

ICAR

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From the DG's Desk

Dear Readers!

Indian agriculture requires variable and efficient input management system in accordance with the soil condition and crop requirements. A sustainable, environmentally safe and cost effective production system will depend on reliable spatio-temporal information based input management system. This knowledge-based approach is intended to increase farming efficiency, enhance profitability, lessen environmental impacts, and is expected to drive further technological innovation. Technological developments in the field of remote sensing and geospatial sciences, and ICTs have the advantage in terms of generating state-of-the art informatics, capturing the variability, vulnerability and dynamism of agricultural system for spatio-temporal monitoring of crop and soil health.

The Unmanned Aerial Vehicles commonly known as drones have shown promising ability for agricultural remote sensing in recent years. The Drone platforms are evolving rapidly from technical and regulatory stand-



points. Aerial sensing from drone bridges the gap between ground-based observations and remotely sensed imagery from conventional aircraft and satellite platforms. Satellite remote sensing systems have several critical drawbacks for agricultural applications such as low spatial and temporal resolution, availability limited by weather conditions and high cost. Use of drone offers several advantages such as low cost, quicker and repeatable data acquisition, flexibility in terms of flying height and timing of missions as per need, high spatial resolution imagery, safety and generation of near real time information. Keeping in view the above facts, drones have been identified as a powerful complement to remote sensing platforms for agricultural applications.

The drone-based sensing technology would enable rapid, non-invasive, reliable appraisal of soil-health and crop conditions (nutrient, water, pest and disease stresses) at field scale and would help subsequent issuance of advisories for countering



environmental and economic consequences of indiscriminate use of fertilizers and other ecologically unfriendly agronomic interventions. Recently, Government of India launched soil health card programme to generate soil health cards for 140 million land holdings through testing of 25.3 million soil samples at every three years interval. The UAV based hyperspectral sensing technology may complement getting soil test results and generating soil health card in desired pace. *Pradhan Mantri Fasal Bima Yojana* launched during January 2016, aims to increase small farmers' resilience to weather shocks and to enhance farmers' adaptive capacity by developing 'climate-smart insurance' products and also to encourage farmers to adopt innovative and modern climate smart agriculture. Drone based remote sensing products would be proxy to crop losses as opposed to loss assessment on farmers' fields by insurance agents. This may lower the cost of providing insurance support to small holders and make it affordable. The proposed technology would not only help in geo-referencing/geo-mapping of insurance having homogenous risk profile for the notified crop, but also in assessing yield loss and type of localized risks causing yield loss.

Recently, IARI with its partner from Delhi Technological University has carried out studies on drone based remote sensing for in season crop health monitoring and also explored its potential for field phenotyping of a large number of rice and wheat genotypes using visible and NIR sensors in low flying indigenously developed drones. The technology was showcased in the recently held Agricultural Fair with a theme on *Krishi Unnati 2016*. In recently launched KISAN (C(K)rop Insurance using Space technology And geo-

informatics) by Ministry of Agriculture and Farmers Welfare, data collected by drones are being collated with satellite imagery and traditional crop cutting experiments to arrive at a foolproof settlement of crop loss claimed by individual farmers. There are many initiatives by private sectors on use of drone for drought monitoring in Marathawada region of Maharashtra and assessing the damage to wheat and mustard crops due to untimely rain and hail storms in Haryana.

With climate change challenging Indian Agriculture, there is a need to strengthen research for developing Unmanned Aerial Vehicles with indigenous know-how including appropriate sensors to be deployed for specific applications in agriculture suiting to the agro-climatic conditions prevalent in India. For this, the Indian Council of Agricultural Research has taken collaborative initiatives with Indian Institutes Technology, Indian Space Research Organization and other institutes to evolve and nurture drone-based technology to revolutionize the farming practices, reduce crop loss and enhance farmers' income in India in the years to come. Understanding and developing air-borne hyper-spectral remote sensing based monitoring of crop and soil condition will have many implications when used in conjunction with satellite based technologies at wider scale. This initiative is perfectly aligned with visionary programme of Honourable Prime Minister on 'Promoting Space Technology in Governance and Development'.

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MoU/MoA

Triparty MoU signed among IISWC, Eco-Task Force, and Uttarakhand Van Panchayat Vikas Samiti

Dehra Dun, 16 June 2016. Triparty MoU was signed among Indian Institute of Soil and Water Conservation, 127 Eco-Task Force and Uttarakhand Van Panchayat Vikas Samiti to conduct an action research project in Jaunsar Tribal Region of the middle Himalayas (Lakhwar) of Uttarakhand to improvise soil working techniques for enhancing tree establishment under rainfed condition, and developing improved tree planting techniques.

