

**ICAR****Reporter**

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Dear Readers,

Education is a driving force behind quality human resource development (HRD) in different sectors that contribute to the Indian economy. Agricultural education is important not only in steering the HRD process, but also develops management skills in working with multiple environment in the rural settings. Realizing this, the Indian Council of Agricultural Research (ICAR), being the apex organization for ensuring quality education in agriculture in the country, continued its concerted efforts in planning, development, coordination and quality assurance in higher agricultural education in the country and thus, strives to maintain and upgrade quality and relevance of higher agricultural education through partnership with State Agricultural Universities, Deemed-to-be-Universities, Central Agricultural Universities and Central Universities with Agriculture Faculty. To enable all these, the ICAR provides financial assistance to the Agricultural Universities for strengthening and development of higher agricultural education system.



Quality assurance in higher agricultural education in the country is being achieved through policy support, accreditation, framing of minimum standards for higher agricultural education, academic regulation, personnel policies, review of course curricula and delivery systems, development support for creating/strengthening infrastructure and facilities, improvement of faculty competence and admission of students through all India competitions.

As first and most important step for quality improvement of education, the Indian Council of Agricultural Research periodically appoints Deans' Committees for revision of course curriculum. In the series, the Fifth Deans' Committee was constituted to consider contemporary challenges for employability of passing out graduates and to adopt a holistic approach for quality assurance in agricultural education. The Committee undertook a bottom-up approach in respect of

curriculum development by obtaining inputs from different stakeholders of agricultural education at different levels. The Committee did deliberate on the skills which the graduates must have and then reverse engineering was done to design the course curricula. The course curricula have now been restructured to reorient course curricula, to develop the much needed skills and entrepreneurial mind-set among the graduates, and to take up self-employment, contribute to enhance rural livelihood and food security sustainability of agriculture. Some new initiatives that emerged out of this Committees' recommendations are:

- i. Student READY (Rural Entrepreneurship Awareness Development Yojana) programme to enable students to be agri-preneurs;
- ii. Agricultural degree programmes that are of 4 years duration at undergraduate level are declared as 'Professional degrees';
- iii. Minimum Standards for Higher Agricultural Education set to ensure land requirements, infrastructure, faculty etc;
- iv. New curricula and new programmes for holistic distribution of courses across semesters in view of the futuristic requirements; and
- v. Accreditation of Agricultural Universities.

Keeping regional requirements in view, the Fifth Deans' Committee recommended certain optional courses in emerging fields like Precision Farming, Conservation Agriculture, Secondary Agriculture, Hi-tech Cultivation, Specially Agriculture, Renewable Energy, Artificial Intelligence, Mechatronics, Plastics in Agriculture, Dryland Horticulture, Nano-technology, Agro-meteorology and Climate Change, Waste Disposal and Pollution Abatement, Food Storage Engineering, Food Plant Sanitation and Environmental Control, Emerging Food Processing Technologies etc. The Committee also added courses on Yoga Practices

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and Human Values, and Ethics to the list of non-credit courses.

The Fifth Deans' Committee also recommended 'Student Exchange Programme' between colleges located in different agro-climatic zones, to promote knowledge sharing, skill development to the

graduating students for specialized jobs in view of market needs and demands. In this regard, the Council is strengthening the experimental learning units to enthuse and capacitate the students. In the process, each college would have a Demonstration-cum-Production Centre for training students, field workers of Government Departments and NGOs community leaders in income generation skills. Taking inputs from the Fifth Deans' Committee, the Council is increasing the number of overseas trainings so as to update knowledge with time, identifying more areas and more programmes for national level trainings through winter/summer schools.

With an objective to have uniformity in the governance of State Agricultural Universities, ICAR brought out first Model Act in 1966 that was revised as latest in 2009. This Model Act is envisaged to bring uniformity in the functioning of all agricultural universities, and to have a pan-India adaptive mechanism to govern higher agricultural education.

Based on in-depth analysis and through comprehensive national level consultation, the Deans' Committees over the years have been making recommendations for transforming agricultural education system in the country for science-led development. The Council appreciates the efforts of the Deans' Committee members and associates to have done their best to reshape agricultural education towards excellence as also to attract and retain the youth in agriculture.



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## ICAR Reporter family

*Wishes its reader  
a wonderful, joyful, healthy, wealthy &  
prosperous New Year 2017*



# WORKSHOPS, MEETINGS, CONFERENCES, SYMPOSIA, SEMINARS,

## 25<sup>th</sup> ICAR Regional Committee Meeting of Zone 8

Coimbatore, 11 November 2016. The Minister for Agriculture, Puducherry, Shri R. Kamalakkannan inaugurated the 25<sup>th</sup> meeting of ICAR Zone 8 at Sugarcane Breeding Institute, and said the area under cultivation in Puducherry has come down drastically from 26,436 ha in 2000-01 to 15,850 ha at present due to certain limiting factors. The aim should be to



substitute 'per hectare productivity' with 'productivity per drop of water' as suggested by Prof. M.S. Swaminathan, Shri Kamala-kannan added that widespread drought in several states in ICAR Zone 8 during the recent past drastically curtailed the area under sugarcane that led the farmers to think of alternate crops which require less water and are shorter in duration. 'So, the research institutions in the region need to identify varieties tolerant to drought or of shorter duration', he said. Among the allied activities, in the animal husbandry sector, the animal population has decreased substantially in this region in the recent decades. For augmenting the farmers' income, crop production has to be integrated with animal husbandry. A comprehensive organic agriculture package taking into account all the components of Integrated Farming has to be given to the farmer. ICAR will help this region on various issues being faced in agricultural mechanization, post-harvest processing and storage of cereals and horticultural produce and weather-linked agricultural insurance, the minister stated.

Dr T. Mohapatra (Secretary, DARE and Director General, ICAR) said that the Zone 8 comprising Tamil Nadu, Karnataka, Kerala, Puducherry and Lakshadweep, is rich in agricultural education, research and extension as it has 6 SAUs, 3 Veterinary Universities, 2 Fisheries Universities, 1 Horticultural



University, 13 ICAR Institutes, 79 KVKs and 7 AICRP (Headquarters). The Regional Committee Meetings are serving as platforms for establishing better linkages between the National Agricultural Research System and the state departments. They also identify research gaps by State Agricultural Universities/ICAR institutes and constraints in transfer of agricultural technology by extension agencies, DG, ICAR said. Expressing concern over the segregation of agricultural universities and formation of too many private agricultural colleges, Dr Mohapatra stressed the need for revenue generation by the SAUs and research institutions. Calling upon the development departments and universities to interact and work together to serve the farmer effectively, Dr Mohapatra felt that the greatest satisfaction comes from solving the problems of the farming community.

Dr K. Ramasamy (Vice-Chancellor, Tamil Nadu Agricultural University) emphasized the need for earmarked areas for producing agricultural crops in the country. Expressing concern over the shrinkage in area under agriculture, reduction in the contribution of agriculture to GDP, low investments in agriculture and lack of intelligent marketing facilities for the farm produce, Dr Ramasamy stressed the need for empowering the agricultural graduates as they are the biggest strength for improving the National Agricultural Research System of the country.

Dr A.K. Singh (DDG, Agricultural Extension) highlighted the recent developments that took place in the past two years in the region. Dr Singh sought the cooperation of the respective state departments for the successful implementation of the technologies developed at the research institutes and state agricultural universities at this region.

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## AICRP on STCR industry interface meet organized

Bhopal, 4 December 2016. The AICRP on Soil Test Crop Response (STCR) and Indian Institute of Soil Science organized STCR-Industry Interface meet on Customized Fertilizer and Decision Support System, with the aim to offer networking opportunities and foster industrial perspective of STCR. Dr Pradip Dey, Project Coordinator (STCR), emphasized the need for close collaboration of research institutes and industry in the context of scientific enterprising and need for change in outlook in the era of globalization. Dr Dey urged for close collaboration of research institutes and the industry, which are in practice in many developed nations for mutual benefit.



A Brainstorming Session was organized wherein reflection on customised fertilizers of Indo-Gulf Fertilizers, Tata Chemicals Ltd., Nagarjuna Fertilizers and Chemicals Ltd., Coromandel International, International Zinc Association, Mosaic India Private Ltd. was shared with respect to problems, and necessary policy interventions were discussed in details. Based on discussion, sustainable business matrix and policy interventions for customized fertilizers were formulated. A mobile-based bilingual (Marathi and English) STCR App for fertilizers recommendations of Maharashtra was launched during the occasion which was prepared in collaboration with National Informatics Centre (Government of India), Pune. Dr T. Satyanarayana of International Plant Nutrition Institute (IPNI) and Shri Avinash Mekala of NIC, Pune also deliberated on Decision Support System.

