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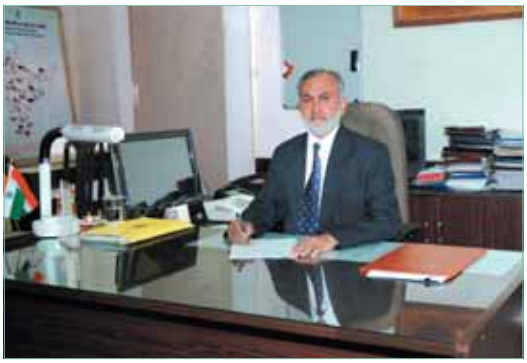
## News in Brief



## From the DG's Desk

Dear Readers,

India remain leading milk producing nation in the world. In 2013-14, Indian milk production was about 138 million tonne taking the average per capita milk availability to 307 g against recommended norms of 290 g/day/person. To this effect, the cow has a special place in the traditional rituals in the country. According to the *19th Livestock Census*, there are about 300 million bovines of which, 190.9 million are cattle that includes 151.17 million indigenous and 39.73 million crossbred/exotic cattle. Among the indigenous cattle, only 22.21 million heads (11.64%) have been described and categorized into 44 different populations including 39 distinct/registered breeds. Cattle being the source of livelihood for landless and resource poor farmers, distribution of cattle amongst various categories of animal keepers revealed that marginal, small and semi-medium farmers on an average have about 89% of total cattle. The indigenous cattle, in particular, have been instrumental in providing milk, milk products, draught power, bio-fertilizer and bio-fuel besides producing bio-molecules and other products beneficial for human health.



| India | Global share (%) | Rank in World |
|---|---|---|
| Cattle | 12.5 | First |
| Buffaloes | 56.7 | First |
| Small ruminants | 20.4 | Second |
| Poultry | 3.1 | Fifth |
| Camel | 2.4 | Tenth |

The indigenous cattle breeds are generally classified on the basis of their utility like milch breeds (Sahiwal, Red Sindhi, Gir and Rathi), draught breeds (Hallikar, Khillar, Nagauri, Kangayam, Red Kandhari etc.) and dual purpose breeds (Tharparkar, Hariana, Kankrej, Deoni, Ongole, Dangi, Kenkatha etc.). These unique breeds have been developed over a period of thousands of years through dedicated efforts of livestock keepers/pastoralists and

other stakeholders in different agro-climatic regions of the country. Majority of the Indian cattle breeds were initially developed for draught animal power. For instance, they possess unique genes for higher thermo-tolerance, greater resistance to tropical diseases and better feed conversion efficiency under low or zero input system. The productivity of indigenous/non-descript cattle is reported to be 2.5 kg/cow against 6.67 kg/cow of crossbred and exotic cows.

There is a global consensus on the conservation of animal genetic resources for sustainable development. The concern today is the declining population of indigenous cattle, while the population of crossbred cattle has increased. The comparison of cattle population as per *19th Livestock Census* (2012) with *18th Livestock Census* (2007) revealed a decline of 4.1% in total cattle population. The share of indigenous cattle to total cattle population has declined from 93% during 1992 to 79% during 2012. On the contrary, the share of crossbred cattle has increased from 7% to 21%, respectively. The decline in indigenous cattle population was -8.94%, while the exotic/crossbred cattle population increased by 20.2%. As per 2012 *Livestock census,* out of 61.95 million males of indigenous cattle, 39.85 millions are used for draught work, 2.98 million used for both draught and breeding purpose and 2.08 million use for breeding only. This indicates that 44.91 million males (79.25%) have been used every year and about 17 million indigenous males are still surplus in our country. Hence, efforts should be made to increase the population of female cattle by using sexed semen of indigenous bulls after perfecting the technique of semen sexing.

*According to* 19th Livestock Census, *there are about 300 million bovines of which, 190.9 million are cattle that includes 151.17 million indigenous and 39.73 million crossbred/exotic cattle. Among the indigenous cattle, only 22.21 million heads (11.64%) were described and categorized into 44 different populations including 39 distinct/registered breeds.*

In the past, exotic germplasm has been used to develop crossbred cattle as 'Freiswal (HF×Sahiwal); Sunandini (Brown Swiss × Local); Karan Fries (HF × Tharparkar), Karan Swiss (Brown Swiss × Sahiwal × Red Sindhi) and Vrindavani (HF × Brown Swiss × Jersey × Hariana). In addition to the indigenous breeds of animals, there are large number of non-descript livestock species that also are being used by farmers for various purposes. Their populations need to be characterized, evaluated for economic and adaptive traits such as resistance to biotic and abiotic stresses, feed conversion efficacy, high productivity etc. The ability of our indigenous breeds to withstand extreme climatic conditions and resistance to diseases in particular, need to be exploited for further development of local breeds. Further, advances in modern science could be utilized to scale up therapeutic and biomolecules for human use. Through our interventions under the National Initiative on Climate Resilient Agriculture, it has been observed that about 40 breeds of indigenous cattle have innate potential to adapt to diverse changing climatic conditions of hot arid, humid tropical and temperate climates and better resistance to internal and external parasites and diseases. With nomadism as the strategy for pastoralists, tremendous indigenous knowledge systems (IKS) is proven attached to cattle and livestock management.

The Government of India has announced a focused programme on the 'Improvement of Indigenous Cattle' and in alignment with this, the Council has prioritized maintenance of genetic diversity of indigenous breeds with a vision of enhancing the cattle population of the country from the existing 25% to 40% by 2030, and focus more on genetic upgradation of indigenous/ native cattle using superior semen from progeny tested/ pedigree selected bulls and by expanding artificial insemination (AI) and natural service network to provide services at the farmers' doorstep. If 10% of non-descript indigenous cattle are graded up with milch breeds in a period of 5 years and assuming 4 kg/cow/day milk production in next generation, additional 27.2 million kg milk/day would be produced adding about 10 million tonnes milk/annum to national average. Further, the disease diagnostic facilities needs to be further strengthened in various regions of the country. Besides this, cheap pen side diagnostic kits needs to be developed and vaccination schedule for various diseases needs to be followed religiously. Research on designing thermo-stable vaccines is an important key area and will help in effective delivery under field conditions, followed by awareness and training to the smallholders, especially women to ensure adoption of new technologies for enhancing productivity of cattle.

Overall, the milk productivity of indigenous cattle needs to be enhanced using breeding, feeding and health management interventions. Further, mining of unique genes and bio-prospecting of special utility traits, biomolecules, products etc. of indigenous cattle would enhance the net economic worth of Indian cattle. The Government of India has implemented the '*Rashtriya Gokul* Mission' to conserve and develop indigenous bovine breeds. Improving indigenous cattle and developing branded cow milk and other products using the IKS available with pastoralists and cow keepers, and creation of niche markets for these products would empower the stakeholders in general and rural women in particular to ensure livelihood security. To enable this, the Council attempts to conduct breed-wise livestock census, developing a roadmap for breeding and conservation of indigenous cattle, in order to enhance the overall agricultural production, productivity and quality in the country.

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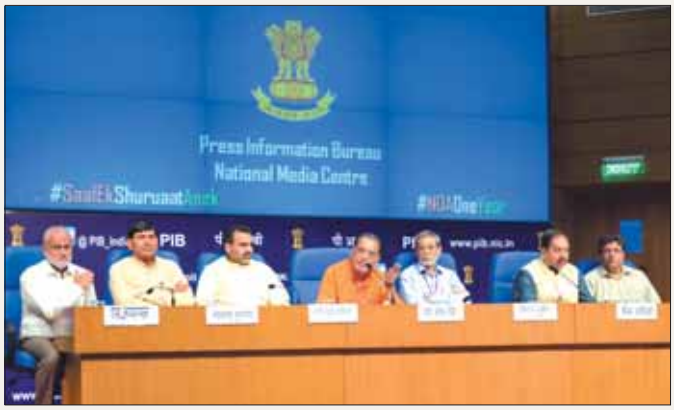
# WORKSHOPS, MEETINGS, SEMINARS, CONFERENCES, SYMPOSIA

## Proactive Measures to Tackle Deficient Monsoon




New Delhi, 3 June 2015. Union Agriculture Minister, Shri Radha Mohan Singh, elaborated upon various proactive measures being taken by Agriculture Ministry to mitigate impact of deficient monsoon on agriculture. Contingency plans for 580 districts have been developed by the ICAR in consultation with stakeholders and are being implemented through state governments. Union Agriculture Minister appreciated the role of Central Research Institute for Dryland Agriculture, Hyderabad for providing regular advisories to farmers in this regard. He assured adequate and timely supply of seeds of contingent crops and other inputs to farmers during low rainfall conditions.

Union Agriculture Minister was addressing a Press Conference to mark the completion of one year of the new government and highlight the major achievements during the period. He emphasized on new initiatives to enhance agricultural productivity and livelihood of farmers, such as Soil-Health Card Scheme, *Pradhan Mantri Krishi Sinchai Yojana*, National *Gokul* Mission, *Paramparagat Krishi Vikas Yojana*, and other programmes of significance. Union Agriculture Minister also highlighted steps taken to strengthen higher agricultural education by establishing new agricultural universities and colleges in different parts of the country.

Union Agriculture Minister elaborated upon Blue Revolution, Price Stabilization Fund, Agri-Tech Infrastructure Fund, and new initiatives to enhance farm credit and cooperation, especially for landless farmers. He also stressed on the steps taken to improve livelihood of fishers of the coastal region. He also released a booklet, *Mission Agriculture-One year of Modi* Sarkar, highlighting new initiatives and major achievements of Ministry of Agriculture, Government of India. Preparedness of agricultural contingencies in *kharif*, 2015 of some states were disussed.

**Agricultural contingency preparendness for *kharif*, 2015**

Dr S. Ayyappan Secretary (DARE) and DG, ICAR inaugurated a National Consultation Meeting on 'Enhancing the Preparedness of Agricultural Contingencies in *kharif*, 2015' on 24 April 2015 that was organized by Indian Council of Agricultural Research (ICAR) and Central Research Institute for Dryland Agriculture at Hyderabad. The objectives of the meeting was to enhance the preparedness of various states and to address agricultural contingencies during *kharif*, 2015 and to identify better management practices in tiding over the drought and other weather aberrations such as hailstorms and cyclones in different states during 2014. Dr S. Ayyappan (Secretary, DARE and DG,ICAR) highlighted the importance given to this meeting by

Department of Agriculture and Cooperation (DAC), Ministry of Agriculture in view of the south-west monsoon forecast given by Indian Meteorological Department. He appreciated the effort taken by Central Research Institute on Dryland Agriculture for preparation of contingency plans for 580 districts and urged for implementation of these plans for different contingency scenarios by holding discussions with different state governments. Dr Ayyappan observed that wherever the recommended measures were followed for different contingencies, the damage loss could be reduced.A technical bulletin on *District Agriculture Contingency Plans to Address Weather Aberrations and for Sustainable Food Security in India* was released on the occasion.

Dr A.K. Sikka (DDG, NRM) stressed upon the need for a strategy to implement the available district contingency plans with appropriate investments. He suggested for states to come up with strategies based on the monsoon forecast. Dr A.K. Sikka observed that seed availability and timely delivery, availability and access to farm implements are crucial issues in drought scenarios and urged the states to prepare detailed plans. He also stressed upon the need for area based agro-advisories and informed the efforts made by ICAR and IMD in issuing a joint agro met advisories.

Sri Narendra Bhoosan (Joint Secretary, Drought Management) suggested for prioritizing varieties on crop-wise for contingency scenario. He informed that 10% of *Rashtriya Krishi Vikas Yojana* revenue is earmarked for implementing contingency measures and requested states to come up with proactive mechanism for offsetting the losses in case contingency seed is not utilized due to good monsoon. He suggested for dissemination of weather forecast through SMS to farming community via M-kisan platform.

Dr Ch. Srinivasa Rao (Director, CRIDA) outlined a 5 point strategy for enhancing the preparedness for contingencies during *kharif* 2015 including (a) updating current contingency plans (ICAR, CRIDA, DAC and State Agriculture Universities), (b) establishing a mechanism for contingency plans implementation at state level through a state nodal officer with sufficient budget provision and by incorporation of contingency plans in state *kharif* action plans, (c) technological support and capacity building by state agricultural university and ICAR, (d) arrangement of critical inputs (seed availability, contingency seeds, fertilizers etc. and timely delivery), and (e) preparation of action plans through interface meetings at states with a priority for those states which might be impacted as per IMD's forecast.