This region suffers from degradation problems like, deforestation and high soil erosion. The Director (IISWC) explained about the necessity and role of forest trees in soil and water conservation and highlighted the issues of drying of springs and the climate change. Col. Rana



talked about rehabilitation work of Eco Task Force and said that development of new tree planting techniques would be helpful in expanding forest cover in Uttarakhand. Shri Tomar also stressed upon women empowerment for forest management.

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MoA signed between IIRR and private company

Rudrapur, 18 May 2016. As a part of commercialization, through Public Private Partnership (PPP) and following the ICAR Guidelines for Intellectual Property Management and Technology Transfer/ Commercialization 2014, one memorandum of agreement (MoA) was signed between Indian Institute of Rice Research, Hyderabad and Bharitya Beej Nigam Ltd (a private sector seed company), Kichha Road, Rudrapur, Uttarakhand on for DRRH-2 rice hybrid seed production and popularization.



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WORKSHOPS, MEETINGS, SEMINARS, CONFERENCES, SYMPOSIA

XXIII ICAR Regional Committee-II Meeting

Hyderabad, 25 June 2016. Shri Swapan Debnath, (Minister of State (Independent Charge), Department of Animal Resources Development, Government of West Bengal), Chief Guest, inaugurated a two-day XXIII Meeting of the ICAR Regional Committee-II, at the National Academy of Agricultural Research Management on 24 June 2016.



Shri Debnath said, “The rural economy of West Bengal mainly depends on agriculture. Animal Husbandry is one of the pillars of our rural economy,” and also added that our department has drawn a plan of action to mitigate the gap between requirement and production. The mission is to cover 60% breedable low milk producing cattle of the state under artificial insemination programme by 2021-22 A.D. to have self-sufficiency in milk production. The Government of West Bengal has decided to strengthen the existing three ‘A’ graded frozen semen bull stations to keep pace with the increasing requirement of frozen semen straws.

Dr Trilochan Mohapatra, Secretary (DARE) and Director General (ICAR), outlined the research achievements during the past two years in agricultural research, agricultural education and extension. Dr Mohapatra explained the current objectives of the ICAR in meeting the challenges of the agricultural sector, and gave examples of the crop varieties released for cultivation in different ecologies. The DG, ICAR also focused on the developments in the field of Horticulture, Biotechnology, Agricultural Engineering, Natural Resources Management, Animal Science, Agricultural Extension and Fisheries. The Regional Committee-II Meeting discussed and reviewed the current status of agricultural research, agricultural

education and extension in West Bengal, Odisha, Andhra Pradesh, Telangana and the Union Territory of Andaman and Nicobar Islands.

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Interactive Meeting of Union Minister for Agriculture & Farmers Welfare at AAU

Asom 17 June 2016. The Union Minister for Agriculture & Farmers’ Welfare, Mr Radha Mohan Singh, along with Mr Atul Bora (Minister of Agriculture and Veterinary, Government of Asom) and Dr T. Mohapatra (Secretary DARE & DG, ICAR) had interactive meeting at AAU, Khanapara campus. The Union Minister for Agriculture and Farmers Welfare said that 3 new Krishi Vigyan Kendras (KVK), one each in Baksa, Morigaon and Bongaigaon districts have also been established during last two years in Asom. District contingency plans for 22 districts of Asom with regard to climate resilient agriculture have also been updated and, finalized. The Union Minister for Agriculture & Farmers Welfare further added that a new breed of poultry named ‘Kamrupa’ has been developed and released under AICRP-AAU, Khanapara centre for the benefit of the farmers last year. A food testing laboratory named ‘EN-Geo Consultancy and Research Centre’ at Ambari, Guwahati has already been established, the Minister added. He further that the proposed IARI-Asom at Bormula, Bamuni gaon, Baihata Chariali at Kamrup district shall be established shortly as per the decision of Government of India. Shri Singh highlighted that the technologies generated by AAU and ICAR Institutes located in Asom have gone to the farmers’ field benefiting them in improving their economy. The Union Minister for Agriculture and Farmers’ Welfare emphasized on greater coordination with the State Departments through quarterly meetings involving the ICAR scientists and state officials for effective technology transfer to the farmers.