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## Workshop of AICRP on Agro-meteorology

Ludhiana, 7 December 2016. The three-day 14<sup>th</sup> biennial workshop of AICRP on Agro-meteorology, jointly organized by CRIDA and School of Climate Change and Agro-meteorology, PAU was started at Punjab Agriculture University on 5 December 2016. Dr P Vijaya Kumar (Project Coordinator, AICRPAM)

focused on achievements of AICRPAM. Dr Ch Srinivasa Rao (Director, CRIDA) raised his concern over in-season climatic variability like early and mid-season drought, which affect farm productivity. Dr Srinivasa also described the efforts made by ICAR through NICRA to combat climate change and variability, in which CRIDA takes the lead role. The deliberations were on the need for effective interaction between agro-meteorologists and other allied subjects such as agronomy, plant breeding, crop physiology, entomology and pathology for better understanding the impacts of climate change in terms of yield reductions or pests-disease dynamics.

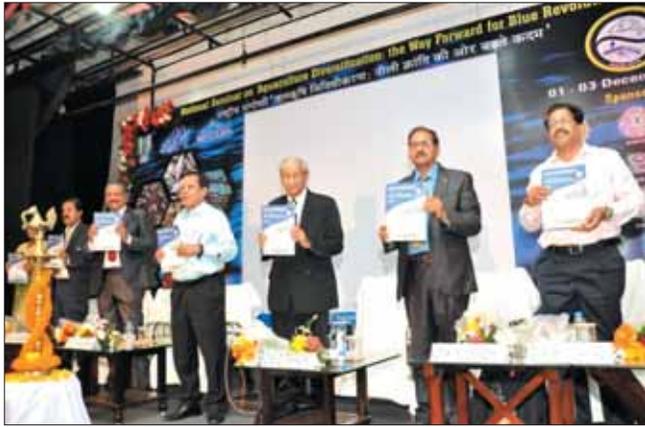
In eight technical sessions of the workshop, the Principal Investigators of the project from 25 co-operating centers made presentations on the progress of work done during 2015-16, and technical programme for 2016-18 was finalized. The work done by each center was critically evaluated and suggestions were given by experts to improve the outcome. Dr M.S. Gill (Director of Research, PAU) gave award for best AICRPAM center on the overall performance to Ludhiana center and first and second prizes for dissemination of agromet advisory services to Jorhat and Faizabad centers respectively.

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## Aquaculture Diversification: The Way Forward for Blue Revolution

Bhubaneswar, 3 December 2016. A National Seminar on 'Aquaculture Diversification: The Way Forward for Blue Revolution' was organized at Central Institute of Freshwater Aquaculture from 1 to 3 December 2016. Dr P. Jayasankar (Director, CIFA) 2016 exhorted to think beyond Indian major carps, and commented that more species and systems are right steps for increasing fish production and productivity. Dr S. N. Pasupalak (Vice Chancellor, OUAT) suggested that availability of quality seeds of diversified species would offer variable options to the farmer.

Dr K. K. Vijayan (Director, Central Institute Brackishwater Aquaculture, Chennai) requested all the participants to debate on strength and weakness of all the available technologies and prioritize them. Dr A. K. Singh (Director, Directorate of Cold Water Fisheries Research, Bhim Tal) preferred to shun exotics for aquaculture. Dr C. N. Ravishankar (Director, Central Institute of Fisheries Technology, Cochin, Kochi) emphasized on various challenges before the aquaculture sector. Dr B. K. Das (Director, Central Inland Fisheries Research Institute, Barrackpore) endorsed enclosure culture in reservoirs and diversification of aquaculture. Dr S. D. Tripathi (Former Director, Central Institute on Fisheries Education, Mumbai) elaborated the foundation of aquaculture research and development carried out in post-independence era in India. There were deliberations on 'Breeding and Seed Production';



'New Frontiers in Aquaculture'; 'Fish Nutrition and Physiology'; 'Social Science Research in Aquaculture'; 'Fish Health Management and Aquatic Environment Management' etc.

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## Identification of indicators of resilience to climate change

Hyderabad, 26 October 2016. With the objective of identifying the sector-wise indicators of resilience in relation to the activities being taken up in National Innovations in Climate Resilient Agriculture (NICRA), a one-day brainstorming meeting on 'Identification of indicators of resilience to climate change' was held at CRIDA. Dr Anthony Whitbread (Research Programme Director, Innovation Systems for the Drylands, ICRISAT) gave an outline of the risks involved in dryland agriculture as well as the short-term tactical measures and long-term strategic measures for managing climate risk. Dr Palanisami suggested that focus is needed on putting the indicators identified into proper perspective.

Dr Ch. Srinivasa Rao (Director, CRIDA) put forth the need for having a critical look at the resilience enhancing interventions in NICRA and also the background to the meeting. Dr Rao also emphasized the need to develop an inventory of indicators for different sub-sectors within agriculture.

In the session, there were presentations on understanding and measuring resilience, identification of indicators under different sectors like crops, livestock, poultry, fisheries and water by NICRA partners. Different participants listed different indicators relevant to field crop production, horticulture, livestock, poultry, and fisheries as well as indicators related to water management and socio-economic dimensions of resilience. Dr Ch. Srinivasa Rao (Director, CRIDA) suggested the participants to examine the list of indicators with respect to their relevance to interventions so that they can be consolidated into an inventory to be quantified subsequently.

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## North-eastern tribal farmers' meet

Kalyani, 26 November 2016. The north-eastern tribal farmers' meet and 4-day training on 'Pisciculture and Allied Farming Practices for Tribal Farmers of north-eastern India', jointly organized by Regional Research Centre of CIFA, Rahara and Bharatiya Kisan Sangha, was inaugurated by Union Minister of State for Agriculture and Farmers' Welfare and Parliamentary Affairs, Shri Surendrajeet Singh Ahluwalia. The Minister of State for Agriculture complimented CIFA for undertaking various aquaculture development activities in the state of north-east hills and other parts of the country and highlighted the importance of fish as health food and the necessity of integrated farming systems and reclamation of water bodies to increase fish production in our country. Dr P. Jayasankar (Director, CIFA) emphasized the role of freshwater aquaculture in improving livelihood of tribal community with CIFA technologies.

Minister of Fisheries, PWD and Excise, Govt. of Assam, Shri Parimal Suklabaidya, highlighted the activities of CIFA in Assam. Shri Jayanta Naskar (MLA, Gosaba, Sunderban) complimented the activities of CIFA at Sunderban for the tribals and requested to standardize the technology of crab farming. Shri Dinesh Dattatraya Kulkarni (Organizing Secretary, *Bharatiya Kisan Sangha*) highlighted the works of the *Sangha* in different parts of the country and expressed his interest to continue such programmes jointly with CIFA in future.

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## Chara Ghosthi for Pasu Palak

Gorakhpur, 15 November 2016. Shri Yogi Aditya Nath Ji Maharaj, MP, Gorakhpur inaugurated one-day *Chara Ghosthi for Pasu Palak*, jointly organized with Agricultural Technology Application Research Institute Zone-IV, Kanpur and Indian Grassland and Fodder Research Institute, Jhansi, and *Poorvanchal Krishi Pradarshani evam Kisan Ghosthi* at Chaukmmafi, Gorakhpur.

Seeds packets of 1 kg oat were distributed to cattle rearing farmers by Shri Aditya Nath ji who urged the farmer for producing seed and distributing to the other farmers in next season for producing good quality feed for cattles. Shri Aditya Nath ji thanked Dr P. K. Ghosh (Director, IGFRI) for organizing this *ghosthi* and providing seed for cattle rearing farmers. Dr Ghosh encouraged the farmers to grow fodder crops for round the year fodder availability and produce quality seed, feed and fodder for cattle. Dr Ghosh assured farmers that the seed of fodder crops oats, barseem and grasses root slips are available at IGFRI, Jhansi. Dr Ghosh said that the government strives to double the income of farmers.

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## Agrochemicals: Research and education in India

New Delhi, 17 November 2016. A three-day National Symposium on 'Agrochemicals Research and Education in India: Appraisal and Roadmap for Future' (15 to 17 November 2016) was inaugurated by Shri Anath Kumar, Union Minister of Chemical and Fertilizers, at National Agricultural Science Complex on 15



November 2016. The Symposium is jointly organized by Society of Pesticide Science, India, and Division of Agricultural Chemicals, Indian Agricultural Research Institute, New Delhi. Shri Kumar urged the scientists to come out with eco-friendly pesticidal molecules and biopesticides and highlighted the efforts of his ministry in recommending neem coated urea at National level. Union Minister of Agriculture and Farmers Welfare, Shri Radha Mohan Singh, emphasized upon the need to strengthen research efforts in the direction of environment friendly crop protection products safe to human health. The symposium was celebrated to mark the Golden Jubilee Year of Division of Agricultural Chemicals, IARI, New Delhi, which was established on 14 November 1966.