***Maharashtra and Telangana:*** The Central Research Institute for Dryland Agriculture along with Department of Agricultural Co-operation organized contingency preparedness interface meetings with officials of

Agricultural Departments of Telangana (11 May 2015) and Maharashtra (13 May 2015) at CRIDA campus and at Department of Agriculture, Pune respectively. The purpose of these meetings was to appraise the monsoon forecast and to prepare the action plans based on district contingency plans available for meeting the agricultural contingencies in the eventuality of deficient rainfall during *kharif* based on Indian Meteorological Department Monsoon forecast for *kharif*, 2015. Dr Ch Srinivasa Rao (Director, CRIDA) presented the existing District Contingency Plans prepared by ICAR in association with state agricultural universities, the role of contingency plans for coping deficient monsoon conditions, delay in on-set of monsoon and mid-season and terminal droughts. Issues related to alternate seed varieties, quantity available, identification of contingency crops and their seed availability, fertilizer requirement etc. were discussed in detail. In addition, resource conservation measures which need to be taken up as 'must do practices' were discussed which can be implemented under existing developmental programs such as *Rashtriya Krishi Vikas Yojana*, micro-irrigation etc.

***Gujarat:*** An interface meeting was organized for contingency preparedness with various stakeholders at Anand Agricultural University, Anand in which Central Research Institute for Dryland Agriculture, Department of Agriculture and Cooperation (Government of India), Anand Agricultural University, Anand, and Department of Agriculture, Government of Gujarat participated on 29 May 2015. The objectives of this meeting were:

(*i*) to sensitize the various stakeholders on the ensuing *kharif* with regard to the forecast of seasonal monsoon; and (*ii*) to prepare the action plans based on available district contingency plans in the eventuality of deficient rainfall during *kharif,* 2015 based on Indian Meteorological Department monsoon forecast. Dr M. Maheswari (CRIDA) informed regarding the availability of contingency plans for about 580 districts across India and apprised the efforts being made to create awareness among various stakeholders at district level on the need for operationalization of contingency plans. She also appraised about the updating process of available district contingency plans for inclusion of recent research developments in the plans. She stressed the need for preparing action plans for minimizing the rainfall deficits in districts that are supposed to receive low rainfall. Dr Ashish Kumar Bhutani (Joint Seceretary) desired that the district level contingency plans should be made available as advisories. He stressed that there is a need to cover large number of farmers, especially small- and marginal-farmers, with crop/ weather insurance programme.

Sri Arun Kumar Solanki suggested that the state agricultural universities may compile better natural resource management technologies district-wise and be provided to Gujarat State Land Development Corporation; every nodal agency such as seed corporation, land development corporation etc. should have their own plan for each district to address the contingency scenarios that may emerge due to aberrant weather conditions; awareness meetings of various stakeholders be organized by university, ATMA, Krishi Vigyan Kendras, divisional and district level agricultural department offices; need to enhance the coverage of crop/weather insurance programmes in a targeted manner specially for non loaned farmers like other developmental programmes; state agricultural universities to prepare the content for recently launched *Kisan* channel by Doordarshan; and proposed to utilize the BISAG facility (which can deliver the video messages in 16 channels) for creating awareness among farming community through a programme to be addressed by the Chief Minister of Gujarat.

The suggestions and action plan developed towards preparedness for *kharif*, 2015

- All state governments to use television channels (including private and local ones) for dissemination of agro-advisories.
- District contingency plans to be prepared at the earliest wherever they are not available.
- Direct seeding of rice to be given top priority where-ever possible in Chhattisgarh, Punjab, Haryana, Uttar Pradesh etc.
- Documenting and communicating the success stories during last 2-3 drought seasons, which were supported by the Government and also identification of shortfalls which need policy interventions and CRIDA to coordinate the documentation efforts.
- Popularization of crop insurance scheme among farming community.
- All loaned farmers to be covered with insurance and settlements are to be made with in 45 days for weather insurance claims.
- Insurance term sheets for different crops are to be collected from AIC and communication material to be made in local language for easy understanding by farming community and the same is to be provided on web sites.
- Interface meeting will be organized in Uttar Pradesh, Haryana, Madhya Pradesh, Maharashtra, Rajasthan, Gujarat, Telangana, Andhra Pradesh, and Karnataka.

***Rajasthan:*** An interface meeting was organized for contingency preparedness by Central Research Institute for Dryland Agriculture (CRIDA) along with Department of Agriculture and Cooperation (DAC), Government of India, and Department of Agriculture, Government of Rajasthan with various stakeholders on 5 June 2015 at Pant Krishi Bhavan, Jaipur. The meeting aimed to (a) sensitize the various stakeholders on the ensuing *kharif* with regard to the forecast of seasonal monsoon, (b) prepare the action plans based on available district contingency plans in the eventuality of deficient rainfall during *kharif*, 2015 based on Indian Meteorological Department (IMD) monsoon forecast. Dr VUM Rao (Director, Research Centre of CRIDA) apprised about the revised forecast made by the India Meteorological Department. Weekly rainfall forecasts for Rajasthan,made by Indian Meteorological Department (IMD), for June 2015 were also shared with department officials. Dr VUM Rao stressed the need for preparing action plans for each district based on weather information to minimize rainfall deficits in districts. Shri Ashok Sampath Ram (Additional Chief Secretary (Agriculture), Government of Rajasthan) advised the divisional and district officials to assess the short duration seed requirement and necessary actions to be taken to stock in sufficient quantity for distribution among the farming community. In case of insufficient seed availability, he suggested to work out the alternatives and advance information may be provided to farmers on the quantum of seed which could be supplied by various agencies. He also emphasized the need for planning at district level based on weather information and advised to focus on rainfed areas in each district. It has been decided to share the information on short duration seeds

availability at each district with other districts on a fortnightly/monthly basis so as ensure the free movement of seed across districts. Successful technologies promoted by AICRP on Dryland Agriculture and NICRA-KVKs were shared with officials of the department and suggested to upscale them at every district. Discussions were held on action plans for each division presented by divisional officials to meet contingency scenarios and suggestions were made. One major recommnedation was to promote *in-situ* conservation measures (both land and soil management practices) and intercropping systems extensively in rainfed districts. Emphasis was on procuring seed-cum-ferti-drills with suitable machines for creation of conservation furrows/broad bed furrows, which effectively complete sowing in a narrow sowing window coupled with creation of *in-situ* conservation measure.

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## National Group Meet, *kharif* 2015

Hyderabad, 18 April 2015. A two-day National Group Meet on *kharif*, 2015 of All India Coordinated Research Project of 'Forage Crops and Utilization', jointly organized by Prof Jayshankar, Telangana State Agricultural University (PJTSAU) and ICAR, was inaugurated by Dr I. S. Solanki (ADG (FFC), ICAR) on 17 April 2015 at University campus. Dr Solanki stressed upon the need of bridging the gap of demand and supply in forage availability by strengthening research on high yielding and better quality fodder crops.

The other deliberations were on the shortage of milk and fodder in the state and need to develop technologies for resource poor farmers in particular; XII Plan initiatives and the achievements of *kharif* 2015 in the field of forage crop improvement, production, protection and breeder seed production as well as popularizing the technologies by Fodder Technology Demonstrations; upon the need of extension of already available technologies and need of a proper database of forage resources in the country; upon low productivity of animals in the state and need of technologies for both commercial dairies as well as small livestock keepers; and importance of meeting and need and expectations of Telengana from this group meeting. Need for mechanization in fodder crops and use of alternate fodder crops was highlighted.


Varietal Identification Committee identified oat var.OS-403; JHO 2009-1; forage bajra var. APFB-09-1; Sewan Grass var. RLSB-11-50 for release in different zones of the country.

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## *Krishi Sanghoshti* for *kharif*

Bhopal, 10 June 2015. Dr K. K. Singh (Director, CIAE) inaugurated the Interaction Meet (*Krishi Sanghoshti*) organized by Central Institute of Agricultural Engineering (CIAE), jointly with Department of Agriculture, Government of Madhya Pradesh (as part of the *Krishi Mahotsav* which was organized by the Government of Madhya Pradesh from 25 May to 15 June 2015). He focused on our Prime Ministers' programme 'Make in India' and advised farmers to use CIAE developed machinery for *kharif* crops and

also encouraged them to actively interact with scientists of CIAE for any kind of assistance they may need on mechanization aspects and avail and benefit from services of CIAE. The focus was on monsoon preparedness including contingency plans, seed availability, management measures, advisories, interactions with state departments.

**Recommendations**

- Farmers should use raised bed planting for all the *kharif* crops (except paddy)
- Ridge and Furrow system should be followed specially for soybean.
- To prevent excessive shattering losses in soybean during combine-harvesting, farmers may sow non-shattering varieties of soybean.
- For paddy, SRI technique may be followed. If nursery is not raised, germinated seed may be sown with Paddy Seeder
- Adequate water harvesting and water storage practices should be adopted for use at later stages as supplementary irrigations.
- Use broad bed furrow system in maize for better management of water

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## Harmonizing biodiversity and climate change: challenges and opportunities

Port Blair, 19 April 2015. A three-day National Seminar on 'Harmonizing Biodiversity and Climate Change : Challenges and Opportunities', jointly organized by Andaman Science Association, Central Island Agricultural Research Institute (Port Blair), ICAR (New Delhi), Bioversity International (New Delhi), PPV&FRA (New Delhi), and Society for Plant Research, India was launched on 17 April 2015 at Garacharma Research Complex, CIARI.

The seminar was based on two themes: (*i*) Biodiversity and (*ii*) Climate Change with eight sessions. Directors of eight National Institutes along with forty-six delegates from mainland participated in the National Seminar.

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## XXIV Workshop of AICRP on Biological Control of Crop Pests

Coimbatore, 3 June 2015. With the aim to review the progress of work done by different AICRP centers during 2014-15 and to finalize the technical programme for 2015-16, a two-day XXIV Workshop of AICRP on'Biological Control of Crop Pests' was inaugurated by Dr K. Ramasamy (Vice-Chancellor, TNAU) on 2 June 2015 at Tamil Nadu Agricultural University. Dr Ramasamy suggested that the basic research has to be strengthened in all fields of agricultural sciences especially in biological control so that breakthroughs in pest management can be achieved and sustainability in agricultures is maintained. Studies on improving the plant immunity against biotic stresses through biotechnological interventions should be strengthened so that cost of plant protection is minimized.

Dr P.K. Chakrabarty (Assistant Director General, PP&B) emphasized that more successful bio-control technologies should be developed so that the area under BIPM can be increased to a greater extent and the harmful effects of chemical pesticides are minimized. ADG stressed the importance of publications of the data generated in AICRPs and bringing out good crop-wise manuals on BIPM/ bio-control technologies. He suggested strengthening of bio-control studies in protected cultivation and also on plant diseases.


**Recommendations**

- New invasive pests like, South American tomato moth, *Tutaabsoluta* was recorded in Karnataka, Maharashtra, Gujarat. A programme on surveillance and management on this pest was initiated immediately. Western flower thrips *Frankliniellaoccidentalis* (Pergande) reported from Bengaluru. Banana skipper *Erionotathrax* (Hespiridae: lepidoptera) has become severe pest in Kerala, Karnataka, Mizoram, Asom and other states. *Pseudococcus jackbeardsley* recorded on cocoa in Dakshina Kannada district of Karnataka. *Phenacoccusm adeirensis* was recorded on cashew in Malur area in Karnataka. Root mealybug, *Formicococcus polysperes* Williams was observed on pepper.
- Incidence of sugarcane woolly aphid and papaya mealy bug was very low throughout the country due to the intensive activity of the released parasitoids and predators
- *Beauveria bassiana* isolates could be established as endophytes in maize for stem borer management.

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## XXIV Biennial workshop of AICRP on Management of salt affected soil and use of saline water in agriculture organized

Makhdoom, 7 June 2015. The Twenty-fourth Biennial Workshop of AICRP on 'Management of Salt- Affected Soil and Use of Saline Water in Agriculture', organized by the CIRG in association with AICRP Center from 5 to 7 June 2015 at Institute was inaugurated by Dr A. K. Sikka (DDG, NRM) stressed on low-cost drainage technologies including controlled drainage can encourage the farmers to adopt drainage as a means of water management. He emphasized on researches in phyto-remediation technologies and protective cultivation. The DDG (NRM) said that like distilleries spent wash other industrial wastes should also be explored and exploited as an alternate source to mineral gypsum as an amendment.

Dr S.S. Khanna (Ex. Advisor, Planning Commission, Government of India) stressed upon the cultivation of sea weed as a livelihood resource for people in coastal areas. Dr S.K. Agarwal (Director, CIRG) informed that the milk production in India has increased from 17 to 134 million tonne from 1951 to 2014 and food production from 51 to 264 million tonne during the same period.

Dr D. K. Sharma (Director and Project Coordinator) apprised that 6.73 million ha area is affected by salinity including coastal and dry land salinity. It entails a loss of about 11 million tonne of food grains. He emphasized that stress tolerant varieties, controlled subsurface drainage and conservation agriculture are amongst the main options to combat the climate change effects.

