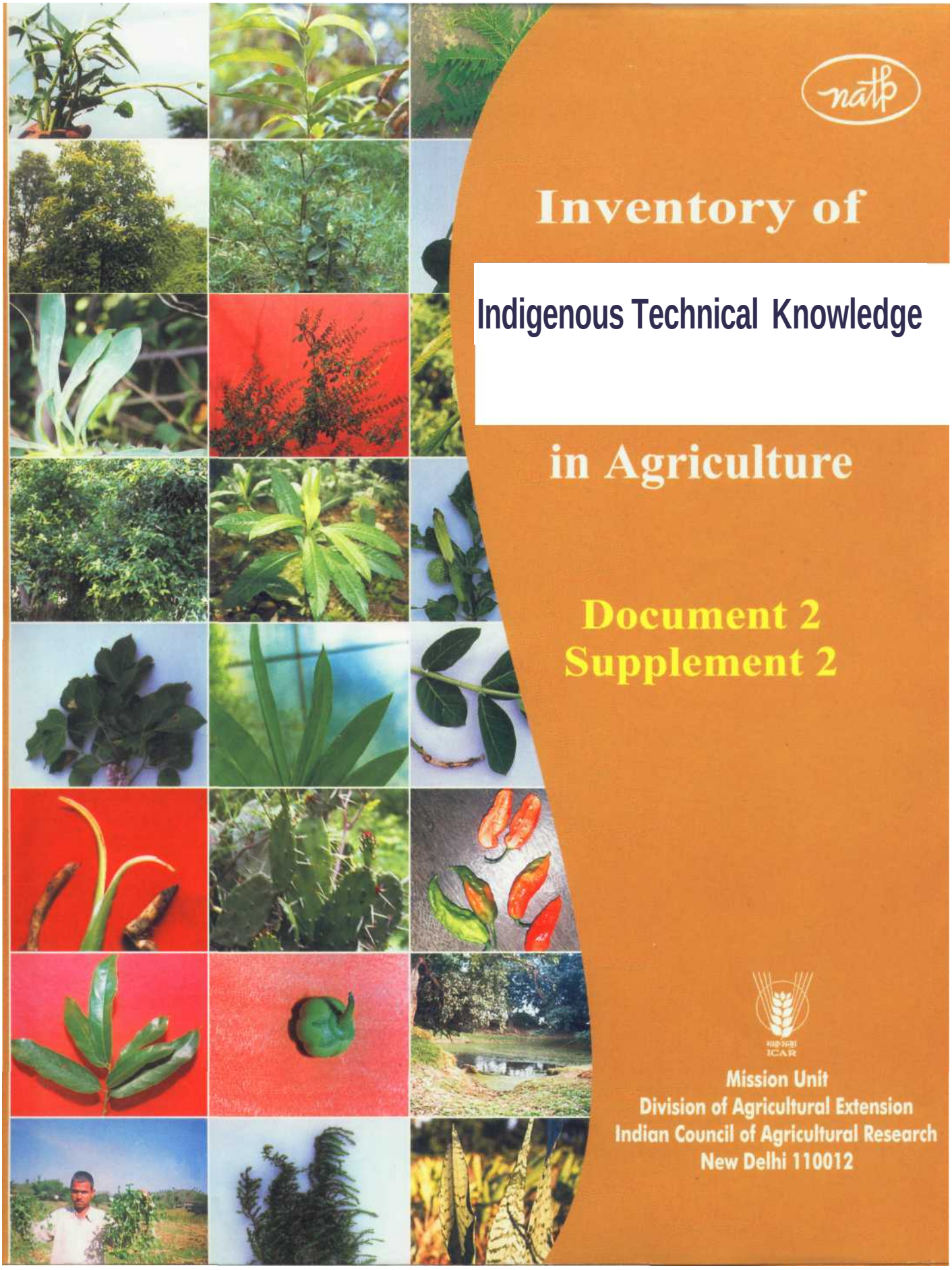


Inventory of

Indigenous Technical Knowledge

in Agriculture

Document 2
Supplement 2

Mission Unit
Division of Agricultural Extension
Indian Council of Agricultural Research
New Delhi 110012

Content

Inventory of
Indigenous Technical Knowledge in Agriculture

Document 2

(Supplement 2)

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Content

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Preface

The Mission Mode Project on 'Collection, Documentation and Validation of Indigenous Technical Knowledge (ITK)' has been making continuous efforts in collecting and documenting information on Indigenous Technical Knowledge in Agriculture right from its inception in 2002. At the first instance, it provided an easy accessibility of such information already available in literature, books, journals, theses, etc. in the form of *Inventory of Indigenous Technical Knowledge in Agriculture*—Document 1.

The indigenous-based practices collected from primary sources through voluntary disclosure were compiled and published in March 2003 entitled as *Inventory of Indigenous Technical Knowledge in Agriculture*—Document 2. In a continuous process of collection and documentation, the indigenous knowledge-based practices were further collected from primary sources and those communicated by the disclosure, embodied and published in June 2003 in the form of*Inventory of Indigenous Technical Knowledge in Agriculture*—Document 2 (Supplement 1). The process of collection and documentation of information in indigenous knowledge-based practices has been the continuous process is the project. The present volume entitled *Indigenous Technical Knowledge in Agriculture*—Document 2 (Supplement 2) in the result of such continuous efforts by the project team.

This supplement contains 846 practices which have been described in 21 chapters, viz. Rain Water Management, Soil and Water Management, Tillage and Practices, Crops and Cropping Systems, Pest and Disease Management, Farm Implements, Post-harvest Technology, Grain/seed Storage, Horticultural Crops, Veterinary and Animal Husbandry, Fishery, Ethno-botany and Agro-biodiversity, Weather forecasting, Waste Water Management, Garbage Disposal and Management, Food Product Development, Natural Yarns, Dyes and Weaves, Low Cost Housing Materials, Ethnic Food and Unclassified.

We are grateful to Dr Mangala Rai, Secretary (DARE) and Director-General (ICAR) for his constant encouragement in documenting the ITKs. The support received from NATP, particularly of the Dr J C Katyal, National Director and Dr K P Agrawal, National Coordinator (MM) is highly acknowledged. The tireless efforts made by the project personnel that have made it possible to publish this document in shortest possible time are highly appreciated.



15 December 2004
New Delhi

^ (P DAS)
Deputy Director-General (AE)
and Mission Leader

Content

Rain Water Management

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
2765	Splashing of water to arecanut trees	Rain water is collected in the pit, dug in the ground between four trees in the arecanut plantation. This collected water is splashed on the tree using a device, made of cashewnut-tree trunk. This is commonly seen in the entire plantation fields in Goa. **Keywords:** arecanut, splashed, rain water, trunk	Shri Mangala Kalidas Sawaikar, Tamsuli, Ponda, North Goa (Goa) 403 107
2766	Collection of water by making channel	Water from higher altitudes is collected through channels. This water is brought to the collection centre at a lower altitude by gravity, which is used for irrigating agricultural fields. **Keywords:** altitude, gravity, rain water, irrigation	Shri Sanjay Anant Patil, Savaiverem, Shilwada, Ponda, North Goa (Goa) 403 401
2767	*Bandh* made of mud and stone	The check dam called *nalla* is made of mud and stone. This structure is called *bandh*, which is used to conserve rain water. The collected rain water is chanellized and diverted for irrigating the fields. **Keywords:** *bandh*, *nalla*, irrigation	Ms Nilima Nachinolkar, C/o Sandeep Gawas, Porye, Sattan, North Goa (Goa) 403 505
2768	Water lifting using *lat*	Rain water is collected in ponds, pits and small pools. This water is utilized for irrigating vegetable garden. At the time of irrigation, a device called *lat* is used. This device is a combination of bamboo poles, which is tied to a strong rock-like stone or cut portion of the tree bark. It is kept horizontally, and to fill up water, a small pot of either plastic or a steel bucket or bended steel is tied at the tip of one pole with	Ms Nilima Nachinolkar, C/o Sandeep Gawas, Ranewad, Parye Sattari, North Goa (Goa) 403 505

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		the pulley attached to it. The process is similar to that of drawing water from the well using pulley and bucket. After the process, the water pours through the channel. If the garden or land is a little bigger, the water is again collected in pits dug in the field, and it is splashed manually by two persons standing opposite to each other. **Keywords:** *lat*, splash, bamboo pole, bucket	
2769	Rain-water harvesting and moisture conservation by *mehandi (Lawsonia alba)* through tillage practises	*Mehandi (Lawsonia alba)* is very popular among the ladies of Rajasthan, Gujarat, and Madhya Pradesh, and among the Muslim ladies of most of the states of India. *Mehandi* is also used for organic or natural dyes. Farmers of entire Sojat belt of Pali district in Rajasthan are cultivating it for using in rain water harvesting and moisture conservation practises in soil since the last 20-25 years. Broadly this technique is grouped under two systems: 1. *Pre-transplanting:* In this, the soil is ploughed to a depth of 30-35 cm so that the maximum rain water percolates in the soil profile. Broad bunds of good height are erected around the field to ensure storage of rain water in the field itself. After preparing the bund, thorns are put on it or it is covered with thorny materials to prevent damage by animals. The entire field is divided into small fragments of 1,000-1,250 sq feet, with provision of a bund of 1-1$^{1}/_{2}$ feet height, locally called *math*. 2. *Past-transplanting:* In this method, deep earthing is adopted for preserving the rain water and moisture in the standing *mehandi*. It preserves rain water in the soil	Shri Purshotan Sharma and Shri Khem Raj, C/o Shri Gajendra Mehado Udyog, Sojat, Pali (Rajasthan)

Code No.	Title of the ITK	Description of the **ITK**	Name and address of **the** discloser/facilitator
		and provides good aeration to roots. With such practices the farmers are able to harvest good crop of *mehandi*. The practices are: (a) Deep ploughing is done between the rows in the first year, and some farmers continue this practice for many years. Deep ploughing helps in retaining rain water in the soil and in better root development. (b) After every rainfall, soil is given good tilth with *khurpi*, which is repeated in August-September till the crop remains dwarf. In well-grown crop it is stopped so that the new twigs are not damaged. **Keywords:** *mehandi*, rain water harvesting, moisture conservation, *bunds*, *math*, pre-transplanting, post-transplanting, *khurpi*	

Soil and Water Conservation

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
2770	Planting of cashew on hill slopes to conserve soil and water	In the hilly slopes, cashew trees are planted in contour lines to conserve soil and water. Paddy is grown in low lands and in the medium land coconut and arecanut are planted. This practice was introduced by the Portuguese. **Keywords:** coconut, arecanut, low land, medium land	Shri Satish Padwalkar, Goteli no.2, Keri Sattari, North Goa (Goa) 403 505
2771	Planting of pineapple to check soil and water erosion	Planting of pineapple in the hilly slope generally practised to control soil and water erosion. It also gives good yield with the available water. This is grown as mixed crop under irrigated conditions. Locally grown pineapple gives fruits of smaller size which are very sweet. This type of practice is common in central Goa. **Keywords:** pineapple, erosion, mixed cropping	Shri Pandurang Majgeankar, Old Goa, Keri Tiswadi, North Goa (Goa) 403 402
2772	Soil conservation through combination of *sarpat* grass *(Saccharum arundinaceum)* and *Acacia indica* L.	Farmers of Sonapur, Sewta and Hamirpur of Azamgarh district in Uttar Pradesh face the problem of gully erosion due to high undulated land and water seepage, which is a big problem for paddy growers in light soils. Farmers plant (root slips) suckers *of sarpat* grass at a distance of 3-4 feet in the last week of June. Between these suckers the seeds of *Acacia indica (babool)* are sown. *Sarpat* grass belongs to family Gramineae. It reaches a height of 7-8 feet. Its root system is very dense. Farmers select the seeds of *Acacia indica* from the dung of goat, because the seeds that pass through the	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		intestine of cattle etc., give about 80% germination. Farmers consider that intestinal juice of goats breaks the dormancy of *Acacia indica* seeds. Fresh seeds of *babool*, used for sowing show very poor germination. The dense roots of *sarpat* grass hold the soil firmly against run-off and the canopy of *babool* acts as an umbrella to decrease splash erosion. When the rainy season is over, *sarpat* grass is harvested and sold in market by making bundles. Small branches of *Acacia indica* are harvested for fuel and agricultural implements is prepared when the plants become 3-4 years-old. **Keywords:** paddy, *sarpat*, *babool*, canopy, bundle	
2773	Indigenous methods of soil and water conservation	Lemongrass and broomgrass are planted on slopy lands. Lemongrass is sold in market and broomgrass is used for preparing huts and houses. Pineapple and *rambans* are planted in the border of kitchen garden to avoid soil losses, which also act as a fence. At river bank, where paddy is taken, farmers plant arecanut tress on borders. Bamboo and banana plants are also planted on slopy or undulating lands. **Keywords:** *rambans*, pineapple, areanut, lemongrass, banana, bamboo	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
2774	Indigenous methods of soil and water conservation under rainfed agro-ecosystem	To conserve soil and water, the tribal people of Kohka, Ghanaghat and Sarhari villages of Dindori district in Madhya Pradesh follow this practice. Most of the fileds are near to forest areas or under uneven topographical situations. In the upper streams, terraces and channels are constructed. Around all sides of soil beds, channels are constructed with an outlet at outer	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology). College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		side of the terrace. Soil erosion is checked by growing perennial grass like *moa* along the border. Ploughing and sowing across the slope as well as fallowing of land are found to be an effective technology to conserve soil and water. *Gular, jamun, ber, aonla, babool* etc. are also planted around the bunds to conserve soil and water. **Keywords:** terraces, channels, *moa*, grass	
2775	Soil conservation by planting banana	People of lower Himachal Pradesh plant banana because (i) it is a source of cash, (ii) its root system is quite extensive, which helps hold a big chunk of soil, and (iii) its broad big leaves reduce the force of the monsoon rain-drops. Thus rain-drops cannot hit the soil directly, which reduces hazards of splash erosion. **Keywords:** banana, soil erosion, splash erosion	People of lower parts of Himachal Pradesh Facilitator: Dr L R Verma MRDA, 4 Summon Hill Shimla (Himachal Pradesh) 171 005
2776	Stabilization of sand dunes and checking of soil erosion by using *kair* as a live fence	The farmers of Jhunjhunu and Nagore districts in Rajasthan grow *kair (Capparis decidua)* plant on borders of fields to prevent shifting of sand and entry of wild animals in the field. *Kair* is a desert plant that can grow under extreme hot and dry conditions. Its leaves are small, acute, spinous and pointed. The tree has a big canopy and the roots hold the soil to prevent soil erosion. Canopy reduces the velocity of the storms or hot winds *(loo).* Fruits of *kair* are rich in nutritive value. Unripe green fruits are used as vegetable and also for making pickles. Its bark has medicinal properties such as analgesic, diaphoretic, laxative, anthelminthic, which cures cough and asthma, ulcers and boils. It is useful in vomiting and piles. The fruit stops foul breath, biliousness and discharges of	Dr Dheeraj Singh, Asst. Professor (Pomology) and Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		urinary bladder. The fresh young leaves are crushed and soaked in water. This extract is filtered, and butter is added to this extract in small quantity, which gives relief from pain of bruises after a fall. **Keywords:** *kair*, storm, pickle, *loo*, medicinal property	

Tillage and Intercultural Management

Code No.	Title of the **ITK**	Description of the **ITK**	Name and address of the discloser/facilitator
2777	Ploughing by *samkor* method for *rabi* and *kharif* sowing  *Samkor* an indigenous crop cultivation practice	Farmers of Jhadol area of Udaipur district in Rajasthan follow *samkor* method of ploughing. The farmers plough the field with *desi* plough and start ploughing from one corner of the field to inner side while keeping the ploughed field in their right hand side. In this practice heavy ploughing is done up to a depth of 1-1 $^{1}/_{2}$ feet, and every corner is ploughed. It is considered good for moisture conservation in *kharif*, and for crop growth in *rabi.* Farmers take maize in *kharif and* wheat in *rabi* **Keywords:** *samkor* method, field ploughing, maize, wheat	Shri Shanti Lai, S/o Shri Roopji Brahmin, Jhadol (Rajasthan); and Shri Shanti Lai Parmar, Kantharia, Jhadol (Rajasthan)

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
2778	Cultivation of indigenous paddy variety Dheka under lowland ecosystem	A*adi* tribes of Pasighat block in Arunachal Pradesh cultivate local paddy variety named Dheka, which is planted in lowland where water availability is high. The plant height is about 2 feet and the colour of the grains is whitish red. Nursery is prepared and it is looked after up to 40 days. In fields, puddling is performed and 7-8 seedlings are transplanted in one hill. This variety is found to be more resistant to insect and pests and contains more amount of gluten, which is a prime requirement of local tribe. To avoid any insect incidence, they spread Pummelo *(Citrus decumana)* fruit bark in the field. During the milky stage, wood ash is sprayed to prevent the housefly attack, which is thought to suck the sap of grains. To meet the nutrient requirement of the crop, rice bran, plant leaves and organic residues from the forest are decomposed in the pit and then broadcast in the field. Keywords: Dheka, Pummelo, wood ash, manure	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
2779	Cultivation of indigenous paddy variety Boga Kolony in uplands	*Aadi* tribals of Pasighat block in Arunachal Pradesh grow a local paddy variety Boga Kolony in the uplands as rainfed crop, where water availability is low. The plant height is 2.5 feet and the colour of grains is whitish yellow. This is sown mixed with pearlmillet and maize. The field is ploughed by using L-shaped blade. Dibbling method is used for sowing the seeds,	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102

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		but nowadays few people are using *desi* plough. After germination, farm women do the weeding. This variety is resistant to insects and pests. To avoid any occurrence of insect pests, farmers spread the pummelo fruit bark and hang dead crab on bamboo poles. During the milky stage, wood ash is sprayed to prevent the housefly attack. **Key words:** Bhoga Kolony, upland, pummelo fruit bark, crab, wood ash	
2780	Use of coconut water and buttermilk mixture to increase the number of flowers in crop plants	A mixture of coconut water and buttermilk is used to increase the number of flowers in paddy, groundnut, millets and banana. A mixture of 5 litres coconut *(Cocos nucifera)* water, and 5 litres buttermilk is taken and this solution is kept in a mud pot. This pot is buried in the soil for 5 to 7 days. After that 1 litre solution is mixed with 10 litres water. This solution is ready to spray, which helps to increase number of flowers in the crops. **Keywords:** coconut water, buttermilk, flowers	Shri C. Bhakkiyanadhan, S/o Shri Chandrasekaran, Nettavelampatty, Kottaipalayam (via Thuraiyur Taluk), Tiruchirapalli (Tamil Nadu) 621 003
2781	Cultivation of rice *Bailu Nalla Budda Vaddlu* (black variety)	This variety of rice gives good yield in black soils and can also be raised in *dubba* and red *chalka* soils of Telangana. It comes to maturity in 120 days, and yields 1.2 tonne/ha grain and 8 cartloads fodder/ha. Starch can be prepared by cooking the grain, which is good for lactating mothers. **Keywords:** Bailu Nalla Budda *Vaddlu, dubba,* lactating mothers, starch	Deccan Development Society, Pasthapur, Zaheerabad (M), Medak (Andhra Pradesh)
2782	Cultivation of ***Bailu*** *Erra Vadlu* (red variety) rice	This crop can be raised in all types of soils, and it comes to maturity within 120 days. Two good rains are required to get its successful yield. On an average, it can give 1.5 tonne grain and 8 cartloads fodder per hectare. The	Deccan Development Society, Pasthapur, Zaheerabad (M), Medak (Andhra Pradesh)

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		grains form a nutritious diet for lactating mothers. **Key words:** *Bailu Erra Vadlu,* lactating mothers, fodder	
2783	Cultivation of *Bailu Erra Budda Vaddlu* (red variety) rice	This rice variety gives good yield in red soils and needs uniform rainfall. The crop comes to maturity in 120 days, yielding 2 tonnes grain and 8 cartloads fodder per hectare. It is similar to *Bailu Nalla Budda Vaddlu* except the colour. **Keywords:** *Bailu Erra Budda Vaddlu,* fodder	Deccan Development Society, Pasthapur, Zaheerabad (M), Medak (Andhra Pradesh)
2784	*Qurqut,* a local variety of paddy	*Qurqut,* a local paddy is cultivated in Goa in rainy *(kharif)* season. This plant is very tall and has red grain. It can be grown under irrigated conditions. Its taste is most acceptable, but the yield is not very good. Crop duration is 122 to 135 days. **Keywords:** *Qurqut,* red grain, irrigated condition	Shri Priti Tilve, Tiverm Marcela.Fonda. Dist. North Goa (Goa) 403 402
2785	*Sarde* method of paddy cultivation	*Sarde* is a practice of cultivating paddy in rainy *{kharif)* season under rainfed conditions. Any variety can be taken for cultivation. In North Goa, sprouted seeds are broadcast in high land and in low land by transplanting. After the harvest of paddy, legumes and vegetables are taken on a large scale. **Keywords:** *sarde,* sprouted seeds	Shri Keshav Majik, Tumbigi, Ranewada, Sanquelim. Sattari North Goa (Goa) 403 505
2786	*Puran* method of paddy cultivation	The practice of growing paddy near the riverbed is called *puran.* It is common and special in North Goa, where small and marginal farmers go for this type of cultivation. At the foot-hills of Sahayadri ghats (a part of Western Ghats), Mhadie river flows. People living in the region divert the flow of water to a small patch and sow paddy in late winter *(rabi)* season and	Shri Rupesh D. Gauns, Ranewada, Porye, Sanquelim, Sattari, North Goa (Goa) 403 505

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		harvest by April end. Ploughing and land preparation are done manually. This practice is otherwise called silt cultivation because it is grown on the riverbed after removal of pebbles. **Keywords: *puran*,** paddy, riverbed, silt, divert	
2787	Use of paddy stalk to suppress weeds and conserve moisture in sandy loam soil	During first week of June, paddy stalks are spread in a thick layer on sugarcane field. The layer acts as a cover to decrease the intensity of rain and suppress germination of weed seeds. After decomposition it is converted into organic matter, which is available to the suceeding crop, i.e. wheat or greengram. This technology is quite useful for the crop grown on sandy soil, and sugarcane crop can sustain moisture stress up to 20-30 days. About 70-80% weed population is controlled by this practice. **Keywords:** paddy straw, weed, moisture, rain intensity	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
2788	Retention of moisture in soil by ploughing	After harvest of paddy, in this area groundnut is cultivated. Prior to sowing of groundnut, ploughing three times helps retain moisture in the field, under rainfed condition. **Keywords:** paddy, groundnut, moisture	Shri Prakash Sakaram Bali, H.No.252, Bela Vita Wada Sangolda, Bardez, North Goa (Goa) 403 511
2789	Use of leaves of custard apple and *Vitex nugundo* to protect rice against rat and other pests	Farmers of Narkuda village of Rajendranagar in Ranga Reddy district of Andhra Pradesh expose the paddy crop to the smoke of burnt leaves of custard apple and *Vitex nugundo* for better control of insects and rats. This practice exists in the farm families of the village for the last 20 years. Leaves of these plants are put in a pot and burnt near the rat burrows. By this practice, rats are killed and insects fly away from the plants. About 5 kg	Shri Ramulu, Narkuda, Rajendranagar, Dist. Ranga Reddy (Andhra Pradesh) 500 030

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		dried leaves are required to give smoke in 1 acre land. **Keywords:** custard apple, *Vitex nugundo*, earthen pot, burrows	Shri Nattuji, S/o Shri Phoola Mema Bari, Makarade, Jhadol (Rajasthan)
2790	Cultivation of local sorghum (red) variety on high slopy lands Traditional cultivation of Red sorghum-  Erect head species	In Ihadol, settlement pattern is on hills or along the slope of hills. Tribal people are following the tradition of their forefathers in cultivation of red sorghum of dwarf nature having erect heads. Locally there are two species of red sorghum. One is of dwarf nature that bears erect heads, the second one grows tall and its heads are little bigger and bent downward. Just after rainfall it is broadcast @ 10 kg seed/ acre, and the field is slightly ploughed and planked. It requires less care and checks soil erosion. Birds do not damage it. Those who cannot afford to purchase maize and other grains prefer to consume such low-priced grain. It is good for pop preparation and is also palatable for animals. **Keywords:** dwarf red sorghum, erect heads, pop, palatable	Traditional cultivation of Red Sorghum-Downward bent head species 
2791	*Pajonna* sorghum	*Pajonna* variety of sorghum is grown in black and gravelly red soils with low rainfall. It gives a grain yield of 1.7-2 tonnes/ha and 1,800-2,000 bundles of fodder. The grain can be used as a diet for pregnant women and fodder for animals. **Key words:** *Pajonna*, sorghum, grain, fodder	Deccan Development Society, Pasthapur, Zaheerabad (M), Medak district (Andhra Pradesh)
2792	*Telia Malle Jonna* sorghum	*Telia Malle Jonna* variety of sorghum is grown in red and black soils of northern Telangana zone of Andhra Pradesh, which mature within 120 days. It produces 1.2 tonnes/ha of grain and 1,800- 2,000 bundles of fodder per hectare. The grains of this variety do not germinate even if this	Deccan Development Society, Pasthapur, Zaheerabad (M), Dist. Medak (Andhra Pradesh)

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		crop is exposed to wet spells of rainfall during the maturity time. Since its ear has the characteristic of loose spiklets, the grain is stored for longer period by mixing with neem and ash. **Keywords:** *Telia Malle Jonna*, fodder, neem	
2793	Cultivation of sorghum *Erra Jonna* (red)	It is suitable for red *chalka* and black soils in Medak and other districts of Telangana region of Andhra Pradesh. It comes to maturity in 120 days. It can give 1.2 tonnes grain and 2,000 bundles of fodder per hectare. The grain is good as a diet for pregnant ladies. The seeds are stored with neem leaves and ash in earthen pots, sealed on the top with mud plaster. **Keywords:** *Erra Jonna, chalka,* black soil fodder	Deccan Development Society, Pasthapur, Zaheerabad (M), Dist. Medak (Andhra Pradesh)
2794	Cultivation of sorghum *Rabi Erra Jonna* (red)	This crop is grown in shallow black soil under limited moisture conditions, which attains maturity in 150 days. It gives a grain yield of 1.3 tonnes/ha with moderate fodder yield. The *chapati* prepared of this grain is tasty and soft. **Keywords:** *Rabi Erra Jonna, chapati*	Deccan Development Society, Pasthapur, Zaheerabad (M), Dist. Medak (Andhra Pradesh)
2795	Cultivation of sorghum *Pyalala Jonna* (sweet variety)	This crop can be grown in black soils under little residual moisture. It gives yield of 100 kg/ha. This is used for preparing popcorn. **Key words:** *Pyalala Jonna*, popcorn	Deccan Development Society, Pasthapur, Zaheerabad (M), Dist. Medak (Andhra Pradesh)
2796	Traditional cultivation of *kangani*	*Kangani*, a minor millet, is one of the important cash crops. Farmers of Jhadol village in Udaipur district of Rajasthan propagate *kangani* by two methods. In small area seeds are broadcast. For better yield it is cultivated through raising of seedlings and transplanted in the fields where water does not stand. In traditional	Shri Bheekha Ram, S/o Shri Dhara Ram Luhar, Kantharia, Jhadol, Dist. Udaipur (Rajasthan); and Shri Trilok Ram, S/o Shri Kaloo ji Prajapat, Kantharia, Jhadol, Dist. Udaipur

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		method of raising seedlings, field is ploughed and seed @ 2.5 kg/ha is broadcast, and after planking it is left. The seedling grows to 6-9 inches height within 20-30 days of sowing. *Kanganis* is also taken following green-manuring with sunnhemp. Just after rainfall in July, sunnhemp seeds are sown. At flowering stage it is being ploughed in field 2-3 times. Around *raksha bandhan* (August), *kangani* seedlings (6-9 inches) are transplanted in the field. Hoeing is done 8-10 days after transplanting. The crop matures after 75 days of transplanting. Under normal condition 10-12 q/ha grains are obtained, which are being sold in the market @ Rs 10-12/kg. *Kangani* is consumed as ethnic food during fasting—as *laddoo, pudi* and *halva* etc. **Keywords:** *kangani*, green-manure, sunnhemp	(Rajasthan)
2797	Cultivation of *Telia Korra* (white) foxtail millet	This coarse-grain crop is grown successfully in degraded red *chalka* and black soils of district Medak in Andhra Pradesh. It requires good rains during milking and grain filling stages. It yields about 2.5 tonnes grain and produces 2,500-3,000 bundles of fodder per hectare. The *ambali* prepared from its grain reduces cold and also body pains, if taken along with *aonla.* It is a good appetizer and has good taste. This variety is tolerant to insects and pests. **Keywords:** *Telia Korra, ambali, aonla, chalka,* black soil, pest tolerance	Deccan Development Society, Pasthapur, Zaheerabad (M), Dist. Medak (Andhra Pradesh)
2798	Cultivation of *Mamchu Korra* foxtail millet	This crop is grown in red and black soils of Telangana zone of Andhra Pradesh. It produces 2 tonnes grain and 2,000-2,500 bundles of fodder per	Deccan Development Society, Pasthapur, Zaheerabad (M), Dist. Medak

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		hectare. The seed is not affected by insects or pests. Cooked *Mamchu Korra* is soft and if eaten relieves body pain. **Keywords:** *Mamchu Korra,* fodder, pests, body pain	(Andhra Pradesh)
2799	Cultivation of *Nalla Korra* (black) foxtail millet	This crop is grown in red and black soils of Telangana zone of Andhra Pradesh, especially in Medak district, and matures within 120 days. On an average it gives 2 tonnes grain and 2.5 tonnes fodder/ha. It is tolerant to pests and diseases. It is good appetizer and is offered to Lord Naga. **Keywords:** *Nalla Korra,* Lord Naga, appetizer, pest and disease resistance	Deccan Development Society, Pasthapur, Zaheerabad (M), Dist. Medak (Andhra Pradesh)
2800	Cultivation of *Erra Korra* (red) fox tail millet	This crop is grown in all types of soil even in less-rainfall areas of Andhra Pradesh. It can be grown as intercrop with pigeonpea and yields 1.2 tonnes grain along with 2,500-3,000 bundles of fodder per hectare. It is a good appetizer and good diet for human beings, especially for children and also for animals. **Keywords:** *Erra Korra,* low rainfall, intercrops, appetizer	Deccan Development Society, Pasthapur, Zaheerabad (M), Medak (Andhra Pradesh)
2801	Cultivation of *Telia Saama* (white) little millet	It is an important millet crop, grown in degraded black and red soils of Andhra Pradesh. It matures within 120 days and yields 2.5 tonnes grain per hectare. It is consumed during summer to give cooling effect to body. **Keywords:** *Telia Saama,* grain, summer cooling effect	Deccan Development Society, Pasthapur, Zaheerabad (M). Dist. Medak (Andhra Pradesh)
2802	Cultivation of *Nalla Saama* (black) little millet	This crop is grown in all types of soils and produces 1 tonne grain and 5 cartloads of fodder per hectare. The crop comes to maturity within 120 days after sowing. **Keywords:** *Nalla Saama,* soil types	Deccan Development Society, Pasthapur, Zaheerabad (M), Dist. dist. Medak (Andhra Pradesh)

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2803	Cultivation of ***Kodi Saama*** *(rabi)* little millet	This crop is raised in red *chalka* soils and comes to maturity within 120 days, giving a grain yield of 1 tonne and 5 cartloads fodder per hectare. It is tolerant to pests and diseases. It is drought tolerant but its grain is coarse. If the crop is delayed beyond 2 days of maturity, the grain falls on the ground. **Keywords:** *Kodi Saama, chalka*, shattering	Deccan Development Society, Pasthapur, Zaheerabad (M), dist. Medak (Andhra Pradesh)
2804	Cultivation of *Aargulu* kodo millet	This crop is raised in gravelly and red *chalka* soils. Depending upon the distribution of rain, its duration will vary. It yields 0.8 tonne/ha and 8 cartloads fodder/ha. It is grown by poor people and is used as an offering to Goddess Durga. **Keywords:** *Aargulu, chalka*, Goddess Durga, poor people	Deccan Development Society, Pasthapur, Zaheerabad (M), dist. Medak (Andhra Pradesh)
2805	Increase in yield of chickpea by different practices	When chickpea is sown with coriander as mixed crop the problem of pod borer is minimized. When the crop is at 4-5-leaf stage, the plants are thinned which increases its productivity. When the crop is sown with minimum tillage operation, there is good scope for higher (25%) yield. Seeds of chickpea are immersed in water for 2 days for sowing in light soils and are sown in furrows. By adopting all these practices the farmers of Sonapur, Sewta and Hamirpur areas of Azamgarh district in Uttar Pradesh get 25-30% higher yield. **Keywords:** coriander, thinning, minimum tillage, seed soaking	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University. Pasighat (Arunachal Pradesh) 731 102
2806	Cultivation of *Erra* ***Togari*** (red) pigeonpea	This crop is raised in black and gravelly soils with low rainfall. It is tolerant to pests and diseases. It yields on an average 1 tonne grain/ha. The seeds can be stored for longer period by mixing with ash and adding neem	Deccan Development Society. Pasthapur, Zaheerabad (M), Dist. dist. Medak (Andhra Pradesh)

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		in the bamboo made grain-storage structure. **Keywords:** *Erra Togari*, neem, seed storage, bamboo	
2807	Raising of sugarcane by minimum tillage	Farmers of Sonapur. Sewta and Hamirpur villages do not plough field for planting sugarcane. After harvesting chickpea or pea, furrows of 1.5 feet width and 10 cm depth are prepared with *fawda* (spade). These furrows are left for 4-5 days, so that eggs of insects and weed seeds are destroyed. Field is irrigated and furrows are submerged fully with water. After 36-40 hr the soil become soft. Then the setts of sugarcane are pressed in the soil at an interval of 7-8 cm. This practice gives more yield than the normal method. The initial cost for ploughing and labour is also saved. **Keywords:** *fawda* (spade), furrow, minimum tillage	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University. Pasighat (Arunachal Pradesh) 791 102
2808	Cultivation of *Gaddi Nuvuulu* niger	This crop is raised in degraded gravelly and red *chalka* soils under rainfed environment. It is tolerant to pests and diseases and comes to maturity within 120 days. It is used for *rasam* and is added while preparing curries. **Keywords:** *Gaddi Nuvuulu*, *rasam*, curries	Deccan Development Society, Pasthapur, Zaheerabad (M), dist. Medak (Andhra Pradesh)
2809	Cultivation of *Avishalu* linseed	This crop is grown in black, shallow, gravelly, red and even saline soils in rainfed regions. It can be grown mixed in coriander and sorghum, yielding 100 kg/ha. It is drought tolerant and comes to maturity in 110 days. Its seeds can be dried in sun and stored in a pot. The *masala* prepared from its grain has good taste, if eaten with curd. **Keywords:** *Avishalu*, *masala*, soil types	Deccan Development Society, Pasthapur, Zaheerabad (M), dist. Medak (Andhra Pradesh)

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2810	Cultivation of *Erra* ***Pundi*** (red) *Hibiscus cannabinus*	This crop is raised in all types of soil under low rainfall. Its leaves add fertility to the soil. The seeds can be used to extract oil and leaves can be used as a vegetable. **Key words:** *Erra Pundi*, leafy vegetable, oil	Deccan Development Society, Pasthapur, Zaheerabad (M), dist. Medak (Andhra Pradesh)
2811	Cultivation of *Telia Pundi* (white) *Hibiscus cannabinus*	This crop is raised in all types of soils, and it comes to maturity within 120 days. It is used as a leafy vegetable and as powder in various food preparations. The stalk can be retted to extract fibre. It can be used to cover thached houses. Oil can be extracted from the seeds. It is tolerant to pests and diseases. **Keywords:** *Telia Pundi*, stalk, oil, fibre	Deccan Development Society, Pasthapur, Zaheerabad (M), dist. Medak (Andhra Pradesh)
2812	Mixed cropping of maize, castor and cowpea in ginger	Farmers in Girgetpally village of Ranga Reddy district in Andhra Pradesh cultivate ginger crop in fertile soils under limited irrigation. After planting ginger in the last week of May to end of June, they sow maize, pigeonpea and cowpea to provide shade to ginger, which is a shade loving crop. Farmers get extra income of Rs 2,000-5,000/ha with this mixed cropping. **Keywords:** ginger, mixed cropping, maize, pigeonpea	Shri B. Sanjeeva Reddy (Scientist). Central Research Institute for Dryland Agriculture, Hyderabad (Andhra Pradesh) 500 059
2813	Mixed cropping of wheat, thymol, garlic and onion	Wheat along with thymol, garlic and onion is sown in October and November in winter *(rabi)* season and harvested in March-April. This cropping system is very useful to prevent insect pest attack and to maintain fertility of the soil. Such cropping systems also provide diversification in food production for domestic use. This practice is followed throughout the hilly areas of Shimla	Farmers of hilly area of Shimla district of Himachal Pradesh Facilitator: Dr L R Verma, MRDA, 4 Summer Hill, Shimla (HP)

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		district of Himachal Pradesh since time immemorial. Keywords: mixed cropping, wheat, thymol, garlic, onion, food diversification	
2814	Mixed cropping in dry farming	Generally mixed cropping pattern is followed by the farmers under dryland conditions to make use of the available field and the resources within a short span of time. Sorghum and pigeonpea are sown together in the field. Farmers harvest one crop after the other. Keywords: dry farming, mixed cropping, sorghum, pigeonpea	Shri P. Thangavel, S/o Shri P. Palanichamy, Nadupatty, Jayamangalam, Periyakulam, Theni (Tamil Nadu) 625 603
2815	Intercropping of maize with potato, *chotayee*, *chinni* and *kodda*	Intercropping of potato, *cholayee*, *chinni* and *kodda* along with maize is helpful to maintain fertility of the soil and also to provide food diversification. This intercropping is practised by the farmers of hilly areas of Shimla district of Himachal Pradesh since long. In this system maize is sown in June-July along with potato, *cholayee*, *chinni* and *kodda* as *kharif* crops. These crops are harvested in October-November. Keywords: intercropping, maize, potato, *cholayee*, *chinni*, *kodda*, soil fertility, hilly area	Farmers of hilly area of Shimla district of Himachal Pradesh. Facilitator: Dr L R Verma, MRDA, 4 Summer Hill, Simla (HP) 171 005
2816	Indigenous cropping system under rainfed agro- ecosystem	Farmers of Kohaka, Ghanaghat and Sarhari villages of Dindori district of Madhya Pradesh follow different types of cropping systems under rainfed conditions, which are as follows: 1. Pigeonpea + rice: On black soil *(kali mitti)* farmers grow tall varieties of rice and on bunds sow pigeonpea. Pigeonpea can survive on the less fertile soil of bund. 2. *Anta* with *kodo (Paspalum scrobiculatum)*, *kutki (Gentiana kurroo)* and pigeonpea: *Anta* is a	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat, (Arunachal Pradesh) 791 102

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		small bushy plant belonging to citrus family (leaves are round with maroon coloured flowers), which is eaten by tribals either in green or dried form. *Kodo* + anta are taken under completely rainfed and undulating situations. *Kodo* is sown across the slope after single ploughing and afterwards *anta* seeds are sown (seed rate 400-500 g/acre). *Anta* is harvested about 15 days after harvesting *kodo.* In *kutki* + *anta* cropping system, the seed rate of *anta* is increased because the plant size of the former is smaller than that of *kodo.* In *anta* + pigeonpea cropping system the pod borer intensity is lessened in pigeonpea. This cropping system is followed in light black cotton soil, locally called *sehra mitti* (slopy land). *Anta* is sold in market as vegetable, from which sauce and ketchup are prepared. This fruit is used in many stomach disorders or ailments and is mixed with any type of food, that is compatible with tribal culture. 3. *Utera* cropping system: It is a system of sowing the succeeding crop in the standing crop before harvesting for utilizing the available moisture. Generally *utera* is followed in paddy fields because there is sufficient moisture available in the fields. Crop, sown in the paddy fields are: pea, linseed, blackgram and lathyrus. 4. *Badi* cropping system: Tribals grow various types of crops in their surroundings and kitchen garden. In *kharif* season maize is the main	

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		crop to be grown in this system, which is sown in line by *chadi.* In addition to maize, vegetables like *anta, lal bhajee (Amaranthus tricolor* L), lady's finger, elephant's foot yam, *palak* (spinach), brinjal, tomato and chillies are grown, whereas fruits like papaya, guava, *Zizyphus* and banana are planted on bunds, which acts as a good fence. Mustard is the main crop grown in *rabi* season. Seeds of radish are mixed with mustard seeds. Vegetables like cucurbits, *palak, suran (Amorphophallus campanulatus Roxb),* chillies, gram and tomato are raised. In rainfed conditions local cultivars of these vegetables are used which are well adapted to prevailing environment. It is an age-old practice. **Keywords:** pigeonpea, rice, *anta, kodo, kutki, sehra mitti*	
2817	Relay cropping of groundnut and sesame	In the groundnut *(Arachis hypogaea)* field, sowing of sesame *(Sesamum indicum),* prior to harvest of groundnut is in practice. If it is sown by broadcasting a day before harvest of groundnut, the seeds are automatically pushed to the soil while harvesting groundnut. Sesame seeds start germinating after 3 days. By using this method, cost of ploughing and sowing are reduced. **Keywords:** sesame, groundnut, relay cropping	Shri S. Veerasamy, S/o Shri Subbiah Udaiyar, Venkatakulam, Post Alangudi Taluk, Pudukottai (Tamil Nadu) 614 623
2818	Crop rotation of wheat and *ogala* along with maize	Wheat is sown in October-November and harvested in March-April. In the same field *ogala* along with maize crop is sown in June-July and harvested in early October, and the same crop sequence is followed during	Farmers of hilly area of Shimla district of Himachal Pradesh. Dr L R Verma, MRDA, 4 Summer Hill, Shimla (HP) 171 005

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		the next year. Such cropping system helps maintain fertility of soil, protect the crops from insect pest attack and also provide diversified food. This crop rotation is used throughout the hilly areas of Shimla district of Himachal Pradesh since a long time. **Keywords:** crop rotation, wheat, *ogala*, maize	
2819	Burning the forest shrubs and organic residues to induce germination	*Aadi* tribes of Pasighat block in Arunachal Pradesh burn the organic materials and forest tree species (shrubs) for preparation of shifting land cultivation *(jhuming).* Burning increases soil temperature, which induces germination of many indigenous plants. It is generally observed that many of the new plant species are germinated after burning though not present prior to burning. **Keywords:** *Jhuming*, burning, dormant seed, germination	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
1820	Meeting out diversified needs by growing *shurtin*	*Shurtin (Michelia doltsopais)* tree is conserved by locals of Nagainga village of district Ukhrul in Manipur. It is grown on shifting-cultivation land and in kitchen garden also. From the leaves of this tree fertilizer is prepared and live fence is created against wild animals which checks soil and water erosion. Under the shade of the tree, a shade-loving crop is grown and a peculiar insect is reared on this tree, which is locally called *khavang.* This insect is used for curing asthama, which is sold @ Rs 10-15 per insect. **Keywords:** *shurtin*, live fence, shade, *khavang*, asthama	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat, (Arunachal Pradesh) 791 102
21	Protection of crop from wild animals	When farmers fail to control the grazing of crops by wild animals, they fence the fields by rope made of *ketki (Caesalpinia bonduc)* shrub fibre.	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology),

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		They cultivate *ketki* shrub near the fields. Leaves are kept in water for 15-20 days (retting), and afterwards fibre is stretched from the leaves. From these fibres rope is prepared. The rope is tied with hedgerows around the crop field and farmers do timely maintenance. This practice is in vogue since 15 years and about 70% of farmers are following it. **Keywords:** rope, *ketki*, wild animals	College of Horticulture and Forestry, Central Agricultural University, Pasighat, (Arunachal Pradesh) 791 102
2822	Indigenous farming systems in Jhadol tribal area in Udaipur district of Rajasthan	In the tribal area of Jhadol, the cropping system are well established as per the farming situation. This is a hilly tract with slopy and small fields. In this system, entire land is fragmented into small fields, which appears to be as table farming. Fields are surrounded with stone fencing along with *Jatropha* plants, which is an oil-seed crop and thus gives additional returns. On top of hill side, maize is cultivated, and at bottom where water accumulates paddy is grown in *kharif* **and** wheat under rainfed conditions in *rabi.* During *kharif* 1 or 2 rows of *ambadi* is taken on the border of maize fields. This is suitable for preparing ropes and seeds are being used as concentrate for milching animals. In the middle of the slopy land some horticultural crops are grown. Colocasia, turmeric with one or two rows of *Colocasia* and *rataloo (Dioscoria alata)* are taken on border side. A few farmers grow turmeric or ginger and some rows of colocasia along with sunhemp. Some farmers grow minor millets like *kangani* as cash crop in the fields where water does not accumulate. There is also provision of green-manure by ploughing the standing sunhemp crop. Some of the farmers plough their fields in circular way for better	Shri Nema Ram, S/o Shri Hakra Parmar, Kantharia, Jhadol, Udaipur, (Rajasthan), Shri Chunilal Brahmin, Jhadol, Udaipur (Rajasthan) Shri Shanti lal, S/o Shri Roopji Jhadol, Udaipur, (Rajasthan), and Shri Keshoo Lal, Paliyardev, Makadadcv, Jhadol, Udaipur (Rajasthan)

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		moisture conservation, locally called *samkor* method of ploughing. Water chestnut and lotus are taken in water tank. **Keywords:** farming systems, *Jatropha*, turmeric, ginger, *colocasia*, *rataloo, sooran, samkor*, sunhemp	
2823	Indigenous soil testing method	In tribal areas of Himachal Pradesh some people are not much aware of soil-testing laboratory. Hence they adopt indigenous method for understanding soil quality. People in these areas depend on their tongue for identifying the taste of specific soils. In this method, a soil sample is taken and a suspension of water is prepared in a bamboo cylinder. The taste of the suspension is done by tongue. If it tastes sour, the farmers decide that the soil **is** good for tree planting. Again, if it tastes oily or slippery, they decide that the site is good for agricultural crops. **Keywords:** taste of soil, suspension, agricultural crops, sour, oily, tree planting	People of tribal area of Himachal Pradesh Dr L R Verma, MRDH, 4 Summer **Hill,** Shimla (HP) 171 005
2824	Control of *Parthenium hysterophorus* weed	To control carrot-weed grass *(Parthenium hysterophorus)* in the agricultural fields, construction of pit is in practice. Digging a pit with 2 m length, 2 m breadth, and 4 m depth is recommended. Weeds collected from the fields are deposited in this pit. Since spores remain at the bottom of the pit, its spread **is** controlled resulting in check of *Parthenium.* **Keywords:** pit, *Parthenium* weed	Shri D. Kuppusamy, S/o Shri Dhanapal Chettiar, Gangavaram, Gingee, Villupuram (Tamil Nadu) 604 151
825	Indigenous knowledge of crop management based on soil identification and fertility determination	Lands where semi-shady conditions do prevail, pineapple is selected for cultivation. Banana is planted to check soil and water erosion on boundary area of slopy land, whereas arecanut is	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture

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		planted as the main cash crop in interspaces. Gentle sloping areas with gravel having moderate fertility along with shallow black sandy soil with gravel is selected for pineapple and mandarin mixed with black pepper crop. In waterlogged soils, rice is planted and banana is grown on bund. If the slope is little bit gentle and soil is shallow black, it is indication of medium fertile soil, and the farmers grow vegetables and cereal crops in combination with fruits. If the slope is gentle and soil is black, farmers consider it highly fertile, and grow cash crops. Low level of fertility is recognized by greyish or light brown soil with high slope. For this area perennial fruit trees and spices are grown and timber plantation is done to control soil and water erosion as well as to fulfill the diversified needs of the people living in East Siang district of Arunachal Pradesh. **Keywords:** soil identification, fertility, soil and water erosion, gentle slope, shallow black, deep black, timber, crop diversification	and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102

5
Pest and Disease Management

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
2826	Use of *kohu gans* for controlling insect pests in rice  Grewea sp.	Leaves of *kohu gans (Grewea* sp.) are collected and ground to control insects and pests in rice. A few litres water is added and the extract is sprayed in the affected field. Erection of stems of this plant in the affected field also gives good result. **Keywords:** *kohu gans,* insect pests,	Shri Willy Sangma Neperpatty, P.O. Ncperpatty, dist. Karbi Anglong (Assam)
2827	Control of *gundhi* bug in rice	Farmers of Pasighat block in Arunachal Pradesh use crabs as insect attractant. Farmers collect 40-50 crabs and kill them. After killing, these crabs are tied with bamboo sticks and placed randomly in the field. Insects are attracted with the smell of crabs and they sit over the body to suck the sap. Thus the crop is saved from the insects. **Keywords:** crab, *gundhi* bug, rice	Dr Ranjay K. Singh Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
2828	Use of *markati* in paddy field as a repellent	Farmers (women) of Mishing tribe of East Siang district, Arunachal Pradesh spread the leaves of *markati* plant *(Baccaurea ramiflora)* randomly after transplanting paddy in the field. By spreading these leaves, the paddy crop is saved from various diseases and the insects are repelled from paddy field. This practice is used since time immemorial and 80-85% farmers rely on this practice. **Keywords:** *markati,* paddy, disease, insect, repellent	Dr Ranjay K Singh Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102

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2829	Control of white grub in rice fields	White grub is a major problem of rice grown in the hills. It causes severe losses in yield. To control white grub infestation in field, farmers use common salt. A solution is prepared by mixing 1 kg common salt in 5 litres water, which is sprayed in about 200m^2 area after ploughing and before sowing. **Keywords:**white grub, common salt	Ms Mukta Bhakuni Sarkar-ki-aali, Hawalbag, dist. **Almora** (Uttaranchal)
2830	Use of rotten fish for controlling aphids in rice	In Joynagar, Teliamura (West Tripura) generally there is incidence of aphids on paddy at flowering time. Farmers of this area dip the dried fish in water for 1 to 2 days. Afterwards this fish soaked water is filtered and some quantity of water is added and then it is sprayed in the field, which repels aphids from paddy field. **Keywords:** aphids, paddy, fish, spray	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
2831	Pest management in paddy field by **pumello** fruits	Farmers of Pasighata area pluck pumello fruits *(Citrus grandis)*, and cut its skin into small pieces. These pieces are fixed on bamboo sticks, which are inserted in paddy field. Insects are controlled by this practice. **Keywords:** pumello, paddy	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh)731 102
2832	Control of hoppers in paddy by using *mukkadaka* decoction	About 1 kg *mukkadaka (Lasiosiphon eriocephalus*, a common plant in the locality which is very bitter and found to cause burning even if a small extract falls on the skin) leaves are boiled in 10 litres water. This solution is filtered and diluted with water in 1:1 ratio and sprayed twice, once during nursery stage and second after transplantation of paddy. The decoction is also effective against crabs, which otherwise cut the plants at a very tender stage. **Keywords:** *mukkadaka*, hoppers, paddy	Shri B. S. Dinesh, Bavikaisaru, Thirthanhalli, dist. Shimoga (Karnataka)

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2833	Control of rice hispa in paddy by using *jamalakhuti*	This practice is followed by the people of Amtola village in dist. Kamrup of Assam. Rhizome *of jamalakhuti (Costus speciosus)* is crushed to make a paste and the juice is extracted out of it. This juice extract is diluted and can be used to spray in paddy field to control rice hispa. **Keywords:** hispa, *jamalakhuti*, paddy	Shri Haren **Kalita,** Amtola, dist. Kamrup (Assam) 781 134
2834	Pest management in rice by *tulsi (Ocimum sanctum)* plant  Wild *tulsi*	Tribal farmers of Champhai district of Mizoram follow the cultivation of rice in ***jhum*** lands. In rainfed rice of *jhum* lands there is attack of various insect pests. Farmers broadcast the seeds of rice in field and plant *tulsi* on borders of the field. This plant is also planted randomly to repel many other damaging insect pests. It is an age-old practice. **Keywords:** *jhum*, rice, *tulsi*, repel	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat, (Arunachal Pradesh) 791 102
2835	Control of rice pests by neem-oil spray	Shri Thanikachalam experimented and found an effective control of rice pests like stem borer and leaf roller, using neem-oil spray. Two hundred ml neem oil is mixed with 4 kg soil or sand and a little cowdung to enhance microbial activity. This slurry is incubated for 2 days. The liquid is then extracted by repeatly washing with water. It is filtered through four folds of cloth. Volume of this solution is then finally made up to 60 litres. The prepared solution is sprayed on paddy field with a power sprayer. It effectively controls stem borer and leaf roller in rice. **Keywords:** rice pests, neem **oil,** soil, cowdung	Shri A. Thanikachalam, Assistant Manager
2836	Control of crane entry in paddy fields	To control the presence of crane in the paddy field, farmers tie waste audio and video cassettes tapes in and	Shri C. Bhakkiyanadhan S/o Chandrasekaran, P.O. **Nettavelampatty,**

Content

Code No.	Title of the ITK	Description of the **ITK**	Name and address of the discloser/facilitator
		around the field. Noise from the tape and glittering shine keep away the crane from the field. **Keywords:** crane, paddy, noise, tape	(via Kottaipalayam), taluk Thuraiyur, dist. Tituchirapalli (Tamil Nadu) 621 003
2837	Use of *sirang theirong* leaves to control weeds and insects in paddy field	Farmers of Nagainga village of disrict Ukhrul, in Manipur collect fallen leaves of a local tree, called *sirang theirong (Juglans regia)* and broadcast the leaves in paddy field. Thickness of layer is up to 1-2 cm. When the decomposition starts, weed growth is suppressed. Simultaneously many cutting and chewing type of insects are controlled. About 35-40% inhabitants use this old practice. **Keywords:** *sirang theirong*, weed, insect, decomposition	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102
2838	Use of *kavlusaraka* bark to control blast disease in paddy	The blast disease of paddy is caused by a fungus, *Pyricularia oryzae.* To control this fungus, 2-3 kg bark of *kavlusaraka (Careya arborea)* is crushed in water. About 500 ml juice extract of this bark is mixed with 15 litres water and sprayed on the affected crop. Three sprays each after 12 days interval are required to control blast in paddy. **Keywords:** *kavlusaraka*, blast disease, paddy, fungus	Shri Purshottama Rao, dist. Shimoga (Karnataka) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
2839	Control of pests and diseases in paddy	A paste is prepared by mixing 1 kg leaves each of chaste tree *(Vitex negundo),* garden quinine *(Clerodendrum inerme)* and indian aloe *(Aloe vera),* and seeds of neem *(Azadirachta indica).* This paste is diluted in 100 litres water for spraying in 1 acre after 25-30 days of planting (the mixture is kept overnight before using for spraying). This formulation effectively controls pests as well as diseases in paddy.	Shri M. K. Chellamuthu Karrukapalayam Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015



Sirang/Hashonthei rong (Olive Tree) leaves used in weed and insect control for paddy crop

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		Keywords: paddy, herbal pesticides, chaste tree, garden quinine, indian aloe, neem	
2840	Control of blister beetle in pearlmillet by fume of Camel bone	In western part of Rajasthan, pearlmillet is usually cultivated in rainy *(kharif)* season. This crop is attacked by many insects and pests, namely grasshoppers, locust, hairy caterpillar, blister beetle (red insect) etc. Blister beetle appears at the booting stage of pearlmillet and sucks the sap from its ears, which results in grainless ear formation. To avoid yield losses, farmers of Balaya village in Nagaur district of Rajasthan fumigate the affected field with camel bone. In this practice, bones of dead camel are collected and dried in sunlight. After that these are crushed into powder and burnt as per wind direction to cover the entire field. **Keywords:** blister beetle, pearlmillet, camel bone, fume	Shri Har Ram Kala Balaya, dist. **Naguar** (Rajasthan)
2841	Control of downy mildew in *cumbu (Pennisetum typhoides)*	In this practice, a decoction of is prepared from 5 kg *pungam* ***(Pongamia** pinnata)* leaves and 200 g cooked rice in 10 litres water. This solution is sprayed on the plant to control downy mildew in *cumbu.* **Keywords:** downy mildew, *cumbu, pungam,* cooked rice, fume	Shri R. Rajavel Thadicherry, Periyakulam, Theni (Tamil Nadu) 625 531
2842	Control of *kukra* disease of cumin seed	*Kukra* is a viral disease of cumin, and people of Alwar district of Rajasthan follow this practice for its control. A decoction is prepared by mixing 25 kg litre of water, 7.5 kg green teak leaf and 5 kg sugar required to cover one hectare. This mixture is boiled till half of the solution is left. After cooling, the decoction is spread over the crops. It is sprayed before the virus infestation at an interval of 10 days. **Keywords:** *kukra* disease, cumin seed, viral, green teak leaves, sugar	Dr Ranjay K Singh Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University Pasighat (Arunachal Pradesh) 791 102

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
2843	Measures to control different pests in chillies	By using asafoetida, termite population can be effectively reduced in chillies. Asafoetida is mixed with irrigation water in channels prevents termite damage. For minimizing the leaf folder damage in chillies *(Capsicum annuwri),* Shri R. Radhakrishnan of Dindigal (Tamil Nadu) developed a technique in which seeds of chillies are soaked in milk and water in the ratio of 1: 1, which effectively controls leaf folder. Keywords: chilli, termite, leaf folder, asafoetida, milk	Shri R. Radhakrishnan P.O. Sukkampatty, Thadicamfu, Dindigul Anna (Tamil Nadu)
2844	Use of bark of *mukul* to control leaf-curl virus in chilli	Late Shri Rameshbhai Bariahas developed a fumigation technique to control leaf curl in chilli plant. The bark of *mukul (Commiphora mukul)* and its gum are mixed with maize flour and sugar. The smoke of this mixture helps in controlling the leaf curl disease. Key words: *mukul*, leaf curl, chilli, maize flour, smoke	Shri Rameshbhai Baria SRISTI, Nanapuvaala, Devgadh Baria, dist. Dahod (Gujarat)
2845	Control of leaf-curl virus in chillies by using *guggul*	A virus infection in chilli plants (leaf-curl virus), causes the leaves to shrivel. This leads to loss of nutrition in the plants and the crop yield reduces greatly. Shri Kanubhai Desai of district Mehsana (Gujarat) burnt *guggul (Balsamodendmn mukul)* and fumigated the plants with its smoke. The *guggul* is placed on burning cow-dung cakes and is carried around the field so that the plant is exposed to the fumes. About 700 g *guggul* is required for 1-acre crop. Keywords: *guggul*, leaf curl, chilli, fumes	Shri Kanubhai Dharamsibhai Desai, Mehsana (Gujarat)
2846	Protection of seedlings of chilli plants from *gavala* by using branches of *kada*	Kapuriben Chauhan from Gujarat developed a gavala method to protect the seedlings of chillies from *eavala*	Ms Kapuriben Chauhan SRISTI, Veddungarkulia, Ved,

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		(Spodoptera litura), the flying black insect that eats the leaves. The branches of *kada* ***(Picrorhiza kurrava)*** plant are used. A 30-day seedlings are transplanted in the field, in rows with a spacing of 1 foot between the rows. Then the branches of *kada* are spread between the rows. Due to bitterness of the leaves of *kada,* the insect does not come near the crop. The *kada* leaves in the field act as mulch and help in keeping the soil moist, requiring less irrigation. **Keywords:** *gavala, kada,* chillies, bitter, mulch, insect	Dhanpur, dist. Dahod (Gujarat)
2847	Use of *Prosopsis juliflora* to control discolouration in *bhindi* and chillies	The lady's finger *(Abelmoschus esculenlus)* and chilli *(Capsicum annuum)* crops suffers from the problem of discoloration of leaves, generally 25-35 days after sowing and the field appears purplish in colour. Shri V. K. Jayaveeran has developed a practice in which 2.5 kg leaves of *Prosopsis juliflora* are ground by adding sufficient water. About 600 ml of the liquid extract is mixed with 100 *litre water and* sprayed once a fortnight for 1 hectare of the affected crop. The crop recover its original colour within 2-3 days. **Keywords:** *bhindi,* chillies, discolouration	Shri V. K. Jayaveeran. **Kuppanamatti,** Ariyapatti, Ja-Usilampatti, dist. Madurai 625 532 (Tamil Nadu)
2849	Control of shoot-borer in brinjal by cow-dung solution	Vegetable growers of Joynagar, Teliamura in West Tripura, use **cowdung** solution to control brinjal shoot-borer since time immemorial. About 8 kg fresh cowdung is mixed with 35 litre water and sprayed on 1 acre land. This practice **is** repealed after 15 days for complete control. About 70-80% farmers of the locality rely on this practice. **Key words:** cowdung, brinjal, shoot-borer	Dr Ranjay K Singh Assistant Professor (Agricultural Extension and Rural Sociology), *College of Horticulture* and Forestry, **Central** Agricultural University, Pasighat **(Arunachal** Pradesh) 791 102

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
2X50	Imparting disease resistance through grafting in brinjal	Grafting has now become an essential phenomenon in modern horticulture, as different qualities of fruit can be maintained through it. In brinjal *(Solarium melongena),* it not only maintains quality but also imparts disease resistance. When seeds are sown repeatedly, some degeneration is possible through cross-pollination. Shri H. S. Sahoo of Rayagad (Orissa) used local *Bohtjri* brinjal for grafting as mother plant and scion from good hybrid variety like P.P.L., Nilgiri and Muktakeshi and grafted on it. These grafted plants can be maintained for years. It gives higher yield in the second year without the application of fertilizer and does not require any interculturing. Besides, it does not suffer from major diseases like wilt, fruit-rot and post-yellow mosaic virus and fruit stem borer. The distance between the plants is to be maintained 0.6-1 m between line to line and row to row. About 10,000 plants can be grown in 1 hectare. **Keywords:** brinjal, resistance, grafting, local variety, hybrid	Shri H. S. Sahoo, Junior Horticulture Officer, O.T.D.P Kashipur, dist. Rayagad (Orissa)
285 I	Control of nematode infestation in turmeric crop	For controlling nematode infestation in turmeric crop, Shri M. K. Chellamuthu has developed a practice in which a paste is prepared from 250 g ginger, 250 g chillies *(Capsicum annuum),* 1 kg leaves of chaste tree *(Vitex negundo),* 1 kg garden quinine *(Clerodendrum inerme),* 500 g garlic, 1 kg indian aloe *(Aloe vent)* and 1 kg neem seeds *(Az.adirachta indica).* This mixture is then diluted with 150 litres water and sprayed on the crops 12 days after planting which is sufficient **for** 1 acre. **Keywords:** *chaste* tree, garden quinine, indian aloe, neem, nematode infestation, turmeric	Shri M. K.Chellamuthu, Karrukapalayam

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
2852	Use of *khuk* (smoke) to repel fruitfly and fruit sucking moth from orchards	When farmers of Ramphlum Venglai and Aizowl areas of Mizoram face the attack of fruit fly and fruit sucking moth in their orchards, they collect fallen leaves, twigs and dry grass from nearby forest area and burn it to produce smoke. Farmers believe that smoke compels the insects to leave the fruit trees. This practice is followed from fruit setting to ripening stage. No flame should be produced at the burning time, so that it can produce more dense smoke. The nearby forest area should not catch fire. Smoke improves the fruit colour and quality. It is an age-old practice. **Keywords:** fruit-fly, fruit-sucking moth, smoke, fire, forest	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
2853	Use of cowdung paste to control trunk borer	Farmers of Thingsulthliah, Koilasit and Bikhawthlir villages of Mizoram, use cowdung paste to get rid of trunk borer. Farmers collect fresh cowdung and some water to make a paste. This paste is applied on the affected part of trunk. This practice is repeated at an interval of 10-15 days. It is being followed since time immemorial. **Keywords:** cowdung paste, trunk-borer	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
2854	Traping shoot borer of sugarcane crop	In Sonapur, Sewta and Hamirpur villages of Azamgarh district of Uttar Pradesh, farmers plant sugarcane in February-March. Four to five lines of *patua* (family-Malvaceae) are also planted around the field. At the time of flowering, shoot-borers are attracted towards *patua*, and sugarcane crop is saved. In addition, rope is also prepared from fibres of *patua* plant. Some farmers grow pearlmillet between the rows of *patua*, because it has poisonous effect during summer and animals do not prefer to graze it. It	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		is an age-old practice that gives 20-25% higher productivity. **Keywords:** shoot-borer, *patua*, flowering, pearlmillet, poisonous	
2855	**Traping of** spotted bollworm and pink bollworm of cotton by ladys' finger	Cotton growers of Rajegaon, Chandangaon and Bisapur villages of Chhindwara district of Madhya Pradesh sow seeds of ladys' finger *(Abelmoschus esculentus)* in one strip after every 4-5 m distance in cotton fields. Bright colour of flowers of ladys' finger attracts more number of both the bollworms than white colour of cotton flowers. Ultimately there is little incidence (30-40%) of bollworms in cotton, and only 25-30% loss is observed. About 60-70% farmers use this technology, which is in vogue since age-old time. **Keywords:** cotton, lady's finger, bollworm	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
2856	Pest control in cotton	Many farmers of Shekh Pipariya village of Gujarat are following this practice to control insects and pests in various crops. Mix 200 g each of *morthuthu* (copper sulphate), *'imbu na ful* (citric acid), *hirakashi* and tobacco (used in *hukka)* are kept in a big container and are added 5 litres water to it. This mixture is kept undisturbed for 10 days and mixture was stirred well thereafter and filtered through a cotton cloth. Approximately 70-80 ml of the prepared filtrate is added in 10 litres fresh water and sprinkled on the affected crop for checking larval pests. About 70% success is achieved in controlling the larval pests in cotton. **Keywords:** *morthuthu, limbu na ful, hirakashi,* tobacco	Shri Ratilal K. Kachhadiya, village Shekh Pipariya. dist. Amreli (Gujarat) National Innovation Foundation. Ahmedabad (Gujarat) 380 015
2857	Use of *dhatura* for controlling pests in cotton	About 300 g leaves and unripe fruits of *dhatura* are crushed and heated with 1 litre water. The filtrate is used as a stock solution. About 300 ml of the	Shri Dhirubhai Kacchadiya, village Pipariya, Amreli (Gujarat)

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		stock solution is mixed in 15 litres water (one pump) and sprinkled over the crop. About 7-8 pumps of the dilute solution is required to sprinkle 1 acre field **of** 3-4 months old cotton crop. According to him, the effect on the insects can be visually noticed within a day. He used this herbal remedy **for** the first time in 1993 and achieved about 80% success. ***Dhatura*** is a poisonous plant that grows wild on common lands. **Keywords:** *dhatura,* sprinkle, cotton, pest	National Innovation Foundation, Ahmedabad (Gujarat) 380 015
2858	Control of cutworms *{Spodoptera litura)* in cotton	For effective control **of** polyphagous caterpillar like *Spodoptera Htura,* an extract **of** herbs like *Citrullus colcynthis, Sesbania grandiflora, Cissus quadrangularis. (hadjora* or edible steamed wine), *Nerium indicum* Mill. (Indian oleander), *Azadirachta indica* (neem) can be used to prepare a bio-pesticide. Nuts of *Nerium indicum* and *Citrullus colcynthis* are mixed with neem and a little tobacco *(Nicotiana tabacum)* which are soaked in water for a few hours. *Sesbania grandiflora (Agasti* or *Agathi)* leaves are seperately soaked in a mud pot filled with water. Country soap-cake is also separately soaked in water. The extract of all these ingredients is filtered and used for spraying on cotton crop to control *Heliothis armigera, Spodoptera litura* and other insect pests. The cotton crop is sprinkled with water the next day. Use of this formulation as a bio-pesticide showed effective control of *Heliothis* and *Spodoptera,* and also **of** other sucking pests like aphids, **jassids** and whiteflies. **Keywords:** poJyphagous, hadjora, oleander, *Heliothis,* aphids, jassids, *whiteflies*	Shri S. Pitachi, 7, Sewai Muniandi Koil Street

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
2859	Control of *Heliothis* in lady's finger	About 1 kg fenugreek *(Trigonella foenum-graceum)* flour is mixed with 2 litres water and kept aside for 24 hr, so that the solution becomes very bitter and mildly toxic. This mixture is then sprayed on the standing crop of lady's finger. This controls 50% of *Heliothis.* Then 10 litres water is added to the remaining solution and then sprayed on the crop. This solution should be mixed or stirred continuously. For 1 acre, approximately 1 kg fenugreek flour solution is enough. **Keywords:** *Heliothis*, lady's finger, fenugreek flour, bitter, mildly toxic	Shri Kantibhai Vankar/ SRISTI, Dhamalia, Hathivan, Lunavada, Panchmahal (Gujarat)
2860	Control of *Heliothis armigera* in major field areas	This ITK is practised in Zanzad village of district Vododara in Gujarat. *Heliothis armigera* can be effectively controlled by using the following herbal formulation prepared from 500 g green chillies *(Capsicum annuum)* (variety S 49) and 5 kg neem *(Az.adirachta indica)* be crushed and boiled in 10 litres water. Then it should be filled in plastic can of 15 litres. About 100-150 ml of the prepared liquid is sprayed in 1 ha field to reduce the population of *Heliothis armigera* and other larvae in cotton, pigeonpea and other pulses. **Keywords:** chilli, neem	Shri Shaileshbhai Rameshbhai Bhatia, Shresh Primary School, Zanzad, Taluka-Shinor, Vadodara (Gujarat)
2861	Bollworm management in cotton	A mixture is prepared with jaggery and cooked *molchai (Dolichos lablab)* in a semi-solid condition to control bollworm in cotton. This mixture is taken in the leaves of *Calotropis (Calotropis gigantea)* and kept along the bunds of the cotton field. It attracts bollworm, sparing the cotton. **Keywords:** bollworm, cotton, jaggery, cooked *motchai*, *Calotropis*	Shri C. Muniyandi, S/o Shri Chinnakaruppan, village Thumbanayakkanpatty, Peraiyur, dist. Madurai (Tamil Nadu) 625 703