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## Farmers'-scientist interaction on

### • Farmer FIRST programme

Dehra Dun, 28 December 2016. Indian Institute of Soil and Water Conservation (IISWC) organized two Farmers *Goshthies* for fruitful interaction between farmers and scientists under Farmer FIRST programme on 27 and 28 December 2016. Dr P.K. Mishra (Director, IISWC, Dehra Dun) urged the farmers to get organized and extend their involvement in Farmer FIRST programme interventions. On-site input management like horticulture nursery development, flower cultivation, vermi-compost, quality seed production etc. was emphasized. Dr Mishra distributed saplings of plum and peach for inclusion in nutritional garden. Wheat var. 'HS-507' and 'VL-892' and lentil var. 'Pant-8' demonstrated at farmers fields were visited by the

Director and all the scientists and necessary suggestions were given for weed control and inter-culture operations. Dr Mishra said that water harvesting is necessary to utilize for life-saving irrigation and vegetable cultivation. Based on agro-ecosystem and farmers' need, the interventions are to be designed. Major attention to empower the rural youths and farm women was given by introducing income generating activities. Regular interface with farmers, scientists and line departments needs to be promoted for regular technology sharing.

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### • rabi pulses

Umiam, 19 November 2016. The KVK Ri-Bhoi, Meghalaya organized a day long Farmers'-scientist interaction programme with special emphasis on promotion of pulses at Umknon village under Umling block. The main objective of the interaction programme was to exchange views and experiences directly with the farmers on different problems in agriculture and allied sectors with special emphasis on pulses.

The Programme Coordinator from KVK, Ri-Bhoi expressed his gratitude to the farmers for being present in the interaction programme despite of their busy paddy harvesting season. The Programme Co-ordinator briefed about the objectives of conducting such programme at villages and deliverables under Tribal Sub Plan project for the benefit of the tribal farmers of the district particularly on nutritional aspects and benefits on soil- health and crop productivity. The Programme Co-ordinator opined that the farmers should leave behind their hesitations and come forward to interact with the KVK scientists for obtaining better agricultural productivity in their villages. The farmers discussed with the scientist on cultivation of pea, lentil, onion, french bean, gerbera, anthurium, coriander, cole crops, disease and pests management, vermicompost, soil testing etc. About 80 kg pea seeds var. 'Vikash' and Lentil var. 'HUL 57' were also distributed to women farmers.

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### • technological backstopping of tribal farmers

Thanka, 21 October 2016. KVK, East Sikkim, Ranipool organized a-day long programme on 'Farmers-Scientists Interaction and Technological Backstopping of Tribal Farmers of Sikkim (IFS-TSP)', at Thanka, Martam, to enhance the livelihood security in Sikkim.

Dr R. K. Avasthe (Joint Director, NOFRI) emphasized on the importance of '*Swacchh Bharat Abhiyan*' and their linkage with production of quality organic nutrient through proper waste management. Dr Avasthe detailed the importance of vegetables especially for nutritional security of rural poor. Further, Dr Avasthe stressed on the importance of the

quality organic seed in the State and encouraged the farmers to undertake production of quality seed and retain them for next two to three years to become self-reliant in organic seeds and motivated the farmers to develop agri-preneurial ability towards the organic seed production to uplift their livelihood as well as self-sufficiency in seed since there is huge demand of organic seeds in the state.

There were deliberations on 'Swacch Bharat Abhiyan' the major insect pests and diseases of potato and other *rabi* crops in Sikkim conditions and their organic management practices, cultivation practices of yellow mustard in rice-fallow under zero till techniques, improved production technology of *rabi* vegetables which can empower the farming community and their livelihood status, and about the nursery management under low-cost poly-structure for quality vegetable seedlings production.

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- **exploring the possibility of mithun husbandry in Meghalaya**

Mawphlang, 22 November 2016. The first ever 'Awareness Programme-cum-Farmers-Scientist Interaction on Scientific Mithun Rearing' was jointly organized by National Research Centre on Mithun, Medziphema, Nagaland and KVK-East Khasi Hill District, Meghalaya to explore the possibilities of introducing Mithun (*Bos frontalis*) in Meghalaya. The programme was held in Mawphlang village, Upper Shillong, East Khasi Hill District from 21 to 22 November 2016.

Shri Kennedy C. Khyriem (MLA) asserted that the programme would bring awareness in local communities regarding adoption of mithun husbandry as an alternative source of livelihood. Scientific mithun rearing would not only improve the livelihood of the farmers but also help in rejuvenation of the forest cover. Dr Abhijit Mitra (Director, NRCM) apprized about the mandate of the Institute and various initiative and technologies generated. Mithun is 'Natural Gardener' which helps to conserve forest eco-system and mithun can be metonym as meat, milk, and money, he added. The farmers were shown a film on mithun husbandry followed by Farmers-scientist interaction in which farmers received expert opinion for the problems faced by them on various aspects of animal husbandry.

On 21 November 2016, a team of scientists from NRC on Mithun and KVK-East Khasi Hills, Meghalaya conducted village survey through participatory rural Appraisal (PRA) to get first hand information on animal husbandry and other allied activities in the village and discuss about the scope and opportunities of mithun husbandry in the area.

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## Development of livestock and poultry sectors in eastern region

Patna, 19 December 2016. With the objective of ushering livestock productivity and to bring out state specific recommendations for eastern region, an Interface Meeting of the committee, formed by Shri Radha Mohan Singh, Union Minister for Agriculture and Farmers Welfare under the chairmanship of Dr H. Rahman, Deputy Director General (Animal Science) was held at ICAR Research Complex for Eastern Region. Dr Rahman highlighted the initiatives undertaken by ICAR for the development and strengthening of livestock and poultry sectors for improving livelihood of small- and marginal-farmers in the region. He also mentioned that an improved pig variety, 'Jharsuk' and a poultry variety, 'Jharsim' were released by ICAR for meeting the demand for improved germplasm of the region.

Dr Rahman also assured all technical support to the state agricultural universities and state animal husbandry and veterinary departments in their endeavours for doubling the income of the farmers.

The deliberations in the meeting primarily centred on improving productivity of different species of livestock and poultry reared by farmers in the region. The challenges confronted in the eastern region in augmenting the productivity, and the possible solutions available with ICAR and SAUs with the technologies developed by these institutions were discussed. Need-based interventions in animal breeding, animal nutrition especially in fodder productivity, and animal health components were deliberated in the meeting. Developing adequate infrastructure in creating germplasm centres, promoting suitable indigenous breeds for the region, strategies to make improved fodder seeds available to livestock farmers and planning for covering more numbers of the livestock population under immunization were discussed elaborately. The action plans were finalized with respect to each state to be taken up by the concerned state departments for follow-up actions.

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## National Consultation on 'Higher Fisheries Education'

Mumbai, 16 December 2016. With the aim to support education system of fisheries colleges by facilitating through fisheries research institutes, the CIFE organized one-day National Consultation on 'Higher Fisheries Education'.

Dr Gopalakrishnan (Director, CIFE) expressed that the goal of 'Blue Revolution' can only be achieved by strengthening the fisheries education in the country.



Hence, this is the need of the hour to support the state fisheries colleges, who shoulder the responsibility of producing fishery graduates, to augment their basic need for improving the student quality. This will help in developing quality human resources in the country with adequate expertise in frontier areas of fisheries.

Dr N. P. Sahu (Dean, CIFE) introduced the delegates about the genesis and work plan of the National Meet and also highlighted the features to be discussed

during the group discussion. Dr G. Venkateswarlu (ADG) presented a glimpse of various ICAR schemes launched recently to enhance the quality of higher education by supporting the students and faculties.

Dr P. Jayasankar (CIFA) advocated strongly for incorporating the elements of entrepreneurship development programme in higher fisheries education. The scientists expressed their views to bring harmonization between undergraduate and postgraduate standards. The national consultation meet was successful in providing an interface for fruitful discussion and exchange of ideas among the representatives of Colleges of Fisheries, CIFE and ICAR Research Institutes pursuing teaching and research in fisheries. To maintain the momentum of growth of this sector, highly competent human resource is an indispensable pre-requisite. The recommendation of this National Consultation facilitated the reforms in higher fisheries education of the country.

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## International Linkages

### Delegates from United Kingdom visits IISS

Bhopal, 9 November 2016. Prof. Mark Swainson (University of Lincoln), Prof. Mark Rutter (The National Centre for Precision Farming, Harper Adams University), Prof. Ronald Corstanje (School of Energy, Environment and Agrifood, Cranfield University) and Ms Swati Saxena (Senior Science and Innovation Advisor, British High Commission, New Delhi) visited Indian Institute of Soil Science (IISS). At the outset, Ms Swati Saxena, briefed the purpose of the visit and the importance to bring together United Kingdom and Indian scientists to identify potential areas for joint collaboration in precision farming and natural resource management.

Dr Ashok K. Patra (Director, IISS) made a brief presentation on the recent achievements of the Institute. The scientists of IISS, Bhopal focused on their innovations and discussed the potential areas



where IISS, Bhopal and United Kingdom can work together to benefit each other in precision farming. The deliberations were on the impacts of long-term fertilizer trials on soil management, soil quality and resilience; micro-and secondary nutrients on soil and plant health; and microbial decomposition and rapid composting techniques for enhanced decomposition of waste materials. The delegates also visited *Mrida parikshak* Mini Lab and MIR spectroscopy research. Both the sides focused on collaborative research and technology development for the benefit of Indo-UK stakeholders in future.