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Union Minister of Agriculture and Farmers Welfare inaugurates Kisan Gosthi and Krishi Vikas Parve

Malhana, 11 June 2016. The Union Minister of Agriculture and Farmers’ Welfare, Shri Radha Mohan Singh, inaugurated *Kisan Gosthi*, *Krishi Vikash Parve*,



and Administrative Building of KVK (IIVR), Deoria. This programme was organized by the Indian Institute of Vegetable Research, Krishi Vigyan Kendra (Malhana, Deoria), Krishi Vigyan Kendra (Kushinagar), National Horticultural Research and Development Foundation (Deoria, Uttar Pradesh) and APIV. The Union Minister of Agriculture and Farmers' Welfare emphasized on *Pradhanmantri Fasal Bima Yojana* and other farmer welfare schemes of Government like *Pradhanmantri Sishai Yojana*, *Ujjwala Yojana*, Soil Health Card etc., and urged the farmers to take advantage of the schemes for enhancing their income and profitability. Shree Mahesh Giri (an MP from Delhi) also informed about the Government's welfare programme started for the farmers.

Dr B. Singh (Director, IIVR) informed the farmers about institute and Krishi Vigyan Kendras activities as well as emphasized on importance of vegetable cultivation for profit, nutritional security and livelihood. Progressive and innovative farmers along with farm-women were awarded at the programme. About 3,000 farmers, farm-women and rural youth from various part of Eastern Uttar Pradesh participated in this programme.

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Third Meeting of Indian Grain Storage Working Group

New Delhi, 23 April 2016. The Union Minister of Agriculture and Farmers' Welfare, Shri Radha Mohan Singh, inaugurated Indian Grain Storage Working Group meeting, and said that it was important to pay more attention on development of low-cost storage systems for farm level storage, cost-effective storage systems for agro-processing industries, and development of modern warehouses for bag storage structures. Shri Singh said that the government has promoted a region-based strategy to focus on reduction in post-harvest losses. This is done according to the climatic diversity of every state and region by implementing the unified Horticulture Development Mission. Under this mission, the government aims to promote technical setup, extension of area under horticultural crops, post-harvest management, processing and marketing etc. The National Agriculture

Market would help nationwide electronic trading of agricultural commodities, Shri Singh said. In this programme, 585 agriculture *mandis* of India would be connected to each other. The farmers would get maximum price for their crops and the interference of mediators would be reduced to a great extent. Direct foreign investment was also being encouraged in this field. The Union Minister further said the government was considering setting up a committee, which would recommend measures to enhance efficiency in warehousing space to reduce post-harvest crop losses. The maiden issue of *Journal of Grain Storage Research* was released by Shri Radha Mohan Singh, Union Minister of Agriculture and Farmers Welfare.

The Secretary (DARE) and DG (ICAR), Dr Trilochan Mohapatra, emphasized that for making our grain storage system loss free, we require scientific, technical and commercial inputs from active researchers, grain storage agencies, transporters, warehouse and silo manufacturers, packaging material industries, fumigation chemicals, grain handling, aeration, cooling and fumigating equipment manufacturers, etc. The DG (ICAR) emphasized that the third meeting of Indian Grain Storage Working Group is meant to bring together all the stakeholders on a single platform to achieve its objectives.

Mr Rajju Shroff (Chairman, CCFI) elucidated that in rural areas we can apply the scientific techniques to increase the agricultural production and to improve the safe storage. In India, ICAR and Krishi Vigyan Kendras (KVKs) are providing trainings on skill development for safe storage of grains. To reduce warehousing problems ICAR, SWC and KVKs have developed so many equipment. Indian agriculture is improving faster and new investments are coming in the sector of warehouse, cold storage etc.

Dr Digvir Jayas (Professor and Vice-President, Research and International, University of Manitoba, Canada) pointed out that as an intellectual group we should work on reducing the food losses. For minimizing the losses, we should consider the interaction between physiological and biological environment. Dr Jayas explained that farmers should be trained for technological issues. The scientific trainings should be modified, so that the farmers can understand and adopt those training more easily.

Ms Seema Kakkar (Executive Director (Quality) Food Corporation of India) informed that the activities of the group are very important for FCI and promised for a greater participation by officials of FCI in its future activities.