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
2862	Control of *Heliothis* and *Prodenia* larvae in cotton and ladys' finger by use of *Aloe vera*, neem and tobacco decoction	A mixture is prepared by mixing 4 kg *kuwarpatha (Aloe vera)*, 500 ml neem oil *(Azadirachta indica)* and 500 g tobacco *(Nicotiana tabacum)* snuff (each 500 ml) in 20 litres water. This mixture is boiled for 3 to 4 hr till the volume of water remains about 5 litres. After cooling and sieving, the solution is diluted and sprayed. About 100-150 ml of the extract is diluted in 15 litres water and sprayed at an interval of 10 days. Keywords: cotton, *Heliothis* and *Prodenia* larvae, *kuwarpatha (Aloe vera)*, neem oil tobacco *(Nicotiana tabacum* L.) snuff	Shri Rajnikant Bhai Patel, Gramsavek Modasa, 68 Jeevan jyot society, Meghraj road, Sabarkantha (Gujarat)
2863	Control of pests in cotton by spraying a mixture prepared with jaggery and soap powder	To control whiteflies in the cotton field, a mixture is prepared by mixing 5 kg jaggery and 50 g soap in 10 litre water. This solution is spread on the cotton leaves. The flies get stuck on the leaves and cannot move. This mixture is sufficient for 1 acre area. Keywords: jaggery, soap water, white flies	Shri D. Ayyanar, Konamangalam, Thaludali, Tindivanam, Villupuram (Tamil Nadu) 604 304
2864	Control of pests in groundnut and tomato field	Equal quantity of *uduvanthalai (Cleistanthus collinus), kangira* leaf *(Piccola percussine), pungam* leaf *(Pongamia pinnata), nochi (Vitex negundo)* and neem *(Azadirachta indica)* seeds are ground properly. This mixture is taken in a mud pot and 5 litres cow-urine is added in it. This is kept for 20 days and then the filtered solution is extracted. About 10 litres water is added with 150 ml filtrate. This mixture is sprayed in tomato and groundnut field to control pests and diseases. Keywords: groundnut, tomato, pest control, cow-urine	Shri S. Veerasamy, S/o Shri Subbiah Udaiyar, P.O. Venkatakulam taluk Alangudi dist. Pudukottai (Tamil Nadu) 614 623

Code No.	Title of the 1TK	Description of the ITK	Name and address of the discloser/facilitator
2865	Control of aphids, whiteflies and caterpillar in groundnut	About 1.5 kg *sitafal (Annona squamosa)* leaves are ground and mixed in 1 litre water and filtered. Similarly, about 500 g dried chillies (Highariya variety) are soaked overnight in 1 litre water and the water drained from the top. Then 1 kg neem *(Azadirachta indica)* seeds are ground and soaked overnight in 2 litre water. All these three are mixed together and diluted in 10 litres water and sprayed on the affected crops. Within 2-3 days the problem of sucking pests and caterpillar can be controlled. Keywords: *sitafal, chilli,* neem, caterpillar, groundnut, whiteflies, aphid	Shri Peethabhai M. Pataat, Junagadh (Gujarat)
2866	Control of green caterpillar in groundnut	Shri Govindbhai J. Desai has adopted this method since the last 4 years. Now the neighbouring farmers have also started adopting it. For control of green caterpillar in groundnut, Shri Govindbhai has developed a mixture using *sitafal (Annona squamosa),* neem *(Azadirachta indica A. Juss)* leaves, water in which green chilies have been soaked overnight, bitter *orayo,* and filtrate of biogas available from *bandel.* The solution is sprayed on the groundnut crop, which results in 70 to 80% control of pests, which is considerably more than the use of chemical pesticides. Keywords: *sitafal, bandel,* green caterpillar, groundnut, green chillies	Shri J. Govindbhai Desai, Junagadh (Gujarat) National Innovation Foundation, Ahmedabad (Gujarat) 380 015
2867	Method to drive away birds in the field	Audio cassettes and tapes after use are generally thrown out. Lengthy tapes are taken out from the cassettes. These tapes are tied on poles placed at different distances in the agricultural field. The tapes shine in the sunshine and also make sound at wind breeze. The sound and shining reflected from	Shri Hirabai Gawas, Porye, Sattari, dist. North Goa (Goa) 403 602

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		the tapes help drive away the birds in the field, specially in groundnut. **Keywords:** audio cassettes, shine, sound, bird drive away	
2868	Control of pests in castor by using tamarind and lemon	About 500 ml of tamarind *(Tamarindus indica)* is mixed with 500 ml juice of lemon in 15 litres water. This solution is sprayed over the infested crop in 0.25 ha. He and other farmers also reported complete control of pests in castor by using this technique. **Keywords:** castor, lemon, pest, tamarind	Shri Banidan Mavaljee Gadhvi, Aghatru National Innovation Foundation, Ahmedabad (Gujarat) 380 015
2869	Rodent control by using *gilmat* leaves	Rat (locally known as *missi* in Garo hills, Meghalaya) is a major pest that damages crop in fields as well as grains in store-houses. *Gilmat (Entada phaseoloides)* leaves are kept at different places in rice field and hot-cooked rice is kept on the leaves of *gilmat.* Farmers consider that hot rice may be responsible for the release of poison from the leaves and rats die after consuming the rice. Resource poor farmers are using this practice since time immemorial. **Keywords:** rat, *gilmat*, hot rice, poison	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry. Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
2870	Rodent control by using seeds of *sui* plant	Villagers of Garo hills consider seeds of *sui (Maesa chisia)* plant as an effective bio-pesticide against rat. Seeds of this plant are ground and mixed with rice flour. This mixture is kept at places where attack of rat is higher. It is equally effective in granary and fields. The farmers believe that *sui* seeds have some poisonous content that is responsible for killing rats. Many residents have now conserved *sui* plant around their fields as well as in the kitchen garden. It is being used since time	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102

Code No.	Title of the 1TK	Description of the ITK	Name and address of the discloser/facilitator
		immemorial. **Keywords:** rat, ***sui,*** bio-pesticide	
2871	Use of ginger and garlic extract to control insect pests in rice	Garo tribes of several villages of Garo hills in Meghalaya use garlic and ginger extract to kill and repel insects since time immemorial. About 3 kg garlic and 3 kg ginger are taken and a paste is prepared. This paste is kept in water overnight for dilution with about 10 litres water, and sprayed over the rice crop in 2.0 acre. This practice is effective only in crops grown on terrace. Farmers consider the smell of the mixture repels the insects from field. It is economical also for the farmers. **Keywords:** garlic, ginger, rice, repel	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
2872	Pest management of vegetable by using extract of garlic	When there is an attack of aphids on vegetable crops, the farmers of Ramphlum Venglai and Aizowl rural villages spray garlic ***(Allium** sativum)* extract to repel them. About 1 kg bulb of garlic are crushed with its leaves and soaked in 2 litre water for 3 hr. About 5-6 litres water is mixed to this extract, and sprayed on the vegetable crops affected with aphids. The left-over solid part of garlic and leaves is applied near crop roots. This practice is repeated after 15 days if aphids are visible. About 70-80% farmers follow this practice. **Keywords:** vegetable, garlic, aphids, repel	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
2873	Tapioca water as an insecticide for pepper	In Kerala, during summer some insects called scales affect pepper leaves. To control these scale insects, tapioca water can be used. Tapioca *(Manihot esculenta)* is the starchy root preserved in Kerala by sun drying. Then it is hard boiled in water and the remaining water is used as an insecticide. Due to	Shri V. J. Joseph, Valummel, Uputhara, P.O. Kakkathod, dist. Idduki (Kerala)

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
	 Indigenous variety of Tapioca having ability to produce 4-5 kg weighted tuber. Although there are *3-4* variety in the same sp., it is grown in shifting land and leaves are used by Aadi for vegetable.	sticky nature of water, it stays on the leaves, killing the scale insect. **Keywords:** tapioca water, insecticide, scale insect	
2874	Control of forest wild pig in *chow-chow* field in the hilly areas	Pig menace in field of chow-chow (squash) is a major problem in hilly areas. To prevent damage by pig, human hair is used. Hairs are collected from hair-cutting saloon. These hairs are chopped nicely and spread near the plant. When pigs enter the field and start to dig the plant, hairs snifs directly into its nose, which creates trouble. This is considered to be the best method to scare away the pigs from the field. **Key words:** *wild pig, chow-chow*, hair	Shri N.T. Pandi Durai, New Bus Stand, Thandigudi, Kotaikanal, Dindugul (Tamil Nadu) 624 216
2875	Control of hairy caterpillar in *kharif* crops	Hairy caterpillar *(Amsacta* spp) appears in the initial stage of *kharif* crops. Hairy caterpillar has a **life** span of 21 days. During this period, it moves round the clock for eating the foliage. Farmers adopt the following methods to check the movement of hairy caterpillar: 1. Mixed cropping of pearlmillet, mothbean, greengram, clusterbean and sesame at the time of sowing to cover the risk of crop damage or failure, so that some returns could be obtained. There is choice of every insect. All the crop species cannot be destroyed at a time. This	Shri Z. D. Kavia, Principal Scientist (Agricultural Extension) Central Arid Zone Research Institute, Jodhpur (Rajasthan) 342 003

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		practice covers climatic as well as biological hazards. 2. Wide trenches are made around the fields to avoid or check the fast movement of hairy caterpillar. This ITK is being practised in sandy tract of Jodhpur, Banner and Jaisalmer districts of western Rajasthan. **Key words:** pearlmillet, mothbean, cluster bean, hairy caterpillar, mixed cropping, trench	
2876	Rodent control in crop fields	To control rodents in the crop field, a mixture is prepared by boiling maize *(Zea mays)* and glyceria *(Glyceria grandis)* leaves. After boiling, the maize seeds are kept for sun-drying for 3 days. Spreading of these maize seeds in the rat hole is in practice to control the rodent menace. Rats eat the seeds, which causes their death. **Keywords:** rodent control, maize and glyceria leaves	Ms C. Kanagambal W/o Shri Chandrasekaran, Nettavelampatty, Kottaipalayam (via taluk Thuraiyur), Tiruchirapalli (Tamil Nadu) 621 003
2877	Control of aphids, jassids and whiteflies in cotton, castor, mustard and vegetable crops by black *veldi*	This ITK is practised by Shri Rajnikant Bhai Patel in Sabarkantha district of Gujarat. In this practice 3 kg black *veldi (Croton bonplandianum)* leaves are boiled in 20 litres water for 2 to 3 hr till the volume remains 5 litres, and then it is sieved properly. About 100-150 ml solution is diluted in 15 litres water and is sprayed. The spray is repeated after 8-10 days. This solution is effectively used to spray on cotton, castor, mustard and also vegetable crops for controlling the infestations of aphids, jassids and whiteflies. **Keywords:** aphids, jassids and whiteflies, black *veldi*	Shri Rajnikant Bhai Patel, Gramsavek Modasa, 68 Jeevan jyot Society, Meghraj Road, Sabarkantha (Gujarat) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

Code No.	Title of the ITK	Description of the **ITK**	Name and address of the discloser/facilitator
2878	Use of natural predators for controlling sucking insects in cotton, mustard, castor and vegetables	Ladybird beetle is the natural predator of sucking insects, viz. aphids, jassids and whiteflies. It normally takes shelter on *Calotropis* sp. The sucking insects are controlled by growing *aak* or ***madar,*** *{Calotropis* ***gigantea*** L.) around the field and by spreading its leaves in the field. Ladybird beetle feeds the sucking insects. This practice is effectively used for controlling sucking insects in cotton, castor, mustard and some vegetable crops. This ITK is practised by Shri Rajnikant Bhai Patel of Sabarkantha in Gujarat. **Keywords:** natural predator, ladybird beetle, sucking pests, *Calotropis gigantea*	Shri Rajnikant Bhai Patel, Gramsavek Modasa, 68 Jeevan jyot Society, Meghraj Road, Sabarkantha (Gujarat) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
2879	Protection of crops by indigenous herbal formulations	The following formulations are followed by Shri Rajnikant Bhai Patel in Sabarkantha district of Gujarat. 1. Control of wilt, root rot and termite damage: About 500 g latex of *thuar (Euphorbia nerifolia* L.) leaves is sprayed on castor, wheat, pomegranate and legumes for controlling wilt, root rot and termite damage. **Keywords:** *thuar {Euphorbia nerifolia* L.), wilt, root rot, termite damage 2. Pest and disease management in cotton: About 400 g juice extract of apical leaves of *kuri (Lantana camara* L.) is sprayed on cotton to control whitefly and other sucking pests. Wilt incidence in cotton is also minimized by using this juice extract, as whitefly acts as a vector for causing wilt. **Keywords:** *kuri (Lantana camara* L.), cotton pest, wilt 3. Control of sucking pests by using *jangalirand (Jatropha curcas* L.)	Shri Rajnikant Bhai Patel, Gramsavek Modasa, 68 Jeevan Jyot Society. Meghraj Road, Sabarkantha (Gujarat)

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		fruits: *Jangalirand (Jatropha curcas* L.) fruits (200 g) are taken and their juice is extracted. This juice is sprayed to control sucking pests like aphids, jassids and whiteflies. **Keywords:** *jangalirand (Jatropha curcas* L.), sucking pests 4. Control of *Heliothis* and *Prodenia* larvae by dusting tobacco *(Nicotiana tobacum* L.) leaf powder: *Heliothis* and *Prodenia.* larvae is controlled by dusting 500 g tobacco *(Nicotiana tobacum* L.) leaf powder. **Keywords:** *Heliothis Prodenia* larvae, tobacco 5. Control of powdery mildew in mustard and other crops: Extract of 400 g *Salvadora oleoides* leaves is sprayed for controlling powdery mildew in mustard and other crops. **Keywords:** *Salvadora oleoides*, powdery mildew, mustard	
2880	Scaring the animals from plantation area.	To drive out the pestering animals in the hilly plantation areas small pebbles are filled in small aluminum containers and these containers are tied on poles at different places in the field with the main rope tied in one corner. Pulling of rope in the corner, gives sound simultaneously and animals get scared. This prevents animals from entering into the crop fields. Keywords: pestering animal, aluminum container, noise	Shri P.K.S. Mohana-sundaram. Coffee Planter, Maduraiveeran Koil Street, Thandigudi, Kotaikanal, Dindugul (Tamil Nadu) 624 216
2881	Control of pests in field during ploughing	Generally in the agricultural land a population of ant, white ant and crab are seen. To control these pests in the field, a mixture of 1 kg tobacco powder *(Nicotiana tabacum)*, 1 kg	Shri C. Thennarasu, S/o Shri Chidambaram, Chinnankuppam, Pappireddipatti, Dharmapuri

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		turmeric powder *(Curcuma longa)* and 1 kg *vasambu* powder *(Acorus colomus)* are taken and mixed with soil while ploughing. This results in controlling pests, especially at the time of cultivation season. **Keywords:** pest control, land, ploughing, *vasambu*, cultivation season	(Tamil Nadu) 636 903
2882	Prevention of entry of wild animals in crop fields	In the hilly areas, forest animals like rabbits, fox, pigs and monkeys cause menace at the time of agricultural season. During crop emergence, a number of methods to scare away these animals are in practice. Construction of small platform in the centre of field is done. Placement of chimney lamp at the centre of the platform surrounded by small poles, covered with red plastic cover or red colour plastic bucket gives the appearance of fire in the field. This prevents the entry of forest animals in the field. **Keywords:** false image, forest animals, small platform, red plastic cover	Shri P. Manickam, S/o Shri Pichan, P.O. Melvadapadi, Vadakananthal, Sankarapuram, Villupuram (Tamil Nadu) 606 207
2883	Termite control by *aak (Calotropis* spp)	Farmers of Nadi II village of Peesangam in Ajmer district of Rajasthan use 10-15 kg plants of *aak (Calotropis* sp.) for controlling termite. The bunch of *aak* plant is kept in the water channels from where water enters the field when its sap is secreted out and reaches the field where termites are there. These plants are slightly mashed before keeping in water channels. The plants are trampled while they are kept in water channels. About 60-65% farmers are using this technique since ages. **Key words:** *aak*, water channel, termite	Shri Ramesh, S/o Shri Bharmal, Nadi II village, Peesangam, Ajmer (Rajasthan)

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
2884	Control of termite in different crops and fruit trees	Farmers of many villages in Alwar district of Rajasthan spray a solution of the leaves of *arusha (Adhatoda vasica)* on crops and in orchards to control termite. In wheat about 750 ml *aankda (Calotropis gigantea)* milk is taken and poured drop by drop in the irrigation source. It controls termites effectively. Keywords: termite, fruit, *arusha*, buttermilk	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat, (Arunachal Pradesh) 791 102
2885	Control of termites in plants by use of *nagali* and *nafatiya*	Roots of *nagali (Eleusine coracana)* and leaves of *nafatiya (Ipomoea fistulosa)* plants are boiled and allowed to cool. The prepared decoction is filtered and sprayed on the termite-affected plants. Sometimes it is poured on the base of the stem so that it can reach the root zone of the plants. Key words: *nagali, nafatiya*, termite control	Shri Posalebhai Pandubhai, Ratilal R. Ganvit, Borpada, Ahwa Dang (Gujarat) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380015
2886	Control of mites in coconut by use of neem oil and garlic	Mites in coconut plantation is controlled effectively by using a solution of neem oil and garlic paste mixed in soap solution. About 200 ml neem *(Azadirachta indica* A. Juss) oil and 200 g garlic *(Allium sativum* L.) paste is mixed in 1.5 litres soap solution. Another solution is made with 200 ml neem oil and 200 g garlic with 300 ml water. Then both the solutions are mixed together and diluted with 9 litres water. The prepared solution @ 1.5 litre/plant is sprayed with the help of rocker sprayer for effective control of mites in coconut plantation. Keywords: mite, coconut plantation, neem oil. garlic, soap solution	Shri Sony Francis, Chirapassathu Pariyaram Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
2887	Control of rhinoceros beetle in coconut by use of opium and *Ficus*	For controlling rhinoceros beetle in coconut, an extract of fruit of opium plant *(Cannabis saliva)* is taken and is	Shri T. Shivashankar

Code No.	Title of the **ITK**	Description of the ITK	Name and address of the discloser/facilitator
		mixed with latex of *Ficus* spp. The prepared extract is poured into the hole. Due to this treatment beetles comes out and are killed manually. **Keywords:** rhinoceros beetle, coconut, opium	
2889	Formulation for control of eriophyid mite in coconut	The formulations consist of 1 kg each of leaves of custard apple ***(Annona squamosa),*** turmeric rhizome *{Curcuma longa),* garden quinine *(Clerodendrum inerme),* indian aloe *(Aloe vera),* chaste tree *(Vitex nigundo),* neem kernels *(Az.adirachta indica)* milk weed ***(Calotropis*** sp.). The ingredients are crushed with sufficient water to make a paste, and juice is extracted by adding 5 litre water. Final volume of 20 litre is made by adding 15 litres water, and it can also be applied as a paste. This solution is applied to the crown region of the palm after the harvest of nuts @ 2 litre/palm. It should be repeated once in every months for better results. **Keywords:** eriophyid mites, coconut, herbal formulation	Shri M. K. Chellamuthu, Karrukapalayam
2890	Application of salt to control coconut diseases	In June and July, common salt is mixed with manure and kept at the bottom of the coconut tree. This helps control the disease and the tree gives better yield. This is widespread in practice. **Keywords:** manure, salt, coconut	Shri Keshav Gawas, Keri, Sattari, North Goa (Goa) 403 505
2891	Pest control in tea plant	People of Silsako village in district Kamrup of North Guwahati (Assam) control tea pest by using this ITK. About 50 g roots of each *ghura neem (Melia azedarach), sojina (Moringa oleifera), koros* ***(Pongamia*** *pinnata)* are .soaked in water for 2 days, before crushing then crushed. The decoction is sprayed on the plants to control tea	Shri Bodon Bora, Silsako, North Guwahati Guwahati dist. Kamrup (Assam) 781 039

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		pests. About 100 litres water is added to the decoction, it is filtered and sprayed on the plants at 15 days interval for effective control of tea pests. **Keywords:** pest, tea plant, *ghura neem, sojina*	
2892	Use of neem *(Azadirachta indica)* flower to control bugs in crops	About 1 kg neem *(Azadirachta indica)* flowers are dried, crushed and dust is prepared. This dust is mixed with ash and sprayed on the crops. All types of bugs are controlled by this method. Farmers of village Nitoie in district Bareilly (Uttar Pradesh) are following this ITK. **Keywords:** neem flower, bugs, crop, ash	Shri Sripal, S/o Shri Ram Singh, Nitoie, Bhmora, dist. Bareilly (Uttar Pradesh)
2893	Use of *dhatura (Belladona* spp) to control pests of gourd crops  *Dhatura*	Vegetable growers of Joynagar, Teliamura (West Tripura) use *dhatura* fruits to control pests of gourd crops like ridge gourd, bottle gourd and sponge gourd. Farmers collect *dhatura* fruits, crush them to make paste and afterwards mix it with jaggery. This mixture is kept in a vessel and placed in the crop field. Insects are attracted towards the vessel, and after eating they die. This practice may be repeated 2 or 3 times in a month to control the insects completely. It is an age-old practice. **Keywords:** *dhatura*, gourd, jaggery	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
2894	Solar-treated neem-leaf extract for *parwal* (pointed gourd) cultivation	In this practice, about 5 litres water is boiled up to the point of steam in a pot. After extinguishing the fire, 500 g neem leaves are added to the boiled water and are covered with a plate for 30-40 min. After cooling, the water along with neem leaves is poured into a glass bottle or in a glass jar, and the bottles are kept open in the sun for 8-10 hr. After 2 days of solar treatment,	Shri Lingamadaiah, Nisarg farm, Allasandra, Channapatna, dist. Bangalore (Karnataka)

ode o.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		it is flitered into another pot. Then the prepared decoction is sprayed on *parwal* plants. It should be used within 2-3 months of preparation. When the plants starts flowering, the preparation is sprayed by diluting 60 ml of this decoction in 10 litres water. The second spray is given within 15 day of 1 st spray. Farmers of Allasandra village of Bangalore are using this ITK. Keywords: solar treatment, neem, pointed gourd, decoction	
95	Solar-treated neemleaf extract and cow urine for getting big-size and early yielding cabbage	Solar-treated neem leaf extract is prepared by boiling 5 litre water up to the point of steam in a pot. After extinguishing the fire, 500 g neem leaves is added to the boiled water and are covered with a plate for 30-40 min. The water along with neem leaves is poured into a glass bottle or in a glass jar, and the bottles are kept open in the sun for 8-10 hr. After 2 days of solar treatment, it is filtered into another pot. Then 500 ml of this solar-treated neem-leaf extract is taken and 200 ml fresh cow-urine is added to it. About 15 litre water is added to this mixture. When cabbage is about to mature (near harvest), the mixture is sprayed. After 7-10 days of spray, the cabbage will be hard and tight with its leaves. This hardness and tightness of cabbage leaves makes the cabbage ready for marketing before 10 days of the usual time. One or two sprays of the prepared mixture give the following advantages: (i) the cabbage can be harvested much earlier than the due time; (ii) it makes the cabbage greener in colour; (iii) cabbages does not get discoloured (yellowing or pale) easily on storage; and (iv) there is no pest attack.	Shri Indramani Sahu, Jagannathpur, Raghunathpur, Jagatsinghpur (Orissa)

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		Keywords: solar treatment, neem, cow urine, cabbage	
2897	Seed treatment by cactus milk	A solution is prepared by mixing 100 ml milk of cactus *(Euphorbia neriifolia)* and 1 litre water. This solution is mixed with seeds of cereals, legumes or cotton and is kept for drying in darkness for 8 hr. Due to these, the larvae of stem borer, termites and other pests could not damage the seeds. Also 1 litre latex of *Euphorbia neriifolia* diluted in 14 litres water can also be used to spray 1 acre field. **Keywords:** seed treatment, cactus milk, stem borer, termito	Shri Shaileshbhai Rameshbhai Bhatia, Shresh Primary School, village Zanzad, taluka Shinor, dist. Vadodara (Gujarat)
2898	Control of wilt in vegetable by using *koduva bael*	About 10 kg stem of *koduva bael (Strychnus axillaris)* is taken and cut into small pieces and soaked in container with 50 litres water, for 7 days. Then 100 g tobacco leaves are taken and soaked in 20 litres water in a separate container overnight. Finally they are mixed together. It is sufficient for spraying 0.13 ha land. It is claimed that this is very effective for wilt disease in brinjal and also for all the types of crop pests affecting paddy, vegetables and other crops. The solution can also be applied as a soil drench or a foliar spray. **Keywords:** *koduva bael*, wilt, tobacco leaves, vegetable	Shri Bimal Gayen, Govindapur
2899	Control of insect pests in vegetable crops	Two kg *kanvali (Ipomoea hederifolia)* tuber, 1 kg *arali (Nerium oleander* or *N. indicum)* seeds, 2 kg *dhatura (Datura metel)* seeds, 1 kg leaves *Nicotiana tabacum* and 500 g limestone powder are soaked in water and ground. The mixture is again soaked in cow urine for 10-15 days, and then it is filtered through a fine	Shri V. Arasan alias Karuppiah, S/o Vellaichamy, Mammaniyour, Komberipatty, Ayyalur (via Vedasanthoor taluk), dist. Dindigul (Tamil Nadu) 624801

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		cotton cloth. One litre of this filtrate is taken and diluted with the required quantity of water. This spray is effective in controlling insect pests in crops like *moringa,* tomato, chilli, brinjal and paddy. It is applied to the crops at an interval of 12 days, and is found to be effective in controlling insect pests in vegetable crops as well. **Keywords: *kanvali,*** *arali,* ***dhatura,*** tobacco, pest control, vegetable crop	
2900	Jackfruit leaf extract as herbicide in crops	*Cuscuta* is a parasitic plant growing on fruit plants and garden plants, taking food from these plants and lowering their yield. One can see no herbs or grass near the jackfruit trees *(Aitocarpus heterophyllus).* Farmers of Bowaigarh subdivision of Orissa take out leaf extract of jackfruit trees and spray on *Cuscuta* plants. It is found that after spraying the jackfruit leaf extract 3-5 times, the *Cuscuta,* gets destroyed. Farmers also collect dry leaves of jackfruit trees and spread on the paddy field in summer season. Farmers cultivate the soil in rainy season along with these leaves. Leaves of jackfruit trees thus show two-fold action: (i) they get decomposed and serve as compost; and (ii) their herbicidal action remains which control grass and other unwanted herbs in the paddy field. **Keywords:** jackfruit, herbicide, *Cuscuta,* compost	Shri Lingaraj Pradhan, Jakeikal. Bowaigarh. Sundargarh (Orissa)
2902	Control of various pests in cotton, pigeonpea and soybean	Shri P. D. Uplenchwar has a formulation to control pests in crop plants. In this practice, an extract is prepared by using garlic *(Allium sativum),* chilli *(Capsicum annuum),* tobacco *{Nicotiana tabacum),* ginger *(Zingiber oficinale)* and *asafoetida* and little amount of cow urine to it.	Shri P. D. Uplenchwar, 'Vichardhan" at Harsul. Digras, dist. **Yavatmal** (Maharashtra)

Code No.	Title of the **ITK**	Description of the **ITK**	Name and address of the discloser/facilitator
		Asafoetida is added for improving the fruiting and cow urine for controlling leaf-curl virus disease. About 500 ml of this liquid is mixed with 15 litres water and sprayed on the affected crop. **Keywords:** pest control, cotton, pigeonpea, soybean, garlic, chillies, tobacco, ginger, asafoetida	

Soil Fertility Management

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
2903	Maintenance of fertility status of soil by using rice husk with poultry manure, cowdung and house ash in ginger and turmeric crops	Farmers of village Khurai, Nandeibum Leikai, Imphal, East Manipur do mixed farming by rearing cattle, piggery and poultry in addition to raising the crops. Since this area has rice-based agro-ecosystem, rice husk is available in abundance. Rice husk is mixed with excreta of poultry birds, catties, pigs and house ash. Afterwards this mixture is spread over the fields of ginger and turmeric (after sowing and before 2-leaf stage of the crop). Yield of ginger and turmeric is increased up to 25-30% after application of this mixture. **Keywords:** rice husk, poultry, cow, pig, ginger, turmeric, house ash	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
2904	Use of pond soil to increase fertility of fields  A village common small pond from where soil is used by villagers	Farmers of Sonapur, Sewta and Hamirpur villages of district Azamgarh in Uttar Pradesh dig the soil from the base of pond in summer season (in the last week of May to second week of June). This soil is spread in the main fields. The concept behind this practice is that during rainy season a lot of waste materials likes leaves, twigs, dung etc. are accumulated in the bottom of the pond and get decomposed there. As a result, the base soil becomes rich in nutrients. After spreading the soil, *desi* plough is run in the field to mix it well. By this practice yield of crops can be increased by 25-30% and **the** expenditure on fertilizers is brought down. **Keywords:** pond, nutrient, plough	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat, Arunachal Pradesh 791 102

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
2905	Organic manure prepared from tree leaves	Farmers (especially women) of Subhas Nagar, Melaghar, Tripura (West Tripura) collect the leaves of eucalyptus, *Ficus* spp., jackfruit, neem and stems of many local shrubs, and then dump all the material in a pit and add some water for decomposition. It is covered by mud layer and left for 3-4 months. Afterwards well-rotten manure is taken out and is used for raising vegetables or cash crops. Mostly poor farmers use this manure and harvest more than two cash crops in a year. It is an age-old practice. **Keywords:** manure, jackfruit, neem, vegetable, shrubs	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
2906	Incorporation of straw of blackgram *(Phaseolus mungo)* in soil to increase wheat yield	The farmers of Patan tehsil of district Jabalpur in Madhya Pradesh consider that nutrient status of blackgram straw is higher than of other materials. Straw of summer blackgram is **left** in the field as such after harvesting. During rainy season some urea is broadcast in the field when the soil become saturated so as to enhance the decomposition of the straw. About 1.5 months later the field is ploughed by *desi* plough for incorporating the rotten straw in the soil. During rainy season *(kharij)*, field is kept fallow and high yielding variety of wheat is grown during winter *(rabi)* season. This practice is in vogue since 10 years. **Keywords:** blackgram, plant nutrients, urea, decomposition	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
2907	Sheep penning in sugarcane-planted field	Farmers of Sonapur, Sewta and Hamirpur used to do sheep penning on the sugarcane field, where light-textured sandy loam soil prevails. About 5-6 days after planting, 300-350 sheep are collected on 1 acre land, and they are made to stay there for a	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University,

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		day. The next day dung is spread uniformly in the field. Three days after the sheep penning, small furrows are made and water is provided through sprinklers to make the nutrients of urine and dung to reach the planting depth. In this activity heat is generated and hormones responsible for germination are activated. Overflooding is avoided. After 3-4 days of this exercise, fast germination of sugarcane starts and uniform plant population is obtained. **Keywords:** sheep penning, sandy loam soil, urine, dung	Pasighat (Arunachal Pradesh)791 102
2908	Animal penning in fields to increase fertility	Farmers of Sonapur, Sewta and Hamirpur villages take services of yadav and gaderiya communities to increase the fertility of land. Animals of whole community are collected during slake period (summer) and the record of each animal is kept by marking on the back. Marking is done by locally available colouring material, which lasts for a long time. On the fields, animals of yadav and gaderiya community are penned for whole night, where they discharge urine and dung. During summer this practice is followed. Animal keepers are contacted at least a week before penning. For penning in fields, animal keepers take grains and money. During daytime the animal keepers set them free to graze around rivers, ponds and dams, so that their need of water is also fulfilled. After penning, the dung is spread uniformly in the field and the field is irrigated to spread the urine uniformly. Afterwards *desi* plough is run in the field. Herders keep the record of every cow and pregnant animals. It is an age-old practice. **Keywords:** penning, fertility, urine, dung	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat, (Arunachal Pradesh) 791 102

Farm Implements

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
2909	Water lifting through thermal power	Shri Tej Singh Goyal of Mandi town in Himachal Pradesh has innovated a thermo water-lifting pump, which is useful for lifting water where electricity is not available. Pine needles or dry bio-waste can be utilized for lifting water. It can be used to generate electricity in a modified way. Two steel tanks of 1 m^3 each (1,000 litres capacity) are placed at the same height, one is filled with water and the other is kept for air. They are connected with each other. An opening of 1.5 inches is kept to fill water in the tank and it is made airtight. One delivery pipe of 2 in. is fitted with non-return valve, to the water tank. The water tank is filled before the process of drawing water starts. When the air tank is heated with biomass or any other fuel, the air in the tank expands and exerts pressure on the tank, so that the water gets pumped outside. This process is repeated again to get the desired quantity of water for irrigation and other purposes. This pump is very economical in operation as fuel consumption is very low, i.e. 100 ml for 200 litres of water and it can also be used to generate electricity in a modified way. Keywords: thermo, water lifting, pump, steel tank	Shri Tej Singh Goya!, H. No. 167/8, Manditown (Himachal Pradesh) 175001
2910	Pooran pump-a bullock-driven water lifting pump	In view of the shortage of diesel and kerosene in villages and crisis of electricity, Shri Pooranlal of village Bhagwantpura (MP), has developed a	Shri Pooranlal Kushwaha, Bhagwantpura, Jatara, Pahadi Bujarg, dist.

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		bullock-driven water-lifting pump. Farmers can use their existing resources and get sufficient water for irrigation and domestic work. The pump has a gear box, crown gear teeth (24" diameter), pinion teeth (4" diameter), gear 70 teeth-12" diameter, pinion-20 teeth-2" diameter, gear shaft, bearings, pulley, V-belt, centrifugal pump (non-electricity motor 3 HP) and yoke (3 m long). The major function of this pump is to convert the bullock energy into mechanical energy. The main component is the reduction gear unit, which transmits the power to the system. The main conversion unit, which consists of an old chaff-cutter gearbox and gear-reduction unit is installed at a suitable foundation. The pump provides the output equivalent to 3 HP electric centrifugal pump. Keywords: bullock, water pump, gear, mechanical energy	Tikamgarh (Madhya Pradesh)
2911	Energy conservation in agricultural pumpsets	During an intensive survey conducted by Dr Jagdeesh in Nellore (Andra Pradesh), it was found that many motor pump sets have a mismatch between suction and delivery. Dr lagdeesh, therefore, designed a device to tap the residual kinetic energy and reduce the exit losses (without disturbing the pipes). A diverging suction is fitted to the discharge end. The divergent truncated cone is about 1 foot, having an angle of 10° to avoid separation in the diverging suction. The advantages of this pump set are: (i) the device is simple and can be made locally; (ii) it saves power in case of electric motor and diesei in case of diesei pumps; (iii) enormous saving of electricity is achieved as power for agriculture is heavily	Dr A. Jagdeesh Nayudamma Centre for Development Alternatives, 2/210 First floor, Nawabpet, dist. Nellore (Andhra Pradesh) 524 002

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		subsidized; and (iv) energy is conserved. **Keywords:** kinetic energy, motor pump, suction, delivery	
291 2	A modified *Newothani*—**cotton** fibre-separating machine	*Newothani* is a traditional machine made up of wood used in the region to remove seeds from raw cotton. Other weavers and cotton-thread spinners are the beneficiaries of this machine. The machine has following main parts: (i) two rollers with helical gear made up of *sisu (Dalbergia sissoo)! rabab tenga/ahoi* or *bell,* with 1.5 cm-1.8 cm diameter, 6 cm gear length and 35 cm total length; ii) two support stands made of sal *(Shorea rnbusta)* or *sisu* of size 6 cm x 2 cm x 25 cm; iii) one bottom half bushing made of *gamari/ titachap* or *pama* with the dimension of 1.5 cm x 2 cm x 20 cm; iv) two pressure adjusters made of *gamari/ titachap* or *pama* of size 1.5 cm x 2 cm x 10 cm (tapered); v) one handle made of soft wood like *gamari/pama* or *pipe* of size 1 cm x 6 cm x 12 cm (with specific shape); vi) one foot stand made of *sal* or *sisu* of size 5 cm x 7 cm x 26 cm; and vii) one foot support made of *sal* or *sisu* with the dimension of 2 cm x 6 cm x 27 cm. During construction he took the help of a carpenter to make the main frame of the machine. The rollers with gas helical gear on one side are madeup of *sisu* wood, so as to make it sturdy as well as fibrous, which can be geared to last for a long time. The bottom half bushing and handle made from soft wood, to reduce wear and tear to the shaft of the rollers. The roller's diameter 1.5 cm-1.8 cm is comparable to the size of cotton seed (approx. 4 mm in diameter) and hence can perform seed separation excellently.	Shri Chakradhar Das, Bongaigaon Polytechnic, Bongaigaon (Assam) 783 380

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		This machine costs Rs 200 and consumes about 0.002168 cu m or 0.08 cu ft wood. Normally it takes 4 hr to separate 200 g seedless cotton by hand, within 1 hr. It helps save time, labour and increase the efficiency. The machine is light, durable and portable. It occupies very less space i.e. approx. 1 sq ft. **Keywords:** weaving, raw cotton, roller, shaft	
13	Cotton-stripping machine	Shri Mansukhbhai Patel developed an improved cotton-stripping machine under Technopreneur Promotion Programme (TEPP). With the help of Shri Kantibhai Patel, a factory Manager with Tent Group Cooperative Cotton Shelling, Ginning and Pressing Society Limited and volunteered factory workers, he designed the first model (it took 2 years) in 1994. The first prototype was developed way back in 1994 and he could develop the final model in 1996. He made several changes over a period of 3 years. Last year he introduced dust-collectors and fitted an automatic feeding system to the machine. He also provided wheel brackets to make the machine portable. The machine processes 400 kg cotton *(kala)* per hour, which is equivalent to almost 160 man-hours (man-hr). Shri Mansukhbhai has manufactured 10 *machines so far. The* advantages of *the* machine are: (i) the stripper saves cost involved in manual labour and eliminates drudgery for woman and children; (ii) it processes 400 kg cotton per hour; (iii) it improves the quality of cotton; and (iv) it is available with suction feed, an auxilliary attachment. **Keywords:** cotton stripping, wheel	Shri Mansukhbhai Patel, 49, Kanti Park Society, Ranna Park. Ghatlodia, dist. Ahmedabad (Gujarat) 380 015

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2914	Cotton-ginning machine and groundnut-pod separator	Shri Marutrao Yashwant Sarode acquired pedestal bush bearings and shafting from Lokhand bazaar, Mumbai. He fixed 1,200 nails on a wooden strip to form a comb and mounted it on the outer flat surface of a belt pulley. A stationary comb of nails was fixed in a curved housing below the pulley in such a way that nails on the pulley passed between the teeth of the comb. The pulley had a sprocket attached, and a chain and crank handle could be manually turned to achieve speeds between 60 and 100 rpm. One person feeds in the cotton boll, whereas another turns the handle. The ginning machine has worked continuously and efficiently for 12 years, and is still being used by some farmers in the village. He designed and fabricated a unique pod separator that used rotating blades to snip off the pods. He used a bullock-drawn blade harrow to loosen the plants first, so that they can be easily uprooted. Groundnut is harvested by uprooting the whole plant by grasping its foliage. The pods are then separated by picking them individually by hand, or in bulk by twisting the roots with one hand while holding the plant firmly in the other, or by threshing, i.e. striking the roots on a horizontal stick or steel blade. **Keywords:** cotton, ginning machine, groundnut, pod separator, nails, teeth	Shri Marutrao Yashwant Sarode, **Ahmednagar** (Maharashtra) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
2915	Arecanut dehusking machine	Peeling of betelnut *(Areca catechu)* nutshell is not easy. The innovator, Shri Narasimha Bhandari, has designed a manual as well as an automatic machine. In the manual machine, wheel has to be rotated by hand for peeling the nut, and is comparatively slow. The automatic	Shri Narasimha Bhandari,Chickmangalore (Karnataka) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

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		machine can peel 20 kg arecanuts in an hour. This machine is four times efficient than an expert labour. The machine is designed to peel betelnut of any size and is better compared with other machines available in the market. **Keywords:** betelnut, peel, nuts	
2916	Innovative arecanut dehusking machine	Shri S. Narsimha Bhatt of Dakshin Kannada (Karnataka) has developed an innovative arecanut dehusking machine. The machine has chain conveyor with spacer cups (which fits one arecanut in each spacer cup) that carries arecanuts to the peeling section. There are two wheels (A and B) made of steel. **Keywords:** arecanut, conveyor, spacer cup	Shri S. Narsimha Bhatt, 3/8 Palace Road, village Vittal, dist. Dakshin Kannada (Karnataka) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
2917	Coconut dehusker	Shri R. Jayaseelan of Virudhunagar (Tamil Nadu) innovated a coconut dehusker. A 1.5 HP electric motor is coupled through a belt to a long, cylindrical metal rod. The tip of the rod is fixed with two sharp blades at one side. The blades are 3/4 feet long and are placed at 1" interval. These blades on rotation help dehusk the coconut easily to the desired level. With the use of this machine the husk could be separated into four pieces, leaving some coir fibres on the nut. It can work on an average 150 nuts/hr, i.e. 7,200 nuts (6 x 150 x 8) can be dehusked in a shift of 8 hr. For feeding nuts, 6 labourers are required. The total estimated cost of this coconut dehusker is around Rs 672, including labour charges, electricity and dehusking operation. **Key words:** dehusk, electric motor, blade, coir	Shri R. Jayaseelan, S/o Ramiah Nadar, J.J. ILLAM, 134-B, Kulalar Street, Amasamiapuram, taluka Srivilliputhur, dist. Virudhunagar (Tamil Nadu) 626 133

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2918	Machine for threshing coconut husk for coir industries	Shri Chandran introduced a machine to thresh paddy from the hay for the first time in Kerala, which became quite popular in the Kuttanad paddy belt, where many farmers have bought it. He introduced a machine for threshing coconut husk for coir industries. About 10 acres coconut plantation can be harvested in a day. This machine costs Rs 3 lakhs. To operate this machine and harvest coconuts, two people are required; one for driving the tractor and another for harvesting the nuts thus saving the time and cost of labour, i.e. Rs 800/day. This machine works with a 10 HP diesel engine, which is an additional advantage of being easily transportable. Keywords: paddy, coconut, threshing, husk, thresh, tractor, diesel engine	Shri K.R. Chandran, Kerala Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
2919	Groundnut pod separator/ wool-ginning machine	Shri Marutrao Yashwant Sarode has developed a machine to ease the cumbersome process of groundnut pod harvesting with his own innovative idea. He designed and fabricated a unique pod separator that used rotating blades to snip off the pods. He used a bullock-drawn blade harrow to loosen the plants first, so that they were then easy to uproot. Groundnut is harvested by uprooting the whole plant by grasping its foliage. The pods are then separated by picking them individually by hand, or in bulk by twisting the roots with one hand while holding the plant firmly in the other, or by threshing, i.e. striking the roots on a horizontal stick or steel blade. Using this machine the pod harvesting and threshing become easier. It saves time and labour as well. He began to design a wool-ginning machine based on the cotton gin, he had seen at Indore. He finalized the	Shri Marut Rao Yashwant Sarode, Ahmednagar (Maharashtra) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

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		design in 1942, and over the next 6 years he set about getting the components for it from the district headquarters and from Mumbai's Lokhand bazaar. He acquired pedestal bush bearings and shafting. He fixed 1,200 nails on a wooden strip to form a comb and mounted it on the outer flat surface of a belt pulley. A stationary comb of nails was fixed in a curved housing below the pulley in such a way that nails on the pulley passed between the teeth of the comb. The pulley had a sprocket attached, and a chain and crank handle could be manually turned to achieve speeds between 60 and 100 rpm. One person was used to feed in the raw wool whereas another used to rotate the handle. The gin worked continuously and efficiently for 12 years and is still operating in the village. Keywords: groundnut, wool, separator, nails, ginning	
2920	Paddy thresher	In paddy cultivation there is labour shortage during post-harvest operations, and the farmers have to pay higher rate to the labourer to complete the threshing operation in time. Conventional thresher available in the market for wheat is not suitable for threshing paddy, because in paddy, besides the seeds, the stalk of the mature plants (straw) is also important and useful for fodder for animals. To find a solution, Shri Ramanbhai of Kheda thought of developing the thresher for paddy and started the work. In 1997, first he developed a working model of small thresher, wherein he used all parts madeup of wood except the iron blades and rollers. It was operated by power sourced from the tractor. As it was	Shri Ramanbhai Manibhai Patel. I-Amul Society, Mr Yagnik School, (opp. Railway Station), Nenpur, Mahemdabad, dist. Kheda (Gujarat) Facilitator: National Innovation Foundation. Ahmedabad (Gujarat) 380 015

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		madeup of wood, it was broken after some time. In 2001 again he revived his idea and started making thresher for paddy by using some of the components of conventional thresher and scrape iron material. After hard work of about a year, he finally developed a working model of machine that can be used for separating the seeds from straw. Basic structure of machine: (i) big-size roller (about 4 feet); (ii) cleaner; (iii) fan for sucking and winnowing; and (iv) shafting, belt and pulley mechanism. It threshes 60 to 70 bunches/hr. The paddy thresher available in the market (Jasoda Agro, Sojitra) costs Rs 63,000. Keywords: threshing, paddy, stalk, wooden	
2921	Use of *mussal* to dehusk paddy	*Mussal* is a farm implement madeup of stone to dehusk paddy. It costs Rs 300. Key words: *mussal*, dehusk, paddy	Shri Sanjay Anant Patil, Savaiverem, Ponda, North Goa (Goa) 403 401
2922	Tamarind harvester and seed separator	Tamarind harvester, a novel implement was developed by Shri A. I. Nadakattin. It has hundreds of iron chains hanging from a rod, carried on a trolley of the tractor. When tamarind is ready for harvest, the tractor trolley is taken through the rows and the chain is kept loose whereby tamarind falls into the trolley. Due to the chain strokes, the tree is damaged but grows again. Tamarind seed separator is useful in isolating the pulp for various preparations. Developed in 1994, it is connected to a tractor or an oil engine for enhancing its efficiency. In this machine, tamarind is thrown out of the pod due to the sliding action of pegs. The machine works on destining method and saves both time and labour. The seed separator machine costs Rs 3 lakhs.	Shri A. I. Nadakattin, Vishwa- Shanti Farm House, village Anigeri, taluka Navalgunda, dist. Dharwad (Karnataka) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

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		Keywords: tamarind, harvester, seed separator, chain, pulp, pegs	
2923	Modified oil-extraction machine	Swastik oil extraction machine is a state-of-art oil-expelling machine developed by Shri Kalpesh Gajjar of Mehsana (Gujarat) to provide oil millers the highest efficiency in a compact shape. The brief features of the machine are; it has three integrated crushers with a total crushing capacity of 18 metric tonnes/day of cotton-seed and 28 metric tonnes/day groundnut and other seeds, the 30 HP motor that powers the machine is an integral part of the main body of the machine, the motor is linked with the three crushers using a planetary gear system, which increases the efficiency of utilization of the power generated by the machine, the machine receives the feed through the conventional hopper, the seeds received through the hopper are steamed in chambers, the machine has three parallel chambers for steaming the seeds and each chamber leads to a separate crusher. The chambers have been designed in such a way that seeds get steam from all the angles. Pressing machines follow the steam chambers: one pressing machine is connected to each steaming chamber. The pressing machines push the seed into the crusher, ensuring that the seeds are not pushed back. The pressing also ensures maximum supply to the crusher by compacting the seeds. The seeds are then crushed in a screw press. The design of the screw press crushing is such that it allows maximum space for the oil to come out. The length of the machine is 3055 mm, width is 1045 mm and height is 2145 mm. Alloy steel has been used in manufacturing the machine to increase	Shri Kalpesh Gajjar, Mehsana (Gujarat) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

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		its life span. The advantages of Swastik oil extraction over conventional oil extraction are the following: (1) Conventional oil expellers are driven by 30 HP foot-mounted electric motor, using sheave and belt technology for crushing 6 to 10 tonnes oilseeds/day. The Swastik oil expeller employs 30 HP flange-mounted electric motor using transmission through planetary gears for crushing 18 to 28 metric tonnes oilseeds/day. (2) Conventional expellers having crushing capacity of 6 to 10 tonnes/day have 3,000 mm length, 1,500 mm width and 2,200 mm height, and requires a total 9.2 m x 3.8 m space. Swastik oil expeller with a capacity thrice that of conventional expellers requires only 10x4 m space. (3) A conventional expeller would require two labourers to manage it. Thus six labourers would be required for a total capacity of 18 metric tonnes/day. But three labourers are needed to operate Swastik oil expeller in shift. (4) In conventional oil expellers power transmission through sheaves and belt technology cause transmission losses and add to the cost of the machine. In Swastic direct transmission of power by the motor reduces transmission losses and reduces accessories. (5) In conventional oil expellers the machine needs mounting on a concrete foundation due to the vibrations caused by the belt. But Swastik expeller does not require a concrete foundation, as there are no major vibrations. (6) In conventional wear and tear is high because of the vibrations and presence of accessories such as belt and counter shaft. But in Swastic wear and tear is low since there are no belts or countershafts.	

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		(7) In conventional there is no mechanism to adjust thickness of the cake when the machine is in operation; switching the machine off results in transmission losses. In Swastik thickness of the cake can be adjusted while the machine is in operation. (8) In conventional it is difficult to maintain the oil percentage in the cake at the optimum values of 6-7%. In Swastik a large crushing area ensures that the oil percentage is consistently maintained at the required level. (9) In conventional there is no special mechanism to remove debris. In Swastik the crusher spine is specifically designed for easy removal of debris (waste) from the crusher. **Keywords:** oil expelier, groundnut, cotton, crusher, pressing machine, hopper	
2924	Automatic sprayer for pesticides	Shri Parbatbhai chanced upon the invention quite accidentally. When he was making a pump, he found that the tank was leaking. The leakage could not be located even after intense search. Hence he filled the tank with air using a foot-pump. When the tank was full, water sprayed out from the place of leakage. He got the idea for spraying the pesticide using air pressure and air sandals in the place of screw pumps, and it proved successful. This spray pump does not need any winding of handles to spray, because the sprayer has to wear a special kind of air sandals designed by Shri Parbatbhai. These air sandals create air pressure, which gets exerted on the tank and sprays the liquid outside. This saves time, energy and labour cost. There are a number of advantages of this pump, developed by Parbatbhai compared with the presently available	Shri Parbatbhai Manjibha Vaghani, Bhavnagar (Gujarat) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

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		spray pump, (i) In the former there is no need for wind a handle, but the latter works only by winding of handle; (ii) In the former insecticide does not spill, but in the latter danger of insecticide spill; (iii) In the former spray is automatically done by air pressure whereas in the latter spray is done by winding the handle; (iv) In the former very little need of repairing; whereas the latter needs repairing often; (v) The former has capacity of 16 litres whereas the latter has capacity of 16 litres; (vi) The weight of fomer is 2.5 to 3 kg whereas weight of the latter is 6 to 7 kg; (vii) In the former there is no washer at all whereas the latter needs replacement of washer often; (viii) In the former one person can spray two separate lines at a time whereas in the latter one person can spray only one line and (ix) In the former spare parts are cheaper and available in the villages also whereas in the latter spare parts are costlier and available in town, cities only. Keywords: water tank, sprayer, air sandals, air pressure	
2925	Motorcycle-mounted sprayer	Shri Ganeshbhai N. Dodiya of Bhavnagar (Gujarat) has innovated a pump that is driven by a motorcycle engine. The pesticide-filled tank is placed at a level higher than the pump, which allows the mixture to come into the pump. The pump outlet is attached to the pipe with 5 openings. One opening is attached to the pump itself. Two openings are connected to the spraying valves (controllable). One opening is left open to allow air to enter. The air enters from the inlet once the water starts being pumped (Bernoulli's principle). This serves the	Shri Ganeshbhai N. Dodiya, Bhavnagar (Gujarat) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

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		purpose of balancing the air pressure. The last opening goes back into the tank. This has a regulator valve that controls the spraying pressure. The returning water also serves the function of stirring the mixture in the tank. This device can be attached to any (Enfield Bullet) motorcycle that has a 5 hp diesel engine. The advantages of this innovative motorcycle-mounted sprayer are as follows: (1) In a market where power sprayers are becoming more and more popular, a motorcycle-mounted sprayer is an attractive proposition for the farmers. The bullet sprayer offers a number of advantages over conventional sprayers. (2) It greatly facilitates the spraying operations for the farmers. Spraying with the use of a bullet sprayer requires lesser time than manual spraying. Since crops like cotton require frequent spraying, a quick method of spraying can prove a boon for the farmers. (3) The adjustable sprayer height makes it very easy to manoeuvre it for spraying different types of crops of various heights. (4) The bullet sprayer is a very efficient product and it does not utilize much energy. (5) The cost of procurement and the operating cost of the sprayer are quite low compared with those of other power sprayers. Also, in the long run. it can prove cheaper than spraying manually. (6) Since it requires less space to move, it can be used in a more versatile manner compared with power sprayers that are mounted on tractors. (7) Bullet sprayer is less bulky than conventional power sprayers and hence it is very easy to handle (8) also, it is much simpler to assemble and dismantle. **Keywords:** motorcycle, sprayer, time	

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2926	Battery-operated sprayer and duster	Shri Lalit Surana of Narsimhapur (Madhya Pradesh), got an innovative idea from water sprayers used in hair-dressing saloons. He received full support from his wife for pursuing his aspirations. This innovation relates to a multi-purpose, adaptive battery-driven sprayer for spraying liquids or suspension in gardens, for fumigation or for spraying on tall trees. Two models of sprayers have been designed to run with 6 and 12 volt batteries. The sprayer can also be attached to a folding-stick, to spray on tall trees. The adjustment exists to modify the quality of mist as desired. The cost of 6-volt sprayers is Rs 200-250 and of 12-volt sprayer is about Rs 500. Due to the light weight, low cost and flexibility in use, the duster and sprayer can have multiple uses. Keywords: sprayer, garden, batteries, trees	Shri Lalit Surana. Ram Mandir, (near Punjab Bank), Narsimhapur (Madhya Pradesh) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
2927	Kushal sprayer	Shri Khimjibhai Kanadia has developed a sprayer named, Kushal. It is a small, portable sprayer for spraying pesticides. It is very easy to use and it discharges fine droplets (mist spray) due to nozzle improvisation. Its light weight makes it manoeuvrable for aged people and also for women. It is very cost effective and it cost only Rs 475 in the range of sprayer products, and its maintenance is free. Keywords: sprayer, droplets, nozzle, light-weight, cost effective	Shri Khimjibhai Kanadia
2928	Bullock-driven sprayer	Shri Bhanjibhai Mathukia of Junagadh (Gujarat) has developed a bullock-driven sprayer. It consists of a cylinder pump assembly, mounted on iron bar attached with two small iron wheels at both the ends. A small kit consisting of	Shri Bhanjibhai Mathukia, Kalavad, Visvadhar, Junagadh, (Gujarat)

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		two wheels and cylinder-piston arrangement is attached to harrow. Rotary motion of the wheel is utilized to build the pressure for spraying. It covers 12 acres of field in a day. It is very easy to assemble and operate. **Keywords:** cylinder pump, rotary motion, piston, harrow, spraying, iron bar	
2929	Automatic spray pumps	Shri Arvindbhai has developed an auto-compression sprayer, based on the idea of magnifying jerks generated while walking to the field. He used a spring and additional weight to magnify these jerks, which could be used to generate the requisite pressure in the tank to spray its liquid. When the user walks with the sprayer mounted on his back, jerks are transmitted to a dead weight, which rests on the spring. Due to jerks, the spring is compressed, pushing the piston downwards. Once the spring reaches nadir, it rebounds and pushes the weight upward, thus pulling the piston downwards. Thus, one stroke is completed. The cycle continues and pressure is generated in the tank due to strokes of the piston. This pressure helps spray the liquid in the tank. The proposed cost of this machine is Rs 3,500. The advantages of the automatic spray pump are: (i) it does not require any extra energy or torque to operate the pump for spraying; (ii) comparative pump is available in the market except foot-sprayer developed by Shri Parbatbhai Vaghani of Gujarat, but operational mechanisms of both the pumps are different technically; and (iii) it saves the labour from tedious and tiresome process of manual stroking for operating the pump. There is scope to	Shri Arvindbhai Patel

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		provide two spray nozzles to get double the output by increasing the pressure. Operator can cover two parallel rows simultaneously and thereby cut down the operation timing by half **Keywords:** compression sprayer, piston, stroke, nozzles, jerks	
2930	Hand-driven pump	Shri Gopalbhai Sutariya has developed a hand-driven pump for spraying chemicals and pesticide solutions. The rotary motion of wheels is used to generate pressure in the tank for spraying. About 40 litres barrel is mounted on the chassis of hand-driven body of the sprayer. It has an adjustable nozzle and spray boom, giving better performance. **Keywords:** spraying, pesticides, rotary motion	Shri Gopalbhai Sutariya
2931	Bicycle-driven sprayer	The whole process of spraying is very tiresome and also leads to hand, back and neck pains with prolonged use for any scale of operation. Bicycle sprayer is a product, that has a potential to revolutionize the way farmers spray their crops, because it helps farmers to reduce cost, time and drudgery owing to its design, manoeuvrability and ease of use. Shri Mansukhbhai of Amreli, Saurashtra (Gujarat) has reversed the sprocket arrangement of cycle-chain drive to get the required pressure for spraying. Pedals are replaced by piston rods, connected with brass cylinder pumps on either side. Movement of bicycle builds up pressure for spraying. Bicycle sprayer is an assembly of a modified sprocket -pump assembly, tank and adjustable sprayer boom, which can be mounted on any bicycle available in the market. The forward and backward movement	Shri Mansukhbhai Jagani, Jay Khodiyar Welding Works, Mota Devaliya, Babra, Amreli, Saurashtra (Gujarat) Facilitator: National Innovation Foundation, Ahmedabad 380 015

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	of bicycle through a chain and modified sprocket arrangement are transferred to a pump assembly, which pumps air into the tank to generate pressure for spraying through the sprayer boon nozzles. This sprayer has an adjustable and foldable boom, which can be adjusted for height as well as for position of spraying nozzles. The price of bicycle sprayer is fixed at Rs 2,200 excluding the bicycle. This sprayer has features like low cost, ease of use, low maintenance and larger area coverage, which make it better than the hand-operated equipment and less costly to operate than tractor or two-wheelcr mounted sprayers. Uniqueness of this product is that it is the only one of its kind in the market and offers a wide variety of benefits to the users, e.g. (i) energy-efficient and easier to operate and maintain; (ii) flexible product with adjustable height and width of spraying boom to increase flexibility for various crops; (iii) since bicycle requires less space to move, it can be used in a more versatile manner than power sprayers that are mounted on tractors; (iv) it increases the efficiency and saves the labour cost, as it can cover more area compared with manual spraying; and (v) it is much simpler to assemble and dissemble, and thereby serves dual use of sprayer-cum-bicycle. Keywords: bicycle, sprayer, pedal, nozzle, boom, drudgery, tiresome	
2932 Jayant sprayer	Shri Rameshbhai Bhalala has developed a sprayer, which is operated through 7.2 HP diesel engine and three-piston ASPEE sprayer pump. The engine and pump are mounted at 5 feet height on the self-designed iron	Shri Rameshbhai Bhalala Facilitator: National Innovation Foundation. Ahmedabad (Gujarat) 380 015

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		chassis mounted on four pneumatic wheels. This is highly efficient for cotton and other crops where the plant height is more. It is also used for interculturing by attaching harrow behind it. Keywords: sprayer, diesel engine, cotton, interculture	
2933	Chandraprabha, a rain gun (sprinkler-cum-fertilizer sprayer)	By studying the conventional sprinkler irrigation system at various exhibitions and locations, Shri Annasaheb of Belgaum district of North Karnataka came out with his own design to suit the requirements of sugarcane crop. He worked with wood at home and ultimately arrived at a suitable design, which he got fabricated at a foundry. It involves components like pump, main pipeline, lateral pipeline, riser pipe and sprinkler. After installing it in his field, he further refined its design. To achieve a balanced shaft movement, Shri Annasaheb added 400 g of additional weight at the back. At the outlet, he provided a groove for fixing nozzles of different sizes to throw water to different lengths as needed. Further, he introduced a locking system to prevent the sprinkler head from throwing water into the neighbouring fields. With all these refinements, now he has an almost perfect sprinkler head, which he has named after the goddess - Chandraprabha. The cost per head of the machine is just Rs 3,500 and installation cost per acre is Rs 15,000, including of the installation of 3-inch PVC main pipeline and riser pipe; whereas, the installation cost of a conventional sprinkler system comes to a minimum of Rs 6,000 per acre with a 2-inch pipelines. The advantages are the followings: (1) The rain gun can irrigate 1 acre in	Shri Annasaheb Udagavi, Sadalga. Chikkodi, dist. Belgaum, (Karnataka) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

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		one hr 30 min. Sprinklers generally have two nozzles, one for applying water over long distances and the other for short distances. But *Chandraprabha* rain gun has a special LOPS nozzle, which covers both the distances. Also there is a provision to choose a nozzle size of 17, 19, 21 or 23 mm to achieve the required throw distance. For instance, a 17 mm nozzle throws water up to 100 feet radius whereas a 23 mm nozzle can throw water up to 140 feet. (2) Saving in water consumption 25 to 50% for different crops with conventional sprinklers, but it is 60 to 70% by Chandraprabha rain-gun. Hence it is possible to increase the irrigated area by more than double by using the same amount of water. (3) Since the water is applied with force, pests like aphids, whiteflies and scales, are effectively washed down. (4) Due to 3-inch pipe and wide nozzle, even composts such as biogas slurry can also be applied. **Keywords:** seed drill, tynes, seed rate, seed pipe, sandy soil	
2934	Wooden marker for sowing cotton	Farmers of Antaram village, Mandal Shabad of district RangaReddy in Andhra Pradesh sow cotton with equidistance of 75 cm plant-to- plant and row- to-row with the help of a marker. The wooden marker consists of wooden beam with 3 wooden pegs fixed 75 cm apart. A wooden beam with 6 cm diameter of 3 m length is tied to the yoke operated by a pair of bullocks with the help of a person. At first the farmers use this tool to mark lines of 75 cm in one direction, and later the same tool is operated in opposite direction to make mini squares of length and width of 75 cm rows. On an average this tool can cover 1.5 ha in a day costing Rs 120.	Shri V. Srinivas, Research Associate, TARIVLP,Central Research Institute for Dryland Agriculture, Hyderabad (Andra Pradesh) 500 059

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		Farmers reported that the square planting of cotton facilitates placement of cottonseed at intercept point for good germination. Later square planting of cotton helps reduce the cost of weeding operations by Rs 200/ha. **Keywords:** sowing, cotton, bullocks	
2935	Wooden blade harrow for intercultivation of cotton	Farmers of Manmarri village of district of RangaReddy in Andra Pradesh do inter cultivation in cotton by a blade harrow frequently. This tool is made of wooden beam of 3 m length, fixed to the main wooden frame that is tied to the yoke of one pair of bullocks. The farmers with this tool can cover intercultural operations of 1 ha in a daycosting Rs 120. This tool is used not only to control the weeds in both directions but is also useful to increase the water-infiltration capacity in vertisols. **Keywords:** harrow, vertisols, yoke	Shri V. Srinivas, Research Associate, TARIVLP, Central Research Institute for Dryland Agriculture, Hyderabad (Andra Pradesh) 500 059
2936	Mango harvesting in basket	To make easy pluck of mangoes from the trees, simple technique is being used. In this practice small basket made of nylon net is tied to a bamboo pole. Small knife or sickle is attached with this basket to make the mangoes fall into the basket. **Keywords:** mango harvest, basket, bamboo pole	Shri P. Rangarajan, S/o Shri Poochendu Reddiar, 3/17, Vembarpatty, village Natham, dist. Dindigul (Tamil Nadu) 624 308
2937	Coconut harvester	Inspired from JCB excavator, Shri Peruma] Karuppiah of Virudhunagar (Tamil Nadu) has developed a coconut harvester for harvesting matured nuts up to a height of 50 feet. In this invention, a fruit-harvesting device comprises a main arm adapted to be secured with the rotatable frame of the device. The main arm is supported at the top ends of the support arms where a sliding block is provided. A pair of	Shri Perumal Karuppiah, B-41, Gomathi Lathe Works, Subbaryar Street, Watrap, Virudhunagar (Tamil Nadu) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

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		hydraulic cylinders is provided on the top of the rotatable frame mounted on the main frame, for raising and lowering said support arms. A hydraulic cylinder is provided below the rotatable frame to provide rotational movement to it when required by the user. An extending arm is supported on the main arm to extend and retract the top arm, which is secured at the top end of the extending arm. A hydraulic cylinder is provided over the main arm for providing the to-and-fro movement to the extending arm. A pair of hydraulic cylinders is provided between the top end of the extending arm and lower portion of the top arm, for raising and lowering the top arm during operation of the device. Guide means are provided on the top of the main frame for guiding the rotational movement of the main arm. A basket is provided at the top end of the top arm for accommodating the user. A pair of locking arms is provided between the front or top end of the main arm and front end of the rotatable frame to lock the raising or lowering movement of the main arm. A jack is provided with the main frame of the device at the back end, to provide stability to the device during its operation. The coconut harvester is useful for harvesting matured nuts from trees, which are as tall as 50 feet. The coconut harvester needs only two people to operate it. One person steers the vehicle around, whereas the other only has to harvest the nuts. A hydraulic jack is fitted to a tractor with 10 levers. This hydraulic jack can be adjusted, to carry a person to the top of the tree. Also light-weight iron plates have been used. Therefore the main	

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		object of the present invention is to provide a fruit-harvesting device that is: (i) adapted to be mounted on a tractor for harvesting the fruits such as coconut; (ii) simple in construction, cheap in cost and easy to maintain; (iii) easily transportable to coconut farms with a tractor; (iv) easily demounted from the tractor during the off-season of the fruit harvesting; and (v) easy in operation, takes less time to harvest in maximum fruits, and solves the labour-related problems. **Keywords:** coconut, rotatable, hydraulic jacket, arm, guidemeans	
2938	Stand for hanging farm implements, called *akadi*	Farm implements such as sickle and knife are hanged on a hanger made up of wood, which can be fixed on the wall. **Keywords: *akadi,*** hanger, sickle, knife	Shri Mangala Kalidas Sawaikar,Tamsuli, Ponda, North Goa (Goa) 403 107
2939	Use of *dhopatene* to flatten soil	*Dhopatene,* which is made up of wood, is used to flatten the soil surface and smoothen the soil surface. **Keywords:** *dhopatene*, wood	Shri Sanjay Anant Patil, Savaiverem, Ponda, North Goa (Goa) 403 401
2940	*Fotar*, a farm implement	*Fotar* is used for grinding or making paste of any plant materials. It is made of stone. **Keywords:** *fotar*	Shri Satish Padwalker, Keri, Rane wada, Sanquelim, Sattari, North Goa (Goa) 403 505
2941	Wooden leveller	A wooden device is used to level the soil after ploughing. It can be used with bullock or with hand also. **Keywords:** leveller, bullock	Shri Tato Gawas Parye, Rane Wada, Sanquelim, Sattari, North Goa (Goa) 403 505
2942	*Dutho*	*Datho* comb is made of wood. Using this comb, lines are drawn in the field, or it is used to break mud clods or sometimes to crush them. It helps make soil loose and smooth. **Keywords:** *datho*, mud, clod, wood	Shri Tato D Gawas, Parye, Rane Wada, Sanquelim, Sattari, North Goa (Goa) 403 505

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2943	*Ginnasi*, as chaff cutter	*Ginnasi*, which is made of iron blade with a wooden handle, is used as chaff-cutter. The implement weighs 1.5 to 2 kg. **Keywords:** *ginnasi*, chaff cutter	Shri Sarsoin, **Hawalbag,** Almora **(Uttaranchal)** Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
2944	Different types of sickle	Shri Kishorbhai Bhardwa has experience of 23 years in repairing and manufacturing of farm implements. A normal sickle has a long blade with wooden handle. One has to sharpen the whole blade when it is blunt. Repetitive sharpening of the blade makes it thin and one has to discard the sickle and buy a new one. To avoid this, he has developed three different types of sickles. In the first model, inspired by a barber's knife, he attached wooden handle with a permanent iron base, to which he attached a thin blade with the help of bolts and nuts. Hence whenever there is need to sharpen the blade, the thin blade can be removed and sharpened. In the second model, the sickle has concave-shaped edge for harvesting the crops, and on the top of it a projection is provided for removing the weeds **and** also to break the soil clods. The third model consists of dual blade in opposite direction. The costs are: Model 1 (like barber's knife) Rs 90, model 2 (dual blade) Rs 65, and model 3 (like *khurpi)* Rs 55. **Keywords:** weeding, interculturing, harvesting, barber's knife	Shri Kishorbhai Bhardwa, Galvav, dist. Junagadh (Gujarat) Facilitator: National Innovation Foundation. Ahmedabad (Gujarat) 380 015
2945	Forage cutter	Shri Karanpal Viswakarma developed an innovative forage cutter, which has three rollers having similar dimensions (80.0 mm), used in the forage-cutter, in which one roller is kept vertical having sufficient gap from the two horizontally lower rollers. All these	Shri Karanpal Viswakarma, Biharigarh (Uttar Pradesh)

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		rollers have teeth, which move the forage through it. These rollers are made of steel. (1) Circular *chakka* (diameter 90 cm) is made of cast iron. By this, a shaft is rotated, which is attached to it. (2) Two Blades are used in this *chakka.* These are made of high carbon steel. It cuts forage in the proper way what we saw. (3) Horizontal shaft is the next important component. After rotation of the *chakka,* power is sent to the rollers through it. It is made of steel. (4) Two springs are used here just above the upper roller and at the top of the machine, which is supported by horizontal plate so that it cannot be dislocated from its own position. Otherwise the roller assembly will be affected. Due to reaction, forces try to move up, so that forage could easily pass through the rollers. And due to spring, upper roller can easily move up. (5) Three bearings are mounted properly to accurate dimensions. The bearing races should be tightly coupled to the shaft to ensure that the motion only occurs inside the low-friction bearing. Press-fitting both rings can make for a difficult assembly or disassembly, and moreover one also needs to ensure that due to axial thrust the bearing is not dislocated. It is also made of steel. (6) Stand is used as a rigid support from the ground, which firmly supported the components assembled machine. (7) Two circular plates (14.0 mm) attached to the upper end and vertically just below the lower roller can pass the power input to the chain-roller assembly. They are held in the vertical plane. (8) Chain system is the main important component to make it differ from the other forage cutter in the market. In this assembly	

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	system, chain and two horizontal rollers are attached to each other, to distribute load in both rollers. Hence the input power applied at the shaft attached to *chakka* is almost the same as the previous one. The comparative strength and weaknesses of the improved forage cutter over conventional forage cutter are as follows: (1) In the improved model the rollers are mounted on bearings, whereas in conventional model rollers are mounted on bushes. (2). In the former the movement of forage is easy due to proper gap between the rollers and the plate. In the latter the gap is normally misaligned due to poor life of bushes, which leads to blockage of forage and thus increases the probability of accidents. (3). In improved model proper synchronization results in low efforts and high efficiency. In conventional model improper synchronization leads to high fatigue and low output. 4. In improved model incorporation of chain drive for the third roller distributes the load evenly on both sides, thus leading to easy running and low maintenance. In conventional model complete load on one side leads to high maintenance. (5). Side *chakka* in the former is made of better material (MS), which improves its life. In the latter model it is normally made of CS, leading to poor life and high maintenance. (6). Due to better material and proper synchronization the improved model can be operated with an electrical motor at high speed and thus saves appreciable cost. But separate machines are used in conventional model to operate with motors, which are costly. The improved version of the forage	