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### CMFRI extends technical support to Bangladesh

Kochi, 20 December 2016. With the aim to develop necessary manpower and expertise in marine fish stock assessment in Bangladesh and encourage research in the area, to develop the data collection system for generating necessary fishery and biological inputs towards the conservation of fishery resources, CMFRI imparted technical guidance in the area of marine fish stock assessment to the neighbouring country. This action was the part of follow up of recommendations of India-Bangladesh Joint Working Group (JWG) on Cooperation in the field of fisheries and aquaculture.

In association with the Bay of Bengal Programme Inter-Governmental Organization (BOBP-IGO), CMFRI

exclusively trained the selected fisheries officials of Bangladesh on methods of stock assessments of tropical fishes. A total of 12 middle-level officials from the Bangladesh Fisheries Department, Bangladesh Fisheries Research Institute in Mymensing and the Institute of Marine Science and Fisheries of University of Chittagong were trained on using various statistical tools, softwares and applications for the assessment of fish stock and data collection. Practical

sessions and field visits were given importance in the training programme.

The participants viewed that the technical guidance rendered by the CMFRI was a valuable support to Bangladesh to conserve hilsa, a popular fish variety in Bangladesh.

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## Success stories

### Empowerment of rural tribal through sustainable inland fisheries development programme

Sagar Island, Sundarban, West Bengal. Keeping in view the conservation issue of natural resources, the tribal community (both male and female) was selected as target group. *Santhal* community is very close to the nature. People depend on daily earning as labour and if the weather is not good or their health does not permit, they face hardship for their daily needs. Fisheries were not a means for livelihood of the villagers. They were catching fish from some of the natural low lying water-bodies for



consumption. After sensitizing the villagers and providing frequent training and demonstration at village and the Institute level has attracted a group of youth including women to rear locally available fish for livelihood. Derelict water-bodies were selected to rear the fish. They cleaned and prepared them for rearing the fish under supervision of scientists from CIFRI. Locally available fish were selected to stock there. Scientific interventions, viz. natural resource identification and inventory, reducing cost of feed by on-farm feed formulation by using local feed ingredients, *Azolla* culture, integrated fish farming, application of vermi-compost, biofloc and periphyton are the attraction of the project. Small indigenous fish which are self-recruiting species were introduced with major carps

for continuous availability of fish. The rearing units which are having tidal influx and high salinity were used to rear brackishwater fish, viz. *Liza parsia*, *Rhinomugil corsula*, *Scatophagus argus*, *Sillago panjijius*, *Liza tade*, *Pseudapocryptes lanceolatus* etc. Partial harvest and natural stocking of fish during monsoon reduced the burden of seed cost. Self-recruiting small indigenous fish, viz. *Amblypharyngodon mola*, *Puntis sarana*, *Salmostoma bacaila*, *Mystus gulio* etc. are the fish stocked only in first year but having sustainable stock even in third year and are being consumed by the villagers for nutritional security.

After rearing for six months, in three freshwater and two brackish natural water units, they could sell fish worth ₹ 18,599 as partial harvesting. In second year, they were more attentive and monitored the process as per the technical support provided to them and earned ₹ 52,865 from partial harvesting of fish from the same water-bodies. Based on the request of villagers, five more units were added and 32,000 fishes stocked in the current year. Institute donated inputs, viz. cast nets, drag nets, net for fencing and water pump to facilitate the activities in tribal village. A high return with cost benefit ratio of 1:3 made villagers happy to adopt fisheries as an alternative livelihood. 10 groups each one having 4 families with a total of 165 individuals is engaged in the livelihood programme of sustainable fisheries and has become an attraction of the surrounding villagers.

They were sensitized to rear indigenous fish along with Indian major carp (*C. mrigala*, *C. catla* and *L.*





*rohita*, *L. bata* and *Puntius sarana*) in freshwater ponds and canals. CIFRI, Kolkata Research Centre trained them to rear the local brackishwater fish, viz. *Rhinomugil corsula*, *Liza parsia*, *Mugil cephalus* and *Mystus gulio* in the available natural water of the area. The sampling was done to record the growth and health of fish. Results are highly satisfactory. A catla attained a weight of 700 to 800 g in six months. Number and size of *Amblypharygodon mola* is considerably high and being utilized in diet of local group. It is not only fulfilling the demand of protein but also provide vitamins and minerals including vitamin A, iron, calcium etc. This fish is self-recruiting and nutrient dense therefore being popularized as species for nutritional security and livelihood.

Awareness was created among them especially women regarding Self-Help Group (SHG), Women empowerment, Right protection Act, schemes available for loan and subsidies etc. Kolkata Research Centre, CIFRI conducted a 'Training-cum-Mass Awareness programme for Utilization of derelict open water to rear and produce indigenous fish for socio-economic development of Tribal community'. Stocking of different type of fishes in right ratio and density was discussed and they were warned to remove highly carnivores fish like *Paku (Piaractus brachypomus)* from the culture system. Villagers and members of *Gram Panchayat* are now interested to produce fish from other available water bodies lying fallow. Even senior citizens of the village are showing interest in fish culture for more income and livelihood. Almost every house is eating fish and started earning by selling fish. Sri Kanai Hembarg, President of *Adivashi Yuvak Sangh*, accepted that he sold fish cost ₹ 40,000 in this year. They were restricted from complete harvest of the crop, only partial harvest is allowed. Rearing of small indigenous self-recruiting fish along with conventional carp culture has added additional income and nutritional security to the poor tribal families. The impact of research showed that attitude of the villagers has changed and now they emphasize us to stock fish in time. They are aware about behaviour of fish, time of stocking, time of harvesting and means to earn maximum profit from available resources.

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## Pheromone trap technology for mass trapping of paddy-yellow stem-borer

Tapi, Gujarat. Pheromone trap technology, a behavioral method in which the insects positive anemotactic orientation, is exploited in making it approach the trap laid. Safer and effective

alternatives to chemical control are needed as a part of inter-disciplinary approach to insect pest management, resulting in emergence of new concept i.e. Integrated Pesticidal Management (IPM) and pheromone trap is one of the effective components of IPM.

### KVK intervention

In the paddy crop, grown in *kharif* as well as in summer in Tapi districts of south Gujarat, 20 insect pests were recorded as major ones, five pests were of national significance. Among these, rice stem borers have been mainly responsible for keeping the crop under stress over the years and across rice ecosystems in Gujarat and also throughout the country. During PRA survey of adopted villages it was found that to manage *S. incertulas*, farmers usually opt chemical pesticide as a first line of defense. This is often beyond the capacity of the poor farmers. The biological control through natural enemies is an ideal method but it is yet not popular among the farmers and not easily applicable. Moreover, this pest is an internal feeder and so it is not much affected by insecticides. Under given circumstances, Krishi Vigyan Kendra, Vyara did an effort to disseminate pheromone trap technology through various extension activities in different villages of Tapi district.

**Output:** By adopting pheromone trap technology, grain yield of paddy was obtained higher in demonstrated field (40.4 q/ha) than local check (36.88 q/ha). The 8.58% increase in yield was obtained than local check.

**Outcome:** It was concluded that use of pheromone trap is an IPM component which attract maximum number of male moth of *Scirpophaga incertulas* and thereby less damage was observed in field. So, pheromone trap technology can be used as an alternative method to health hazardous chemical pesticides.

**Impact:** By the principle 'Seeing is believing', other neighboring farmers visited the demonstration field. They also saw the effectiveness of this technology and made enquiry about the pheromone traps and also its source of availability. The farmers from neighboring villages were also attracted and associated with the KVK for adopting pheromone trap technology.

Further information may be obtained from S.M. Chavan, C.D.Pandya (Krishi Vigyan Kendra, Navsari Agricultural University, Vyara (Gujarat) 394650) and G.R.Patel (Director of Extension Education, Navsari Agricultural University, Navsari, Gujarat).

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Plant trees,  
Conserve water,  
Protect environment.



## Skill-development programme for farmers of north sikkim

Tadong, 25 October 2016. National Organic Farming Research Institute (NOFRI), Tadong, organized 'Skill Development-cum-Input Distribution Programme on Livelihood Security through Organic Vegetable Cultivation under Tribal Sub Plan (TSP) and National Mission for Sustaining Himalayan Ecosystem (NMSHE) for the progressive high altitude tribal farmers of Lachung (2800 m amsl), North Sikkim to increase awareness and strengthen the progressive tribal farmers on organic vegetable production by dissemination of scientific knowledge along with input support system. The technical know-how and various inputs viz., organically permitted bio-pesticides, bio-fungicides, bio-fertilizers, untreated seeds, and plastic sheets for low-cost plastic tunnels were distributed. Interactive discussions were held with the farmers on scientific vegetable production technologies developed by NOFRI for quick and easy transfer of the technologies; farmers showed keen interest and appreciated the efforts of ICAR.

Dr R.K. Avasthe (Joint Director, NOFRI) highlighted the activities of the institute related to organic crop production and stressed upon the need of more skill development programmes for further sustaining the livelihood security of tribal farmers under changing climatic conditions. Joint Director also discussed the importance of soil and its management for sustainable production under organic conditions through conservation agriculture.