A scientist-farmers' interaction meeting followed wherein farmers raised many issues of concern to them. Problems like lodging of wheat crop even in low rainfall years, attack of termite: a serious problem of the area, installation of subsurface drainage in saline areas, installation of artificial ground water structures, proper method of soil and water sampling and non availability of salt tolerant wheat varieties were discussed.

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## Workshop on NICRA in *Saansad Adrsh Gram*

Rasoolpur Jataan, 19 May 2015. The Krishi Vigyan Kendra, Muzaffarnagar under Sardar Vallabhbhai Patel University of Agriculture and Technology, Meerut is executing National Initiative on Climate Resilient Agriculture (NICRA) project in *Saansad Adarsh Gram-Rasoolpur Jataan*, Muzaffarnagar with effect from April 2015. Dr Alok Sikka (DDG, NRM) emphasized on adoption of climate resilient technologies and said that NICRA is being implemented in 100 districts in the country and in coming days more districts will be added. Dr A.K. Singh (DDG, Agricultural Extension) suggested the adoption of less water requiring technologies due to depleting groundwater. He also urged the farmers to adopt soil-test based nutrient management to cut cost of cultivation.


Prof. H.S. Gaur (Vice-Chancellor SVPUA&T, Meerut) emphasized on the importance of science-based technologies for farmers' prosperity. Prof. Gaur called upon the Krishi Vigyan Kendra scientists to work for resource poor farmers to secure their food security and livelihood. Dr U.S.Gautam (Zonal Project Director, ICAR, Kanpur) highlighted the role of Custom Hiring Centre under NICRA, He suggested that KVK should work for knowledge empowerment of the farmers so that farmers can take right decision in time for managing their farming.The role of KVK for preparing 715 Soil-Health Cards in *Saansad Adarsh Gram* was also lauded. Dr U.S.Gautam (Zonal Project Director) said that KVK Muzaffarnagar is the first KVK in Zone IV (Uttar Pradesh and Uttarakhand) which has achieved this distinction in '*Saansad Adarsh Gram*'. More than 250 farmers were present during the programme.

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## IV Annual Review Workshop on National Agricultural Science Fund

New Delhi, 29 May 2015. Dr Panjab Singh (former Secretary, DARE and DG, ICAR) chaired two-day IV Annual Review Workshop of the National Agricultural Science Fund (NASF) which was started on 28 May 2015 at NASC Complex. Dr S. Ayyappan (Secretary, DARE and Director General, ICAR) impressed the participants for good working environment in the institute(s), projects to be problem solving in nature and achievements to be timely. The Chairman of Empowered Committee observed that the projects need to be focussed and care should be taken by the CPIs to present the publications, technologies etc. clearly during the presentations.

Dr P. K. Agrawal (Assistant Director General, NASF) focused on details regarding the formation and activities of National Agricultural Science Fund. It was followed by open discussion and observations by the participants. Members of the Empowered Committee, Deputy Directors General of ICAR, members of the Expert Committees and Chairmen of Advisory Committees made their observations for different aspects of funding. During two days of deliberations 19 projects were presented and discussed. On 29 May 2015, a general discussion and observations from different participants were taken to improve the funding. The Chairman of Empowered Committee

called upon the CPIs to bring seriousness and commitment for the project from the day of formulating the project. The deliverables in terms of publications, patents and technologies need to come out of projects.

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## Annual Zonal Review Workshop of KVKs in Zone VIII

Shivamogga, 23 May 2015. The Vice Chancellor of University of Agricultural and Horticultural Sciences (UAHS), Dr C. Vasudevappa, inaugurated the four-day Annual Zonal Review Workshop of Krishi Vigyan Kendras (KVKs) in Zone VIII at his University campus on 20 May 2015. He emphasized that the region-specific emerging issues related agricultural and allied sectors may be addressed and accordingly technological

interventions should be taken up by the KVKs. The work done by KVKs in Zone VIII during 2014-15 was reviewed through concurrent sessions by an expert panel. Further, an expert's talk on subsidy schemes and credit facilities for farming community, was arranged as common session on 21 May 2015, and another expert's talk on Rice portal to rice check-opportunities for KVKs was arranged on 22 May 2015.

The presentations of the KVKs were evaluated. The KVKs that were rated as very good got issued certificate of appreciation, while the ones rated as average were given additional handholding during current year.

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## Workshop on Availability and judicious use of feed and fodder resources to meet the growing demand for milk production

New Delhi, 8 June 2015. With the aim to discuss strategies and prepare action plans for efficient use of available feed and fodder resources, securing surplus biomass for use in deficit areas and green fodder production enhancement from land available under fodder production by the use of certified fodder seeds a workshop was jointly organized by National Dairy Development Board (NDDB) and Indian Council of Agricultural Research (ICAR) on 'Availability and judicious use of feed and fodder resources to meet the growing demand for milk production' at NASC Complex. Dr S. Ayyappan (Secretary, DARE and DG, ICAR) informed the participants that efforts on feeds and fodder development are scattered and need focused and region specific strategy for efficient utilization of all feed resources available for animal feeding, including tree leaves, bio-degradable wastes of vegetables and fruits.

It was discussed that non-conventional crop residues such as cotton stalks, soybean and mustard straws, maize stover and cobs, pulse straws like pigeon pea straw and any other lignified biomass available in and around different milk sheds can be used for manufacturing straw based pellets/ blocks.

- Appropriate Mowers, Reapers, Liners, Bundle Makers, Balers, Tedders Swathers, Choppers, Shredders, Threshers, Conditioners, Grinders, Mixers, Enrichment Devices, Dosers, Material Handling Equipment need to be introduced and propagated, as per biomass needs.
- To minimise loss of crop residues like paddy during or after harvesting, there is a need to upgrade/ modify available reaper, thresher and harvester machines for appropriate management of wet crop residues like paddy and propagate in different milk sheds.
- As area under fodder crops is static, there is a need to be promoted non-conventional fodders like moringa, thornless cactus, azolla, dual purpose cereals crops to maximise land productivity without adverse effect on agriculture production and encouraging fodder cultivation on bunds/ farm boundaries, canal side/ national highway etc.
- To minimize seasonal variations in fodder availability, fodder conservation is to be propagated to conserve surplus fodder of maize, sorghum, pearl millet and oats through silage/ hay making.
- Establishment of Micro-training Centre (MTC) by identifying progressive dairy farmer as a trainer may quickly disseminate improved technology to large number of users.
- Establishment of 'National Feed & Fodder Forum'. This Forum can meet once or twice in a year for monitoring feed and fodder situation in the country. The Forum may assist in implementation of Animal Feed Regulation Act at state level and publishing data on feed and fodder availability from a single source.

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## National innovation on climate resilient agriculture

Kolkata, 23 April 2015. The Zonal Project Directorate, Zone II organized Zonal Workshop on 'Technology Demonstration Component of National Innovation on Climate Resilient Agriculture' (NICRA). Under this component, an integrated package of proven technologies would be demonstrated in one village in each district for adaptation and mitigation of the crop and livestock production systems to climate variability based on the available technologies. These activities are currently being carried out in 100 Krishi Vigyan Kendras (KVK) in different parts of the country. The KVK team for each district carried out a detailed exercise on the needs of the village, the climatic vulnerability (drought/floods/heat wave/frost/cyclone) and the available technology options from the concerned Zonal Agricultural Research Stations of the State Agricultural Universities.

Progress of work done by 15 Krishi Vigyan Kendras (KVKs) under Zone-II has been reviewed and Action Plan for 2015-16 was also discussed. Two more KVKs are included taking the total to 17 in this zone.

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## Workshop-cum-brainstorming session on Seed spices plant genetic resources

Ajmer, 27 May 2015. Dr R S Paroda (Chairman, TAAS) inaugurated one day workshop-cum-brainstorming session on 'Strategies to strengthen seed spices plant genetic resources and burning issues of cumin and coriander' at the campus of NRC on Seed Spices. The Seed spices are low volume and high value crops of the arid and semi-arid India. These crops also possess high export and medicinal value. Dr Paroda emphasized upon the need to have strong PGR's conservation facility dedicated to seed spices, and suggested to explore seed spices genetic resources in a much intensified manner.

Dr R R Hanchinal (Chairman PPV & FRA) advised to take up minor seed spices under DUS programme for safeguarding the national wealth.

Dr S B Dandin (Ex-Vice Chancellor, University of Horticultural Sciences, Bagalkot) shared his views for a road map for seed spice improvement at national level.

Dr Balraj Singh (Director, NRCSS) gave an overview of the activities of NRC on Seed Spices. Challenging problems of cumin and coriander i.e. *Alternaria* blight of cumin and stem gall of coriander were also deliberated to find ways for efficient management of both the diseases. It was suggested to study the basic aspects of plant interaction and also to screen large number of germplasm in the hot spots for developing disease resistant varieties.

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## ICAR Regional Committee No.1 for Uttarakhand

Pantnagar, 3 June 2015. The Vice Chancellor,Govind Ballabh Pant University for Agriculture and Technology, Dr Mangala Rai, inaugurated the State Level Joint Meeting of ICAR Regional Committee No. 1 for Uttarakhand at University campus. He informed that


the University has prepared a Plan for *kharif* which will be executed in the current season. Dr Mangala Rai emphasized on need and importance for production of seeds of minor millets like *ragi* and pulses like pigeon pea, and short duration cowpea. Regarding horticulture scenario in Uttarakhand, Dr Mangala Rai stated that we need good quality planting material of elite varieties to improve fruit in qualitative and quantitative production.

The Member-Secretary ICAR Regional Committee No.1., Dr. P.K. Mishra, also briefed the house about the State Level Joint Meeting of ICAR Regional Committee No.1 held for Himachal Pradesh at CSKHPKV, Palampur . He also summarized the day long deliberations of the meeting.

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## XXII Meet of ICAR Regional Committee, Zone III

Agartala, 23 May 2015. A two-day XXII meeting of the Regional Committee Zone III of the ICAR started on

22 May 2015.The Chief Minister, Tripura , Shri Manik Sarkar, stressed on the importance of collaborative efforts of agricultural scientists and allied industries for holistic development of agriculture.

Shri Aghore Debbarma, Minister of Agriculture (ARDD & Tribal Welfare of Tripura), Dr B. D. Chakma (Minister of State (Fisheries) of Mizoram), Shri Khagendra Jamatia (Minister (Forest & RD) of Tripura) and Lt. Col. (Retd) Z.S. Zuala (Parliamentary Secretary (Home, E&N, Agriculture & RD)) also delivered their views on the present status and need for more research and developmental work on agriculture, animal husbandry and fisheries etc.

Dr S. Ayyappan [Secretary (DARE) and Director General (ICAR)] gave valuable suggestions for future actions on the issues in the agenda items. Members of the Governing Body (ICAR) Shri Ratneshwari Prasad Singh, Shri Ram Krishna Kushmaria, Shri Suresh Chandel and Shri Sudhir Kr. Bhargava graced the meeting and gave valuable advices for holistic improvement of the entire North-Eastern Hills Region.

Dr S. V. Ngachan (Director, ICAR Research Centre NEH Region) presented the action taken report. Research, education and extension issues on agriculture and allied disciplines of the eight North-Eastern states, namely Tripura, Asom, Arunachal Pradesh, Meghalaya, Mizoram, Manipur, Nagaland and Sikkim were extensively discussed under different agenda items.

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## J-Gate@CeRA User-awareness workshop organized at SBI

Coimbatore, 12 June 2015. The one-day J-Gate@CeRA User awareness workshop was inaugurated by Dr Rameshwar Singh (Project Director, DKMA) at Sugarcane Breeding Institute (SBI), Coimbatore. He said that CeRA has been successfully serving as an R&D information resource base for the Agricultural researchers of our country over the years. Urging the researchers of Sugarcane Breeding Institute, Central Institute for Cotton Research-Regional Station,Central Institute of Agricultural Engineering-IEP and Tamil Nadu Agricultural University to make use of CeRA, Dr Singh mentioned that CeRA is the largest e-resource consortium in the country, after UGC-Infonet. The Document Delivery Request (DDR) is a unique feature of CeRA, Dr Singh added. Highlighting some of the new initiatives of CeRA such as trial access to *Encyclopedia Britannica*, JoVE and a few e-books, Dr Singh felt that research institutes should improve their Net connectivity to effectively utilize CeRA facility.


Dr Bakshi Ram (Director, SBI ) complimented the efforts of CeRA in providing quick access to quality journals in the field of Agriculture. Appreciating the initiatives of DKMA in showcasing the important technologies of ICAR, Dr Ram suggested that researchers should use the advanced search facility of CeRA for accessing information, rather than conducting searches through common search engines such as Google.