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		cutter developed by Karanpal has following features: (1) Better cylinder movement, thus leading to minimum breakage of bearing and rollers, (2) Free movement of forage without any blockage, (3) Better synchronization due to incorporation of chain drive for the third roller, which distributes the load, is on both sides, (4) Incorporation of extra bearings reduces the wear and tear, (5) Same cost as the conventional forage cutters, (6) It is strong and sturdy, (7) It has longer life with less maintenance and (8) It is light in weight. **Key words:** *chakka*, chain, force, forage cutter, vertical plane, roller, shaft	
2946	Three and four wheel tractor of 12 H.P.	Shri Bhanjibhai has developed a small three-wheel tractor powered by a 10 HP engine. The unique feature of this tractor is that it was evolved over 15 years in its convertible ability. The front axle is designed in such a way that the tractor can be made into a 3-wheeled or a 4-wheeled vehicle. He explained that double-wheeled front axle is essential while carrying out farm operations, which are usually at low speed and high load. However, when it is used for transporting goods to the market yard, many people would prefer single front wheel, pulling the trailer. Other features of the innovation are: (i) engine equipped with 12.5 HP Field Marshal, air-cooled engine with self-start system; (ii) it has maximum speed of 30 km/hr; (iii) standard hypoid gear of 9-42, gear design along with provision of differential lock; (iv) gears are 1-2-3 and reverse (in both high low); (v) it has P.T.O shaft with different speeds, suitable for threshing operation and spraying agrochemicals;	Shri Mansukhbhai Patel, 49, Kanti Park Society, Ranna Park, Ghatlodia, dist. Ahmedabad (Gujarat) 380 015

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		(vi) multi-disc foot-operated brakes; and (vii) implement position and lowering speed control by hydraulic system. The various advantages include: (i) innovative transmission unit, (ii) interchangeability from 3 - wheeled to 4 - wheeled tractor and *vice versa*, (iii) improved performance with reduced cost, (iv) adjustable wheel base to meet the requirement for interculturing, (v) the three wheels facilitate high manoeuvrability, and hence is ideal for small fields (vi) the gear system is based on pulley mechanism and saves energy, and (vii) the design was kept simple, making it possible for the farmer himself to do the repairs. Keywords: load, smaller machine, gear, front-axle	
2947	*Rekkala dhanti* for intercultivation of close-spaced crops like sorghum	The farmers in Appareddyguda village of district Mahaboobanagar in Andhra Pradesh traditionally use *rekkala dhanti* for intercultivation of sorghum, fingermillet and pearlmillet sown 30 cm apart. This tool is made of iron blade with a width of 22.5 cm, fixed with wooden legs, having a conical shape. It has 90 cm wooden handle in the middle of the triangular structure and one beam of 3 m length that can be tied to the yoke. Two such tools are attached to the yoke, operated by a pair of bullocks with three men. The farmers with these implements can cover 1 ha area in a day, costing Rs 200/ha. Farmers reported that this tool facilitates interculture operation in close-spaced crops even after 30 days of sowing. Keywords: *rekkala dhanti*, fingermillet, pearlmillet	Shri V. Srinivas, Research Associate, TARIVLP, Central Research Institute for Dryland Agriculture. Hyderabad (Andra Pradesh) 500 059

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2948	Mini tractor-drawn ridger, weeder and sugarcane leaf-mulcher	The ridger is developed as an attachment to the three-point hydraulic linkage of the mini tractor. The ridger comprises an upper main frame, a central shank and a ridger bottom. The distance between the outer edges of the rear wheels of the mini tractor is 1.2 m and total width of the implement is about 1 m. Hence in crop rows of 1.5 m normal spacing, the implement can be very easily used without damaging the crop. The moisture level of soil should be enough for the tool to penetrate. The cutting tool penetrates and cuts the soil. The soil is cut up to 22.5 cm depth and is lifted on the wing board on each side. The lifted soil is thrown on both sides. The tractor is moved in 'alternating field machine pattern' in the field by going from one end of the field in one direction between first and second rows and coming back in opposite direction after skipping the next two rows through fifth and sixth rows and alternating in a similar manner. The ridger-weeder is unique as it does both weeding and earthing-up in a single operation in sugarcane crop. There is a saving in cost and time by more than 60%. Since it helps in trash mulching and obviates the need **for** its burning, the ridger-weeds also contributes towards conserving moisture and improves organic matter content in the soil. **Keywords:** ridger, weeding, mulching, tractor, sugarcane, moisture	Shri P. K. Jeyakrishnan Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
2949	Bicycle- weeder, tiller and harrow	After a lot of trial and error, Shri Gopal Malhari Bhise came out with an implement, fashioned out of the front axle, wheel and handle-bar of a standard bicycle, which can be used by the marginal farmers to conduct operations normally carried out by	Shri Gopal Malhari Bhise, Shendurni, dist. Jalgaon (Maharashtra) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

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		bullocks or tractors. In all his endeavours, Mainabai and his close friend Subhash Jagtap stood by him solidly. The latter, owner of Sachin Welding Works, helped him with his expert welding skills. Perseverance finally paid off and his portable implement, christened Krishiraja, was received very well in the local market. He has fabricated 213 devices so far. The whole set currently sells for approximately Rs 1,200 apiece. "It gives the much-needed independence to the small farmers who cannot obtain bullocks or a tractor in time," says Ramesh Mahajan, an extension worker in the Department of Adult and Continuing Education and Extension Services of North Maharashtra University. **Keywords:** ridger. weeding, mulching, tractor, sugarcane, moisture	
2950	Wooden blade harrow for intercultivation of castor	Farmers of Manmarri village frequently do intercultivation in castor by a blade harrow, which is sown by rectangular planting. This tool is made of wooden beam 45 cm wide, fixed to wooden pegs. Blade made of iron or mild steel is fixed to the wooden pegs. Two wooden beams with 3 m length are fixed to the main wooden frame which is tied to the yoke of one pair of bullocks. The farmers with this tool can cover intercultural operations of 1 ha in a day, costing Rs 120. This tool is useful not only to control the weeds in both directions but also to increase the infiltration capacity in vertisols. **Keywords:** harrow, vertisols, yoke, infiltration	Shri V. Srinivas, Research Associate, TARlVLP.Central Research Institute for Dryland Agriculture, Hyderabad (Andra Pradesh) 500 059
2951	Bullet-driven Santi weeding machine	The regular occurrence of famine in Saurashtra region of Gujarat had forced the farmers to look for a	Shri Mansukhbhai Jagani, Jay Khodiyar Welding Works, Mota

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		replacement for their bullocks to carry out agricultural operations. Shri Mansukhbhai of Amreli of Saurashtra (Gujarat) thought of utilizing Enfield Bullet, a powerful motorcycle commonly used in the region as a replacement to the bullock. He decided to convert the petrol motorcycle into a diesel one, driven by a 5.5 H.P. engine. The motorcycle was then provided with an attachment replacing the rear wheel. The attachment could have various kinds of tools attached to it for farming, inter-culturing and sowing operations. About 10 ha land can be weeded in a day using this bullet Santi and the cost of weeding is merely Rs 8-10/ha. It can plough 1 acre field in just 30 min. and consumes 2 litres fuel only. It costs around Rs 20,000 for a complete set of unit with three implements (excluding the cost of motorcycle). The advantages of Bullet-driven Santi are the followings: (1) It is a new farming machine smaller than the tillers and tractors but stronger than the bullocks. (2) It is easy in assemble and has low-cost attachments for farming, inter-culturing and sowing operations (3) It requires 30 min. to carry out cultivation operation in 1 acre. The diesel consumption required for it is 2 litres only. (4) The unit is capable of performing all the agricultural operation carried out by the pairs of bullock. (5) It is multi-purpose machine, which can be used for interculturing, sowing, spraying and other agricultural operations. (6) It is easy to dismantle, and regular motorcycle can be used after completing all operations. (7) It can also be used for transporting operations by attaching a small trailer. This innovation received excellent	Devaliya, taluka Babra, district: Amreli, Saurashtra (Gujarat) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

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		response from Indian Science Congress at Pune and Swadeshi Vigyan Mela, Delhi. Students at MIT, Boston have developed business plan for this technology. National Institute of Design, Ahmedabad is working on improving the design as a part of GRIDS (Grassroots Innovations Design Studio). Keywords: bullet motorcycle, interculturing, sowing, spraying	
2952	Improved sugarcane rotavator	Sugarcane is one of the major cash crops in India. After the crop is cut, huge bagasse and stem waste are left over on the field, standing. The length of these stems may rise up to 1 ft above as well as below the ground. Traditionally, the waste was burnt and then the land was cleared for further use. Apart from the waste removal, burning the field caused degradation of soil fertility reduced the productivity and led to drying of the soil. This also caused air pollution in the vicinity. Shri Rambhai Patel has an experience of 25 years in farming, and during this time, he noted down the difficulties faced by him and devised an improved sugarcane rotavator. The implement is being mounted on 20 H.P. tractor. The twin rotors are connected through the chain and sprocket mechanism with the coupler, which gets the power input from the tractor and is used to uproot the sugarcane left-over stems and crush them, so that they can be used as a natural manure in the field. Attributes of the machine are: (i) the use of two rotors, the specified orientation and material selection of the blade is innovative in the machine; (ii) it can effectively cut the sugarcane stems in one go, whereas the conventional rotavator is to be	Shri Rambhai Patel Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

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		operated 3-4 times on the same field; (iii) the total cost incurred by the innovator in developing the prototype is nearly Rs 2 lakhs; (iv) it protects farmers from the smoke of the fire that was lit to burn the left-over stems by traditional practice. **Keywords:** bagasse, sugarcane, rotavator, fertility, soil, smoke	
2953	Labour-saving seed drill	After 25 years of experimentation, Shri G. Somasundaram of Tiruchirapalli in Tamil Nadu has developed a hand-pushed seed drill with one or two tynes, a bullock-drawn seed-drill with 3 to 5 tynes, and a tractor-mounted seed-drill with 6 to 11 tynes. He has patented these implements. The simple, hand-pushed implement is made of steel frames and wooden handle. It has one to two tynes, and it can be used to sow a variety of millets and other bold-seeded crops. The depth of seeding, and the spacing between the rows and within the row can be adjusted. It can cover 0.2 ha in a day. The bullock-drawn seed drill has steel framework and a seed box. It has three to five tynes. It can cover 0.8 to 1.2 ha in a day. The tractor-mounted seed drill has 6 to 11 tynes, and costs Rs 18,500. It can cover 1 ha in 2 hr. In these seed-drills the steel seed-pipes can be changed to suit the seeds of different sizes. The implements can be fabricated with local materials, and this sturdy implement needs little maintenance. Any repair can be attended locally. Advantages are the followings: (1) By using this implement the seed rate can be reduced. For example, for dryland paddy the seed rate can be reduced to 12 kg/acre instead of normal 30 kg	Shri G. Somasundaram, Arangottai, Tiruchirapalli. Chennai, (Tamil Nadu) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

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		adopted by farmers. For lsq. m a population of 60 seeds is sufficient instead of 120 seeds. (2) By using this seed-drill the seed rate can be reduced greately for example, for groundnut and castor by 10%, and for paddy, *bajra*, gingelly, *ragi*, *cholam*, blackgram, *Echinocloa* (banyard millet) and foxtail millet *(Setaria italica)* by 50%, (3) The bullock-drawn seed drill can cover 3 - 4 acres instead of 0.5 acre by conventional sowing. The tractor-drawn seed-drill can easily cover 6 - 8 acres instead of 1 acre in conventional sowing. (4) The cost of seeding is cheaper. (5) Crops raised through this method of seeding will come for harvest 15 days earlier due to quick maturity and exposure to good sunlight. **Keywords:** seed-drill, tynes, seed rate, seed pipe, sandy soil	
2954	Multi-utility bullock-driven seed- cum-fertilizer drill	The innovator, Shri Ramesh Chandra Gurjara, a handicapped, has developed a multi-utility bullock-driven flexible agricultural equipment, which can be used for ploughing, inter-cropping, seed drill-cum-fertilizer dispersant and can also be used for levelling the land and weeding purpose. The multipurpose device comprises plough, seeding pipe, hopper, wheels, gears, hydraulic lifter and metallic chassis. Ploughing teeth and sowing pipe *(vavaniu)* are attached behind the chassis. The plough and sow teeth are adjustable width-wise to facilitate intercropping. Three wheels support the total chassis. Height of the plough and sow pipe can be adjusted by hydraulic lifter attached with the system. Mechanical braking has been attached for controlling the device. There is also provision for sitting on	Shri Ramesh Chandra Gurjar Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

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		the device, so that handicapped person can use it. It costs Rs 7000 only. The advantages of the device are the followings: (1) Flexibility in height and sowing pipe, hydraulic lifter and adjustable sowing teeth for intercropping and multiple plough system, making the system customized for handicapped users. (2) Can do ploughing, levelling, weeding, sowing and fertilizing by single person. (3) Conventional bullock-driven ploughing system has single plough, but in the present case multiple plough has been adopted. Sow and plough teeth can be adjusted width-wise in the present device, whereas in conventional system this facility is not available. (4) Designed for handicapped persons (5) It is light in weight, versatile and easy to use. **Keywords:** multi-utility, bullock, seed-drill, fertilizer dispersant, handicapped	
2955	Seed-cum-fertilizer drill	Shri Hazarilal Ojha has manufactured implements like hoe, sickle, spade, leveller, cultivator, ridger plough, seed drill and soil scoop. Many farmers use single-vessel drill machine, in which seed and fertilizer are mixed and kept together. In such a delivery system, seeds and fertilizer fall together at the same level or surface. Due to this, seeds get damaged from localized concentration of fertilizers during germination. The fertilizer is also not utilized by the crop roots efficiently. To overcome the problem, farmers started using separate drives to drill fertilizer and seed. This method improved the yield of crop, but also imposed expense of an additional drill drive on the farmers. In 1999 Shri Hazarilal attended an agricultural fair	Shri Hazarilal Ojha

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	at Anta (dist. Baran in Rajasthan), where local agricultural scientists (KVK, Baran) appealed to the people to develop a machine that could deliver fertilizer and seeds in single operation but at different depths, may be which is suitable for hard black soils. He took it as a challenge, as he was already familiar with the operation of agricultural implements. He did intensive work on the problem for 1 year and developed a bullock-drawn two-boxed seed-cum-fertilizer drill. His machine comprises three main parts, viz. box, cultivator and arm wheel. This machine is able to drill fertilizer and seed together but delivers them separately in a single drive and also at different depths. The cost of his machine is Rs 16,500. Virtues of his machine are the followings: (1) This machine, on examination by scientists at KVK (Baran was found efficient enough and received appreciation by them as well as the farmers. (2) Demonstration of this machine made before several agricultural engineers and experts earned their satisfaction about its performance. They considered it a useful innovation. (3) His machine saves not only seed and fertilizer but also supports optimum growth of seedlings. Keywords: seed, fertilizer, drill, roots, single operation, box	
2956 Aan«i/-tilting bullock cart	Shri Amrutbhai Agrawat of Junagadh district in Gujarat conceived the idea of a bullock cart similar to a municipal dumping truck with a hydraulic system for lifting the body. In such a system, the body of the cart tilts gradually so that the compost falls directly into the furrows uniformly. The cart has four	Shri Amrutbhai Agrawat, Pikhor, Malia - Hatina, Junagadh (Gujarat) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		wheels and a harness-rotating device that enables the bullocks to negotiate sharp bends easily. It is available in three different models of two wheels, three wheels and four wheels. The advantages are the followings: (1) The four-wheel base equalizes the load on the cart and thereby prevents the yoke gall formation on the neck of bullock. It also makes the cart a more stable and safe system of material transportation. (2) The non-hydraulic innovative tilting mechanism saves the task of unloading the material manually. (3) Improved brake system reduces the tension on bulls in slopy and hilly areas. (4) Its total iron body (except yoke and wheel) makes it more durable compared with traditional wooden carts. (4) The pneumatic wheel makes it easy to pull the cart. (5) Full turning mechanism provides high manoeuvrability, and increases the efficiency and performance of the cart while operating in congested areas. (6) It has adjustable outlet mechanism for unloading the material at the target place, directly. (7) It has improved designs of yoke and collars for animal comfort. (8) *Aaruni* reduces the drudgery of bullocks and hence makes the life of the animal easier. It is the only eco-friendly cart available in the market. (9) It can also be attached behind a tractor or any other vehicle as trailer for transportation of goods. (10) The design and dimensions of the cart can be modified as per local needs. (11) *Aaruni* cart can perform alternative functions in the industry like transportation of material due to its additional features. (12) NABARD has approved the unit cost of the cart, which will enable buyers to get loans	

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		from any scheduled bank. **Key words:** cart, sharp twin, yoke gall, transportation, unloading *Aaruni*	
2957	Multipurpose contraption	Shri Mulubhai of Junagadh (Gujarat) has more practical knowledge in the area of farm machineries and is always trying to fabricate the implements or machine by himself rather than buying them from the market. The increasing cost of cultivation through conventional big tractor and maintenance cost of bullocks forced the farmers to look for alternative ways. Shri Mulubhai has assembled the small contraption by using stationary engine and gearbox of matador-307. The engine and gearbox are installed on self-fabricated chassis having four-wheel base. The unit is equipped with facilities like steering, brake system etc. to operate the vehicle. The unique feature of this machine is the spraying mechanism, comprising a pressure pump (ASPEE) and fabricated booms attached with nozzles on both the sides of the machine. The pump can be operated through engine and creates sufficient pressure as a result of uniform spray. This small contraption also has provision for attachment of small farm implements behind it to perform normal agricultural operations like shallow ploughing, interculturing and sowing. Virtues of the machine are: (i) small and compact machine, having multiple applications in farming along with easy maneuvrability, low maintenance cost and fuel economy, (ii) 4.5 HP engine is used to drive the tractor (the tractors available in the market are at least with 18 HP engine) and (iii) it has very high fuel efficiency, which is	Shri Mulubhai Senjaliya, Valvi, Junagadh (Gujarat) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

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		claimed to be one litre diesel/ha of cultivation. Keywords: tractor, transport, steering, nozzles	
2958	Low-cost milking machine	Shri V. A. Johnny of Ernakulam (Kerala) has developed a low-cost machine to milk the cows easily without causing them any irritation, and to reduce labour. No electricity is required to operate this milking machine and it can give relief to the cattle. The machine consists of a pump attached with hand lever, milk bottle and transparent plastic tube attached with four cup shaped rubber bushes, connected with air valves. One end of the pump is attached to the udder and other to the milk bottle. It is a simple machine, working on the principle of vacuum. When the lever is lifted upwards, the milk will get released through the udders and will get deposited in air valve through the attached plastic tubes. As the lever is pushed downwards, the stored milk in the air valve will flow through the tube to the milk bottle. Milk is drawn from the udders only when the lever is lifted upwards. The process of milking can be seen since, transparent pipes are used, and one can stop pulling the lever when the milking is over. It is low-cost machine, easy to handle and operate. Currently it is used by more than 20 farmers of the village and it is recommended by the experts. Keywords: transparent, lever, udder, milk	Shri V. A. Johnny, Vithayathil House, Kozhipilly, P.O. Kothamangalam, dist. Ernakulam (Kerala) 686 691
2959	Cow washing device	Shri Vijay Kumar of Shree Balaji Farm, Bangalore, has developed a portable cow-washing device, with which, even an aggressive and furious cattle can be washed without any risk.	Shri G. Vijay Kumar, Shree Balaji Farm, village Atur (Bangalore) Facilitator: National Innovation Foundation,

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		Using this instrument a cow can be washed within 10-15 min. and minute insects, ticks, lices can be washed away as well. The machine is designed like an octopus with tentacles. It is low-cost, portable device, which can be easily assembled and disassembled. The device is attached with the bore-well on one side through a pipeline. Another line is connected to this pipe, which has a small control valve and a small reservoir-like portion called octobot. From this octobot three hose-pipes are drawn out. One of these hose pipes goes to the top and rest two on both the sides. The pipes are perforated, so that spray water comes out of it. The perforated pipes can be adjusted according to convenience. Thus when water is sprinkled from three sides on an animal, proper cleaning is possible quickly. The washed water can be diverted towards the farm. Keywords: cow washing, octobot, aggressive, ticks, lices, portable device	Ahmedabad (Gujarat) 380 015
2960	Palm and coconut leaf mat-weaving machine	Shri T. S. Pasupathy Marthandam of Tirunelvelli (Tamil Nadu) has developed a new machine for speedy weaving of mats from palm and coconut leaves. The machine comprises a frame, two palm-leaf folders, a roller, a cross-pave section, and two pedal leaves on both sides (left and right). The machine can be made to operate either by pedal or by handle, though the basic design of the machine remains the same. It can be adjusted for either criss-cross knitting or V-shaped knitting. It enables skilled operator along with an unskilled person to produce 6 mats of 2 x 4 feet in 1 hr. With a capital investment of Rs 10,000 and working capital of	Shri T. S. Pasupathy Marthandam/SRISTI, Research Centre, Anandha Rural Industries, Research Centre, Kultam, Radhapuram, Tirunelvelli (Tamil Nadu) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		Rs 2,500 for leaves, one can earn a net income of Rs 75/day (calculated after depreciation, interest on capital, rent, maintenance, sales tax etc.). Virtues of this machine are as follows: (1) This machine would help ease the drudgery, increase the quality and productivity thus help earn more revenue. (2) The machine is easy to operate, cheap and highly efficient in producing quality mats. (3) It is used for packing items like fish, matches and jaggery. **Keywords:** palm, coconut, leaf-mat weaving, packing	
2961	Spathe-cutting instrument	Shri R. Muruga Selvan of dist. Thoothukudi in Tamil Nadu has developed a cutting spathe instrument for palmyra tree *(Borassus flabelliformis)*, which secretes sweet juice from which black sugar is made. The instrument has a long rod, having a knife. The rod is connected with an electric motor through wheels having teeth. The motor is connected with a timer circuit, through which a DC current of 12V is passed. A small plastic box is attached around each spathe. Another plastic box is attached at the bottom of the tree. The boxes are joined with a PVC pipe. The DC current is passed through the circuit. The timer circuit allows the current to pass to the motor 3 times a day. Thus the rod rotates and the knife cuts a small portion of the spathe. Due to this more juice comes out from the spathe and gets collected in the plastic box. When the upper box is filled, it is diverted to the bottom plastic box through the PVC pipe without moving up the tree. The cost of assembling the instrument is around Rs 100. Government grants are also available. It is a low-cost instrument, can be	Shri R. Muruga Selvan, 1/80, Soorankudi, Vilathikulam, Thoothukudi (Tamil Nadu) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

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		easily installed, requires no maintenance, and minor repairs can be done by the workers. It saves time and labour, and more juice is collected in less time, without wastage. **Key words:** spathe cutting, toddy, palmyra, knife, black sugar, climbing	
2962	Banana slicer	Shri Joy Augustin of Malappuram (Kerala) has developed a device to slice banana which is useful for making chips and other bakery products. Banana-slicing device have five cylinders to put bananas. There is a holder having spring action in the cylinders to keep banana vertical, and in order to keep banana tight, a spring-load system is attached. With the help of blade set attached on a round plate, banana can be sliced. **Keywords:** banana sliced, bakery, spring, chips	Shri Joy Augustin and T. J. James, Fathima Matha, E.M.H.S., Tirur 7, Pookayil, dist. Malappuram (Kerala) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
2963	Pulley with stopper	Women while pulling up water from a well have to contend with rope burn, fatigue and the prospect of a bucketful of water falling back into the well due to sheer tiredness and inability to continue pulling. The SRISTI organized a brain-storming session with innovators and posed this problem. Shri Amrutbhai Agrawat has come up with an entirely simple yet brilliant solution by attaching a lever or a ratchet on the pulley so that the bucket can be pulled up but cannot fall back down into the well, thus enabling the women to stop for a breather without the fear of previous effort going waste. He has since designed improved versions of the pulley, called Ganga, Jamuna and Saraswati which, are cheap, costing only Rs 150 to 250. **Keywords:** pulley stopper, fatigue, bucket, lever, rachet	Shri Amrutbhai Agrawat Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
2964	Borewell digging with an improved machine	To dig bore-well, the machine is assembled with Lambretta scooter engine. It is functioning well and goes up to 20-50 m deep. It is given to others for hiring and the nearby villagers benefited by using this machine in their fields. Keywords: bore-well, scooter engine	Shri Ramachandra Nilkant Chad, Ranewada, Porye, Sattari, dist. Goa (Goa)
2965	Coir-rope-making	Rope is made of coconut coir. It is prepared locally and used for various households and in farmyard. This also gives good income for the livelihood. Keywords: coir rope	Shri D. Gauns, Porye, Ranewada, Sanquelim, Sattari, North Goa (Goa) 403 505
2966	Wooden plough	Traditional bullock-drawn wooden plough is still being used for ploughing. Plough is made of wood, sometimes made at home or hired on rent. Farmers treat this as sacred and worship this wooden plough and perform pooja, prior to going for ploughing. Keywords: wooden plough	Shri Tato D Gawas, Porye, Ranewada, Sanquelim, Sattari, North Goa (Goa) 403 505

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Post-harvest Technology

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
2967	Post-harvest technology for *tumba (Citrullus colocynthis)* fruits	Farmers of western desert districts take *tumba* as a rainy season *(kharif)* crop. Matured *tumba* fruit has medicinal value for human beings and animals. Oil extracted from its seeds is used for soap industries. Matured *tumba* fruit is also used as animal feed for higher milk production. Farmers of Banner, Bikaner, Jaisalmer and Jodhpur districts of western Rajasthan use the following methods for seed separation from *tumba* fruit: As per requirement, pits are prepared and their walls and bottoms are plastered by mud and cow-dung. In this process seeds are settled at bottom. Seeds are taken out and spread on the ground. After soaking of moisture, seeds are collected and stored. Matured fruits are collected in threshing floor and crushed by tractor movement, which are spread on sand and kept for a few days for drying. Then the seeds are separated from sand by winnowing.Thus separated seeds are filled in bags and are supplied to soap industries and general market for sale. Treatment of *tumba* seeds for human consumption: *Tumba* fruits and seeds are bitter in taste. These are treated with the following methods to reduce bitterness: 1. Separated seeds are filled in small bags and put in irrigation water channels. Due to constant flow of water in channel, bitterness of seeds is	Shri Tej Shengarh, Balsan, dist. Jodhpur (Rajastan); and Shri N. D.Amrawet, Mathania, Mathania, Osian, dist. Jodhpur (Rajasthan)

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		reduced. The seeds are again washed by rubbing in hand. Such treated seeds are ready for human consumption. 2. Small quantity of seed is put in buttermilk for 3-5 days. Such treated seeds are washed in fresh water and used for human consumption. *Tumba*-seed flour is mixed with pearlmillet flour and bread is prepared (locally called mixed *sogra).* Medicinal uses of matured *tumba* fruits for human being 1. Medicinal use of *tumba* creeper root is purgatives. *Tumba* root serves as good purgative, as 5-10 ml root extract is given to elders before taking breakfast. 2. The matured yellow fruits are kept for natural drying. Pulp of the dry *tumba* fruit is used for diabetics. Small quantity of dry pulp mixed with other ingredients or as pure is given to the diabetic persons to cure. Matured *tumba* fruit is taken and *ajwain* and *sendha* salt is poured in the fruit by drilling or cutting a hole. It is kept for drying. These treated seeds are used for stomach pain and gastric trouble. Only teaspoonful is provided to the person, which gives immediate relief. Matured *tumba* fruits are crushed and poured in plastic containers. Diabetic patients crush the fruits by using both legs like peddling a cycle. The exercise is carried for 10-15 min. daily. In this method cut pieces of matured *tumba* fruits are rubbed on the foot sole of diabetic patients. This practice is repeated 2-3 times for 10-15 days regularly or one has to keep continue rubbing on foot sole till he feels bitter taste on his tongue.	

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		Medicinal use of *tumba* fruit for animals Horse and camel keepers generally encounter one deadly disease of stomach trouble of the animals. Fresh matured fruit is taken, a small hole in fruit is made and *sendha* salt and *ajwain* are filled in the hole. It is kept for drying. The treated fruits are given to the animals for curing stomach pain. **Keywords:** *tumba*, post harvest technology, medicinal use, diabetics, purgative, stomach problem	

Grain/seed Storage

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
2968	*Pora (karola)*—a grain-storage structure of bamboo  Traditional grain storage structure *Pora*	Tribal people of village Kantharia of Jhadol, dist Udaipur in Rajasthan use *pora* a grain-storage structure made of bamboo. Kantharia village is situated in Aravalli hills where bamboo is easily available. Therefore bamboo strips are used to prepare *pora* for grain storage. Shri Nanoo Ram disclosed that he is having 70 years old *pora* for storing his farm produce. This *pora* is 6 feet high with 3 feet diameter and have 5-6 q storing capacity. For preparation of *pora*, at least 80 bamboo sticks are required. Inside the house, stone slab is kept on 3 stones. The slabs should be at least 9 inches high from the ground. On the stone slab *pora* is structured. Slurry of cowdung and *gomutra* are pasted inside with the coating of fine ash. Such coating is provided to absorb moisture and repel stored grain pests. Such type of *pora* is cheap, suitable for all weather, moisture-proof, resistance to rodent damage, easy to shift, and covers less space in house. Wheat, rice and maize are safely stored in it for 1 year **Key words:** *pora (karola)*, grain-storage structure, stone slab, cowdung, *gomutra*	Shri Nanoo Ram, S/o Shri Hakra Parmar, Kantharia, Jhadol, dist. Udaipur (Rajasthan)
2969	Grain storage in *chola kuzhi*	*Chola kuzhi*, a grain-storage structure is made by digging a pit at the ground level. Size of the pit is 5 m long and 5 m wide. Cowdung and *thumbai* leaf *(Leucas aspera)* extract are coated along the walls of the pit. Cereals and	Shri V. Punithavathi, 69 Church Street, Erumalainaickenpatty, Devadanapatty (via, Periyakulam), Theni (Tamil Nadu) 625 601

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		millets are stored and the opening is closed with lid. This is considered as the best practice. **Keywords:** *chola kuzhi*, cowdung, *thumbai-leaf* extract	
2970	Storage of wheat by using lime	To protect wheat from storage pests, 100 g lime is placed in 1 q wheat. By using this practice, wheat can be stored for about 1 year. This ITK is practised in Nitoie village in district Bareilly of Uttar Pradesh. **Keywords:** wheat storage, lime, storage pest	Shri Khubi Ram, S/o Shri Hulasi Ram. Nitoie, Bhmora, dist. Bareilly (Uttar Pradesh)
2971	Storage of grain by neem *(Azadirachta indica)* leaves	Farmers of Khai Khera village in district Bareilly of Uttar Pradesh keep 3 kg neem *{Azadirachta indica)* leaves in lq grain, which keeps the grain safe for minimum 1 year. **Keywords:** neem, grain	Shri Krishna, S/o Shri Ghasi Ram, Khai Khera, Rithoura dist. Bareilly (Uttar Pradesh)
2972	Use of crushed pepper to increase the storage quality of rice	This practice is used for increasing the quality of rice in storage. In this practice about 50 g pepper is packed in a muslin cloth or ordinary cloth. This packet is placed in rice grain. Pepper smell drives away any storage pest. **Keywords:** crushed pepper, keeping quality	Shri P. Krishnamoorthy, 92-B State Bank Colony, Secretary, CENARD. Batlagundu. Nilakottai, Dindugul (Tamil Nadu) 624 202
2973	*Tatho*—a rice-storage structure	*Tatho* is made of bamboo sticks and cowdung is applied to seal hole. It can be used as sheet or sometimes rolled into a structure shown in fig. Paddy or rice can be stored. Sometimes as a sheet it can be used for drying also. **Keywords:** *tatho*, rice, storage, cowdung	Shri Samarjeetsingh Rane, Porye, Sattari, North Goa (Goa) 403 505
2974	Control of rice moth in stored gains	There is a great loss of stored paddy grains due to rice moth in Assam, which also deteriorates the quality. Use of chemical or synthetic pesticides for preserving stored grains is	Shri Siwas Mousam Borah, Bipin Phukan (Assam) Facilitator: National Innovation Foundation,

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		injurious to health. Therefore Shri Siwas conducted an experiment to check the effectiveness of herbal plants to control the rice moth and other pests in stored grains. In this experiment, leaves and branches of *Croton tiglium (konibih)* and *Azadirachta indica (mohaneem)* are mixed properly, and are spread at the bottom, between and at upper surface in the stored paddy grains. **Keywords:** moth, stored grain, neem, *konibih*	Ahmedabad (Gujarat) 380 015
2975	Use of leaf extract for pulse storage	Pulse grains are normally stored after drying. Leaf extract of *malai vembu {Melia azadirachta)* and *thumbai (Leucas aspera)* are mixed with red soil. This mixture is coated on the grains. It is allowed to dry in shade for 5 days. The dried grains are packed in gunny bags. **Keywords:** pulse storage, *malai vembu, thumbai,* red soil	Shri S. Periyakaruppan, S/o Shri Seeni, North Street, Kachikatty, Thalampatty Vadipatty, dist. Madurai (Tamil Nadu) 625 218
2976	Storage of sesame seeds	After harvesting sesame (Sesamum indicum), good and healthy seeds are selected with care to store them for the next season. Pounded dried chillies (Capsicum frutescens) and dried *bambara* leaves are mixed, and it is kept with sesame seeds during storage. Smell of chilly and *bambara* leaf drive away the storage pests. The smell acts as repellent against any storage pest and disease. **Keywords:** sesame, chillies, *bambara* leaves, insect repellent	Shri M. Jabamala, S/o Shri Micheal Manae Udaiyar, village Madhavalikadu, Thirupurangulam, (via P.O. Venkatakulam), dist. Alangudi, Pudukottai (Tamil Nadu) 622 301
2977	Seed storage in bin	After harvesting, good and healthy seeds are selected with care to store them for next season. To store grains, a storage structure, i.e. bin, is used. At the time of seed storage, *notchi (Vitex negundo),* neem *{Azadirachta indica)*	Shri R. Govindasamy, Peruvalur, Gingee, Villupuram (Tamil Nadu) 604 208

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		and *pungam (Pongamia pinnata)* leaves are mixed. Apart from mixing, a few leaves are spread at the top of seeds. On the top of it, waste paper and paddy straw are spread to cover the surface. **Key words:** seed storage, bin, ***notchi,*** *neem, pungam*	
2978	Storage of paddy in earthen pot	Farmers of Narkuda village of Rajendranagar in district Ranga Reddy district of Andhra Pradesh store paddy in earthen pots. First they dry paddy under the sun and then keep in earthen pot, and put hay at the top and apply cowdung to seal the pot. Nearly 2 kg hay is required to cover. This method of storing paddy costs Rs 250/pot of 50 kg capacity. Nearly 40-50% of the families in the village are practising this technology. The farmers reported that seeds of paddy stored by this method remain viable for 2 years with good quality. **Keywords:** paddy, earthen pot	Shri A. Sankharayya, village Narkuda, Rajendranagar, Hyderabad (Andhra Pradesh) 500 030
2980	Storage of cereals grains in *moond*	Farmers of Kesarpur village of Ajmer (Rajasthan) store cereals in *moond* (a big-sized pitcher, made of black clay soil, sand and lime) by mixing neem leaves and ash. Leaves of neem tree are dried and mixed @ 1 kg to 40 kg grain. This mixture is filled in *moond*, and ash (obtained from fire-place) layer of 2-3" thickness is placed on the upper part. It is kept at a height of 6" from the floor to protect from moisture. Wheat and barley grains are stored from April to October, and grains of sorghum, pearlmillet and maize are stored from October to June. About 50-55% of farmers are adopting this practice. Nowadays some farmers are using diesel drums in place of *moond.*	Shri Buddha Singh and Shri Nath Singh Rawat, village Kesarpura, Peesangam, dist. Ajmer (Rajasthan) 305 001

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		Keywords: *moond*, neem, ash, fire-place	
2981	Storage of pigeonpea seeds in earthen pot	Farmers of Narkuda village of Rajendranagar of Ranga Reddy district in Andhra Pradesh store pigeonpea seeds for good viability. They first dry the seeds in sun, and then mix it with neem leaves and ash. Later they keep it in a pot and seal the pot with a cloth. The seeds are saved by this method effectively from attack of storage pests. After 1 year the seeds are removed from the pot and placed in gunny bag, rubbed vigorously to get rid of neem and ash. The pot of 50 kg capacity and cost of storage per year work out to approximately Rs 250. **Keywords:** pigeonpea, earthen pot, neem leaf, ash	Shri A. Venkataya, village Narkuda, Rajendranagar, dist. RR (Andhra Pradesh) 500 030
2982	Grain storage in *moond*	Farmers of Mayapur village of Ajmer (Rajasthan) store pulse grains (greengram and chickpea) in *moond* by mixing ***bajri*** with the grains. About 5-8 kg ***bajri*** is mixed with 40 kg grain and filled in *moond*, and on top about 2" thick layer is spread. *Moond* is kept at a height of 6" to avoid moisture loss. Chickpea is stored from April to October and greengram from September to June. About 35^40% farmers are following this practice. **Keywords:** *moond*, pearlmillet, chickpea, moisture losses	Shri Kailash Bharti, S/o Shri Gheesa Bharti, village Mayapur, Peesangam, dist. Ajmer (Rajastan) 305 001
2983	Onion storage in *dori*	Onion is stored in a special storage structure, called *dori*, which is made of dried pigeonpea (redgram) twigs. The twigs are dried and cleaned before using it for storage-structure construction. Height and width of this structure are adjusted according to the amount of onions to be stored. Its top is covered with thatch and the	Shri L.P. Veluchamy, B.E., Seepalakottai, Odaipatty, Udhamapalayam, Theni (Tamil Nadu) 626 540

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		structure is placed on stones. By using this storage structure, onion can be stored for 3 to 12 months. To provide good ventilation, this storage structure is built in open space, exposing it to the sunlight. Onions are well protected from insect pests and diseases. **Keywords:** onion storage, ***dori,*** redgram twigs	
2984	Storage of onion on roof top	For safe storage of onion, dried, cleaned and selected onion bulbs are taken along with leaves. This onion bunch is horizontally hanged on the roof top. Onion **is** kept horizontally. This method provides good aeration and keeps onion free from pests and diseases. Hanging of bunches facilitates easy circulation of fresh air, and there is no secondary infection. These onion bulbs are used for sowing as well as for cooking purposes. **Keywords:** onion, roof top	Shri D. Lakshmanan, S/o Shri Duraisamy. Kothamangalam Maiyam, **Maruthan** Street, taluk Alangudi, dist. Pudukottai (Tamil Nadu) 614 624
2985	Onion storage in attic	Onion is stored by a special method, in which dried, cleaned and selected onion is taken for storage. A structure is made of wooden piece of 3 m width and 7 **m** length. Along with it, thatch material is used on which onion is kept horizontally. This method provides good aeration and keeps onion free from pests and diseases. **Keywords:** onion storage, attic, wooden piece	Shri P.M.S. Dhavamani, **S/o** Shri P.M. **Samivel** Nadar, Middle Street, Odaipatly, Udhamapalayam, Theni (Tamil Nadu) 625 540
2986	*Panchpali* made of jackfruit bark for storage	*Panchpali* is a storage device. It is used to store different types of spices in the kitchen. It is made of wood and is easy to handle. **Keywords:** *panchpali*, spice, wood	Shri **Mangala** Kalidas Sawaikar, Tamsuli, Marcela, Ponda, North Goa(Goa)403 107
2987	Earthen pots for cooking and storing the grains	Earthen pots can be used for cooking foods or sometimes to store food items. Normally food cooked in	Shri Tato D Gawas. **Porye,** Ranewada, Sanquelim, Sattari,

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		earthen pots has a very fine and very good taste. Use of mud pots for all traditional storage practices is seen all over India. **Keywords:** earthen pot, cooking, store	North Goa (Goa) 403 505

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Horticultural Crops

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
2988	*Oomono*—a local chilli variety 	Oomono variety of chilli is very popular in Meitei community of Manipur, which has very good aroma and is used during special occasions and some festivals. The chilli is preferred for making *chutney* and pickle. Dried chillies are eaten with fish, which increases its taste. It is extremely pungent and may lead to vomiting and heat in the intestine. This variety is grown more on laterite to gravelly soils of hill-tops. Lowland or waterlogged soil does not suit to it. Single plant may produce up to 30-40 fruits. A well-nourished plant produces good fruiting up to 4 to 5 years. This plant is being cultivated in kitchen garden since ages. **Keywords:** *Oomono*, aroma, pungency, *chutney*, pickle, vomiting, heat	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
2989	Control of sucking pests in brinjal	An extraction is prepared by mixing lkg each of *unnichedi (Lantana camara)*, papaya *(Carica papaya), nochi (Vitex negundo), katralai (Aloe vera)*, and 5 litres cow-urine to control pests in brinjal. It is kept for 1 week in shade. This mixture is sprayed 3 times daily for 10 days in the brinjal field, which prevents sucking pests. This mixture is also applied to the crop after transplanting. **Keywords:** brinjal, *unnichedi*, papaya, *nochi, katralai*, cow-urine, sucking pests	Shri G. Saravanan, S/o Shri V. Guruchamy, Gopalpatty, Vembarpatty, Natham, Dindugul (Tamil Nadu) 624 308

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
2990	Control of fruit-borer in brinjal	About 0.5 kg garlic *(Allium sativum)* and 1 kg green chilli *(Capsicum frutescens)* are taken and ground well. One kg tobacco *(Nicotiana tobaccum)* leaf and a little water are added to this mixture. It is kept aside for 3 days and then 1 litre of this filtered mixture is added with 10 litres of water. This mixture is sprayed 2 times a day for 10 days in brinjal field for controlling fruit-borer. Keywords: fruit borer, brinjal, garlic, green chilli, tobacco leaf	Shri V. Meyyanadhan, S/o Shri Veeramuthu, Maramadakki, Aranthangi, Pudukottai (Tamil Nadu) 614 622
2991	Treatment for leaf-curl virus in chilli	Farmers of village Nadi-II in district Ajmer of Rajasthan take 2 kg tender stem of *khimp (Leptadenia spartium)* bush (xerophytic) and immerse it in 2-3 litres water for 1 week. Afterwards it is filtered and double the quantity of water is added to this *khimp* solution. In the evening this mixture is sprayed over the affected crop. This solution is effective in the nursery stage. About 30% farmers are using this wisdom since 10 years. Keywords: *khimp*, leaf curl virus	Shri Roopchand Khar/ Shri Lala Ram Khar, village Nadi-II, Peesangam, dist. Ajmer (Rajastan)
2992	Control of blight in cumin seed	Farmers of Kesarpura village of Peesangam in dist. Ajmer (Rajasthan) take 1 kg leaf of tobacco *(Nicotiana tabacum)* and soak it in 5 litres water overnight. After filtering, this decoction is sprayed in 0.166 ha (1 /6th ha) (1 *bigha).* It is sprayed twice, first on 40 days old crop and second time on 55-60 days old crop. About 40% farmers are following this practice since 10-15 years. This ITK is effective at initial stage of disease. Keywords: tobacco, cumin seed, blight	Shri Kishanlal and Shri Kna Ram Raigar, village Kesarpura, Peesangam, dist. Ajmer (Rajasthan)
2993	Potato cultivation in paddy hay packets with less water	Shri Lingaraj Pradhan of Sundargarh district in Orissa has developed a	Shri Lingaraj Pradhan, Jakeikal, Bowaigarh,

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		method of cultivating potato in paddy hay packets. These hay packets contain soil and cowdung inside and seeds are sown at the periphery, between hay ropes. Roots of potato seed go inside the soil, and leaves come out. Inside the packet potato grows. He applied water of domestic use to it. This method needs no land and no extra irrigation. He now proposes to keep these packets on iron racks, one above the other. He also plans to put wheels to the racks, so that these can be transported to the sun from the corridor. Ropes of 3 to 4 cm diameter are prepared from paddy hays. These ropes are woven to make round packets, called *pura, puruga* or *alia.* These are generally prepared to preserve seeds in village areas. Seeds are generally kept in the centre of the hay-made packets and are closed by ropes. For potato cultivation, compost and soil are kept inside the hay packet and closed by ropes. Between two adjacent ropes of hay, pre-prepared potato buds are placed. Domestic water (after washing hands and utensils) is used on the hay packets. Potato leaves come out from the junction of two ropes and the roots go into the soil inside the packet. After the usual time, potatoes of 10-15 kg are harvested by breaking these packets. Its benefits are as follows: (1) land is required; landless can do it on commercial basis; (2) no extra water is required while washing hand and face, the water can be poured into the packet; (3) no need of de-weeding, as no weed grows and thus full utilization of fertilizers is possible; (4) one can use pesticides in controlled way; and (5) 10-15 kg potato can be obtained	Sundargarh (Orissa) Facilitator: National Innovation Foundation. Ahmedabad (Gujarat) 380 015

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		from one packet. **Keywords:** *pura, puruga, olia*, potato, hay packets, hay ropes	
2994	Potato cultivation in shifting method	The Aadi tribes of Pasighat block in Arunachal Pradesh have developed technology of raising indigenous variety of potato in slopy land under moisture-stress condition. A place with sufficient amount of organic matter and semi-shade condition is identified in the shifting land. In this method furrow is not made. Either the whole tuber (if small in size) or pieces (if big in size) are selected for sowing at an interval of 20-25 cm. After sowing, the soil is covered with organic residues to conserve moisture. After germination, weeding is done. All weeded out materials are put in soil. After weeding, the crop is irrigated by bamboo through drip method. Generally potato is grown on the places adjacent to natural water streams coming from the hill top. **Keywords:** potato, slopy place, shifting land, bamboo drip irrigation	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
2995	*Thrips* white-spot control in	Ash is taken from hearth or fireplace and screened carefully. About 65 kg ash/ha is spread in the field after first irrigation, i.e. 15 days after sowing onion.The same practice is repeated after second irrigation. Almost all farmers are using this practice for 20-25 years. This practice is used in village Nadi II, Peesagam in Ajmer district of Rajasthan. **Keywords:** *thrips*, white spot, ash, irrigation	Shri Teekamchand Khar and Shri Lala Ram Khar, village Nadi-II, Peesangam, Ajmer (Rajas tan)
2996	Control of thrips in onion *(Allium cepa)*	A mixture is prepared by taking appropriate quantity of leaves of *erukku (Calotropis giganta), nochi (Vitex negundo), sothu katralai {Aloe*	Ms. A. Anthoniammal, W/o Shri Arokiasamy, 25, Savariyar Koil Street, Thiruvalarcholai,

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		vera), adhatoda {Adhatoda zeylanica), neem (Azadirachta indica) and *kumatti (Colycynthis vulgaris)* to control thrips in onion. These are pound and mixed with 5 litre cow-urine and kept for 10 days in shade. After 10 days, the mixture is filtered and 1 litre filtrate is mixed with 12 litres of water. This mixture is sprayed 3 times a week for controlling thrips in onion. **Keywords:** thrips, onion	Thiruvanaikoil via, Tiruchirappally (Tamil Nadu) 620 005
2997	Use of tobacco *(Nicotiana* spp.) decoction to control aphids in cauliflower	Yellowish-green nymps and adults suck the sap from cauliflower crop and excrete honey-dews, on which shooty mould grows. About 1 kg tobacco leaf powder is dissolved in 5 litres of water and it is boiled till deep black colour develops. It is left for cooling overnight and the next morning 100 ml solution is diluted in 2 litres water. This is sufficient for spraying an area of 50 sq m. After an interval of 1 week, spraying may be repeated based on the insect population and damage. Farmers of Netajinagar of West Tripura district consider that nicotine content of tobacco leaves has insecticidal properties and the experience shows 70-80% control. This practice is being followed since time immemorial. **Keywords:** tobacco, aphid, spray, nicotine, insecticide	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102
2998	Cultivation practices of *sooran (Amorpholatus companulatus)* 	Areas like Jhadol and Gojunda of Udaipur district (Rajasthan), where rich soil exists are suitable for growing tuber crops. *Sooran (Amorpholatus companulatus)* is *jamikand* grown by tribal farmers. Framers grow it as an intercrop with turmeric, ginger and colocasia for their own consumption and for sale also. *Sooran* contains eyes and usually remains dormant	Shri Trilok Prajapati, Kantharia, Jhadol, dist. Udaipur (Rajasthan); and Smt Pana Bai, W/o Shri Heera ba (near Kalaji-Goraji), Bhat ji ki Wadi, dist. Udaipur (Rajasthan)

Indigenous farming system in Jhadol tribal area of Udaipur district of Rajasthan

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		throughout the year. It springs up before the onset of monsoon in the *Aasadh* (July). Cut pieces having eyes are sown on bunds around field at the end of Aasoj (Oct-Nov.). Cracks in soil appear at full maturity of *sooran* and its leaves turn pale and fall automatically. This is the right time for harvesting. Each *sooran* attains a weight of 2-2.5 kg, and is almost round in shape. *Post-harvest treatment:* Matured *sooran* is cut into small pieces and boiled in water. It is kept overnight and its skin is removed, and then cut pieces are fried in ghee of equal weight. It is consumed by adding a little water and frying (on fire). *Sooran* is being consumed as a tonic in winter and is also offered as *bhoj* to God also. Pregnant ladies are restricted not to consume *sooran.* Keywords: *sooran*, cut pieces	 Indigenous method of cultivation of
2999	Insect-pest control in cucurbits by using neem spray	The people of village Daijar in district Jodhpur of Rajasthan use neem leaves to control sucking pests in summer cucurbits. Neem leaves (10 kg) are dipped in 7-10 litres water, which is allowed to ferment for 7-10 days. Then it is mixed by hand, filtered and stored in containers to use as spray. About 1.5 litres of this solution is mixed in 12 litres water and sprayed in standing cucurbit crop. This is found to be very effective in controlling leaf-sucking insects. Keywords: neem, decoction, cucurbit crop, sucking insect	Shri Bhoma Ram ji Solanki, Daijar, Mandor, dist. Jodhpur (Rajasthan)
3000	Seed treatment for cucurbit cultivation	The people of village Daijar in district Jodhpur of Rajasthan are using this practice since 15 years to treat the cucurbit seeds for proper and better germination. There are a few methods	Shri Bhoma Ram ji Shaulanki, Daijar, Mandor, dist. Jodhpur (Rajasthan)

Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
	of seed treatment of cucurbits, as indicated below: 1. Bitter gourd: Salt (100 g) is dissolved in 2 litres lukewarm water, and 1 kg bitter gourd seed is soaked in it for 12 hr. After this the seeds are washed with normal water and kept in wet cloth. These are ready for sowing. Seeds germinate within 7 days (3 days earlier than without seed treatment). 2. Bottle gourd *(Lagenaria **siceraria):*** About 0.5 kg bottle gourd seeds is dipped in 1.5 litres sour buttermilk for 15 hr. After this, the seeds are washed with clean water and kept in wet cloth. The seeds are used **for** sowing, and they germinate within 7 days instead **of** 10 days. 3. Round gourd *(Tinda):* For the treatment of 1 kg seed, 2 litres cow-milk is required. Seeds are soaked in cow milk for 12-14 hr and then kept in wet cloth and used for sowing. Fruits obtained by this seed treatment are bigger in size and shining colour in comparison with those **of** untreated seeds. 4. Cucumber *(Cucumis melo):* Salt (50 g) is dissolved in water and is heated to make it slightly warm. About 33 g seeds are kept in this water for 10-12 hr. Thereafter these seeds are washed with clean water and kept in wet cloth. It is ready **for** sowing. These seeds germinate within a week in comparison with 10 days taken by the untreated seeds. **Keywords:** seed treatment, bitter gourd, bottle gourd, round gourd, cucumber, salt, sour butter milk, cow milk	

Code No.	Title of the ITK	Description of the **ITK**	Name and address of the discloser/facilitator
3001	Treatment of summer cucurbit *(balam kakari)* seeds for early and better germination	This ITK is followed in village Ram in district Dungarpur of Rajasthan. In this practice summer cucurbits are treated with *mahua* leaves. Earthen pot as per quantity of seeds is taken, and the seeds along with lukewarm water are poured in it so that the seeds get moist. Then the entire quantity of seeds is covered with green *mahua* leaves, and a lid is placed over the opening of pot. It is kept for 3 days. The sprouted seeds are sown in furrows. The seeds germinate early. **Keywords:** seed treatment, summer cucurbit, *mahua* leaves, earthen pot	Shri Deva ji, S/o Shri Kodar Ji Keer, village Rama, Aaspur, dist. Dungarpur (Rajasthan)
3002	Conservation of soil moisture for summer cucurbit cultivation	This ITK is practised by most of the summer cucurbit growers of Palada Moru (Gaaradia Bandh) village in district Dungarpur of Rajasthan. Summer cucurbits are sown in February-March. Seeds are sown around the field in deep and broad furrows at an interspace of 1.5 m. Seeds sprout after 10 days of seeding. Between the rows, clods are broken and the soil is made compact by beating with stick. After 2-3 intercultural operations, this practice is again repeated. Compactness of the soil will not allow the moisture to easily evaporate from the soil. **Keywords:** soil moisture, evaporation, summer cucurbit, soil clod	Shri Nanu Ram, S/o Shri Chaguji Raj Bhoie, Singhara wala, Palada Monu (Ganadia Bandh), Aantri, dist. Dungarpur (Rajasthan) 314037
3003	Breaking the dormancy of bitter gourd seeds by keeping in compost pit	Seeds of bitter gourd are tied in a cotton cloth (intensively woven cloth) and are kept in compost pit up to depth of 4-5 cm. Seeds germinate due to heat of compost in 5-6 days. By this practice 95% germination is achieved and 4-5 days are saved in the field. After taking out the seeds from compost pit, these are placed in shade and moist condition till sowing time in	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		the field. It is an age-old practice being used in villages of Sonapur, Sewta and Hamirpur of district Azamgarh of Uttar Pradesh. **Keywords:** dormancy, bitter gourd, heat, compost pit	
3004	Seed treatment of *bhindi* (ladys' finger)	This ITK is used by the villagers of Daijar in district Jodhpur of Rajasthan for better germination and insect-pest control in *bhindi*. These are methods for seed treatment. 1. Salt-based seed treatment: In 1 litre water, 100 g salt is mixed and it is slightly heated. About 700 g *bhindi* seeds are dipped in it for 14-15 hr. After this the seeds are washed with fresh water and kept in wet cloth, and then sown. These seeds germinate 5 days earlier in comparison with untreated ones. 2. *Cow urine based treatment:* After salt and fresh water treatment, 250 ml cow-urine is mixed in it. Seeds are ready for sowing. **Keywords:** *bhindi*, seed treatment, salt, cow-urine, neem	Shri Shyam ji, S/o Shri Gopal ji Mali, Daijar, Mandur, dist. Jodhpur (Rajasthan)
3005	Use of meat to attract red ants for controlling fruit-sucking moth and trunk-borers in mandarin  Red ants	Farmers of Jorhat tie (with rope) a piece of meat (15-20 g) on branches of mandarin trees to attract red ants toward them. Red ants make their nests on the branches of trees. These are carnivorous in nature. At night fruit-sucking moth and fly attack the fruit, and the red ants become alert to catch these insects for feeding. Red ants kill the larvae of mandarin trunk-borer very easily. This is an age-old practice that is helpful in controlling 20-25% moth attack. **Keywords:** red ant, meat, mandarin, fruit-sucking moth, trunk-borer	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102

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Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
3006	Indigenous method of improving the productivity of banana	*Adi* tribe of Pasighat area of district East Siang in Arunachal Pradesh have developed their own system to increase the yield of banana plant. Most of the banana varieties found are of local type whose peduncles are very large. The fingers on the tip portion of these local cultivars are very thin whereas on the other end these fingers are normally thick. Hence, to lessen the number of fingers per peduncle, these thin fingers are plucked up to one third length of the peduncle. These plucked thin fingers are used for preparing a dish. The fingers are boiled (without peeling the skin) with ginger, spring onion, garlic and local spices. The dish is ready to eat. Sometimes during certain special or festive occasions dried fish is added to this dish, and eaten. By plucking the thin fingers, the yield per plant of banana is increased, and market value of the remaining fingers is also increased due to increase in size. **Keywords:** banana finger, pluck, dried fish, size	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3007	Mulching in banana	To improve the soil fertility in the banana fields, a practice of mulching of crop residues is in use. Crop residues are placed between rows in the banana field, at an early stage. This residues acts as green-manure and increases soil fertility. **Keywords:** mulching, banana field, soil fertility	Shri G. Saravanan, S/o Shri V. Guruchamy, Gopal patty, Vembarpatty, Natham, dist. Dindugul (Tamil Nadu) 624 308
3008	Increasing growth of banana bunch	About 20 ml lime juice *(Citrus Union)*, 20 g cooking charcoal powder, 10 g urea and 20 ml cow urine are taken in a plastic cover, and tied at the tip of the banana bunch. This mixture gives colour, brightness, taste and good formation of banana fruits. If the	Shri T. Sadharajan. S/o Shri Thangavel, P.O. Kothamangalam, taluk, Alangudi, dist. Pudukkottai (Tamil Nadu) 614 624

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		colour and taste are good, banana fetches good price in the market. **Keywords:** banana, bunch, growth	
3009	Use of indigenous mixture for enhancing growth of banana	A mixture is prepared by using 5 litres cow-urine, 5 litres cow-dung, $^{1}/_{4}$ kg local brown sugar and 5 litres water. This mixture is left for 24 hr. In 1 litre mixture, 10 litres water is added and sprayed at the bottom of the tree. This mixture improves the banana-plant growth. **Keywords:** boost up, banana-plant growth, cow-urine, cow-dung, local brown sugar	Shri M. Ganeshan, S/o **Shri** Marutha **Pillai,** P.O. Thanneerpalli, taluk Kulithalai, dist. Karur (Tamil Nadu) 639 209
3010	Control of panama wilt in banana	A mixture is prepared in water by taking appropriate quantity of neem leaves and seed to control panama wilt ***(Fusarium** oxysporum)* in banana. Banana suckers are immersed in this solution for 3 hr before planting. It kills all the pests and disease organisms in the stem. Keywords: *neem*, panama wilt, banana	Shri K. Ravichandran, S/o Shri Kashthuri, Kallar Street, Ayyampalaym, taluk Musiri, dist. Tiruchirapalli (Tamil Nadu) 621 202
3011	Use of indigenous paste for increasing plantain size and taste in banana	This ITK is followed to increase the taste and also to get a uniform size of plantain in the banana field. About 20 g wood ash, 25 ml cow urine and 2 ml water are mixed and applied on the tip of the bunch. Application of this paste was found effective to increase sweetness and bring uniform size of the plantain. **Keywords:** plantain, wood ash, cow-urine, sweetness, uniform	Shri P. Andigonar, S/o Shri Peruinal Gonar, Poovangonar Lane, village Ammapettai, Vadakananthal, Kallakurichi, Villupuram (Tamil Nadu) 606 207
3012	Treatment of mango trees for proper flowering	Flowering of mango depends on proper care of the tree. This is an alternate bearing crop, and sometimes the tree stops flowering, affecting the yield adversely. The reasons may be nutritional deficiency, insect problem or abnormal weather. Mango growers	Shri Trilok Prajapati, Kantharia, Jhadol. dist. Udaipur (Rajasthan); and Smt. Pana Bai, W/o Shri Heera ba, Kantharia, Jhadol present adress: near

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Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		of Jhadol area in district Udaipur of Rajasthan use smoke for mango tree with elephant excreta (2-5 kg) at the time of flowering. Farmers believe that due to this treatment there is proper flowering in tree. **Keywords:** mango trees, elephant excreta, smoke	Kalaji-Goraji Bhat ji ki Wadi, Udaipur (Rajasthan)
3013	Indigenous method of mango plantation	In upper stream of gravelly to stony soil, plantation of mango tree is very difficult. Orchadists of villages Sonapur, Sewta and Hamirpur of dist. Azamgarh in Uttar Pradesh have developed a new technology in which mango is planted alongwith suckers of banana. Both mango plant and suckers are joined with black soil and tied with jute rope. Plant survivability is more than 70% in this method. It is considered that water secreted from the roots of banana suckers help pulverize the hard gravelly soil, and mango plants utilize this water for their growth. After 7-8 years of plantation, banana plants are completely uprooted and the mango tree is allowed to grow. **Keywords:** mango, banana suckers, jute rope, pulverize, water secretion	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat, (Arunachal Pradesh) 731 102
3014	Control of mango stem-borer	Due to attack of stem-borer in mango tree, the tree starts dying, beginning with branches and stem. Stem borer enters the stem or branch and goes on feeding inside, thus making it hollow and later death of the tree. Mango growers of Jhadol tribal area of dist. Udaipur in Rajasthan follow two methods to check this problem. 1. A hole of 12 inches x 9 inches is prepared on upper side of damaged branch or stem, and edible *karanj* oil (5-10 kg) is poured in it. After pouring the oil,	Shri Vardichand, S/o Shri Kesgi Ornes, Pochi, Alkaliya, Kantharia, Jhadol (Rajasthan) Shri Trilok, S/o Shri Kaloo ji Prajapati, Kantharia, Jhadol (Rajasthan), and Shri Chuni Lai, S/o Shri Khem Raj Brahamin, Jhadol (Rajasthan)

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		the hole is closed with clay or mud. Due to bitterness of the **oil,** borers die. 2. Entire stem is scratched from top side to lower side while chopping the stem, *karanj* oil is poured on top of the side, which percolates in all the chopped spots. Thus the oil percolating inside the stem controls the insect damage. **Keywords:** mango stem-borer, *karanj* oil, bitterness	
3015	Fruit bagging in pomegranate to control insects	Polythene bags are tied around the pomegranate fruit at an early stage to control fruit borers and other pests. This practice helps control the pest and borer attack in the fruit. Small perforation in the polythene bags makes easy air flow. **Keywords:** fruit bagging, pomegranate, polythene bags	Shri G. Saravanan, S/o Shri V. Guruchamy, Gopalpatty, Vembarpatty, Natham, Dindugul (Tamil Nadu) 624 308
3016	Practices to control button shedding in palm	Practices are as follows: 1. Dried fish waste and salt is applied. 2. Ash is applied. Ash contains potassium and micronutrients, that helps in reducing the button shedding 3. Burial of banana pseudo-stem in the basins: Banana pseudo-stems and leaves are cut into small pieces and dried in sun and then buried in the basins. 4. Removal of alternate inflorescence: This practice makes available more quantity of nutrients and water to the existing inflorescence. **Keywords:** fish waste, salt, ash, banana, burial, inflorescence	Shri L. B. Singh, Shri S. K. Z. Ahmed, Shri R. Soundrarajan and Shri N Sarangi, Krishi Vigyan Kendra, Central Agricultural Research Institute, Port Blair (Andaman and **Nicobar** Group of Islands)
3017	Control of pests in coconut	Farmers of Andaman and Nicobar Islands follow different practices to	Dr LB Singh, Shri S K Zamir Ahmed, Shri R

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		save their coconut crop from various pests, which are as follows: /. Bud rot disease *(Phytophthora palmivorai)* control in palm Calcium carbonate is burnt and applied along with ash in the basin. Salt and ash mixture is applied after removal of the affected portion in the crown. Bleaching powder is applied on the affected portion. 2. Control of yellowing of leaves in palm Application of crushed onion in the basins is effective. The basin is drenched with cow-urine diluted by adding 10 times water 3. Control of Rhinocerous beetle in palm Beetle is hooked out and the leaf axil is filled with sand, salt and ash. The mixture of neem oil and kerosene in equal proportion is sprayed. Regular cleaning of crown is done. A mixture of neem-cake and sand in the leaf axil prior to onset of monsoon is applied. Castor cake made as a solution in water is placed at different locations in the garden as attractant for the beetles. Five fruits of *mahua* are crushed and mixed with 1 litre rice gruel. The pot containing this mixture is kept under the young trees of coconut to trap the beetle. 4. Control of termites in palm Lime is applied in the soil to prevent the attack of termite on seedlings. The lime paste is applied on the palm to check termite attack on the adult palms. Salt and ash are applied in the planting pit. Small heaps of 20 kg un-decomposed farmyard manure or fresh cowdung per 0.02 ha area controls termite attack. 5. Control of rodents in palm The trunk is wrapped with	Soundrarajan and Shri N Sarangi, Krishi Vigyan Kendra, Central Agricultural Research Institute, Port Blair (Andaman and Nicobar Group of Islands) 744 101

Code No.	Title of the ITK	Description of the **ITK**	Name and address of the discloser/facilitator
		polythene or tin sheets to a height of about 8 feet. This practice prevents the rat from reaching the crown by climbing the palm from ground surface. *Glyricidia (jindabali)* leaves are ground and mixed with cooked rice. After adding a little coconut **oil,** small balls are made. These balls, when consumed by the rats lead to their death. 6. Control of squirrel This practice is followed in Car Nicobar, where squirrels climb up the palm and drink coconut water and damage the fruits. A picture of snake is drawn on the lower portion of trunk of the coconut palms. These nocturnal animals get confused with the figure by assuming it to be a real snake and do not come in the vicinity of the tree. **Keywords:** bud-rot disease, palm, rhinocerus beetle, *mahua*, termite, rodent, *jindabali*	
3018	Use of firewood ash or cowdung ash as a pesticide	Farmers of village Phalseema in district Almora of Uttaranchal use ash of firewood or cowdung to control the pest attack on vegetable crops. Ash is dusted at the flowering stage of vegetable crops to control insects-pest attack. **Keywords:** vegetable crop, ash, firewood, cowdung	Ms. Rama Devi, Phalseema, Hawalbagh, dist. Almora (Uttaranchal)
3019	Mixing brick pieces in the soil around base of coconut tree	About 60-70% farmers of Subhas Nagar, Melaghar, Sunamara, Tripura (West) incorporate pieces of bricks and gravels in the soil around the base of coconut tree up to drip circle, which maintains good aeration (soil remains loose) and conserves soil moisture without any waterlogging. This practice is completed before the bearing of coconut trees. It also checks the washing off of upper nutrient-rich soil.	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		Keywords: brick, coconut, drip circle, good aeration, bearing	
3020	Termite control in coconut field	Waste engine oil is painted on the bark of the tree up to 40 cm height (from the bottom) to prevent termites in the coconut field. **Keywords:** *termite, waste engine oil*	Shri Selva Pandi, Ayyanarpuram, P.O. Ammachiyapuram dist. Theni (Tamil Nadu) 625 531
3021	Rat and squirrel management in the coconut field	Rat and squirrel in the coconut field are controlled by painting black colour on the tree. This painting, which looks like a snake, helps reduce the movement of rat as well as of squirrel on the coconut tree. **Keywords:** rat, squirrel, coconut field, snake	Shri C. Jayaraj, S/o Shri Chinnasamy, Colony Street, Nadupatty, Jayamangalam, Periyakulam, Theni (Tamil Nadu) 625 603
3022	Coconut plantation in the waterlogged area	In the waterlogged area, bund is raised with a breadth of 2 m and 1 m height. Coconut *(Cocos nucifera)* tree is planted on the bunds. Waterlogging on either side helps get a good coconut yield. **Keywords:** coconut plantation, waterlogging, bund	Shri N. Kannu, S/o Shri Natesan, village Murugapatti, P.O. Karur Main Road, taluk Trichy, Tiruchirapalli (Tamil Nadu) 620 101
3023	*Rhinocerous* beetle management in coconut by using palm toddy	This ITK is being used to control *Rhinocerous* beetle *(Oryctes rhinoceros)* in the field. About 5 litres palm *(Borassus flabellifer)* toddy is taken in a mud pot and is kept in the field at a distance of 30 m depending on the size of the field. Due to pungent smell of toddy, beetles get attracted towards this solution and get caught. **Keywords:** *Rhinocerus* beetle, coconut, palm toddy, mud pot, pungent smell	Shri R. Pandi Durai, S/o Shri Rangasamy, Ammapettai, Sathyamangalam, Kulathur, Pudukkottai (Tamil Nadu) 622 501
3024	Control of Rhinocerus beetle in coconut by applying salt and turmeric mixture	About 250 g common salt and 100 g turmeric powder (Curcuma longa) are mixed well. This mixture is sprayed at the top of the tree to control *Rhinocerus (Oryctes rhinoceros)*	Shri P. Andikonar, S/o Shri Perumal Konar, Poovangonar Lane, Ammapettai, Vadakananthal,

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		beetle in the coconut tree. **Keywords:** rhinocerus beetle, coconut, salt, turmeric powder	Kallakurichi, Villupuram (Tamil Nadu) 606 207
3025	Prevention of rat attack in citrus fruits	In Pithoragarh district, citrus fruits are produced on a large scale. The fruits are severely attacked by rats, which cause heavy yield losses. To prevent rats climbing the citrus trees and damaging the fruits, pine needles are tied on the trunk of the citrus tree at 1.5 to 2 feet above the ground. The sharp pine needles create an obstacle for the rats to reach the fruits. This ITK is followed in village Agaion of district Pithoragarh in Uttaranchal. **Keywords:** citrus, rodent, pine	Shri Dinesh Chandra Pant, Agaion, Didihat, dist. Pithoragarh (Uttaranchal)
3026	Use of *pongamia* leaves for higher productivity in custard apple	Farmers of village Narkuda of Rajendranagar of district Ranga Reddy in Andhra Pradesh apply leaves of *pongamia* @ 10 kg/custard apple tree in tree basins for getting higher productivity. By doing so, the plants remain healthy and produce flowers and fruits of bigger size. The farmers consider that these materials are useful to conserve the moisture and control the weeds during rainy season, besides having utility as manure. Very little expenditure is involved in this method, as *pongamia* plants are available on the field boundaries. Nearly 10% of the people in the village are practising this technology. **Keywords:** *pongamia*, weed, manure	Shri A. Sankharayya, vilage Narkuda, Rajendranagar, district RR, (Andhra Pradesh) 500 030
3027	Control of fruit-borer in vegetable crops	Mixed cropping of sorghum (Sorghum bicolor) and *cumbu (Pennisetum typhoides)* is done in the vegetable fields as trap crops for controlling fruit borer. In the field where brinjal, tomato, beans and chillies are grown, fruit-borer can be controlled by this method. When birds get attracted to	Shri K.I. Pitchimuthu, S/o Shri Innachi, Meicalpalayam, Nilakottai, Dindugul (Tamil Nadu) 624 215