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Pre-kharif farmers' meet

Cuttack, 3 June 2016. Dr A.K. Nayak (Director, NRRI) inaugurated Pre-kharif Farmers' Meet, organized by

National Rice Research Institute under the Tribal Sub-Plan (TSP) programme in the adopted village Ramthenga of Danagadi block, Jajpur, Odisha, and highlighted the major objectives of the TSP of the Government of India in bridging the gap between tribal and non-tribal dominated areas of the country and bringing the tribal people to the mainstream of development process. Dr Nayak emphasized on skill training and capacity development programme for the adopted farmers and farm-women in agriculture for sustaining and improving their livelihoods. Besides, Dr Nayak formally inaugurated the Ramthenga 'Farm Inputs Users' Association' (FIUA) formed under the TSP through *Gram Sabha* and handed over thirty-four agricultural implements namely, seed treating drum, manual operated marker, mandwa weeder, pedal paddy thresher and mini rice parboiling unit procured under TSP to the FIUA for demonstration and use by association members. The Director, NRRI also distributed paddy seed mini kits of newly released NRRI varieties to all the tribal farmers and farm-women for demonstration.

A farmers-scientists interaction and feedback session was organized to understand and address the problems and issues concerning agricultural production and productivity of the village. Later, an action plan was finalized to undertake various demonstrations and on-farm trials and capacity building programmes in ensuing *kharif* season.

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Enhancing the preparedness for agricultural contingencies for *kharif*, 2016

Bihar

Patna, 30 May 2016. With the aim to discuss action plan related to district level contingency plan for *kharif* 2016 in Bihar and its operationalization, an interface meeting on 'Enhancing the Preparedness for Agricultural Contingencies in Bihar for *kharif* 2016', jointly organized by Central Research Institute for Dryland Agriculture, Hyderabad and ICAR Research Complex for Eastern Region at Patna, was held at ICAR Research Complex for Eastern Region. Dr Ch. Srinivasa Rao (Director, CRIDA) emphasized that the implementation of the various interventions in contingency plan should be location and situation specific. Dr Rao also emphasized that there is a need to create awareness among the farmers and line departments about preparedness to overcome flood or drought situations. Dr Rao focused on the concept of seed plus management as an important strategy. He added that stress-tolerant short and medium duration varieties of rice and pigeonpea need to be promoted in the state. Water harvesting structures are needed in the rainfall deficient regions and the harvested water should be used first for saving livestock and horticultural crops.

Dr M. Osman (Principal Scientist, CRIDA) narrated that as per the recent forecast of IMD, Bihar will receive below normal rainfall particularly in West Champaran, Gopalganj, East Champaran, Chhapra, Siwan, Bhojpur, Patna, Nalanda, Gaya, Aurangabad, Nawada, Munger, Begusarai, Khagaria, Bhagalpur, Purnia and Katihar and other districts will receive near normal rainfall except Rohtas which will receive above normal rainfall.

Recommendations

- Climate resilient practices like community based staggered nursery, mechanical transplanting etc. need to be promoted.
- As the short duration varieties of rice are more preferred for contingency, seeds of short and medium duration varieties of rice need to be produced.
- Since the area of pigeonpea and other pulses is decreasing in the region, it needs to be promoted and short duration varieties need to be developed.
- *In-situ* soil moisture conservation should be focused for contingency planning. Moisture conservation techniques like raised bed planting should be adopted. Small-water harvesting structures need to be developed in large numbers.
- Considerable area in the state exists under saline soils hence, salt-tolerant rice varieties already developed by CSSRI, Karnal need to be promoted in Bihar.
- Diversification with contingent crops like pigeonpea, blackgram, *bajra*, sesame, *toria* and small and minor millets is required.
- Seed production of berseem needs to be taken in identified areas of Bihar.
- Both the State Agricultural Universities of the state have been requested to intensify the improved and stress tolerant varieties of pulses and oilseeds for the state.
- Hailstorm is also becoming a regular phenomenon in the state; hence, it should also be kept in mind while making the contingency planning.
- Demand aggregation of seed requirement of the district for different crops should be carried out in advance by all the Krishi Vigyan Kendras (KVK). All the Programme Coordinators of KVKs need to prepare a detailed report on seed requirement for each district, including varieties grown so as to submit it to Government of Bihar for contingency seed plan.
- The KVKs need to validate contingency plans available so as to fine tune the cropping patterns.

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Maharashtra

Pune, 14 May 2016. In view of the region-wise monsoon forecast for Maharashtra, an interface meeting on 'Enhanced preparedness in Maharashtra for *kharif* 2016' was jointly organized by Central Research Institute for Dryland Agriculture, Department of Agriculture, Government of Maharashtra and Department of Agriculture and Co-operation, Government of India, in Maharashtra. The meeting is significant in the background of severe drought in



Maharashtra during 2015 and normal monsoon forecast during 2016. All regions in Maharashtra are expected to receive above normal rainfall during *kharif*, 2016.