Dr D Puthira Prathap (Officer In-charge,SBI Library) said that the discipline of Agricultural Sciences has been immensely benefitted with the launch of CeRA in 2007. The high number of un-cited papers, which would come down with access to CeRA, has long plagued the discipline, he said. This is the fifth in the series of CeRA workshops conducted at SBI, since 2008, he informed.

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## 45th Annual group meet of AICRP on Soybean

Indore, 11 May 2015. A three-day XXXXV Annual General Meeting of All India Co-ordinated Research Project (AICRP) on Soybean was inaugurated by the Vice Chancellor, Panjabrao Deshmukh Krishi Vishwavidyalaya, Dr Ravi Prakash Dani, on 9 May 2015. It was jointly organized by the Directorate of Soybean Research and Regional Research Centre of Dr Panjabrao Deshmukh Krishi Vidyapeeth, Amrawati. Dr Dani stressed upon addressing the emerging problems in soybean cultivation and expressed great concern over vagaries of monsoon experienced during last two years which led to significantly low productivity, especially in Maharashtra.

Dr B.B. Singh (ADG,O&P) assured that soybean scientists would take note of changing situations and orient their research activities to overcome them. Considering the global climatic changes, Dr V.S. Bhatia (Director, Directorate of Soybean Research) stressed upon need to make soybean crop more climate resilient.

During the group meeting two new soybean varieties, viz. 'SL 979' for north plain Zone and 'MAUS 612' for

south zone were identified. Besides this, several measures were recommended to address water stress and for effective management of weeds, insect-pests and diseases.

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## Interface meeting of progressive farmers with scientists

Jabalpur, 16 April 2015. The Directorate of Weed Science Research organized Interface Meeting of progressive farmers with State Department officers and scientists. Dr A.R. Sharma (Director, DWR) highlighted the role of conservation agriculture for sustainable crop production and importance of weed management in different field crops. The agricultural development programmes, viz. SRI, SMI, SWI, Green manuring and Mechanization etc. were discussed which were initiated by state

government and IFFCO for the welfare of farmers. Shri V K Chouksey (DDH, Jabalpur) briefed the audience about the activities of National Horticulture Mission and different developmental programmes by the Government of Madhya Pradesh. Smt Harsha Pateria (Deputy Project Director, ATMA, Katni) shared the success story of sweet corn cultivation of Katni district where farmers are earning about ₹ 70,000 to 75,000 per acre. Achiever farmers from different districts shared their experiences in this meeting. Shri M. Narla, an achiever farmer from Katni, said that with adoption of SRI technology over traditional method of transplanting has increased rice production by 2.5-fold.

Sri Soni (Progressive farmer, Katangi) apprised about System of Mustard Intensification (SMI) and said that with this intervention, he has harvested an yield of 40-45 q/ha. There was lively discussion among officers and farmers during the presentations. A field visit to experimental area of Directorate of Weed Science Research was organized to show demonstrations of summer green gram under conservation agriculture. Improved farm machinery such as multi-crop zero-till seed drill, bed planter, Happy Seeder, laser land leveler, tractor operated sprayer with boom, paddy drum seeder and other farm implements were also demonstrated in working condition.

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## Up-scaling of quality protein maize emphasized for nutrition security

New Delhi, 21 May 2015. A two-day Brainstorming Workshop on 'Up-scaling of Quality Protein Maize (QPM) for nutrition security', was jointly organized by the Indian Council of Agricultural Research (ICAR), Trust for Advancement of Agricultural Sciences (TAAS), National Academy of Agricultural Sciences (NAAS), Indian Institute of Maize Research (IIMR), International Maize and Wheat Improvement Centre (CIMMYT), Borlaug Institute for South Asia (BISA), and Indian Society of Genetics and Plant Breeding (ISGPB) on 20 May 2015 at NASC complex.

Dr R.S. Paroda (Chairman, TASS) recalled the past experiences of integrating technology, policy and enabling environment in ushering Green Revolution in India to achieve food security and emphasized that QPM can now play a major role in addressing the grave issues of hidden hunger among significant population of country. While appreciating the work done by Dr S.K. Vasal, Winner of World Food Prize, he explained how a holistic approach including public sector, farmers and private sector against the backdrop of enabling environment can bring about a drastic change in dealing with nutritional issues.

Dr S. Ayyappan (Secretary, DARE and Director General, ICAR) called upon maize scientists, R&D workers, and seed producing agencies to work together to take the maize technology and innovations to farmers. Dr Ayyappan added how maize stands out amidst all other crops by way of having highest growth rate and asked to develop the roadmap for Quality Protein Maize (QPM).

During the workshop eight technical sessions were organized in which all aspects to promote and further improve QPM were discussed to identify the gaps in adoption and to prepare a roadmap to further up-scale

QPM. These discussion were led by Dr K.M.L. Pathak (DDG, Animal Science). More than 100 participants from public as well as private sector, government agencies, progressive farmers, seed producing agencies etc. attended the workshop.

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## National Seminar on 'Value addition of cotton stalks and other agro-wastes for rural livelihood'

Nagpur, 6 June 2015. The Union Minister for Road Transport, Highways and Shipping, Shri Nitin Gadkari, inaugurated the National Seminar on 'Value addition of cotton stalks and other agro-wastes for rural livelihood' which was organized by GTC of Central Institute for Research on Cotton Technology, Mumbai in collaboration with Indian Society for Cotton Improvement and Agro-Plus Foundation.

Shri Nitin Gadkari advised farmers to grow crops after studying economic viability, instead of blindly sticking to traditional crops. The Union Minister stressed upon utilizing technology, innovative thinking and fostering the spirit of entrepreneurship among the rural youth; and urged to use cotton stalk and other agro-wastes for making pellets and briquettes as an alternative to coal, firewood, cooking gas and for conversion into ethanol as an alternative to fossil fuel. The Union Minister felicitated several farmers and entrepreneurs who make good use of agro-waste.

Dr C. D. Mayee (President, ISCI) expressed the need to amend the curriculum of agriculture universities from primary agriculture to secondary agriculture and added that advancement in agricultural technology is needed to convert waste into wealth. Dr P. G. Patil (Director, CIRCOT) emphasized upon the need to promote entrepreneurship in the field of agro-waste management. Books and Leaflets published by CIRCOT, Mumbai and NBSS&LUP, Nagpur were released on the occasion. More than 350 delegates including farmers, raw material suppliers and industry personnel participated in the seminar.

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## Brainstorming session with stakeholders involved in annual oilseeds

Hyderabad, 27 May 2015. To develop perpetual synergistic linkages across various stakeholders involved in annual oilseeds, a road map was prepared on issues pertaining to seed production, area expansion, trade related issues, linkages with the industry on Public, Private Partnership mode for increasing the productivity, effective supply chain mechanisms, quality aspects, value addition and other demand driven aspects as felt by the industry. The Indian Institute of Oilseeds Research conducted a brainstorming session with stakeholders (seed producers, processors, traders, oil-extractors, industrial users, suppliers, farmer producers, consumers) involved in annual oilseeds. The aim was to initiate novel mechanisms, linkages and institutional refurbishments to give a fillip to the oilseeds production and productivity which is of paramount importance to the country.

The deliberations centred on breaking the jinx of the domestic availability of edible oils in the country. After threadbare discussions, it was decided that addressing the problems on the seed production front, adoption of villages in varied agro-ecological situations for enhancing the production through good Agricultural Practices, Crop surveys for realistic production forecasting, scientific soil, water and nutrient management of oilseeds are to be addressed on priority through Public Private Partnership mode. It was also felt that tie up on demand driven researchable issues between the research Institutes and Private industry are to be addressed for the specific oilseed commodity. The delegates from the industry expressed that such interactive sessions are to be conducted at least once in 3-6 months every year so that the industry can play a pro-active role in faster translation of the research outcomes to the oilseed farming community. The Solvent Extractors Association (SEA) of India opined that it would provide two-three page space in their magazine exclusively for the latest research outputs/ developments from the National Agricultural Research/ System on Oilseeds for wider circulation to the members of the SEA so that the information asymmetry gets reduced.

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## Brainstorming session and exhibition on avocado

Chettalli, 27 May 2015. One-day Brainstorming Session and Exhibition on Avocado, organized at Central Horticultural Experimental Station (CHES) was inaugurated by Dr T. Manjunath Rao (Director, IIHR). This programme was organized to discuss various issues related to avocado industry in India and to create a

platform for exchange of ideas and thoughts among the scientific fraternity, entrepreneurs, farmers, growers, students from different parts of the country who have been associated with avocado cultivation, promotion, marketing etc. The exhibition was inaugurated by Air-Vice Marshall, O. P. Tiwari (VSM, Air force station, Mysore). More than 100 promising selection of avocado being maintained in CHES, Chettalli and more than 50 collections from farmers and many post-harvest products of avocado were displayed at this occasion. The selected entries were awarded.

A Souvenir and abstract on avocado was also released at this occasion. Several queries were raised by the growers regarding cultivation, feasibility, profitability on avocado cultivation in India. The experiences of existing avocado cultivation in parts of Tamil Nadu, Karnataka indicated that this crop may become successful in many sub-tropical and sub-temperate areas of the Karnataka, Kerala, Tamil Nadu, Maharashtra and north-east India.

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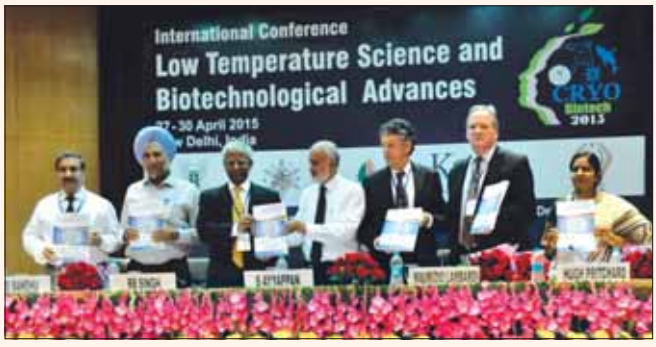
# International Linkages

## International Conference on 'Low temperature science and biotechnological advances'

New Delhi, 30 April 2015. Dr S. Ayyappan (Secretary, DARE and DG, ICAR) inaugurated a four-day International Conference on 'Low Temperature Science and Biotechnological Advances' organized by National Bureau of Plant Genetic Resources, was held in collaboration with National Academy of Agricultural Sciences (NAAS), India; Society for Low Temperature Biology (SLTB), United Kingdom and Royal Botanic Gardens (RBG), Kew, United Kingdom from 27 to 30 April 2015 at NASC Complex. This was an exclusive international event on Cryobiology in Asia to bring together the research leaders of diverse disciplines involved in preservation of genetic resources of crops, veterinary, aquatic species, microbial and stem cells of animals and human beings.




The focus of this international event was on low and ultra-low temperature bio-banking of genetic resources, especially using cryopreservation. Basic mechanisms of acclimatation, cold tolerance, cold sensitivity, cold-desiccation stress/tolerance by freeze-avoidance were discussed in plants. Lessons learnt from basic sciences were applied for breeding crops and horticultural plants for cold, chilling and frost tolerance and for climate change research. Conference was successful in seamless flow of ideas across plants, animals, fishes, microbes and medical field and led to flexible multidirectional streaming of knowledge, sharing of information, discussions on emerging issues for prioritizing of germplasm for cryobanking. Cryopreservation research and development has advanced significantly and successfully during last two decades and the future prospects for its contained implementation are promising across all bioresources. Apart from preserving the biological genetic resources for use in current and future projected values, cryobanks are required for gaining knowledge in omics programme. Best practices and quality assurance discussions were held in the conference for aiding in good laboratory accreditation. Cold stress is a major environmental factor that limits the agricultural productivity of plants in hilly areas and the conference dealt with possible solutions. Genetic engineering of abiotic stress-related genes is another exploratory route. For microbes throughout the world most of the reputed microbial resource centers use cryobanking as a routine method and National Bureau of Agriculturally Important Micro-organisms, Mau has already initiated cryobanking in collaboration with National Bureau of Plant Genetic Resources (NBPGR). In the field of aquaculture, NBFGR is making efforts and cryopreservation has been achieved for sperms, however, for oocytes and embryos success is very limited. Refined protocols are to be used in aquaculture for broodstock management and genetic improvement programmes. Threatened, vulnerable and endangered plants and animal species need attention as there is a decline in their genetic diversity. The preservation of valuable breeds using assisted reproductive technologies is limited, due to limited access to gametes which needs cryopreservation. Efforts made by National Bureau of Animal Genetic Research, National Dairy Research Institute, Indian Veterinary Research Institute and other universities in cryobanking were highlighted during the Conference.