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		the grain of sorghum and *cumbu*, they feed on the fruit borer. **Keywords:** fruit borers, vegetable crops, mixed crop, sorghum, *cumbu*	
3028	Trap crop for fruit-borer management	In orchards, fruit-borer is a menace. To control it, growing of castor plant as a trap is in practice. Fruit borer (Spodoptera litura) prefers castor. Young larvae that get stuck in castor leaf are removed later. **Keywords:** trap crop, fruit borer, castor	Shri P. Chinnasamy, Ayyanarpuram, Ammachiyapuram, Theni (Tamil Nadu) 625 531
3029	Control of fruit-borer in tomato	When tomato comes to maturity stage, attack of fruit borer is common. To control this, hen and cocks are allowed in the field to feed the larvae, both in the evening and morning. **Keywords:** fruit-borer, tomato, hen, cock	Shri K.I. Pitchimuthu, S/o Shri Innachi, Meicalpalayam, Nilakottai, Dindugul (Tamil Nadu) 624 215
3030	Mushroom cultivation by using *shisore* tree wood	*kadi* tribe of Pasight (Arunachal Pradesh) cut branches of *shirsare (Albizzia procera)* tree and spread it in furrow for decomposition during rainy season. Some organic materials which contains more amount of twigs and leaves, are spread over these cut branches (1 month later). It takes 10-15 days for the germination of local mushroom species, which are non-poisonous. **Keywords:** mushroom, *shisar*, non-poisonous	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102
3031	Cultivation of *singhada* (water chestnut)	Traditional cultivation of *singhada* prevailed in perennial rain water-harvested bodies in *{talab*, tank) in Udaipur, Dungarpur, Banswada, Chittorgarh, Bhilwada, Ajmer, Jaipur, Alwar, Bharatpur and Pali districts of Rajasthan. *Singhada* has economic, social, religious and ethnic food values. Traditionally Keer community	Shri Nanu Ram, S/o Shri Chaguji Bhoie, Singhara wala, Padla Moru (Ghardia Bandh), Aantri, Dungarpur (Rajasthan) 314 037, Shri Pema Ram Prajapati (Manda Neemali), Shubha

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		in all these districts is cultivating it by following technique of cultivation: 1. Traditional method of seed selection The growers reported that in Kartik month (November.) fresh crop arrives in vegetable market. *Singhada* growers select matured seed from the lot by putting green and fresh selected *singhada* in water-ful bucket. Floating seeds are being discarded and settled at bottom are kept as new seed for next crop. Locally there are three species found in the area. (a) *Soonthia:* This is a hard species, preferred for drying *singhada*, having green or red coating. This is being consumed after boiling. This species is found in Maharashtra, Gujarat and Udaipur region. (b) Green skin coated and of small size: This species is prevalent in Raipur area of Pali district of Rajasthan. It is more sweet in taste in comparison with other species. (c) Red skin-coated with medium size and moderate sweet in taste. It is being grown in Kekari of Bhilwara district of Rajasthan. (d) *Singhada* dull green skin coated is bigger in size in comparison with all other species. This is not so sweet in taste. It is ultivated in U.P. and adjoining areas of Delhi. 2. Traditional method of seed treatment and preservation Green and fresh *singhada* seeds selected in November are kept in earthen pots or pitchers. Every week water of the earthen pot is	Nagar-A, Kumharo ka Bas, Pali (Rajasthan), Shri Chotu Lai Keer, Bhamudar, Jahajpur, Bhilwara (Rajasthan), Shri Hari Singh Rajput, Paroli, Kotari, Bhilwara (Rajasthan); and Shri Ramesh Khema ji Keer, Bhadesar (Keero ki Dhani), Chittorgarh (present address: Mans Talab, Jhadol, Udaipur (Rajasthan)



Small and green skin coated *singhada* species of Raipur, Pali, Rajasthan



Small red skin coated *singhada*

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
	Green hard skin coated *singhada*	replaced by fresh water from November to March or up to *Holi*, for 4—5 months. Some growers keep the seed in small pits having mud and stagnant water. 3. Traditional method of propagation *Singhada* is cultivated in rain-water bodies on rental or contractual basis. Generally seed rate varies from grower to grower of the area. It is being kept 12 to 60 kg/ha basis. The following techniques are followed for its propagation: (i) In Pali and other places some growers select the fresh seed and broadcast it thinly on standing water in perennial rain water-harvesting bodies, where they are assured to have water up to the beginning of the next rainy season. That germinated seed starts floating in March-April (around *Holi).* (ii) Majority of growers use treated and germinated seed kept in earthen pots. They broadcast thinly in standing water for tank or talab. Germinated seed takes the form of a vine and start spreading and floating on water. (iii) In Dungarpur district, Keers of village Ghada Moria mentioned that in October- November they select seed by putting green and fresh *singhada* in water. Those settled in water are selected for seed purpose. They fill the selected seed in gunny bag and put it in standing water for 10-15 days, so that they may germinate. They do the sowing in nursery, where water remains standing at least up to March or *Holi* festival, or they try to keep water in *singhada-nursery* plot. During this period vines grow up to 3-4 feet length. Well-grown vine shorts *(tanta)* are transplanted in water reservoirs or talabs. While transplanting care is	



Green hard skin coated *singhada*

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	taken that root of the vine is properly pressed in the tank-bed soil. Sometimes they tie small pebbles with the roots at transplanting spot. They also use bamboo stick for proper pressing of vine root in the tank-bed soil, so that the vine establishes well and starts spreading on the water surface. Thus crop starts to give *singhada* in October-November. (iv) In perennial tanks *singhada* can be cultivated. For the first time it introduced through vine shorts *(tanta).* Farmers purchase 6-10 q/ha vines @ Rs 1,000/q and do planting in the standing water as described. (a) For transportation of vines, care is taken that while packing the bundle of each vine is prepared with a bunch of leaves, called *chada*, and these are packed in bags. The quantity of each bundle depends on area. These are planted in an area where water remains up to onset of monsoon and fresh rain water accumulates. (b) Their planting is done by putting a knot at the root side of the vine. A bamboo stick is bifurcated at one end and with its help the knot side of vine is pressed in tank-bed soil in standing water, and plant the vines in water as per their length. The *chada* bunch of leaves is kept outside the water. If tank becomes dry or water is withdrawn, these are retransplanted to another standing water-body. (c) Timely weeding is done. Mainly water algae are taken out of the water surface and	

Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
	other water-weeds are removed from the tank-bed soil. The process is repeated till the accumulation of fresh water in the pond. (d) As per the knowledge of growers, red beetle causes heavy damage to the shoots. It is controlled manually, or the traditional method of spreading the ash of of cow-dung cake *(aarnia chana)* mixed with ash collected from funeral place of dead bodies (cremation ground or *Marghat)* is followed. Ash act as a repellent, and the insect migrates to other host plants. (e) Growing vines are cared properly and allowed to spread on the water surface. (f) New vines are introduced only in the water bodies where water remains most of the time undisturbed. Too much water waves damage the *chada.* 4. Traditional way of harvesting raw and ripened singhada In the traditional method, white flowers appear on *singhada* vines in *bhado* and *aasoj* (August-September), *singhada* fruit formation takes place around *sarad (aasoj),* and it matures around *Diwali* (October-November) or *kartik* month. Picking is done twice a week on rotational basis, and is continued up to 8 weeks, lasting up to *Kartik* or November. For picking of *singhada* from the spreading or floating vines in deep water, the growers adopt own ways or approaches, e.g. (a) In mango-growing areas small	

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	boats of mango wood of 4-6 feet length with $2^{1}/_{2}$ feet width and $1^{1}/_{2}$ feet depth is used for *singhada* collection. One person can collect 60-100 kg *singhada* in a day from the floating vines. (b) In other areas a floating structure *garnai* is prepared by tying 2 earthen pots downward with 2 bamboo sticks, having length of 7-8 feet. At both the ends earthen pots are kept. *Garnai* remains floating on water. One person sits in the center and collects *singhada* in earthen pot kept with him. (c) Now-a-days people collect raw *singhada.* While using rubber tubes, they float with the help of tubes and pluck the raw *singhada*. (iii) Traditional method of collection of matured *singhada* in water Generally after 7-8 pickings *singhada* vines die naturally. Growers prefer to take raw *singhada* to vegetable market for sale to fetch good price, or they allow the *singhada* to ripe on the vine. Kartika month or November when all the vines dry and *singhada* floats in water and settles down on the tank-bed. The farmers have evolved an indigenous way to collect *singhada* by using *Bardan* or gunny bags. *Bardan* having length of 7-10 feet and 4-5 feet width is tied with a string and finally is tied with boat or *gharnai.* Some small stone is tied or put at both the sides in the middle and at the end of *bardan* or gunny bag. This adjustment should have tapering position. Collections are done from one corner to the last corner of the water-body. Most of the *singhada*	

Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
	attaches with *bardan*. This practice is repeated thus *singhada* float in water are being collected. These are exposed to sun-rays for natural drying. Hard coating of dried *singhada* is removed by slight beating and sold in the market. Its consumer uses in different ways are: (i) in marriage ceremony *singhada* are being distributed as symbol of happiness; (ii) ladies prepare *sugar* of *singhada* flour in butter, oil and sugar; (iii) consumed by ladies as a remedy of gynaecological problems; (iv) for worshiping, *singhada* is also used; (v) ripened raw water chestnuts are consumed; and (vi) *phoola* is prepared by roasting *singhada* in hot sand and it is used during worship in temples. (vii) Dry *singhada* is crushed to powder form, and then singhada *savaia* are prepared. It is used as *sagar* on fasting days. 5. Economics of singhada cultivation As per rough estimates of growers, its cost of cultivation is about Rs 50,000/ha. This includes contractual charges paid for tank, seed; vine cost or care, and picking also. Returns depend on many factors. In the market price fluctuation is very severe. Returns may vary from Rs 1 lakh to 1.5 lakhs/ha. Besides, *singhada* growers do the cultivation of cucurbits under preserved moisture in tank-bed, soils and keeps themselves busy for the entire year. Keywords: *singhada* (water chestnut)	

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3032	Horti-silvicultural system for sustainable production of fruits, vegetables, spices and timber	Aadi tribes of many villages such as Balek and Nait of Pasighat block in Arunachal Pradesh have developed horti-silvicultural system for conserving and utilizing the natural resources. The slopy land where soil is shallow and yellowish black is chosen for planting pineapple, litchi, plum, pear, peach, jackfruit, lemon, lime, pummelo, *sisar* (timber tree), bamboo, *tejpatta (Cinnamomum tamala),* and vegetables like mustard and beans. In the border, bamboo and timber species are planted as they check soil and water erosion. Simultaneously between the plants on border, broomgrass and lemongrass are planted, whereas some farmers plant *Lantana camara* to avoid entrance of wild animals. In the second line of the border, plum and peach are intercropped with lemon, lime, pummelo *(Citrus decumena)* and *tejpatta (Cinnamomum tamala).* In the third line, pineapple is planted with local variety of litchi and jackfruit. After an interval of 3—4 years pineapple is uprooted and after making small pieces it is mixed with the soil to improve the organic matter content of the soil. **Keywords:** sloppy land, *sisar*, pummelo, *tejpatta*	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3033	Using local fruit trees for sustainable waste land management	The farmers of Sikar, Jaipur and Tonk districts of Rajasthan have identified different utility plants according to soil condition in relation to texture, structure, reaction, gradient, nutrient pattern and water stress with the climatic conditions of the locations. The prominent fruit species selected by the farmers have characteristics of surviving under low-fertility and moisture-stress conditions of soil atmosphere. The prominent fruit	Dr Dheeraj Singh, Assistant Professor (Pomology) and Dr Ranjay K. Singh, Asstt. Professor (Agricultural Extension and Rural Sociology), College of Horticulture and forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 761 102

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		species for wasteland under arid conditions are *jharberi (Ziziphus nummularia), bordi* or *her (Ziziphus mauritiana), ker (Capparis dicidua)* and *gonda (Cordia myxa).* The farmers of semi-arid conditions have a lot of choice like guava, custard apple, pomegranate, bael *(Aegle marmelos),* tamarind, *khirni (Manilkara kauki), jamun (Syzygium cumini)* and datepalm. In extreme arid conditions the fruit plants like *her, ker, Opuntia* are grown. Custard apple, pomegranate, guava and aonla are successfully grown under medium-rainfall conditions. For saline and alkali soils prominent fruit plants grown by the farmers are datepalm, *ber, aonla (Emblica officinalis),* bael, *jamun,* guava, *karonda,* mulberry, *phalsa (Grewia subinaequalis)* and *gonda (Cordia myxa).* **Keywords:** wasteland, utility, plant, semi-arid, arid	
3034	Bamboo case	Basket made of bamboo is used to protect chicken and hen at home. Baskets of different types made as shelter for chicken and hen growers. Size and shape may vary and is usually less expensive **Keywords:** basket, bamboo, hen	Shri Narvra Wadarbhat, Porye, Padwalkar, Bicholim, North Goa (Goa) 403 505

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Veterinary Science and Animal Husbandry

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
3035	Use of barley flour and *shisham (Dalbergia sissoo)* leaves for treatment of dysentery in animals	A paste is prepared by 500 g *shisham* leaves and mixed with 500 g barely flour and water. It is given twice daily  *Dalbergia sisoo* to cure dysentery in animals. This ITK is practised in village Sundyaba in district Bareilly in Uttar Pradesh. Keywords: dysentery, animal, barley flour, *shisham* leaves	Shri Chhatwar, S/o Shri Mulchand, Sundyaba, Haphijganj, dist. Bareilly (Uttar Pradesh)
3036	Cure of dysentery in animals by using *karela* and onion	Small pieces are cut from 250 g *karela (Momordica charantia)* and 250 g onion, and given orally to animals twice daily. The dysentery is controlled. This practice is followed in village Maheshpur (Shivsingh) of district Bareilly in Uttar Pradesh. Keywords: dysentery, animal, *karela (Momordica charantia)*, onion	Shri Mohan Lai, S/o Shri Dhani Ram, Maheshpur (Shivsingh), Bhairpura, dist. Bareilly (Uttar Pradesh)
3037	Treatment of dysentery in animals by *samer (Ceiba pentandra)* and flour	For treating dysentery, a paste is prepared by mixing 100-150 g *samer* and flour. This mixture is given twice daily to the animal; dysentery is cured	Shri Tota Ram, S/o Shri Chandan Ram, Nitoie, Bhmora, dist. Bareilly (Uttar Pradesh)

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		in a short time. This practice is followed in village Nitoie of district Bareilly in Uttar Pradesh. **Keywords:** dysentery, animal, *samer*, flour	
3038	Cure for dysentery in animals by feeding barley paste	This ITK is followed in village Nitoie in district Bareilly in Uttar Pradesh. About 500 g barley paste is prepared by mixing some water. This is given twice daily to the suffering animal. **Keywords:** dysentery, animal, barley paste	Shri Lala Ram, S/o Shri Tika Ram, village Nitoie, Bhamora, district Bareilly (Uttar Pradesh)
3039	Treatment of dysentery in animal by *dudhani* plant	People of village Khiraka in district Bareilly of Uttar Pradesh use this ITK for treatment of dysentery in animals. A paste of *dudhani* plant (50-100 g) is prepared and given to the animal twice daily. **Keywords:** *dudhani*, dysentery	Shri Sher Singh, S/o Shri Ram Chand, Khiraka, Auadh, dist. Bareilly (Uttar Pradesh)
3040	Treatment of dysentery in animals by using *aru (Prunus persica)* and *shisham* leaves	A paste is prepared by leaves of *aru* and *shisham* (each 250 g) and mixed with 1 litre water. It is given twice daily to animals. This ITK is useful to cure dysentery in animals and is used by the people of village Kamua Kala in district Bareilly of Uttar Pradesh. **Keywords:** dysentery, *aru* and *shisham* leaves	Shri Veer Singh, S/o Shri Inderjit Singh, Kamua Kala, dist. Bareilly (Uttar Pradesh)
	 Am leaves		
3041	Use of rice starch and *kharia* soil for treatment of dysentery in animals	People of village Khiraka in district Bareilly of Uttar Pradesh use rice starch and *kharia* soil for the treatment of dysentery in animals. About 100 g	Shri Rajender Prasad, S/o Shri Ganen Lai, Khiraka, Auadh, dist. Bareilly (Uttar Pradesh)

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		kharia soil is mixed with 250 g rice starch and given twice daily to animals. The dysentery in animals is fully controlled. **Keywords:** dysentery, animal, rice starch, *kharia* soil	
3042	Use of *andawali* flowers to control dysentery in animals 	For treatment of dysentery in animals, 5-7 *andawali* flowers are fed to the animal twice daily. The animal is cured within a day. This is practised in village Maheshpur (Shivsingh) of district Bareilly in Uttar Pradesh. **Keywords:** dysentery, animal, *andawali*	Shri Rajendra, S/o Shri Babu Ram, Maheshpur (Shivsingh), Bhairpura, dist. Bareilly (Uttar Pradesh)
3043	Treatment of dysentery in animals with *shisham* leaves	*Shisham* leaves might have anti-dysenteric medicinal value. About 500g *shisham* leaves are ground into paste and given orally 2-3 times a day. The animal is cured in 1 day. **Keywords:** dysentery, animal, *shisham* leaves	Shri Rajendra, S/o Shri Babu Ram, Maheshpur (Shivsingh), Bhairpura, dist. Bareilly (Uttar Pradesh)
3044	Treatment of dysentery in animals by using *samer (Ceiba pentendra)* leaf and butter milk	For the treatment of dysentery in animal, 250 g *samer* leaf paste and 1 litre buttermilk are mixed properly. This mixture is given twice daily to the animal. This treatment is used by the people of village Gotia (Larpur) in district Bareilly of Uttar Pradesh. **Keywords:** dysentery, animal, *samer* leaf, buttermilk	Shri Surendra Pal, S/o Shri Liladhar, Gotia (Larpur), Sainthal, dist. Bareilly (Uttar Pradesh)
3045	Use of *simar {Ceiba pentendra)* bark to control dysentery in animals	About 1 kg paste of *simar* bark is prepared and fed to the affected animal for 3 days. Farmers of Kamua Kala village of district Bareilly in Uttar Pradesh cure dysentery in animals by this practice. **Keywords:** *simar*, dysentery	Shri Surender Pal, S/o Shri Than Singh, village Kamua Kala, dist. Bareilly (Uttar Pradesh)

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
3046	Use of banana plant for control of blood discharge dung	The banana plant, locally known as *bheemkol (Musa balbisiona),* is chopped and boiled with water. Then the juice from the chopped mixture is extracted and this liquid is given orally to animals suffering from blood discharge. **Keywords:** *bheemkol*, chopped	Shri Pallav Saikia, P Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3047	Treatment of diarrhoea in animals with *kakai*	A paste is prepared by crushing 200-300 g *kakai* and it is given twice daily to affected animals to control diarrhoea. Cattle owners of village Pachhomi in district Bareilly of Uttar Pradesh follow this practice. **Keywords:** *kakai*, diarrhoea	Shri Bandha Shah, S/o Shri Hanna Bakash, Pachhomi, Faridpur, dist. Bareilly (Uttar Pradesh)
3048	Use of decoction of bark of mango and *kumbi kaliyo* for curing diarrhoea in animals	About 1 kg bark of mango *(Mangifera indica)* trunk and 500 g bark of *kumbi kaliyo (Careya arborea)* are crushed. About 1 litre water is added to it and kept for 1-2 hr. The liquid is then strained through a thin cloth and 250 ml is administered to animals orally twice a day for 2 days. About 20% population of the village has been using this technique for the last 20 years. **Keywords:** *kumbi kaliyo*, mango, strained, trunk	Shri Nathubhai Hirabhai Prajapati, Khanpur Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3049	Cure of diarrhoea in cattle with roots of *narkhi-markhi*	About 25 g thin roots of *Schrebera sweietenioides*, locally known *narkhi-markhi*, are mixed and finely crushed, and a solution is prepared by adding water to it. This solution is given to the cattle to drink, or roots of *narkhi-markhi* can be given 4 - 5 times for 2 days by mixing with fodder or *chapatis.* Animal gets cured within 3 -4 days. This is a traditional method being used for a long time. **Keywords:** *narkhi-markhi*, *chapati*	Shri Jivalyabhai Bachubhai Gaekwad, Garudia Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
3050	Use of leaves of *betel* and *omam* for curing diarrhoea in goats	In this practice, 2 leaves of *Piper betel* (betel) and *Coleus aromaticus (omam)* and are ground and a fine paste is prepared by adding water. About 50 ml water is added to the prepared paste and this extract is given to the goat along with 1/4-teaspoonful asafoetida. **Keywords:** *betel*, *omam*, asafoetida	Ms Banumathi, village Parakulam, P.O. Marangur, Mangalam, Sivagangai (Tamil Nadu) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3051	Cure of diarrhoea in catties by using bark of *kangoo* and mustard seed	A mixture of bark of *kangoo (Flacortia indica)* and mustard seed is used to cure diarrhoea in cattle by the people of Shimla district in Himachal Pradesh since long. About 5 g bark paste of *kangoo* plant and 2 g mustard seed are heated in an earthen pot and given with curd twice daily to the infected cattle. **Keywords:** diarrhoea, cattle, *kangoo*, mustard seed, curd	Farmers of hilly area of Shimla district of Himachal Pradesh Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3052	Treatment of diarrhoea in animals by *bakena* leaves and barely flour	Paste of *bakena* leaves (10-20 leaves) is mixed with 250 g barley flour. The prepared mixture is given to the animal twice daily to cure diarrhoea. **Keywords:** *bakena*, barley, diarrhoea	Shri Lakhpati Singh, S/o Shri Babu Singh, Nawada (Ban), dist. Bareilly (Uttar Pradesh)
3053	Treatment of diarrhoea in catties by *kharia* soil and *gular {Ficus glomerata)*  *Ficus glomerata*	When the catties of village Bichuria of district Bareilly of Uttar Pradesh suffer from diarrhoea, the cattle owners immerse *kharia* (50 g) in water and give it as supplement to the suffering cattle, twice daily. About 10-20 leaves of *gular* are also fed to the cattle for curing diarrhoea. **Keywords:** diarrhoea, *kharia* soil, *gular*	Md. Noor Ahmed S/o Md. Lai Mohamed, Bichuria, Balia, dist. Bareilly (Uttar Pradesh)
3054	Treatment of severe diarrhoea by green leaves of wild *gokhus*	Cattle owners of village Mantal of Ahmedabad (Gujrat) use leaves of *gokhus* plant as a cure of severe	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension

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		diarrhoea. Extract of *gokhus (Tribulus terrestris)* leaves (300 g) is taken, and 350 ml fresh water and 150 ml sugar are added to it. These ingredients are mixed well and given to the suffering animals orally. It is given thrice a day till 3-4 days for complete recovery from severe diarrhoea. It is in vogue since time immemorial. **Keywords:** *gokhus*, severe diarrhoea, sugar	and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102
3055	Treatment of diarrhoea in animals with *dhatura* leaves and wheat flour  *Detura*	People of village Bichuria in district Bareilly of Uttar Pradesh follow this treatment to cure diarrhoea in animals. About 2-3 *dhatura* leaves with wheat bread are given to the animal twice daily. **Keywords:** diarrhoea, animal, *dhatura* leave, wheat flour	Shri Satya Prakash, S/o Shri Ajaypal Singh, Bichuria, Balia, dist. Bareilly (Uttar Pradesh)
3056	Use of *chirchita* flower to control diarrhoea in cattle	When animals of village Mantal, dist. Ahmedabad (Gujarat) suffer from diarrhoea, the cattle owners grind 100 g flowers of *chirchita (Achyranthus aspera).* About 200 ml fresh cool water is added to it and this dose is drenched 3 times a day. This practice may be continued up to 3 days for complete recovery. It is an age-old practice. **Keywords:** *chirchita*, diarrhoea	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3057	Use of green leaves of bamboo for curing diarrhoea in catties	When there is problem of diarrhoea in animals, the cattle owners of Imphal (Manipur) extract juice of green leaves	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension

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	 Bamboo green leaves used in diarrhoea	of bamboo (100 g). Afterwards about 200 ml fresh water is mixed and solution is filtered with cotton cloth, and about 50 g salt is added in this solution. This forms one dose, and it is given thrice a day for faster recovery. The dose and frequency also depend on the body weight of the animal. About 80% inhabitants rely on this practice. **Keywords:** diarrhoea, green bamboo, leaf juice, salt	and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102
3058	Curing diarrhoea in animals by leaf and flower extract of *nevine lem (Bauhinia longifolia)*	Tribal people of Pasighat area of district East Siang in Arunachal Pradesh collect 100-150 g flowers and 200-250 g tender leaves of *nevine lem (Bauhinia longifolia)* and grind with a little amount of water. This solution is again mixed with 250 ml fresh water and filtered with the help of cotton cloth, and then salt (30—40 g) is added to it. This solution is given as a treatment to the animals suffering from diarrhoea with the help of bamboo pipe. This practice is repeated thrice a day and is continued for 3—4 days to get complete recovery. The efficacy of this practice is 80-90% and it is an age-old practice. About 40-50 per cent community people use this practice. **Keywords:** *nevine lem*, diarrhoea, salt	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102
3059	Treatments for diarrhoea in animals	Tribal farmers of village Bhurdia of Jhadol in district Udaipur of Rajasthan treat the animals suffering from diarrhoea in the following ways: (i) Green stem bark of *paba, samri* and *kegar* trees (each 250 g) are chopped and boiled in 1-2 litres water. It is filtered and fed to the animal twice daily for 3 days. (ii) Green stem bark of mango, *semal*	Shri Somaj, S/o Shri Pataji Vadera, Bhurdia, Khera (Chundawaton), Jhadol, Udaipur (Rajasthan) and Shri Vardi Chand, S/o Shri Kesa ji Orna, Pokhi, Atkalia, Kantharia, Jhadol, Udaipur (Rajasthan)

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		and *heetri* trees (each 200 g) are chopped and boiled in 0.5-1 litre water. It is filtered and given in 2 dosages in 1 day. Keywords: diarrhoea, animal, stem bark, *paba, samri, kegar* trees, mango, semal, *heetri* trees	
3061	Treatment for loose motion in calves with cumin seeds	Due to loose motion, a calf stops sucking milk of the mother cow, salivation may persist, and weakness and sometimes death may also take place. For its treatment, 10 g cumin seeds are ground to powder and added with molasses. Small round balls of this mixture are prepared and fed to the calf twice a day. This treatment is practised in the tehsil Theog of district Shimla in Himachal Pradesh. Keywords: loose motion, calf, cumin seeds, molasses	People of tehsil Theog in Shimla district of Himachal Pradesh Facilitator: Dr L R Verma, MRDA, 4 Summer Hill, Shimla (HP) 171 005
3062	Bark of *asundhro* and *tanach* to control loose motion in cattle	About 200 g bark of *asundhro (Bauhinia racemosa)* and 200 g bark of *tanach (Oogenia oogeinensis)* is crushed and 2 litres water is added to it. This solution is kept for 2 hr and strained. Then 250 ml of this solution is given orally to the cattle twice a day for 4 days. Loose motion in cattle gets cured within 5 days. Keywords: *asundhro, tanach,* loose motion	Shri Sudharkarbhai Kochubhai Goli, Vanki Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3063	Use of *dhoona* and wheat or paddy to control loose motion in cuttle and goat	Solidified, dehydrated portion of *Canarium bengalense* tree, locally known *dhoona,* is ground well and mixed with wheat or paddy to make small lumps. This prepared mixture is fed to the cattle or goat suffering from loose motion. Keywords: *dhoona,* lumps, loose motion	Shri Pallav Saikia, DPP Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

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3064	Cure of loose motion in animals by feeding *kamboi* foliage	About 1 kg *kamboi {Bridelia retusa)* foliage is crushed and 1 litre water is added. Solution prepared by mixing foliage **of *Kirgonelia reticulata*** can also be given to cure loose motion. The solution is given to the cattle twice a day. **Keywords:** *kamboi,* foliage, loose motion, *kirgonelia reticulata*	Shri Sureshbhai Somabhai Patel, Rajpuri Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3065	Using extract of *ghamadio* to prevent loose motion	When animals suffer from loose motion, the cattle owners of village Mantal of Ahmedabad (Gujrat) give extract of root, bark and leaves of *ghamadio (Eciipta prostata)* plant to the animals. About 150 g roots, 150 g bark and 200 g green leaves are crushed and this paste is mixed with 300 ml water. This solution is filtered with cotton cloth and drenched to animal with the help of bamboo pipe. This dose is repeated 3-4 times a day. It is an age-old practice. The success varies from 75 to 80%. **Keywords:** *ghamadio,* loose motion	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102
3066	Cure of gas trouble in cattle with fruits of *kachari* creeper	When animals suffer from gas trouble, the cattle owners of many villages of district Bhavnagar of Gujarat collect 200 g raw fruits of *kachari (Cucumis callosus)* and prepare paste by crushing. This paste is mixed with 250 ml buttermilk and 8-10 g common salt. The mixture is filtered through clean cotton cloth or sieve and fed orally to the cattle. This dose is repeated at an interval of 2 hr and continued for 2 days. **Keywords:** gas trouble, *kachari,* buttermilk	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry. Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3067	Control of gas trouble in cattle with black pepper and asafoetida	To cure the gas trouble in cattle, 10 g ginger, 10 g each of black pepper *(Piper nigrum),* asafoetida *(Ferula asafoetida)* and sweet flag are taken	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology),

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		and paste is made. This paste is diluted with 200 ml hot water. The solution is given orally to cattle by using bamboo stick. The dosages are given thrice a day for 1-2 days for complete recovery from the gas trouble in animals. **Keywords:** asafoetida, ginger, black pepper, sweet flag	College of Horticulture and Forestry, Central Agricultural University, Pasighat, (Arunachal Pradesh) 731 102
3068	Control of gastric trouble in animals by using *nausadar*	To cure the gastric problem in animal, 10 g *nausadar* (Ammonium hydroxide) is given. The gastric problem is controlled in a few hours. This practice is followed by Maheshpur (Shivsingh) villagers of district Bareilly in Uttar Pradesh. **Keywords:** gastric trouble, animal, *nausadar*	Shri Rajendra, S/o Shri Babu Ram, Maheshpur (Shivsingh), Bhairpura, dist. Bareilly (Uttar Pradesh)
3069	Control of bloat (gas trouble) in cattle by use of *komala, meendhvel* and mustard seeds	About 100 g bark of *komala,* 100 g bark of *meendhvel (Cassia italica)* plant and 100 g mustard seeds *(Brassica juncea)* are mixed and crushed together to make a paste by adding water. About 500 ml of this solution is given to the cattle immediately and 500 ml after 1-2 hr. This will relieve gas trouble in cattle within a few hours. This is a traditional method. **Keywords:** *meendhvel, komala,* mustard, gas trouble	Shri Sudharkarbhai Kochubhai Goli, Vanki Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3070	Control of gastrointestinal disorders in animals with *ajwain* and ***dugjeera***	About 50 g powdered bishopweed seeds *(ajwain) (Trachyspermum ammi)* and 50 g powdered *dugjeera* fruit *(Cuminum cyminum),* are mixed with water. Gas trouble can be relieved within 2 hr. More than 20% of the population of this village is using this method of treatment for the past 20 years. **Keywords:** *bishopweed, dugjeera,* gas trouble	Shri Varkhadyabhai Kalubhai, Harapada Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

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3071	Treatment of gastric trouble in catties	Cattle owners of village Kamua Kala of district Bareilly of Uttar Pradesh prepare paste of 10 g onion, 10 g black pepper and mustard **oil.** This dose is given twice a day to control gastric trouble. **Keywords:** onion, black pepper, gastric trouble	Shri Inderjit Singh, Sarpanch, village Kamua Kala, dist. Bareilly (Uttar Pradesh)
3072	Treatment of gastric trouble in catties by *bakena* leaves and barley	Cattle owners of Rajpuri village of Bareilly district, Uttar Pradesh prepare a paste of 500 g *bakena* leaves and 500 g barley and it is mixed in 1 litre water. It is given 3-4 times daily to the affected animal to cure gastric trouble. **Keywords:** *bakena* leaves, barley, gastric trouble, mustard oil	Shri Brij Lai, S/o Shri Kare Ram. Rajpuri (Nawada) Bareilly (Uttar Pradesh)
3073	Treatment of gastric problem in animals by using black pepper, onion, *nausadar* and ghee	This ITK is followed in village Sundyaba of district Bareilly in Uttar Pradesh. For the treatment of gastric problem, a paste is prepared by mixing 10 g *nausadar, 5* g black pepper 250 g onion and 250 g *desi* ghee. This paste is given 2-3 times daily to the animal. The gastric problem is controlled. **Keywords:** gastric problem, *nausadar*, black pepper, onion, *desi* ghee	Shri Chheda Lai, S/o Shri Dodraj, Sundyaba, Haphijganj, dist. Bareilly (Uttar Pradesh)
3074	Treatment for stomach pain in cattle and buffalo	Villagers of Khohara of district Karauli in Rajasthan are using this ITK since 10-15 years. About 250 g ***choti*** *harda (Terminalia chebula)* are fried in 50 g ghee and ground to powder form. This powder is mixed with 100 g edible soda and 3 doses are prepared, for morning, mid-day and evening. For each dose, 1 litre water is taken in big utensil and 1 dose is mixed in it. This is given to the animal to get relief from stomach pain. **Keywords:** stomach pain, *choti harda*, edible soda, ghee	Shri Nathya Nath, S/o Shri Bhora Nath, Khohara, Todabhim, dist. Karauli (Rajasthan) 321 611

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
3075	Treatment for stomach ailment in cattle by feeding wild tobacco	Stomach ailment in cattle is caused by eating moist grass. Cattle show symptoms of tympany of rumen, stop feeding and show profuse salivation etc. For treatment of this ailment, *sharakhu* (wild tobacco) is crushed and boiled in water for 2—3 min. and is fed to the infected cattle with a bamboo pipe. This treatment is used in Shimla (Himachal Pradesh). **Keywords:** stomach ailment, *sharakhu*, bamboo pipe	Shri Vidhya Dut, Laboratory Attendant, Department of Bio-Sciences, Himachal Pradesh University, Shimla (Himachal Pradesh) 171 005
3076	Remedy for tympany disease in animals	The ingredients used to cure tympany in animals are: black salt (25 g), ashes of dried bark and roots of a kind of plantain tree called *athia kol* or *bhim kol (Musa paradisiaca),* **100** g bulbs of *Allium* ***vineale*** *(bon nohoru),* **100 g** roots of *fisfal (Primus domestica),* (25 g, rhizome of *Zingiber qfficinalis (ginger),* 100 g seeds of ***Xanthophyllum*** *phesta* ***(jabrang),*** **5** g stem of *Alocacia indica (bar kachu), 2* inches and roots of *Hibiscus pungens* ***(ulot kombol),*** 25 g. All the components are ground to powder and are mixed with water to make two large-sized boluses, which are administered orally. One bolus daily for 2 days for large animals (more than 6 years) and only one bolus for a day for small animal are sufficient. **Keywords:** black salt, powder, ginger, *fisfal, blimkol, jabrang, bar kachulot kombol, bon noharu*	Shri Bodon Bora, Silsako, North Guwahati, dist. Guwahati (Assam) 781 039 Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3077	Remedy to cure tympany in animals	The ingredients used for making a formulation to cure tympany in animals are: 6 pieces of the bulb of *Allium* ***sativum*** (garlic or *nohoru),* fruit covers (25 g) of *Cocos nucifera* (coconut or *narikol),* bark or roots (25 g) of *Musa paradisiaca (bhim kol),* 10 leaves of *Piper betel (pan),* 40 seeds of *Xanthophylum phesta (jabrang)* and	Shri Uttam Talukdar, C/ o Sri Dayaram Talukdar, Kothal kuchi, P.O. Komarkuchi, dist. Nalbari (Assam) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

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		125 g rhizome of ***Zingiber officinalis*** (ginger or *ada).* All these ingredients are ground to powder. This powder is divided into 7 parts and given orally. **Keywords:** ***narikol, nohoru,*** *bhim kol, jabrang, ada,* rhizome	
3078	Cure of tympany in animals by using *jabrang* and *bhimkol*	The seeds *of jabrang (Xanthopyllum phesta)* are crushed to powder and mixed with oil and ashes prepared from *bhimkol* roots *(Musa paradisiaca).* The paste prepared from these ingredients is taken as one dose and is administered orally twice daily, one in the morning and one in the afternoon until recovery. **Keywords:** *jabrang, bhimkol*	Shri S. Dhonokanta Das, Borgaon, dist. Kamrup (Assam) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3079	Use of asafoetida, ginger and *soova dana* to cure tympany in animals	In this practice, a solution of 5 g *hing (Ferula asafoetida),* **25** g **dry** ginger, 100 g black salt, 50 g *soova dana (Anethum suva),* 25 g *ajma* ***(Trachyspermum*** *ammi)* and 500 g jaggery is boiled in 1 litre water. This solution is boiled till the amount of water is reduced to half. After cooling the solution, the animal is made to drink it. This cures the animal within 3 hr and the remedy is believed to be 100% effective. **Keywords:** *hing, soova dana, ajma,* jaggery, dry ginger	Shri Bhikalal Prabhudas Masani, Amreli (Gujarat) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3080	Treatment of *afara* in animals with onion and asafoetida	For the treatment of *afara* farmers of village Khirka in district Bareilly of Uttar Pradesh use this ITK. About 250 g onion juice, 50 g asafoetida and 100 g salt are taken and mixed properly. It is given twice daily to the animal for curing *afara.* **Keywords:** *afara,* onion, asafoetida, salt	Shri **Rajendra** Prasad, S/o Shri Ganen Lai, Kharia, Auodh, **dist.** Bareilly (Uttar Pradesh) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat)
3081	Cure of bloating *(afara)* in animals by using *tetumba,* mustard seeds and buttermilk	Cattle owners of village Dang (Saradhna), Ajmer (Rajastan) feed 50 g *tetumba* ***(Colocynthis*** *vulgaris)*	Shri Dcnkaranji/Namji Jat, Dang (Saradhna) village, Peesagam.

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		fruit, 50 g mustard seed, 50 g salt and sour buttermilk mixture to the animals when they suffer from bloating problem. About 40-50% families are following it. This is an age-old practice. **Keywords:** *tetumba*, mustard, salt, buttermilk, bloating	**Azmer** (Rajastan) 305 001
3082	Treatment of *afara* in animals with black salt and *desi* ghee	This ITK is practised in village Bishesharpur in district Bareilly in Uttar Pradesh to cure *afara* in animals. About 30 g black salt is mixed in 200 g *desi* ghee and given to the affected animals twice daily to control *afara*. **Keywords:** *afara*, black salt, *desi ghee*	Shri Chote Lai, S/o Mangali Prasad, Bishesharpur, Joytijagir, dist. Bareilly (Uttar Pradesh)
3083	Treatment of *afara* in animals with black pepper, mustard oil and black salt	Paste of black pepper (10 g) and black salt (50 g) is prepared by adding 100 ml mustard oil to it. Cattle owners of village Khai Khera of district Bareilly (Uttar Pradesh) supplement this mixture to the animal for curing *afara.* **Keywords:** *afara*, black salt, black pepper, mustard oil	Shri Md. Miyan, S/o Shri Raihis Khan, Khai Khera, Rithoura, dist. Bareilly (Uttar Pradesh)
3084	Treatment of *afara* in animals with cowdung and jaggery	Cowdung and jaggery (each 250 g) are mixed and given to the animal orally twice daily to control *afara* in animals. This treatment is followed in village Serasa of district Bareilly in Uttar Pradesh. **Keywords:** *afara*, cow dung, jaggery	Shri Md. Akil, S/o Shri Md. Sher Mohhamad, Serasa, Balia, dist. Bareilly (Uttar Pradesh)
3085	Treatment of *afara* in animals with *akauwa* leaves and mustard oil	About 2-3 *akauwa* leaves are taken and 10 g mustard oil is applied on them. These leaves are given twice daily to the animal to control *afara.* This ITK is practised in village Nawada (Ban) in district Bareilly of Uttar Pradesh. **Keywords:** *afara*, *akauwa* leaves, mustard oil	Shri Ranchandra Singh, S/o Shri Lekhraj Singh, village Nawada (Ban), dist. Bareilly (Uttar Pradesh)

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3086	Treatment of ***afara*** in animals with *phulsan (Crotolaria juncea)*	*Phulsan* flowers (250 g) is boiled in water and this water is drenched to animal for curing *afara.* This practice is being followed in village Sundyaba of district Bareilly (Uttar Pradesh). **Keywords:** *afara*, *akauwa* leaves, mustard oil	Shri Ranchandra Singh, S/o Shri Lekhraj Singh, village Nawada (Ban), dist. Bareilly (Uttar Pradesh)
3087	Treatment of *afara* in animals with *gosraine* and salt	The people of village Gotia (Larpur) in district Bareilly in Uttar Pradesh use this ITK. For the treatment of *afara,* 50 g *gosraine* leaves are boiled and mixed with 5 g salt. This mixture is given orally thrice daily. This treatment shows effect within 4-5 hr and the animal gets cured. **Keywords:** *afara, gosraine* leaves, salt	Shri Sita Ram, S/o Shri Budhsen, Gotia (Larpur), Sainthal, dist. Bareilly (Uttar Pradesh)
3088	Treatment of ***afara*** in cattle with seeds and bark of *Cassia fistula*	The stomach of suffering animal looks like a drum (swollen), due to excess gas formation, and the hairs are raised. Four seeds of *Cassia fistula (kodiyala)* are powdered by grinding. Filtrate of 250 g bark of *Cassia fistula* is added to this powder, which is prepared by dipping the crushed bark in water. This dose is given twice a day up to 3—4 days for complete recovery. A few cattle owners also give about 500 ml whey in addition to this treatment. It is an age-old practice, and is followed by cattle owners of Alwar district in Rajasthan. **Keywords:** *afara, kodiyala,* bark, grinding	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University. Pasighat (Arunachal Pradesh) 731 102
3089	Use of *kothamara* shrub extract to cure *afara* in cattle	*Afara* is a dangerous disease in cattle. To cure the *afara* disease, 200 g bark of shrub *kothamara (Anisiphalis rumphii)* is taken and ground. The ground material is added to water. The extract is filtered and 250 ml solution is made. This solution is given to cattle. This dosage are given 4 times a day at an interval of 2 hr and it is continued for 2-3 days. **Keywords:** *kothamara, afara,* scuttle	Dr Ranjay K Singh. Assistant Professor (Agricultural Extension and Rural Sociology), College **of** Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102

Code No.	Title of the **ITK**	Description of the **ITK**	Name and address of the discloser/facilitator
3090	Treatment of *afara* in animals with ***karela (Momordica charantia)*** and black salt	This ITK is practised in village Nitoie in district Bareilly in Uttar Pradesh. For the treatment of *afara*, a paste is prepared by adding 200 g *karela (Momordica charantia)* and 20 g black salt. This paste is given to the animal twice daily for curing the *afara* disease. **Keywords:** *afara, karela (Momordica charantia)*, black salt	Shri Lala Ram, S/o Shri Tika Ram, Nitoie, Bhamora, Bareilly (Uttar Pradesh)
3091	Use of solution made from tobacco for curing *afara* in animals	When an animal suffers from *afara* the cattle owners of village Hamirpur of district Alwar (Rajasthan) soak 300-400 g leaves of tobacco *(Nicotiana tabacum)* in 2 litre water in an earthen pot and leave it for 3-4 days to decay. Afterwards it is filtered with cotton cloth and about 200 ml of this extract is mixed with 300 ml fresh water and drenched to cattle with help of bamboo pipe thrice a day. This treatment is continued up to 4-5 days for complete recovery. This practice has 80-90% efficacy and 65-75% people are using this practice since age-old time. **Key words:** *afara,* tobacco, bamboo pipe	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3092	Treatment of *afara* in animals by using a mixture of *kasondhi* leaf, asafoetida and onion	A paste of 10 g asafoetida and 200 g onions is prepared and given orally with 100 g *kasodhi* leaves to the infected animals. The people of village Khata in district Bareilly in Uttar Pradesh follow this treatment. **Keywords:** *afara, kasondhi* leaf, asafoetida, onion	Shri Siya Ram, S/o Shri Payre Lai, Khata, Rithoura, dist. Bareilly (Uttar Pradesh)
3093	Treatment of *afara* in animals with *nausadar* and black pepper	A paste of *nausadar* and black pepper (each 10 g) is prepared by mixing 200 g *desi* ghee and it is given to the animal for curing *afara*. People of village Nitoie of district Bareilly in Uttar Pradesh use this treatment **Keywords:** *afara, nausadar*, black pepper, *desi* ghee	Shri Tota Ram, S/o Shri Chandan Ram, Nitoie, Bhamora, dist. Bareilly (Uttar Pradesh)

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
3094	Treatment of *afara* in animals with red chilli and wheat bran	To cure *afara* disease in animals, people of village Kharia in district Bareilly in Uttar Pradesh burn 250 g wheat bran and 50 g red chilli, and its smoke is given to the affected animal twice daily. **Keywords:** *afara*, animal, red chilli, wheat bran, smoke	Shri Surendra Pal, S/o Shri Tek Chand, Kharia, Auodh, dist. Bareilly (Uttar Pradesh)
3095	Use of *guma* grass for treatment of *afara* in animals	About 250 g *guma* grass is fed orally to the infected animal twice daily. Cattle owners of village Kamua Kala in district Bareilly in Uttar Pradesh follow this practice to cure *afara.* **Keywords:** *guma* grass, *afara*	Shri Chote Lai, S/o Shri Than Singh, Kamua Kala. dist. Bareilly (Uttar Pradesh)
3096	Treatment of *afara* in animals with human bone	People of villages Khirka, Khata and Rajupur of district Bareilly in Uttar Pradesh follow this ITK to cure *afara* in animals. After death of human beings burnt bones are collected and a powder is prepared. This powder is mixed with water and given to the affected animal twice daily to cure *afara.* **Keywords:** *afara*, human bone	Shri Krishna Pal, S/o Shri Tika Ram, Kharia, Auodh, dist. Bareilly (Uttar Pradesh); Shri Kashi Ram S/o Shri Payre Lai, Khata.dist. Bareilly (Uttar Pradesh); and Shri Nanhe Lai, S/o Shivcharan Lai, Rajupur, Devchara, dist. Bareilly (Uttar Pradesh)
3097	Treatment of *afara* in animals with asafoetida, onion, garlic and *ajwain (Trachyspermum ammi)*	Cattle owners of village Rajpuri of district Bareilly in Uttar Pradesh make paste of asafoetida, onion, garlic and *ajwain* (50 g each), and given to the affected animals. **Keywords:** *afara*, onion, garlic, asafoetida	Shri Rajpal, S/o Shri Laturi Singh, Rajpuri (Nawada), dist. Bareilly (Uttar Pradesh)
3098	Treatment of *afara* in cattle with *guma*	Paste of *guma* (100 g) is prepared and is applied to the affected animal twice a day. Cattle owners of village Nawada (Ban) of district Bareilly in Uttar Pradesh follow this practice to cure *afara.* **Keywords:** *guma*, *afara*	Shri Sawaraj Singh, S/o Shri Sunder Lai, Nawada (Ban), dist. Bareilly (Uttar Pradesh)

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
3099	Treatment of *qfara* in animals with jute water	About 500 g jute is immersed in water and this water is given to the animal, twice daily. Farmers of village Gotia (Larpur) of district Bareilly (Uttar Pradesh) control *afara* with this practice. **Keywords:** *afara,* jute water	Shri Surendra Pal, S/o Shri Liladhar, Gotia (Larpur), dist. Bareilly (Uttar Pradesh)
3100	Use of *nari* ***(Commelina benghalensis)*** for curing *afara* in animals 	A paste of 250 g *nari* leaves is prepared and given as supplement to the animal affected twice daily, which cures *afara.* Farmers of village Rajpuri (Nawada) of district Bareilly (Uttar Pradesh) control *afara* with this practice. **Keywords:** *afara, nari*	Shri Brij Lai, S/o Shri Kare Ram and Shri Tarachand, S/o Shri Narayan Singh, Rajpuri (Nawada), dist. Bareilly (Uttar Pradesh)
3101	Treatment for bloat in animals by using leaves of *Adathoda vasica*	About 50% people of the village in district Bharuch of Gujarat are using this practice. In this ITK, about 200 g leaves of *Adathoda vasica* are crushed and soaked in 300 g water. This mixture is then filtered and given to the affected animal orally. **Keywords:** *Adathoda vasica,* soak	Shri Lalujibhai Umarabhai Vasava, Mission Company, P.O.Kanbhdi, Dediyapada, dist. Bharuch (Gujarat) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3102	Use of pods of *Cassia* to cure bloat in animals	Shri Babaji Khaant of Sabarkantha (Gujarat) uses pods of *garmalo (Cassia fistula)* and steam coal to cure animals of *afara.* About 200 g pods of *garmalo* and 100 g steam coal are mixed and pound to a fine powder. This is thoroughly mixed in water and filtered. The filtered liquid is given to the animal to drink, once a day for 2 days. The animal will have loose motions and then will become well. **Keywords:** *garmalo,* steam coal, *sabji*	Shri Babaji Sonaji Khaant, Sabarkantha (Gujarat) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

Code No.	Title of the ITK	Description of the ITK	Name and address of the **discloser/facilitator**
3103	Control of indigestion in cattle by using *puliyaranai kez.hangu*	To control indigestion, 100 g tubers of *puliyaranai kez.hangu (Aponogeton natans)* mixed with *arugampul* ***(Cynodon*** *dactylon)* leaves are fed to the cattle. It takes 3 hr to give relief to the cattle, and the excretion becomes normal. **Keywords:** indigestion, *puliyaranai* ***kezhangu,*** *arugampul*	Shri D. Kuppusamy, S/o Shri Dhanapal Chettiar, Gengavaram, Kanakankuppam, Alampoondi, Gingee, **Villupuram** (Tamil Nadu)604 151
3104	Control of indigestion in cattle by using betel leaves	For controlling indigestion in cattle, 10 betel leaves *(Hibiscus abelmoschus),* 20 g ginger *(Zingiber* ***officinalis)*** piece, 10 g black pepper *(Piper nigrum),* and 10 g garlic *(Allium sativum)* are taken. A paste is prepared by mixing all these ingredients in hot water and fed to the cattle twice a day. This gives immediate relief to the cattle. **Keywords:** indigestion	Shri R. Anbarasu, S/o Shri Raman, P.O. Maramadakki. taluk Aranthangi. Pudukottai (Tamil Nadu) 614 622
3105	*Nerunji* water treatment for curing indigestion in cattle	When cattle is suffering from indigestion and swelling of stomach, *nerunji (Pedalium* ***murex)*** extract is prepared and fed to the cattle. This water acts as laxative and helps in digestion, giving quick relief to the cattle. **Keywords:** *nerunji* water, indigestion, laxative	Shri M. Senthil Vadivu, Perumalkoilpatty, Sathankoilpatty, Devadanapatty (via, Periyakulam), Theni (Tamil Nadu) 625 602
3106	*Lausra* ***(Cordia*** *obliqua)* for digestion problem in cattle	This ITK is followed in hilly areas of district Shimla in Himachal Pradesh since time immemorial. *Cardia* spp. contains some substance that is effective to cure digestive ailments in cattle. After removing seeds from fruits, pickle and *sabji* are prepared, which are good remedy to cure gastric problem very significantly. Fruits as such are also used for this purpose. **Key words:** *lausra (Cordia obliqua),* digestion, pickle, *sabji*	Farmers **of** hilly areas of Shimla district of Himachal Pradesh Facilitator: Dr **L.R. Verma,** MRDA, 4 Summer Hill, Shimla (Himachal Pradesh) 171 005

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
3107	Treatment **for** constipation in calf by feeding whey	When cattle suffer from constipation, the animal stops feeding, salivation persists, and weakness and sometimes death are also observed. To treat constipation in calf, fresh whey is fed to the calf twice a day. This treatment is used in the tehsil Theog of district Shimla in Himachal Pradesh. **Key words:** whey, constipation	People of Tehsil Theog of Himachal Pradesh Facilitator: Dr L R Verma, MRDA. 4 Summa Hill, Shimla (HP) 171 005
31(18	Treatment of constipation in cattle by *lal jhimati* seeds	When cattle of village Mantal of Ahmedabad (Gujarat) suffer from constipation, the cattle owners collect 350-400 g seeds of *lal jhimati (Barleria cristata)* plant and prepare a paste. About 300 ml fresh water is mixed with this paste and fed to animals orally by bamboo pipe. This dose may be repeated thrice a day. It may be followed up to 3-4 days for getting complete recovery. It is in vogue among farmers since time immemorial. **Keywords:** *lal jhimati*, constipation	Dr Ranjay K Singh. Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102
3109	Cure of constipation in cattle with *samudi* leaves and root extract	Cattle owners of village Mantal of Ahmedabad (Gujarat) give as supplement the extract of *samudi (Prosopis cineraria)* leaves and roots to get relief from constipation. About 200 g leaves and 250 g roots of *samudi* are mixed with 500 ml water after making the paste. It is filtered through cotton cloth. This dose is drenched by bamboo pipe for 2-3 times daily till complete recovery. It is an age-old practice. About 80-90% disease may be cured by this. **Keywords:** *samudi*, constipation, leaf, root	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University. Pasighat (Arunachal Pradesh) 73! 102
31 10	Cure *o(* constipation in cattle **with** extract o\′ sponge gourd leaves	Cattle owners of village Mantal, Ahmedabad (Gujarat) feed the extract of sponge gourd leaves to animals suffering from constipation. About	Dr Ranjay K Singh. Assistant Professor (Agricultural Extension and Rural Sociology).

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		200 g sponge gourd (eaves are ground and mixed with 250 g water. It is drenched with the help **of** bamboo piece. It is repeated thrice a day **for** 1-2 days for complete recovery. This practice **is** being followed since time immemorial. **Keywords:** constipation, sponge gourd	College **of** Horticulture and Forestry, Central Agricultural University, Pasighat **(Arunachal** Pradesh) 731 102
	Use of ***bhat*** *mateka,* molasses and turmeric for treatment of bloat or constipation in animals	About 50 g roots of ***Monochoria*** *vaginalis* plants, locally known *bhat mateka,* is ground and 5 g turmeric powder *(Curcuma longa),* and 25 g salt and 50 g molasses ***(gur)*** are added to it. Then this mixture **is** made into lumps and fed to the animal. This method has been traditionally practised since ages and is found to be very effective. **Keywords:** *bhat mateka, gur,* lumps, molasses	Shri **Pallav** Saikia. DPP Facilitator: National Innovation Foundation. Ahmedabad (Gujarat) 380 015
112	Use of leaves of *nayuruvi* for curing constipation in animals	In this practice, clean leaves **of** *Achyranthes aspera* L. ***(nayuruvi)*** are collected and ground with hot water to prepare a decoction. About 50-100 ml of the prepared decoction **is** given **to** the affected animal twice a day. It is being practised by discloser since five years. **Keywords:** *nayuruvi,* decoction	Shri **Perriyathambi,** Tuvarabathi. Natham. **Dindigul** (Tamil Nadu) 624 401 Facilitator: National Innovation Foundation. Ahmedabad (Gujarat I 380 015
13	**Use of *panpanna,*** molasses and milk for treatment of constipation in animals	A mixture is prepared by mixing *panpanna* leaves (4), molasses and milk (0.5 litre each). This mixture is drenched to the animal twice daily. This ITK is being followed to cure constipation by cattle owners of village Khiraka in district Bareilly in Uttar Pradesh. **Keywords:** constipation, *panpanna,* molasses, milk	Shri Krishna Pal, S/o Shri Tikka Ram, village Khiraka. dist. Bareilly (Uttar Pradesh)
14	Cure of stomach pain and intestinal worms in cattle by using decoction of ***Woodfordia***	Farmers of hilly areas **of** district Shimla of Himachal Pradesh use decoction of *Woodfordia* spp. flowers	Farmers **of** hilly area **of** Shimla district **of** Himachal Pradesh

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	spp.	to cure stomach pain and remove intestinal worms in cattle. The flowers are considered as a tonic. The decoction of flowers is given orally. **Keywords:** ***Woodfordia*** spp., decoction, stomach pain, intestinal worms	Facilitator: Dr L R Verma, MRDA. 4 Summer Hill, Shimla (HP) 171 005
3115	Treatment for removal of intestinal worms in animals	Shri Jaglabhai Tajubhai Barkota of district Banswada of Rajasthan and some other farmers of the same village use this practice. Two to three branches of *fafda thor (Euphorbia* spp) are burnt and ash is obtained. This ash (50 g) is mixed with water and given to the animal to drink once a day for 2 days. Another treatment for intestinal worms is to make a powder after drying the ingredients such as *Holarrhena antidysentrica* bark (10%), *Mentha piperita* leaves (10%), *Tinospora cordifola* leaves (40%), *Butea monosperma* seeds (20%) and *Phyllanthus emblica* leaves (20%). A dose of 3 g each of this mixture twice a day helps eliminate the intestinal worms. **Keywords:** *fafda thor,* ash, intestinal worms	Shri Ramanlal Nathuji Plarava, Koba, dist. Banswada (Rajasthan) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3116	Remedy for intestinal worms in animals by use of garlic	In this practice, 20 g garlic *(Allium sativum)* is pounded well and mixed with 200 ml vinegar, and administered orally on a full-moon day or a day before. For another 4 hr no feed or water is given. The practice of giving treatment during waxing phase of the moon is advised because the multiplication of worms in the gut of the animal is very fast during that time, therefore the treatment kills maximum worms on the full-moon day. **Keywords:** intestinal worms, garlic, vinegar, waxing	Shri Jaison J. Jerom, Kanya Kumari (Tamil Nadu) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

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3117	Treatment of intestinal worms in cattle by *am (Prunus persica)* and salt	In this practice, paste of *am* leaves (50 g) and salt (25 g) is prepared and given as supplement to cow once daily. Cattle owners of village Khai Khera in district Bareilly of Uttar Pradesh kill the intestinal worms by this treatment. **Keywords:** intestinal worms, *am* leaves, salt	Shri Krishna, S/o Ghasi Ram, village Khai Khera, dist. Bareilly (Uttar Pradesh)
3118	Remedy to intestinal worms in calves	A few leaves of *anar (Punnica granatum)* and 50 g *bam (Balco moniary)*, 50 g seeds of *bajari (Pennisetum* ***typhoides),*** 50 g seeds of *methi (Foeniculum graecuni)*, 50 g seeds of *raydo (Brassica juncea)*, 25 g *ajmo (Trachyspemium ammi)* and 50 g fruits of *Piper betel are* mixed and soaked in 1 litre water for 12 hr **and** then boiled till the quantity is reduced to half. About 100 ml of the prepared decoction is given to the affected calf for 2 days, before it is allowed to suck the milk. It is reported by many farmers that within 2 days the calf excretes the dead worms and stops licking soil. **Keywords:** *anar, bam, methi, bajari, raydo, ajmo,* intestinal worms	Shri Mahipat Sinh M Gadhvi, Muwada, Mahedabad, dist. Kheda (Gujarat)
3119	Use of ginger and leaves of *Psidium guajava* for deworming in calves	About 50 g rhizomes of ginger *(Zingiber* ***officinale*** Rose.) are fried and given with 500 g young leaves of *Psidium guajava* to the affected calf orally for once a day for 5-6 days. **Keywords:** ginger, *Psidium guajava*	Ms Shantamma (Karnataka) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3120	Fruit spines for evacuating roundworms and tapeworms from buffalo calves	For buffalo calves, tapeworm and roundworm infestation is a scourge, causing diarrhoea and death. Delicate spines present on the covering of ***imli*** like peas locally called *baidanka (Mucuna pruriens)* are fed to the calves. About 25 g spines are removed from the peas *(Mucuna pruriens)* with a scalpel and are collected on a sheet	Shri Hemanta **Pradhan,** Jakeikala, Banaigarh, dist. Sundargarh (Orissa)

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		of paper. These spines are mixed with 50 g jaggery, and a paste is prepared. The prepared paste is fed to the calves in the evening once a day for 1-2 days. The worms are excreted along with bowel and the animal gets relieved the next morning. **Keywords:** *baidanka*, jaggery, spines, calves, worms	
3121	Treatment to control internal parasites in calves and adults	In infant calves worms develop in their stomach and that results in weakness and poor growth. Villagers of the area are using these ITKs to control internal parasites in calves. 1. About 200 g *mahuwa* fruits, 100 ml liquor and 500 ml water are taken and kept for fermentation for 3 days. On the fourth day this fermented mixture is given to the calf in 2 dosages. Worms come out. 2. Green stem bark of *sambri* (200 g) from standing tree is chopped and is boiled inl litre water. It is then cooled, filtered and given to the animal in 2 dosages daily. Internal parasites of matured animals come out. **Keywords:** internal parasites, *mahuwa* fruits, *sambri* tree bark	Shri Heera Lai, S/o Shri Kamla ji Kumhar, Damana (Umra khapra), Jhadol, dist. Udaipur (Rajas than)
3 122	Control of worms in animal **stomach** by using radish leaves	People of village Nitoie in district Bareilly of Uttar Pradesh use radish leaves to kill the worms in the stomach of animals. About 100 g radish leaves are given orally to the affected animal daily. **Keywords:** worms, stomach, radish leaves	Shri Khubi Ram, S/o Shri Hulasi Ram, village Nitoie, Bhamora, dist. Bareilly (Uttar Pradesh)
.3123	Treatment for stomach worms in animals	A mixture of 250 g sugar solution and 0.5 litre butter milk is given twice daily to the animal to control stomach worms. This ITK is practised in village	Ms Natho, w/o Shri All Hasan, Bichuria, Balia, dist. Bareilly (Uttar Pradesh)

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		Bichuria in district Bareilly of Uttar Pradesh. **Keywords:** stomach worms, sugar solution, butter milk	
3124	Treatment of worms in animal stomach by *am* (peach leaves), watermelon and butter milk  Watermelon leaves	Juice of 10 leaves of *aru* (peach) and watermelon is extracted and 200-250 g butter milk is added to it by farmers of Khiraka village of Bareilly district (Uttar Pradesh) for killing the worms inside animal stomach. This dose is given twice or thrice daily. The worms of animal die. **Keywords:** peach leaves, watermelon leaves, worm, butter milk	Shri Rajendra Prasad, S/o Shri Ganen Lai, Khiraka, Auadh, dist. Bareilly (Uttar Pradesh)
3125	Control of worms in animals by buttermilk and black salt	Butter milk (1 litre) is mixed with black salt (50 g) by cattle owners of village Tarba of district Bareilly of Uttar Pradesh. This mixture is fed to the animal twice a day. All the worms die. **Key words:** butter milk, black salt, worm	Shri Nanhe Ram, S/o Shri Raghu Raj Singh, Tarba, dist. Bareilly (Uttar Pradesh)
3126	Treatment of stomach worms in animals by milk and *sira* (molasses)	About 250 ml each of *sira* and milk (without boiling) are mixed and fed to the animal by cattle owners of village Rajupur of district Bareilly in Uttar Pradesh. All the worms in animals die. **Keywords:** *sira*, milk, worm	Shri Maiku Lai, S/o Shri Nanku Lai, Rajupur, Devchara, dist. Bareilly (Uttar Pradesh)
3127	Deworming in calves by *andya* tree leaves	Calves suffer from the problem of worms up to the age of 6 months due to the habit of soil eating. Extract of 30^1-0 g green leaves of *andya* tree is taken out and mixed with 100 ml	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture

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		lukewarm water. This solution is given to the suffering calf. This dose is given for 3 days to get complete relief from worms. Alternative practice for deworming when *adya* tree is not found effective by a few cattle owners is to use datepalm. About 100 g date palm is ground and mixed with 200 ml fresh water and given to the calf once a day for 3 days. This practice is being followed in Alwar district of Rajasthan. **Keywords:** worms, soil eating, *andya* tree, lukewarm, datepalm	and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3 128	Treatment of worm infection in animals with *am* leaves	A paste is prepared by mixing 200 g *am* leaves and 50 g asafoetida. This paste is applied on the infected part twice daily. The worm infection is controlled. This ITK is practised in village Sundyaba in district Bareilly of Uttar Pradesh. **Keywords:** worm infection, *am* leaves, asafoedita	Shri Tota Ram, S/o Mulchand, Sundyaba, Haphijganj, dist. Bareilly (Uttar Pradesh)
3129	Use of camphor for treatment of worm infestation	This ITK is followed in village Nitoie of district Bareilly in Uttar Pradesh. When worm infestation is observed on animal injury, about 10 g camphor is applied on the injured part and it is bandaged. Camphor is very effective for worms. **Keywords:** worm infestation, camphor, injury	Shri Tota Ram, S/o Shri Chandan Ram, village Nitoie, Bhmora, dist. Bareilly (Uttar Pradesh)
3130	Treatment of worm in infected part of animal by leaves **of** *hajare (Phyllanthus niruri)*	*Hajare* leaves are tied on the worm-infected part of the body. Worms die due to leaf extract of *hajare.* **Keywords:** *hajare*, worm	Shri Bhup Ram. S/o Shri Sohan Lai, Khiraka, Auadh, dist. Bareilly (Uttar Pradesh)
3131	Treatment of worms in injury place of animals by soil ant nests	People of village Bichuria of district Bareilly in Uttar Pradesh follow this ITK. In this treatment, soil obtained from nests of ants is applied on the	Shri Satya Prakash, S/o Shri Ajaypal Singh, Bichuria, Balia, dist. Bareilly (Uttar Pradesh)

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		injured part of the animal to cure worms. **Keywords:** worms, injury, soil of ant nest	
3132	Removal of worms in wound of animals by use of *chanothi*	If any skin eruption or boil or a wound has been infested by worms in an animal, *chanothi (Abrus precatnrius)* creeper or its parts are applied around the animal's neck. The worms fall off the erupted spots and the affected skin dries up and heals quickly. **Key words:** *chanothi* creeper, boils, erupted spot	Shri Ambalal Kalubhai Patel, Patharia Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3133	Treatment of intestinal worm infection in animals by *harebhera* leaves	This treatment is being used by the people of village Khata of district Bareilly in Uttar Pradesh. To cure worm infection in animals, a paste of 200-250 g *harebhera* leaves is prepared and given twice daily. **Keywords:** worm infection, *harebhera* leaves	Shri Lalta Prasad, S/o Shri Kharagsen, Khata, block Rithoura, dist. Bareilly (Uttar Pradesh)
3134	Treatment of intestinal worm infection in animals by neem *{Azadirachta indica)* and jaggery	A paste is prepared by mixing 250g jaggery and 500 g neem *(Azadirachta indica)* leaves. This paste is given orally to the animal twice daily for the treatment of worm infection. This ITK is practised in village Gotia (Larpur) of district Bareilly in Uttar Pradesh. **Keywords:** worm infection, neem, jaggery	Shri Mohanswarup, S/o Shri Roshan Lai, Gotia (Larpur), Sainthal, dist. Bareilly (Uttar Pradesh)
3135	Use of watermelon leaves for treatment of worms in foot of catties	Juice of 10-20 g leaves of watermelon is extracted and applied on the foot of animals. The cattle owners of village Nawada (Ban) of district Bareilly in Uttar Pradesh follow this ITK for treatment against foot worms in animals. **Keywords:** watermelon, foot worm	Shri Sawaraj Singh, S/o Shri Sunder Lai, village Nawada (Ban), dist. Bareilly (Uttar Pradesh)
3136	Treatment of injury in animals by *kanja* leaves and mustard oil	Cattle owners of village Kamuakala, dist. Bareilly, Uttar Pradesh, heat the leaves of *kanja* (250 g) in 250 ml mustard oil and bandage it on the	Shri Veer Singh S/o Inderjit Singh, Kamua Kala, dist. Bareilly (Uttar Pradesh)

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		injured part of the body, which cures the injury. Keywords: *kanja*, mustard oil, bandage	
3137	Treatment of injury in animals by leaves of *satoda (pathachatti)*	When animals get injured, the farmers of village Mantal, dist. Ahmedabad (Gujrat) prepare paste of 150 g *satoda/ pathachatti (Lactuca heyneana)* leaves, and apply over affected body part and tie with cotton cloth. This practice is continued till 7 days for complete recovery. It is in vogue since time immemorial. Keywords: *satoda (pathachatti),* injury	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102
3138	Treatment of animal injury by mustard oil and cowdung	The worm infection in animal injury is cured by this ITK. In this practice, 100-200 g cowdung is burnt and the ash is mixed with 50-100 g mustard oil. This mixture is applied twice daily on the injury of animal. The worm infection will be fully cured. This ITK is practised in village Sundyaba in district Bareilly of Uttar Pradesh. Keywords: injury, animal, worms, mustard oil, cowdung	Shri Tota Ram, S/o Shri Mulchand, Sundyaba, Haphijganj, dist. Bareilly (Uttar Pradesh)
3139	Treatment of injury by paste of *peruk* creeper	When there is cut or injury on the skin of animal, the cattle owners of village Godum of district East Siang in Arunachal Pradesh grind the leaves of *peruk (Centella asiatica)* creeper with small amount of water. This paste is	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central

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	applied on the injured part of the body. For complete recovery, it is followed up to 2-3 weeks. It is an age-old practice. **Keywords:** *peruk* creeper, grind, injury	Agricultural University, Pasighat (Arunachal Pradesh) 731 102
3140 Treatment of injury by *rakatpindi*, turmeric *(ambia), chotchaji*, honey and *tajgeru*	Paste of all materials (50 g each) is prepared and heated slightly. This paste is applied on the injured organ, which cures the animal. This wisdom is being followed in village Nawada (Ban) of district Bareilly (Uttar Pradesh) **Keywords:** *rakatpindi*, turmeric *(ambia), chotchaji*, honey, *tajgeru*, injury	Shri Lakhpat Singh, S/o Shri Babu Singh, village Nawada (Ban), dist. Bareilly (Uttar Pradesh)
3141 Treatment of cut place in animal body by using *chitchita (Achyranthus aspera), meuri* and *bichuwa (Martynia annua)* leaves 	Cattle owners of village Pachhomi of district Bareilly in Uttar Pradesh prepare a paste of *chitchita, meuri* and *bichuwa* leaves (each 100 g) and apply on the cut part of animal's body. Animal cures within 4-5 days. **Keywords:** *chitchita, meuri,bichuwa*, cut place	Shri Sher Singh, S/o Shri Desh Raj Singh, Pachhomi, Faridpur, dist. Bareilly (Uttar Pradesh)
3142 Treatment of cut place in animal body by using vinegar and red chilli	Cattle owners of Bishesharpur village of district Bareilly in Uttar Pradesh prepare a paste of red chilli (25 g) and vinegar (50 g). This paste is applied on the cut place for curing. **Keywords:** vinegar, cut place, red chilli	Shri Chote Lai, S/o Shri Mangali Prasad, Bishesharpur, dist. Bareilly (Uttar Pradesh)