Dr Ashish Yadav [Senior Scientist (Horticulture)] detailed the organic production techniques of major vegetable crops growing in North Sikkim viz., cole crops, pea, potato, leafy and root vegetables. Dr Yadav also discussed about the intensive vegetable production techniques under low cost plastic tunnels and greenhouse.

Dr H. Kalita [(Principal Scientist (Entomology))] shared the information on good agricultural practices and pest management under organic conditions. Dr Kalita emphasized the need for proper crop rotation and regular monitoring to avoid pest in different crops.

Dr R. Gopi [(Scientist-Senior Scale (Plant Pathology))] shared the information on disease management in major vegetable crops under organic production system.

Shri Shaon Kumar Das [Scientist (Soil Science)] briefed about the organic nutrient management techniques and importance of soil testing, and stressed on the need for proper management of soil acidity for balanced organic nutrients of crops.

Dr Brijesh Kumar [Scientist (Animal Reproduction)] interacted with the farmers and suggested methods for maintaining the hygienic housing for dairy cattle along with the proper management of diseases prevalent in the region. Dr Kumar also discussed backyard poultry and piggery management techniques.

Mr Boniface Lepcha (Subject Matter Specialist, KVK Ranipool) coordinated the event and shared the information on vegetable nursery raising techniques for the improvement of livelihood of the farmers.

Shri Namgay Wangdi Bhutia (Pipon, Lachung, Dzumsa Unit-22, North Sikkim) focused the efforts in empowering the rural tribal farmers of remote areas of North Sikkim through skill development and critical input support.

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## Organic Animal Husbandry...

Izatnagar, 7 December 2016. Dr Arvind Kumar (Vice-Chancellor, Rani Laxmi Bai Central Agricultural University) inaugurated a short course on 'Organic Animal Husbandry: Concept, Standards and Practices' on 28 November 2016 at Indian Veterinary Research Institute. Dr Kumar opined that organic animal husbandry is an emerging area where there is clear knowledge and skill gap which needs to be narrowed. Dr Kumar expressed satisfaction that the participants were being given the relevant literature concerning various facets of organic animal husbandry including the book, *Organic Livestock Farming*.



Dr R.K. Singh (Director, IVRI) exhorted the participants to develop package of practices on organic livestock production for different species of livestock and poultry. Dr Singh added that to broaden the knowledge base in this new field they should take up projects and programmes for which funds may be available from different funding agencies of government and private sector.

Dr Mahesh Chander (Course Director) informed that the Institute has organized several capacity development programmes on 'Organic animal husbandry' both on campus and off-campus for various categories of stakeholders over the years. He

mentioned that the institute extended technical support in developing Roadmap for Organic Animal Husbandry Development in Sikkim which is declared as India's first organic state.

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## Extension methodologies for coastal fisheries

Cochin, 26 November 2016. Dr C.N. Ravishankar (Director, CIFT) inaugurated 12-day programme on 'Extension Methodologies for Coastal Fisheries' (sponsored by ITEC, Ministry of External Affairs, Government of India under Technical Cooperation Scheme of Colombo Plan, on 15 December 2016 at Central Institute of Fisheries Technology. Dr Ravishankar called upon the participants to share their experiences and ideas through ELC mode to make the learning process more realistic. Mr Lutfur Rahman and Mr Sharif Ahmed, from Bangladesh attended the programme.

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## Smoke curing of fish by hygienic and scientific methods using COFISKI model

Umladtkur, 19 November 2016. The Central Institute of Fisheries Technology, Kochi, in collaboration with Department of Fisheries, Government of Meghalaya, Shillong and Office of Deputy Commissioner, West Jaintia Hills District, Government of Meghalaya organized a one day Demonstration programme on 'Smoke Curing of Fish by Hygienic and Scientific Methods Using COFISKI' in West Jaintia Hills District Meghalaya.

Dr M.M. Prasad (Head, MFR) demonstrated smoke curing of fish from beginning to the end that include hygiene aspects in handling the post-harvest fish. The present Community Fish Smoking Kiln (COFISKI) model is completely mobile that could be relocated to any place and the trays that are employed for smoke curing of fish are made up of food-grade steel. Use of this steel is crucial for the safety of fish. The importance of application of spraying neem, citronella and lemon grass oils with water in controlling the blow fly infestation were apprised to the participants. The advantage is these are botanical products and will neither have any side effects nor harbor any kind of contaminants. Another important aspect the fishers said that the neem oil with water need to be sprayed only in surroundings and not coming in contact with fish. Marketing avenues for the products at Jowai, Shillong and Guwahati were told to the fishers for sustainable income generation.

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## 'Farmer FIRST' at

### • IISWR

Dehra Dun, 17 November 2016. Dr P.K. Mishra (Director, IISWC) launched the 'Farmer FIRST' programme in 23 villages of Raipur block in Dehra Dun district. The Farmer FIRST programme was based on enriching knowledge and integrating technologies, enhancing farmers-scientists interface, onsite input management, institutional building and content mobilisation for further technology application and knowledge sharing.

In this programme, three clusters of villages namely Koti *gaon* group of hamlets (Siriyan, Ghandol, Chaukion, Jhabrani, Koti maychak, Chakchauba, Koti, Tegur and Kaknawa); Sindhwal *gaon* group of hamlets (Badwali, Mudia, Dhaksari, Sindhwal *gaon*, Lethdi, Godishera, Kuther, Thal, Ranikhet, Bhagwanpur, Simiyand and Talai); and Badasi Grant group of hamlets (Badasi, Dandi and Dhanyadi hamlets) were covered. Dr P.K. Mishra distributed 'HS 507' and 'VL 892' wheat and PL 8 cv. of lentil among farmers. The farmers were oriented about scientific cultivation of crops and also motivated to get involved in participatory research along with multi-disciplinary team of scientists. In all 617 farm-families benefitted through different technological modules and interventions.

Dr Lakhan Singh (Head, HRD&SS) focused on agro-ecosystem analysis, different technological modules like crop-based interventions; Natural Resource Management based modules for water-harvesting, check dams and field bunds to control bank cutting and damage to adjacent agriculture land, solid waste management; Enterprise-based module for rural youths like insect proof net house for healthy vegetable/flower nursery raising, integrated farming system; Livestock management; and some other income generating activities were conducted in the villages.

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### • ATARI

Kanpur, 12 November 2016. The ATARI organized the orientation of Farmer FIRST from six ICAR institutes like IIRR, IGFR, IIFSR, SAU and GBPUAT. Dr V.P. Chahal (ADG Agriculture Extension), shared with the house the genesis of Farmer FIRST project and how it is different from the conventional Transfer of Technology systems and even the erstwhile TAR-IVLP. Dr Chahal stated that the budget provisioned under Farmer FIRST has been squeezed from the regular budget for KVK project of ICAR and thus the significance of such projects and its funding must be given due importance by all the concerned Principal Investigators. For effective execution of this project, the team spirit among the project team members must be ensured.

Dr U. S. Gautam (Chairman, ZPMC) highlighted the major features and specialties of the project and also explained the related terminologies for comprehension among the participating scientists.

Dr C.M. Singh (Expert) expressed that ZPMC had screened the project proposals in the light of Farmer FIRST philosophy and the suggestions made by the committee matched with the observations of PMC, ICAR. Dr Singh expressed that such projects are the way forward of TAR-IVLP with greater emphasis on raising farmers' income, institution building, strengthening value chains, stakeholders' linkages, cost reduction etc. And to make the project successful, the team members need to work in mutual confidence, in missionary mode, deciding the interventions in stakeholder participatory mode and data recording must be ensured at every level right from benchmarking, execution stage, monitoring stage to effect analysis stage.

Dr O. P. Singh (Expert) also reiterated on focused team approach and sound commitments by all members in order to make the concrete and replicable impact.

Shri Sethpal Singh and Shri Chandra Shekhar Singh (Progressive farmers and farmer representative of ZPMC) highlighted some of the burning issues that farmers are facing these days, which must be addressed and how these projects could match in the

line of Nations' commitment to double the farmers' income so that farmers' morale may be elevated and agriculture may again get the respectable status in rural milieu.

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#### • CIFA

New Delhi, 28 November 2016. The Central Institute of Freshwater Aquaculture selected five villages in Khordha district (3 villages in Jatani and one each is Baliana and Balipatna Block) and involved around 400 farm-families. Modules on improved technologies on crop, horticulture, livestock and fishery will be promoted. Skill training and technical backup will be provided to the beneficiaries. Small- and marginal-farmers, farm-women would be given special attention. During this *rabi* green gram cultivation in rice fallow, introducing improved variety of pointed-gourd, capsicum; improved strain *kaveri bird* will be popularized. Besides scientific carp culture and integrated fish farming will also be considered. For gender mainstreaming self-help group based intervention on backyard poultry and mushroom will be carried out. During the second session of launching workshop detailed discussion was held with the farmers and interventions to be carried out during *rabi* 2016-17 were selected.

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## Celebrations

### World Soil Day

ICAR celebrated World Soil Day at its institutions. Details of some of the programmes organized are given here.

#### • CAZRI

Ranwata, 5 December 2016. Shri Chiman Singh Ji Dedu (*Pradhan of Panchayat Samiti* Bhopalgarh, Jodhpur) inaugurated World Soil Day, organized by CAZRI Krishi Vigyan Kendra, at village Palari.