The stem cell therapy market is expected to rise with time and large business opportunity in the therapies segment is expected for India in future. The Indian government is encouraging stem cell research and development activity and growth where Department of Biotechnology, Indian Council of Medical Research (ICMR), Department of Science and Technology, and Council of Scientific and Industrial Research are the key supporters.

Cryobanking done by ICMR and its Institutes and private Cryobanks were highlighted. For plant species the NBPGR's Tissue Culture and Cryopreservation Unit is the 'Centre of Excellence' for conduct of International Trainings on *in vitro* Conservation and Cryopreservation and has a Cryogenebank, holding more than 11,000 accessions (comprising 6,250 of difficult-to-store non-orthodox seed species 3,850 of orthodox seeds, 400 of buds and 500 of pollen) as a result of continuous research work of 28 years and with collaboration of other Institutes of ICAR.

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## Union Agriculture Minister at the 39th session of FAO

Rome, 8 June 2015. The Union Agriculture Minister of India, Shri Radha Mohan Singh, addressed the 39th session of Conference of Food and Agriculture Organisation of the United Nations. He said that in keeping with United Nartions declaration of 2015 as the Year of Soils, and understanding the need to conserve the most primary source of production soil, India has launched new measures to provide Soil-Health Cards to all farmers in the country in a time bound manner. This countrywide exercise in which we intend issuing more than 14 crore cards over a period of 3 years will go a long way in further increasing the production and productivity of Indian agriculture. At the same time, National Food Security Act has been enacted with the objective of providing food and nutritional security to all by ensuring access to adequate quantity of quality food at affordable prices. At last years Committee on World Food Security India has already made a presentation on the salient features of the Act to the membership and it desist from reiterating them here. The Act whose implementation costs India's government over 20 billion US dollars has already started showing positive results in combating hunger and malnutrition and is the base on which we have build our intervention strategy to fulfil our commitments to the Rome Declaration under International Conference on Nutrition last November.

Union Agriculture Minister, Shri Radha Mohan Singh with FAO Director-General José Graziano da Silva during 39th session of Conference of FAO

There is no doubt that sustaining an overall agricultural growth rate of about 4% over long years is a major challenge in the face of stagnating productivity levels combined with increasing abiotic and biotic stresses which constrain crop yields. There is need to focus on research products that can provide us breakthrough in yields which can be made accessible and affordable for different categories of farmers and for this purpose


there is an urgent need to further strengthen the CGIAR institutions to generate technology innovations that can be further up-scaled by national agricultural research systems. The role of Food and Agriculture Organisation in India and other such middle income countries needs to be reworked and a symbiotic relationship needs to be established for an effective partnership ahead. FAO has shown it in Medium Term Plan (MTP) and Programme of Work and Budget (PWB). The MTP and PWB come as a breath of fresh air. The FAO Management has made an honest attempt to list areas of priority and areas of de-emphasis in the document. We would also like to commend FAO and all the member countries for having reached a consensus on the budget level during the Council meeting, a first for FAO.

In conclusion, Union Agriculture Minister of India informed that agricultural growth remains one of the top most priorities for his Government. The Government of India addressing the concerns of our farming community with renewed focus on public and private investments to provide infrastructure, ensure technology transfer to farmers, generate employment both on and off the fields and to sustain agricultural development as well as to strengthen the countrys' nutritional and food security. India is committed to her farmers, especially small-scale family farmers and women farmers and look forward to a fruitful partnership with FAO and with all of you as we dedicate ourselves to the commitment of eradicating hunger and malnutrition with our lifetime.

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## Knowledge sharing on Basic veterinary epidemiology and outbreak investigation

Bengaluru, 6 April 2015. A five-day United States Department of Agriculture (USDA) training programme on Basic Veterinary Epidemiology and Outbreak Investigation, jointly organized by USDA, USA, Department of Animal Husbandry Dairying and Fisheries, Government of India, and National Institute of Veterinary Epidemiology and Disease

Informatics,and Southern Regional Disease Diagnostic Laboratory, Bengaluru was started at National Institute of Veterinary Epidemiology and Disease Informatics (NIVEDI).

Dr H. Rahman (Director, NIVEDI) stressed on the need for such training programme as epidemiology is an important component disease control programme and appreciated the efforts of the USDA and DADF in capacity building in the area of epidemiology in India. Dr Rahman urged the participants to adapt the knowledge gained during the training programme in disease investigations and epidemiological studies. Dr Rahman said in India incidence of livestock diseases vary from state to state and expressed the hope that the training would help India's veterinarians to diagnose and control diseases effectively.

Ms. Robin White (Chief of staff, USDA) expressed her gratitude to DADF and NIVEDI for the co-operation in the organizing the training programme. She also appreciated the brand new facilities available at NIVEDI in the area of veterinary epidemiology and disease investigation and assured for long-term collaboration.

Dr B. Pattnaik (Project Director,Directorate on Foot-and-Mouth Disease) highlighted the shift towards disease epidemiology worldover and stressed the need to study disease ecology, factors contributing disease spread etc.

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## High-powered delegation of USA for collaboration in Animal Health

New Delhi, 10 June 2015. Dr S. Ayyappan (Secretary, DARE and Director General, ICAR) chaired a meeting with the delegation from Centres for Disease Control (CDC) and Prevention, Atlanta, GA (USA) and Indian Council of Agricultural Research, New Delhi (India) was organized by National Institute of Veterinary Epidemiology and Disease Informatics (NIVEDI) in collaboration with Centres for Disease Control and Prevention, Atlanta, GA (USA) and ICAR at Krishi Bhavan. Dr S. Ayyappan briefed the activities of ICAR and National Institute of Veterinary Epidemiology and Disease Informatics, Bengaluru on Health Programme and Disease Epidemiology. He said that ICAR is keen in extending all cooperation for a partnership development within the frame of its mandates and the scientists of ICAR are equally competent to carry out the research and an equal opportunity is to be provided to them in the partnership. Dr Gaya Prasad (ADG, ICAR) informed that the role of Animal Sciences Division of ICAR is to carry out the research on all aspects of animal health. Dr H. Rahman (Director, NIVEDI) informed that NIVEDI has potential in capacity building in epidemiology and outbreak response and one health programmes in the country. He said that training also was organized in association with USDA on Field Epidemiology to train the field veterinarians.

Dr Jordan Tappero (Director, Division of Global Health Protection) briefed the programmes on zoonotic diseases, microbial resistance, laboratory strengthening, surveillance, etc. He expressed satisfaction working with NIVEDI and wished to strengthen further collaboration in detection, prevention and diseases response particularly for zoonotic diseases like anthrax, brucellosis, leptospirosis and rabies. Dr Kayla Layserson (CDC, India, Country Director) and Dr Scott D Saxe, (APHIS attaché) highlighted the forthcoming activities with NIVEDI like epidemiology training and stake holder meeting on anthrax. Dr Dennis Corrol (Special representative for Global Health) informed that this meeting is an introductory discussion for participation in One Health. He said USA has partnership in 30 other countries and is looking forward to establish partnership with India. Dr Lalita Shankar (Senior Public Health Specialist from USAID) desired to establish collaboration on antimicrobial resistance of animal and human pathogens.

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## ICAR signs MoU for the ICAR journals with TEEAL

New Delhi, 4 May 2015. The ICAR- Directorate of Knowledge Management in Agriculture, Directorate of Mushroom Research, Central Potato Research Institute, Central Marine Fisheries Research Institute, and Central Institute of Fisheries Technology signed

Memoranda of Understandings for The Essential Electronics Agricultural Library' (TEEAL). Eight research journals, *The Indian Journal of Agricultural Sciences, The Indian Journal of Animal Sciences, Indian Farming, Indian Horticulture, Mushroom Research, Potato Journal, Indian Journal of Fisheries,* and *Fisheries Technology* signed Memoranda of Understandings with The Essential Electronics Agricultural Library' (TEEAL), of Cornell University, Ithaca, New York, USA.

Dr Joy Paulson (Project Director, TEEAL, International Projects Librarian, Cornell University) said that the journals in The Essential Electronics Agricultural Library are generously provided by major publishers, which have been selected for their quality and relevance.

According to MoUs above mentioned Journals have become a part of TEEAL and would provide information on agricultural, animal, fisheries sciences to the researchers working at places where the internet is patchy.

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## ICAR Research Centre for NEH Region signs an MoU

Mawphlang, 10 April 2015. An MoU was signed between *Ka Synjuk ki Hima Arliang-wah Umiam* Mawphlang welfare society, Mawphlang Meghalaya, and ICAR Research Complex for NEH Region to commercially produce and market the Pig Bristle Technology developed by Dr G. Kadirvel (Senior Scientist, Animal Production Division, ICAR Research Centre for North-Eastern Hills Region).

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# Success Stories

## DIVA diagnostic kit for Foot-and-Mouth Disease

New Delhi, 26 May 2015. The official launch of the DIVA diagnostic kit for Foot-and- Mouth Disease took place at NASC complex. The kit has been manufactured by private partner firm with the know how transferred by Project Directorate on Foot-and-Mouth Disease, Mukteswar.

The Foot-and-Mouth Disease (FMD) is a major livestock disease of transboundary importance, affecting cloven-hoofed animals including cattle, pigs, goats and sheep. It is estimated that the annual direct economic loss due to FMD in India is around ₹ 20,000 crore. Therefore, development of rapid and precise diagnostics facilitating DIVA would be valuable in the sero-surveillance of FMD when active immunization is ongoing.

Agr-Innovate India worked collaboratively with the Public, Private Partnership and the Research Institute, Project Directorate on Foot-and-Mouth Disease (PDMFD) to fully define and fulfil the requirements of client. The plan involved the training of personnel from the private partnership at PDMFD, Mukteshwar on the production of FMD reagent kits and associated quality assurance (QA) procedures, and testing and formulation of safe operating procedures.

The Public Private Partnership (PPP) has resulted in the on-time launch of improved kits that contain all the necessary ready to use reagents for detecting Foot-and-Mouth Disease Virus (FMDV) which is compact and convenient and comes with all commercial documentation for best user experience.

Dr K.M.L. Pathak said, 'this is the best demonstration of 'Make In India' initiative and the partnership has set a stage for industries and technology developers to exchange skills and knowledge and create business opportunities in animal health sector.'

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## Talks of Camel *(Untan Ri Baatan)*

Bikaner, 17 April 2015. Inspired by the honourable Prime Minister's *Man Ki Baat* programme, NRC on Camel, started an *Aakashvani* programme (Radio Programme) Talks of Camel *Untan Ri Baatan* under its' Network Project on Animal Genetic Resources, being supervised at Bikaner by Dr S.C. Mehta (Principal Scientist). This programme has been launched to create awareness about the conservation of camel. This programme is broadcast from four radio stations of All India Radio viz. Bikaner, Jodhpur, Udaipur and Kota on every third Friday of the month between 5:30 and 6:00 PM. The broadcasting range of the four *Aakashvani Kendra* selected for the purpose, encompasses about 30% of Rajasthan, i.e. 2.3 crore people and even if we reach to 1% of this population, it comes to 2.3 lakh people. At present, the

programme is scheduled to have 12 episodes. The first episode of the programme 'Talks on Camel' was broadcast by Bikaner, Jodhpur, Udaipur and Kota Radio stations/*Aakashvani Kendra* (All India Radio). The first episode was on 'Role of ICAR in Conservation of Animal Biodiversity'. Dr Prakash spoke on the contribution of Animal Husbandry in GDP and role of ICAR in enhancing the livelihood security of small and marginal farmers. Dr N.V.Patil briefed the efforts being done by NRC on Camel, Bikaner in conserving the camels and he has also touched various aspects of research in camel. Dr S.C. Mehta focused on the theme of conserving the precious germplasm for future and emphasized that the way we are again searching the indigenous (*desi*) varieties of brinjal and looking for indigenous (*desi*) wheat produced by organic farming, which we left sometime back because of demand of high production, should not happen in animals to the extent that they become irrevocable.To ensure the availability of the programme to the people whenever they want, the audio clips have been uploaded on Google Drive and shared. Also to spread the message through social media I have created and shared the Facebook page Talks of Camel *Untan Ri Baatan* which contains all links and newspaper coverage.

## Wheat and greengram cultivation under conservation agriculture: a viable option

Rice-wheat, the major cropping system in the Indo-Gangetic plains, is also followed in central and eastern part of Madhya Pradesh. In this system, wheat is normally sown in fine seedbed prepared with 4-5 tillage operations. The tillage operations increase the cost of production but they have hardly any benefit for increasing the grain yield of wheat. Further, there is a great concern about reduction in soil fertility, scarcity of farm labour, declining water-table and high cost of production under conventional agriculture. To mitigate these problems, it is essential to adopt technically-feasible, economically-viable and ecologically-permissible technology, which ameliorates late sowing, minimizes weed infestation, lowers cost of production, and improves fertilizer and water-use efficiency.