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3143	Treatment of cut in the body part by *katira*	About 10 g *katira* is immersed in water and paste is prepared. This paste is applied on the cut or injured part. This practice is followed in village Gotia (Larpur) of district Bareilly (Uttar Pradesh). Key **words:** *katira*, cut	Shri Surendra Pal, S.O Liladhar, Gotia (Larpur), dist. Bareilly (Uttar Pradesh)
3144	Treatment of cut place in animals with lime	Lime *(chuna)* is applied on the cut place of animal and it is bandaged. Lime-water is sprinkled over it, which cures the wound. It is being followed in village Khiraka of district Bareilly in Uttar Pradesh. **Keywords:** cut, lime	Shri Bhup Ram, S/o Shri Sohan Lai, village Khiraka, dist. Bareilly (Uttar Pradesh)
3145	Use of *guma* flowers for treatment of cut in body parts of animal	Paste of 8-10 *guma* flowers is prepared and applied on the cut part with a bandage. Farmers of village Sundyaba of district Bareilly in Uttar Pradesh observed curing of the cut part by this practice. **Keywords:** *guma* flower, cut	Shri Tota Ram, S/o Shri Mulchand, Sundyaba, village Haphijganj, dist. Bareilly (Uttar Pradesh)
3146	Treatment of animal injury with salt and vinegar	For the treatment of animal injury, people of village Gotia in district Bareilly in Uttar Pradesh use salt and vinegar. In this treatment 5 g salt is mixed with 50 ml vinegar and applied on the injured part twice daily. **Keywords:** injury, animal, salt, vinegar	Shri Sita Ram, S/o Shri Budh Sen, Gotia (Larpur), village Sainthal, dist. Bareilly (Uttar Pradesh)
3147	Treatment of animal injury by using *miuri* and *akash bel {Cuscuta reflexa)*  *Cuscuta reflexa*	People of village Gotia (Larpur) in district Bareilly in Uttar Pradesh use *miuri* and *akash bel* for the treatment of animal injury. About 50 g *miuri* and 100 g *akash bel* are boiled. After cooling, it is applied on the injury and bandaged. **Keywords:** injury, *miuri, akash bel*	Shri Hira Lai, S/o Shri Nukta Prasad, Gotia (Larpur), village Sainthal, dist. Bareilly (Uttar Pradesh)

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
3148	Use of alum for the treatment of injury in animals	People of village Bichuria in district Bareilly in Uttar Pradesh follow this ITK for the treatment of injury. Alum powder is applied on the cut place of animal and it is bandaged. Water is applied on it twice daily. **Keywords:** injury, alum	Shri Md. Noor Ahmed. S/o Shri Md. Lai **Mohamed,** village Bichuria, Balia, dist. Bareilly (Uttar Pradesh)
3149	Treatment of injury in animals with turmeric and lime	A paste is prepared by mixing turmeric and lime (each 50 g) and heated. The heated mixture is applied at the injured place of animal to cure the injury. People of village Bichuria in district Bareilly in Uttar Pradesh use this treatment to cure injury in the animal. **Keywords:** injury, animal, turmeric, lime	Shri Md. Noor Ahmed, S/o Shri Md. Lai Mohamed, village Bichuria, Balia, dist. Bareilly (Uttar Pradesh)
3150	Treatment of injury in animals with vinegar	Cattle owners of villages Kamua Kala, Maheshpur (Shiv Singh) and Khai Khera of district Bareilly in Uttar Pradesh apply 500 ml vinegar twice as per requirement daily to cure injury in animals. **Keywords:** vinegar, injury	Shri Sobha Ram. S/o Shri Khipali Ram, Kamua Kala, Shri Krishna S/o Shri Ghasi Ram, Khai Khera, Shri Mohan Lai, Maheshpur (Shiv Singh) and Shri Ramavtar, Khata dist. Bareilly (Uttar Pradesh)
3151	Treatment of animal injury by cotton cloth and mustard oil	Cotton cloth is dipped in mustard oil and burnt. After burning the ash of cotton cloth is collected and a paste is prepared. This paste is applied on the injury place of animal. The injury of animal is cured within 2-3 days. This treatment is common in village Khiraka of district Bareilly in Uttar Pradesh. **Keywords:** injury, cotton cloth, mustard **oil,** ash, paste	Shri Rajeshwar Singh, S/o Shri Ganen Lai, Khiraka, village Auadh, dist. Bareilly (Uttar Pradesh)
3153	Treatment of cut or injury in animals by *arbi* ***(Colocasia esculenta)***	Paste of 100 g *arbi (Colocasia esculenta)* is prepared and applied on cut part of the body organ to cure injury in the animals. **Keywords:** *arbi (Colocasia esculenta)*, cut	Shri Lala Ram, S/o Shri Tikka Ram, Nitoie, village Bhmora, dist. Bareilly (Uttar Pradesh)

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
3154	Treatment of injury in animals with turmeric and *desi* ghee	Cattle owners of village Amlonipur of district Bareilly in Uttar Pradesh wash the injured or cut body organ with hot water and apply the paste of turmeric (100 g) and ***desi*** ghee, that cures the injuries. **Keywords:** ghee, turmeric, injury	Shri Tara Chand, S/o Shri Narayan Singh, village Amlonipur, dist. Bareilly (Uttar Pradesh)
3155	Treatment of injury in animals by pigeonpea *(Cajanas cajan)* leaves	This ITK is practised in village Maheshpur (Shivsingh) of district Bareilly in Uttar Pradesh. In this treatment a paste is prepared by grinding 200 g pigeonpea leaves and it is applied on the injured part twice daily. This paste is useful to cure all types of injury. **Keywords:** injury, pigeonpea	Shri Rajendra, S/o Shri Babu Ram, village Maheshpur (Shivsingh) Bhairpura, dist. Bareilly (Uttar Pradesh)
3156	Use of *kokreinda (Carissa carandas)* for treatment of cut in animal skin	The people of village Rajupur in district Bareilly in Uttar Pradesh use this ITK to check bleeding from the cut place of the animal. Juice of *kokreinda* (250-300 g) is prepared and put on the cut place of the animal. The bleeding is controlled in a little time. **Keywords:** *kokreinda,* cut, bleeding	Shri Bhup Ram, S/o Shri Girbal Maurya, Rajupur, village Devchara, dist. Bareilly (Uttar Pradesh)
3157	Treatment of cut in animals with mango pickle	This ITK is practised in Rajupur, Khiraka and Pachhomi villages in Bareilly district of Uttar Pradesh. Mango pickle (50-1 OOg) is bandaged in cut place of animal. The cut place of animal is cured within 2-3 days. **Keywords:** cut place, mango pickle, bandage	Shri Brij Mohan Lai, S/o Shri Jamuna Prasad, Rajupur, Devchara, dist. Bareilly (Uttar Pradesh), Shri Rajeshwar Singh, S/o Shri Ganen Lai, Khiraka, dist. Bareilly (Uttar Pradesh) and Md. Sabir, S/o Shri Mangali Shah, Pachhomi, dist. Bareilly (Uttar Pradesh)
3159	Use of thymol and rock salt to heal wound in cattle	People of hilly areas of Shimla in Himachal Pradesh are using this treatment to cure wound in cattle. About 2-5 g thymol and 5 g rock salt are pound and a paste is prepared by	Farmers of hilly areas of district Shimla of Himachal Pradesh Facilitator: Dr L R Verma, MRDA,

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		adding water drop-wise. This paste is tied over the wounded area to heal it effectively. **Keywords:** wound healing, thymol, rock salt	4 Summer Hill, Shimla 171 005
3160	Use of *dub* grass and rice to stop bleeding from wound or injury	*Dub* grass *(Cynodon dactylori)* is ground to form a smooth paste. Then broken rice *(Oryza sativa)* is crushed to form a smooth powder. Both are mixed together. This mixture is applied on the wound 4 times a day. The same amount is administered orally 4 times for a day. **Keywords:** *dub* grass, wound, rice	Shri S. Dhonokanta Das, village Borgaon. dist. Kamrup (Assam)
3161	Treatment of injury in animals by *rnolya mehandi*	When an animal suffers from injuries, the farmers of district Alwar in Rajasthan take out the extract of the herb called *molya mehandi.* This extract is poured, drop by drop, over the affected body part. Stem and leaves of *molya mehandi* are fried in mustard oil and tied over the injured part. This practice is done cautiously on every alternate days till full recovery. It is an age-old practice. **Keywords:** *molya mehandi*, stem, mustard oil, wound and cuts	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102
U62	Healing of wounds and cuts in animals	In this practice about 50 g roots and leaves of *Canscarca andrographioides* (Garo name, *sak-sre)* is ground to make a paste. It is applied externally on the affected body parts of the animal, twice daily, till recovery. **Keywords:** *sak-sre*	Shri Lalmuanzuala Chinzah, GIAN-NE, IIT, G-North Guwahati (Assam)
3163	Use of green-leaf extract of *devil* tree to cure wound in animals	The wounded place is washed with the alum water, 20 g green leaves of devil tree *(Calotropes gigantea)* are crushed and extract is taken out. This extract is applied on the wound to give immediate cure. This practice is very effective and 80-90% of cattle owners are	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University,

Cod No.	Title of the **ITK**	Description of the **ITK**	Name and address of the discloser/facilitator
		using it. **Keywords:** *devil* tree, wound	Pasighat (Arunachal Pradesh) 731 102
3164	Treatment to cure wound in cattle by using *Elephantopus scaber*	The leaves of *Elephantopus scaber* L. are cleaned with water and crushed into a fine paste. The paste is externally applied on the affected part of the wounded animal. The paste should not be smeared on the wound. It is placed in a thin cloth and tied around the wound of the animal. This is good for the navel infections too. One plant at a time is enough for curing the wound. **Keywords:** wound, smeared, navel infections	Shri Moolchandra (Karnataka) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3165	Use of paste of butter and snails *(ghongha)* for healing the shoulder wound of bullocks	Cattle owners of Sonapur, Sewata, Hamirpur and Kalbalhuti villages of district Azamgarh in Uttar Pradesh observe that young bullocks' shoulders are wounded from *juwath* (yolk of plough) during training of running a plough, whereas trained bullocks are wounded while running the plough in heavy-textured soil. To cope up with this problem, cattle owners collect 1 or 2 snails from the lowland black cotton soil areas, separate the shell and crush the remaining portion with butter to make a paste. This paste is applied on the affected part of shoulders, twice a day (morning and evening). This practice is continued till complete cure. It gives 80-90% relief, and 35-40% cattle owners are using this technology since ages. **Keywords:** shoulder wound, snails, butter, yolk	Dr. Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
3166	Treatment of animal wound or cut by *gumma (Leucas linifolia)* flowers 	A paste of 8-10 *gumma* flowers is prepared and it is bandaged on cut place of animals. The cut place is cured. This ITK is practised in village Sundyaba of district Bareilly in Ultar Pradesh. Keywords: wound or cut, *gumma* flowers	Shri Tota Ram, S/o Shri Mulchand, Sundyaba, village Haphijganj, dist. Bareilly (Uttar Pradesh)
3167	Treatment of wound in animals with turmeric and mustard oil	About 50 g turmeric paste is taken and is fried in 100 g mustard oil. This paste is applied on the cut places of animal body twice daily. The people of village Khata of block Rithoura in district Bareilly in Uttar Pradesh use this treatment. Keywords: animal cut, turmeric, mustard oil	Shri Kashi Ram, S/o Shri Pyarelal, village Khata, block Rithour, dist. Bareilly (Uttar Pradesh)
3168	Use of *piludi* to cure wound and muscle pain in animals	To cure wound and muscle swelling, 100-150 g *piludi (Salvadora persica)* is collected and adequate water is added to make a paste, which is applied on the wound and swelling parts. This procedure is repeated everyday till the complete recovery. The efficacy is 50-60%. Keywords: *piludi*, swelling, wound	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102
3169	Remedy to cure sprain in animals	*Barun (Cataeva nurvala)* bark and *bihlongoni {Polygonum* spp.) leaves are ground separately with a little water and the juice is extracted. Turmeric is crushed to smaller pieces or powdered. The juice extract of *barun (Cataeva nurvala)* is massaged twice daily for 5 days, followed by	Shri Dhonokanta Das, village Borgaon, dist. Kamrup (Assam) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

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		massaging with the juice extract of *bihlongoni* twice daily for 5 days. Turmeric should be administered orally twice a day for 5 days. **Keywords:** *bihlongoni* leaves, *barun*	
3170	Cure of wounds and sprains in animals with seeds of *bhallia*	About 100 g seeds of *bhallia (Semecarpus anacardium)* are boiled and cooked in castor oil. Its paste is prepared, which is applied on the wounds twice a day for 2-3 days. This oil is used for massage in affected legs of ploughing bullocks once in evening hours. **Keywords:** *bhallia*, castor oil, massage, wound	Shri Antaryami Pradhan, village Tansi, dist. Angul (Orissa) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3172	Treatment to cure sprains and fractures in animals  *Calotropis gigantea*	A paste of *awalia (Cassia auriculata)*, excreta of goat, soil below *akadia (Calotropis gigantea)* is used to bandage the sprain or the fractured limb. It gets cured within a week. A bandage is applied for 15 days and is replaced by a new bandage for the next 10 days to cure the fractured limb. **Keywords:** *awalia*, *akadia*, bandage	Shri Bhayajibhai Amrabhai Pagi, Hathivan Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3173	Remedy to cure arthritis by using *khipdo*	About 500 g branches of *khipdo (Leptadenia reticulata)* is used to cure arthritis in animals. *Khipdo* has small and round white flowers. It has straight branches with thin and long leaves (5 cm). Thick sticky fluid comes out of the branches when they break. A bunch of thin branches of *khipdo* are kept inside a mud pot,	Shri Karsanbhai Vania, Lakadia, village Bhacchau, dist. Kutch (Gujarat) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

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		which is covered with dung. The pot is kept in a pit in the dung-hill for at least 7 days. Bunch of the plant is taken out and the water is filtered in another vessel. Precaution is taken while opening the mouth of the mud pot, as the warm vapours coming out of the pot may burn the face. About 250 ml of the filtered liquid is given to the cattle along with the fodder twice a day for 3 days. Within 3 - 4 days, arthritis in animals can be cured effectively. **Keywords:** *khipdo*, arthritis, mud pot, warm vapours	
3174	Cure of arthritis in cattle	The ingredients are: 1 small bulb of *Allium vineale (bon nohoru)*, 3 leaves of *Piper betel (pan* leaves) and 4 pieces of ginger *(Zingiber officinalis).* These ingredients are mixed and then ground to make a paste. This is given orally (three doses) at every 3 hr interval daily to the affected animal. **Keywords:** *bon nohoru*, ginger, pan leaves	Shri Bodon Bora, Silsako, North Guwahati, Guwahati, dist. Kamrup (Assam) 781 039 Facilitator: National Innovation Foundation. Ahmedabad (Gujarat) 380 015
3175	Use of *nochi (Vitex negundo), kattukottai (Jatropa gossiphylla)* and neern *(Azadirachta indica)* leaves for treatment of cattle wound	Leaves *of nochi (Vitex negundo), kattukottai (Jatropa gossiphylla)*, and neem *(Azadirachta indica)* are cut into small pieces and a little water is added to it. Then it is boiled properly. The mixture is applied on the wound. It gives immediate cure. **Keywords:** cattle wound, *nochi, kattukottai, neem*	Shri G. Palanichamy. S/o Shri Gopal Naidu, Navapatty, Kannivadi, dist. Dindugul (Tamil Nadu) 624 705
3176	Use of banana-leaf ash to control wound in cattle	To control wound in cattle, 50 g banana-leaf ash (made out of a separate banana plant, called *puthu vazhai)* is mixed with 20 ml butter. This paste is applied twice daily. This mixture helps to heal the wound in cattle. **Keywords:** cattle wound, banana leaf ash, butter	Shri A.E. Ramadoss, Adhanappattu. Thensiruvallur. Vanur. Villupuram (Tamil Nadu) 604 102

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
3177	Use of *kochila* leaves for curing **cut,** wounds and snake bites in animal	The *kochila* plant *(Strychnos nux-vomica)* in Orissa bears yellowish and round fruits, which look like *tendu* fruits. Leaves of these plants are bitter to taste. Some *kochila* leaves are taken, dried in sun and powdered. This powder is applied on a cut, wound or snake-bite, and as a result the wound gets healed and the effect of poison gets nullified very quickly. It is given twice a day, for 2-3 days. Farmers around the village consider it as their natural antibiotic. **Keywords:** *kochila*, wound, snakebite, antibiotic	Shri Amulya Kumar Jena, Ganjam (Orissa) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3178	Prevention of excessive bleeding due to injury in animals by using leaves of *Artemisia vulgaris* and roots of *Capparis grandiflora*	Equal quantities (4 g) of fresh leaves *of Artemisia vulgaris* (Garo name, *sak-sak)* are crushed well along with the roots of *Capparis grandiflora.* This is given orally to the affected animal thrice daily, till recovery. **Keywords:** *sak-sak*	Shri Lalmuanzuala Chinzah, GIAN-NE, I IT, G-North Guwahati (Assam) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3179	Use of *nari (Commelina* spp.) leaves and mustard oil for the treatment of injury in animals	About 10 *nari* leaves are taken, and after applying 50 g mustard oil, these are heated. The leaves are bandaged on the injured place of the animal. The animal is fully cured within 1-2 days. This ITK is practised in Nitoie village of Bareilly district in Uttar Pradesh. **Keywords:** injury, *nari* leaves, mustard oil	Shri Tota Ram, S/o Shri Chandan Ram, Nitoie, Bhmora, dist. Bareilly (Uttar Pradesh)
3180	Use of neem oil and turmeric powder to control maggot wound in cattle	To control maggot wound in cattle, 20 ml neem *(Azadirachta indica)* oil is mixed with 4-teaspoonfuls of turmeric *{Curcuma tonga)* powder. This paste is applied until the wound gets healed. **Keywords:** maggot wound, cattle, neem oil, turmeric	Shri R. Vijayan, Shanthi Nagar, Periamuthur, Krishnagiri, dist. Dharmapuri (Tamil Nadu) 635 122
3181	Cure of wound affected by maggots in animals by using *fisfal* and *hidal*	Ingredients used are: 10 leaves of *fisfal (Prunus domestica)* and 5 ml gum of *hidal (Barringtonia acutangula).* The	Shri Bodon Bora, Silsako, North Guwahati, Guwahati

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		fisfal leaves are crushed to make a paste. The paste is applied over the maggoted wound. A clean white cloth is wrapped over the wound. Depending upon the position of the wound, gum of *Barringtonia acutangula* can be used as an adhesive to keep the cloth intact. One or two applications per day are necessary. The cloth is removed after 1 day. **Key words:** gum, *fisfal*, wound, maggots	(Assam) 781 039 Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3182	Use of *alipen-kenaghi* for treatment of maggoted wound	*Alipen-kenaghi* (in Rengma dialect) is an arthropod belonging to class Diplopoda, having about 11 segments with 22 pairs of legs. It has a dorso-ventrally flattened body and slightly concave ventral surface. It is usually found during summer season in thick jungle. It has a peculiar characteristic that when it is disturbed during motion, it coils tightly and becomes round like a marble, and moments later if kept undisturbed starts moving. It is crushed and made into a paste. The paste is applied to maggoted wounds. Maggots are either get killed or are expelled from the wounds, thus helping in healing the wounds. **Keywords:** *alipen-kenaghi*, maggoted wound	Shri John Semy, Nsunyii, P.O. Tseminyu, dist. Kohima (Nagaland) 797 109 Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3183	Use of *ataaqii* leaves and bamboo shoots in maggoted wound	*Ataaqii* is a creeper having thorns, both in the stems and ribs of leaves. The leaves are crushed along with tender bamboo shoots to make a paste, which is applied to the maggoted wounds. The leaves and young tender shoots of *akhhachii* plant are also crushed along with this paste and juice extracted from it. This is used for treating maggoted wound. **Keywords:** *ataaqii*, *akhhachii*, maggoted wound, bamboo shoot	Shri Wala Thong, Nsunyu, P.O. Tseminyu, Kohima, (Nagaland) 797 109



Ataaqu (tree)



Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
3184	Use of *vulhanglu* for maggoted wound  Vuthanglu	*Vuthanglo* (Kuki dialect) belongs to Asteraceae family, which is a wild vegetable, found in plenty. In *Kuki dialect vu* means pig, *thang* means maggot and *lu* means medicine. For medication purpose, the leaves are crushed and applied to the affected area for killing or expelling maggots. **Keywords:** *vuthanglu,* Asteraceae, maggoted wound	Shri Thangboi Kuki, Medziphema (Nagaland) 797 106
3185	Use of *Schima* ***wallichii*** bark for maggoted wound  *Schima wallichii*	*Schima wallichii (ameshiichhan* in Rengma; *meshii* in Angami) is a tree, found in abundance all over Nagaland. The bark of this tree, common salt and some naphthalene balls are crushed together and applied to the maggoted wound. It is reported that the preparation gives effective result. **Keywords:** *Schima wallichii, ameshiichhan, meshii,* salt, naphthalene, maggoted wound	Dr S. Hangsing, Medziphema (Nagaland) 797 106
3186	Checking bleeding in animals with decoction of *naga kaho* and *theithuk theirong* leaves 	This practice is being followed by 70-80% villagers of Nagainga of Ukhrul district (Manipur) since time immemorial. About 250 g *nagakaho (Derris ferruginea)* and 125 g *theithuk* ***theirong*** *(Heynea trijuga)* leaves are boiled in water for 1 hr and after cooling the filtered extract is preserved in bottle. When any organ of animal is injured and there is excess bleeding, this decoction is applied over there and that body part is tied with cotton cloth. Total course of treatment is 7-8 days. **Keywords:** *naga kaho, theithuk thei rong,* overbleeding	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension 

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			and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3187	Treatment of skin infection in animals with *barjgandha*	The people of village Khata of block Rithoura of district Bareilly in Uttar Pradesh are using this ITK. For the treatment of skin disease in animals, 100 g *barjgandha* paste is prepared and applied on the infected place. The skin infection is cured. **Keywords:** skin infection, *barjgandha*	Shri Lalta Prasad, S/o Shri Kharagsen, Khata, Rithoura, dist. Bareilly (Uttar Pradesh)
3188	Curing of an abscess in animals	Ingredients used for the preparation of decoction to cure abscess in animals are: salt (10 g), roots of *ulkosu (Amorphophallus campanulatus)* 3pieces (2 inches), roots of *ulot kombol (Hibiscus pungens)* 3pieces (2 inches), roots of *tholapadma* 2 pieces, roots of *outenga (Dillenia indica)* 2 pieces, roots of *choral (Tragia involucrate), 2* pieces and roots of *bon kopah* ***(Bombax*** *cieba) 2* pieces. All these ingredients are boiled in water. The water is administered 3 days prior to opening of the abscess. *Aakon (Calotropis gigantea)* is also applied on the abscess. After 3 days the abscess is punctured with a main tenga thorn. The pus is evacuated, but if it could not be evacuated fully, small amount of salt is wrapped in a small cloth and inserted in the punctured hole. The *Chorat, ulotkombol* and *bon kopah* roots (around 18 inches) are orally given daily for 3 days. If started on Saturday, it should be continued till Monday. The second and third dose should be given after a gap of 15 days preferably on Tuesday and Saturday and continued for 3 days. **Keywords:** abscess, pus, salt, roots	Shri Bodon Bora, Silsako, North Guwahati, dist. Guwahati (Assam) 781 039 Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

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3189	Use **of *junjunia*** leaf paste for abscess in dewclaw	About 50 g leaves of *junjunia* ***(Cmtalaria striata)*** are ground to make a paste. The prepared paste is applied daily for 3 days. If the medicine is applied at the onset of the disease, the inflammed area subsides automatically, and in advanced case recovery is evident with drainage of pus from the affected region. **Keywords:** *junjunia,* pus, drainage	Shri Bodon Bora, Silsako, North Guwahati, Guwahati, dist. Kamrup (Assam) 781 039 Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3190	Use of ***bhot bangana*** as treatment for abscess in animals	In this ITK, the raw fruits of *bhot bengana (Solanum* ***torutn)*** are given orally for 5 days to the diseased animal. This proved to be successful. **Keywords:** ***bhot*** *bengana,* abscess	Shri S. Dhonokanta Das, Borgaon, dist. Kamrup (Assam) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 **015**
3191	Use of leaves of *mohaneem* and *bih dhekia* to cure scabies in goats	Equal quantities (50 pieces) of leaves of *mohaneem (Azadirachta indica)* and *bih dhekia {Lygodium japonicum)* are boiled in water and the water is used as the medicine. The affected animal is given bath with the water daily until recovery. **Keywords:** *mohaneem, bih dhekia*	Shri Bodon Bora, Silsako, North Guwahati, Guwahati, dist. Kamrup (Assam) 781 039 Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 **015**
3192	Treatment of scabies by leaves of ***vent***	Scabies is a skin problem in animals. A local plant, known as *vent (Helerofragma roxbargii)* is available in the Athmallick subdivision of Orissa. In this practice, 7 8 leaves of *very* are taken and a paste is made. This paste is applied on the scabies affected animal in the night for 7 days. This practice is very effective. **Keywords:** *veru,* scabies	Shri Gopinath Pradhan, Athmallik (Orissa) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 **015**
3193	Overcoming the problem of itching in animals	When animals of village Mantal of Ahmedabad (Gujarat) feel uneasiness due to itching, the cattle owners collect 30^40 g green or dried (dried is preferred) inflorescence of *kali tuhi*	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture

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		(Ocimum amricanum) from the nearby forest or kitchen garden and crush it to prepare a powder. This powder is mixed in 250 ml water and given as supplement to the suffering animal with the help of bamboo pipe. This dose is repeated for 3-4 times a day and may be continued up to 7 or 8 days. It is an age-old practice. **Keywords:** *kali tulsi*, inflorescence, itching, uneasy	and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3194	Treatment of shoulder swelling in animals with *sayor* 	For the treatment of shoulder swelling in animals, about 200 g *sayor* branches are taken and fried in 1 kg mustard oil. This oil is used for message on the swelling of shoulder twice daily. The swelling is cured. This ITK is practised in village Sundyaba of district Bareilly in Uttar Pradesh. **Keywords:** shoulder swelling, *sayor* branches, mustard oil	Shri Tota Ram, S/o Shri Mulchand, Sundyaba, Haphijganj, district Bareilly (Uttar Pradesh)
3195	Treatment of shoulder swelling in animals with *geru*	For the treatment of shoulder swelling in animals, farmers of village Nitoie of district Bareilly in Uttar Pradesh follow this ITK. A paste is prepared of 250 g *geru* which is applied on swollen shoulder of the animal. Within 2-3 days swelling is controlled. **Keywords:** shoulder, swelling, *geru*	Shri Sripal, S/o Shri Ram Singh, village Nitoie, Bhmora, dist. Bareilly (Uttar Pradesh)
3196	Cure of yoke gall in animals by using paste of *khondi* and custard apple	If animal gets wounded due to heavy load and is not able to take the load, 200 g *khondi (Cadaba fruticosa)* are ground to paste. Another method of treatment is to crush the leaves of custard apple. The juice extract is applied 3 times a day on the affected area, or the prepared paste is applied on the neck after heating. The wound gets healed and the animal gets relief	Shri Shukriabhai Janiabhai Choudhary, Dhunkal Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

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		within 4-5 days. This should be continued at least for 5 days. **Keywords:** *khondi*, custard apple	
3197	Use of neem leaves to cure yoke gall in animals	About 50 g leaves of neem *(Azadirachta indica)* is heated in a frying pan by adding mustard oil to it, and a paste is made. The paste is applied daily on the wound and it is wrapped with a bandage. It is good to apply a bamboo head-collar. **Keywords:** neem, bandage, bamboo	Shri S. Dhonokanta Das, Borgaon, dist. Kamrup (Assam) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3198	Cure of yoke gall of bullocks	A paste from bulbs of garlic *(Allium sativum)*, seeds of *Amaranthus paniculatus* L. and fruits of *Piper longum* are prepared. The prepared paste is applied externally on the affected region. **Keywords:** garlic, piper	Ms Shantamma (Karnataka) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3199	Use of *kali makoi {Solarium nigrum)* for treatment of swelling in animal body	This ITK is practised in village Rajupur in block Devchara of district Bareilly in Uttar Pradesh. In this practice, a paste of 200-250 g *kali makoi* is prepared and it is applied on  S. *nigrun* the swelling part of the animal. Animal gets relieved in 2-3 days. **Keywords:** *kali makoi*, swelling	Shri Nanhe Lai, S/o Shri Shiv Charan Lai, Rajupur, Devchara, dist. Bareilly (Uttar Pradesh) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
3200	Cure of swelling due to injury in animals	Decoction of 4 pieces of leaves of *Acanthus leucostachysis (sam sikal)* is mixed with the extract of tuber (4 small pieces) of *Allium* spp. *(ban nohoru)* and 4 leaves of *Thunbergia* spp. The medicine is applied directly on the affected region, twice daily, till recovery. **Keywords:** *sam sikal, bon nohoru*	Shri Lalmuanzuala Chinzah, GIAN-NE, IIT, G-North Guwahati (Assam) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3201	Treatment of hoof- and foot-joint swelling with *rasodi* in calfs	When animals suffer from hoof- and-foot joint swelling, the cattle owners of village Mantal of Ahmedabad (Gujarat) collect 100-150 g leaves of *rasodi (Vanda tessellata)* plant and boil them in 500 ml water till solution remains about 300 ml. It is drenched with the help of bamboo pipe, twice a day up to 6 days. **Keywords:** joint swelling, foot swelling, *rasodi*	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3202	Curing the body swelling by using *vand* plant leaves	Sometimes due to field operations animals suffer from swelling in body parts and feel severe pain. About 350 g green leaves of *vand {Derris trifoliate)* plant are collected and boiled in 1 litre water till decoction remains 500 ml. Lukewarm decoction is given to the suffering animals orally, thrice a day. This dose is continued up to 10-12 days at a gap of 1 day. **Keywords:** swelling, *vand*	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3203	Cure of eye infection with wooden coal	The cattle suffering from eye disease are treated with wooden coal. About 10 g dust of wooden coal is applied to the eyes of the ailing animal, which gives fast relief. The people of village Nitoie in district Bareilly in Uttar Pradesh follow this practice. **Keywords:** eye infection, wooden coal, dust	Shri Sultan Singh, S/o Shri Mewa Ram, Nitoie, Bhamora, dist. Bareilly (Uttar Pradesh)

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
3204	Treatment of eye infection in animals with *batasa* (sugar product)	To cure eye infection in animals, people of village Sundyaba in district Bareilly in Uttar Pradesh are using this ITK. About 50-100 *batasa* (made of sugar) and water are taken in mouth. After mixing, it is applied repeatedly spitting on the animal's eye twice daily. **Keywords:** eye infection, *batasa*	Shri Tota Ram, S/o Shri Mulchand, Sundyaba, Haphijganj, dist. Bareilly (Uttar Pradesh)
3205	Treatment of eye infection in animals with salt water	For the treatment of eye infection in animals, 5-10 g salt and water are taken in mouth and are mixed. After mixing the solution is spitted in the animal's eyes. This practice is followed in village Khiraka of district Bareilly in Uttar Pradesh. **Keywords:** eye infection, salt, water	Shri Rajeshwar Singh, S/o Shri Ganen Lai, Khiraka, Auadh, and Sh. Rajendra Maheshpur (Shiv Singh) dist. Bareilly (Uttar Pradesh)
3206	Use of salt water for treatment of eye infection in animals	About 2-3 g salt is mixed in water and applied on the infected eyes of the animal in morning time. It is found to be effective to cure all types of eye infections and is followed by the people of village Bichuria in Uttar Pradesh **Keywords:** eye infection, salt, animal	Shri Md. Noor Ahmed, S/o Shri Md. Lai Mohamed, Bichuria, Balia, dist. Bareilly (Uttar Pradesh)
3208	Treatment for corneal opacity in goat with *lai jabori*	In this practice, two *lai jabori (Drimia indicd)* plants are taken, crushed and juice is extracted from them. The juice extract is applied on the affected eyes of the goat, thrice daily, till recovery. **Keywords:** *lai jabori*, juice, goat corneal opacity	Shri Bodon Bora, Silsako, North Guwahati, Guwahati dist. Kamrup (Assam) 781 039
3209	Treatment for sore eye in cattle by using *perumpillai* and pepper	A paste is prepared by grinding 100 g *perumpillai* ***(Aerva** persica)* leaves, and 5 g pepper powder *(Piper nigrum).* This paste is taken in a piece of white muslin cloth and squeezed slowly on the eyes. Suggested dose for 1 eye is 3-5 drops for 2 days, which gives relief to the cattle from sore eye. **Keywords:** sore eye, *perumpillai*, pepper powder	Shri P. Vellikkannu, S/o. Shri Pichan, Melvalapadi, Vadakananthal, Sankarankoil, Villupuram (Tamil Nadu) 606 207 Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
3210	Treatment for conjunctivitis in animals by using a mixture of butter and pulse flour	Due to conjunctivitis, animals' eyes become red, and mud-like excreta is secreted from the eyes. The affected animal feels uneasiness due to pain. To cure it, cattle owners of Alwar district in Rajasthan mix 250 g butter with 400 g pulse flour and feed it to the cattle. In addition, some farmers wash the eyes with water mixed with lemon juice. **Keywords:** conjunctivitis, eye, butter pulse flour, lemon	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102
3211	Eye treatment of animals with mustard oil	The people of village Khata of block Rithoura in Uttar Pradesh use mustard oil for the treatment of eyes in animals. In this treatment, 100 g mustard oil is applied on lower part of horn. The animals' eyes are cured. **Keywords:** eye treatment, mustard oil	Shri Ramauttar, S/o Shri Gargsen, Khata, Rithoura, dist. Bareilly (Uttar Pradesh)
3212	Treatment of eyes in animals with *sirsa* leaves	This treatment is being used by the people of village Gotia (Larpur) of district Bareilly in Uttar Pradesh. Juice of 10-20 *sirsa* leaves is extracted and applied drop by drop to the animal's eyes twice daily. The eye infection is fully cured. **Keywords:** eye treatment, *sirsa* leaves	Shri Hira Lai, S/o Shri Nukta Prasad, Gotia (Larpur). Sainthal, dist. Bareilly (Uttar Pradesh)
3213	Extract of *fog (Calygonum polygonoides)* leaves as treatment for *aankh mein phoola* (cornea opacity) in animals	This treatment is followed in district Jodhpur of western Rajasthan. One kg green *fog (Calygonum polygonoides)* leaf is taken and extract is prepared. About 100-200 ml extract is taken and cotton lint is dipped in it. It is kept over the eyes of animals and tied there. It also cures the effect of *Calotropis* allergy. **Keywords:** *aankh mein phoola* (cornea opacity), extract, fog *(Calygonum polygonoides)* leaves	Shri Iwar Dan, Retd. Captain, Chanchalwa, Utamber, Shergarh, Jodhpur (Rajasthan)
3214	Smoke of camel bone—an effective remedy for mastitis in animals	Animal keepers of village Kantharia say that mastitis in milch animals is more prevalent during rainy season.	Shri Trilok, S/o Shri Kaloo ji Prajapati, and Shri Bheeka Ram

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		Udder and teats are affected. Swelling appears on the udder. Locally it is called as *gor*. There is discharge of blood or pus in one or all the four teats. Animal keepers of village Kantharia in Jhadol of district Udaipur in Rajasthan follow this treatment. The udders of affected animals are exposed to smoke of camel bone. The wood or cowdung cake is burnt in earthen pot and powder of camel bone is poured on the burning cowdung cake. It is kept under the udder. This is repeated for 2-3 days for cure. **Keywords:** mastitis, camel bone, burning wood, cowdung cake, smoke	Luhar, Kantharia, Jhadol, dist. Udaipur (Rajasthan)
3215	Treatment of mastitis in animals with *wading* plant	Mastitis *(gor)* is found in milch animals. With the infestation there is swelling in udder and animal ceases milk production. Sometimes there is pus or blood with the milk. Villagers of Jhadol area in district Udaipur in Rajasthan use roots of *wading* (a bush) for its treatment. About 1 foot long root of *wading* bush is taken and fed daily to the animal. **Keywords:** Mastitis *(gor)*, swelling udder, *wading* bush, roots	Shri Soormal, S/o Shri Detaji Badera, Damana (Umra Khapra), village Jhadol, dist. Udaipur (Rajasthan)
3216	Treatment with *servan* and *chilar* to cure swelling on the udders in cattle	About 100 g leaf of *servan (Gmelina arborea)* and 100 g leaf of *chilar (Caesalpinia decapetala)* are crushed to make juice. About 50 ml juice extracted from this mixture is applied on the udders. This is done once in 3 days to cure swellings. Care should be taken not to allow the animal to lie till the juice dries up. **Keywords:** *servan, chilar*, udder, juice	Shri Savjibhai Gamanbhai Gangodi, Baripada Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3217	Cure of swelling of udders in cattle by using leaf of *Luffa acutangula*	This ITK has been practised for the last 30 years. In this practice, 100-150 g leaf of *Luffa acutangula*, locally called *peeyi peerku*, is crushed to a fine paste. This paste is applied	Shri Ayyathurai Konar, Krishnapuram, dist. Madurai (Tamil Nadu)

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		externally, once a day for 3 days. This medicine can be applied over the previous day's application, without removing it. **Keywords:** intestinal worms, *peeyi peerku, varmakalai, silambu*	
3218	Use **of *Oroxylum indicurn*** to cure wound/cracks on udders in cattle	In this practice, seeds of *Oroxylum indicurn* Vent, are fried in mustard oil and made into a paste. This prepared paste is applied externally twice daily, till the disease gets cured. **Keywords:** *Oroxylum indicum* Vent, mustard oil	Shri V K Sharma Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3219	Remedy to cure bleeding from udders in cows by using stems of *Dichiostachys cinerea*	The stems of *Dichiostachys cinerea (vidathalai kutchi)* are collected and burnt. Then milk is poured on the burning sticks and allowed the fumes to pass through the udders of cow or a paste of the stems by adding milk to it is made and applied on the udders of the affected cow. This procedure has to be repeated for 6-7 days, twice a day. **Keywords:** bleeding from udder, milk burning sticks	Shri Palchamy and K.Arumugam, Kannakulam, RO. Sooranam, Sivagangai (Tamil Nadu)
3220	Cure of swelling on udders by use of decoction of bark of ***satodi***	About 500 g bark of *satodi (Boerhavia diffusa)* tree is crushed and mixed with 500 ml water. This is applied on the affected area and some liquid can also be given to drink, twice a day for 3-4 days. This cures swelling on udders within a few days. **Keywords:** *satodi*, udder, bark	Shri Bhayajibhai Amrabhai Pagi, Hathivan Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3221	Use of fenugreek, leaves of *ulukha* and molasses as remedy for mastitis in cattle	The seeds (100 g) of fenugreek *(Trigonella foenum-graceum)* are fried and then crushed. The leaves of *ulukha (Desmodium triquetrum)* (250 g) **are** also ground to paste. Molasses are then added to the ground seeds and leaves. This mixture is divided into 7 parts and is applied in 2 ways (i) salt is dissolved in 1 litre water and the water is boiled, and then the steam of the	Shri Bodon Bora, Silsako, North Guwahati (Assam) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

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		water is applied **in** the form of fomentation and is given 3 times a day for 7 days; and (ii) 1 part of the prepared mixture is given daily for 7 days orally. **Keywords:** *ulukha*, fenugreek, fomentation	
3222	Use of *puma noboi* and root of .*soru borial* to cure mastitis in cattle	In this ITK, *puma noboi (Boerhaevia diffusa)* and roots of *soru borial* (small) *(Sida cordifolia)* are taken and half the part is ground to make a paste, which is applied on the **inflammed** portion, and the remaining part is administered orally once for 5 days. **Keywords:** *puma noboi*, inflammed, udder	Shri S. Dhonokanta Das, Borgaon, dist. Kamrup (Assam) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3223	Use of *koros* and honey to cure mastitis in cattle	The whole herb, *koros (Pongamia pinnata)* is taken and is mixed with honey to make a paste. It is administered orally 3 times a day for 3 days. **Keywords:** *koros*, honey	Shri S. Dhonokanta Das, Borgaon, dist. Kamrup (Assam) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3224	Remedy to cure bovine mastitis	In this practice, 50-60 g leaves of *Acalypha indica (kuppameni)* and *Cynandropsis gynandra (taiwela)* are ground and extract is taken. Seeds of *Abrus precatorius* L. *(gundu mani)* is ground with the prepared extract to make a fine paste. This is externally applied once a day for 3 days. Also the root of *Aristolochia indica (thalaisuruli)* is crushed by adding 200-300 ml water and juice is extracted from it. This juice extract is filtered and is given to the affected animal orally, once a day for 3 days. **Keywords:** *kuppameni, gundu mani, thalaisuruli*	Shri Ayyathurai Konar, Krishnapuram, dist. Madurai, (Tamil Nadu) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3225	Use of old tamarind to prevent mastitis in cows	Farmers of district Sambalpur use 200 g old fruits of tamarind *(Tamarindus indica)* for prevention of mastitis.	Ms Chandrakanti Mohapatra, Sambalpur (Orissa)

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		They use 3-4 years old tamarind for soaking in water. A paste is prepared from it. The prepared paste is drenched to the cattle, once a day for 4-5 days. The farmers give two such drenches at an interval of 6 months. This therapy ensures prevention of mastitis. **Keywords:** tamarind, mastitis, drench	Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3226	Treatment of haemorrhagic septicaemia in animals with *kasondhi (Cassia sophera)* leaf and salt	A paste is prepared by 250 g *kasondhi* leaf and 50 g salt. This mixture is given twice daily to cure hemorrhagic septicemia in animal. This ITK is practised in Nawada (band) village of Faridpur in Bareilly district of Uttar Pradesh. **Keywords:** *kausodhi* leaf and salt, hemorrhagic septicemia	Shri Kripal Singh, Gateman-351-C, Nawada (Band), Faridpur, dist. Bareilly (Uttar Pradesh)
3227	Treatment of haemorrhagic septicaemia in animals using *bhatt (Lathyrus sativus)*, black pepper and ghee	For the treatment of haemorrhagic septicaemia in animals, people of Rajupur and Rajpuri (Nawada) villages of district Bareilly in Uttar Pradesh use a paste made from 250 g *bhatt*, 5 g black pepper and 250 g *desi* ghee, which is given 2—3 times daily. The haemorrhagic septicaemia is controlled within a week. **Keywords:** haemorrhagic septicaemia, *bhatt*, black pepper, *desi* ghee	Shri Nanhe Lai, S/o Shri Shiv Charan Lai, Rajupur, Devchara, and Shri Tarachand, S/o Shri Narayan Singh, Rajpuri (Nawada), dist. Bareilly (Uttar Pradesh)
3228	Treatment of haemorrhagic septicaemia in animals with using *sira* and leaves of *gosraine* 	For the treatment of haemorrhagic septicaemia in animals, people of village Khata of district Bareilly in Uttar Pradesh prepare a paste made from *gosraine* leaves and *sira* and it is applied on the aftected part of neck. The haemorrhagic septicaemia is controlled within a week. **Keywords:** haemorrhagic septicaemia, *gosraine, sira*	Shri Lalta Prasad Khata, Rithaura Distt Bareilly (Uttar Pradesh)

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3229	Treatment of haemorrhagic septicaemia in animals with *sira* (molasses) and dry ginger	About 200 g paste of dry ginger *(south)* is mixed with 200 ml *sira* and given as supplement to the animal twice a day. The cattle owners of village Kamuakala, Bareilly in Uttar Pradesh find that *haemorrhagic septicaemia* is controlled fully. Keywords: *south, sira,* haemorrhagic septicaemia	Shri Surender Pal, S/o Shri Than Singh, Kamua Kala, dist. Bareilly (Uttar Pradesh)
3230	Treatment of haemorrhagic septicaemia in animals with *maboli* grass, black pepper and *desi* ghee	A paste is prepared by mixing 250 g *maboli* grass, 10 g black pepper and 250 g *desi* ghee. This paste is given twice daily to the animal for treatment of haemorrhagic septicaemia. This wisdom is being followed in village Bishesharpur of district Bareilly in Uttar Pradesh. **Keywords:** *maboli* grass, haemorrhagic septicaemia, black pepper, *desi* ghee	Shri Devi Ram, S/o Shri Brij Lai, Bishesharpur, dist. Bareilly (Uttar Pradesh)
3231	Control of a haemorrhagic septicaemia in animals with ash **of cowdung**	This ITK is practised in village Khai Khera of district Bareilly in Uttar Pradesh. To control *haemorrhagic septicaemia* in animals, ash of cowdung is applied on animal's neck twice daily. **Keywords:** *haemorrhagic septicaemia,* ash of cowdung	Shri Krishna, S/o Shri Ghasi Ram, Khai Khera, Rithoura, dist. Bareilly (Uttar Pradesh)
3232	Use of honey and lime for the treatment of haemorrhagic septicaemia in animals	Farmers of village Bichuria of district Bareilly in Uttar Pradesh are following this practice for the treatment of haemorrhagic septicaemia. In this treatment, honey and lime are mixed properly and applied on neck. It is found to be effective to cure haemorrhagic septicaemia. **Keywords:** honey, lime, haemorrhagic septicaemia	Shri Md. Noor Ahmed, S/o Shri Md. Lai Mohamed village Bichuria, Balia, dist. Bareilly (Uttar Pradesh)
3233	Treatment of haemorrhagic septicaemia in animals with honey and *kala jeera (Buniuin persicum)*	Farmers of village Bichuria of district Bareilly in Uttar Pradesh follow this ITK for the treatment of haemorrhagic septicaemia in animals. Honey and	Ms Natho, W/o Shri Ali Hasan, Bichuria, Balia, dist. Bareilly (Uttar Pradesh)

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		kalajeera (Bunium persicum) (each 50 g) are mixed and applied on the neck of infected animal. *Haemorrhagic septicaemia* is cured in short time. **Keywords:** hemorrhagic septicaemia, honey, *kalajeera*	
3234	Treatment of haemorrhagic septicaemia in animals with cow-urine and ***desi*** wine	Half litre cow-urine and 250 ml local wine are mixed and given to the affected animal 3-4 times a day. This treatment is followed by cattle owners of village Rajpuri of district Bareilly in Uttar Pradesh to cure haemorrhagic septicaemia. **Keywords:** haemorrhagic septicaemia, cow urine, local wine	Shri Brij Lai, S/o Shri Kare Ram. Rajpuri (Nawada), Bareilly (Uttar Pradesh)
3235	Treatment of haemorrhagic septicaemia in animals with *tutiys, aram* and molasses	Mixture of *tutiys, aram* and molasses (each 100 g) is prepared and applied over the infected part of the body. This treatment controls the haemorrhagic septicaemia within 2-3 days. This treatment is followed in village Khiraka of district Bareilly in Uttar Pradesh. **Keywords:** haemorrhagic septicaemia, *tutiys, aram*, molasses	Shri Krishna **Pal,** S/o Shri Tikka Ram, Khiraka, dist. Bareilly (Uttar Pradesh)
3236	Cure of throat problem in cattle by use of *phagda*	*Galghotu* is a common disease in cattle. For the treatment of this disease a small branch *of phagda (Ficus* sp.) is taken. It is kept in hot ash and then touched to the neck of the infected cattle twice a day for 3 days. **Keywords:** *galghotu, phagda*, neck, hot ash	Shri Vidhya Dutt, Laboratory Attendant, Department of Bio-Sciences, **Himachal** Pradesh University, **Shirnla** (Himachal Pradesh) 171 005
3237	Treatment of *galghotu* in animals with *arna,* turmeric and garlic	*Galghotu* usually appears in animals during the rainy season. In this disease due to swelling on tongue the animal stops feeding and in acute cases animal may die. For its treatment, the animal keepers of village Damana of Jhadol area in Rajasthan follow this ITK. A lotion is prepared by mixing	Shri Soormal, S/o Shri Detaji Badera. Damana (Umra Khapra), Jhadol (Rajasthan)

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		500 g *arna* leaves *(Clearidandrum),* turmeric, garlic and salt (each 100 g). This lotion is rubbed on the swollen tongue. After some time swelling of tongue is reduced and the animal starts feeding. **Keywords:** *galghotu,* swelling on tongue, *arna* leaves, turmeric, garlic, salt	
3238	Treatment of *galghotu* by use of decoction of bark of *paba, samri* and *kegar*	People of village Bhurdia, Jhadol of Udaipur district in Rajasthan use this ITK for the treatment of *galghotu.* Green stem bark of *paba, samri* and *kegar* trees (each 250 g) is chopped and boiled in 1-2 litres of water. It is filtered and fed to the animal twice daily for 3 days. The remaining unfiltered material is applied as bandage over swelling. Animal is cured within 3 days. **Keywords:** *galghotu,* stem bark, *paba, samri* and *kegar* trees	Shri Somaj, S/o Shri Pataji Vadera, Bhurdia, Khera (Chundawaton), and Shri Vardi Chand S/o Shri Kesa ji Orna, Pokhi, Atkalia, Kantharia, village Jhadol, dist. Udaipur (Rajasthan)
3239	Treatment of animal's tail with *laci* fish	About 200 g *laci* fish is burnt properly and a paste is prepared by using it. This paste is applied on the animal's tail twice daily, for tis cure. This treatment is followed in village Maheshpur (Shivsingh) of district Bareilly in Uttar Pradesh. **Keywords:** animal tail, *laci* fish	Shri Komil Ram, S/o Shri Ram Prasad, village Maheshpur (Shivsingh) Bhairpura, dist. Bareilly (Uttar Pradesh)
3240	Treatment of animal's tail with **mobil** oil	When animal suffers from cut in the tail, people of village Bichuria of district Bareilly in Uttar Pradesh apply mobil oil on the tail of the animal twice daily. The tail is cured within 2-3 days. **Keywords:** cut, tail, mobil oil	Shri Satya Prakash, S/o Shri Ajaypal Singh, village Bichuria, Balia, dist. Bareilly (Uttar Pradesh)
3241	Treatment of animal's tail with ***beri*** grass	Farmers of village Nitoie of district Bareilly in Uttar Pradesh are using this ITK for the treatment of animal's tail. A paste of 250 g *beri* grass is made, which is applied on the cut part of the	Shri Malkhan Singh, S/o Shri Iswari Prasad, Nitoie, Bhamora, dist. Bareilly (Uttar Pradesh)

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		animal's tail. The tail is cured within 2-3 days. **Keywords:** tail, animal, *beri* grass	
3242	Treatment of animal's tail with mustard oil	Hot mustard oil (150-200 g) is applied on animal's tail 2-3 times daily, for its cure. This ITK is followed in village Sundyaba of district Bareilly in Uttar Pradesh. **Keywords: tail,** mustard oil	Shri Tota Ram. S/o Shri Mulchand, Sundyaba, Haphijganj, and Shri Nanhe Lai, Devchara dist. Bareilly (Uttar Pradesh)
3243	Treatment of animal's tail with milk of *akauwa*	*Akauwa* milk is used for the treatment of cut in the animal's tail by the people of village Khata of district Bareily in Uttar Pradesh. To cure this ailment, 20-30 g *akauwa* milk is used twice daily on the animal's tail. **Keywords: tail,** cut, animal, *akauwa* milk	Shri Ramauttar, S/o Shri Gargsen, Khata, Rithoura. dist. Bareilly (Uttar Pradesh)
3244	Treatment of tail cancer in animals with mustard oil	Sometimes tail of animal become hairless and starts reducing and becomes like a wood-stick, called *pitundia (dagnala).* Animal stops feeding and becomes weak. People of village Kantharia of Jhadol Tehsil of district Udaipur in Rajasthan adopt local treatment for this. About 100 ml mustard oil is boiled and tip of the animal's tail is dipped in this boiling oil. While doing this operation, animal is held tight to check its movement. The animal is cured with this treatment. **Keywords:** tail cancer, hairless, boiling mustard oil	Shri Trilok, S/o Shri Kaloo ji Prajapati, Kantharia, Jhadol, dist. Udaipur (Rajasthan)
3245	Treatment of animal's tail with garlic and mustard oil	This practice is used by the people of village Khata of Rithuora block of district Bareilly in Uttar Pradesh for the treatment of animal's tail. In this practice 20 g garlic is fried in 100 g mustard oil and the paste is applied twice or thrice daily on the cut place of the animal. **Keywords: tail,** garlic, mustard oil	Shri Lalta Prasad, S/o Shri Kharagsen, Khata, Rithoura, dist. Bareilly (Uttar Pradesh)

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3247	Treatment of *z.eo* (lice) in animal with turmeric and mustard oil	For the treatment *of zeo* in animals, 100 g turmeric powder and 250 g mustard oil are mixed properly and applied on the *zeo* place of the animal. The *zeo* are dead within a week. This ITK is followed in village Nitoie of district Bareilly in Uttar Pradesh. Keywords: *z.eo,* turmeric, mustard oil	Shri Sultan Singh, S/o Shri Mewa Ram, Nitoie, Bhmora, Bareilly (Uttar Pradesh)
3248	Treatment of *zeo* (lice) in animal by red chili and mustard oil	A paste is prepared by mixing 25 g red chilli and lOOg mustard oil and this paste is applied on animal body. After 3 hours bath is given to the animal. All types *of zeo* in animal body are cured. This ITK is practised in Gotia village of Bareilly district in Uttar Pradesh. Keywords: *z.eo,* chilli, mustard oil	Shri Surendra Pal, S/o Shri Liladhar, village Gotia (Larpur), Sainthal, Shri Bhap Ram Khiraka, Auadh dist. Bareilly (Uttar Pradesh)
3249	Eradication of lice with neem *(Azadirachta indica)* oil	Cattle owners of village Pachhomi of district Bareilly in Uttar Pradesh massage the neem *(Azadirachta indica)* oil on animal's body, and consequently lice dies. Keywords: neem oil, lice	Shri Sher Singh, S/o Shri Desh Raj Singh, village Pachhomi, Faridpur, dist. Bareilly (Uttar Pradesh)
3250	Control of cattle lice by using *Aloe vera* plant	Jelly oozes out when *Aloe vera* leaf blade is broken into pieces. This jelly is scrubbed on the skin of the cattle, which controls body lice. This jelly has the pesticidal and bactericidal effect. Keywords: cattle lice, *Aloe vera,* jelly	Shri M. Thangamuthu, No. 16-A/6, Vivekanandapuram Nagar, Batlagundu, Nilakottai, Dindugul (Tamil Nadu) 624 202
3252	Treatment of lice with *rohani (Mallotus philippensis)* flowers and mustard oil	About 100 g powder of *rohani* flowers is mixed in 100 ml mustard oil. Cattle owners of village Nawada (Ban) of Bareilly district in Uttar Pradesh apply this mixture by massaging the body. Lice of animal body dies within 2 days. Keywords: *rohani,* mustard oil, lice	Shri Prem Ray, S/o Shri Sobhas Ray, Nawada (Ban), dist. Bareilly (Uttar Pradesh)
3253	*Kaitha* for eradicating ticks from cowsheds	*Kaitha* fruits *(Limonia acidissima)* are taken and a hole is made near the top where it joins the stems to the trees.	Shri Duryodhan Biswa Lodhani, Parjang, dist. Dhenkanal (Orissa)

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		Through this hole inner contents are evacuated. Four to five such empty *kaitha* fruits are hanged in the cowshed at 4-5 places. Probably *kaitha* fruit emits an odour by which ticks get repelled from the cowshed and also stop breeding. **Keywords:** *kaitha,* odour, breeding, tick	Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3254	Killing ***kilani*** (ticks) in animals with leaves of *bhatt {Lathyrus sativus)*	*Bhatt* leaves are boiled in water and this mixture is applied on animal's body. Farmers of village Kamua Kala of district Bareilly (Uttar Pradesh) eradicate ticks by this method. **Keywords:** *kilani, bhatt*	Shri Veer Singh, S/o Shri Inderjit Singh, Kamua Kala, dist. Bareilly (Uttar Pradesh) Facilitator: National Innovation Foundation. Ahmedabad (Gujarat) 380 015
3255	**Control of *zeo* (lice) in** animals by using *kalikh,* mustard oil and turmeric	A paste is prepared by mixing *kalikh* (carbon obtained from backside of cooking vessels) and turmeric. Mustard oil is mixed with this mixture and massaged on the body to kill the lice. **Keywords:** *kalikh,* mustard oil, turmeric, lice	Shri Md. Dulha Hasan S/o Shri Md. Gul Sher, Bichuria, Balia, dist. Bareilly (Uttar Pradesh)
3256	Biological control of lice and tick infestation in cattle	Tribal pastoralists of Sundargarh district in Orissa control lice infestation in their cattle biologically. These pastoralists never use BHC powder or any other material like tobacco powder because of some reaction to the skin of cattle during sunny days. The nomadic pastoralists take 7-10 of human lice from the scalp of their children and leave on the body of cattle infested with lice and ticks. Human adult lice eat away the nymphs, eggs and larvae of cattle lice present on the body surface. After 15-20 days they give a thorough bath to the cattle. Now the cattle becomes free of lice. After feeding upon the cattle lice, the human lice die automatically.	Shri Biswanath Pradhan, Jakeikala, Bonaigarh, dist. Sundargarh (Orissa) Facilitator: National Innovation Foundation. Ahmedabad (Gujarat) 380 015

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		Keywords: nomadic, pastoralists, lice,ticks, scalp	
3257	Use of *veru* plant roots to control ticks in cattle	In Malkanagir and Koraput districts of Orissa, a wild plant locally named *veru (Heterofragma roxbargii)* is available. In a traditionally followed practice, 100 g roots of *veru* are taken and are soaked in water. Then the roots are ground and a white paste is prepared. This milky white paste is diluted in water at the rate of 10 g in 1 litre water. If cattle is infested with ticks, it is given bath with this water, and as a result ticks get detached from the cattle. The lotion is also helpful in cleaning the cowsheds, byres etc. It prevents tick breeding even in the ground. **Keywords:** *ticks,* milky white paste, ticks	Shri Hemanta Pradhan, Jakeikala, Banaigarh. dist. Sundargarh (Orissa) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3258	Control of scabies, ticks and lice in buffaloes by bathing in fish pond after application of *methi* seed paste on the body parts	In Orissa buffaloes are used both for ploughing and milk production. After ploughing or draughting work, buffaloes are given a bath in a pond or river. Buffaloes remain in water for hours. A paste of 500 g *methi* seeds *(Trigonella foenum-graceum)* is prepared by soaking them overnight in water. After application *of methi* paste, the buffaloes are made to remain immersed in water, such as in a fish-pond. Fishes get attracted by *methi* smell and eat away the ticks, lice and fungus present on the skin of the buffaloes. By giving such a type of bath skin diseases in buffaloes are controlled. The villagers adopt this practice once or twice a month. **Keywords:** *methi,* buffaloe, fishpond, lice, tick, fungus	Shri Gopinath Pradhan, Athmallik (Orissa) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3259	Method of removing leech from animal's nostrils	Leech infestation in animals is a common problem in hills. The leeches enter into the nostrils of animals while	Smt. Khasthi Devi, Agaion, Didihat, dist. Pithoragarh,

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		they are drinking water. As per the traditional method, the animals are deprived of water for about 36-40 hr. Then the animals are provided with water in bright sunlight. Leech comes out of nostrils to drink water. **Keywords:** leech, nostril, sunlight	(Uttaranchal)
3260	Use of fruits of *Solarium surattense* and urine of goats to cure epiataxis in cattle	In this practice, about 20 mature fruits of *Solarium surattense (kandangathiri)* are cut into exact halves and 200 ml urine of goat is added to it. The contents are transferred to a fresh mud-pot, and the mouth of the pot is closed with a piece of extra-coarse cloth. The pot is kept under farm waste and dung, i.e. in a compost pit and it is allowed to ferment. This mud pot is broken and the fermented liquid is allowed to drip out. This filtrate is stored in clean bottles. Instillation of about 1 ml of solution in each nostril of the animal stops the bleeding from nose instantly. **Keywords:** *kandangathiri*, mud pot, cowdung, nostril	Shri Ayyathurai Konar, Krishnapuram, dist. Madurai (Tamil Nadu)
3261	Use of jaggery for treatment of *Calotropis procera* allergy in animals	During grazing, a white sticky fluid from *Calotropis* branches sticks to the body of buffaloes around neck and at all the junctions of horns. Due to this, swelling appears and in extreme cases the animals become blind. Animal keepers of village Kantarda Chama of district Jodhpur in Rajasthan apply paste of jaggery on the swollen part, and feed the solution of jaggery to buffaloes. This treatment reduces swelling and buffaloes get relief. **Keywords:** *Calotropis procera*, allergy, jaggery, swelling	Shri N. D. Ratnoo, Katarda Charna, Luni, dist. Jodhpur (Rajasthan)
3262	Treatment of horn injury with hair and linseed oil	This ITK is followed in Maheshpur (Shivsingh) and Khiraka villages of district Bareilly in Uttar Pradesh. The hairs are bandaged on the horn of	Shri Om Prakash, S/o Shri Dina Nath, Maheshpur (Shivsingh) Bhairpura, dist. Bareilly

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		animal and 100 g linseed *(Linum usitatissimum)* oil is applied on it, twice daily. The animal horn is cured within 2 days. **Keywords:** horn, hair, linseed oil	(Uttar Pradesh) and Shri Bhup Ram, S/o Shri Sohan Lai, Khiraka, dist. Bareilly (Uttar Pradesh)
3263	Use of diesel for treatment of horn injury in animals	People of Bishesharpur village in Bareilly district of Uttar Pradesh treat animal horn with diesel. In this treatment, cotton cloth is dipped in diesel and bandaged on animal's horn for curing the horn injury of the affected animals. **Keywords:** horn treatment, animal, diesel, cotton cloth	Shri Devi Ram, S/o Shri Brij Lai, Bishesharpur, Joytijagir, dist. Bareilly (Uttar Pradesh)
3264	Use of *kunein* oil as treatment of horn injury in animals	This ITK is practised in village Gotia of district Bareilly in Uttar Pradesh. About 50 g *kunein* oil is applied on the horn injury to cure this problem. **Keywords:** horn injury, *kunein* oil	Shri Devaki Prasad, S/o Shri Mewa Ram, Gotia (Larpur), Sainthal, dist. Bareilly (Uttar Pradesh)
3265	Use of red alum and ghee to treat horn injury in animals	People of village Sundaya of district Bareilly in Uttar Pradesh use this ITK. For this, 100 g dust of red alum and 200 g pure ghee are mixed properly and applied on the infected horn. The animal horn is cured. **Keywords:** animal horn, red alum, pure ghee	Shri Tota Ram, S/o Shri Mulchand, Sundyaba, Haphijganj, dist. Bareilly (Uttar Pradesh)
3266	To overcome the problem of broken horn in animals	Sometimes animal's horn may develop cracks leading to horn breakage. To get rid of it, farmers of district Alwar in Rajasthan burn the leather of worn-out shoes (15-20 g) and ladies' hair (5-10 g). The ash is mixed with mustard oil and it is applied over the cracked horn, and this practice is repeated after an interval of 3-4 days. The problem is solved within 25 days by using this technique for 3 times. **Keywords:** horn, crack, broken, leather, hair, mustard oil	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102

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3267	Remedy to cure bleeding of horns	In this, gingelly oil *(Sesamum indicum)* is taken and the latex from leaves of *Euphorbia tortilis (thiruku kalli)* and *Ficus bengalensis (alam)* are collected. The gingelly oil is applied on the affected horn and *Euphorbia tortilis* milk is poured on top of it, and then *alam* milk *(Ficus bengalensis)* is applied on the wound. The horn is tied with a clean piece of cloth daily for 3 days. **Keywords:** *thiruku kalli, alam*, horn, wound	Shri M Arumugam and **Smt** K. Mala, Kothamangalam, RO. Sakkur, Sivagangai (Tamil Nadu) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3268	Healing of broken horn in cattle by using paste of *nagali*	The people of village Mohbi are following this practice. In this ITK, flour made of *nagali (Eleusine coracana)* is made into a paste. The prepared paste is applied on the broken edge of the horn. It is applied 3-4 times a week. This treatment helps heal the horn, and slowly the edge of the horn becomes tough and resistant. Many farmers of the village and nearby villages have started using this practice. **Keywords:** *nagali*, horn, broken edge	Shri Oliyabhai Rupsinhbhai, village Mohbi, Malsamot RO., Dadiapada, dist! Bharuch (Gujarat) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3269	Remedy to prevent loosening or shedding of teeth in animals	About 100 g ashes of banana or plantain tree *(Musa paradisiaca)* prepared in *Kati mah* (15 October to 15 November), black salt (50 g), mustard oil (5 ml) and honey (25 ml) are taken. Ingredients required are: 5 ml gum or latex of *Calotropis gigantea* L. *(aakon)*, 1 g root of *Coix lachryma-jobi (kaor moni)*, **100** g bulb of *Allium vineale (bon nohoru)*, 100 g roots of *Hibiscus pungens (ulot kombol)*, 25 g rhizomes of *Zingiber* ***officinalis*** (ginger or *ada)*, 100 g roots of *Datura metel* **L.** ***(ronga*** *batura).* All these ingredients are sundried and ground to powder. The prepared ashes and black salt are added to this powdered	Shri Bodon Bora, Silsako, North Guwahati, Guwahati dist. Kamrup (Assam) 781 039

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		mixture. This mixture is made into boluses of about 1.5 g. Two boluses are given daily for the first 5 days and then 1 bolus daily for 45 days. Honey is administered daily. One cheek is cleaned with water and wiped out. A little mustard oil is massaged on that area to make the blood vessel prominent. Then *akon* gum is placed on an *akon* leaf and applied on any point of the artery. This is done only once. **Keywords:** *akon, ronga, ada, Kati mah,* honey, mustard	
3270	Cure of loosening and shedding of teeth in animals	Seeds of *mati mah* ***(Phseolus*** *mungo)* and *bora chaul* ***(Oryza*** *satlva)* are crushed to powder and a paste is prepared from it by adding some amount of water. *Dudhkori (Holarrhaena antidysenterica)* bark is crushed separately to powder. A spatula-like object is heated and pressed over the loosened teeth. To open the jaws a bamboo (a short piece) is inserted. It is carefully done to avoid injury to the tongue for every 4 days up to recovery. *Mati mah (Phaseolus mungo)* and *bora chaul* are mixed with a little water. A piece of cotton is dipped in this mixture and pressed on the teeth. *Dudhkori* bark *(Holarrhaena antidysenterica)* is ground and administered orally till complete recovery. This treatment can be used twice a day till recovery. **Keywords:** *mati mah, bora chaul, dudhkori*	Shri Bodon Bora, Silsako, North Guwahati, Guwahati dist. Kamrup (Assam) 781 039 Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3271	Use of *joratora* grass for the treatment of fractured bone in animals	Fractured bone in animals is treated with *joratora* grass. This treatment is followed in village Maheshpur (Shivsingh) of district Bareilly in Uttar Pradesh. A paste is prepared by grounding 250 g *joratora* grass and given twice daily to the animal.	Shri Ram Bahadur, S/o Shri Narayan, village Maheshpur (Shivsingh), Bhairpura, dist. Bareilly (Uttar Pradesh)

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		Keywords: fractured bone, animal, *joratora* grass	
3272	Treatment of fractured bone in animals ***with joratora*** grass and goat milk	Paste of *joratora* grass is prepared by mixing it with goat milk (250 g). Cattle owners of village Nawada (Ban) of district Bareilly (Uttar Pradesh) follow it. This dose is given as a supplement to animal twice a day to rejoin the fractured bone. **Keywords:** *joratora*, goat milk, fractured bone	Shri Lakhpati Singh, S/o Shri Babu Singh, village Nawada (Ban), dist. Bareilly (Uttar Pradesh)
3273	Setting of fractured limb in animals by use of paste made from leaves and bark of *arjuna sadara*	A paste from 500 g leaf and 500 g bark of *arjuna sadara (Terminalia arjuna)* is prepared. This ointment is wrapped around the fractured limb of animal with a bandage. It can be applied 3 times a day. Animals get relief from pain and fractured limb gets cured within a few days. **Keywords:** *arjuna sadara*, fractured limb	Shri Somabhai Bhimabhai Malivad, Bhad Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3274	Treatment for fractured legs in animals with leaves of *udala* and fruits of *betel* and *timru*	About 100 g *udala (Chrysophyllum albidum)* leaves, 100 g *betel (Piper betel)* leaves and 100 g fruits of *timru (Diospyros melanoxylon* Roxb.) are ground together to make a paste. This paste is applied on the fractured leg and bandaged. The bandage is kept for 15 days. Another bandage is kept for 10 days. The fractured leg heals within 25 days. **Keywords:** *udala*, *timru*, bandage, fracture	Shri Dalubhai Ramabhai, Moti Dhabas Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3275	Treatment for fractured legs in cattle	The ingredients are: half bulb of onion *(Allium cepa)*, 1.5 inches roots of *Clerodendron siphonanthus (eklabor), tholapadma*, 100 g bark of *Cataeva nurvala (barun)*, 10 g seeds of *Piper nigrum (jaluk)*, 10 g seeds of ***Piper longum (pipoli)*** and 10 g seeds of *Xanthophyllum phesta (jabrang).* These ingredients are ground together	Shri Dhonokanta Das, Borgaon, dist. Kamrup (Assam) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

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		and *barun (Cataeva nurvala)* is separately ground into a paste by adding a little water. The *barun* paste is applied on the affected region and is wrapped with a clean cloth, and then a bamboo splint is used. This bandage application is repeated 3 times at 4-day intervals. The other powdered ingredients are mixed and administered orally. It relieves pain and also helps in faster recovery of broken leg. **Keywords: *piyaj,*** *barun, jaluk, jabrang,* bandgage	
3276	Setting of fractured or dislocated bone in animal by use of mustard oil, *ronga* ***batura,*** *jetuka, dhatuia* and horn radish	Ingredients used for this ITK are mustard **oil,** 5 *ronga batura (Datura metel* L) leaves, 5 *jetuka* leaves *(Menispermum glacerum)* and 5 g bark of horn radish *(Moringa pterygosperma).* All the ingredients are washed with water, ground and made into a paste, adding a little mustard oil. The position of the fractured bone is adjusted and the prepared paste is applied over the affected region and wrapped with a bandage. A bamboo splint can be applied for proper adjustment of the bones. The bandage can be removed after 3 days. The leaves of *dhatura* are not necessary for the third time application. It is necessary that all the ingredients are in equal proportion, though the requirement depends upon the area of the affected region. **Keywords:** *jetuka, ronga batura,* radish, bandage, bone, mustard, bamboo	Shri Bodon Bora, Silsako, North Guwahati, Guwahati, dist. Kamrup (Assam) 781 039
3277	Setting of fractured bone in cattle by use of *Rothia indica* and leaves of *Naravelia* spp.	To set the fractured bone in cattle, *Rothia indica* and leaves of *Naravelia* spp. are used throughout the hilly areas of Shimla district in Himachal Pradesh since time immemorial. In this practice, a paste of the roots of *Rothia indica* and leaves of *Naravelia* spp. is	Farmers of hilly areas of Shimla district in Himachal Pradesh Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