Dr O.P. Yadav (Director, CAZRI) highlighted the importance of Soil Day and Soil-Health Card. Dr Yadav also called upon farmers to recycle the nutrients into the soil to maintain soil-health. Dr Yadav further underlined that farmers are shifting from traditional cultivation to scientific cultivation and suggested that all farming community must be aware of Natural Resource Conservation and should not grow more water consuming crops in arid region due to scarcity of water.

The scientists in their briefs suggested to use green fodder and mineral mixture in diets of livestock

to recover the nutrient deficiency and for increasing milk production and to maintain good health; focused on need of soil and water testing and gave detailed information on soil sample collection, methodology and composting on farmers' field; emphasized on reclamation of the problematic soils by using minimum input and low-cost technology; and also informed on *Azolla* production and its advantages, nutritive value and impact on the health, breeding and nutrition of the animal.

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#### KVK, Zone IV

Haridwar, 5 December 2016. Union Minister of Agriculture and Farmers Welfare, Shri Radha Mohan Singh, inaugurated World Soil Day programme at KVK, Haridwar. The Krishi Vigyan Kendras of Uttar Pradesh and Uttara Khand celebrated World Soil Day and pre-*rabi* campaign. All the 81 KVKs organized this event at their center or at farmer field. On this occasion every KVK organized the *Kisan Gosthi*. The major focus of these *Gosthies* were making the farmers alert on unprecedented rate of application of chemical fertilizers in soil. This along with frequently changing climatic conditions has made the agriculture

more prone to damages and less production. All 81 KVKs also organized pre-rabi Kisan Sammelan to enhance awareness among farmers, farm-women and youth for location specific technologies. Different officials highlighted the importance of soil-health in sustaining agriculture productivity and profitability of farms.

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### KVK in Zone V

Hyderabad, 5 December 2016. World Soil Day was celebrated by 78 Krishi Vigyan Kendras (KVKs) in Zone V (Andhra Pradesh, Telangana and Maharashtra) by involving public functionaries and farmers. Each KVK provided a minimum of 250 Soil-health Cards along with crop specific nutrient recommendations. KVKs utilized this opportunity to create awareness and provide critical inputs by conducting pre-rabi Kisan Sammelan involving 500 to 750 farmers, farm-women, youth and officials of line departments of agriculture, horticulture and animal husbandry. Awareness on location specific latest technologies were shown through display of technologies in exhibitions and live demonstrations. Literature in local languages was released on the occasion. Farmer-scientist interaction was facilitated to provide on the spot advisories to queries of farmers.

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### Swachhta Pakhwada

ICAR celebrated Swachhta Pakhwada at its institutions. Some of them are discussed here.



- On 20 October 2016, the National Bureau of Agriculturally Important Microorganisms (NBAIM) staff did cleaning outside the main gate of the bureau. The activities involved removing the garbage and unwanted grasses growing on the road in front of the main gate. Under the Swachhta Abiyan programme of the Government of India, Swachhta Pakhwada started at NBAIM, Mau with Swachhta Shapath which was taken by all staff on 17 October 2016. On the same day, in the evening the staff was involved in cleaning the surroundings of the office building. On 25 October 2016, the NBAIM scientists went to village Ghiri

Ka Matihan and apprised the villagers about the Swachh Bharat campaign of the Government of India which aims to make the country open defecation free by 2019. The matter of construction of toilets in the village was discussed with Panchayat Pradhan who was present in the meeting. At the same time, the villagers were urged to discontinue the use of polythene bags which play havoc with the environment.

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- On 26 October 2016, under the campaign of Swachhta Pakhwada, a rally was conducted at the entire Bhalesar village of Mahasamund district by Indira Gandhi Krishi Vishwavidyalaya, Krishi Vigyan Kendra, Mahasamund (Chhattisgarh) with collaboration of Government School, Village Bhalesar, to create awareness about cleanliness / clean environment among the villagers. The Sarpanch of village Bhalesar, Shri Ram Khilawan Sahu was also present during the event to motivate the students and villagers to keep home and working environment clean.

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### Kisan Mela, 2016

Kasaragod, 12 December 2016. Union Minister of Agriculture and Farmers Welfare, Shri Radha Mohan Singh inaugurated 3-day Kisan Mela, 2016 jointly organized by the Indian Society for Plantation Crops, and Central Plant Crops Research Institute at Kasaragod on 10 December 2016. Nearly 50 private entrepreneurs receiving technology from ICAR Institutes also participated and sold their products in exhibition. The CIFT exhibited and displayed different techniques related to fish-harvesting and post-harvesting aspects. Value added fishery products like fish pickle, fish pappads, ready-to-eat and ready-to-cook fish products etc., in the stall attracted public attention.

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### Agri-based small-scale entrepreneurship development

Utamber, 9 December 2016. A 3-day off-campus training on 'Agri-based small-scale entrepreneurship development for livelihood security of farmers in arid region' was organized under ICARDA project between 7 and 9 December 2016 at village Utamber in Balesar tehsil by the Central Arid Zone Research Institute to create awareness among the farmers about various agri-based interventions suitable for entrepreneurial adoption for income generation activities.

Dr O.P. Yadav (Director, CAZRI) advised farmers to adopt new agricultural technologies for improving



the productivity and family income. The programme comprised both the lecture and practical sessions including hand-on training to the farmers and farm-women under capacity building. Information was also provided about various governmental schemes supporting the home-scale and small-scale entrepreneur development (*grih* and *laghu udyog*) by farming community. The training programme covered nursery development for integrated vegetable production, crops suitable for horticultural plantation and orchard development in arid region, dairy development and management, mushroom production, vermi-compost and *Azolla* production technology, post-harvest technology, food preservation for entrepreneurship development, protected cultivation, fodder production, solar devices for farming community etc.

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## A new KVK in North 24 Parganas-II

North 24 Parganas-II, 16 December 2016. Dr P.G. Karmakar (Director, CRIJAF) inaugurated KVK in North 24 Parganas-II that will work under administrative control of Central Research Institute for Jute and Allied (CRIJAF). Dr Karmakar emphasized on conserving the natural resources in an integrated diversified system with the aim of sustaining farm income at an increased level. Scientists explained benefits of having additional KVK in the district for the farming community. This is the 651<sup>st</sup> KVK of the country sanctioned on 20 October 2016 by the Indian Council of Agricultural Research (ICAR).



Sri Arun Roy (Additional Director, Agriculture) requested all the participants to take advantage of the KVK programmes for enhancing their income and profitability of farmers. Shri Roy also appreciated role of KVKs in making this programme a success. This KVK has been assigned to serve the agriculture blocks of Hingalganj, Sandeshkhali, Minakhan, Hasnabad, Barasat, Haroa, Barrackpore and Rajarhat of North 24 Parganas district. The second KVK in the district of North 24 Parganas is responsible for improving the skills and income of farming community through introduction of suitable models of peri-urban and rural agriculture, horticulture, fishery and animal husbandry.

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## Fifth Foundation Day of NIBSM

Raipur, 7 October, 2016. Dr V. Ravindra Babu (Director, IIRR) inaugurated the Fifth Foundation Day of National Institute of Biotic Stress Management (NIBSM) and laid the foundation stone of Integrated Farming System Model at NIBSM campus. Dr Jagdish Kumar (Director, NIBSM) emphasized on the importance of this institute for management of pest and diseases related to agriculture. Dr Pankaj Kaushal (Joint Director, Research) focused on the 'Year at a Glance 2015-16' and briefed about the various achievements and activities towards the budding paths of the institute.

Dr D.B. Ahuja (Director, National Research Centre for Integrated Pest Management) emphasized on the judicious use of fertilizers and pesticides for control of pests and diseases.

Dr V. Ravindra Babu (Director, Indian Institute of Rice Research, Hyderabad) suggested the scientist of NIBSM to have holistic and multidisciplinary approach to achieve sustainable and profitable agriculture. Dr Babu highlighted the importance of pest surveillance, host plant resistance, marker aided selection, genomic research for management biotic stress research at Foundation Day Lecture.

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## 22<sup>nd</sup> Foundation Day of NIANP

Bengaluru, 24 November 2016. Shri Arvind Kaushal, Distinguished Fellow, The Energy and Resources Institute, New Delhi called on the scientists to address the issue of feed and fodder scarcity and the impending effect of climate change on livestock production on the 22<sup>nd</sup> Foundation Day of National Institute of Animal Nutrition and Physiology. Shri Kaushal suggested making concerned effort to get funding from National and International Agencies through collaborative research projects.

Dr Raghavendra Bhatta (Director, NIANP)

highlighted the significant achievements including the new initiatives and vision of the Institute for the future.

Dr N.V. Patil (Director, NRC on Camel) reiterated the need for collaborative research in animal science especially in basic and fundamental aspects of livestock production, and urged that the research findings of NIANP need to be made use of in species specific institutes to develop strategies for improving their productivity. Two technical books, *Buffalo Reproduction* and *Animal Nutrition Technologies* were released.