Sri Vikas Deshmukh (Commissioner, Agriculture) stressed upon the contingency plans not only for agriculture but also for horticulture, livestock systems as well. Shri Deshmukh requested the representatives of state agricultural universities for updated information on agronomic measures, varieties etc., to be given before the start of *kharif* so that the information could be used by district level officials. Sri Deshmukh informed the audience about large-scale measures taken up by the government on water conservation (both *in-situ* and *x-situ*) and stressed upon the need to make use of harvested water for supplemental irrigation during long dry spells to avert the loss of crop production. Sri K. V. Deshmukh (Director, Agriculture), appraised the audience about the action taken during *kharif* 2015-16 on interventions taken up to mitigate dry spells in different districts. Sri Deshmukh pointed that some of the interventions, though could support short duration crops for a limited period, but could not withstand long duration dry spells of more than 40 days in few districts of Marathwada region and called for universities to work on management interventions measures. Shri Deshmukh also narrated experiences of few progressive farmers on how they could manage the drought in 2015-16 through crop diversification, limited use of available water through micro irrigation systems etc. The non-availability of breeder seed for bringing new varieties into seed production chain was also discussed and universities were requested supply the breeder seed so that measures could be taken to enhance availability of improved varieties.

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Madhya Pradesh

Bhopal, 21 June 2016. An interface meeting on enhancing the preparedness for agriculture contingencies during *kharif* 2016 for Madhya Pradesh was jointly organized by Central Research Institute for Dryland Agriculture (CRIDA), Indian Institute of Soil Science (IISS), Department of Agriculture, Government of Madhya Pradesh and Department of Agriculture and Cooperation and Farmers Welfare (DAC&FW).

Shri Rajesh Rajora (Principal Secretary, Agriculture, Government of Madhya Pradesh) called for promotion of management practices such as broad bed furrow and ridge systems, farm ponds for runoff harvesting, organic mulching, zero tillage to improve soil-health etc. as essential practices among farming community to meet long dry spells. Shri Rajora desired that crop diversification, intercropping and agroforestry measures be promoted as climate resilient measures for climate change. Shri R. B. Sinha (Joint Secretary, DAC&FW) stressed for impact assessment of contingency plans in over coming weather aberrations during last two years in the State. Shri M. L. Meena



(Director, Agriculture) requested all district officials to prepare action plans based on the natural resources and cropping systems prevailing in the district. Shri Meena also pointed out that whenever necessary, groundwater use to be promoted for supplemental irrigations as contingency measure. Dr K.V. Rao (Director, CRIDA) informed the status of monsoon and stressed upon the need for contingency preparation in view of above normal rainfall to mitigate problems of seasonal waterlogging due to large scale black soils in the state.

Recommendations

- Equal emphasis need to be given for both seed supply and management practices under contingency plans.
- Better natural resource management practices to be promoted among farmers to overcome water stagnation problems due to high intense storms.
- A seed rolling plan to be developed for contingency crops in discussion with state agriculture universities so that sufficient quantity of seed would be available for distribution.
- Farmers are to be dissuaded in cultivation of rice with groundwater and promoting rice through SRI cultivation method.
- Realistic action plans are to be prepared by each district based on resources available.
- Monthly meetings to be organized at district level with all stakeholders during the *kharif* to address contingency scenarios.

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Gujarat

Hyderabad, 23 June 2016. With the aim to educate on the status of monsoon during *kharif* 2016; document the experiences of implementing the contingency



measures during the last year; and to review the plans being made to tackle the weather aberrations for the current year an meeting was organized by the Central Research Institute for Dryland Agriculture in collaboration with Department of Agriculture and Cooperation and Department of Agriculture, Government of Gujarat for enhancing the preparedness for agricultural contingencies during *kharif* 2016 in Gujarat. Dr S. R. Chaudhari (Director of Agriculture, Government of Gujarat), chaired this meeting and said that Banaskantha district experienced 26 inches (650 mm) of rainfall in 48 hr leading to severe erosion of top soil and loss of standing cotton crop.

Recommendations

- *In-situ* conservation measures in long duration crops such as cotton and castor to be promoted to manage rainfall variability.
- Residue recycling need to be promoted for improving soil organic carbon towards coping mid season droughts.
- Broad bed furrows to be promoted to address high intense rainfall events in heavy textured soils.
- Individual farm holding wise water structures need to be linked with PMKSY.
- Groundnut and castor as contingent crops in place of cotton.
- Promoting intercropping systems involving pigeon pea as an intercrop along with groundnut, maize, pearl millet etc.
- Discouraging cotton due to high infestation of pink boll worm.
- Silage making needs to be emphasized to meet the off season fodder requirement.