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		prepared and applied on the fractured bone. The treatment is renewed every-day till the bone is completely set. Keywords: *Rothia indica, Naravelia* spp., fracture of bone	
3278	Treatment for fractured bone in cattle with bark of *Nyctanthes* spp.	To cure the fractured bone in cattle, farmers of hill areas of district Shimla in Himachal Pradesh use this ITK since time immemorial. In this practice a paste is prepared by pounding the bark of *Nyctanthes* spp. which is applied for 10-15 days. Fresh preparation is applied everyday. Bark of *Nyctanthes* spp. contains certain substances, that are useful in curing the bone fracture in cattle very effectively. Keywords: *Nyctanthes* spp, bark, fractured bone	Farmers of hilly areas of Shimla district of Himachal Pradesh Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3279	Treatment of fractured bone in animals with *kapuwa (Ceiba pentendra)* and turmeric	This treatment is followed by the people of village Maheshpur (Shivsingh) of district Bareilly in Uttar Pradesh for their animals. A paste is prepared by 100 g *kapuwa* leaves and 100 g turmeric and it is given twice daily to the animal. Keywords: fractured bone, *kapuwa*, turmeric	Shri Ram Bahadur, S/o Shri Narayan, village Maheshpur (Shivsingh), Bhairpura, dist. Bareilly (Uttar Pradesh)
3280	Treatment of fractured bone in animals with aonla, turmeric, *geru* and lime	A paste is prepared by mixing aonla, turmeric, *geru* and lime (each 25g). This paste is applied over the fractured bone of the animal 2-3 times daily. The fractured bone is set after a few days. Farmers of village Nitoie of district Bareilly in Uttar Pradesh are following this treatment. Keywords: fractured bone, aonla, turmeric, *geru*, lime	Shri Lala Ram, S/o Shri Tikka Ram, village Nitoie, Bhmora dist. Bareilly (Uttar Pradesh)
3281	Treatment of fractured bone of animals with bamboo and linseed oil	The fractured bone is aligned properly with the help of bamboo splits, and linseed oil is applied twice daily over	Shri Harish Kumar, S/o Shri Shankar Lai, Khiraka, Auadh and

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		it. Bone **is** rejoined within 10-15 days. Cattle owners of villages Khiraka and Khai Khera of district Bareilly (Uttar Pradesh) follow this practice. **Keywords:** linseed **oil,** bamboo split, fracture	Shri Md. Jaki Ahmed, S/o Shri Navi Ahmed, Khai Khera, dist. Bareilly (Uttar Pradesh)
3282	Healing of fracture in goats by using the latex of *Euphobia tirucalli*	In this practice some leaves of *Euphobia tirucalli (kallipal)* are taken and 50 ml latex is collected from them. One piece of white cloth is taken and this latex is applied on the white cloth, which is tied over the fractured part. This has to be used once a day for 3 days. **Keywords:** *kallipal,* white cloth, white latex	Shri P. Amaiyan, Malaiyur, P.O. Lingavadi, Dindigul (Tamil Nadu)
3283	Cure of bone fracture in animals with lahori salt, turmeric *(ambia), chotchaji* and *satawar (Asperagus racimosus)*	In this practice, powder of all the materials (50 g each) is taken and a paste is prepared, which is applied on the fractured organ. Farmers of Khai Khera village observe that the bone is rejoined within 10 days. **Keywords:** *lahori* salt, turmeric *(ambia), chotchaji, satawar,* bone fracture	Md Miyya S/o Shri Raihis Khan Khaikhera, Rithoura, Bareilly (Uttar Pradesh)
3284	Use of *lasik rangik* (jackfruit) bark to cure bone fracture in animals	When an animal suffers from bone fracture, the Adi tribals of Pasighat area in East Siang district (Arunachal Pradesh) take 500 g bark of jackfruit and prepare its paste. In this paste 5-10 g salt is added and the mixture is heated for 2-3 min. This mixture is applied over the affected part of the body. The same practice is repeated at an interval of 3-4 days up to 25-30 days for complete recovery. It has efficacy of 60-70%. It is an age-old practice. **Keywords:** *tasik rangik,* salt, jackfruit, bone fracture	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102

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3285	Treating fire burns with *tutmalanga* leaves	About 100 g *tutmalanga* leaves are soaked in water for some time, and then bandaged on the burn wound twice daily. This 1TK is practised by the people of village Maheshpur (Shivsingh) of Bareilly district in Uttar Pradesh. **Keywords:** fire burns, *tutmalanga* leaves	Shri Rajendra, S/o Shri Babu Ram, Maheshpur (Shivsingh), Bhairpura, Bareilly (Uttar Pradesh)
3286	Treatment of burns with *barjgandha* and hen's egg	Farmers of village Khirka of Bareilly district in Uttar Pradesh prepare a paste of *barjgandha* (100 g) and one hen's egg. This paste is applied on the burn-affected part of the skin. **Keywords:** burn, *barjgandha*, hen's egg	Shri Sher Singh, S/o Shri Ram Chandra, Kharia (Auodh), dist. Bareilly (Uttar Pradesh)
3287	Treatment of burn injury in animals with *nagphani*	Pulp of *nagphani (Opuntia* spp.) and salt is mixed properly and heated. After heating it is applied on the burn  injury of the animal. People of village Rajupur of Bareilly district in Uttar Pradesh follow this treatment to cure burn injury. **Keywords:** burn injury, pulp, *nagphani (Opentia* spp.), salt	Shri Nanhe Lai, S/o Shri Shivcharan Lai, Rajupur, Devchara, dist. Bareilly (Uttar Pradesh)
3288	Cure of burn in animals by treating with onion and *geru*	Sometimes animal receives fire injury and some part of its body may get burnt. The people of village Nitoie of Bareilly district in Uttar Pradesh apply	Shri Tota Ram, S/o Shri Chandan Ram, village Nitoie, Bhmora, dist. Bareilly (Uttar Pradesh)

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		paste of 200 g onion and 50 g *gem* on burnt part of the animal. It gives relief to the animal within 1-2 days. **Keywords:** burn, onion, *gem*	
3289	Treatment for body ache in animals by using *ghundi* ***(Abrus** precatorius)* and *akash bel* ***(Cuscuta** reflexa)*	*Ghundi* and *akash bel* (each 100 g) are mixed together and a paste is prepared by mixing water in it. It is given daily to the animal twice daily. All types of pains in animal are cured with this treatment. People of village Rajupur of Bareilly district in Uttar Pradesh follow this treatment. **Keywords:** body ache, *ghundi*, *akash bel*	Shri Nanhe Lai, S/o Shri Shiv Charan Lai, village Rajupur, Devchara, dist. Bareilly (Uttar Pradesh)
3290	Remedy for severe body ache in animals	About 1 teaspoonful gum of *akon (Calotropis gigantea)* and mustard **oil** are mixed. Then 250 g *bihlogoni* leaves *(Polygonum* spp.) are crushed to obtain the juice and 10 g seeds of *jabrang (Xanthoxylum phesta)* and *pipoli (Piper nigrum)* are ground and mixed with ashes of bark and roots of a plantain tree, called *bhim kol (Musa paradisiaca)* and a paste is made. On the first day, the mixture of gum and oil is applied on one cheek. The next day whole body is massaged with the extracted juice of *bihlogoni* together with oral administration of the mixture of ashes, *jabrang* and *pipoli* thrice daily. **Keywords:** *pipoli, jabrang, akon, bhim kol*	Shri Haren Kalita, village Amtola, P.O. Amtola, dist. Kamrup (Assam) 781 134
3291	Remedy to cure rheumatism in animals	Bulbs of garlic *(Allium sativum),* 10 g fruits of *Piper longum (thippili),* 10 g rhizomes of dry ginger *(Zingiber officinale)* and a handful of *Ziziphus ocnoplia* leaves are ground and made into a fine paste using water, and is given to the affected animal orally daily once till the animal gets relieved of pain. This treatment is found to be cost effective, without any side effect	Shri P. Karruppan and Shri. K. Arumugam, Kothamangalam, P.O. Sakkur, Thiruvarur (Tamil Nadu)

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	and with easily available raw materials. **Keywords:** ginger, garlic, cost effective, raw materials	
3292 Treatment of prolapsed uterus in animal with *giloie (Tinospora cordifolia)* and butter milk 	The people of village Sundyaba of district Bareilly in Uttar Pradesh use this ITK for the treatment of prolapsed uterus in animals. About 100 g *giloie* and 250 g buttermilk of cow are mixed properly and given twice daily to the animal. **Keywords:** uterus, *giloie*, buttermilk	Shri Chheda Lai, S/o Shri Dodraj, Sundyaba, Haphijganj, dist. Bareilly (Uttar Pradesh)
3293 Treatment of prolapsed uterus in animals with bamboo *(Dendrocalamus strictus)* leaves	For treatment of prolapsed uterus in animals, people of village Maheshpur (Shivsingh) of district Bareilly in Uttar Pradesh are using bamboo leaves. About 200-250 g bamboo leaves are given orally twice or thrice daily to the animal. **Keywords:** prolapsed uterus, bamboo leaves	Shri Netmohan, S/o Shri Amber Singh Yadav, village Maheshpur (Shivsingh), Bhairpura, dist. Bareilly (Uttar Pradesh)
Dendrocalamus strictus		
3294 Treatment of prolapsed uterus in animals with bamboo leaves, barley and jaggery	Bamboo leaves (100 g) are boiled with barley, and jaggery is mixed to it. It is given as a supplement to the animal 2-3 times a day for treatment of prolapse of the uterus. **Keywords:** bamboo leaves, barley, uterus	Shri Lakhpatti Singh, S/o Shri Babu Singh, Nawada (Ban), dist. Bareilly (Uttar Pradesh)

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3295	Treatment of prolapsed uterus in animals with *pedal*	About 1 kg *pedal* is given orally to the animal. The animal's uterus move inside within a few hours. This treatment is common in village Nitoie of district Bareilly in Uttar Pradesh. **Keywords:** uterus, prolapsed, *pedal*	Shri Sultan Singh, S/o Shri Mewa Ram, Nitoie, Bhamora, dist. Bareilly (Uttar Pradesh)
3296	Treatment of prolapsed uterus in animals with sugarcane leaves	Above 500 g sugarcane leaves are given twice daily to the animal. The uterus will not prolapse. This ITK is practised in Rajupur village of Bareilly district in Uttar Pradesh. **Keywords:** prolapsed uterus, sugarcane leaves	Shri Meghnath, S/o Shri Maiku Lai, Rajupur, Devchara, dist. Bareilly (Uttar Pradesh)
3297	Treatment of prolapsed uterus in animals with nut and goat milk	Powder of nut (250 g) and goat milk (500 ml) is mixed well. The dose is divided into two parts and given in morning and at evening. The animal is treated in 2 days. Cattle owners of village Khiraka, Bareilly (Uttar Pradesh) follow this wisdom. **Keywords:** nut, goat milk, uterus, prolapse	Shri Knaiya Lai, S/o Shri Khub Chand, Khiraka, Auadh, Bareilly (Uttar Pradesh)
3298	Cure of prolapsed uterus in animals with *lajwanti (Mimosa pudica), akash bel (Cuscuta **reflexa)*** and barley  *Mimosa pudica*	Cattle owners of village Rajpuri of Bareilly district in Uttar Pradesh prepare a paste of 250 g *lajwanti* leaves, 500 g *akash bel* and barley flour. This mixture is fed to the animal. **Keywords:** *lajwanti, akashbel,* uterus prolapse	Shri Brij Lai, S/o Shri Kare Ram, village Rajpuri (Nawada), dist. Bareilly (Uttar Pradesh)

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3299	Treatment of prolapsed uterus in animals with roots of *chitchita (Achyranthus aspera)*	About 200 g *chitchita* root paste is boiled in water. Cool boiled water is mixed to this mixture and fed to the animal, which cures the prolapsed uterus. **Keywords:** *chitchita,* prolapsed uterus	Shri Krishna Pal, S/o Shri Tikka Ram, village Khiraka, dist. Bareilly (Uttar Pradesh)
3300	Treatment of prolapsed uterus in animals with black salt and dry ginger	A paste of 50 g blacksalt and 50 g dry ginger is prepared and it is boiled in 1 litre water. Half the solution is given to the animal 2 times a day. **Keywords:** black salt, dry ginger, uterus	Shri Brij Lai, S/o Shri Kare Ram, Rajpuri (Nawada) dist. Bareilly (Uttar Pradesh)
3301	Treatment of prolapsed uterus with vermilion	Pure and dry vermilion is applied over the prolapsed uterus and is pushed inside the body gently. Scratch by nails should be avoided. On an average its cost is Rs. 10 for one animal. About 50- 60% of population is following it since 10-12 years. **Keywords:** vermilion, uterus, scratch, nails	Shri **Roopchand** Khar Village Nadi-II, Peesangam, **Ajmer** (Rajasthan)
3302	Treatment of prolapsed uterus with gum of *palas* tree *(Butea monosperma* Lamk Tanbort.) and leaves of *sisam (Dalberia sissoo)*	When cows or buffaloes suffer from the problem of prolapsed uterus, the cattle owners of Alwar district in Rajasthan, dissolve 300-400 g gum of *palas* tree in water. This solution is drenched to the animal orally thrice a day for 10 days. Besides, ground green leaves of *sisam* (250 g) are also given with 1 litre water, thrice a day. Cattle owners consider gum as a pain-killer and sisam leaves as cooling agent. It is an age-old practice. **Keywords:** prolapsed uterus, gum, sisam, pain-killer, cooling agent	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology). College *o(* Horticulture and Forestry. Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102
3303	Treatment of prolapsed uterus with decoction of tree roots of young *babool (Acacia **nilotica)***	Sometimes uterus of cows and buffaloes come out before calving, and bleeding may start. Cattle owners of district Alwar in Rajasthan collect 250 g roots of young *babool* tree and keep it in 4 litres water after grinding. This mixture is boiled in earthern pot until	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University,

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		solution is reduced to 2 litres and turns dark in colour. This decoction is drenched orally @ 500 ml twice a day with a bamboo pipe. Fodders, which produce heat in body, are given to the needy animal. **Keywords:** prolapsed uterus, *babool*, heat, bleeding	Pasighat (Arunachal Pradesh) 731 102
3304	Treatment of prolapsed uterus with *adha supari*	When cattle suffer from prolapsed uterus, the cattle owners collect 100 g *adha supari {Areca catechu)* and grind it to prepare a paste by adding 250 ml water. About 200 ml fresh water is again added to it. This dose is given twice a day and continued up to 15 days for complete recovery. This age-old practice is being followed by cattle owners of village Mantal of Ahmedabad (Gujarat). **Keywords:** prolapsed uterus, *adha supari*	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102
3305	Use **of *bael*** *(Aegle mannelns)* for treatment of prolapsed uterus in animals	This ITK is practised in Bichuria village of Bareilly district in Uttar Pradesh. About 100-150 g *bael (Aegle marmelos)* is boiled and its juice is given to the animal for treatment of prolapsed uterus. **Keywords:** *bael (Aegle marmelos),* prolapsed uterus, animal	Shri Md. Noor Ahmed, S/o Shri Md. Lai Mohamed, Bichuria, Balia, dist. Bareilly (Uttar Pradesh)
3306	Treatment of prolapsed uterus with *thorc*, ***lajwanti*** and ***simada***	Cows and she-buffaloes suffer from prolapse of the uterus during their pregnancy, causing bleeding during the sitting time. To cure this disease, flowers of *thore (Opuntia* spp.) are mixed with grass and fed to the animal. While in the second step, 100 g *lajwanti (Mimosa pudica)* plant extract is mixed with 200 ml water, which is orally given to the cattle with a bamboo stick. In the third step 100 g *simada (Bombax malabarium)* fruit extract is given separately. This practice is continued till the final	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102

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		calving of the she-animals. **Keywords:** *thore, lajwanti, simada*	
3307	Treatment of uterus problem in animals with *chuie-muie* grass	To cure this ailment, leaf juice of *chuie-muie (Mimosa pudica)* grass is applied on uterus of the animal. This ITK is practised in village Nawada (Band) of block Faridpur of district Bareilly in Uttar Pradesh. **Keywords:** uterus problem, animal, *chuie-muie* grass	Shri Rajendra Singh 'Bhole', Faridpur, Bareilly (Uttar Pradesh)
3308	Treatment for prolapse in animals with *chikni supari, multani mitti* and ghee	Problem of prolapse appears in cows and buffaloes. In this treatment, 100 g *chikni supari,* 150 g *multani mini* (bentonite) and 150 g cow ghee are mixed properly and fed to the animal for 3 days. During these 3 days the animal is fed light fodder, and feeding of jaggery slurry is avoided. While giving this treatment, the affected organs are washed with local liquor, and uterus is being set with round ring *(edani)* and string. Animal is kept in half-standing position to maintain cleanliness. **Keywords:** prolapse, *chikni supari, multani mini,* cow ghee	Smt. Pana Bai, C/o Shri Trilok Prajapati, Kantharia, Tehsil Jhadol, dist. Udaipur (Rajasthan)
3309	Treatment of prolapsed uterus in animals by use of bael	This ITK is used for the treatment of prolapsed uterus in animals. About 250-300 g fruit pulp of bael *(Agle marmelos)* is fried and mixed with water. This is given twice or thrice daily. The people of village Sundyaba of district Bareilly in Uttar Pradesh are using this treatment. **Keywords:** prolapsed uterus, bael	Shri Tota Ram, S/o Shri Mulchand, Sundyaba, Haphijganj, dist. Bareilly (Uttar Pradesh)
3310	Treatment of cow for expulsion of placenta with *Urtica dioica*	This ITK is used throughout Rohru of Shimla district in Himachal Pradesh. *Bitchu-ghuti (Urtica dioica)* is boiled with wheat flour and fed to the cow. This helps in early and easy expulsion of placenta. **Keywords:** placenta, cow, *bitchu-ghuti*	Ms Yashwant Singh Hartta, Institute of Integrated Himalayan Studies, Himachal Pradesh University, Shimla (Himachal Pradesh) 171 005

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3311	Removal of placenta in animals by feeding *gharona* and *oashan*	About 600 g leaves of *gharona* creeper or 500 g leaves of *oashan* are ground to make a paste. The prepared paste is given once to the animals along with fodder for the treatment of removal of placenta. This helps in removing other wastes of the body also, thus making the animal's body clean. **Keywords:** *gharona, oashan,* placenta, fodder	Shri Jasubhai Parmar, Makania Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3312	Removal of placenta in animals by feeding *madhu* leaves	In cattle and other animals, if placenta does not detach, it should be treated immediately, otherwise animal may die. About 1 kg of *madhu (Madhuca indica)* leaves mixed with 2 kg paddy is given to the animal to eat. The placenta and other uterus waste get detached within 1 hour. This assures no problem in future delivery also. **Keywords:** *madhu,* paddy, placenta, uterus	Shri Sampatbhai Nanabhai Ganagurde, Hathgad Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3313	Expulsion of placenta in cattle by using lady's finger, palm sugar and gingelly oil	About 250 g immature pods of lady's finger *(Abelmoschus indicus* or *A. esculentus)* and 200 g palm sugar are ground together finely to make a paste and this paste is then mixed with 500 ml gingelly oil. The prepared paste is administered orally to the cattle once a day for 2-3 days. **Keywords:** lady's finger, placenta, gingelly oil	Shri P Vivekanandan/ SEVA, 45, TPM Nagar. Virattipathu, Madurai (Tamil Nadu) 625 010
3314	Expulsion of placenta in goats by using paste of *amarvel*	About 500 g of a common parasite creeper *amarvel (Cuscuta reflexa),* growing on trees and plants, is finely ground and mixed with adequate water to make a fine paste. This paste is then put in a bamboo bowl. A bowlful of this mixture is fed to the animal, once for 2 days. **Keywords:** *amarvel,* bamboo, bowl	Shri P Vivekanandan/ SEVA, 45, TPM Nagar, Virattipathu, Madurai (Tamil Nadu) 625 010

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3315	Expulsion of placenta in animals by using leaves and vine of*fanj*	The leaves and pieces of vine, *Clematis biloba (fanj),* are boiled in water and the prepared decoction is allowed to cool. This decoction is fed to the diseased animal orally. **Keywords:** *fanj*, decoction	Shri Balwanthsinh Laxmansinh **Zala/** Ganeshbhai Hajabhai Bharvad, P.O. **Udharoj,** Viramgam, Ahmedabad (Gujarat) Facilitator: National Innovation Foundation. Ahmedabad (Gujarat) 380 015
3316	Use of *shimmed (Salmalea* sp.) for easy expulsion of placenta of cows	For early and easy expulsion of placenta, bark of *shimmal* is crushed into powder and mixed with wheat flour, and then fed to the cow. It helps in easy expulsion of placenta. This ITK is used in Shimla district of **Himachal** Pradesh. **Keywords:** *shimmal*, placenta, wheat flour	Shri Vidhya Dut, Laboratory Attendant, Department of Bio-Sciences, Himachal Pradesh University, Shimla (Himachal Pradesh) 171 005
3317	Use of *thore* plant sap (wild cactus, *Opunita* spp.) with goat milk for dropping of retained placenta	After calving some cows and buffaloes do not drop placenta either easily or it is retained for longer time. To overcome this problem, 200 ml sap of *thore (Opuntia* spp.) plant is mixed with 200-300 ml goat milk. This mixture is orally given to the cattle with a bamboo pipe. This mixture may be repeated again after 1 hr to get satisfactory result. The efficacy is 80-90%. **Keywords:** *thore*, dropping, placenta, cactus	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat **(Arunachal** Pradesh) 791 102
3318	Treatment to drop retained placenta in animals	Sometimes placenta does not drop naturally in animals; then the cattle owners of village Mantal of Ahmedabad (Gujarat) collect 400-450 g green leaves of *kanthi (Capparis repiaria)* and take out the extract. Extract is mixed with buttermilk and drenched to animal with bamboo pipe. It is given 2-3 times at an interval of 1 hr 30 min., if single dose is not effective. It is being used since time	Dr Ranjay K Singh. Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102

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		immemorial. **Keywords:** buttermilk, *kanthi*	
3319	Treatment with sugarcane leaf for expulsion of placenta in animals	In the Jhadol area the farmers reported that for retention of placenta they provide most common treatment based on easy availability of the material. Sugarcane is grown in the area. They wait for 3 hr for natural expulsion of placenta, and after that they feed top leaves of 2-3 standing sugarcane plant. Placenta is expelled within 6 hr. **Keywords:** placenta, sugarcane	Shri Heera Lai, S/o Shri Kamla ji Kumhar, Damana (Umra Khapra), Jhadol, dist. Udaipur (Rajasthan) and Shri Khem Raj, S/o **Shri** Modil Lai ji Darji, Jhadol, dist. Udaipur (Rajasthan)
3320	Use of wheat grain, butter and sesame oil for dropping of retained placenta	About 500 g wheat grains, 300 g of butter and 300 ml sesame oil are mixed together and this mixture given to the needy animal. This practice is repeated again after 1-2 hr, if she animal has not dropped the retained placenta. The efficacy is 70-80%. **Keywords:** sesame, placenta, butter, wheat	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3321	Removal of retained placenta by using a mixture of bamboo leaves, jaggery and *ajwaine*	Sometimes placenta does not drop after calving in animals, which badly affects milk production. To overcome this problem cattle owner feed a mixture of 500 g green bamboo leaves, 500 g jaggery and 100 g *ajwaine* ***(Trachyspermum** ammi).* A few other farmers drench mustard oil (250 ml) with lukewarm water (500 ml). **Keywords:** retained placenta, bamboo leaves, jaggery, *ajwaine*, mustard oil, water	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102
3322	Expulsion of placenta in animals by feeding *gular*	After calving in animals (cattle and buffalo) placenta drops out naturally. In some cases placenta is retained in the body. To avoid complications, timely efforts are being made by the people of village Khohara of district Karuli in eastern Rajasthan. In this treatment, 250 g unripe fruits of *gular*	Shri Nathya Nath, S/o Shri Bhora Nath, Khohara, Todabhim, Karauli (Rajasthan) 321 611

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		(Ficus asperima or F. *glomerata)* is boiled in 1 litre water for 4-5 min. After cooling it is fed to the animal. By this treatment, placenta is expelled within 10-15 hr. This treatment is repeated if placenta is not expelled. In another treatment 500 g green *gular* leaves are boiled in 1 litre water. After cooling, it is filtered and given to the animal. After this treatment the placenta is expelled within 10-15 hr. **Keywords:** expulsion, placenta, *gular* fruits, leaves	
3323	Induction of heat in animals with lentil and mustard oilcake	This ITK is used to induce heat in animals by the people of a Maheshpur (Shivsingh) village of district Bareilly in Uttar Pradesh. One kg lentil *(Lense esculentus) dal* and 300-400 g mustard oil-cake are mixed properly. It is given twice daily to the animal, which induces heat in the animal. **Keywords:** induction, heat, lentil, mustard, oil-cake	Shri Rajendra, S/o Shri Babu Ram, village Maheshpur (Shivsingh), Bhairpura, dist. Bareilly (Uttar Pradesh)
3324	Bringing heat in cows with green leaves of *lalphulwali sankhawali*	When she animals do not come to heat because of any internal or hormonal problem, the cattle owners of village Mantal of Ahmedabad (Gujarat) collect 300 g green leaves and stems of *lalphulwali sankhawali (Evolvulus alsinoides).* These leaves are crushed by adding 250 ml water. This solution is filtered and given orally to the suffering animal with the help of a bamboo piece. This practice is followed at a gap of 1 day up to 10-12 days. **Keywords:** *lalphulwali sankhawali*, hormone, heat period	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3325	Bringing cows and buffaloes in heat by feeding a mixture of *hing, pipad* and *vand*	When cows or buffaloes do not come in heat naturally, the cattle owners of district Alwar in Rajasthan prepare a mixture of 50 g *hing* (asafoetida) +	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology),

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		100 g *pipad (Fumeria vaillantii)* and 200 g *vand (Dems trifoliat).* A paste is prepared and it is fed to the animal by keeping in bread. This practice is continued for 2 days to bring the cows and buffaloes in heat. For buffaloes, each ingredient is increased by 25%. It is an age-old practice. Other practices used for this purpose are as follows: (a) Some farmers mix dry chilli powder (100 g) with 200 ml. of mustard oil) and feed with the help of bamboo pipe in the morning and evening time. (b) Some cattle owners give 3-5 eggs of hen to their animals for bringing in heat. **Keywords:** heat, *hing, pipad, vand,* chilli, egg	College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102
3326	Induction of heat in animals by feeding lentil, jaggery and egg	People of village Sundaya of district Bareilly in Uttar Pradesh use this ITK for induction of heat in animals. For this, 1 kg lentil *(Lense esculentum),* lkg jaggery and 1 egg is mixed and is given twice daily to the animal. **Keywords:** induction, heat, lentil, jaggery, egg	Shri Chhatwar, S/o Shri Mulchand, Sundyaba, Haphijganj, dist. Bareilly (Uttar Pradesh)
3327	Induction of heat in animals by feeding *gumachi*	Paste of *gumachi* is prepared, mixed with water and given as supplement to the animal twice a day. Animals of Rajpuri, district Bareilly (Uttar Pradesh) come in heat by feeding *gumachi.* **Keywords:** induction, heat, *gumachi*	Shri Brij Lai, S/o Shri Kare Ram, Rajpur (Nawada), dist. Bareilly (Uttar Pradesh)
3328	To bring animals in heat with wheat flour and wasp comb	The comb of wasp is mixed with *chapati* of wheat flour and given twice daily to the animals, which induces heat in them. This ITK is followed in village Bichuria of district Bareilly in Uttar Pradesh. **Keywords:** induction, heat, wheat *chapati,* wasp comb	Md. Noor Ahemd S/o Md. Lai Mohamed, Bichuria, Balia, dist. Bareilly (Uttar Pradesh)

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3329	To retain heat period in animals with rice	Farmers of village Bichuria of district Bareilly in Uttar Pradesh soak rice grains in water for 1 day and after cooking it is given to the animal, which is useful to retain heat period. **Keywords:** heat period, rice	Md. Dulha Hasan S/o Md. Gul Sher, Bichuria, Balia, dist. Bareilly (Uttar Pradesh)
3330	Treatment to bring heifer or milching animals in heat by feeding *lal chirmi*	Matured heifer may not come in heat timely. This problem also happens with matured animals that do not come in heat in time after calving. To overcome the problem, the animals are fed *lal chirmi (Abrus precatorius)* roots (250 g), crushed in powder form daily for 3 days. **Keywords:** heifer, milching animal, heat, *lal chirmi (Abrus prekatirius)* roots	Shri Soormal, S/o Shri Detaji Badera, Damana (Uumra Khapra), Jhadol, dist. Udaipur (Rajasthan)
3331	Treatment of cow or buffalo to bring it in heat by feeding sprouted wheat and *kewda* flower	Mostly on being ill-fed or due to abnormality in organs, the heifers do not come in heat. Animal keepers of tribal area of Udaipur district in Rajasthan take the following measures for this. 1. Wheat (500 g) is dipped in water early in the night for germination wrapped in gunny bag. Next morning the germinated wheat is mixed with 200 g jaggery and 200 g sesame oil and fed to the animal daily for 3 days. 2. One *kewda* flower is wrapped in 2 breads and fed to the animal daily for 2 days. *Kewda* flower may be used after offering in *puja* to God or Goddess. It gives positive results. **Keywords:** cow, buffalo, heat, wheat, jaggery, sesame oil, *kewda* flower, bread	Mrs. Panna bai, W/o Shri Heera Ba, Near Kamahi-Garage, Bat jig Kid Wade, dist. Diapeer (Rajasthan)
3332	Use of *kewda* flowers to bring cows or buffaloes in heat	Farmers of Alwar district in Rajasthan feed 100 g flowers of *kewda (Pandanus andamanensium)* with bread to bring the animal in heat. This	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology),

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		practice is continued up to 1 week. Keywords: *kewda* flowers, heat	College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102
3333	Induction of heat in animals by using a mixture of lentil, mustard cake and banana flowers	Lentil and banana flowers are boiled and mustard cake is mixed in them. It is given to the animal twice daily for inducing heat. Keywords: lentil, mustard cake, banana flower, heat	Shri Sher Singh, S/o Desh Raj Singh, Pachhomi, Faridpur, dist. Bareilly (Uttar Pradesh)
3334	To bring animals into heat with use of lentil *(Lense esculentum)*	About 1 kg lentil is boiled and given 2-3 times daily to the cattle. The animal comes into heat. This practice of inducing heat in animal is practised in village Nitoie of district Bareilly in Uttar Pradesh. Keywords: heat, animal, lentil	Shri Tota Ram, S/o Chandan Ram, Nitoie, Bhmora, dist. Bareilly (Uttar Pradesh)
3335	Control of heat problem in cattle	During summer, cattle are affected by heat (warmth). To overcome this, a 20 g agathi *(Agathi grandiflora)*, 4 *pachalada* banana fruit *(Musa paradisiaca)*, and 50 ml pig fat are mixed. This mixture is fed to the cattle, two times in a day as oral application. Keywords: *agathi*, banana, pig fat	Ms. B. Anthoniammal, W/o Shri Arokiasamy, 25, Savariyar Koil Street, Thiruvalarcholai, via Thiruvanaikoil, Tiruchirapalli (Tamil Nadu) 620 005
3336	Induction of heat in animals with lentil and pigeon waste	About 1 kg lentil is cooked and pigeon waste is added to it. The same quantity is fed to the animal for 2 days so that the animal comes in heat. Keywords: lentil, pigeon waste, heat	Shri Rajender Prasad, S/o Shri Ganen Lai, Khiraka, Auadh, Bareilly (Uttar Pradesh)
3337	Treatment of animals with non-boiled milk for bringing it in heat	By giving 1 litre non-boiled milk to animal for 2-3 days, cattle owners of village Rajpur of district Bareilly in Uttar Pradesh find that the animal comes in heat. Keywords: non-boiled milk, heat	Shri Nanhe Lai, S/o Shri Shiv Charan Lai, Rajupur, Devchara, dist. Bareilly (Uttar Pradesh)

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3338	Treatment with *bajaria* fish and wheat bread to induce heat in animals	Small *bajaria* fish (50 g) along with wheat bread are given to the animal. The animal comes in heat within 2 days. People of village Rajupur of district Bareilly in Uttar Pradesh follow this treatment. **Keywords:** induction of heat, *bajaria* fish	Shri Maiku Lai, S/o Shri Nanku Lai, Rajupur, Devchara, dist. Bareilly (Uttar Pradesh)
3339	Treatment for heat disease (haematuria) in cattle	In this practice, about 50 g seeds of *Madhuca longifolia*, a handful leaves of *Cajanus cajan* and roots of *Nelumbo nucifera (alii kilangu)* are ground to make a fine paste. The prepared paste is mixed with 500 ml rice water and fed to the animal, three times a day, till the disease gets cured. **Keywords:** *alii kilangu*, rice water	Shri Mani, Somasekarampur, P.O. Nallur. Mannarkudi, Thiruvarur (Tamil Nadu)
3340	Control of heat balls in cattle with *Aloe vera* and turmeric	Leaf sheath of *Aloe vera* is taken and kept in the fire. After that it is squeezed nicely to extract juice. A paste is prepared by mixing the juice with turmeric *{Curcuma longa)* powder and applied on the heat balls, twice a day. Immediate cure is seen. **Keywords:** heat ball, leaf sheath, *Aloe vera*	Shri Radhakrishnan, S/o Dhangiah Nadar, P.O. Ayyampalaym, taluk Musiri, dist. Tiruchirapalli (Tamil Nadu) 621 202
3341	Use of *tesu* flowers as treatment of urinary problem in animals	Flowers of *tesu (Butea monosperma)* is found to be effective for the treatment of this problem. About 50 g *tesu* flowers are given twice daily to the animal. This ITK is practised by the people of Maheshpur (Shivsingh) village of district Bareilly in Uttar Pradesh. **Keywords:** urinary problem, *tesu (Butea monosperma)* flowers	Shri Komal Singh, S/o Shri Ram Singh, Maheshpur (Shivsingh), Bhairpura, dist. Bareilly (Uttar Pradesh)
3342	Treatment for self-urine consumption in animals	Cattle owners of district Alwar in Rajasthan sometimes observe that bullock starts to drink its own urine due to deficiency of sodium in the body, which is considered to be a bad	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture

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		trait for the animals as they fetch lower price in the market. To overcome this deficiency, cattle owners rub common salt on the tongue of the animals. This practice is continued up to 15 days. It is an old practice. **Keywords:** sodium, lower price, salt, tongue	and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3343	Treatment of urine problem in animals with *palash* flowers	For the treatment of urine problem in animals, people of village Gotia (Larpur) of district Bareilly in Uttar Pradesh use this ITK. A paste of 100-150 g *palash (Butea monosperma)* flowers is prepared and given orally twice daily to the animal. Urine problem is cured in a few days. **Keywords:** urine problem, *palash* flower, paste	Shri Mohan Swarup, S/o Shri Roshan Lai, Gotia (Larpur), Sainthal, dist. Bareilly (Uttar Pradesh)
3344	Use of *bhindi* roots for oligouria and blocked urination in cow	The roots of *bhindi [Abelmoschus esculentus* (L.) *Moench]* are taken and juice is extracted. The juice extract is given orally, a dosage of about 100 ml, twice a day. **Keywords:** *bhindi*, oligouria, blocked urination	Nepali community, North Guwahati (Assam) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3345	Treatment for blocking of urinary tract in cattle by using bark **of *jamun***	Cows and buffaloes, especially bullocks, suffer from stones in urinary bladder. For the treatment of blocked urinary tract, the villagers of Junagadh district in Gujarat collect the green bark *of jamun* tree *(Syzygium cuminii)*, crush it and take out extract. The prepared extract is mixed with fodder and given to the animal twice daily (in the morning and in the evening) for 3 days. This gives relief to the animal. **Keywords:** *jamun*, urinary tract	Shri Mansukhbhai Shyamjibhai Savaliya, Junagadh (Gujarat) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3346	Use of elephant dung for treatment of urine problem in animals	The people of village Rajupur in block Devchara of district Bareilly in Uttar Pradesh follow this practice. About 100-200 g elephant dung is burnt and	Shri Radhe Shyam, S/o Shri Makku Lai, Rajupur, Devchara, dist. Bareilly (Uttar Pradesh)

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		its smoke is given to the affected animal twice daily. After 6-8 hr this problem is cured. **Keywords:** elephant dung, smoke, urine problem	
3347	Cure of blood in urine with *tulsi* flowers in cattle	When there is problem of blood in urine **of** animals, it may prove fatal and affect productivity. Cattle owners of village Mantal of Ahmedabad (Gujarat) prepare a paste of 200 g *tulsi (Ocimum sanctum)* flowers (wild) and add approximately 250 ml water and drench it to animal with bamboo pipe. This dose is repeated four times a day up to 10-12 days for complete recovery. **Keywords:** blood, urine, *tulsi* flower	Dr **Ranjay K** Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat **(Arunachal** Pradesh) 791 102
3348	Treatment of blood secretion in urine of cattle by using green leaves of *sisam (Dalbergia sissoo)*	When there is a problem of blood in urine of animals, the cattle owners of Alwar district in Rajasthan immerse green leaves of *sisam* (3 kg, 2.5 kg and 1 kg for buffalo, bullock and goat respectively) into 3 litres water and keep it for 3 days. Afterwards the extract of this solution is filtered and 250 ml (of this extract) is given orally thrice a day up to 3-4 days till complete recovery. It is an age-old practice. **Keywords:** blood secretion, sisam, urine	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102
3349	Cure of urine problem in animals with soda	Baking soda (250 g) is mixed in water and given twice daily to the suffered animal. By using this treatment the animal gets relieved within a few hours. People of village Rajupur of district Bareilly in Uttar Pradesh follow this practice. **Keywords:** urine problem, soda	Shri Nanhe Lai, S/o **Shri Shiv Charan** Lai. Rajupur, Dcvchara, dist. Bareilly (Uttar Pradesh)

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3350	Treatment of urine problem in animals with *nausadar*	Cattle owners of village Kamua Kala of district Bareilly in Uttar Pradesh mix 10 g *nausadar* with wheat flour and give it as supplement twice a day. Animal passes urine on the same day. **Keywords:** *nausadar*, wheat flour,	Shri Bhajan Lai, S/o Lakhan Singh, Kamua Kala, dist. Bareilly (Uttar Pradesh)
3351	Treatment of urine problem in animals with black salt, garlic, fenugreek, turmeric and ***ajwaine*** (*Trachyspermum ammi)*	Cattle owners of village Rajpuri in district Bareilly in Uttar Pradesh make a paste of black salt, garlic, fenugreek, turmeric and *ajwaine* and mix jaggery to it. This mixture is fed to the animal, which is cure of the urine problem. **Keywords:** black salt, garlic, fenugreek, turmeric, *ajwaine*, jaggery, urine problem	Shri Brij Lai, S/o Shri Kare Ram, Rajpuri (Nawada), dist. Bareilly (Uttar Pradesh)
3352	Treatment to increase milk production in animals with ***dalia,*** jaggery, cumin *(Cuminum cyminum), ajwain {Trachyspermum ammi)* and dry ginger	Cattle owners of village Khiraka of district Bareilly (Uttar Pradesh) cook 100 g each of *dalia* (coarse powder of wheat grains), cumin seed, *ajwaine* and dry ginger alongwith jaggery. It is fed to the animal. The milk yield of animals increased within 2-3 days. **Keywords:** milk production, *dalia*, jaggery, cumin seed, *ajwan, soth* (dry ginger)	Shri Bhup Ram, S/o Shri Sohan Lai, Khiraka, Auadh, dist. Bareilly (Uttar Pradesh)
3353	To increase milk production in animals by using blackgram and jaggery	Farmers of village Nitoie of district Bareilly in Uttar Pradesh use this ITK to increase the milk yield. A paste of 1 kg blackgram is prepared and 1 kg jaggery is mixed in it. This mixture is given daily to the animal for 7 days. The milk yield of animal is increased. **Keywords:** milk production, blackgram, jaggery	Shri Malkhan, S/o Shri Krishna Prasad, Nitoie, Bhmora, dist. Bareilly (Uttar Pradesh)
3354	Use of cumin seeds for increasing milk production in cows	When a cow suffers from lack of milk after calving, the people of South Tripura district powder cumin seeds (200 g) and mix it with jaggery (250 g). This mixture is given thrice a day up to 10 days. About 60-70% of milk	Dr Ranjay K. Singh, Assistant Professor (Agricultural. Extension and Rural Sociology), College of Horticulture and Forestry, Central

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		quantity is increased. **Keywords:** cumin seed, jaggery, lack of milk	Agricultural University, Pasighat (Arunachal Pradesh) 731 102
3355	Use of a mixture of cottonseed with the flowers of *mahua, palash, ryand* leaves and fruits of *gundi* tree to increase milk efficiency of cattle	To enhance milk production in cattle, 500-600 g cotton seed are soaked in water overnight. These are mixed with 0.5 kg *mahua {Madhuca indica)* flowers, 100 g ***palash*** *(Butea monosperma)* flowers, 100 g *gundi (Abrus precatorius)* fruits and 500 g *ryand (Mimusops hexandra)* leaves. This mixture is fed to the cattle, thrice a day for 10-15 days. About 70-80% cattle owners are adopting this practice. **Keywords:** *gundi, palash, ryand*	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3356	Increasing milk efficiency in goats by *ukhara* climber	Due to some hormonal or nutritional disturbances, goats produce less quantity of milk compared with their breed performance. Goat owners collect *ukhara* climber and give it as a fodder to goat 3-4 times a day. This practice is continued up to 20-25 days in village Mantal of Ahmedabad (Gujarat). **Keywords:** goat, milk, *ukhara*	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology). College of Horticulture and Forestry, Central Agricultural University, Pasighat, (Arunachal Pradesh) 791 102
3357	To increase milk production in animal by using *sira* (molasses) and *geru*	A mixture is prepared by using 50 g *geru* in 1 litre *sira.* The cattle owners of Bichuria village of Bareilly district in Uttar Pradesh feed the mixture twice daily to the animal to increase the milk yield. **Keywords:** milk, *sira, gent*	Shri Md. Noor Ahmed. S/o Shri Md. Lai Mohamed, Bichuria, Balia, dist. Bareilly (Uttar Pradesh)
3358	To increase milk efficiency in cows and buffaloes with *peshi* climber	When cows or buffaloes show deficient in milk production, the cattle owners collect *peshi (Piper longum)* climber and cut it into pieces. Abut 2-3 kg pieces of climber are fed to the animal daily up to 15-20 days for full recovery. This practice is being followed by cattle owners of village Mantal of Ahmedabad (Gujarat) since	Dr Ranjay K Singh. Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102

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		time immemorial. Keywords: milk efficiency, cow, *peshi* climber	
3359	To increasing milk production in cows and buffaloes with *ghodigadi* plant	When there is deficiency of milk in cows, the cattle owners cut *ghodigadi (Withania somnifera)* climber into pieces (about 2-3 kg) and mix some quantity of barley or pulse grains with it. This dose is given up to 20 days for obtaining satisfactory results. This practice is in vogue since time immemorial. Keywords: *ghodigadi*, deficiency, climber	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3360	Treatment for increasing milk secretion in livestock	Shri Bhaity Dutta of Patiogaon gives a herbal mixture to the cattle to increase milk secretion. Ingredients are molasses, turmeric, salt, rice bran and wheat bran, and roots of *Mimosa pudica (neelajibon*, i. e. touch me not). Few roots of *neelajibon (Mimosa pudica)* are ground well, to which 200 g of molasses, 1 piece of turmeric and a little salt are added. This prepared mixture can be added with cattle feed (rice bran or wheat bran) to increase milk production. This treatment has been traditionally practised since ages and is found to be very effective. Keywords: molasses, turmeric, salt, rice bran, touch me not	Shri Bhaity Dutta, Patiogaon Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3361	To recover milking efficiency of cattle and buffaloes by feeding jaggery, gram flour *{Cicer arietinum)* and fenugreek *(Trigorella foenum-graecum* L.)	Cattle owners of district Alwar in Rajastan give 250 g jaggery twice a day to the animal suffering from decreased milking efficiency. In addition to jaggery, 250 g gram flour and 250 g fenugreek seed paste are also fed to the needy animal for recovery, up to 10 days. Alternatively, 400-500 g *aadu* flour is given to the needy animal. It is an age-old practice. Keywords: milking efficiency, jaggery, gram, fenugreek	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102

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3362	Use of jaggery and *satawar (Asparagus racemosus)* to increase milk yield in animals	To increase the milk production in animals, people of village Sundyaba of district Bareilly in Uttar Pradesh use this treatment. About 500 g jaggery and 250 g *satawar* are mixed properly and is given twice daily for 3 days. The milk of animal increases. Keywords: milk, animal, jaggery, *satawar (Asparagus racemosus)*	Shri Tota Ram, S/o Shri Mulchand, Sundyaba, Haphijganj, dist. Bareilly (Uttar Pradesh)
3363	Use of bamboo *(Bambusa* spp.) leaves to increase milk yield in animals	To increase the milk in animal, farmers of village Gotia (Larpur) of district Bareilly in Uttar Pradesh use new leaves of bamboo. About 1 kg bamboo leaves are boiled and its paste is given orally twice daily. It increases the milk production in the animal. Keywords: bamboo *(Bambusa* spp.) leaves, milk production	Shri Hira Lai, S/o Shri Nukta Prasad, Gotia (Larpur), Sainthal, dist. Bareilly (Uttar Pradesh)
3364	Use of *satawar* (asparagus) to increase milk production in animals	During lactation period, sometimes animals suddenly become dry or stop milk production. The farmers of village Chitrete of district Dungarpur in Rajasthan use this treatment to start milk production in animals. About 250 g green roots of *satawar (Asparagus* sp.) are crushed and ground properly. It is mixed with 250 ml water, and given daily for 4 days to the animal. Animal again starts milking and milk production is also increased. Keywords: milk production, *satawar*	Shri Mohan, S/o Shri Gautam Parmar, Chitrete, Dungarpur (Rajasthan)
3365	Use of a mixture made from *asadiyo* and *suwadan* seeds to increase milk yield in cattle	To increase the milk production in cattle, 200 g *asadiyo (Lapidium sativum)* seeds and 200 g *suwadan (Peucedanum graveolens)* seeds are taken, paste is prepared and it is mixed with 1 litre water. The mixture is orally given to the cattle by using bamboo stick. The dose and frequency depend on the type of animal, breed and body weight. This practice is very fruitful and effective up to 60-70% in	D. Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College *o(* Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102

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		increasing the milk production in cattle. **Keywords:** *asadiyo, suwadan*	
3366	To increase milk production in animals by feeding jaggery-based mixture	People of village Maheshpur (Shivsingh) of district Bareilly in Uttar Pradesh are following this practice to increase milk production in animals. A paste is prepared by mixing dry ginger, cumin and aniseed (each 100 g) with 500 g jaggery. This paste is given to the animal twice a day to increase milk production. **Keywords:** milk production, dry ginger, cumin, aniseed, jaggery	Shri Rajendra, S/o Shri Babu Ram, Maheshpur (Shivsingh), Bhairpura, dist. Bareilly (Uttar Pradesh)
3367	Use of *bayuhal (Grewia optiva)* for increasing milk production	When calf of cow or buffalo dies after birth, the cattle either stops giving milk or else gives less milk. People use different indigenous technologies for this. For increasing the milk yield, farmers of district Shimla in Himachal Pradesh feed the cattle *bayuhal* twigs. This increases the quantity of milk and also improves the health of cattle. **Keywords:** *bayuhal*, milk yield	Shri Vidhya Dut, Laboratory Attendant, Department of Bio-Sciences, Himachal Pradesh University, Shimla (Himachal Pradesh) 171 005
3368	Use of bark of *pipal* and *kothi* for increasing milk production in cattle	About 100 g bark *of pipal* tree *(Ficus religiosa)* and 100 g bark of *kothi (Limonia acidssima* L.) are boiled in water, after cutting into smaller pieces. After it cools down, it is filtered through a piece of cloth. About 250 g of this mixture is given orally to the cattle along with fodder or concentrates twice a day. The milk yield increases by 500 ml. This traditional method is passed on through generations and used by 80% of the population in this area. **Keywords:** *pipal*, *kothal*, fodder	Shri Ganagarambhai Devkibhai Gayakad, Shiwarimal Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3369	Enhancement of milk production in cattle by feeding sesame oilcake and jaggery	To increase milk production in cattle, Shri P. Vivekanandan of Tamil Nadu developed a practice, which is now	Shri P Vivekanandan/ SEVA, 45, TPM Nagar, Virattipathu, dist.

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		followed in his village and also nearby villages. Oilcake of gingelly *(Sesamum indicum* or *Sesamum orientate)* is crushed with palm jaggery and a paste is prepared. This paste is fed to the milch animals, once in 2 days regularly to enhance their milk production. **Keywords:** oilcake, ginger, jaggery	Madurai (Tamil Nadu) 625 010 Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3370	To initiate lactation in cattle by feeding *sabarkand* and *dukarkand* roots	One piece of *sabarkand* roots and one piece of *dukarkand* roots are crushed and 500 ml water is added to this mixture. Then 250 g of this mixture is given to cow or buffalo along with fodder twice a day. Within a few days cattle starts yielding milk. **Keywords:** *sabarkand, dukarkand,* fodder	Shri Devrambhai Haribhai, Ganagarde, Jakhana Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3371	Remedy to cure agalactia (animal stops giving milk)	The ingredients used to cure agalactia are: molasses (25 g), bulb of *Costus speciosus (jamalakhuti)* 200 g. bulbs of *tholapadma* 200 g and seed of *Trigonella foenum-graceum (methi)* 50 g. All these ingredients are boiled in 1 litre water and molasses are added to it to prepare a decoction. The water and the contents are administered orally, daily for 3 days. **Keywords:** *jamalakhuti, tholapadma, methi,* molasses	Shri Bodon Bora, Silsako, North Guwahati (Assam)
3372	Use of *ogok* fodder for increasing milk of cows and body weight of pigs	Tribal women of Adi community have identified the *ogok* plant for increasing the cow milk and weight of pigs. Milking efficiency of local cow breed of Pasighat area of East Siang district (Arunachal Pradesh) is very poor (about 1-2 litres/time). To increase the milking efficiency, 5-6kg *ogok* grass is collected, which is perennial in nature found under plain ecology where soil is moist humid with good organic matter. This fodder is given as a	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102

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		supplement to the cow (thrice a day, i.e. morning, afternoon and evening time) as such without making into small pieces. By giving this fodder about 1 litre milk yield/time is increased. To increase the weight of pigs, only small tender parts of this grass is fed. Sometimes this may be supplemented by mixing husk and local banana after boiling. About 70-80% cattle owners use this wisdom and it is prevalent among them since time immemorial. **Keywords:** *ogok* grass, pig, cow, milk efficiency, body weight	
3373	Use of wild banana and **Colocasia** with rice husk to increase the weight of pigs	To increase the body weight of pig, 2-3 kg inner part of pseudostem (pith material) of newly grown wild banana and 1 -1 $^{1}/_{2}$ kg *colocasia* stems are collected, and are mixed with rice husk, and then boiled for 30 min. These all materials are mixed together and fed to the pig. This dose is given twice a day during morning and evening. This practice is very old and effective to increase the body weight of pig rapidly. Adi tribe of Pasighat areas of East Siang district (Arunachal Pradesh) are following this wisdom since age-old time. **Keywords:** wild banana, pseudostem, colocassia, rice husk	Dr Ranjay K. singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3374	**Practises** followed in Andaman and Nicobar ;roups of Island for animal management	Cattle owners of Andaman and Nicobar groups of Islands use different practices for animals, which are as follows: 1. Boiled stems and leaves of *ghueya (Colocassia* spp.) are fed to milch cow to obtain better milk yield. 2. Crushed *booty parti (Eupatorium odoratum)* is used for wound dressing for cattle and other domestic animals.	Shri S.K. Zamir Ahmed. Shri R.L. Sagar, Shri Nagesh Ram, Shri B. Singh, Ms. Kanak Lata, Shri Neeraj Shrivastav, Shri N.C. Choudhuri, Shri R. Soundararajan and Shri S.P.S. Ahlawat, Krishi Vigyan Kendra, Central Agricultural Research Institute,

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		3. Bamboo leaves are used as oral medication in case of retained placenta in cattle. 4. Mixture of tobacco, camphor and lime is used against maggot-infested wounds. 5. Mustard seeds are used in the feeds to build up disease resistance in poultry. 6. Mixture of garlic, turmeric and rice is fed as general treatment for poultry diseases. 7. Rubbing the mixture of salt and mustard oil using stem of *ghueya (Colocassia* spp.) is followed in cases of mouth abscess in cattle. **Keywords:** *ghueya, booty patti*, tobacco, camphor, lime, garlic, turmeric, rice, poultry, salt, mustard oil	P.B. 181, Port **Blair** (A&N Islands) 744 **101**
3375	Health-care management of animals during drought period	During the drought and flood conditions, animals are attacked by some diseases. To control these diseases, fruits of *deshi* ***babool*** *(Acacia nilotica), vilayati babool (Acacia fernesiana),* ***minthi*** *imali (Pithecellobium bigeminum)* leaves and fruits, tubers of *montha (Cyperus rotundas), doob* grass ***(Cynodon*** *dactyon)* and roots are given to different types of animals. Cow, buffaloes and lactating animals are given *babool* fruits and large quantity *of doob* grass. For draught animals like bullocks, *minthi imli* leaves and large quantity of *montha* grass are given. This practice is maintaining the heath and milk efficiency. **Keywords:** *deshi babool, vilayati babool, minthi imali, montha, doob* grass, *babool*	Dr Ran jay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University. Pasighat (Arunachal Pradesh) 791 102
3376	Health care of buffaloes	Buffalo keepers of Jhadol and of Udaipur city have the traditional knowledge to maintain the buffaloes	Mrs Pana Bail, W/o Shri Heera ba, (near Kalaji Goraji), Bhat ji ki Wadi,

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		properly for high milk production as well as their health and hygiene etc. as per the practices described below: (a) *After conception:* About 1 kg barley bran is dipped in water early in the night and fed to the buffalo the next morning daily for 1 month. It is given mostly without boiling so that the animal maintains foetus properly. (b) *After calving:* *For 3 days after calving:* jaggery (1 kg) is boiled in water when lukewarm and it is fed to the animal. For 3 days only warm water is given. (c) *Fourth day onward to 1 month:* For good digestion 1 kg wheat bran is fried in 200 g sesame **oil.** Slurry is prepared by adding 1 kg jaggery in boiling water. Fried wheat bran is added in the slurry and it is kept for boiling till it becomes thick. Locally it is called *lapsi.* It is given once daily to the animal for 1 month. (d) *Later on for I month, fourth day onward:* A mixture of 250 g fenugreek and 2 kg pearlmillet is prepared and boiled properly. Fenugreek becomes soft during boiling. It is given daily to the animal. (e) *For better health and higher milk production:* Coconut, *sova* and *ajwain* (each 5 kg) are crushed in a crusher to prepare a good mixture. It is fed *Vi* kg daily to the animal for at least 1 month. (f) *Later on, for higher milk production:* Sesame oilcake, *kapasia* (cotton seed) each 2 kg and wheat bran 1 kg are mixed and boiled in water. It is cooled and fed daily at the time of milking.	Udaipur (Rajasthan)

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		Keywords: health care, buffalo, conception, calving, milk production, barley bran, wheat bran, jaggery, fenugreek, pearlmillet, sesame oil, ***kapasia,*** **coconut,** *sova,* ***ajwain***	
3377	Use of mixture made from indigenous trees, shrubs and plants as feed for the animals for good health under drought condition	During drought and flood conditions, Gujarat state cattle owners are using some indigenous practices. Leaves of *her (Zizyphus mauratiana), piludi (Salvadora persica), boliyo (Aegle* ***marmelos),*** *gado (Tinospora* ***cordifolia),*** *darodi (Argemone maxicana), dhawalu* and *jinjwo (Barleria* ***cristata),*** fruits of *ankdo (Calotropis gigantean),* and *umra (Ficus* ***glomerata),*** and leaves of *pipal (Ficus religiosa)* and *bargad, (Ficus benghalensis)* are collected and mixed, and then fed to the cattle. This mixture maintains good health of the cattle. The efficacy is 70-80%. **Keywords:** *pulushi, boliyo, gado, darodi, dhawalu, jinjwo, ankdo, umra*	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3378	Using tender leaves of *ankdo* to make the bullocks more alert and active	When a bullock looks like very lazy and weak, 100 g tender leaves of *ankdo (Calotaopis gigantea)* are collected, and mixed with water. This mixture is orally given to cattle by using bamboo sticks. This practice is continued for 10-15 days each month. It is very effective (40-50%) in making the bullock active and alert. Keywords: *ankdo,* bullock	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3379	Treatment to overcome the problem of poor grazing in buffaloes	Sometimes animal stops feeding which results in weakness. Under such cases villagers of Balaya of district Nagaur in Rajasthan feed a mixture of jaggery, turmeric and sesame oil to the affected animals. One litre water is boiled till it reduced to one-fourth. About 125 g sesame oil, 100 g turmeric and 250 g 2-year-old jaggery are mixed in it.	Shri Har Ram Kala, Balaya, Nagaur (Rajasthan)

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		After cooling it is fed to the animal twice daily (morning or evening). This treatment is repeated for 3-4 days. **Keywords:** poor grazing, sesame oil, turmeric, jaggery	
3380	Treatment of foot diseases with *akauwa* "leaves	To cure an animal of foot disease, 2-3 *akauwa (Calotropis gigentea)* leaves are given orally to the animal daily. This ITK is followed in village Maheshpur (Shivsingh) of district Bareilly in Uttar Pradesh. **Keywords:** foot disease, *akauwa* leaves	Shri Komal, S/o Shri Ram Singh, Maheshpur (Shivsingh), Bhairpura, dist. Bareilly (Uttar Pradesh)
3381	Treatment of foot disease in animals with *babool (Acacia niiotica)* leaves and alum  *Acacia*	To cure foot disease in animals, people of village Maheshpur (Shivsingh) of district Bareilly in Uttar Pradesh use this ITK. A paste of 500 g *babool (Acacia niiotica)* and 250 g alum is prepared and applied drop-by-drop to the animals foot 2-3 times daily. **Keywords:** foot disease, *babool (Acacia niiotica)* leaves, alum	Shri Ram Bhaduar, S/o Shri Narayan, village Maheshpur (Shivsingh), Bhairpura, dist. Bareilly (Uttar Pradesh)
3382	Treatment of foot disease with fish water	The affected parts of the animal are washed with 0.5-1 litre fish water (about 5 days old water) for 4-5 days. Healing takes place very soon. This ITK is being used by the people of village Maheshpur (Shivsingh) of district Bareilly in Uttar Pradesh to cure foot disease. **Keywords:** foot disease, fish water	Shri Rajendra, S/o Shri Babu Ram, Maheshpur (Shivsingh), Bhairpura, dist. Bareilly (Uttar Pradesh)
3383	Use of neem *(Azadirachta indica)* and *babool (Acacia niiotica)* to cure foot disease in animals	This ITK is practised in village Nitoie of district Bareilly in Uttar Pradesh. Leaves of neem *(Azadirachta indica)* and *babool* (200 g each) are boiled and its water is applied on the affected	Shri Sripal, S/o Shri Ram Singh, village Nitoie, Bhmora, dist. Bareilly (Uttar Pradesh)

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		parts of the animal twice daily. The foot disease in animal is controlled. **Keywords:** neem *(Azadimchta indica), babool (Acacia **nilotica),*** **foot** disease	
3384	Treatment of mouth disease in animals with *chitchita*	The people of village Amlonipur of district Bareilly in Uttar Pradesh use *chitchita* for control **of** mouth disease in animals. The juice of *chitchita* (250 g) is given to the animal twice daily. The mouth disease is cured in few days. **Keywords:** mouth disease, *chitchita*	Shri Tara Chand, S/o Shri Narayan Singh, Amlonipur, Bisalpur, dist. Bareilly (Utiar Pradesh)
3385	Treatment of mouth disease in animals with turmeric and salt	Cattle owners **of** village Gotia (Larpur) **of** district Bareilly in Uttar Pradesh prepare a paste of turmeric and salt (each 100 g). This paste is applied on the tongue of the affected animal. **Keywords:** turmeric, salt, tongue	Shri Surendra Pal, S/o Shri Liladhar. Gotia (Larpur), Sainthal, dist. Bareilly (Uttar Pradesh)
3386	Use of chickpea flour and mustard oil to control mouth disease in animals	To cure mouth disease in cattle, people **of** village Rajupur of district Bareilly in Uttar Pradesh use this ITK. Chickpea flour (250 g) *chapati* is prepared and mustard oil is applied on it. This *chapati* is given daily to the animal for 2-3 days. The mouth disease of the animal is cured. **Keywords:** mouth disease, chickpea flour, *chapati*, mustard oil	Shri Maiku Lai, S/o Shri Nanku Lai. Rajupur, Devchara, dist. Bareilly (Uttar Pradesh)
3389	Use of *Sesbania grandiflora* leaves to control mouth ulcer in goat	*Sesbania* leaves are taken in a wide-mouthed vessel and 1 litre water is added to it. It is boiled properly and the extract is filtered. The filtered solution is fed to the goat to cure mouth ulcer. **Keywords:** *Sesbania grandiflora*, mouth ulcer	Shri C. Thennarasu, S/o Shri Chidambaram, Chinnakuppam, Pappireddipatti, Dharmapuri (Tamil Nadu) 636 903
3390	Treatment to cure glosopharingitis in cows by using leaves of *kanak champa*	Glosopharingitis is a painful condition in cows. Due to inflammation in mouth cavity, cows cannot eat and	Shri Antaryami Pradhan, Tansi. dist. Angul (Orissa)

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		drink properly. In this practise, 200 g leaves of *kanak champa (Michelia champaca)* are taken and a paste is prepared by adding a little water to it, and given orally once a day for 3 days. It is reported by many farmers of the village that inflammation subsides within 3 days. **Keywords:** glosopharingitis, *kanak champa*, inflammation	Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380015
3391	Treatment of foot disease in animals by *babool {Acacia arabica)* and alum	To cure foot disease in animals, juice of 500 g *babool (Acacia nilotica)* leaves and 40 g alum is mixed thoroughly and applied drop by drop to the animal's foot twice daily. This treatment is followed in Rajupur village of Bareilly district in Uttar Pradesh. **Keywords:** foot disease, *babool (Acacia arabica)*, alum	Shri Maiku Lai, S/o Shri Nanku Lai, Rajupur, Devchara, dist. Bareilly (Uttar Pradesh)
3392	Treatment of foot disease in animals with alum and *babool (Acacia nilotica)*	Alum (100 g) and *babool* (250 g) are boiled in water. This water is poured on the foot of animal to cure the foot disease. **Keywords:** alum, *babool (Acacia nilotica)*, foot disease	Shri Lakhpat Singh, S/o Shri Babu Singh, Nawada (Ban), dist. Bareilly (Uttar Pradesh)
3393	Treatment of foot disease in animals with hot sand	Cattle owners of village Pachhomi of district Bareilly in Uttar Pradesh make the animal to walk on hot sand for 15-20 min. daily. The animal gets relief from foot disease. **Keywords:** hot sand, foot disease	Shri Rampal Singh, S/o Shri Hira Singh, Pachhomi, Faridpur, dist. Bareilly (Uttar Pradesh)
3394	Treatment of foot disease in animals *with jamun* and *babool (Acacia nilotica)* bark	People of village Khai Khera of district Bareilley in Uttar Pradesh are following this ITK to cure foot disease in animals. Bark *oijamun (Szygium cuminii)* and *babool (Acacia nilotica)* is boiled and the extract is applied twice daily on the infected foot (lesions) of animal. **Keywords:** foot disease, *jamun, babool (Acacia nilotica)* bark	Shri Krishna, S/o Shri Ghasi Ram, Khai Khera, Rithoura, dist. Bareilly (Uttar Pradesh)

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3395	Use of ***babool*** *(Acacia nilotica)* for treatment of foot disease in animals	About 200 g *babool (Acacia nilotica)* bark is boiled in water and this is applied twice daily on the infected foot (lesions) of the animal. This treatment is followed in Bichuria village of Bareilly district in Uttar Pradesh. **Keywords:** *babool (Acacia nilotica)* bark, foot disease	Shri Md. Noor Ahmed, S/o Shri Md. Lai Mohamed, Bichuria, Balia, dist. Bareilly (Uttar Pradesh)
3396	Treatment of foot disease in animals with *babool (Acacia* sp.) and alum	Paste of *babool (Acacia* sp.) is prepared by mixing alum powder and it is applied twice daily on the infected foot lesions of the animal. People of village Bishesharpur in district Bareilly of Uttar Pradesh use this practice to cure foot disease in animals. **Keywords:** foot disease, *babool,* alum	Shri Rameshwar Dayal, S/o Shri Mohan Lai, Bishesharpur, Joytijagir. Bareilly (Uttar Pradesh)
3397	Treatment of foot disease in animals with *karela* and buttermilk	People of Khiraka village of Bareilly district in Uttar Pradesh use this treatment to cure foot disease in animals. A paste is prepared by mixing 10 g *karela (Momordica charantia)* leaves with 250 g buttermilk. It is given twice daily to the animal. The water of alum (250 g) is also drenched on the foot of animal 2-3 times daily. The foot disease is cured in a few days. **Keywords:** foot disease, *karela (Momordica charantia)* leaves, alum	Shri Bhup Ram, S/o Shri Sohan Lai, Khiraka, Auadh, Bareilly (Uttar Pradesh)
3398	Use of unprocessed leather water to cure foot and mouth disease in animals	To cure foot and mouth disease in cattle, water from dead animals' leather, which is secreted during the processing of leather to improve quality, is collected. This water is separated and kept in earthen pot and given when the animals suffer from foot and mouth disease. The efficacy of this treatment is 60-70%. **Keywords:** leather water, earthen pot	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102

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3399	Remedy for FMD in animals	Required amount (about 50 g) of rhizome of *Curcuma longa (haldi)* is taken and crushed to powder. Sufficient quantity of salt is added to lukewarm water to prepare a decoction. The tongue and toes of the affected animals are washed daily with this lukewarm water. The turmeric powder is sprayed on the toes and tongue daily **for** 10-12 days. **Keywords:** tongue, rhizome, lukewarm, toe	Shri S. Dhonokanta Das, Borgaon, Kamrup (Assam) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3400	Use **of** hedgehog to cure foot and mouth disease in cattle	Thorns (spines) of dead *sherio* (hedgehog), a small creature having thorny body cover are collected and burnt and the smoke is allowed to pass through the body of the animal suffering from FMD. **Keywords:** *sherio*, hedgehog, placenta, flatulence	Shri Lakhabhai B. Khatana, Bhavnagar (Gujarat) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3401	Remedy to cure FMD in catle	1. In this, 50 g resin **of** *dhak (Butea* spp.) tree is mixed with 50 ml latex **of** *Euphorbia* sp. along with 50 g alum. This mixture is applied inside the mouth **of** the infected animal. About 15-20 g gum is used for each dose, three times a day, **for** 2-3 days. 2. The bark **of** *Acacia nilotica* tree is another material used to treat FMD. The bark is boiled in water along with a little alum *(phitkari)* and filtered. The filtrate when lukewarm is poured on the hooves of the affected animal. The same filtrate is also used to wash the insides of the animal's mouth. The extract may also be prepared without alum. 3. Plain table salt solution is used as a topical application. The salt is dissolved in water, which is heated to a temperature that the animal	Shri Udaikishore Sharma, Roosolgarh (Pahasu), Bulandarshahr **(Uttar** Pradesh) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

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		can tolerate and poured in a stream over the hooves. The people in this area have great faith in this method of treatment; about 50% people in the villages use this method. **Keywords:** *dhak*, alum, topical, hooves, latex	
3402	Cure of FMD in cattle by using garlic and mustard oil	In this practice, to cure FMD in goats, garlic *(Allium sativum)* pieces are fried in mustard oil and after the oil cools, it is applied on the muzzle region and a few drops are put in the mouth. The hooves are regularly washed with treated neem water (neem leaves are boiled in water and strained). **Keywords:** garlic, neem, muzzle	Shri Mohan Lai (Uttar Pradesh) Facilitator: National Innovation Foundation. Ahmedabad (Gujarat) 380 015
3403	Fumigation **of** cattle yard to cure FMD	This is a common practice **of** treatment **of** FMD in town and its nearby villages, Coimbatore (Tamil Nadu). In this practice, the cattle yard and affected animals are fumigated by buring neem leaves, dried fish waste and turmeric powder mixture. **Keywords:** fumigation, neem, fish waste, cattle yard	Shri Karuppanan. Coimbatore (Tamil Nadu) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3404	Use of bark of *sal* to cure FMD in cattle	In this practice, 200 g bark **of** *sal (Shorea robusta)* trees are collected and crushed. Then it is boiled in a little water. A pasty and sticky decoction is produced. This sticking material is applied in the hoof and muzzle **of** the cattle affected with FMD. This helps in healing and prevents spread of virus. The dosage should be used twice a day, till complete healing. **Keywords:** *sal*, hoof, virus, muzzle	Shri **Duryodhan Biswal, Lodhani, Parjang,** Dhenkanal (Orissa) Facilitator: National Innovation Foundation. Ahmedabad (Gujarat) 380 015
3405	Feeding mushroom to prevent FMD in cattle	A locally available mushroom, known as *phundka chhatu*, is used by the tribals of Nilgiri subdivision in Orissa to prevent FMD. The round and ball-shaped mushroom is available in the	Shri Biswanath Pradhan, Jakeikala, Bonaigarh. **Sundargarh** (Orissa) Facilitator: National