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## 23<sup>rd</sup> Foundation Day of Directorate of Rapeseed-Mustard Research

Bharatpur. Dr Gurbachan Singh (Chairman, ASRB) inaugurated 23<sup>rd</sup> Foundation Day of Directorate of Rapeseed-Mustard Research (DRMR), and emphasized that in recent years agriculture witnessed tremendous changes in climate due to which the farmers have confronted a lot of setbacks in terms of production. Farmers were either forced to revamp the farming operations or shift entirely to another crop to minimize loss. This has been reflected in the case of mustard cultivation as well. Farmers are shifting to other crops such as wheat. Another major issue is the depletion of natural resources such as water. Farmers should adhere to the agronomic practices to ensure 'more crop, per drop'. Dr Singh also stated that the newly inducted programme *Mera Gaon, Mera Gaurav* has proven to be a success so far. He urged all scientists' involvement in this programme to capitalize on its effectiveness to enable the farmers to generate regular income.

Dr J. S. Sandhu (DDG, Crop Science), appreciated the efforts made by the DRMR for development of economically important crop of rapeseed-mustard.

Dr Dhiraj Singh (Director, DRMR) focused on the efforts of all the staff involved in bringing the Directorate to the current shape and hoped that the progress of DRMR would increase by leaps and bounds.

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## 58<sup>th</sup> Foundation Day of CAZRI

Jodhpur, 1 October 2016. Dr Gurbachan Singh (Chairman, ASRB) inaugurated 58<sup>th</sup> Foundation day at Central Arid Zone Research Institute (CAZRI). Dr Singh focused on 'Climate resilient agriculture: A way forward' and emphasized the need for development of contingency plans to cope with weather-related aberrations and development of integrated farming system models for integrating crops, farming, livestock, fisheries, horticulture, vermi-composting

etc. to reduce the risk and assure sustainable livelihood and higher income in arid regions. Dr Singh highlighted on arid farming in western Rajasthan for developing climate resilient agricultural and livestock management practices at local level and lauded research and extension efforts of the institute for addressing issues related to environment, agriculture, forestry, horticulture, solar energy etc.

Dr K.P.R. Vittal (Director, NIASM) focused on farm community in one of most difficult ecosystems of across world.

Dr O.P. Yadav (Director, CAZRI) placed on record recent notable contributions of institute in commercialization of nano-fertilizers, improvement in cluster bean and pearl millet, seed production of pulses, development of wind tunnel facility for simulation studies of wind erosion process over sanddune surfaces and devise its control strategies. The efforts of CAZRI KVK, Pali in facilitating *Kharchi Gram Panchayat* for conservation of 'Kharchiya' wheat variety, which was recently awarded Plant Genome Saviour Community Award of 10 lakh by PPV&FRA, New Delhi, were also appreciated.

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## Farmers' field day on

### • adoption of biocontrol technologies

Fatehpur, 19 October 2016. Punjab Agricultural University, Ludhiana, in collaboration with AICRP on Biological Control and National Bureau of Agricultural Insect Resources, Bengaluru and Nahar Sugar Mills, Amloh, organized a Farmers' Field Day on 'Adoption of Biocontrol Technologies' at village Fatehpur, district Patiala. The role of egg parasitoid, *Trichogramma* in management of lepidopteran pests in sugarcane and organic basmati rice was highlighted. The collaboration between AICRP on Biological Control, PAU and Sugar Mills in Punjab resulted in coverage of more than 35,000 ha area under biocontrol module and adoption of the same by farmers.

Dr B.S. Dhillon (Vice Chancellor, PAU) stressed on the need for adoption of biocontrol technologies in conjunction with other management techniques such as timely sowing of crop, selection of varieties, judicious use of fertilizers, need-based application of green chemistry insecticides and following proper spray technologies.

Dr P.K. Chakrabarty (ADG, PP) suggested the need-based use of insecticides for the production of ecologically safe food. Dr Chakrabarty advised the farmers to get information on latest farming practices from 'Farmers Portal' of the Government of India.

Dr Chandish Ballal (Director, NBAIR) invited the farmers for training on low-cost mass production

technologies of novel and potential bioagents and biopesticides at NBAIR, Bengaluru.

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#### • **zero-till cultivation of Black gram**

East Sikkim, 15 November 2016. Krishi Vigyan Kendra East Sikkim, NOFRI organized Field Day on Zero-till cultivation of black gram (*Pahenlo Dal*) in line of maize - black gram - buckwheat a climate resilient cropping system under *Mera Goan, Mera Gaurav* programme. Generally, pulses are grown after maize, hence, the wide gap is observed in productivity at research farm and farmers' field.

Dr R.K. Avasthe (Joint Director, National Organic Farming Research Institute, Tadong, Gangtok) briefed on organic cultivation of *kharif* pulses under no-till technology immediately after maize harvest, which can not only improves the soil health but also reduces the lay over time between the crops. Dr Avasthi encouraged the farmers to undertake production of quality seeds to retain them for becoming self-dependent since treated seeds had been banned in the state. Dr Avasthe encouraged the farmers towards establishing the sources of organic inputs within the farm to reduce dependence on outside inputs.

Dr Raghavendra Singh, Programme Coordinator (I/c) highlighted the objectives of programme and briefed about the scientific adoption of no-till cultivation of black gram in maize-black gram-buckwheat cropping system. Scientists discussed the importance of pulses in cereal-based cropping system regarding the of soil fertility enhancement; and stressed to utilize their farm land which they kept fallow after maize, so that cropping intensity would increase up to at least 200% improving the livelihood security of the farming community.

The deliberations were on cultivation practices of year round vegetable production in Sikkim; the different diseases of pulses as well as the other commercial crops and their management; quality seed production of pulses at cluster level; and on the farmers for preventive measures of insects pest management especially under organic farming.

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#### • **production of rajmah under Tribal Sub-Plan**

Umiam, 16 November 2016. The KVK Ri-Bhoi, ICAR Research Centre for NEH Region organized a field day on Production of Rajmah var. 'Tripura Sel-1' under Tribal-Sub Plan (TSP) at Umden Mission village.

Mr Khlurpharnai Marwein has taken the lead for organizing the field day at his field with the representative of demonstrated cluster of farmers from Umden mission and Umryjah village. A total of 5 ha area was covered under the demonstration. The farmers opined that though they could receive a good

harvest, yet they found it difficult to sale in the market. They showed their preference for hybrid french bean rather than rajmah.

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## Agricultural Education Day at

#### • **CIFT**

Cochin, 3 December 2016. The Central Institute of Fisheries Technology celebrated the 'Agricultural Education Day' to commemorate the birth anniversary of Bharat Ratna Dr Rajendra Prasad, the first Union Minister of Agriculture of India and first President of Independent India. A seminar was arranged on 'Importance of Agricultural Education in India' for school students along with farmers'- scientists interaction-cum-training programme for the Fisher-women.

The deliberations were on Role of CIFT for Fishery sector development, Improved Technologies in fisheries, and Technological advancement in agriculture. The CIFT organized a one-day farmers-scientists interaction -cum- hands-on training programme on 'Women Self-Employment through Improved Techniques of Fish Processing and Value Addition', for the women self-help group (Kudumbasree) of Thoppumpady area of Willingdon Island in Cochin. The school students and their teachers showed keen interest towards agriculture education starting from graduation to Ph. D. level, type of entrance examinations to get through and the career prospects in different sectors like research, teaching, extension, agri-entrepreneurship etc. so that they can plan for pursuing their higher studies in agriculture education.

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#### • **CAZRI**

Jodhpur, 28 November 2016. Agriculture Education Day was celebrated at CAZRI on the occasion of birth anniversary of Bharat Ratna Dr Rajendra Prasad. The theme of the event was 'Promoting Girls in Agriculture Education'. About 70 girl students along with their teachers participated in the day long event. The programme included visit of ATIC, Solar yard, Desert Botanical Garden, Horticulture block, Integrated Farming System and Organic farm.



Dr S. Srinivas Rao (General Manager, Regional Remote Sensing Centre of ISRO) sensitized the students about their activities and areas where ISRO technologies were used in agriculture. Dr O.P. Yadav (Director, CAZRI) motivated the students for considering agriculture as one of the career option, and highlighted that agriculture services gives an opportunity to serve the down trodden and also gives an opportunity to get connected with nature lifelong. Dr Yadav assured a good career for girls in this field. The deliberations were on 'Career in Agriculture', 'Use of Solar Energy in Agriculture' etc. Students showed a keen interest in scientific aspects of harnessing solar energy.

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### ● ICAR-RC for NEH Region

Umiam, 3 December 2016. To commemorate the significance of agricultural education in the country, ICAR Research Centre for NEH Region, celebrated the *Krishi Siksha Diwas* (Agriculture Education Day). Dr Satish Chandra (Director, ICAR RC for NEH Region) highlighted the growing importance of quality education in different agriculture and allied subjects. Various events like slogan writing, poster making and debate competition, with topics relevant to the present scenario of agricultural education, were held during the day-long celebration. Students of B.Voc in Agriculture from Tata Institute of Social Sciences-School of Vocational Education, Guwahati and other research scholars from ICAR RC for NEH Region participated in the aforementioned events. More than 80 participants altogether in the competitions have brought out innovative ideas from young minds on enhancing the effectiveness of agricultural education.