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North-east India

Interface meetings on enhancing the preparedness for agriculture contingencies such as floods and mid-season droughts during *kharif* 2016 for north-east region were jointly organized by the Central Research Institute for Dryland Agriculture, ICAR Research Complex for North- East Region, Umiam, and Department of Agriculture and Cooperation along with state departments of agriculture i.e Asom and Meghalaya were conducted at Guwahati and Umiam on 27 June and 28 June respectively. The meetings started with the discussions on the purpose of this interface meeting, state wise monsoon forecast for both Asom and Meghalaya.

Based on the SACOF-8 forecast, many districts in both the states are expected to receive to below normal rainfall during the present *kharif*.

Asom

Guwahati, 27 June 2016. Sri Amlan Baruah (Secretary, Agriculture) said that village level worker, a link between the department and farmer should be made aware the contingency plans and implementation need

to be made through them. Shri Baruah requested that interface meetings for north-east region could be conducted in April/ May every year with the help of the Indian Council of Agricultural Research. Shri Baruah advised the district officials to stabilize and enhance the income of farmers in spite of weather aberrations and made a plea to officials to enhance the *rabi* cultivated in Asom specially with pulses and oilseeds and use the available technologies from Assam Agricultural University.

Dr Ch. Srinivasa Rao (Director, CRIDA) informed the audience that contingency plans for 22 districts of Asom are completed and available in public domain. Dr Rao stressed upon the need for contingency preparation in view of below normal rainfall which may impact the crops during mid- or end of season and also for flash flood situations which are common in this region. Dr G. N. Hazarika (Director of Research, Assam Agricultural University) informed the audience about the possibility of *rabi* crop in spite of deficient rainfall. Dr Hazarika suggested for promotion short duration rice varieties, staggered nursery planting in the event post flood scenarios.

Recommendations

- Priority to be given for interventions to overcome flash flood and mid season/ terminal drought situations.
- Efforts to be made to promote farm ponds in every farm holding to face the mid season droughts.
- Bund height needs to be increased for additional water storage in rice fields.
- In flood prone regions, emphasis to be given for *rabi* action plans and link them up for enhancing production of pulses and oilseeds.

Meghalaya

Umiam, 28 June 2016. Dr Premjit Singh (Vice Chancellor, CAU) said that in spite of more than annual rainfall of 2,000 mm, water scarcity is a constant problem in this state and requested the department to plan for long-term measures with focus on rainwater harvesting systems and enhancing the *rabi* area and production with micro-irrigation systems. Dr Singh also stressed upon the availability of quality seed suited to the region and informed the efforts made by Central Agricultural University (CAU) on seed supply to Meghalaya. Dr Ch. Srinivasa Rao (Director, CRIDA) informed that this is the XI Interface Meeting at all India level and second one in north-east region being conducted during this *kharif*. Dr Singh also informed that below normal rainfall is expected during the *kharif* as per Indian Meteorological Department and SASCOF forecast and requested to plan for mid-season and terminal season droughts as well as flash flood scenarios. Considering the topography in the region, Dr Rao suggested to initiate measures appropriate for upland, midland and low-land situations with crop diversification to pulses and oilseeds in mid and uplands and short duration submergence tolerant varieties in low lands.



Dr S. V. Ngachen (Director, ICAR Complex for North-East Region) informed that less than normal rainfall is received over a period of time. However, the intense rainfall and flash floods are becoming major problem in Gharo hills increasing the soil erosion risk and submerging the paddy fields and also hampering the potato cultivation.

Recommendations

- Priority for construction of check dams across streams for water conservation with more funds from central schemes.
- Efforts to be made to conserve the forests which otherwise enhances the risk of land slides, soil erosion with increased intensity of rains.
- Promotion of soybean and pigeon pea to be taken up on priority during *rabi*.
- Application of fertilizers in split doses to be promoted among farming community.
- Low cost *jalkunds*, treadle pumps are to be promoted in the region.
- Pulses or short duration paddy varieties are to be promoted during drought situations.
- Need to develop machines suiting to local conditions enhancing the use by women farmers.
- Crop rotation should be the norm for endemic areas.