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		last part of rainy season (September-October). These mushrooms are dried and kept preserved. Before winter comes (season for spread of FMD), 2 such dried mushrooms are fed to the cattle. It acts as a preventive measure for the cows against FMD. The dosage should be used once or twice with an interval of 20 days, before winter season starts. **Keywords:** *phundka chhatu,* mushroom	Innovation Foundation, Ahmedabad (Gujarat) 380 015
3406	Control of FMD with cowpea leaves	In this practice, 7-8 matured leaves of cowpea *(Cyamopsis tetragonoloba)* plants and 50 g dried rice from Jagannath temple (fermented rice) are taken. Then this mixture (rice with cowpea leaves) is fed to the affected cattle. It is observed to give quick recovery of cattle from FMD. **Keywords:** cowpea, dried rice	Shri Pramod Biswal, Lodhani, Parajang (Orissa) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3407	Treatment of foot disease in animals with linseed *(Linum usitatisimum)* oil	To cure foot disease in animals, people of village Hansa in district Bareilly in Uttar Pradesh apply 50 g linseed oil in animals foot; This treatment is given twice daily to cure foot disease. **Keywords:** foot disease, linseed oil	Shri Puran Lai, S/o Shri Het Ram, Hansa, Bhojipura, Bareilly (Uttar Pradesh)
3408	Use of onion for treatment of weakness in foot of animals	People of village Khai Khera of district Bareilly in Uttar Pradesh follow this treatment to cure foot weakness in animals. In this practice, 200 g onion is given to the animal twice daily. It cures foot weakness. **Keywords:** foot weakness, onion	Shri Krishna, S/o Shri Ghasi Ram, Khai Khera, Rithoura, Bareilly (Uttar Pradesh)
3409	Cure of lameness in animals	Cattle owners of village Mantal of Ahmedabad in Guajrat observe the problem of lameness in animals during winter. To overcome this problem, a mixture of green leaves of *thore (Opuntia* spp.) plant and soil (100 g each) is prepared, and ground to a	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University,

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		paste. This paste is boiled in water and lukewarm paste is smeared over the affected leg. This practice is followed once a day and continued up to 10-15 days for complete recovery. It is in vogue since time immemorial. **Keywords:** lameness, *thore*, soil	Pasighat, (Arunaehal Pradesh) 791 102
3410	Cure of *langdi* disease (lameness) in animals with decoction of *piludi* shrub	In this disease the animals feel problem in moving from one place to another. Cattle owners boil 300 g green leaves of *piludi {Salvadora persica)* in 1 litre water. When the decoction remains 400 ml, it is allowed to cool and the lukewarm decoction is drenched orally to the suffering animal with a bamboo pipe. This dose is repeated thrice a day and continued up to 25-30 days for complete recovery. **Keywords:** *langdi*, lameness, *piludi*	Dr. Ranjay K Singh, Assistant Professor (Agril. Extension and Rural Sociology). College **of Horticulture** and Forestry. Central Agricultural University, Pasighat, (Arunaehal Pradesh) 791 102
3411	*Jiski* plant extract to control weakness in animals	When an animal suffers from the problem of weakness and faints during standing position (called *ghumadi* in local language), the cattle owners of Mantal village of Ahmedabad (Gujarat) grind 200 g each of roots and leaves *of jiski (Glycyerrhiza glabra)* plant. About 400 ml water is added to this paste. This solution is filtered through cotton cloth and drenched to animal with a bamboo pipe. The same dose may be repeated twice or thrice up to 3-4 days. It is an age-old practice. **Keywords:** weakness, **faint,** *jiski*	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunaehal Pradesh) 791 102
3412	Recovery from weakness with extract of *babool* and jaggery	Weakness in animals may deteriorate the productivity of animals. Cattle owners of village Mantal of Ahmedabad (Gujarat) collect 350 g leaves of *babool (Acacia indica)* and its extract is taken out by crushing.	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central

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		About 150 g jaggery is mixed to this water and 250 ml solution is prepared. ***Babool*** extract is added to it and drenched to the animal orally, thrice a day, up to 15-20 days to get complete recovery. **Keywords:** *babool*, weakness, jaggery	Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3413	Cure of *korma* (foot injuries) in animals by use of *kegar* stem	Due **to** continuous standing in mud and movement in water during rainy season, foot gets injured and animals become unable to move. Green stem of *kegar* tree is chopped and filled in earthen utensil having a hole at the bottom. Under the hole another utensil is kept. Upper utensil is exposed to fire for 4-6 hr. Its extract accumulates in the lower utensil. This extract is applied over injuries. Thus *korma* is cured. This is practised by the cattle owner of Jhadol of Udaipur district in Rajasthan. **Keywords:** *korma* (foot injury), *kegar* tree	Shri Somaj, S/o Shri Pataji Vadera, Bhurdia, Khera (Chundawaton), Jhadol. Udaipur (Rajasthan) and Shri Vardi Chand, S/o Shri Kesaji Orna, Pokhi, Atkalia, Kantharia, Jhadol. Udaipur (Rajasthan)
3414	Treatment for foot burns *(khuria)* in animals with bark decoction of *arjun*	Often the animals get foot burns and become unable to move during rainy season. For immediate treatment the cattle owners of village Jhadol of district Udaipur in Rajasthan use the decoction of bark of *arjun.* One kg *arjun (Terminalia arjuna)* tree bark is taken and boiled in 1 litre water till it is reduced to one-fourth. Foot burns are cleaned and this decoction is applied daily. **Keywords:** *khuria*, foot burns, *arjun (Terminalia arjuna)* tree bark	Shri Soormal, S/o Shri Detaji Badera. Damana (Uumra khapra), Jhadol, Udaipur (Rajasthan)
3415	Use of fenugreek, ***ajwain,*** turmeric and jaggery for relief **of joint** pains in legs of buffalo	Most buffaloes suffer from joint pain in legs and the animals move with difficulty. People of Jhadol area of district Udaipur in Rajasthan follow this ITK. A mixture is prepared by adding fenugreek, *ajwain*, turmeric and jaggery (each 200 g) along with	Mrs Pana bai, W/o Shri Heera ba, Kantharia, Jhadol Present address: Near Kalaji-Goraji, Bhat ji ki Wadi, Udaipur (Rajasthan)

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3416	Cure of acthyma on the face (mouth) of goat by using a mixture of sesame oil and turmeric powder	50 g salt. This mixture is boiled in water by adding some garlic cloves. After cooling, this mixture is fed to the animal for 3 days. It provides immediate relief. **Keywords:** joint pain, buffalo, fenugreek *(Trigonella foenum-graecum), ajwain (Artemisia maritima),* turmeric, garlic-Small acthyma (rashes) appears on both sides of lips of goats. About 50 ml sesame oil is heated and 10 g turmeric powder is mixed into it. This mixture is applied on affected part with a cotton plug in lukewarm state. This practice is followed for 3-4 days by goat owners of village Dang (Saradhna), Peesagam, Ajmer (Rajasthan). About 70-80% population is using it since long. **Keywords:** acthyma, jaw, goat, sesame oil, turmeric	Shri Markaran ji. S/o Magnaji Paronda, village Dang (Saradhna). Peesagam. Ajmer (Rajasthan) 305 001
3417	Use of mustard oil to cure contagious *aphtha* in goats	Goat rearing is a profitable farming in western Orissa. During the end of rainy season goats get affected with a viral disease, named contagious *aphtha.* Small eruptions come out around the lips and eyes. Goats cannot graze properly due to pain. Villagers of district Kondhmal in Orissa make a paste of 50 g raw mustard *(Brassica juncea)* seeds. The prepared paste is applied on the affected part of lips and face, twice a day for 3-5 days. With 3-5 applications, the eruptions get subsided. Most of the people of the village and nearby villages are using this practice to cure aphtha in goats. **Key words:** *aphtha,* lips, face, eruption, viral	Shri Duryodhan Biswal. Lodhani. Parjang, Dhenkanal (Orissa) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380015
3418	Treatment of cattle fever with *Rothia* spp., ginger, black pepper and *Andrographis*	A mixture made of the leaves of *Rothia* spp., ginger, black pepper and leaves of *Andrographis* spp. is used to	Farmers of hilly area of Shimla district in Himachal Pradesh

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		cure fever in cattle by the people of district Shimla in Himachal Pradesh. In this treatment, decoction of the leaves of *Rothia* spp. and *Andrographis* spp. along with 10 g ginger and 3 g black pepper is prepared and divided in eight equal parts. It is given twice a day for 3-4 days to fever-affected cattle with symptoms of excess bile. The treatment is also helpful to maintain and regulate the body temperature effectively in cattle. **Keywords:** herbal treatment, *Rothia* spp., *Andrographis* spp., ginger, black pepper	Facilitator: Dr L R Verma MRDA, 4 Summer Hill Shimla (HP) 171 005
3419	Use of bitter gourd *{Momordica charamia)* leaves for the treatment of fever in animals	The farmers of village Maheshpur (Shivsingh) of district Bareilly in Uttar Pradesh use this treatment to cure fever in animals. Leaf paste is prepared by mixing 200-250 g bitter gourd leaves and a little water. This paste is given twice daily to the animal. By this treatment, animal gets cured with in a few hours. **Keywords:** bitter gourd *{Momordica charantia)* leaves, fever	Shri Komal, S/o Shri Ram Singh, Maheshpur (Shivsingh), Bhairpura, Bareilly (Uttar Pradesh)
3420	Use of onion and garlic as treatment of cattle against fever	For treatment of cattle against fever, a mixture is prepared by mixing 20 g each of onion *{Allium cepa),* and garlic *(Allium sativum)* and 5 g timber *(Zanthoxyleum alatum)* with 20 g wheat flour and 10 g molasses. Round bolls are prepared by this mixture and fed to the affected animals. The farmers of Shimla district in Himachal Praddesh use this treatment to control fever in cattle. **Keywords:** fever, onion, garlic, wheat flour, timber	People of Shimla district of Himachal Pradesh at large Facilitator: Dr L R Verma MRDA, 4 Summer Hill Shimla (HP) 171 005
3421	Use of *kelly* to control fever of animals	In summer season due to hot weather animals generally suffer from fever. The bulbs of the *kelly (Canna* spp.) plant are crushed and juice is	Smt. Kunti Devi, W/o Shri PS. Bisht, Sarson, Hawalbag, Almora (Uttaranchal)

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		extracted, and fed to the affected animals. This effectively cures the animal from fever. **Keywords:** *Carina* spp., fever	
3422	Use of *akaua* and *karela* to cure fever in animals	A paste is prepared by mixing 3-5 *akaua* leaves, 300-400 g *karela* and some water. This paste is given twice daily to the animal. This treatment is common in village Sundyaba of district Bareilly in Uttar Pradesh. **Keywords:** fever, *akaua, karela*	Shri Durga Prasad, S/o Shri Khem Kharan, Sundyaba, Haphijganj, Bareilly (Uttar Pradesh)
3423	Control of fever in animals by using *pahari* grass and mustard oil 	To control fever in animals, the farmers of villages Nawapada (Band) and Pachomi of district Bareilly in Uttar Pradesh use *pahari* grass and mustard oil. About 500 g *pahari* grass is mixed with 100 g mustard oil. Gentle massage is given with this mixture twice or thrice daily to the body of the animal to cure fever. **Keywords:** fever, *pahari* grass, mustard oil, massage	Shri Rajender Singh 'Bhole', Nawada (Band), Faridpur, Bareilly (Uttar Pradesh)
3424	Use of *gosraine* to control fever in animals	People of village Rajupur of district Bareilly in Uttar Pradesh are using this treatment to cure fever in animals. Juice of 100-150 g leaves and fruits of *gosraine* is extracted after boiling them. This extract is given twice daily to the fever-affected animal. **Keywords:** fever, *gosraine*	Shri Maiku Lai, S/o Shri Nanku Lai, Rajupur, Devchara, Bareilly (Uttar Pradesh)
3425	Use of hen's egg, *bhilaya* and jaggery to control fever in animals	People of village Khai Khera in district Bareilly district in Uttar Pradesh are using this treatment to cure fever in animals. One egg daily is fed to the animal, and after that a mixture of 1 *bhilaya* and jaggery	Shri Jaki Ahmed, S/o Shri Navi Ahmed, Khai Khera, Bareilly (Uttar Pradesh)

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		(250 g) is given as a supplement orally twice a day. **Keywords:** fever, *bhilaya*, jaggery, hen's egg	
3426	Treatment of fever in animals with ***kasondhi*** *(Casia* ***occidentalis),*** *bakena* and ***ghundi***  *Kasoundhi*	Cattle owners of village Rajpuri of district Bareilly of Uttar Pradesh make paste of *kasondhi (Cassia occidentalis), bakena* and *ghundi* (50 g each), give it as a supplement to the animal, which controls fever. **Keywords:** *kasondhi, bakena,ghundi,* fever	Shri Brij Lai, S/o Shri Kare Ram, Rajpuri (Nawada), Bareilly (Uttar Pradesh)
3427	Use of ***sadia*** grass to cure fever in animals	This ITK is followed in village Rajpur of district Bareilly in Uttar Pradesh, to cure fever in animals. For this, 200-250 g *sadia* grass is given orally, twice daily, to the animal. The fever is controlled within 1-2 days. **Keywords:** fever, ***sadia*** grass	Shri Meghnath, S/o Shri Maiku Lai, Rajpur Devchara, Bareilly (Uttar Pradesh)
3428	Treatment of fever in animals using smoke of chilli, hair, bran and mustard oil	People of village Biehuria of district Bareilly in Uttar Pradesh burn red chilli, hair, bran and mustard **oil,** and its smoke is given twice daily to the infected animal. This practice **is** used to cure fever in animals. **Keywords:** fever, red chilli, hair, bran, mustard oil, smoke	Shri Satya Prakash, S/o Shri Ajaypal Singh, Biehuria, Balia, Bareilly (Uttar Pradesh)
3429	Treatment of fever in animals with a mixture of *giloie,* ***barmdandi*** and ***kanja***	*Giloie, barmdandi* and *kanja* (each 50 g) are taken and juice is prepared. This juice mixture is given twice daily to the suffered animal. This treatment is	Shri Maiku Lai, S/o Shri Nanku Lai, village Rajupur, P.O. Devchara, Bareilly (Uttar Pradesh)

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		followed by the people of village Rajupur in of Bareilly district in Uttar Pradesh. Keywords: fever, *giloie, barmdandi, kanja,* juice	
3430	Treatment for fever in animals by ising the decoction of *kadfoda* tree bark	Animals do not take fodder in case of fever. Cattle owners of district Alwar in Rajasthan prepare a decoction of *kadfoda (Gentiana kurroo)* tree. About 250-300 g bark is boiled in 1 litre water till the solution remains about 400 ml. This solution is given orally to the affected animal thrice a day for 4-5 days for complete recovery. Keywords: *kadfoda,* fever, decoction	Dr. Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh)731 102
3431	Use of bark of *Mimusops hexandra* to control fever in animals	People ofdistriet Bharuch in Gujarat collect 500-700 g bark of *Mimusops hexandra,* and crush it to take out the liquid extract to cure fever in animals. This extract is smeared on all the four legs of the affected animal. This pratice is followed twice a day for 4 days. Keywords: bark, smear	Shri Sojabhai Motibhai Vasava/Prabhat Dayabhai Patel, Kanbudi, Dediyapada P.O., Bharuch (Gujarat) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380015
3432	Control of milk fever in cattle	Due to milk fever the cattle show following symptoms: improper food intake, oversalivation and raising one leg. To cure this disease, a mixture of 20 g asafoetida *(Ferula asafoetida)* and 10 white beetle leaves *(Hibiscus abelmoschus)* are fed to the cattle until it is cured. Keywords: milk fever, asafoetida, white beetle leaves	Shri G. Sivakumar, S/o Shri Govindasamy, No.2/45. Kakkan Street, Peruvalur, Gingee Villupuram (Tamil Nadu) 604 208
3433	Application of *khar* for cough treatment in livestock	The banana peels of *Musa balabasiana,* locally known *bheemkol,* is preserved over the fireplace and dehydrated. It is crushed with 10-12 chillies *(Capsicum annuum)* locally known *khutjolokia.* The product formed is known *khar.* This is applied	Shri Bhaity Dutta, Patiogaon Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

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		to the tongue of the affected animal. After some time it is cleaned by using leaves of fig plant (locally known *deemoru).* This is a traditional treatment, which is practised since years and is found to be very effective to cure cough in animals. **Keywords:** *bheemkol, khan khutjolokia,* fireplace	
3434	Cure of cough in animals by using ash of coconut, fruits of *jogholi bhang* and *bhim kol*	In this practice, 25 g ash of fruit shell of coconut *(Cocos nucifera),* 4 fruit covers *of jogholi bhang (Datura metel),* 1 fruit cover of *bhim kol (Musa paradisiaca)* and some salt are mixed, ground and made into 2 parts. This is given orally twice, morning and evening, to the diseased animal. **Keywords:** *jogholi bhang, bhim* ***kol,*** coconut	Shri Bodon Bora, Silsako, North Guwahati Kamrup (Assam) 781 039
3435	Treatment of cough and fever in animals with red chilli, rubber and hair	Red chilli (50 g), rubber (500 g) and hair are collected and burnt. Inhaling the produced smoke cures the animal. Cattle owners of village Kamuakala of district Bareilly in Uttar Pradesh give the smoke twice a day. **Keywords:** chilli, rubber, hair	Shri Ram Auttar, S/o Shri Manohar Singh, Kamua Kala, Bareilly (Uttar Pradesh)
3436	Use of *tulsi* leaves to cure common cold in cattle	In this ITK, a decoction is prepared by mixing 50 g *tulsi* leaves *(Ocimum sanctum),* 20 g mint leaves *(Mentha viridis),* tea leaves or powder and 50 g aniseeds or *ajwain (Trachyspermum ammi).* All these ingredients are boiled in water till the water is reduced to half of the original volume. The decoction is then cooled, filtered and given to the ailing animal everyday. According to the farmers, this treatment cures the cold in *3-4* days. **Keywords:** *ajwain,* decoction, *tulsi,* mint, teapowder	Shri Mansukhbhai Govindbhai Kapadi, Rajkot (Gujarat) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
3437	Treatment for cold, cough and pneumonia of animals by use of turmeric and wine	Due to cold and cough the animal feels uneasy and stops grazing. Veins adjoining the front legs and heart seem pulping dominantly. Villagers of Jhadol of district Udaipur in Rajasthan are using this ITK to cure this ailment. Turmeric (100 g), 1 litre wine (liquor) and 25 g salt are mixed properly, and after heating it is fed to the animal. **Keywords:** cold, cough, pneumonia, turmeric, wine (liquor), salt	Mrs Pana Bai, W/o Shri Heera Ba, near Kalaji-Goraji, Bhat ji ki Wadi, Udaipur (Rajasthan)
3438	Use of *kair* shoots and barks of *jal* tree to treat pneumonia	A decoction of 50 g shoot of *kair (Capparis aphylla)*, 50 g bark of *jal (Salvadora persica)* tree, 5 g chilli is prepared in 500 g water by boiling. When the mixture remains half, it is filtered and fed to the suffering animal with the help of pipe by cattle owners of village Mayapur of Peesangam, Ajmer (Rajasthan). Jaggery solution is fed prior to decoction. This method is effective when the problem of pneumonia (coryza, cough and cold) is in preliminary stage. It is beneficial for cow, buffalo and goats. The treatment costs Rs 15-20. About 50-60% cattle owners are using it since long. **Keywords:** *kair*, *jal*, jaggery, pneumonia, coryza	Shri Kailash Bharti, S/o Shri Gheesa Bharti, village Mayapur, Peesangam, Ajmer (Rajasthan) 305 001
3439	Treatment for severe pneumonia by using human urine and black cumin seeds	Pneumonia is a dangerous problem during winter in animals. Under such condition, cattle owners of district Alwar in Rajasthan take 300 ml human urine, in which 50 g powder of black cumin *(Cupressus* sp.) seeds is mixed, and it is boiled for 5 min. After cooling, this solution is drenched to the animal with the help of bamboo pipe thrice a day. This practice is continued up to 3-4 days for complete recovery. **Keywords:** pneumonia, winter, human urine, black cumin	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102

Code No.	Title of the **ITK**	Description of the ITK	Name and address of the discloser/facilitator
3440	Treatment for pneumonia by using powder of black cumin seed and jaggery	When the animals suffer from pneumonia in winter the cattle owners of district Alwar in Rajasthan grind about 200 g black cumin seeds and mix it with 250-300 g jaggery. Jaggery is taken in liquid form so that the mixture can be drenched through bamboo pipe. This treatment is given thrice a day and continued up to 3-4 days for relief. **Keywords:** pneumonia, black cumin seed,jaggery	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3441	Treatment of cold and fever in animals with smoke of sugar	About 100 g sugar is burned and its smoke is given twice daily to the affected animal **Keywords:** cold, fever, sugar, smoke	Shri Satya Prakash, S/o Shri Ajaypal Singh, Bichuria, Balia, Bareilly (Uttar Pradesh)
3442	Use of drumstick bark for treatment of *vai (Acetonencea)* in buffalo	*Vai (Acetonemed)* is being considered a very dangerous problem of buffaloes. Immediate relief to the suffering animals is needed, otherwise the animals become unable to move; even it becomes difficult for the sick animal to stand itself. It stops feeding partially and becomes very week and may die due to constant sickness. Villagers of Biral of tehsil Shergarh of district Jodhapur in Rajasthan are using this age-old practice. For this treatment, 2-3 kg green bark of drumstick *(Moringa oleifera)* is taken and it is chopped properly. It is kept in a utensil and 5 litres water is added to it for boiling, to reduce it to 2 litres. It is filtered and fed to the animal in morning with fodder or any feed. Same dose is repeated in evening for 3 days or continued till the animal is cured. **Keywords:** *vai*, buffaloes, drumstick, green bark	Shri Narsing Dan, S/o Shri Chand Dan Kavia, Biral, Shergarh, Balesar, Jodhpur (Rajasthan) 342 306
3443	Use of jaggery to control cold in animals	This ITK is practised in village Maheshpur (Shivsingh) in Bareilly district of Uttar Pradesh. About 1 kg jaggery is given to the affected animal	Shri Rajendra, S/o Shri Babu Ram, Maheshpur (Shivsingh) Bhairpura. Bareilly (Uttar Pradesh)

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		2-3 times daily. It is useful to cure cold in animal. **Keywords:** cold, jaggery	
3444	Use of smoke of sissoo ***(Dalbergia** sissoo)* bark and jute bag to control cold in cattle	During the winter season, cattle suffer from cold. To overcome this, the farmers of district Surendernagar in Gujarat, use bark of sissoo *(Dalbergia sissoo)* and jute bag, so that the smoke can go through the nose of animals to get recovery. The efficacy of this practice is 60-70% as reported by the local people. The practice is going on since time immemorial. **Keywords:** sissoo, coldness, jutebag, smoke	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102
3445	Treatment of glands in animals with *dhatura* fruits	For the treatment of animal glands, a paste is prepared by grinding 100-150 g *dhatura* fruits and it is applied on the glands 2-3 times daily. This **ITK** is followed in village Maheshpur (Shivsingh) of district Bareilly in Uttar Pradesh. **Keywords:** glands, animal, *dhatura* fruits	Shri Ram Auttar, S/o Shri Lekh Raj, Maheshpur (Shivsingh), Bhairpura, Bareilly (Uttar Pradesh)
3446	Treatment of weakness in animals with *chui-mui (Mimosa pudica)* leaves and buttermilk	This practice is followed in village Khiraka of district Bareilly in Uttar Pradesh. Juice of four *chui-mui* leaves is taken and 500 g buttermilk is mixed with it. It is given daily to the animal. **Keywords:** weakness, *chui-mui*, buttermilk	Shri Rajender Prasad, S/o Shri Ganen Lai, Khiraka, Auadh. Bareilly (Uttar Pradesh)
3447	Use of *mahua* fruits for treatment of weak animals	In hilly area, animal keepers of Jhadol of district Udaipur in Rajasthan provide immediate treatment to weak animals. People of the area use matured *mahua* fruits for this purpose. *Mahua* trees are in abundance. Also the villagers get *mahua* fruits easily from market. One kg fruit is fed to the affected animal daily for 10 days. Animal regains strength. **Keywords:** *mahua* fruits, weak animal	Shri Heera Lai, S/o Shri Kamla ji Kumhar, Damana (Umra Khapra), Jhadol, Udaipur (Rajasthan)

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
3449	Use of queen termite extract to cure sickness in bullocks	When bullocks are suffering from sickness, in such a condition people in Keshkal block of district Bastar in Chhattisgarh follow this practice. About 8-10 queen termite insects are collected from wild area and after grinding it is given with the bread twice daily for one month. By using this practice about 70-80% problem of health and sickness of the bullock is cured. **Keywords:** sickness, bullocks, queen termite	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3450	Increasing appetite of animals with a mixture of black salt, *ajwaine*, turmeric and fenugreek	Cattle owners of village Pachhomi of district Bareilly (Uttar Pradesh) roast black salt, *ajwaine*, turmeric and fenugreek (50 g each). The mixture is ground to make powder, and mustard oil is added to it, which is given as a supplement to the cattle for increasing its appetite. **Keywords:** black salt, *ajwaine*, turmeric, fenugreek, mustard oil, appetite	Shri Md. Sabir, S/o Shri Mangali Shah, Pachhomi, Faridpur, Bareilly (Uttar Pradesh)
3451	Increasing appetite of animals with a mixture of *kalkatia* leaves, salt, onion and *chokar* (wheat bran)	Cattle owners of village Khirka, district Bareilly (Uttar Pradesh) boil *kalkatia* leaves (five) and mix onion (100 g) and salt (100 g). The ultimate mixture is fed to the animal for increasing its appetite. **Keywords:** salt, appetite, *kalkatia* leaves	Shri Surendra Pal, S/o Shri Tek Chand, Pachhomi, Faridpur, Bareilly (Uttar Pradesh)
3452	Treatment of lack of appetite in animals with a mixture of black salt, *ajwaine* and wheat flour	Cattle owners of village Khai Khera of district Bareilly in Uttar Pradesh prepare the powder of *ajwaine* (25 g) and black salt (100 g). This mixture is mixed with wheat flour and fed to the animal twice a day, which increases the appetite. **Keywords:** black salt, *ajwaine*, wheat flour, appetite	Shri Md. Miyan, S/o Shri Raihis Khan, Khai Khera, Bareilly (Uttar Pradesh)

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3453	Use of salt and wheat flour to increase appetite in animals	*Chapati* of wheat flour is prepared by adding a little salt. It is given twice daily to the animal as a good appetizer. This ITK is followed in village of Bichuria of district Bareilly in Uttar Pradesh. **Keywords:** *chapati*, bread, appetite, animal	Shri Md. Noor Ahmed, S/o Shri Md. Lai Mohamed, Bichuria, Balia, Bareilly (Uttar Pradesh)
3454	To Increase appetite in animals with *ajan, ajwaine (Trachyspermum ammi)* and balck salt	Farmers of village Sundyaba of district Bareilly in Uttar Pradesh give as supplement the mixture of *ajan, ajwaine* and black salt (each 200 g) to increase the animals appetite. **Keywords:** *ajan, ajwaine*, appetite	Shri Md. Noor Ahmed, S/o Shri Md. Lai Mohamed, Bichuria, Balia, Bareilly (Uttar Pradesh)
3455	Easy calf delivery	About 50 g sesame *(Sesamum indicum)* seeds and 100 g brown sugar are taken and fed to the cattle. It makes delivery easy. Apart from this, 1 kg Okra *{Abelmomoschus esculentus)* is also fed to the cattle to make delivery process easy. **Keywords:** sesame, brown sugar, okra, delivery	Ms C. Kanagambal, W/o Shri Chandrasekaran, P.O. Nettavelampatty, (via Kottaipalayam) TalukaThuraiyur, Thiruchirapalli (Tamil Nadu) 621 003
3456	Treatment of dog bite with *kokranda* ***(Carrisa*** *carandas)* and buttermilk	About 5 leaves of *kokranda* are crushed and mixed with *Vi* litre buttermilk. This dose is given twice a day to the animal by cattle owners of villages Nawada (Ban) and Bichuria of district Bareilly in Uttar Pradesh. **Keywords:** *kokranda*, buttermillc, dog bite	Shri Prem Ray, S/o Shri Sobhas Ray, Nawada (Ban), and Smt. Natho W/o Shri AH Hasan, Bichuria,), Bareilly (Uttar Pradesh)
3457	Use of *akawua* for treatment of dog bite in animal	People of village Bishesharpur of district Bareilly in Uttar Pradesh follow this treatment to cure dog bite in animals. In this treatment, 3 ml *akawua* milk is mixed with jaggery and fed to the suffering animals twice daily. **Keywords:** *akawua* milk, jaggery, dog bite	Shri Devi Ram, S/o Shri Brij Lai, Bishesharpur, Joytijagir, Bareilly (Uttar Pradesh)

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3458	Use **of *kuchala (Strichnos nux-vomica)*** for treatment of dog bite in animals	The people of village Sundyaba of district Bareilly in Uttar Pradesh use this treatment to cure the dog bite in the animals. A paste is prepared from 250 g *kuchala* and given orally twice a day. The infection of dog bite is cured. **Keywords:** *kuchala*, dog bite	Shri Om Prakash Gangwar, S/o Shri Nathu Lai, Sundyaba, Haphijganj, Bareilly (Uttar Pradesh)
3459	Snake-bite treatment of cattle by use of ***Aerva lanata***	*Sirupeelaipoo (Aerva lanata)* is used for snake-bite treatment in cattle. For this, about 200 g *sirupeelaipoo* is crushed and the juice is directly poured in to the eyes of the cattle. To ooze out blood, V-shaped cut is made in the ear tip. This brings relief to the cattle, after that it may be taken to doctor for treatment or animal gets cured if the treatment continues for 2 days. **Keywords:** *sirupeelaipoo (Aerva lanata)*, snake-bite, cattle, V-shaped cut	Shri Selva Pandi, Ayyanarpuram, Ammachiyapuram, Theni (Tamil Nadu) 625 531
3460	Cure of snake-bite with extract of *kothambadi* leaves	Patel community of village Mantal, Ahmedabad (Gujarat) drench the extract of tender leaves of *kothambadi (Coriandrum sativum)* to the animals when they suffer from snake-bite. About 400g green leaves, buds and tender stems of *kothambadi* are collected and ground to take out the extract. This extract is mixed with 200 ml water and given to the affected animal with help of bamboo pipe. This dose is repeated 4 times a day and continued up to 2-3 days for complete eradication of poisonous effect. It is an age-old practice. **Keywords:** *kothambadi*, snakebite, poison	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat, (Arunachal Pradesh) 791 102
3461	Control of poultry ailments with bark of *kavitha*	Fever and losing consciousness that leads to death is common in chickens. For curing this disease in poultry, the bark of *kavitha (Limonia acidissima*	Shri Sudharkarbhai Kochubhai Goli, Vanki Facilitator: National Innovation Foundation,

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		L.) is used. About 100 g bark of *kavitha* tree is crushed and 500 ml water is added to it. It is kept for 1-2 hr and then filtered. This water is kept near the diseased chicken so that it can drink the medicated water several times a day. No other source of drinking water is kept nearby. The villagers of Vanki and the people in the nearby villages are using this method for treatment to cure chickens effectively for generations. **Keywords:** *kavitha*, bark, chickens	Ahmedabad (Gujarat) 380 015
3462	Treatment for various poultry diseases	1. *Diarrhoea:* If the bird shows symptoms with watery and green faeces, foul ordour, discharge from the nose, coughing and sneezing, swelling of head and head with neck twisted to one side, drooping wings, dragging legs, sleepiness, convulsions and paralysis; the affected chickens are to be removed and kept separately. A mixture of the leaves of *veliparuthi (Pegularia daemia)* and *kuppaimeni (Acalypha indica)* and the bark of neem *(Azadirachta indica)* and *velvelam (Acacia leucophloea)* are crushed and mixed with *mi* flour, and given to birds as feed. The birds are treated successfully. 2. *Nutritious feed for turkey chicks:* The feed consists mainly of seedlings of blackgram *(Phaseolus radiatus).* Blackgram is sown in nursery beds and 3 days old seedlings are utilised for preparation of feed. The young chicks are allowed to feed on the seedlings. In addition, for 15 days *omelette* (roast eggs) mixed with leaves of *adathoda (Adathoda zeylanica)* and *poduthalai (Lippia*	Shri S. P. Balu, Kulamangalam (Tamil Nadu) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

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		nodiflera)is fed. This mixture of feed is found to be very effective for quick weight gain in chicks. 3. *Prevention of aflatoxin infection:* If the feeds get contaminaed with aflatoxin fungus, this ITK is used. A powder from dried roots of ***nannari (Hemidesmis** indicus),* ***vannam avuri (Indigofera tinctoria),*** leaves of *veliparuthi* ***(Pergularia** daemia),* seeds **of *moringa** (Moringa oleifera)* and garlic ***(Allium** sativum)* is prepared. A small quantity of this powder is mixed with the normal fodder and given to the chickens to prevent the harmful effects due to intake of aflatoxin. **Keywords:** *veliparuthi,* ***kuppaimeni,*** *velvelam, omelette, adathoda, poduthalai, nannari, vannam avuri,* aflatoxin	
3463	Dipping birds in water to hasten moulting process	In this practice bird is restrained by leg and then dipped in water for a second and set free. This process is repeated 5-10 times per day up to 2-3 days. This practice increases the egg-production efficiency and 46% of the rural poultry farmers of Davangare and Shimoga districts of Karnataka follow it. **Keywords:** dip in water, egg production	Dr G. R. K Sharma, Assistant Professor, Department of Veterinary Extension, College of Veterinary Science, ANGR Agricultural University, Tirupati (Andhra Pradesh) 517 502
3464	Application of ash to increase the efficiency of moulting process in birds	Pure ash is applied by restraining the birds, starting from head followed by neck, breast, body, wings and finally tail. After application the birds are confined for 30-60 min. to avoid wiping off of ash, and afterwards they are set free. About 30-50% of the farmers of Devinagari and Hamirpur districts of Karnataka believe that this practice hastens the laying process. **Keywords:** ash, moulting, laying	Dr G. R. K Sharma, Assistant Professor, Department of Veterinary Extension, College of Veterinary Science, ANGR Agricultural University, Tirupati (Andhra Pradesh) 517 502

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
3465	Quarantine of birds to dark locations to undergo moulting process	This traditional practice involves isolation of birds in darker places (mini-huts prepared with mud and paddy straw) for 3-4 weeks, and then setting them free. Separate care must be taken to check predators. This is the simplest practice and is most effective for increased egg production. About 20-40% of the backyard poultry farmers of district Madhya in Karnataka and Kanmur district in Kerala are following this practice. **Keywords:** *quarantine, moulting, dark place, mini-hut*	Dr G. R. K **Sharma,** Assistant Professor, Department of Veterinary Extension, College of Veterinary Science, ANGR Agricultural University, Tirupati (Andhra Pradesh) 517 502
3466	Application of mud to shorten the moulting process	This practice involves the restraining of birds and applying thick mud all over the body. Then they are sheltered in a cooler place for 30-60 min., so that the applied mud gets dried, and then the birds are left free. Albeit of complex procedure it quickes the moulting process and in turn increases the production. Poultry owners of district Malappuram and Kannur in Kerala are following this practice **Keywords:** mud, moulting, cool place	Dr G. R. K Sharma. Assistant Professor, Department of Veterinary Extension, College of Veterinary Science, ANGR Agricultural University, Tirupati (Andhra Pradesh) 517 502
3467	Fixing of feathers on beak of birds to accelerate the moulting process	This practice involves restraining of the birds by legs. Then quill of the feather is passed through the nostril and the bird is observed for a few weeks. Here care is taken so that the birds do not wound itself or others with the quill. Despite its complexity, the practice hastens the moulting process and shortens the production gap. About 45-50% farmers of district Chikmangalore in Karnataka and district Alapuzha in Kerala are following this practice. Keywords: quill, feather, nostril, moulting	Dr G. R. K Sharma, Assistant Professor, Department of Veterinary Extension, College of Veterinary Science, ANGR Agricultural University, Tirupati (Andhra Pradesh) 517 502

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3468	Use of ash and mustard oil paste for treating fowl pox	Scabs of fowl pox are cleaned and a paste made from mustard oil and ash is applied. It is reported that the treatment is effective in curing fowl pox. **Keywords:** fowl pox, ash mustard oil	Shri Thangsamo Lotha, IETC Colony, Medziphema (Nagaland) 797 106
3469	Use of *Raja Mircha* seed for cure of fowl pox  Raja mircha	*Raja Mircha* (local name) is a variety of chilli, which was once considered the hottest chilli in the world. This is found in abundance in this region of the country and is liked by most of the tribal people. The seed is used for treating fowl pox in chicken by placing one seed each in both the eyes of the affected birds. Severe lackrymation follows after its application, but the birds get cured after a few days. **Keywords:** *Raja Mircha*, fowl pox, lackrymation, chilli	Shri Thangboi Kuki, Medziphema (Nagaland) 797 106
3470	Protection of poultry birds from *ranikhet* disease	*Ranikhet* is a fatal disease of poultry birds. It is a viral disease. Farmers of district Jagatsinghpur in Orissa use an indigenous preparation for its prevention. In this, equal proportion (20 g) of *apamaranga (Achyranthes aspera)* root, red raw chilli *{Capsicum annuum)* and garlic *(Allium sativum)* are ground together to make a fine paste. The prepared paste is given orally to each bird (nearly 1 g). This prevents occurrences of *ranikhet* disease in poultry birds. **Keywords:** *apamaranga*, chilli, garlic, ranikhet disease	Shri Hemanta Pradhan, Jakeikala, Banaigarh, Sundargarh (Orissa) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3471	Plucking of wing feathers for better growth rate in chicken	To have better growth rate and fattening of chicken, a few (4-5) wing feathers are plucked. It is reported that growth rate is increased with this treatment. **Keywords:** wing feather, fanning, chicken, plucking	Shri Thangsamo Lotha, IETC Colony, Medziphema, (Nagaland) 797 106

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3472	Use of green leaves of garlic and onion to increase the body weight of chicken birds rapidly	Poultry farmers of Sonapur, Sewta and Hamirpur of district Azamgarh in Uttar Pradesh feed green leaves of garlic and onion to their chicks for attaining rapid growth. For a lot of 50 chicks (250 g body weight) about 3 kg garlic leaves and 1.5 kg of onion leaves are required. Both the leaves are mixed and fed to the chicks. As these leaves are generally not available in the same season, and hence are fed separately (singly). Garlic leaves are available in the winter season and 4-5 kg leaves are fed to a lot of 50 birds. Onion leaves are available in summers and 2-3 kg leaves are fed to a lot of 50 chicks. This practice is very effective in increasing the body weight of birds rapidly. Keywords: poultry birds, rapid growth, garlic, onion	Dr Ranjay K. singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3473	Use of mustard oil for mange in rabbit	Mange is one of the commonest diseases encountered in rabbit. To cure it, mustard oil is applied to the affected region. Keywords: mustard oil, mange, rabbit	Shri Thangsamo Lotha, IETC Colony, Medziphema, (Nagaland) 797 106
3474	Fodder storage in *pachawa*	Animal keepers of Gila Kor village of Jodhpur district in Rajasthan store fodder by this method. *Pachawa* is an improved method in which fodder is stored for 15-20 years without any damage. Materials for storing in *pachawa* are easily available. These are pearlmillet stubbles, harvested grass from fallow and cultivable fields. Many a times the farmers also store pearlmillet ears in the central part of *pachawa.* That helps during famine and drought conditions. The relevant details for storing fodder in *pachawa* are given below: 1. Higher elevated place in the	Shri Kishan Singh Rathore, Golakor (via Peelvan), Jodhpur, (Rajasthan)

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	locality is chosen, so that flood water cannot damage it, and it should be a little away from residence to keep safe from hazards of fire etc. 2. At selected spot levelling is done for larger life *of pachawa.* At the bottom the first layer of 5 feet height of harvested *kharif* grasses *(sevan, dhaman and bhurat)* is put. 3. The length of the *pachawa* is kept as per wind direction, southwest to northeast, owing to blowing of wind in this direction during summer. Thus *pachawa* is not bent and sand dunes not accumulate adjoining *pachawa.* 4. Farmers put pearlmillet stubbles on the layer of grass up to the height of 12-15 feet in cris-cross manner. The first layer of pearlmillet stubbles is kept according to width, and second layer is made from another direction. Each layer of 1.5-2 feet is given up to a height of 12-15 feet. In the centre either pearlmillet ears or guar fodder etc. are filled to maintain proper balance. After attending the desired height, gradually the width is reduced. So that at top *pachawa* becomes tapering. 5. Before finishing the height of 25 feet, width is again increased so that in future rain water may not damage the structure. 6. At the top *pachawa* is thatched while keeping pearlmillet stubbles at a slope. The topmost layer of local *bushes sinia (Crotoleria bruhia)* is kept to enable rain water to flow to the ground. 7. The top of the *pachawa* is made tight with strong strings cross-wise	

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		to prevent damage from high wind and storms. 8. Finally ***Zigiphus*** *rotendifolia* thorns are put at top, so that birds may not damage it. **Keywords:** fodder storage, *pachawa,* pearlmillet stubbles	
3475	Local food material for buffaloes and poultry	When there is scarcity of fodder in village Nagainga of district Ukhrul, the cattle owners manage to feed local fodders to their animals. Locally available *chichi* ***(Allophylus*** *cobbe)* and *latchangrong (Blurnea balsamifera)* colleted by the women, are cut into small pieces and conserved. During scarcity these plant materials are mixed in different ratios with rice and local millets to feed the animals and birds. For poultry, a plant called *haremhan (Breynia stipularis)* is used. About 65-70% inhabitants have been using this practice since age-old time. **Keywords:** fodder, *chichi, latchangrong, haremhan,* poultry	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102
3476	Treatment of madness in cows by using *lalpushpavali*	Sometimes animals behave in a manner to give an impression that they have gone mad. To overcome it, cattle owners of village Mantal of Ahmedabad (Gujarat) use leaves of *lalpushpavali (Tribulus zeylanicus).* It grows on sandy loam soil. Extract of about I kg leaves is taken out by crushing after adding water. Total quantity of leaf extract and water is made up to 500 ml and given to needy animal thrice a day and continued up to one month. Sometimes it is extended up to 2-3 months depending upon the severity of the case. This practice is in vogue since time immemorial. **Keywords:** *lalpushpavali,* madness	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
3477	Remedy to cure unconsciousness in bullocks	A cut is made into 1 foot long piece of indigenous cactus *{Carnegiea gigantea),* which is then filled with *bishopweed* seeds *(Aegopodium* spp.). This is boiled till the outer covering separates. It is then ground by adding a litre water. About 250 ml of the prepared paste is given to the animal (bullock) orally, twice a day. The unconsciousness is relieved within 2 days. This technique has been passed through generation. **Keywords:** *bishopweed,* unconsciousness, cactus	Shri Sureshbhai Somabhai Patel, Rajpuri Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3478	Cure of giddiness in goats by use of *bhim kol* ash	Ash of the dried bark and root of a kind of plantain tree, called *bhim kol (Musa paradisiaca),* is prepared. The ash should be prepared only during 15 October-15 November. This period is called *Kati mah* in Assamese calendar. About 100 g ash is wrapped in a cloth and it is dissolved in 1-2 litre water for 5 min. This water is used as the medicine and is massaged three times a day, for 5 days on the temporal fosse as well as on the spinal cord. **Keywords:** *bhimkkol, Kati mah,* fosse	Shri Bodon Bora, Silsako, North Guwahati (Assam) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3479	Use of ***simla*** to prevent mud coming out of animals	Flowers of *simla (Bombax malabaricum)* are used for preventing mud coming out of animals. Due to violent clash or less strength or any other defects in the womb of the animal, sometimes mud comes out of the animal. To prevent this, about 500 ml juice extracted from the flowers of *simla* is sprayed for 2 days on the portion from which mud is coming out. This prevents coming out of mud from the animal. **Keywords:** *simla,* clash, mud	Shri Kalubhai Patel, Nani Sarsan, Santrampur, Dahod (Gujarat) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
3480	Cure of tetanus in animals by use of maize	Cattle or other animals affected by tetanus become frenetic with protruding eyes (sticky), and start kicking. Loss of appetite and laziness can also be seen. When the cattle develop such symptoms, 2 kg maize *(Zea mays)* leaves and sweet ears are crushed, water is added to it and it is kept for 1-2 hr. The prepared mixture is strained and fed to the animal. There will be a fast recovery from tetanus. If the animal eats whole leaves, it may also be fed. **Keywords:** frenetic, protruding eye, maize, fed	Shri Kalubhai Patel, Nani Sarsan, Santrampur, Dahod (Gujarat) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3481	Care and protection of cattle against perspiration	About 2 kg *kasuda* of *kliakra* are crushed and 2 litres water is added to it. This solution is strained after 2 hr. About 250 nil of this lipuid is^fiiven to the cattle for 4 days, twice a day. About 20% of the population of the village is using this technique to get rid of perspiration in cattle. **Keywords:** *kasuda* of *khakra*, perspiration	Shri Ulashyabhai Varyabhai Pawar, Vadpada Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3482	Remedy to cure choking in cattle by using *jabrang*, ash of banana and mustard oil	About 100 g powdered seeds of *jabrang (Xanthophyllum* spp.), 50 g ash of *Musa paradisiaca* and mustard oil are mixed together to make a paste which is orally given twice daily for 3 days. **Keywords:** *jabrang*, mustard	Shri Dhonokanta Das, Borgaon, Kamrup (Assam) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3483	Use of *dubari bon* as remedy to prevent cowpox in cattle	About 25 g *dubari bon (Cynodon dactyion)* is crushed and made in to a paste with 25 g sugar, which is administrated orally one dose daily for 3 days. This should be administered annually for prevention against cowpox **Keywords:** *dubari bon*, cowpox	Shri Dhonokanta Das, Borgaon, Kamrup (Assam) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

Code No.	Title of the ITK	Description **of** the ITK	Name and address of the discloser/facilitator
3484	Cure of glossitis in animals	In this ITK *sindoor* (1 pinch), *khar* (1 pinch), one small bulb of *bon nohoru (Allium vineale)*, 3 pieces of *pan* leaves *(Piper betel)* and 4 pieces of ginger *(Zingiber officinalis)* are mixed togther and ground to make a paste. This paste is given orally at every 3 hr interval in a day. **Keywords:** *sindoor, khar, bon nohoru, pan* leaves	Shri Bodon Bora, Silsako, North Guwahati, Guwahati Kamrup, (Assam) 781 039 Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3485	Use **of** ***Imperata cylinderica*** Beauv roots as anthelminlic **for** animals	The roots of *Imperata cylinderica* Beauv are crushed, its juice extract is taken out and is given orally to the affected animal in 10-15 ml dose once daily, for 2-3 days. This practice is followed by Nepali community who developed this practice with their own efforts. **Keywords:** *Imperata cylinderica* Beauv	Nepali community. North Guwahati (Assam) Facilitator: National Innovation Foundation. Ahmedabad (Gujarat) 380 015
3486	Treatment for anuria in animals by using roots of ***Achyranthes*** *aspera*	In this practice, 50 g roots **of** *Achyranthes aspera* are mixed with 500 g jaggery. This mixture is crushed to make a paste. The prepared mixture is fed to the ailing animal. This treatment is believed to cure the problem completely and is used by all the villagers. **Keywords:** ailing animal, anuria	Shri Gemarsingh D. Zala, Zinzuvadiya, Dasuda, Surendranagar (Gujarat) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3487	Treatment to cure excessive salivation in animals by use of leaves of ***Andrographis*** *alata*	In this practice, the leaves of *Andrographis alata* are ground and 500 ml water is added to it. This is given to the affected animal orally, twice a day for 3 days. **Keywords:** *Andrographis alata*	Shri Mani (Scout), Somasekarapuram, Nallur, Mannarkudi, Thiruvarur (Tamil Nadu) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015
3488	Treatment **of** keratitis of cattle with *dhala kainch*	In this practice, a local plant known as *dhala kainch (Mucuna pruriens)* is used for treating keratitis. *Kainch*	Shri Janmejaya Prahdan, Paikasahi, Angul (Orissa)

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		plants bear fruits similar to those of peas. The seeds resemble somewhat like pigeonpea. Some of these plants produce red peas and others white peas. The roots from white variety plant is taken and are fed (7 metres) to the cattle along with grass, daily once for 6-7 days. It is claimed that keratitis disappears after 7 days of such medication. Keywords: *dhala kainch*, white peas, keratitis	Facilitator: National Innovation Foundation. Ahmedabad (Gujarat) 380 015
3489	Remedies to cure various veterinary diseases	1. *Anoestrous in cattle:* About 200 g *bhilama* seeds *(Semecarpus anacardium)* are mixed with cattle feed and given to the affected animal. Care has to be taken that the powder does not *spill* over any part of the body of the cattle, lest it causes irritation or dema. In addition, lOOg pigeon excreta or 2 eggs mixed with cattle feed once or twice are given to the animal. Sometimes 100 ml pure and fresh groundnut oil is also used. 2. *Skin disease in cattle:* About 150g pieces of roots of *desi bordi (Zizyphus mauritiana)* are boiled in 500 ml water and allowed to cool. The affected skin part is washed with lukewarm water, followed by washing with the above prepared solution. Wounds and other infections get cured if this treatment is repeated twice a day for 3-4 days. 3. *Yoke gall in cattle:* About 200 g roots of *zipto (Triumfelta rhomboidea)* are boiled in 500 ml water and allowed to cool. The affected part is washed with lukewarm water and the prepared filterate is applied. The treatment is repeated twice a day for 2 days.	Shri Dhonokanta Das, Borgaon, Kamrup (Assam), and Shri Rehmat Khan Pir Khan Solanki, SRISTI, Char Village (Gujarat) Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		The wound begins to cure after 2 days. All these remedies are found to be very effective **Keywords:** *bhilama, desibordi, zipto,* lukewarm	
3490	Cure for diarrhoea, conjuctivitis and other ailments of livestock	The ITKs are useful for many common diseases in cattle. 1. *Retention of placenta:* About 1 kg leaves of *mahua (Madhuca indica)* or tender leaves of bamboo *(Bambusa arundiacea)* are fed immediately after partutrition and the placenta will drop within 2 hr. 2. *Diarrhoea:* Juice from 2 kg bark of *aristo (Bahuinia racemosa)* is extracted and mixed with 1 litre water and then filtered. This filterate is administered orally once or twice a day for 2 days. Diarrhoea can be effectively cured by this treatment. 3. *Conjuctivitis* (inflammation of eyes): About 50 g bark of *ingoriao (Balanites roxburghii)* is rubbed against hard stone mixed with a little water and applied topically (drop-wise) over the eyelids, two or three times a day for 8-10 days. Care should be taken that iris of the eye is not disturbed. 4. *Prolapse of womb:* Dough prepared from 1 kg fine flour of *adad (Vigna radiata)* is fed in early morning for 10 days. This is believed to solve the problem completely. 5. *Arthritis:* Roots of *shatavari [Asparagus* spp.) are cut into small pieces and fed once a day for 3-4 days to relieve the animal from arthritis. Keywords: *mahua, aristo, ingoriao, adad, shatavari,* arthritis, womb	Shri Devkaranbhai Rabari, Mahudi Facilitator: National Innovation Foundation, Ahmedabad (Gujarat) 380 015

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Fisheries

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
3491	River management for fish production	The water from main river is diverted into small-sized channels, which are passed nearby the cattle shed so the daily wastes i.e. urine and dung gets is mixed with it before reaching the crop fields. During rainy season a large number of fish are diverted from river and accumulated in the micro-catchments, which are prepared for harvesting the fish. The waste product of cattle shed helps develop congenial micro-environment for the fish. About 40-45% households are following this age-old practice. **Keywords:** cattle shed, dung, urine, micro-catchment, fish	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh)791 102
3492	Feed management for rapid growth of fish	Rotten cowdung (left for 2-3 days so that meanwhile some larvae develop in it), waste materials obtained after preparation of rice beer, rice husk, cut grass *(Lersa hexandra)*, green stem of paddy and *kambhong* grass (grown on decayed matter) are spread in the ponds by tribals of Kakching Mayai Leikai (Manipur). All these materials are used singly but may be used in combination depending on the availability. Before application, small pieces of these materials are cut and spread on the water, after disturbing the water of the pond. Local fish growers consider that by applying these materials they obtain good harvest of fish. **Key words:** *kambhong*, rice beer, rice husk, fish, pond	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102

Code No.	Title of the **ITK**	Description of the **ITK**	Name and address of the discloser/facilitator
3493	Use of *Toddalia asiatica* for harvest of fish	*Toddalia asiatica*, locally called *nuraiyendu*, is crushed in water to make juice. This juice when mixed in the river or pond water brings the fish to the surface. This helps in easy catching of fish. **Keywords:** *Toddalia asiatica*, fish bait	Shri T. Rajasekaran, S/o Shri R. Thirumalaisamy, Reddiarpatty, Kannivadi, Dindugul (Tamil Nadu) 624 705
3494	Fish catching by use of local vegetation	Adi tribals of Pasighat area uses local vegetation for catching fish. Extract of *rugzi (Aesculus* spp.) leaves is taken out, which is mixed with the water of specific range, and the fishes of this range become unconscious. Other plant materials like *diku temu (Polystichum* spp.) tree, *taki sading (Polypodium vulgare)* shrub and *ripek* leaves are also used by these tribes. It is reported that water of that particular area becomes normal after 3-4 hr. This practice is eco-friendly and is being followed by tribes since time immemorial. **Keywords:** *rugzi, diku temu, takisding, ripek*, unconscious	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102
3495	Use of *Khon* for fish catching	Conical-shape baskets are made to use fish catching. It is made of bamboo stick and tied with coir rope. It is cylindrical, wide mouthed and has	Shri Pandurang Majgeankar, Keri, Tiswadi, North Goa (Goa) 403 402



Taki sading—stem bark is used as fish catching material in ponds



Leaf extract of *tamu* is used for fish catching. It is quite eco-friendly



Indigenous ferns—used as ethnic materials for fish catching called Rugji and used as vegetable as well, it is also used in stomach pain

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		sharp edge. The structure helps catch the fish, which are trapped inside and cannot escape. Fishermen use this and feel comfortable when go for fishing. Keywords: *khon*, bamboo sticks,coir,fish catching	
3496	Fish catching by using *manas*	During high tide water is passed through the check dam and blocked in small patch. This helps catch fish and prawns. This is considered an easy way for fish catching. Keywords: *manas*, check dam, fish catching	Shri Sandesh Senari, Tiswadi, Amona, Bieholim, North Goa (Goa) 403 402

Ethno-Botany and Agro-Biodiversity

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
3497	Indigenous cultivation of *safed* ***moosali,*** a medicinal plant	People of Jhadol village of district Udaipur in Rajasthan cultivate *safed moosali* by the following way: Field is prepared by 4—5 ploughing s after heavy manuring @ 6 tonnes/acre with application of tank bed soil. Ridges and furrows are made at a distance of 1 foot and height of 9 inches. Root slips, at least 2 roots of 3-4 inches length, are planted 6 inches apart at both sides and middle of the ridges at a depth of 2-3 inches. Field is kept free of weeds and irrigated at 8-10 days interval. In the furrow *kangani* is sown in October. The crop matures in October. The people of the area reported that *safed moosali* could be easily stored *in situ* field up to March. At the beginning of summer, a pit of 9 inches is dug beneath a mango tree and *safed moosali* is kept in it. The pit is covered with dry field soil. **Keywords:** *safed moosali*, cultivation, storing	Shri Khayali Lai Pandiya, village Jhadol, district Udaipur (Rajasthan)
3498	Indigenous uses of *mahua* tree *(kalpa vriksha)* 	*Mahua* is one of the most useful trees of the tribal area, including entire Udaipur district and Aravalli hills of Rajasthan. People of village Naya Talab, Hathai in Dungarpur district in Rajasthan are having the following use of *mahua* tree: *Medicinal use of mahua leaves: Mahua* leaves are used for medicinal purpose by the tribal people. It is found to be effective in external injury. Green *mahua* leaves are smeared with	Shri Rama ji, S/o Shri Kan ji Nanoma, Maya Talab, Hothal, Dungarpur (Rajasthan) 314 034

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		oil or ghee and are kept on the swollen parts of the body. Then it is tied with bandages. Thus swelling is reduced. **Keywords:** *mahua* leaves, injury, ghee *Preparation of drink:* Dry *mahua* flowers (4 kg) is kept in a pot and 12 litres of water is added in it. This mixture is allowed to ferment for 3 days in summer and 5 days in winter. This fermented material is then distilled and the prepared material is called *mahuai*. This is not harmful for health if consumed as medicine in small quantity. *Mahuai* is found to be effective against the internal injury and pneumonia in infants. It is also used as a vermicide for sheep and goat. **Keywords:** flower, fermentation, liquor, medicine *Tonic of roasted dry flowers:* For roasting, *kelari* (a round pot made of clay) is used. About 250 g dry *mahua* flowers are taken in *kelari* and it is roasted for 3-5 min after adding ghee. It is consumed during rainy season or when excess work is done by man. It reduces tiredness and the person feels easy and fresh. **Keywords:** roasted, dry flowers, tonic, *kelari* *Tonic for draught animals:* About 500 g dry *mahua* flowers are soaked in water for 3-4 hr and fed to the animal daily for 15 days. On being fed, the animal gets energy during the days of heavy work load. **Keywords:** tonic, drought animal *Preparation of **ethnic** food, Dhokali:* About 2 kg dry *mahua* flowers are boiled in 3 litres of water for 15 min. to make it soft and remove bitterness. Boiled flowers are mixed with 2 kg wheat flour by adding some water.	

Code No.	Title of the **ITK**	Description of the **ITK**	Name and address of the discloser/facilitator
		Round bread is prepared for making 4-layered *dhokali* of 3 inches diameter. For its preparation, an earthen pot of 15 litre capacity is taken and 1.5-2 litres water is poured in the pot. Over the water two layers of datepalm-leaf stubbles are kept in criss-cross manner. Another layer of datepalm-leaf fibre over the first layer is put and it is put over the *dhokali*. Second layer of 4-layered *dhokali* are kept over the layer of datepalm-leaf fibre, and third layer of six four-fold *dhokali* is put over this layer. The last layer of datepalm-leaf fibre is given over the *dhokalies* and opening of pot is closed with a lid. This earthen pot is kept on light fire for 45 min to 1 hr till the colour of four-fold *dhokali* becomes brown. Steam-cooked *dhokali*, spreads a particular aroma. In tribal areas it is being consumed on special occasions like *sheetla saptami*. Sometimes it is prepared as a special dish during rainy season. **Keywords:** *dokali*, *mahua* flowers, wheat flour, earthen pot, datepalm-leaf	
		Use of mahua fruits for oil extraction: Mahua-fruit kernel (20 kg) is taken and crushed for oil extraction at oil crushers. About 10 litre oil is extracted. This oil is boiled in earthen pot to remove its bitterness. This oil is being used for vegetable cooking, etc. **Keywords: *mahua-frait*** kernel, oil extraction	
		Construction of house with mahua wood timber: Since *mahua* trees live a long age. their wood become very hard, which cannot be damaged by termites. *Mahua* timber beam is being used for construction of houses that are resistant to termites. **Keywords:** house, *mahua* wood, termite-proof houses	

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		Keywords: lightning, direction, rainfall	
3502	Prediction of weather by observing feeding behaviour of hen	Farmers of village Shantinagar, Teliamura of West Tripura assume that hens have sensitivity for the probable weather changes. When hens feed upon certain weeds with their chicks at specific locations, there may be chances of severe winter and winter rains. On account of these observations people decide their cropping scheme and estimate the management cost to cope up with the situations. This is an age-old practice. **Keywords:** hen, chicks, weed, winter	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102
3503	Prediction of drought by observing flowering in bamboo	Whenever bamboo flowers, farmers of villages Gourangatilla and Teliamura of West Tripura consider that in the coming period there will be severe drought. A bamboo stem reaches to full maturity in 60-70 years, and some bamboo plants flower at maturity whereas others do not. Accordingly, as per the flowering intensity, the farmers decide the intensity of the drought to get ready for coping with drought and planning for proper cropping strategy. **Keywords:** flowering in bamboo, drought, cropping strategy	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102

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Weather Forecasting

Code No.	Title of the 1TK	Description of the ITK	Name and address of the discloser/facilitator
3499	*Kerda (Capparis decidua)* flowers as rainfall indicator	*Kerda* flowers are used as an indicator of rainfall. Farmers of Bhavnagar, Surendranagar and Kheda districts of Gujarat consider that when the *kerda (Capparis decidua)* plants produce more number of flowers and fruits, it is assumed that there will be severe drought in the coming year. Colour of flowers is also helpful for the farmers to decide the cropping strategies in advance. When bright orange-colour flowers are produced, drought prevails during rainy season for a longer time. When greenish yellow to orange flowers are produced, there will be drought for 20 or 30 days and after that some showers may be received. Little amount of flowers with greenish yellow colour shows sufficient amount of rainfall during the year. **Keywords:** *kerda* flower, rainfall indicator	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
1500	Prediction of rainfall by observing ring in the sky	When a ring is formed around the moon, the farmers make prediction about rain. When ring is near to moon, it is an indication that the rain is far away. When ring is distant from moon, it indicates that there will be rain soon within I or 2 days. **Keywords:** moon, ring	Shri D. C. Pant, Agaion, Didihat, Pithoragarh (Uttaranchal)
501	Rainfall prediction through direction of lightning	When lightning starts from north-east to east direction and shines up to the south-east, it is forecast that rain is about to come. When there is lightning in other directions, there is no possibility of rain.	Shri M.S. Bagdwal, Kunj-Bargal, Bhaisiyachhana, **Alrnora** (Uttaranchal)

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Waste-Water Management

Code No.	Title of the **ITK**	Description of the ITK	Name and address of the discloser/facilitator
3504	Use of *nelli* (gooseberry) sticks for converting saline water into neutral water	To turn saline water into non-saline, use of sticks of *nelli* or gooseberry *(Phyllanthus emblica)* is in practice. ***Nelli*** (anola) sticks have the property to convert saline water into non-saline water, which can be consumed. **Keywords: *nelli,*** saline water, neutral water	Shri S. Dhanapandian, S/o Shri Subramanian, P.O. M. Vadipatty, Taluka Nilakottai, district Dindugul (Tamil Nadu) 624 202

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Garbage Disposal and Management

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
3505	Compost pit	To dispose-off garbage, a pit is constructed in the field. All garbage, cowdung, cow urine, garden waste and kitchen waste are collected in the pit. The material collected in the pit is allowed to decompose. This can be used as organic or green manure prior to ploughing in the field and also at different growth stages of the crop. Keywords: pit, garbage, decomposition	Shri Sameer Gauns, Porye, Ranewada, Sanquelim, Sattari, North Goa (Goa) 403 505

Food Product Development

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
3506	Preparation of *kodo* beer	A local drink *(kodo* beer) is prepared from millet by different tribe of Sikkim. The drink is known *tchang* in Bhutia and *jhar* in Nepali languages. This beer is offered to guests in bamboo or wooden cup as a regard of honour. Major communities in Sikkim are Lechas, Bhutias and Nepalis. Preparation of the drink is as follows. Matured and dried grains of *kodo (Paspalum scrobiculatum)* are boiled thoroughly along with a little of water. It is mixed with powder of rice *(Oryza sativa),* 'maize *(Zea mays),* and wheat *(Triticum astivum).* This mixture enhances the taste and flavour of the beer. After draining-off the water, the boiled *kodo* grains are spread on a mat, and local yeast, known as *marcha,* is mixed with these grains @ 10 g/15 kg. The mixture is wrapped air-tight with banana leaves and is kept in the cane basket for 3-5 days for fermentation. Then the banana leaf is removed and the fermenting mixture is transferred to polythene bags and kept air-tight for 1-2 weeks. Its temperature is adjusted to allow it to undergo complete fermentation. The fermented millet grains are transferred in the bamboo cup. The bamboo cup is known as *tongba* in Nepali and *bhib* in Bhutia language. Then lukewarm water in sufficient quantity is poured inside bamboo cup. A small bamboo pipe, known as *bibsing* in Nepali and *eimah* in Bhutia, is kept in this cup. One can consume the beer by sucking through	Dr Dheeraj Singh, Assistant Professor (Pomology) and Dr Ranjay K. Singh. Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 761 102

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		the pipe. Lukewarm water may be poured gradually till the flavour is retained. The left-over material is used for feeding the pigs and cows. It is very useful for fast growth of pigs. It is consumed daily, just before and after the food, as a healthy tonic. A few spoonfuls of beer are given to the children as a cure of cold and cough. Keywords: beer, *tchang, jhar, marcha, tongba, bhib, bibsing, elmah, kodo,* rice, maize	
3507	Preparation of *rokshi* beer	Many villagers of Sikkim have developed a technology of preparation of *rokshi* as a traditional drink that is a favourite in Sikkim state. In preparation of *rokshi, Canna edulis (phultaral)* and *Zea mays* (maize) are used. The starchy roots of *Canna* are washed thoroughly with water and cut into thin slices, which are mixed with corn *(Zea mays)* powder in the ratio of 6: 1 w/w. About 5 g yeast *(marcha)* is mixed thoroughly to 1 kg of this mixture. The mixture is kept air-tight inside a polythene bag or wrapped with leaves of banana or arecanut. The process of temporization and condensation is carried out in a specially designed indigenous apparatus. Keywords: *rokshi, phultaral, marcha, Canna,* maize, beer	Dr Dheeraj Singh, Assistant Professor (Pomology) and Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 761 102
3508	Preparation of rice beer	Villagers of Majai and Bholaganj Bazar area, of East Khasi hills in Meghalaya prepare beer of rice and consume it at certain special occasions. To prepare yeast, rice is ground to powder form, and the leaves of jackfruit and local fern leaves are mixed with it. Old yeast is also added to this mixture, which is prepared in round bowls. For preparation of beer,	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102

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		local rice is taken in certain amount, boiled and cooled. Prepared yeast and some water are mixed with this cooled rice, and it is kept in a vessel by covering with gunny bag and allowed to ferment. After 3-4 days beer is ready, and it is drained out from the vessel. It is very nutritious and beneficial for health. **Keywords:** rice beer, yeast, jackfruit, fern, gunny bag, fermentation	
3509	*Fenny* preparation	After cashew seed is removed, ripe cashew fruit is taken and smashed. The white watery juice is collected and stored in a barrel for 1 week to undergo fermentation. After fermentation, solution is passed through the process of distillation. Final product is called *fenny* which is ready for consumption. It is one of the Goan special and manufactures are allowed to sell it only in Goa. The fenny produced through the above mentioned process gives some fruity smell, and the industry is looking on how to change the smell for better marketing. The discloser has manufacturing unit at his land and he takes cashew fruit from other cashew growers @ Rs 20-25/kg if collected from the supplier directly. Sometimes, if it is supplied at the manufacturing yard, the price is Rs 25-30. **Keywords:** *fenny*, barrel, fruity smell, cashew seed, juice	Shri Arnold Mascarenhas, Bhironda, Sattari (Goa)
3510	Vegetable of *sapu badia*	*Sapu badia* is a special dish, which is prepared by people of district Kangra in Himachal Pradesh. Blackgram is soaked overnight and washed completely in the next morning. It is ground in pestle and mortar *(sil-batta)* with spices and condiments, and salt is added to it. After mixing it properly,	Ms Monika Rana, Research Scholar, Department of Bio-Sciences, Himachal Pradesh University, Shimla (Himachal Pradesh) 171 005

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		small pieces are prepared and sun-dried. Oil is heated and sliced onion, spices and tomato are added. Then curd is added, and it is cooked by adding *sapu badia* and small quantity of water for 10-15 min. Keywords: *sapu badia*, blackgram, curd	
3511	Cooking of pulses	In villages of district Azamgarh in Uttar Pradesh, people use to collect rainwater from their roofs of houses (made of soil). Pulse grains do not cook well in normal water and require more energy and time for cooking. During rainy season villagers use this water for cooking pulses. For other seasons, the women have identified some wells, that water is proper for cooking of pulses. Rain water of first 3-4 showers is avoided because the roof is not clean, but after a few rains the water collected from the roof may be utilized. Village women are cooking pulses in rain water since age-old times and by this 40% time and 30% fuel can be saved. Keywords: rain water, roof, pulses, wells, mustard oil	Dr. Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3512	*Udda methi* (green mango)	Fresh green mango is cleaned and cut into small pieces. Coconut paste, red chilli, turmeric powder and salt are added to it. Oil is heated and mustard, blackgram and *methi* leaves are added to this mango mixture along with jaggery for added taste. Key words: *udda methi*, blackgram, mango, *methi* leaves, jaggery	Ms Leela Talauliker Taleigoa, Tiswadi, North Goa (Goa)
3513	Preparation of *khat khate*	Pumpkin, drumstick, tender jackfruit, papaya, carrot, raddish and raw banana are cut into small pieces. Coconut paste, red chilli, tamarind and turmeric	Ms. Leela Talauliker, Taleigoa, Tiswadi, North Goa (Goa)

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		powder are added to the vegetable pieces. It is then seasoned with blackgram, salt and jaggery, and *tripal* leaf is added to increase the taste of the dish. **Keywords:** *khat khate*, blackgram, pumpkin, drumstick, tender jackfruit, papaya, carrot, raddish, banana	
3514	*Alambi londak* (mushroom *masala)*	Cleaned mushroom is cut into small pieces. Roasted coriander seeds, fennel seed, red chilli, cloves, cinnamon, salt, turmeric powder, pepper, garlic, onion and tamarind are mixed into thick paste. Onion and the *masala* are added to mushroom. Tasty mushroom is ready to eat. **Keywords:** *masala*, mushroom	Ms Seema Moyi, Siolion, Bardez, North Goa (Goa)
3515	*Raita* preparation from bitter gourd *(karela)*	Fresh, cleaned bitter gourd *(karela)* is peeled and is cut to pieces and salt is added. *Karela* is deep-fried and is kept aside. Coconut paste, green chilli, cashew nut, jaggery and white sesame are added to the fried *karela.* It is seasoned with mustard which gives it good taste. It can be consumed after 5 min. **Keywords:** bitter gourd, *raita*, sesame	Ms Jyoti kamat Panaji, Tiswadi, North Goa (Goa)
3516	Dry macrel *kismur*	Roasted dry macrel fish is cut to small pieces. Ingredients such as coconut, onion, chilli powder, tamarind pulp, turmeric powder and salt are added to it. It is cooked and is ready for serving. **Keywords:** kismur, *macrel fish*	Ms Seema Maye, Siolion, Bardez, North Goa (Goa)
3517	Prawn *balchao*	Required quantity of prawn is taken and cleaned. Turmeric and salt are added. Coriander, red chilli, cumin seeds, cloves, pepper, tomato, garlic and ginger are made into paste. Then it is mixed with prawn and fried nicely. **Keywords:** *balchao*, coriander, red chilli, cumin seeds, cloves, pepper, tomato	Ms Sunetra M. Talauliker, Training Associate (Home Science), ICAR Research Complex for Goa, Ela-Old-Goa (Goa) 403 402