In areas around Jabalpur, harvesting of rice and wheat is mostly done through combine harvesters, and the crop residues are invariably burnt before sowing the next crop. This burning is causing serious environmental hazard besides loss of previous organic matter and soil nutrients. The Directorate of Weed Science Research, Jabalpur introduced seeder machine to demonstrate the conservation agriculture technology among farming community for sowing of wheat and greengram for the first time under OFR programme during 2012-2014. Four farmers in 2012-13, and 10 farmers in 2013-14 were selected in Panagar block of Jabalpur, and sowing of wheat and greegram was done on 1 acre in each farmer's field. Sowing was done without any tillage operation (ploughing) for land preparation and removing/burning the standing crop stubbles of the previous crop.

### Wheat

Demonstrated fields showed very good emergence and establishment of crop. Weed population in conservation agriculture trials was less compared to farmers practice. Use of ready-mix combination of clodinafop + metsulphuron @ 400 g/ha at 25 days of growth controlled the weed flora effectively as compared to the farmers' practice (conventional tillage) with 2,4-D as a weed control measure). Conservation agriculture technology gave higher grain yield (4.5 tonne/ha) and B:C ratio (3.98) over the farmer's practice (4 tonne/ha and 2.67).

### Greengram

Conservation agriculture technology was demonstrated on greengram during summer following wheat harvest. Sowing with happy seeder in the residues of wheat resulted in very good emergence and establishment. Weed population in conservation agriculture was less compared to conventional agriculture. Conservation agriculture along with improved weed management (imazethapyr @ 100 g/ha at 15-20 days after sowing) was very effective, economical and gave a seed yield of 1.4 tonne/ha, with higher B:C ratio of 3.32 as compared to 0.70 tonne/ha with B:C ratio of 1.32 under farmers practice.

Conservation agriculture technologies saved time and cost of land preparation, and favoured early sowing which helped to utilize residual soil moisture. Unlike conventional zero-till seed drill, seeder facilitated sowing in the previous crop residue, which served as mulch and thus helped in managing weed menace and improved soil health. The successful demonstration of this technology was realized by following the principles of learning by doing and seeing is believing. After the successful introduction of this technology, about 400 farmers have started growing wheat under conservation agriculture and stopped burning the residues of previous crop this season (2014-15).

The farmers of this locality are highly enthusiastic about wheat and greengram sowing under conservation agriculture. The technology adoption by farmers is very encouraging and the performance of this technology has become a household discussion amongst the farmers of this locality.

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## Farm level adaptations for climate resilience to turn the Coastal tracts evergreen

The OFR trials in wheat and greengram conducted by the Directorate under conservation agriculture have made significant impact on farmers of Jabalpur region. The farmers are positive in their attitude about this technology. Saving time, cost, fuel during land preparation, labour and the overall profitability gains have shown positive change in the attitude of farmers towards this technology.

A couple of farmers from the southern coastal tracts of Kerala made their 'far reaching dream' of having an evergreen farm 'a reality'. Under coastal weather conditions, even though conducive for growing coconut, the productivity remains low due to poor physico-chemical properties of soil. Agro-techniques developed by CPCRI for moisture conservation practices, viz. husk burial and direct utilization of coconut and other crop wastes, basin management with raising and incorporation of green manure cowpea, application of coir pith compost and micro irrigation were found successful in the Northern coasts of Kerala.

While undertaking Front-Line Demonstrations by CPCRI in two farmers' gardens in the southern coastal tracts of Kerala at Arattupuzha (Alappuzha district) and Alappad (Kollam District), other than the poor fertility status of the soil, two major concerns observed as impediment to successful cultivation of coconut such were water-logging due to precipitation variation and salt water inundation. This peculiar situation in the tract made it difficult for the farmers to take up cultivation of many of the intercrops and adopt year-round cultivation.

The rich experience of a farmer couple - 90 years old Shri Devadas, a Homeo Doctor and Smt Sathyavathi, retired Headmistress from Alappad Panchayat of Kollam District and another farmer - Shri Babu, Muthiraparambil, from Arattupuzha Panchayat of Alappuzha District of Kerala paved a great way in successfully refining the technologies to suit to the requirements of coastal farmers of South Kerala. The demonstrations were undertaken in an area of 0.6 ha each in both the places between 2012 and 2015.

The soils in both the locations were found to be non-saline, having pH ranging from 4.5 to 6.3 with low levels of organic C, K, Ca and Mg and higher levels of P, Mn, Fe and Zn before commencement of the technology demonstrations. To overcome the problems of water logging and salt-water inundation, different intercrops like banana (4 varieties), pineapple, vegetables including cool season vegetables, tuber crops, fodder grass, ginger and turmeric were tested for their adaptability. Various intercrops were planted with and without husk burial in the planting pits/ application of coir pith compost under coastal sandy conditions and their performance was evaluated. Pineapple was found to be the most ideal crop to withstand water logging, yielding fruits on an average 1.0-1.75 kg.

Banana varieties also performed well and bunches weighed on an average of 7 kg for Nendran, 13.5 kg for Njalipoovan and 22.5 kg for Robusta. All the tuber crops (except colocasia) were affected by water-logging. Among the vegetables, amaranthus, bittergourd, cow pea, tomato, cauliflower and cabbage performed well. Cauliflower weighing up to 2 kg and cabbage up to 2.5 kg could be harvested. The farmers could get single plant yield up to 18 kg from bitter gourd and 4 kg from cow pea.

The yield of coconut also showed improvement up to 59% at Arattupuzha and 55% at Alappad. The net income from the coconut-based cropping system varied depending on the intensity of intercrops cultivated. Shri Devadas and Smt Sathyavathi realized a net income of ₹ 1.35 lakh during 2013-14, whereas Shri Babu earned ₹ 1.89 lakh.

Several farm level climate-smart practices were adopted by the farmers to increase productivity and build resilience in the coastal tracts with climatic vagaries. A modified method of sideways placement of husk around the plant for pineapple showed better performance when compared to normal recommendation under water logged conditions. This has resulted in better growth, early bearing and higher fruit weight for pineapple (average 1.75 kg) compared to normal planted ones (average 1.00 kg).

Other climate resilient measures adopted by farmers including advancement of planting time of tuber crops and banana and standardizing the age of banana suckers for planting were proved to be successful. Planting 4-5 months old suckers of Njalipoovan variety of banana during November-December helped in tideing over the water-logging experienced during the early stages of bunch development. Earthing up with silt (150 kg/plant) along with application of 100 g of Muriate of Potash/plant at the bunch emergence improved growth of plants. By this refinement, the farmers could save 100% of the plants from lodging and poor finger formation due to water-logging.

Because of the coincidence of rainy season with growth period of most of the tuber crops, it was difficult for the farmers to raise them under normal planting time. By planting short duration varieties of tapioca like Vellayani Hraswa (5-6 months), Sree Jaya (7 months),and Sree Vijaya (6-7 months) and through advancement of planting from October to November, the farmers could get a reasonable yield (average 3.2 kg/plant). In case of elephant foot yam and dioscorea, the farmers retained the previous year's crop in the field and obtained average yields of 6.3 kg from Dioscorea, 5.2 kg from Gajendra variety and 13.5 kg

from Peerumedu Local variety of elephant foot yam. Sustainable production can be achieved from coastal agro-ecosystem through the integration of recommended technologies coupled with concurrent assessment and refinements for adaptation to climatic vulnerabilities.

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## Area-wise community adoption programme manages coconut pests

Kayamkulam. Rhinoceros beetle (*Oryctes rhinoceros* Linn.), popularly known as the black beetle, the major pest of coconut in all coconut growing states, affects seedlings, juveniles and adult bearing palms and leads to reduction in growth as well as considerable yield by the damage inflicted in unopened inflorescences in bearing palms. The adult beetle lays eggs in cowdung pits, vermi-compost units, coir pith, degraded coconut logs etc. Treatment of such breeding sites with green muscardine fungus (GMF), *Metarhizium anisopliae*, developed by Central Plantation Crops Research Institute, Regional Station, infest different stages of grubs within a week and thus, effectively brings down the population of the pest. Incorporation of *Clerodendron infortunatum*, a common weed seen in coconut gardens, in the breeding sites also inhibits the growth stages of the black beetle.

Low level of awareness of the technology among the farming community along with non-availability of sufficient quantities of GMF were the major obstacles in the adoption of the environment friendly and effective bio-management technologies. To address these issues, CPCRI, Regional Station, Kayamkulam has successfully implemented an Area-wise Community Adoption programme. As per the CPCRI technology, the fungus could be easily multiplied at farm-level by simple and cheap methods using rice grains, tapioca chips and coconut water. Its production was decentralized through farm-level. The GMF multiplication units by trained farm women groups. The capacity building and skill upgradation of the units were done by the CPCRI scientists, as a continuous process of confidence building. Effective linkage and building up of network with relevant stakeholders like Department of Agriculture, coconut farmers' groups, Veterinary Department, Milk co-operative societies, farmers, mass media especially All India Radio, local panchayath etc. were developed for rapid spread of technology and multiple level of interventions. The model implemented in Edava grama panchayath in 520 ha of coconut area during 2010-13 proved to be very effective in field situations and enabled rapid spread and utilization of technology in other areas. Taking cue from the success, approximately 4,000 ha of area in Thekkekara, Devikulangara, Krishnapuram, Bharanikkavu and Edava panchayaths of Alappuzha and Trivandrum districts of Kerala were brought under the programme during 2014-15. The women group (2-3) of 12-15 members in each ward were involved in technology transfer activities and treatment of breeding sites, thus mobilizing a total of 150-200 women representing each panchayath in popularizing and adopting the technologies.

By ensuring hygienic conditions, anyone with training support can start a unit in an ordinary room. The initial cost of setting up of the unit comes to only ₹ 8,000 to ₹ 10,000. The basic items required are a pressure cooker (20 litre capacity), culture of GMF, polypropylene covers, quality rice and other accessories like cotton, aluminum foil, thick candles, hand gloves etc. The rice is half-cooked and after cooling, filled in polypropylene covers and the covers are sterilized in pressure cooker. Thick candles are lighted in the work-table to keep the area free of contaminants and culture of GMF is added into the cover and thoroughly mixed. Such covers are kept at room temperature for about a week for the fungus to multiply. For application, mix one packet of GMF with one litre of water and sprinkle over the breeding sites. The beetle grubs could be found dead in a week's time. Such treatment of breeding sites is to be done only once in an year.

While planning for *panchayath*-wise community adoption programmes, as first step, map all the potential breeding sites of rhinoceros beetles in each ward and treat with GMF as a one week campaign with the active involvement of various stake holders. As the production cost of one packet (100 g) of GMF is only ₹ 20, this programme, requires only ₹ 20,000 to 25,000 per *panchayath*.

The impact analysis of this programme indicated 70 to 80% reachability to the potential adopters and 75% reduction in fresh incidence of rhinoceros beetle especially in the bearing palms, thus, reducing the yield loss to farmers. Participation and functional linkages at grass-root level could influence the technology utilization in a positive and effective manner and that is the message of the activities facilitated by the CPCRI, Regional Station, Kayamkulam.

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## Knowledge sharing with N-E tribal farmers on Oyster mushroom cultivation

Tadong, 22 April 2015. The ICAR Research Complex for NEH Region, Sikkim Centre organized a six-day 'Hands on Training Programme on Oyster Mushroom Spawn Production' for the tribal farmers of Sikkim from 17 to 22 April 2015. This programme aimed at training of farmers on different aspects of oyster mushroom cultivation including spawn production and post-harvest management techniques to improve livelihood and nutritional security of the resource poor tribal farmers, women empowerment and self-employment generation.

Dr R.K. Avasthe (Joint Director, ICAR, Sikkim Centre) asked the farmers to harness the full benefit of this training programme by undertaking mushroom farming on commercial scale. He assured the farmers of technical and input support from ICAR Sikkim Centre in their endeavours.

Shri P.T. Bhutia (Director, Horticulture, HCCDD, Government of Sikkim) told farmers that HCCDD, Government of Sikkim would like to help the farmers by establishing 'Farmers Interest Groups' for spawn production and mushroom cultivation in North- Sikkim. He advocated the farmers to go for crop diversification to reap the maximum benefits from crop production. During the technical sessions the topics of lectures aimed at comprehensive coverage of aspects related to mushroom production in Sikkim, including insect pest management in mushroom production; post-harvest management in mushrooms; and disease management in organic mushroom cultivation' to the participants.