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Academia-Industry Interaction Meet

at ICAR-RCER, Patna

Bhopal, 28 June 2016. The Union Agriculture and Farmers' Welfare Minister, Shri Radha Mohan Singh, inaugurated an Agricultural Machinery Resource Centre, displaying 18 types of CIAE prototypes numbering 565 at Centre Institute of Agricultural Engineering (CIAE). Shri Singh said that centre aimed to promote popularization of new machines and skill up gradation training in operation and maintenance of agricultural machinery and added that the centre has been established under Consortium Research Project on Farm Mechanization and Precision Farming housed. Later, with the aim to bring academia and industry at a common platform to chalk out strategies towards development and commercialization of farm machinery in the eastern region of the country an Academia-Industry Interaction meet was jointly organized by the CIAE, Bhopal in collaboration with ICAR-RCER,



Patna and All Agricultural Machinery Manufacturers Association India (AIAMMA) at ICAR Research Complex for Eastern Region, Patna. Inaugurating the Academia-Industry Interaction Meet, Union Agriculture and Farmers' Welfare Minister, Shri Radha Mohan Singh emphasized to increase agricultural mechanization to enhance the production and productivity of agricultural produce so that the income of the farmers could be doubled by 2022 A.D. and showed his concern on below average farm power availability (1.1 kW/ha compared to national average of 1.85 kW/ha) in eastern region of the country. Shri Singh also mentioned that cost of human energy is Rs 125 per unit whereas cost of energy from tractors and power tiller is lesser than Rs 10 per unit. Problem of unemployment will increase by farm mechanization is a myth. The state wherein farm mechanization is the highest among states employs 7 lakh labours every year for agricultural activities.

Dr R. C. Srivastava (Vice Chancellor, Rajendra Agricultural University, Pusa) informed that the cost of cultivation could be reduced by 33-45% in cereals, if mechanization in crop production is adopted. Dr K. K. Singh (Director, CIAE) stressed that farm mechanization will have significant role in achieving Second Green Revolution in the country. A total of 70 delegates comprising of research and development institutions, Academia, State development agencies and manufactures from Bihar, Jharkhand, Odisha and West Bengal participated in the meet.

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on Agricultural Mechanization

Pune, 3 May 2016. To create a common platform for ICAR institutes, agricultural universities and leading agricultural machinery manufacturers in Maharashtra and discuss the innovative technologies and mechanization in Madhya Pradesh, the Central Institute of Agricultural Engineering (CIAE), Mahatma Phule Krishi Vidyapeeth (MPKV), Rahuri, AIAMMA, Pune Chapter, and Maharashtra State Agro-Industrial Development Corporation, Mumbai organized an Academia-Industry Interaction Meet at the College of Agriculture, Mahatma Phule Krishi Vidyapeeth, Pune. The interactions resulted in providing guidance to the manufacturers in moving forward for bridging the farm



mechanization gaps in Maharashtra. Dr K. P. Vishvanatha (Vice Chancellor, MPKV) highlighted challenges to provide cost effective and timely solutions to labour problems faced by the farming community to achieve higher production and income. Besides the other deliberations showed that several hundred technologies are already available in the National Agricultural Research System, which need to be commercialized through the manufacturers to make them available to farmers expeditiously.

Dr K. K. Singh (Director, CIAE) informed the house that CIAE is capable of extending all supports in providing training, technical expertise in production development and also testing of farm machinery. Increase of women labour in the agricultural sector requires a rethink from the manufacturers to develop simple, gender-friendly and ergonomic tools and machinery.

Recommendations

- Development of high capacity power operated machinery to be taken up by the CIAE, Bhopal, in collaboration with manufacturers.
- Several issues related to testing of agricultural machinery such as testing fee, time taken for testing etc., need to be addressed.
- Creation of custom-hiring hubs for easy availability of high capacity machines.
- Establishment of skill development centres for fabrication and operation, maintenance and repair of agricultural machinery.

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NICRA-Expert Committee Meet

New Delhi, 14 June 2016. The Secretary (DARE) and DG (ICAR), Dr T. Mohapatra, chaired a three-day National Innovation Committee Resilient Agriculture (NICRA) expert committee meeting at NASC Complex. Dr Mohapatra highlighted the importance of contingency plans developed by the ICAR and need for strengthening them, made suggestions towards implementation strategies in coordination with State and Central Governments and informed that this is

one of the priorities for PMO in the light of recent droughts, rainfall variability and other extreme climatic events.

Dr Mohapatra suggested that mechanisms to monitor the implementation of these plans need to be developed, and the adaptation and mitigation of agriculture systems through better integration of crop, NRM, livestock, poultry and fishery sectors. Reduction of methane (CH₄) emissions from livestock sector, conservation agriculture, carbon sequestration, germplasm collection, combined affects of elevated temperature and CO₂ on crops and livestock, efficient utilization of NICRA infrastructure, lessons learnt from NICRA-Climate resilient villages need to be documented, he further added.