Code No.	Title of the **ITK**	Description of the ITK	Name and address of the discloser/facilitator
3518	Stuffed macrel ***(bharile bangade)***	The central bone of macrel fish is removed. Coconut, coriander leaves, garlic, ginger, green chillies and tamarind are ground. Then onion is added to this ground *masala.* Salt is added to macrel, and chilli powder and turmeric powder are added both outside and inside. The above-mentioned prepared *masala* is stuffed into the macrel **Keywords:** *masala*, macrel	Ms Sadhya Kamat, Upper Bazaar, Ponda, North Goa (Goa)
3520	Preparation of pickle of macrel fish	Macrel fish pickle is prepared by cutting the fish into small pieces, and adding salt to it. Oil is heated and fenugreek, asafoetida and mustard seeds are added. Garlic and ginger paste, chilli powder, tamarind pulp, a little vinegar and turmeric powder are then added. This is a very tasty pickle, commonly used in Goa and has good market value. **Keywords:** macrel, asafoetida, chilli, fenugreek, vinegar, pickle	Ms Sunetra M. Talauliker, Training Associate (Home Science), ICAR Research Complex for Goa, Ela-Old-Goa (Goa) 403 402
3521	Macrel *udda methi*	Macrel is cut into pieces. Coriander seeds, red chilli, blackgram, fenugreek, coconut and cloves are roasted and ground with tamarind. Oil is heated and onion is fried by mixing all the ground material, salt and *haldi* powder with macrel. **Keywords:** macrel, *udda methi*	Ms Promila Kamat, Tiswadi, Ponda, North Goa (Goa)
3522	Indigenous method of fish preservation	In rainy season people of Keshkal block of district Bastar in Chhattisgarh catch the fishes and preserve them for the next year. Fish breeds of sidhari, mangur, etc. are collected, and after washing, these are burnt with the paddy stalk in such a way that the outer skin of fish turns reddish-brown. These processed fish are stored in a bin, called *tokari.* Moisture content in fish should be less than 6-8%. The	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102

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		store bin is made of green leaves of *sihari shrub*. These leaves have some antibacterial and antifungal properties, which ensure longer storability of fish. **Keywords:** fish, preservation, burning, *tokri, sihari*	
3523	Preparation of bitter gourd *(karela)* pickle	Fresh bitter gourd *(karela)* is cut into pieces and is deep-fried. Salt, tamarind juice, roasted mustard, *methi* powder, chilli powder and jaggery are added to the fried *karela.* Then it is cooked into a thick sauce and is taken as a pickle. It is stored in a bottle for long-term use. **Keywords:** pickle, *karela, methi,* mustard, jaggery	Ms Leela Talauliker, Panaji, Shankowadi.Tiswadi. North Goa (Goa)
3524	Bamboo-shoot pickle	Bamboo shoot is peeled and cut into small pieces, and then put in brine solution for 8 days. Green chillies are taken and cut into small pieces. Oil is heated and salt, mustard powder, asafoetida, turmeric powder and sliced green chillies are added to it along with the soaked bamboo shoot and is stirred well. Pickle is ready for use after sometime. **Keywords:** asafoetida, bamboo shoot, chilli, pickle	Ms Sunetra M. Talauliker, Training Associate (Home Science), ICAR Research Complex for Goa, Ela-Old-Goa (Goa) 403 402
3525	Jackfruit *papad*	Pulp is taken from fresh ripe jackfruit and is boiled. It is then cooled. Salt, cumin, chilli powder and asafoetida are added to the boiled mixture. Small dough is made into papad and is kept for sun-drying. It can be stored and consumed throughout the year. **Keywords:** *papad,* asafoetida, jackfruit	Ms Khedekar Nagzari, Curti Panda, North Goa (Goa)
3526	Breadfruit *papad*	Breadfruit is boiled and is peeled nicely. Salt, cumin, green chillies and pepper are added to the boiled breadfruit. Dough is made by mixing it	Ms Khedeker, Nagari Curti, Ponda, North Goa (Goa)

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		very well. Small quantity of dough is spread on the plastic paper for drying. Well-dried *papad* can be stored in container for ready use. **Keywords:** *papad*, breadfruit, sun-drying	
3527	Preparation of low-cost dired banana	Banana fruit is cut horizontally into pieces. Common salt is applied on the pieces and is kept for drying for 10 days. These dried bananas are stored in mud pot. Common salt prevents fungus disease and thus banana is stored safe for a year. **Keywords:** banana, common salt, mud pot	Shri S. Thinagarasamy, village Kooliyangadu, P.O. Vennavalgudi, Arimalam, Taluka Alangudi, Pudukottai (Tamil Nadu) 622 201
3528	Preservation of vegetables for using in winter season	During winter, fresh vegetables are not available due to snow in Shimla district. Hence people use to dry vegetables during summer season and use it in winter. Vegetables like beans, cabbage, capsicum, tomato, pumpkin etc. are cut into small pieces and dried in sun for complete drying and are stored in airtight container. During winter season, before cooking, these vegetables are boiled in small amount of water and used in cooking. **Keywords:** vegetable, sun-drying, cabbage, beans, pumpkin	Facilitator: Dr L.R. Verma MRDA, 4 Summer Hill Shimla (HP) 171 005
3529	Preparation of sweet potato wafer	Cleaned sweet potato of good quality is taken and boiled. Then it is smashed nicely. Butter is added and is mixed thoroughly. This is spread on the paper and dried under sun. It is very much liked by children and can be served as such. **Keywords:** wafer, sweet potato, butter	Ms Kalindi Salgaonkar, Porra, Bardeg, North Goa (Goa)
3530	Buttermilk preparation by *ravi*	Buttermilk is prepared from fresh curd. Curd is taken in a China clay vessel. A wood that is specially made is used for beat the fresh curd. It is tied with a rope and beaten speedily.	Shri Mangala Kalidas Sawaikar, Tamsuli Mareela, Ponda, North Goa (Goa) 403 107

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
		Keywords: *ravi*, curd, china clay vessel	
3531	Preparation of sweet rice	Sweet rice is a very tasty and nutritious food, which is prepared by people of Himachal Pradesh at large. Jaggery is dissolved completely by adding water. In a pan *desi* ghee is taken and rice is roasted. Molasses, water and crushed dry fruits are added to it and then it is cooked for 15-30 **Keywords:** sweet rice, jaggery, dry-fruits, roasted rice	Facilitator: Dr L.R. Verma MRDA, 4 Summer Hill Shimla(HP) 171 005
3532	Preparation of sweet rice flakes	One cup of rice flake, coconut milk, water and jaggery are taken in a vessel and are boiled. After cooking, cardamom powder is added to taste. Sweet rice flakes can serve as dessert during festival time. **Keywords:** rice flake, cardamom, jaggery, desert	Ms Nayan Talauliker, Taleigao, Panaji Tiswadi. North Goa (Goa)
3533	*Moira* banana *halwa*	Ripe banana is cut into small pieces, sugar and ghee are added to it, and is kept for cooking. Cardamom powder is added to get taste. Banana *halwa* is ready for serving. **Keywords:** *halwa*, sugar, ghee, cardamom	Ms Sunetra M. Talauliker, Training Associate (Home Science), ICAR Research Complex for Goa, Ela-Old-Goa (Goa) 403 402
3534	Preparation of *shakarpara*	This ITK is used throughout district Hamirpur in Himachal Pradesh. *Shakarpara* is prepared during festive occasions. Wheat flour, sugar, milk and refined oil are mixed and kneaded by mixing dry fruits. By using this, dough *roti* is prepared and is cut into small square pieces. **Keywords:** *shakarpara*, wheat flour, sugar, milk, oil	Facilitator: Dr L.R. Verma MRDA, 4 Summer Hill Shimla(HP) 171 005
3535	*Bebinca*, a Goan special sweet	*Bebinca* is popularly known as the queen of Goan sweets. It has a rich golden colour and enriching flavour.	Ms Vidhya Kamat, Porvorim, Goa (Goa)

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		Maida, sugar, egg, coconut, butter, salt and spices are the ingredients. The market price for one pack is Rs 70 and it is sold at airport counter also. **Keywords:** *bebinca*, Goan sweet	
3536	Jackfruit *poli*	Jackfruit juice is extracted from fresh and ripe fruit. Required quantity of sugar is added to the juice and small dough is prepared. It is spread nicely on a plastic paper and dried under sunlight. It can be stored and given to children as snack. **Keywords: *poli,*** jackfruit, dough, sunlight	Shri Mohan Tendulkar Mulkorlem, Sanglem, South Goa, (Goa)
3537	Preparation of *manganne*	Chickpea is boiled. Freshly prepared coconut milk, jaggery, cardamom and cashewnut are added to it. This mixture is cooked well and a little sago is added to get taste. **Keywords:** chickpea, *manganne*	Ms Sandhya Kamat, Uppar Bazzar, Ponda, North Goa (Goa)
3538	Cake preparation from cucumber	Jaggery, sugar, boiled cucumber, roasted cashewnut powder and cashewnut pieces are mixed properly. One kg of *rava (Somalina)* is added to the mixture and it is kept in the oven for baking. Cucumber cake is ready for serving after baking. **Keywords:** cake, cucumber, *rava*, jaggery	Ms Leela Talauliker, Taleigao, Tiswadi, North Goa (Goa)
3539	Jackfruit cake preparation	Fresh, ripe jackfruit is cut in pieces and juice is extracted from it. Fine-quality fried *rawa (Somalina)*, jackfruit juice, jaggery, raisin and cashewnut are added and baked. Approximate quantity of ingredients is taken as per requirement. **Keywords:** *rawa*, jackfruit, jaggery, cake	Ms Vasanti Tarker, Siolim, Bardez, North Goa (Goa)
3540	*Khubache **dangor*** (black clam cutlet)	Clam is cleaned and onion, coconut, chilli powder, turmeric powder, tamarind pulp and rice flour are added.	Ms Vasanti Kamat, Sioliom, Bardez, North Goa (Goa)

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		Then rollinin *rawa (Somalina)* is taken and is shallow-fried. Keywords: cutlet, clam, turmeric, *rollinin rawa*	
3541	Macrel *gizzard* cutlet	First gizzards are collected from the macrel fish. Onion, coconut, chilli powder, turmeric powder, tamarind and rice flour are added and rolled in rawa *(Somalina)* and then shallow-fried on pan. Keywords: macrel, gizzard, *rawa*, cutlet	Ms Nita Talauliker, Panaji, Tiswadi, North Goa (Goa)

Yarns

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
3542	Use of powder of wild banana leaves to improve the quality of thread for *gale* (traditional dress) weaving	Aadi tribe of Pasighat area of district East Siang in Arunachal Pradesh are quite wise to use this wisdom. A local cultivar of banana, named Ghost Fo, is selected for this purpose. The women-folk are able to identify this cultivar in the forest. On backside of wild banana leaves there is production of special kind of powder, which is used for *gale* weaving. The whole leaves are cut and dried in shade, and then these are cautiously taken for preservation. Whenever tribal people weave the *gale*, the preserved leaves are rubbed on the thread. This powder improves the quality of the thread and creates shine in the gale dress, which fetches higher price in the market. **Keywords:** banana-leaf powder, ***gale*** weaving, rub	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3543	Extraction of fibre from *pulichai keerai (Hibiscus cannabinus)*	Matured and harvested *pulichai keerai (Hibiscus cannabinus)* plants are immersed in water for 10 days. Then these are smashed on a slab to separate the fibres. This is a local practice to make fibre from *pulichai keerai*. **Keywords:** fibre extraction, *pulichai keerai*	Shri S. Vivekanda Prabhakar, 69, Church Street, P.O. Erumalainaickenpatty, (via Devadapatty), Taluka Periyakulam, Theni (Tamil Nadu) 625 601
3544	Traditional rope-making from ***bayuhal*** *(Gravia optiva)*	Fibre, extracted from the stems of *bayuhal (Gravia optiva)* is used to make ropes, which are used in various agricultural, horticultural and animal husbandry activities by the local people. This ITK is used in Shimla district of Himachal Pradesh. **Keywords:** *bayuhal (Gravia optiva)*, rope-making, stem	Shri Vidhya Dut, Laboratory Attendant, Department of Bio-Sciences, Himachal Pradesh University, Shimla (Himachal Pradesh) 171 005

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
3545	Preparation of indigo dye	Indigo dye is prepared from *aviri (Indigofera **tinctoria)*** leaves. About 1-1.5 tonnes *aviri* leaves are collected and put in **a** cement tank with the water level 2 feet and the leaves are kept immersed in water for 10-15 hr. Coloured water is transferred to another cement tank. This solution is stirred well and blue-coloured solution is kept for sometime to get the dust deposited at the bottom. Filtered solution is then transferred to **a** brass vessel and boiled properly. After boiling, the mixture is poured into a plate for cooling. This mixture, when solidified, is cut into small pieces and used as dye. **Keywords:** indigo dye, ***aviri*** leaves, blue coloured solution	Shri M. **Thamizharasan, No.41/3, Chinna Mudali** Street. Nagalapuram, Tindivanam, Villupuram (Tamil Nadu) 604 153
3546	Use of *kovai (Coccinia grandis)* leaves for dyeing clothes	About 10 ml leaf extract *of kovai (Coccinia grandis)* is mixed with 1 spoonful turmeric powder and kept overnight in a mud pot. This mixture is used to dye cotton and other clothes. Sometimes it may be even painted on the wall, which gives greenish yellow colour. Key **words:** *kovai*, dyeing clothes	Shri A. **Muthiah,** S/o Shri Audi. P.O. Endapuli, **Periyakulam,** Theni (Tamil Nadu) 625 501
3547	Natural dyes	*Bixa ornellena* seed is used as natural colour dye. This is directly used as colouring agent **Keywords:** dye, colouring agent	Shri Ramakant Chari, Porye, Dongrion, Tiswadi. Sattari North Goa (Goa) 403 505

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Low-cost Housing Materials

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
3548	*Jhompra*—a low-cost house	Housing is the one of the major problems of the poor farmers. In desert during summer the temperature goes very high and in winter it touches around freezing point. People of village Gilakor of district Jodhpur in Rajasthan have developed *jhompra* technique for residing. It remains cool during summer and provides good protection in winter besides keeping safe from chilling cold of the desert. *Jhompra* is cheap, good looking and durable. Rain water does not enter the roof of *jhompra.* Most peculiar characteristic *of jhompra* is its resistance to earthquake. Normally it takes 1 week for its preparation. Materials required are: *murrain,* loam soil (yellow coloured), cowdung, pearlmillet *husk* and stem, *khejri* stick, thick and thin ropes. *Method: Murram,* loam soil, cowdung and pearlmillet husk and water are mixed by trampling with feet, to get a homogeneous mixture. At the place where these *jhompras* are to be prepared, sand is excavated up to a depth of 6 inches. This mixture is kept (in square-shape brick of 10" x 12") on the excavated circular periphery. In 1 day 2-3 layers of square bricks are prepared. Thickness of one layer is from 6 to 8 inches. On the next day, when the previous layers are dried, a few other layers are prepared over it. Height of this wall reaches up to 6-7 feet (in 7-8 days), in which there is	Shri Kishan Singh Rathore, P.O. Gilkor, Peelva, Jodhpur (Rajasthan)

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		one door and a few shelves. When the circular-shaped wall is prepared, umbrella-shaped roof is prepared in 2 ways. In the first way the whole roof is prepared by taking the measurement of walls, and then it is fixed on the walls. In the second way roof is prepared over the walls with the help of sticks. The sticks of pearmillet are kept on this umbrella-shaped structure and tied with thin ropes. After covering completely, 8-10 circular bundles of thick ropes are tied (on lower part of roof) with the help of thin ropes. Doors are prepared from sticks of *khejri* tree and walls are plastered every year. Nowadays walls are being prepared from stones also. People are preparing *jhompra* since ages. **Keywords:** *jhompra*, summer, temperature, winter	
3549	***Khop***	Coconut-leaf sheath is used to thatch houses in the village. Hut is made of coconut-leaf sheath to provide shelter from wind, sun and rain. In the garden and agricultural land, this type of thatched hut is constructed. **Keywords:** *khop*, coconut, leaf sheath, thatch	Shri Sameer Gauns, Porye, Ranewada, Sanquelim, Sattari, North Goa (Goa) 403 505
3550	*Kavilache cohar*	Mud house constructed and thatched with brick tiles is known as kavilache cohar in Goa. It is commonly seen in villages. **Keywords:** *kavilache cohar*, mud, tiles	Shri Pandurang Rane, Porye, Sattari, North Goa (Goa) 403 505

Ethnic Food

Code No.	Title of the ITK	Description of the ITK	Name and address of the discloser/facilitator
3551	Drumstick flower curry and pickle	In many villages of Alwar district in Rajasthan this ethnic pickle and vegetables from the local drumstick is prepared. Commonly two drumstick varieties are grown in this area. The first one is self-grown in forests, which produces brownish white flowers, whereas the second produces yellowish white flowers. It is planted in kitchen gardens and used as vegetable. For curry preparation flowers are cleaned and fried in mustard oil by adding turmeric, onion, garlic and other spices. It is cooked and taken. For preparing pickles from drumstick, the following is the procedure: In the first step sugar and salt are boiled in water. After boiling, this mixture is left for cooling. The flowers are collected and cleaned. Cleaned flowers are fried in mustard oil by adding turmeric, onion and garlic. Then cooled mixture and flower mixture are mixed in the pot and again fried for 5 min. Cooled pickles are kept in earthen pot tied with clean cotton cloth. It may be used up to 3 months. This ethnic pickle is specially given to a person who is suffering from weakness, influenza and fever to get relief. **Keywords:** pickle, drumstick, influenza, flower	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3552	Preparation of pickle and vegetable of *ker (Capparis decidua)*	This ITK is followed in village Kerla of district Jodhpur in Rajasthan. *Ker (Capparis decidua)* is the one of the important bushes of the desert. The	Ms Vinod Kanwar Bhati. D/o Shri Dungar Singh, Thakur Virendra Nagar (Near First

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		green and forest fruits are collected and processed for pickle and cooking as vegetable. *Preparation of ker vegetable: Ker* is somewhat bitter in taste. Therefore, it is soaked in salt-mixed buttermilk for 3—4 days in a mud pot. Bitterness can also be removed by boiling it for 30 min on low heat. Afterwards it is dried in shade and spread on a cotton cloth. Now sweet *ker* is ready for preparing vegetable. This should not be prepared in bronze pot. It is fried in oil by adding spices mixed in curd and stirred continuously. After that, *ker* and water are added in it and cooked for 10 min. *Pickle of ker:* For pickle preparation, sweet *ker* (edible) is boiled and then all spices are mixed in it. In another pot, oil is heated and after cooling it is poured on *ker* and kept in a jar. It is kept in well-ventilated place. After 1 week the pickle is ready to eat. **Keywords:** *ker*, vegetable, pickle, buttermilk, spices	RAC), **Jodhpur** (Rajasthan)
3553	Using *kerda* fruits to make vegetable and pickle by the resource-poor people	The resource-poor people of many blocks of Bhavnagar, Surendernagar and Kheda districts in Gujarat prepare vegetable and pickle from *kerda (Capparis decidua)* fruits, which grows naturally under varying geographical conditions. It is a xerophytic plant and has two cultivars, one with big size-fruits and other with smallsize fruits. Cultivars with small-size fruits are used as live fence. Fruits of big-size cukivars are collected from May to July. Collected fruits are cut into small pieces and fried in groundnut oil by adding garlic and onion. For preparing the pickle, fruits are washed and boiled with alum water. Salt, sugar and a few local	Dr. Ranjay K. Singh, Assistant Professor (Agri. Extension & Rural Sociology). College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102

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		spices are fried in groundnut oil. After frying, the boiled fruits of *kerda* are added to the fried spices mixture. After cooling it is stored in an earthen pot. The pickle is ready for consumption now. **Keywords:** *kerda,* xerophytic, groundnut oil, alum water	
3554	Pickle of *jalpai*	Women folk of *Adi* tribe collect *jalpai,* which is a tuber. After proper cleaning with water the tubers are boiled in sufficient quantity of water for 5 min. Mixture of mustard, fenugreek, salt, turmeric and a few other local spices are powdered and mixed with boiled *jalpai* tubers. This mixture is kept in an earthen pot and finally mustard oil is mixed with this mixture and kept in sunlight for 6-7 days. After 12-14 days this pickle is eatable. This is very nutritious, delicious and mouth watering. About 65-75% people use this pickle and its knowledge of preparation is age-old. **Keywords:** *jalpai,* pickle, fenugreek, turmeric	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3555	Preparation of pickle from *thore* leaves and flowers	In Alwar district, (Rajasthan) many village women prepare pickle from *thore* plant. *Thore* plant is a xerophytic plant, which is abundant in Alwar district. *Thore* leaves and flowers are collected, cleaned and washed. These are cut into small pieces, boiled for 5-10 min with *aonla (Emblica ojficinalis)* or *imli (Tamarindus indica)* leaves. These leaves neutralize the poisonous effect of the *thore* sap. This mixture is fried in mustard oil, and then turmeric, onion, garlic and spices are added to it. The mixture is cooked for 20 min and then it is ready to be taken. During preparation of the pickle, the same mixture is dried under	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102

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		sun for a few hours, and then stored in earthen pot. **Keywords:** *thore* leaves and flowers, xerophytic, *anola*, *imli*, neutralize	
3556	Use of indigenous algae as vegetable	*Aadi* tribes of Pasighat block in Arunachal Pradesh prepare ethnic food from local algae species, which is found in local aquatic areas like ponds and rivers. Algae are collected and cleaned properly. It is fried in edible oil, and garlic, spring onion, chillies and coriander are added. This is now ready for eating. A few members of *Aadi* community eat it just after the boiling. These algae are collected, dried in sun and stored for the off-season use. Algae is an ethnic food of high nutrient value and it also cures fever. **Keywords:** algae, aquatic, pond and rivers, sun	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3557	Ethnic food preparation from *dhenkiya sag* and flower or tender leaves of pumpkin	*Dhenkiya sag* is mostly found under the moist and shady forest condition near to drains or rivers. Its tender leaves are boiled and used as local vegetable. Some people from Assam mix chickpea seeds, and tender leaves or flowers of pumpkin to it also. The *Aadi* tribe also prepares pickles from the flowers of pumpkin. **Keywords:** *dhenkiya sag*, pumpkin, pickle	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3558	Ethnic food made from various plants leaves	Unripe jackfruit is cut into small pieces and tender leaves of plants, such as neem, potato, tomato, pumpkin and broomstick are cut into small pieces. The mixture is boiled in water after adding *methi* (fenugreek), *laung* (clove) and chilli. This dish is enriched by Bengali community of West Tripura with fried beans of many local cultivars. This dish is mostly eaten	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102

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		during April (Chaitra *tnasha).* There is a belief that after eating this dish, no disease or evil soul affects the person. This food is in vogue since time **immemorial** and it is considered good for health because there is no oil in it. **Keywords:** unripe jackfruit, fenugreek, clove, beans, *chaitra masha*	
3559	Preparation of ethnic food from *nevine lem* ***(Bauhinia longifolia)***	The tender leaves of *nevine lem {Bauhinia longifolia)* are collected by women of *Adi* tribe of Pasighat area of East Siang district in Arunachal Pradesh. Collected leaves are immersed in water for 10 min Leaves are mixed with onion, garlic and local chillies and boiled for 5 min after adding many local spices. The prepared vegetable is very delicious and taken in lukewarm state. This curry is offered to guests and is prepared during festive occasions. About 60-70% community members are using this ethnic food and it is in vogue since age-old times. **Keywords:** *nevine lem,* onion, garlic, chillies	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3560	Preparation of curry from ***okung*** herb	Leaves of local herb, called *okung* are collected from forest areas and washed with water properly. Big-size pieces are made and kept in water for 8-10 min and the leaves are taken out. This water is put in another pot, which is taken by aged members. In these pieces of leaves, onion, garlic, *tnarsang* (herb), green chilli and many other local spices are added (proportion of *okung* is 70% in the curry). The whole mixture is boiled. This curry is offered to guests and is prepared at certain festive occasions. *Adi* tribe of Pasighat area of East Siang district, (Arunachal Pradesh) is accustomed to take this curry since	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102

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		age-old times. **Keywords:** *okung*, herb, *marsang*, curry	
3561	Preparation of *pindi koora*	*Pindi koora*—a curry that can be prepared easily, is very nutritious and easily digestible. It is good to eat with *roti*. Onion is cut in to small pieces and is used for seasoning. Ginger and garlic paste is added to it and fried. Optimum water alongwith salt and chilli powder are added to it. Chickpea flour is added slowly into the water without forming bowls. It is cooked properly. **Keywords: *pindi*** *koora*, chilli, ginger	Deccan Development Society, Pasthapur, Zaheerabad (M), district Medak (Andhra Pradesh)
3562	Preparation of *ulava gudaalu*	*Ulava gudaalu* is made by boiling horsegram. This is a very nutritious food. Cowpea is cleaned and soaked for 4 hr. It is then boiled in sufficient water. The excess water is drained and boiled cowpea is seasoned by adding salt and chilli according to taste. The drained water is made as *rasam.* **Keywords:** *ulava gudaalu, rasam*, horsegram	Deccan Development Society, Pasthapur, Zaheerabad (M), district Medak (Andhra Pradesh)
3563	Preparation of *ulava charu*	*Ulava charu* is a local variety of *da I* made of cowpea. Cowpea is roasted and the coat of the grains is removed. It is boiled and mashed to make it soft. Tamarind pulp is removed, diluted with water and is boiled. The *da!* is added to it and cooked for some more time, and *ulava charu* is ready. **Keywords:** *ulava charu, dal*	Deccan Development Society, Pasthapur, Zaheerabad (M), district Medak (Andhra Pradesh)
3564	Preparation of *saama buvva*	*Saama buvva* is a local food prepared from millet in southern Telangana region of Andhra Pradesh. If this food is taken in summer, it keeps the body cool. One kg cleaned little millet is soaked in water for 30 min. (half an hour) and is added to 1.5 litres boiling	Deccan Development Society. Pasthapur, Zaheerabad (M), district Medak (Andhra Pradesh)

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		water, stirring slowly, and then salt is added as per taste while it is being cooked. This is good to eat with curd or locally made *dal*. **Keywords:** *saama buvva, dal*	
3565	Preparation of *kachalo ka sag*	This is a special dish prepared from *kachalo (Colocasia* sp.) leaves by the people of district Kangra in Himachal Pradesh. *Kachalo* leaves are cut into small pieces and boiled for 10-15 min. by adding a glass of water. Small quantity of *amchur* (raw mango powder) is added to it. Mustard oil is taken in a pan, and then sliced onion, spices and salt are mixed in it. *kachalo* leaves are then added and cooked for 10-15 min. **Keywords:** *kachalo, amchur,* mustard oil	Ms Monika Rana, Research Scholar, Department of Bio-Sciences, Himachal Pradesh University, Shimla (Himachal Pradesh) 171 005
3566	***Bai-an*** ethnic food	The following ingredients are used for preparation of *bai:* brinjal, beans, squash, colocasia, tender leaves of pumpkin and cowpea. A local plant, called *chengal (Amaranthus viridis),* is also mixed with it. *Bai* is prepared by immersing ash in water and this is filtered through funnel (having mesh). Obtained extract is reddish, slight salty and flavoured. All vegetables are washed, cut into pieces and added to the boiling water. *Chengal* is also added up to 50% of the whole quantity; afterwards chillies and salt are added according to taste. It is boiled while continuously stirring. **Keywords:** *bai, chengal,* squash, funnel, chilli, salt	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3567	***Moya*** preparation from the leaves of *taro (Colocasia* spp.)	Villagers of district Mokokchung in Nagaland pluck the leaves of *taro (Colocasia* spp.) plant on 3rd, 5th, 7th and 9th day of lunar fortnight *(shukla paksha),* which is considered the best	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture

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		time for it. Leaves are kept in the bamboo basket till it turns yellowish. It is wrapped in banana leaves by making some holes in leaves and it is kept on it to extract the water present in the leaves of *taro*. These dried leaves are boiled in water to form a paste. From this paste, cylindrical pieces are prepared and placed on fire for drying. It is kept in bamboo basket, which may be used in preparation of various dishes. This ethnic food *moya* is being used since age-old times. **Keywords:** *taro*, banana leaves, *moya*, bamboo basket	and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102
3568	Preparation of *utti* curry	Meitei community of Manipur has been preparing *utti* curry since age-old times. The ingredients mainly consist of many forest-oriented vegetables like *Colocasia* sp. ginger, local onion, tender leaves of cucurbitaceous plants, and the leaves and fruits of solanaceous plants. *Khari* is also added. *Khari* is prepared by burning stem of pea plant. The ash obtained is collected in bamboo basket and a little water is sprinkled over it. After few days fermented liquid is obtained, which is called *khari*, which is used as catalytic agent. All the vegetables and other materials are added to the boiling water in a big earthen pot along with a little amount of rice and *khari*. It is boiled till all the materials get properly cooked. Once again a little amount of *khari* is added in the boiling mixture and it is stirred frequently. Finally salt is added according to taste. Nowadays in place of *khari*, *meetha* soda (sodium bicarbonate) is being used along with spices and oil. **Keywords: *utti*** curry, *Colocasia* sp., ginger, onion, *khari*, *meetha* soda, catalytic agent, spices, salt	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102

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3569	***Mangan utti***—an ethnic food	Meitei community people are in practice to cook *mangan utti* since age-old times. It is prepared from locally available materials such as rice, dried pea, turmeric, *khari* (at present edible soda is used), banana leaf, mustard oil and ***maroi napakpi*** (leek, a kind of onion). Leek is chopped into pieces of *W* length and some amount **of** rice, turmeric, mustard oil, *mangan (Pisum sativum)* and edible soda are mixed. It is boiled in water till cooking, but overcooking is avoided. In another fry pan a small amount of oil is heated and leek is fried, and then added to the cooked mixture. Again the whole mixture is cooked and finally salt is added according to taste. It is a general assumption that this food helps them escape from illness and is useful for longer survival. **Keywords:** *mangan utti*, dried pea, rice, *khari*, leek, mustard oil, edible soda	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102
3570	Ethnic **food, *jakep***	After autumn harvest of rice, tribals of East Garo hills in Meghalaya, prepare *jakep.* Rice grains are immersed in water for 1 hr and afterwards dried in flat, round container for one night. These grains are ground by local means and a paste is obtained. Sesame seeds are mixed with a little water and sugar, and a liquid of thick consistency is prepared. A frying pan is placed on fire and one spoonful of rice paste is put and spread in circular shape. Sesame seed mixture is placed on this circular rice bread and it is folded into two halves. Now *jakep* is ready for consumption. **Keywords:** *jakep*, rice, sesame, sugar	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102
357**1**	Ethnic *chutney* from fruits of ***kopi*** and *koppir*	The fruits of *koppir (Capsicum khasina)* and *kopi (Solanum* spp.) are collected, cleaned and boiled to	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension

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 Kopi fruit		prepare ethnic chutney. Seeds are separated from the pulp. Separated pulp is crushed on a stone, and spring onion, garlic and salt are added to it. Some people add potato, and then this dish is known as potato *bharta.* **Keywords:** *koppir, kopi, chutney, bharta*	and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3572	Preparation of *yongchak iromba (chutney)*	It is very special, tasty and pungent *chutney,* which is taken during winter season. Meitei community people of Manipur prepare it from ingredients like *yongchak (Parkia roxburghii), hawai mupi (bakla, Viciafaba), loklei* or *pheija (Wendlandia pendula),* potato, *nagari* (fermented fish) and chilli. *Yongchak* is scrapped with scrapper and tender stem of *loklei (Macaranga denticulata)* is cut into small pieces (it gives flavour). Potato is peeled off and cut into halves. All the materials along with *pheija* are boiled in water. After boiling the water is dried by heating and the remaining mixture is crushed properly. Fermented fish is roasted and mixed with chilli and salt, and finally crushed. It is mixed well with the previously crushed mixture of *yongchak.* It is garnished with coriander leaves and chopped onion pieces. **Keywords:** *chutney, yongchak, hawai mupi, loklei, pheija, nagari,* potato, onion, coriander	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat, Arunachal Pradesh 791 102
3573	*Chutney* preparation by leaves of *chamkong*	Tribal women of Adi community collect green and tender leaves of *chamkong.* Leaves are washed properly and afterwards chilli, onion, garlic and salt are added and crushed well to get a paste. Some people prefer to add roasted dry fish powder to it. This *chutney* is very delicious and nutritive. About 60-70% community members take this ethnic food. Tribals	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102

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		of Pasighat area of district, East Siang (Arunchal Pradesh) are in habit of taking this *chutney* since age-old times. **Keywords:** *chamkong, chutney,* chilli, salt, garlic	
3574	Preparation of *jonna ambali*	*Jonna ambali* is a nutritious food that helps in purifying the blood, as it is prepared using jaggery, which is rich in iron content. For its preparation, at first 2 litres of water is boiled and 100 g roasted and ground aniseed and peanut powder are added to it. Then 500 g sorghum flour is slowly mixed to boiling water while stirring. Then 500 g jaggery is mixed with 1 litre water and is added to the boiling sorghum. It is boiled for some more time and *jonna ambali* is ready. Every 100 g jaggery contains 0.4 g protein and 0.08 g iron. **Keywords:** *Jonna ambali,* jaggery, sorghum, aniseed	Deccan Development Society, Pasthapur, Zaheerabad (M), district Medak (Andhra Pradesh)
3575	Preparation of *jonna peelaalu laddu*	*Jonna peelaalu laddu* is prepared by making 750 g jaggery syrup and 1 kg sorghum corn with a little cardamom powder. Then the mixture is heated. Some oil is applied to palms and the mixture is made into round balls. Children love this dish a lot. **Keywords:** *jonna peelaalu laddu,* cardamom, syrup	Deccan Development Society, Pasthapur, Zaheerabad (M), district Medak (Andhra Pradesh)
3576	Preparation of *jonna malida*	*Jonna malida* is very nutritious food, as ghee and other dry fruits are used in its preparation. Soft dough is kneaded with sorghum flour and thin *chapaties* are made. The *chapaties* are crushed into tiny bits. Then 50 g dry coconut, 100 g fried peanuts, 25 g aniseed, 100 g puffed chickpea, cardamom and 500 g jaggery are powdered and mixed with the crushed *chapaties* along with	Deccan Development Society, Pasthapur, Zaheerabad (M), district Medak (Andhra Pradesh)

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		100 g ghee. **Keywords:** *jonna malida,chapati*	
3577	Preparation of *sajja ambali*	*Sajja ambali* is a nutritious food that helps in purifying the blood, as it is prepared using jaggery, which is rich in iron content. For its preparation 2 litres of water is boiled with 50 g roasted and ground aniseed and 100 g peanut powder. Later 500 g pearlmillet flour is slowly mixed to the boiling water while stirring. Then 500 g jaggery is boiled with 1 litre water and is added to the boiling pearlmillet. It is boiled for some more time. **Keywords:** *sajja ambali*, aniseed, jaggery	Deccan Development Society, Pasthapur, Zaheerabad (M), district Medak (Andhra Pradesh)
3578	Preparation of *sajja nune pole*	*Sajja nune pole* is made by melting 500 g jaggery to thick consistency. Then 1 kg pearlmillet flour is added to it. Afterwards 25 g aniseed, 25 g poppy seeds and 4 cardamoms are added. Small balls of the dough are made and are pressed and deep fried in oil. **Keywords:** *sajja nune pole*, poppy seeds	Deccan Development Society, Pasthapur. Zaheerabad (M), district Medak (Andhra Pradesh)
3579	Preparation of *korra pasham*	*Korra pasham* is a sweet dish made of foxtail millet. This is very nutritious food and is prepared by elders on new moon day. One kg of the cleaned millet is soaked in water for 30 min. and is boiled in 2 litres of water. One kg jaggery melted in water is added to the cooking mixture. Then dried and sliced coconut, aniseed and cardamom are added to it. This is good to eat with milk. **Keywords:** *korra pasham*, aniseed	Deccan Development Society, Pasthapur, Zaheerabad (M), district Medak (Andhra Pradesh)
3580	Preparation of *taida ambali*	*Taida ambali* is made of fingermillet grains. Fingermillet contains calcium, phosphorus, iron and protein, required for the growth of children.	Deccan Development Society, Pasthapur, Zaheerabad (M), district Medak

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		Fingermillet is cleaned with water and dried in sun, and is roasted and ground. Some fingermillet flour is dissolved in water and is added to the boiling water. Then *Vi* kg melted jaggery, aniseed, poppy seeds and peanut are added and boiled for some more time. Now *taida ambali* is ready. Every 100 g of fingermillet contains 7.3 g protein, 0.344 g calcium and 3.9 g iron. **Keywords:** *kaida ambali*, aniseed, poppy seeds	(Andhra Pradesh)
35X1	Preparation of *taida atlu*	*Taida atlu* are sweet pancakes, made by adding 500 g jaggery to sufficient water and finger millet flour is added. This is made to a flow consistency. Then pancakes are put on a hot pan. **Keywords:** *taida atlu*, fingermillet, jaggery	Deccan Development Society, Pasthapur, Zaheerabad (M), district Medak (Andhra Pradesh)
3582	Preparation of *taida nuilida*	*Taida malida* is very nutritious food made by meshing fingermillet flour. Thin *chapaties* are made and are crushed into tiny bits. Then dry coconut, fried peanut, aniseed, puffed chickpea, cardamom and jaggery are powdered and are mixed with the *chapati* along with ghee. **Keywords:** *taida malida, chapati*	Deccan Development Society, Pasthapur, Zaheerabad (M), district Medak (Andhra Pradesh).
3583	Preparation of *teepi bumdi*	*Teepi bumdi* is a sweet dish made of chickpea flour. The dough is kneaded with flour. Then the dough is put in the *sameya* instrument and *sameya* thus prepared are fried in the heated oil. When they are done hard, these are removed and put into jaggery syrup and mixed well. Then *bumdi* is ready. **Keywords:** *teepi bumdi, sameya*, syrup	Deccan Development Society, Pasthapur, Zaheerabad (M), district Medak (Andhra Pradesh)

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3584	Preparation of *shanaga polelu*	*Shanaga polelu* is a sweet dish made during festivals with chickpea. One kg chickpea is mixed in 2 litres of water. Excess water is drained and it is kept aside. After that, jaggery is ground and added to the boiled *dal.* Aniseed and cardamom are added. Wheat flour is kneaded and rolled to a small *puri*, in which a small quantity of *dal* and jaggery mix are added, and then it is closed. It is pressed like a *chapati* and roasted on a hot pan. **Keywords:** *shanaga polelu*, *dal*, aniseed, *puri*, *chapati*	Deccan Development Society, Pasthapur, Zaheerabad (M), district Medak (Andhra Pradesh)
3585	Preparation of sweet *kadoo*	This is a special dish of Mandi district in Himachal Pradesh. This is prepared during festive occasions. In this ITK, *kadoo* is cut into small pieces and boiled by adding sugar according to taste. It is stirred thoroughly, and takes 30 min. for cooking. Then all the available dry fruits are added to it. **Keywords:** sweet *kadoo,* dry fruits, festive occasions	Shri Sant Ram, P.O. Alsingdi, tehsil Karsog, dist. Mandi (Himachal Pradesh)
3586	Preparation of *gulab kand*	In Himachal Pradesh a very delicious and sweet *gulab kand* is prepared by mixing dried petals of rose *(Rosa indica)* and 50 g molasses or jaggery. It is also used as a sweetening agent in pan. The rose petals add flavour and make the sweet *gulab kand* more delicious. This food is used throughout the hilly areas of Shimla district in Himachal Pradesh since time immemorial. **Keywords:** rose petal, molasses	Facilitator: Dr L.R. Verma MRDA, 4 Summer Hill, Shimla (HP) 171 005
3587	Preparation of *maduwa* (fingermillet) *ki bari*	*Bari* is prepared from fingermillet flour. Flour of fingermillet is first fried with *desi* ghee for 5 min. and then water and jaggery are added to this. The mixture is cooked for 15 to 20 min. The *bari* is ready to serve. This	Ms. Rama Bisht Bagdwal Bhawan, Dhungadhara. dist. Almora (Uttaranchal)

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		ethnic food is prepared commonly in the villages of Uttaranchal. **Keywords:** fingermillet, *desi* ghee, *bari*	
3588	Preparation of *jonna gatka*	*Jonna gatka* is made of semolina of sorghum. About 1 kg semolina is added to 3 litres boiling water slowly while stirring. Then salt, ginger and garlic paste is added according to taste. Then it becomes thick. **Keywords:** *jonna gatka*, semolina	Deccan Development Society, Pasthapur, Zaheerabad (M), district Medak (Andhra Pradesh)
3589	Preparation of *sajja burva*	Pearlmillet contains very nutritious elements. Hence people of southern Telangana make different dishes out of it. *Sajja burva* is cooked pearlmillet. One kg cleaned pearlmillet is soaked for 30 min. and is added to 3 litres boiling water while stirring slowly, and salt is added to taste while it is being cooked. This preparation is eaten with buttermilk. Every 100 g pearlmillet contains 11.6 g protein, 4.2 g calcium and 8 g iron. **Keywords:** *sajja burva*, buttermilk, pearlmillet	Deccan Development Society, Pasthapur, Zaheerabad (M), district Medak (Andhra Pradesh)
3590	Preparation of *korra buvva*	*Korra buvva* is a local food prepared from fox-millet in southern Telangana region. One kg of cleaned millet is soaked in water for 30 min. (half an hour) and is added to 1.5 litres of boiling water while it is being cooked. This is good to eat with buttermilk or locally made *dal*. Every 100 g fox-millet contains 12.3 g protein, 0.031 g calcium and 2.8 g iron. **Keywords:** *korra buvva*, *dal*, buttermilk	Deccan Development Society, Pasthapur, Zaheerabad (M), district Medak (Andhra Pradesh)
3591	Preparation of *korra kichidi*	*Korra kichidi* is a very healthy food. Seasoned onions is put in oil alongwith ginger and garlic paste, sliced chillies, leafy vegetables and greengram are added to it and fried.	Deccan Development Society, Pasthapur, Zaheerabad (M), district Medak (Andhra Pradesh)

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		Salt and chilli powder are added according to taste. Sufficient water is added and boiled. Then 1 kg foxtail millet is added and cooked. This dish **is** good to eat with curd. Every 100 g greengram contains 24.5 g protein, 0.075 g calcium and 3.9 g iron. **Keywords:** *korra kichidi*, chilli, calcium, protein, iron	
3592	Preparation of *shanaga gudala*	*Shanaga gudala* is made by soaking chickpea for 4 hr and then boiling it and then adding salt. Excess water is drained. **Keywords:** *shanaga gudala*, chickpea	Deccan Development Society, Pasthapur, Zaheerabad (M), district Medak (Andhra Pradesh)
3593	Preparation of *pindi pulusu*	***Pindi*** *pulusu* **is** made of chickpea flour. Onion is seasoned, and ginger and garlic paste is added. Some chilli powder and salt are also added. Then tamarind pulp is put into it and sufficient water is added. When it is boiled, some chickpea flour is added and mixed so that it would not form moulds. It **is** made ready in diluted form. **Keywords:** ***pindi*** *pulusu*, chickpea, chilli, tamarind	Deccan Development Society, Pasthapur, Zaheerabad (M), district Medak (Andhra Pradesh)
3594	Preparation of *shanaga bajjilu*	*Shanaga bajjilu* is a snack dish eaten during tea-time. The flour of chickpea is taken, and some salt, chilli powder, ginger and garlic paste alongwith sufficient water are added to it to a level of flow consistency. A few spinach leaves are put in it and fried in oil. The *bajjlu* can be made with other alternatives like potato slices, big green chillies and other green leaves. **Keywords:** *shanaga bajjilu*, spinach, potato slices	Deccan Development Society, Pasthapur, Zaheerabad (M), district Medak (Andhra Pradesh)
3595	Food from *motha* tuber during drought	The local tribes and resources-poor people of many blocks of districts Bhavnagar, Surendernagar and Kheda	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension

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		in Gujarat prepare food from locally available weed tuber, called *motha (Cyperus rotundus),* under the harsh and drought conditions. After the collection of *motha* tuber, these are washed with alum water, its outer brown layer is removed and the tubers are boiled. Boiled tubers are cut into small pieces, dried in sunlight for 10-15 days and then powdered at local flour-mill. This powder is used to prepare *chapati*. The same tubers may be used for preparing curry after boiling. Many local vegetables are mixed with this curry for making it tastier. **Keywords:** *motha*, brown layer, **flourmill,** *chapati*	and Rural Sociology), College **of** Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3596	***Chapati*** preparation from mango stone	Mango seeds or stones are dipped in water for whole night. The next day stones are taken out and these are dried in the shade of a tree. The outer cover **of** the stone is broken and inner part is dried again and ground into powder form. Before grinding, the mango seeds are kept in bamboo basket, which is placed in running river so that bitter taste of seeds is removed. The powder is mixed with small millet flour or with pulse flour for making *chapati.* About 95% tribal people use it. **Keywords:** mango stone, *chapati,* bitter	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry,Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3597	Preparation of *jonna burva*	*Jonna burva* is a local food prepared from sorghum in southern Telangana region. One kg cleaned sorghum is soaked overnight and it is added **to** 3 litres **of** boiling water while stirring it slowly. Salt is added to taste. This preparation is also called *pulagam.* This is eaten with a side dish called *pacchi pulusu,* made of diluted tamarind extract. About 100 g	Deccan Development Society, Pasthapur, Zaheerabad (M), district Medak (Andhra Pradesh)

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		sorghum contains 10.4 g protein, 0.025 g calcium and 4.1 g iron. **Keywords:** *jonna burva,* sorghum, *pacchi pulusu, pulagam,* protein, calcium, iron	
3598	Preparation of *jonna rotte*	*Jonna rotte* is the *chapati* made of sorghum flour, which is very nutritious. Soft dough is kneaded by mixing 500 g sorghum flour with sufficient water and then handful of dough is taken and it is pressed with hand on a smooth plate by sprinkling some flour into a *chapati.* Then it is put on hot pan and cooked both the sides. **Keywords:** *jonna burva,* sorghum, dough	Deccan Development Society, Pasthapur, Zaheerabad (M), district Medak (Andhra Pradesh)
3599	Preparation *of jonna appadalu*	*Jonna appadalu* is made in Telangana region with sorghum. About 2.5 litres of water is boiled and 500 g sorghum flour is added to it. Then salt, chilli powder and cumin seeds are added for good taste. It is mixed well and cooked till it softens. A wet white cloth is spread in sun and small quantity of cooked sorghum are put on it like *puri* and it is dried. Some water is sprinkled on the cloth after it is dried and the *puris* are removed. Again it is dried and stored in a tight tin. **Keywords:** *jonna appadalu, puri*	Deccan Development Society, Pasthapur, Zaheerabad (M), district Medak (Andhra Pradesh)
3600	Preparation of *sajja rotte*	*Sajja rotte* is the *chapati* made of pearlmillet flour, which is very nutritious. Soft dough is kneaded by mixing 500 g pearlmillet flour with sufficient water and then handful of dough is taken and it is pressed with hand into a *chapati* on a smooth plate by sprinkling some flour. Then it is put on hot pan and cooked both the sides. **Keywords:** *sajja rotte, roti*	Deccan Development Society, Pasthapur, Zaheerabad (M), district Medak (Andhra Pradesh)

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3601	Preparation of *taida kudumulu*	*Taida kudumulu* is made during festival season in southern Telangana region of Andhra Pradesh. This is prepared by first kneading dough of fingermillet flour with hot water, adding salt to taste. Then a small quantity of the dough is taken and is pressed with fingers flat. It is then boiled to make the *kudumulu* ready. **Keywords:** ***taida*** *kudumulu*, steam, fingermillet	Deccan Development Society, Pasthapur, Zaheerabad (M), district Medak (Andhra Pradesh)
3602	Preparation of *nuvvula polelu*	*Nuvvula polelu* is very rich in protein, iron, calcium and phosphorus. Hence this dish gives strength and helps in growth of children. First sesame is roasted, and then sesame and jaggery are ground to soft powder and cardamom is added. Wheat flour is kneaded and small-size *puri* is made and is again rolled by spilling fingermillet flour. Then it is fried on a hot pan on both the sides by applying ghee. Now *nuvvula polelu* is ready. **Keywords:** *nuvvula polelu*, sesame, *puri*	Deccan Development Society, Pasthapur, Zaheerabad (M), district Medak (Andhra Pradesh)
3603	Preparation of *yavva malida*	*Yavva malida* is a very nutritious food made by meshing millet flour and making thin *chapaties*. The *chapaties* are shaped into tiny bits. Then dry coconut, fried peanut, aniseed, puffed chickpea, cardamom and jaggery are powdered and mixed in the crushed *chapati* along with ghee. **Keywords:** *yavva malida, chapati*	Deccan Development Society, Pasthapur, Zaheerabad (M), district Medak (Andhra Pradesh)
3604	Preparation of *trtung rymbai*	This ethnic food is prevalent (80-85% people consume it) in the tribal-dominated villages of East Khasi Hills. Tribals take indigenous cultivar of beans and wash the seeds properly. These bean seeds are soaked in water in aluminum vessel overnight, and the next morning it is boiled for 2 hr. Afterwards these boiled seeds are kept	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102

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		in aluminum vessel (which is big and circular in shape) and covered with banana leaves. Cloth, gunny bag or rice straw is also placed over the banana leaf and kept as such for 4 days. Afterwards it is stirred after putting some hot water and again it is tied in gunny bag for one night. Now it is ready for consumption. The tribal people pack these seeds in banana leave for carrying to market (for selling). It fetches good money in the market. It is in vogue since time immemorial and it is a nutritious (protein) food, especially for sick person. **Keywords:** *trtung rymbai*, beans, banana leaves, protein	
3605	Preparation of *sanna*	*Sanna* preparation is similar to that of *idli*. Parboiled rice is soaked and ground well. Coconut toddy, grated coconut, vinegar and jaggery are added to the mixture, and then it is ground and kept separately. The mixture is stirred well and kept overnight for fermentation. The next morning, it is cooked like *idli* in a pressure cooker or using idli-maker. This gives special taste and is native preparation of Goa. **Keywords:** *sanna*, idli	Shri Tato Gawas Parye, Ranewada, Sanquelim, Sattari, North Goa (Goa) 403 505
3606	Preparation of *mimil*	A rice variety, that is more sticky, is preferred for preparing *mimil*. For it, two pots of equal size are taken, one having hole at bottom. Water is filled up to half capacity in the pot (without hole) and it is covered with thin cotton cloth. In the second pot (with hole) banana or *sal* leaf is placed at bottom and rice grains with sesame seeds and sugar are kept on the leaf. The mouth of the pot is covered with another leaf and over it a wooden plate is kept. Pot	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102

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	(half filled with water) is placed on fire and second pot (having rice) is placed over it. After complete cooking rice is taken out with leaf and served for eating. **Keywords:** stickiness, *mimil*, pot, hole, cotton cloth	
3607 Preparation **of *hawaichar*** from soybean	Local variety of soybean is collected and immersed in water. Grains are boiled till they become soft but shape of grains should not be changed. Grains are separated from water and wrapped in green banana leaves. These leaves are kept in storage structures (for paddy) at a depth of 2-3' to maintain the temperature. The process of fermentation starts in grains and these are separated after 4-5 days. Now the *hawaichar* is ready and may be consumed with leafy vegetables. About 80-90% tribals of Pasighat area of district East Siang, (Arunachal Pradesh) consume it and this practice is age-old. **Keywords:** *hawaichar*, banana, soybean, fermentation	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 731 102
3608 Preparation of *naming* from ***colocassia*** rhizomes and fish	Aadi tribes of Pasighat block in Arunachal Pradesh prepare the ethnic food from local cultivars of *kassu (Colocasia esculentum)* and local fresh or dried fish. To prepare *naming*, the rhizomes of colocasia are collected, cleaned and cut into small pieces. These pieces are mixed with fish (fresh or dry) to increase the taste. This mixture is boiled in water and small pieces of local bamboo, *tenga* (newly grown bamboo shoot), are mixed to make it tastier. **Keywords:** *kassu*, fish, rhizome, bamboo, *tenga*	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102

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3609	Prevention of plague from ethnic food prepared from fermented bamboo shoots *(soibum)* and fermented fish *(utonggari)*	Farmers of village Khurai Namdeibum Leikai, Imphal East (Manipur) keep bamboo pieces in *cot* (large size bamboo container), which is about 7' in height. After filling the *cot* with water, it is covered with banana leaf and left for 2-3 months. A local fish breed Phobou is used for fermentation, which is brought from rural places or from Assam. In an earthen pot the required quantity of fish is kept and pressed tightly, afterwards it is covered with banana leaf and mud paste is used to cover it. It is allowed to ferment for 2-3 months. After completion of this period, *utonggari* (fermented fish) is mixed with fermented bamboo shoot and eaten. It is an age-old practice, and it is a general assumption that problem of plague may be avoided by taking it. Keywords: fermented bamboo shoot, fermented fish, *phobou*, banana leaf, plague	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3610	Preparation of *eronba*	*Eronba* is equally popular among all the inhabitants, whether vegetarian or non-vegetarian. Ingredients are *yongchak* or tree bean *(Paktia roxburghii), ngari* (dry fish of *Puntus* species, *Phutunis or Eromus dandricus).* For non-vegetarians, *masoi nakupi (Allium odorosum)* and for vegetarians, potato, *pullei (Alpini nigra),* chilli, salt and coriander are used. All the vegetables are boiled in a container. *Ngari* is soaked or *masoi nakupi* is fried and a paste is made by mixing chillies and salt. Green cover of tree bean should be removed by scrapping with *yoingkhot;* potato is also peeled off properly and this is mixed with the cooked material. It is a good appetizer and about 95% of the population consumes it. *Yongchak* is a multipurpose tree and has medicinal value also.	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102

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		Keywords: *eronba, yongchak, ngari, pullei*	
3611	Preparation of ethnic food, *hentak*	*Hentak* is a preserved food, which is a common dish in many parts of Manipur. It is taken with *morokmetpa* (chilli *chutney). Hentak* is prepared by smashing *hongngoo (Alocasia indica)* along with a number of small sun-dried fishes *(puntus* species, *phutunis* or *Eromus dandricus),* which are preserved for about 3 months. *Hentak* of good quality is obtained after several number of smashings. It is an age-old practice and women prepare it nicely compared with men, because it involves complex procedures. Inhabitants of this region take it daily and it is considered as an appetizer and has good taste. **Keywords:** *hentak, morokmetpa* **(chilli** *chutney), hongngoo, puntus, phutunis*	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3612	Preparation of *kangsoi*	This food is very tasty, contains low fat, nutritive and can be prepared in any season. Ingredients required are: fermented fish, chillies, dry fish and *moral napakpi* (leek). First chillies, dry fish and a small amount of *moral napakpi* are boiled in water. Roasted *nagari* (small fish) with remaining *moral napakpi* is added to the boiling water. By this procedure dish becomes tastier. Potato is also added to boiling water after peeling and slicing. Other vegetables may also be added to the boiling water. After proper cooking, salt is added to it. It is garnished with coriander leaves. It is ready to be served. **Keywords:** *kangsoi,* low fat, fermented fish, coriander	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3613	*Shingju*—an ethnic food	It is a hot and spicy salad of fresh local vegetables. The following ingredients are required: fermented fish *(nagari),*	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension

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		chillies, *theiding* (sesame seed), *thamboee* (aquatic plant like lotus), leaf of *hawai matar* (pea), cabbage and *komprek* (indigenous wetland plant). These vegetables may be added according to their availability. Vegetables are chopped into small pieces. Roasted and crushed, fermented fish is added with salt and chilli. Chopped vegetables are mixed well with the fish mixture and powder of *theiding* is added to it. Finely chopped onion and coriander leaves are spread over it. About 80-90% inhabitants of Uripak Vachaspati Leikai (Imphal) are preparing this ethnic food from age-old times. **Keywords:** *shingju, salid, theiding, thamboee,* pea, *komprek*	and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3614	Ethnic food -*Wijung* ***thongba***	Meitei community of Manipur prepare this ethnic food from *wijung (Bambusa oliveriana),* onion, dry fish, fermented fish, salt, chilli and coriander. First *wijung* is washed and cut into small pieces. All the ingredients except *wijung* are kept in a container and cooked by adding water. Afterwards pieces of *wijung* are mixed well with the cooked materials by continuous stirring and coriander leaves are sprinkled over the final mixture. *Wijung* is an aquatic plant, very hardy and nutritive. It is good for the person suffering from digestive troubles. It is an age-old practice and about 85% people consume it. **Keywords:** *wijung thongba,* aquatic, digestive trouble, nutritive	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3615	Ethnic food—*bish kachu macher jhol*	Small pieces of local colocasia *(bish kachu)* are cut, boiled in water and paste is made by adding garlic and chillies. This paste is fried in mustard oil by adding many local spices.	Dr Ranjay K Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture

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		Turmeric powder, salt and fried fish *(rui)* and also water are added to it. It is cooked till water disappears. It is an age-old practice. **Keywords:** *bish kachu, col ocas ia,* fried fish	and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3616	Use of *simol* and *donkalegin* tubers as ethnic food materials  *Marsang*	Tribal women of Adi tribe of Pasighat area of district East Siang (Arunachal Pradesh) are efficient in identifying edible tubers among several other species available in forests. They use *simol* and *donkalegin* from forest areas and boil them after washing properly. After boiling the skin of tubers is removed and small pieces of tubers are made. These pieces are mixed with chillies, bamboo shoots, local dry fish, coriander, *marsang* herb and many other herbs. Majority of the people take it directly but new-generation people fry this mixture in mustard oil and then take it. This is very nutritive, delicious and mouth watering. **Keywords:** *simol, donkalegin, marsang*, tuber, bamboo shoot, coriander	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology),College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3617	Ethnic food prepared from local fish and green tender leaves of pumpkin or mustard	Local breeds of fish, viz. *nagsang, nagarang, nagakra* and *obogra* are used to make this dish. One or two fish of above mentioned species are collected from pond or paddy field, and after proper washing, are fried in mustard oil with chillies. Tender leaves of local cultivar of pumpkin or mustard are collected and after washing these are cut into pieces. These pieces are boiled in water and fried fish is again fried with these boiled leaf pieces by adding many local spices and salt. Now the dish is ready for eating. Tribals (80-90%) of Kakching Mayai Leikai (Manipur) are taking this dish since age-old times.	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102

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		Keywords: *nagsang, nagarang, nagakra* and *obogra*, pumpkin, mustard	
3618	Preparation of *pahadi biryani*	People in Rohru area of district Shimla are very fond of eating non-vegetarian dishes. They hang meat in the kitchen (in the smoke-intensive place) for winter use. When snowfall occurs, people cut the meat into small pieces and get it washed. In a pan, mustard oil is taken and meat is fried, and all spices are added. It is cooked for 10-15 min. and then rice is added with some water. It is again cooked for 15 min. before making it ready to eat. **Keywords:** *pahadi biryani*, meat, rice	Ms Yashwant Singh Hartta, Institute of Integrated Himalayan Studies. Himachal Pradesh University, Shimla (Himachal Pradesh) 171 005
3619	Preparation of non-vegetarian *khobli*	Non-vegetarian *khobli* is prepared by people of Rahru area of district Shimla of Himachal Pradesh. Animal fat is cut into small pieces and stuffed into small amount of wheat dough. This is then boiled in water for 10-15 min. This is taken with *dal* of blackgram *(Phaseolus mungo)* during lohri festival. **Keywords:** *khobli*, animal fat, wheat flour	Ms Yashwant Singh Hartta, Institute of Integrated Himalayan Studies, Himachal Pradesh University. Shimla (Himachal Pradesh) 171 005
3620	Ethnic food—beer of *chakhou* (red rice)	*Sekmai yu* is considered to be the best local whisky among Meitei community, which has medicinal value if taken in small quantity. First rice is cooked well and spread over a mat. *Hmamei* (rice cake) is ground and mixed properly with cooked rice. This mixture is kept in *kharnung* (earthen pot) and left for 5-7 days after filling water. For distillation, a steel container, perforated plate and receiver are required. Processed rice is cooked in steel container and collected through *yukok* (a starter solution consisting of local yeast). After	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102

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		processing, it is ready for use. This local beer is taken during some occasions. It improves digestion of old persons, and is used as after-shave lotion as well as for curing joint pains. **Keywords:** *chakhou, sekmai yu, hmamei* (rice cake), *khamung* (earthen pot), distillation, *yukok*, after-shave lotion	
3621	Preparation of yeast tablets for rice-beer fermentation	It is reported from the tribal people of Balek and Napit villages of Pasighat area, district East Siang (Arunachal Pradesh) that without yeast tablets rice beer cannot be prepared. Whenever tablets are required, women folk collect tender green leaves of *mum* shrub from nearby forest and grind them in a secret place (the process is not shown to male folks) and left for 2-3 hr in dark shady condition. Afterwards rice grains of local cultivar are soaked in water and 3—4 hr later its paste is prepared. Now the paste of *mura* shrub and rice are mixed well, and round tablets of 5-8 g are prepared and dried in shady and well-aerated place over a cotton cloth. These tablets are dried for 8-10 days. This wisdom has 90-95% efficiency and it is an age-old practice. **Keywords:** *mura*, rice beer, shade, yeast	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3622	*Changem pomba*—an ethnic food	This ethnic food is popular among Meitei community of Manipur since ancient times. It contains dry fish, fermented soybean, *hentak* prawn, rice, forest-based vegetables, mustard leaves, pea leaves, onion leaves, turmeric, ginger and a few wild spicy plants. *Hentak* is made by crushing small dry fishes and stalk of wild *Colocasia* sp. Firtst the stalk is cut into small pieces, dried in sun and crushed	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102

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		with dry fish. It gets converted into a dark coloured paste, which is kept in clay or earthen pot and a little amount of oil is mixed as a preservative before keeping it. All the ingredients are added to the boiling water and it is cooked for 10 min. People consume this ethnic food during harvesting period to get energy and relief from pain. This ethnic food has no side effect and very suitable to local culture. **Keywords:** *hentak, Co/ocasia* sp., fermented soybean, mustard, pea, onion	
3623	*Pcruk kangsu*—an ethnic food	This age-old ethnic food is popular among Meitei community of Manipur. Ingredients are: *peruk* (Indian pennyword *Centella asiatica*, a medicinal plant), red chilli, potato, pea, dry fish and fermented indigenous fish (nagari). All the ingredients except fish are added to the boiling water and cooked for 10 min. and extra water is drained out. Boiled *peruk* is taken out and cut into small pieces. Fermented fish is first roasted and then crushed with chilli by adding salt and made into a paste. Boiled *peruk*, paste of chilli and fish and all other boiled ingredients are mixed to make a solid paste. It is garnished with coriander leaves and slices of onion. *Peruk* is used in healing wounds, for curing headache and stomach problem **Keywords:** *peruk*, Indian pennywort, fish, onion, coriander	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University. Pasighat (Arunachal Pradesh) 791 102
3624	*Champhut*—an ethnic food	This ethnic food is famous among Meitei community of Manipur, which is prepared from pumpkin, sponge gourd, cucumber, pea, carrot, beans, Indian pennywort *(Centella asiatica)*, cabbage and green mustard. All the	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central

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		materials are boiled till complete cooking and at last salt is added. It is considered very nutritious, saves time and spices and gives satisfaction. This food is considered to have medicinal value for weak persons and is effective in stomach problem. **Keywords:** *champhut*, time, spice, weak person, stomach problem	Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3625	Ethnic food—*laffu chamthong*  *Chamthong*	This ethnic food is popular among Meitei community of Manipur and it is used by 90-95% of community members. This food has been in use since time immemorial and is preferred for getting better health. Ingredients used to prepare this dish are pseudostem of banana suckers, dry fish, fermented fish, local chilli, onion, garlic, ginger and potato. First, the pseudostem of banana suckers is cut into small pieces after verifying its bitterness. If it is bitter, it is rejected, otherwise it may be used. All above-said materials are mixed and boiled in water for some time and salt is added. Coriander should not be added to this dish, otherwise it may prove harmful for human health. This food is given to the nursing mother or the person who has travelled a long distance. **Keywords:** *Iqffu chamthong*, banana suckers, pseudostem	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102
3626	Use of indigenous fruit, ***ellica,*** as vegetable, spices and medicine	Adi community of Pasighat area use a local fruit, called ***ellica*** *(Terminalia chebula)* in three ways, i.e. as local food, as spices and as medicine. Flowering and fruiting in *ellica* are completed up to October, and it is plucked from trees till the first week of November. After collecting, the fruits are dried in a local oven having three layers of iron mesh in vertical manner. The oven is used for drying because	Dr Ranjay K. Singh, Assistant Professor (Agricultural Extension and Rural Sociology), College of Horticulture and Forestry, Central Agricultural University, Pasighat (Arunachal Pradesh) 791 102

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		there rains and shady condition prevails all the time. In the first, second and third layers of iron mesh respectively fishes, *ellica* fruit and paddy grains are dried. After drying, *ellica* fruit is powdered and stored in bottles or bamboo pots. This powder is supplemented with fish as a spice, to diabetic patients to normalize the blood pressure. To prepare the dish, these fruits are semi-dried, boiled and then seeds are separated. It is cut into small pieces and again boiled with many of the local vegetables and salt is added. This dish is taken during winter season to avoid cough and cold. This fruit is effective up to 40-50% in diabetes and successful up to 50-60% in cold and cough. **Keywords:** *ellica*, spice, sugar, diabetes, blood pressure	
3627	Ethnic food of the Jhadol tribal area of Udaipur district in Rajasthan	In Jhadol tribal area people prepare some of the food items, which are of unique in nature. Some of them are as follows: (a) *Bokana pakodi:* In the Jhadol area *bokana* appears as weed in maize fields. Villagers prepare *bokana pakodi* as special dish during rainy season. Leaves of young *bokana* plants are taken and washed. Slurry of chickpea flour @ 1 kg flour for 250 g *bokana* leaves is prepared. Edible oil is heated in open-mouth utensil *(kadai).* Each leaf coated with chickpea floor is put in heated oil. Leaves coated with gram flour take the shape of egg. It is consumed with spices. In gram floor slurry, spices to **suit** own taste are mixed. **Keywords:** *bokana pakodi, bokana* leaves	Shri Trilok **Prajapati, Kantharia,** Jhadol. dist. Udaipur **(Rajasthan);** and Ms. Pana **bail,** W/o Shri Heera ba Kantharia. Jhadol (At present: **near Kalaji-Goraji,** Bhatji ki Wadi. Udaipur. Rajasthan)

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Ethnic food of tribal area—use of *bokna* weed for *pakodi* preparation 	(b) *Use of kangani seed* or *flour during fasting days: Kangani* seeds are fried on *tawa* or *kadhai*, and it pops. These fried seeds are mixed with jaggery slurry. For 1 kg *kangani* pop, 250 g jaggery is required. *Laddoos* are prepared and consumed. Children like it very much. It can be consumed as *kangani* pops also and it is used for the preparation of *halwa* as well. For *halwa* the *Kangani* seeds are beaten in *oakhali* with slight water to remove husk etc., and seeds are crushed to coarse flour. *Halwa* is prepared while using jaggery and ghee. For 1 kg *kangani* seeds at least 250 g jaggery and 200 g ghee are required. During fasting period, *Paris* (pudis) are also prepared by using *kangani* flour. Therefore, instead of salt, *sendha* salt is added while preparing *pudies*, which are good in taste and consumed with vegetables. **Keywords:** *kangani seed* or *flour, halwa, pudies*	
Ethnic food of tribal area-Sooran *(Jamikanfd)* soil tuber for special dish preparation in winter 	(c) *Fried pickle of sooran: Sooran* is a tuber crop and consumed as tonic during winter. For the preparation of pickle, *sooran* is cut into pieces and boiled in water. After boiling it is kept overnight to reduce its bitterness. Next morning skin is removed. It is exposed to sun for natural drying. Sun-dried pieces are fried in ghee in 1:1 ratio. Fried *sooran* pieces are taken and pickle to suit one's taste is prepared by adding spices and water. During winter it is consumed with taste as energy tonic and one can consume at least 500 g fried *sooran.* Usually pregnant ladies are	

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		advised not to consume fried *sooran.* Fried *sooran* is used for worshipping Lord Shrinathji. **Keywords:** *sooran,* fried pickle, spices	
3628	Preparation of *jonna peelaalu*	*Jonna peelaalu* are sorghum corns made of special variety of sorghum meant for making corn. 1 kg sorghum is washed and dried in sun and then cooked in 3 litres of warm water for some time, and the remaining water is drained. It is roasted in a hot pan. Sorghum is salted to make the sorghum corn. **Keywords:** *jonna peelaalu,* corn	Deccan Development Society, Pasthapur, Zaheerabad (M), district Medak (Andhra Pradesh)
3629	Preparation of *shanaga murukulu*	*Shanaga murukulu* is made of chickpea flour. Adequate salt, chilli powder, ginger and garlic paste are added and dough is kneaded with some water to a slightly hard consistency. Then an instrument used to prepare *sameya* is taken and the dough is put in and pressed it in heated **oil.** Then the *murukulu* **is** ready. **Keywords:** *shanaga murukulu, sameya*	Deccan Development Society, Pasthapur, Zaheerabad (M), district Medak (Andhra Pradesh)
3630	Preparation of *shanaga kaara*	*Shanaga kaara* is a snack, which is usually made during parties and tastes very good. It is made from chickpea flour. Enough salt, chilli powder, ginger and garlic paste are added according to taste. It is made to a flow consistency by adding water. For making *kaara* the dough is spread on a plate having holes, and this whole plate is immersed in heated oil for frying the dough. It fried until crispy and then removed. Fried peanut and curry leaves is added to it. This stays for many days. **Keywords:** *shanaga kaara,* chickpea	Deccan Development Society, Pasthapur, Zaheerabad (M), district Medak (Andhra Pradesh)

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3631	Preparation of *indraa*	*Indraa* is prepared throughout Rohru in Shimla district of Himachal Pradesh. Horsegram is soaked in water overnight. In the morning it is crushed and spices such as cumin seeds, coriander, chilli, onion and ginger are added according to taste. It is mixed thoroughly and shaped in small balls, which are cooked over steam. **Keywords:** *indraa*, horsegram, spices	Ms Yashwant Singh Hartta, Institute of Integrated Himalayan Studies, Himachal Pradesh University, Shimla (Himachal Pradesh) 171 005

Unclassified

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3632	Coconut-shell spoon	*Karowi davalo* is used as spatula to serve dishes or food items. It is called wooden spoon and made of coconut shell. Considering the availability of coconut in plants in this region, lots of handicrafts showcase items are also made of coconut shell in addition to their use for making spatula or spoon. **Keywords:** coconut shell, spoon	Shri Rupesh D. Gauns, Porye, Ranewada, Sanquelim, Sattari, North Goa (Goa) 403 505
3633	Use of arecanut tree trunk as sheet	Arecanut tree bark is cut longitudinally into 2 halves. This cut portion is used as sheet, which can be dried. **Keywords:** arecanut, sheet	Shri Sanjay Anant Patil. village Savaiverim, taluk Ponda, district Goa (Goa) 403 401