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## Protection of Plant Varieties and Farmers' Rights

New Delhi, 10 April 2015. With the aim to sensitize the farmers about their rights and protection acts and discuss the issues and perspectives of PPV&FRA for

the agricultural development in North-East region an awareness programme on 'Protection of Plant Varieties and Farmers' Rights' was organized at the ICAR Research Complex, Umiam in collaboration with PPV&FRA, Government of India, New Delhi.

Dr A.K. Tripathi (In charge, Zonal Project Directorate, Zone III) emphasized on the importance of protection of plant varieties and the farmers' rights. He said that the North-East India is rich in wide biodiversity and it is the need of the time to protect the diversified indigenous germplasms of the region with the help of farmers in which KVK can play pivotal role.

Dr S.V. Ngachan (Director, ICAR Research Complex for NEH Region) said that farmers' protection is one of our major duties for the development of north-east agriculture. Highlighting some of the precious indigenous germplasm of north-eastern hills region, Dr Ngachan said that PPV&FRA is the first of its kind of farmers' act that empowers the farmers to protect their rights. Expressing happiness over the progress of the work in the region, Dr Ngachan suggested the PPV&FR Authority to give emphasis on registration of medicinal and aromatic plants under PPV&FRA that are available in plenty in North-Eastern Hills Region and advised to develop awareness through circulation of literatures in local languages and by harnessing the facilities of KIRAN website of the institute.

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## KVK East Sikkim strengthens farmers through input support under NICRA

Nandok, 4 June 2015. To strengthen the organic seed production among the farming community through farmers' participatory mode, The Krishi Vigyan Kendra, ICAR Sikkim Centre organized training-cum-input support programme in the presence of 28 progressive farmers at Lower Nandok under NICRA project. An improved soybean variety RCS 1-10, developed by ICAR Research Complex for NEH Region, Umiam, was

distributed amongst the progressive farmers of lower Nandok, East Sikkim. Soybean variety has been which performs very well in the mid hills eco-system of Sikkim. In the programme around one thousand slips of napier grass was also distributed among the farmers as a part of NICRA technology demonstration component.

Dr R.K. Avasthe (Joint Director, ICAR Research Complex for NEH Region, Sikkim Centre) encouraged the farmers to undertake production of quality seed of soybean and become self dependent in organic seeds. He urged the farming community of the locality to develop Nandok, and other adjoining villages of East Sikkim as quality organic seed producers. He also stressed upon agri-prenurial ability towards the organic seed production by the farmers to uplift their livelihood as well as self sufficiency in seed since there is huge demand of organic seeds in the state.

Dr Raghavendra Singh, Sr. Scientist (Agronomy) and PC (I/c) KVK East Sikkim, ICAR Sikkim Centre welcomed the gathering and detailed the improved packages and practices for cultivation of soybean. He stressed upon the cultivation of Napier grass on bunds in view of its importance for soil and water conservation as well as use it as a fodder grass during lean period.

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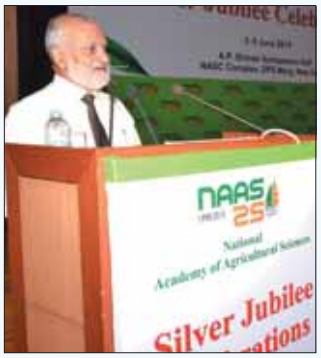
# Celebrations

## Glorious 25 years of National Academy of Agricultural Sciences

New Delhi, 5 June 2015. The National Academy of Agricultural Sciences, India opened its Silver Jubilee function on 2 June 2015 at the NASC. The first day was dedicated to the future scientists of the country, the post-graduate research students of National Agricultural Research and Education System. The students from 31 different universities participated debating the issue of future of agriculture in India targeting 2040 AD.


Besides, a national essay competition was organized to coincide with the elocution on the topic of 'Agriculture as a profession'. Both items gave a great hope as almost all the young minds gave positive ideas and believed that India will soon be a global trade leader in agriculture and farmer the lead businessman of the country.The subsequent days were aimed towards seeking the impressions nurtured by the Associate Fellowship who are going to be around for at least next two decades, with reference to their own disciplines. Representing brighter side of the coin which invariably tended to have a darker uncertain side, the young group was enthusiastic in taking the science to its logical and applied products to better the agricultural situation despite the expected climate change impacts. The Academy also summarised the recommendations from nation-wide Silver-Jubilee


symposia held in different places in the country filtering information and recommendations which were discussed by an eminent panel. The highlights of the celebration were Special Silver Jubilee lectures delivered by the Founder President of NAAS, Professor



M.S. Swaminathan; Director General of ICRISAT, Dr D. Bergvinson, and Director of University of Western Australia Institute of Agriculture, Professor Kadambot Siddique. Professor Swaminathan gave a brilliantly painted motivating picture of the adventurous side of Indian agricultural scientists who delivered technologies to farmers despite constraints and uncertainties.

The Final day was marked by an exceptionally well organised and inspiring Foundation Day lecture on 5 June, 2015 by Professor Y.K. Alagh on the structure of Indian agriculture wherein with the policy supports the possibility of achieving the 4% growth rate was put forward. More than 250 Fellows participated on all the days which also saw recognition of three farmers and an agri-industrialist who have made India proud to face up to international challenges despite all the uncertainties accentuated by climate change.

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## *Mera gaon, mera gaurav*

Koraput, 24 April 2015. With the aim to have interaction with the farmers to understand the needs of the villagers and providing technical knowledge to address the particular problem, one-day field interaction visit was conducted by the Indian Institute of Soil and Water Conservation, Research Centre under *'Mera Gaon Mera Gaurav'* programme at Malipungar, Tentuliguda and Kokuriguda tribal villages. The farmers were satisfied with the suggestions and were assured by the centre to provide some incentives for soil and water conservation measures under different programmes.

### Impact of field visit

- Repair work of old underground pipe at Malipungar to be done by the community and required PVC pipes are provided by the Research Centre. After successful installation of the pipe lines, underground pipes for another site will be looked into.
- Community demanding lift irrigation systems to lift water from *jhola* land. A very good patch of intensive cultivated area with vegetables crops are observed indicating that the community is working very hard.
- During interaction the team formulated a road map for conducting activities from next visit and prepare a check list to access the performance of the suggested measures.

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## Island *Kisan Mela*

Port Blair, 28 May 2015. The Member of Parliament, Shri Bishnu Pada Ray, inaugurated two-day long, the Island *Kisan Mela,* organized by the CIARI, Port Blair, at the Central Islands Agriculture Research Institute (CIARI) *mela* ground. The Member of Parliament highlighted the Government's commitment for the welfare of the people of the country, especially the farming community. Referring to CIARI activities, Shri Ray said that CIARI had achieved success in preparing seedlings for different agriculture products which would be made available to the farmers. He urged the CIARI scientists to assist the Islands' farmers by providing high-yielding breeds and seedling of brinjal, Andaman Papaya, broiler ducks, Nicobarese fowl, Teressa goats, Andaman sapota etc. which would add more income to the farmers. Earlier, the Member of Parliament visited the exhibition stalls, put up by the famers and different departments as part of the *kisan mela* and interacted with farmers. Dr S. Dam Roy (Director, CIARI) said that the Islands are hot bio-diverse spot and CIARI is making all efforts to provide modern agriculture technology not only to improve agriculture productivity but also to preserve those varieties available only in the Islands.

A programme *'Ek mulakat vaigyanik evam kisano ke saath'*, was conducted in the afternoon in which scientists and farmers interacted and exchanged knowledge on agricultural activities. About 400 farmers from different parts of the Islands participated in the *mela*.

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## *Kisan Mela* in Kumaon, Garhwal hills regions

Almora, 8 April 2015. Shri Manoj Tewari (MLA, Almora) chief guest in the *Kisan Mela,* organized by the Vivekanand Parvathiya Krishi Anusandhan Sansthan (VPKAS), spoke on various achievements of VPKAS and the other ICAR research institutes located in the region. One of the participant institutes,the Indian Institute of Soil and Water Conservation (IISWC) exhibited various natural resource conservation and improved agricultural production.

Dr P.K. Mishra (Director, IISWC) emphasized use of conservation technologies by the end-users for sustaining the production in his message. The scientists of IISWC requested farmers and other participants present in the *Mela* to adopt innovative technologies being developed to augment crop production without harming resource bases. While interacting with farmers, scientists shared the status, potential and improvement needs to conserve water and fisheries resources. They informed the participants on the benefits of fish foods and fish farming; and pointed out that fish farming in available and harvested water suitably and conservation of fish resources in natural waters hold the key to meet the increasing demands of fish. Later, the team had interaction with the tribal women farmers of the participants to understand their problems, needs and the potential technological interventions.

Farmers showed keen interest on technological aspects of the IISWC and had useful interaction with the scientists. Over 300 farmers and participants benefited from the IISWC stall, which exhibited specifically prepared exhibits and technological details.

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## Fish farmers festival

Motihari, 12 April 2015. The Union Minister of Agriculture, Shri Radha Mohan Singh ji inaugurated a two-day, *Matsya utpadan hetu kisan mela,* organized by the Central Institute of Fisheries Education, Mumbai, and National Fisheries Development Board, Hyderabad at Motihari (Bihar) from 11 to 12 April 2015. The Union Agriculture Minister emphasized on the potential and profits of fish farming which is compared to an ATM for a farmer and informed the gathering that the new initiatives of the Central Government in Blue Growth - Blue Revolution will bring prosperity to the fish farmers in the country.

Dr S. Ayyappan (Secretary, DARE and Director General ICAR) motivated the farmers to enter into fish culture. More than 5,000 farmers and officials and entrepreneurs participated in the programme. Dr W.S. Lakra (Director, CIFE, Mumbai) and Dr Paul Pandian (Chief Executive, National Fisheries Development Board) also spoke on the prospects of fisheries development in the state. The scientists of Central Institute of Fisheries Education, Central Institute of Fisheries and Aquaculture, and National Fisheries Development Board, Hyderabad delivered lectures and interacted with fish farmers, entrepreneurs and state fisheries officials.

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## World Veterinary Day, 2015

IVRI, 25 April 2015. The World Veterinary Day (WVD) is celebrated every year throughout the world on the last saturday of April. The Indian Veterinary Research Institute (IVRI) celebrated World Veterinary Day, year 'WVD 2015' at its several campuses under the OIE proposed theme of 'Vector borne diseases with a zoonotic potential'.

### IVRI campus

**Izatnagar.** Prof. M.C. Varshneya (Vice Chancellor, Kamdhenu University, Gandhinagar, Gujarat) emphasized the importance of Veterinary profession and appealed the veterinarians to accept the challenges, especially with regard to treatment and control of vector borne zoonotic diseases for the betterment of human and animal health, Director, IVRI, presided over the programme.

Dr R.K. Singh (Director, IVRI) delivered a lecture on 'Veterinary Profession—its role, contributions, duties and future scope' and highlighted the contribution of IVRI in development and production of veterinary biologicals including more than 50 life saving vaccines and more than 100 diagnostics. In a free Rabies vaccination camp-cum-animal health 330 dogs were vaccinated against rabies and also necessary diagnostic services were provided for other domestic animals.

Dr R K Singh, Director and VC, IVRI, giving vaccination during celebrations of World Veterinary Day 2015

**Mukteswar.** Dr B. Pattanaik (Project Director, PD on FMD, Mukteswar) chaired the World Veterinary Day, 2015 at IVRI campus, Mukteswar. About 100 participants including 50 school/college students, 30 farmers and 20 scientific staff participated in the event.

### IVRI Regional Station

**Palampur.** On World Veterinary Day, 2015 a group discussion-*cum-gosthi* was arranged. The scientists highlighted the definition and importance of World Veterinary Day and addressed the gathering on 'zoonotic diseases', followed by the group discussion on the topic, 'zoonotic diseases with particular reference to its prevalence in the local area'. There was specific discussion on the zoonotic diseases spread through cow-milk, with particular reference to animal wise diseases and its preventive management strategies.

**Kolkata.** The IVRI, Eastern Regional Station, Kolkata celebrated the World Veterinary Day-2015 at Sidhabari village under *Dendua Gram Panchayat* of Salanpur Block of Asansol Sub-division, West Bengal. The scientists briefed about organization of animal health/ infertility camps-cum-awareness programmes at Sidhabari village from December, 2014 to March, 2015 and narrated about various interventions such as vaccination, deworming, treatment of sick animals and reproductive disorders, organisation of *kisan gosthi*, distribution of mineral mixture supplementation and leaflets to farmers etc.