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## Freshwater aquaculture as livelihood option for tribal farmers

Pune 19 October 2016. Shri Vijay Shikhare (Assistant Commissioner of Fisheries, Pune Region) inaugurated an awareness programme on 'Freshwater Aquaculture as Livelihood Option for Tribal Farmers of Junnar and Ambegaon Tahsils of Pune District', organized by CIFA, Bhubaneswar in collaboration with Department of Fisheries, Government of Maharashtra, Pune, and Krishi Vigyan Kendra, Narayangaon at KVK, Narayangaon. Shri Shikhare emphasized the need for improvement of livelihood of tribal farmers through aquaculture practices and implementation of fisheries schemes. A Focus Group Discussion was arranged at Amboli village to identify problems related to aquaculture and the group visited many small ponds and dam site to explore the possibilities of scientific fish culture at Junnar region. Around 192 tribal farmers from Junnar and Ambegaon Tahsils participated in the programme.

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## Technology week-cum-Jai Kisan, Jai Vigyan week celebration

Umiam, 29 December 2016. Krishi Vigyan Kendra, Ri-Bhoi organized a 7-day Technology week- cum- *Jai Kisan, Jai Vigyan* week on birth anniversary of former Prime Minister, late Chaudhury Charan Singh, on 23 December 2016 at KVK, Ri-Bhoi.



An exhibition of farmers' produce to commemorate the birth anniversary of former Prime Ministers Shri Atal Behari Vajpayee (25 December) and late Chaudhury Charan Singh (23 December) was organized. A training programme on Community nursery for production of quality planting materials was conducted to mark the end of the week long celebration at Umeit.

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## Showcasing of Technologies developed by IISR

Lucknow, 18 December 2016. The Indian Institute of Sugarcane Research (IISR) showcased technologies developed by the Institute including new developed varieties, crop production technology, bio-control of insect pests and diseases, agricultural machineries developed for mechanization of sugarcane farming and jaggery manufacturing.

Hon'ble Governor of Uttar Pradesh, Shri Ram Naik inaugurated one-day Seminar on 'Improving productivity and quality of hybrid rice and sugarcane in Uttar Pradesh', jointly organized by *Krishi Evam Gramin Vikas Sewa Samiti*, Lucknow, and Indian Institute on Sugarcane Research. Shri Naik urged the scientists to discuss how the technology developed by the scientists can be beneficial for the farmers and how the technology developed in the laboratory can be disseminated to the farmers at the field. Shri Naik urged the scientists to discuss how the consumption of improved jaggery can be increased among the masses. Shri Naik also emphasized that scientists should also work on diversified uses of sugarcane to make sugarcane cultivation more profitable.

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## DG, ICAR visits

- Bhopal, 6 October 2016. Dr Trilochan Mohapatra (Secretary, DARE and Director General, ICAR) highlighted the need to find out ways to make intervention in the replication of viral pathogens at the molecular level at Biosafely Level -3 laboratory in National Institute of High Security Animal Diseases (NIHSAD). Dr V. P. Singh (Director, NIHSAD) urged for the institute's need of a BSL-4 laboratory in view of the rising threat from zoonotic infections.
- Varanasi, 9 October 2016. Dr Trilochan Mohapatra (Secretary, DARE and Director General, ICAR) attended valedictory function of 12-day training on 'Principles and production techniques of hybrid seed in vegetables' organized at IIVR. Dr Mohapatra advised organizing of such skill development training programme for self-employment of the unemployed youth.
- Pune, 21 October 2016. Dr Trilochan Mohapatra (Secretary, DARE and Director General, ICAR) launched *Flori News* the official newsletter of Directorate of Floricultural Research and also unveiled the Wall Magazine - *Petals* in English and *Pankhudi* in Hindi during his visit. He took part in the *Sawaach Bharat Abhiyan Pakhwada* and presented *Swaach* kits.
- Coimbatore, 11 November 2016. The Central Institute of Agricultural Engineering, Regional

Centre (CIAE-RC) showed sugarcane bud chip technology, rope making from banana pseudostem, minimal processing of banana central core, banana pseudostem shredder, moringa leaf stripper, multiplier onion peeler, aloe vera gel extractor, curry leaf stripper, millet mill, cassava stake cutter planter, developed by CIAE-RC, to Dr Trilochan Mohapatra (Secretary DARE and Director General ICAR) during his visit.



- Mangalore, 11 December 2016. Dr Trilochan Mohapatra (Secretary, DARE and Director General ICAR) visited Research Centre of Central Marine Fisheries Research Institute and focused on vital role played by the Research Centre in the field of marine capture and culture fisheries was explained in brief.

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## Glimpses of ICAR in 2016



The Union Agriculture and Farmers Welfare Minister, Shri Radha Mohan Singh, lauded efforts of scientists and farmers for making Indian agriculture ready to face and win over challenges and also climatic adversities at the 88<sup>th</sup> ICAR Foundation Day.



The Union MoA and FW emphasized on *Pradhanmantri Fasal Bima Yojana*, *Pradhanmantri Sichai Yojana* etc. .



The DG, ICAR focused on establishment of BRICS Agricultural Research Centre with co-operation of member countries, and highlighted on bilateral cooperation in agricultural research and education among BRICS countries.



The Ethiopian delegation expressed their interest to collaborate with NRC on Meat and sought its help in identifying gaps in their meat sector and inputs for establishing meat species identification, value addition and clean meat production facilities at their place.



The Union Minister of State for Ministry of Environment, Forest and Climate Change; Shri Prakash Javadekar appreciated the theme of Biodiversity during the exhibition organized by the CIFE (Mumbai), CMFRI (Kochi), and CIFT (Cochin).

## Personnel

### Trainings

- Central Institute of Fisheries Technology (CIFT) organized 4-day training programmes on 'Disease diagnostics and Disease management in Aquaculture' to strengthen the skill of state government fishery extension workers on disease diagnostic tools and methods on aquaculture between 18 and 21 October, 2016 under National Fisheries Development Board (NFDB) funded project, 'National Surveillance Project on Aquatic Animal Diseases'.
- A total of 21 participants of technical cadre working in 14 ICAR institutes in the areas of agriculture/horticulture/vegetables covering 10 states participated in this training programme. The Course Director, Dr B. Singh (Director, IIVR ) stated that this programme was intended to train the participants in the area of hybrid development and techniques of hybrid seed production.
- ICAR sponsored short course on 'Reshaping Agriculture and Nutrition Linkages for Food and Nutrition Security' was inaugurated on 17 November 2016 at CRIDA, Hyderabad.
- The Union Ministry of External Affairs inaugurated a training programme on 'ISO-22000-HACCP for Seafood Industry' to enhance their administration and technical capabilities at Central Institute of Fisheries Technology, Cochin, for imparting comprehensive and integrated training to the participants of the member countries of Colombo plan to enhance their administration and technical capabilities; Central Institute of Fisheries Technology, Cochin.
- Central Institute of Fisheries Technology in collaboration with governments of Meghalaya, Shillong organized a one-day Demonstration Programme on 'Smoke Curing of Fish by Hygienic and Scientific Methods Using COFISKI' at Umladhkur, Amlarem Sub Division, West Jaintia Hills District, Meghalaya.
- Dr B. K. Das (Director, CIFRI) inaugurated a 4-day training programme for the farmers from Mayurbhanj District, Odisha on 23 December 2016 at CIFRI. Dr Das emphasized on the importance of the skill development of the farmers on various aspects of inland fisheries management to secure their life and livelihood.  

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- Bhopal, 17 December 2016. A six-day training programme for Technical personnel of ICAR was organized at Central Institute of Agricultural

Engineering between 12 and 17 December 2016 on 'Operation and Maintenance of Improved Implements and Machinery for Technical Officer of ICAR Institutes'.

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- Shillong, 21 December 2016. ATARI, Umiam has recently organized a two days training programme on 'mobile app. development' from 20 to 21 December, 2016 at the computer lab of department of IT in Meghalaya.

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### Appointments

Name, Designation and Address	Date of appointment
Dr P.L. Saroj, Director, CIAH, Bikaner	3 October 2016
Dr Parbodh Chander, Director, CSSRI, Karnal	10 October 2016
Dr Suresh Pal, Director, NIAEPR, New Delhi	28 October 2016

### Superannuation

Name, Designation and Address	Date of retirement
Dr Birham Prakash, Director, CIRC, Meerut	31 December 2016

Following officials holding RMP Positions were relieved from their position consequent upon completion of their tenure:

Name, Designation and Address	Date of relieving
Dr B. Pattnaik, Project Director, PDFMD, Mukteswar	5 December 2016 (completion of tenure)
Dr R. Bhagwati, Joint Director ICAR Research Complex, Basar, Arunachal Pradesh	6 December 2016 (completion of tenure)
Dr Dhiraj Singh, Director, DRMR, Bharatpur (University employee)	31 December 2016 (relieved)

### Editorial Board

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