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## World Environment Day

### IVRI

Tivaria, 5 June 2015. The Krishi Vigyan Kendra (KVK) of IVRI celebrated World Environment Day at Tivaria village of Uttar Pradesh. The farmers were given tips on how to grow crops environmentally friendly way by the Subject Matter Specialists of KVK. The 3,500 rootstocks of Lemon grass and Napier grass and seeds of vegetables were distributed to the farmers and farm women. The farmers were sensitized about the judicious use of water, electricity, agro-chemicals and


fertilizers, while emphasizing the importance of cleanliness, hygiene and keeping the environment clean and green by Dr Mahesh Chander (Joint Director, Extension Education). The farmers were urged by Dr B P Singh (Programme Coordinator, KVK) to remain in touch with the institute to receive farm advisories on regular basis. The specialists of KVK highlighted the importance of diversification in agriculture having component of livestock and poultry alongside crops and fruit trees. The farmers were explained the importance of growing fodder crops to draw maximum advantage from farming activities. The farmers were informed about the various programmes of government being implemented by the institute for the farm productivity enhancement and welfare of farm animals & farming community including farm youth and farm women. The special focus of the programme was planting of saplings of Litchi, Banana and lemon in the village to create awareness among farmers about importance of fruit trees in enhancing farm income and nutritional security.

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### NIANP

Bengaluru, 5 June 2015. The 'World Environment Day' was headed by Dr Raghavendra Bhatta (Director, NIANP) who emphasized the need for the citizens in ensuring a clean and healthy environment for the welfare of the mankind and how we can contribute in this regard. Dr Raghavendra Bhatta recalled '*Swachh Bharat Abhiyan*' a mission of our Hon'ble Prime Minister and followed his guidelines related to cleanliness and set a model in surrounding areas.Further entire staff of the Institute along with research scholars, contract workers, students and residents of the Institute campus went round the Institute's premises and joined hands in our periodic '*Swachh Bharat Abhiyan*', by cleaning up the premises afresh. To mark this occasion, a mass tree plantation programme was also undertaken by planting tree saplings in the Institute campus by all the staff.

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## Farm inputs distribution to tribal farmers

South Goa, 4 April 2015. A programme on 'Farm inputs Distribution to tribal farmers' was organized at Cola village, South Goa district. The farm inputs, *viz.* 1 Power tillers (9 hp), with all accessories including Mould board plough, cage wheels, rotavator, cultivator etc., 6 power sprayer, 6 brush cutter, fertilizer and agro-chemicals were distributed to 6 self-help group of tribal farmers under Tribal Welfare projects funded by Indian Council of Agricultural Research, New Delhi. With the aim of the project it to benefit the small- and marginal- tribal farmers of Goa by Training and Sensitization to improved methods and technologies in agriculture and animal husbandry, distribution of farm inputs like planting material, chicks, chemicals, fertilizers, bio-control agents, vaccines, pumps, farm and processing machinery and advisory of experts the Central Coastal Agricultural Research Institute, Old Goa, is involved in this Project.

Shri Narendra Sawaikar (Member of Parliament, South Goa) pointed out to the farmers that they should utilize the inputs and expertise of scientists for agricultural development of their areas and their state. Dr Alok Kumar Sikka (DDG, NRM) interacted with tribal farmers and asked them what are all the agricultural inputs which are required for better farming. Dr Sikka also requested the beneficiaries to maintain, share and utilize the equipments properly.

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## 54th Annual Day of CIFE

Mumbai, 15 June 2015. The 54th Annual day celebrations of the Central Institute of Fisheries Education (CIFE) was inaugurated by Chief Guest, Shri Gajanan Kirtikar (Member of Parliament) who emphasized on the potential of fisheries development in coastal and inland states including Maharashtra. Shri Kirtikar reminded the responsibility of institute to be fisher/ farmer friendly and urgend to develop programmes for them.

Dr C.D. Mayee (President, ISCI) emphasized creation of responsible human resources in fisheries especially


in the light of climate change and global developments.

Dr W.S. Lakra (Director, CIFE) briefed the audience on the achievements of various academic programmes, research activities as well as outreach programmes undertaken by the institute.

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## 37th Foundation Day of CIARI

Port Blair, 23 June 2015. The Central Island Agricultural Research Institute (CIARI) celebrated its 37th Foundation Day. The Chief guest, Dr. Gurbachan Singh (Chairman, ASRB) in his addressed lauded the efforts and achievements of the Institute and also the contributions of the Scientists and others for taking the Institute this far. He shared his experiences while, serving in different capacity for bringing out desirable outcome in the field of research, development and extension for the benefit of the farmers and country as a whole. He said agriculture is an engine for the economic growth of the country and called upon the scientists and policy makers to develop technologies and policies which will not only be beneficial for the farming families, but will also ease the means to earn their livelihood. Dr. Singh emphasised on the major programmes Like More Drop per Crop, Lab to Land, Digital India, Swatch Bharat and Kisan Channel as suggested by our honourable Prime Minister, which should be followed in principal.


Dr S. Dam Roy (Director, CIARI) highlighted on the Mission, Vision and the significant accomplishment achieved by the Institute, benefitting the farmers, women, youth and other stakeholders of the Islands over the year.


Publications like Journal of Andaman Science Association, Indigenous Animal Genetic Resources of A & N Islands, Agriculture Production guide for Nicobar Islands and Multipurpose Fodder Trees in IFS were also released during the occassion.

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## IISWC, RC, participated in mega exhibition

Chandigarh, 28 May 2015. The Indian Institute of Soil and Water Conservation, Research Centre, participated in Government of India's Mega Exhibition. The farmers were discussed about the role of soil-testing in diagnosing the conditions of available nutrients in the soil which indicates the fertility and productivity of the soils. It also helps in assessing the soil constraints related to soil-fertility. Therefore, soil-testing provides sound information for recommendation of fertilizers and correct amount of chemical fertilizers to be integrated with organic amendments for improving the soil-health and quality to increase the productivity per unit area. The farmers were shown the sample soil-health card, developed in Mandhala watershed. The use of such information to the farmers were explained and it was also discussed whether the health card would help reduce consumption of fertilizers. Also, soil-health card will help the farmer in determining what can be more easily grown in the farm. The farmers raised the issue of bridging the gap between the number of soil-testing laboratories and the targeted number that needs to be established in the following three years. The farmers also discussed about the problems they are facing regarding water availability and salinity in soils, especially in growth of rice.

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## Inter-Institutional Sports Tournament, 2015

Cochin, 29 May 2015. Dr K.N. Raghava (Commissioner of Customs, Cochin) inaugurated Inter-Institutional Sports Tournament (2015), hosted by the Central Institute of Fisheries Technology at Maharaja's College Grounds, Ernakulam; and declared the tournament

open. Dr Raghava opined that sports play an important role in moulding a complete person with a healthy mind and healthy body.

Dr Ravishankar C.N. (Director, CIFT, Cochin) explained about the genesis of the ICAR Sports tournaments in the Golden Jubilee Year of ICAR in 1979 when the then Director General of ICAR Dr M.S. Swaminathan instituted the tournament as per the proposal given by CIFT, Cochin.

About 600 participants from 25 ICAR institutions played in the southern states.

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## ICAR Zonal Sports Meet, 2015

Dehra Dun, 21 April 2015. A three-day Inter-Institutional North Zone Staff Sports meet was inaugurated by Dr Vinod Kumar (Director, IGNFA, Dehra Dun) on 18 April 2015 at Indian Institute of Soil and Water Conservation.

Dr P.K. Mishra (Director, IISWC) focused on 20 categories of Track and Field events namely, running, jumping and throwing; 4 categories of indoor games such as badminton, Table Tennis, carom and chess; and 5 categories of outdoor, team games, viz., basketball, football, *kabaddi*, volleyball (shooting and

smashing) in which 23 ICAR Institutes participated. The Director (IISWC) also got released a souvenir on sports meet highlighting the tournament schedule and tourist places in Dehra Dun.

The closing ceremony was held on 21 April 2015 in which Dr P.P. Bhojvaid (Director, Forest Research Institute) distributed the Shields and Medals to winning teams and player as chief guest of the closing function. Mr Sandeep Deswal (from NDRI, Karnal) and Mrs Manisha Arya (from VPKAS, Almora) were adjudged as best athletes amongst men and women, respectively. The NDRI, Karnal won the overall championship by securing maximum points.

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# Visits

### Prof. (Dr) M.S. Swaminathan visits CTCRI

Thiruvananthapuram, 20 May 2015. Prof. M.S. Swaminathan emphasized on development of eco-technologies for sustainable cultivation of cassava and other tropical tuber crops. Dr Swaminathan appreciated the on-going work on soil-test based fertilizer recommendation, organic farming, soil and nutrient conservation technologies, and studies on response of tuber crops to climate change.

Prof. Swaminathan stressed the importance of bio-fortification and value addition to tuber crops and appreciated the outstanding work carried out by the institute on that aspect. He discussed about the latest extension research on introduction and popularization of improved varieties of tuber crops in Maharashtra; interaction of scientists with *Kunbi* tribes in Joida, Uttar Kanada; recently made MoU between Belgaon Minerals, Karnataka for establishing a sweet potato factory; and Information Communication Technology application for technology transfer of tuber crops.

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- Dr S. Ayyappan (Secretary, DARE and DG, ICAR) visited to attend 56th Board of Trustees Meeting of International Centre for Agricultural Research in Dry Areas (ICARDA) from 2 to 6 May 2015 at Rabat, Morocco.

## DG (ICAR) stresses on World class out-put

Visakhapatnam, 9 May 2015. Dr S. Ayyappan (Secretary DARE and DG, ICAR) stressed that the scientist community should come out with world class output as there are no dearth for funds and facilities. He also advised the scientists to identify the experts in related areas so as to plan and execute the research work on par with advanced laboratories in the West. In the one to one interactive meeting with technical, administrative and supporting staff of both the Regional Centres the DG (ICAR) discussed problems and prospects for betterment of ICAR with special reference to 'Vision 2050.' Dr Ayyappan exulted the August gathering of both Regional Stations of CIFT and CMFRI for the good work, and advised to join together to make much needed difference both in laboratories and in field in the form of quotidian meetings and cautioned time is not to rest in laurels.

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## Trainings

- Dehra Dun, 17 April 2015. The Indian Institute of Soil and Water Conservation (IISWC), organized a five-day training programme on 'Soil and Water Conservation Training-cum- Exposure Visit' from 13 to 17 April, 2015 for multi-disciplinary team of 20 officers, sponsored by Director, Institute on Management of Agricultural Extension, Bhubaneshwar, Odisha. Dr P.K. Mishra (Director, IISWC) suggested to adopt integrated watershed management approach.
- Dehra Dun, 23 May 2015. The Indian Institute of Soil and Water Conservation (IISWC), Dehra Dun organized a five-day short training programme on 'Soil and Water Conservation and Watershed Management' from 19 to 23 May, 2015 in which 20 officers of different disciplines from 16 districts of Odisha were participated. The training programme was sponsored by Director, Institute on Management of Agricultural Extension (IMAGE), Bhubaneshwar, Odisha). Dr P.K. Mishra (Director, IISWC) said that realistic watershed planning is the base for integrated watershed development and management.
- Dehra Dun, 1 June 2015.The Indian Institute of Soil and Water Conservation (IISWC), organized a six-day Training-cum-Exposure visit Programme on 'Soil and Water Conservation Techniques' wef 27 May, in which 24 Agriculture Engineers posted in different districts in Tamil Nadu participated. Dr P.K. Mishra (Director, IISWC) suggested to adopt integrated watershed management approach. Learned soil and water conservation technologies and approaches need to be applied in field situation.

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- Hyderabad, 28 May 2015. A three-day paid entrepreneurial training programme on 'Development of value-added meat products' was started on 26 May 2015 at National Research Centre on Meat. Necessary information like availability of equipments, their costs, suppliers, ingredients, composition and products formulation was provided to participants to enable them to start their own business.

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- Jodhpur, 23 May 2015. The Central Arid Zone Research Institute organized a three-day, from 21 to 23 May 2015, training programme under Tribal Sub-Plan Project covering soil and water conservation, improving crop productivity, land use and land capability, horticulture and livelihood improvement knowledge were imparted. Dr R.K. Bhatt (Director, CAZRI) has distributed soil-health cards to 30 tribal farmers for the first time and emphasized the need of integral land use management for improving crop productivity and livelihood sustainability.

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- Dehra Dun, 9 June 2015. The Indian Institute of Soil and Water Conservation, organized a six-day Training-cum-Exposure visit Programme on 'Soil and Water Conservation Techniques' from 4 to 9 June 2015.

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## Personnel

### Superannuations

| Name | Designation and Address | Date of superannuation |
|---|---|---|
| Dr R. Venkataramanan | Joint Director, IVRI, Research Centre, Bengaluru | 31 May 2015 |
| Dr. Asim Kumar Pal | Joint Director, CIFE, Mumbai | 31 May 2015 |
| Dr B.P. Singh | Director, CPRI, Shimla | 30 June 2015 |



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