Dr Alugusundaram (DDG, Agriculture Engineering) underlined the need to reduce the post-harvest losses and value addition of agriculture produce through women farmers groups; and highlighted the utilization of ITKs in climate change adaptation.

Dr S. M. Virmani focused on global climate change negotiations, importance of agriculture sector, details of CoP meetings, role of NICRA in commitments made by Government of India, strategies for strengthening the NICRA programme, priority setting, village based innovative climate resilient technology up-scaling and strengthening of competitive projects etc. Dr Virmani also highlighted the need for strong background analysis of agro-ecosystem for project proposals under NICRA.

Dr Ch.Srinivasa Rao (Director, CRIDA) focused on various outputs and outcomes of the projects, and technologies channeling to other national programmes like NMSA, PMKSY, Water Mission, the Himalayan Mission, State dryland missions, Green climate fund, INDCs, UNFCCC-SBSTA meetings. Dr Rao highlighted the contingency plan interphase with State Governments establishment of 151 climate resilient model villages and to expand horizontally through various national and station programme.

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Climate change and Mitigation Strategies through Plant Genetic Resources

Palode, 17 June 2016. Dr P. Pugazhendi (Director, Scheduled Caste Development Department, Government of Kerala) inaugurated a workshop on 'Climate change and Mitigation Strategies through Plant Genetic Resources', sponsored by Kerala State Council for Science, Technology and Environment (KSCTE), at Indian Institute of Oil Palm Research, Research Centre, and delivered a lead expert lecture on the proposed topic. Dr P.G.Latha (Director, JNTBGRI) felicitated the function and delivered a





expert lecture on 'Climate change mitigation strategies through *in situ* conservation of Plant Genetic Resources (PGR)'. The other speakers focused on Climate change and mitigation strategies through PGR, role of plantation crops for climate change mitigation etc. Clear strategies were evolved for large-scale afforestation and *in-situ* conservation of PGR under the programme 'Mera Gaon Mera Gaurav' in the opted villages of Indian Institute of Oil Palm Research Regional Station.

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Workshop on NICRA, NIFTD and strategy for *kharif*

Kanpur, 19 April, 2016. Two-day workshop on National Innovations in Climate Resilient Agriculture (NICRA) and 'National Initiative on Fodder Technology Demonstration (NIFTD) and strategy for *kharif* of Krishi Vigyan Kendras was held on 19 April 2016 at Agricultural Technology Application Research Institute (Zone IV). Dr A. K Singh (DDG, Agricultural Extension) highlighted the need for NICRA project in the face of increasing climate variability, and emphasized to develop *kharif* strategy with opportunity of different technology to overcome the drought situation.

Dr U.S. Gautam (Director, ATARI, Zone IV) presented performance of NICRA and explained about the expectations of NICRA- KVKs and way forward. The scientists remarked on the vulnerability of the Uttar Pradesh and Uttarakhand, narrated that the KVKs work according to the need of the farmers on different vulnerabilities such as drought, flood, groundwater



depletion, cold wave frost and hail storm. Some scientists gave suggestions for improvement of action plan for 2016-17; while some focused on overall performance of the NICRA and NIFTD project of the zone.

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Climate resilient technologies for improving livelihood of farmers of Mizoram

Aizwal, 5 May 2016. The ICAR Research Complex for NEH Region, Mizoram Centre organized brainstorming session climate resilient technologies for improving livelihood of farmers of Mizoram under National Mission for Sustainable Hill Ecosystem (Task Force 6).



Dr C. Lalzarliana (Director, Crop Husbandry, Department of Agriculture) emphasized the adverse impact of the present weather aberration on the agricultural scenario of Mizoram. Dr Lalzarliana suggested the essentiality for demonstration for site specific technologies for promotion of diversified agriculture in Mizoram, and mentioned the state government initiatives to increase the farm resilience against the weather aberrations under different development scheme by the state government. Lt. Col (Rtd.) Z.S. Zuala (Parliamentary Secretary (Home, Agriculture and Rural Development) Government of Mizoram) focused on maintaining soil-health, current measures to reduce top soil erosion from the hill slopes, *Jhum* improvement and controlling deforestation as well as bamboo slashing. LT. Col. Zuala emphasized the need for crop diversification for the *Jhum* farmers by strengthening the infrastructure of different Krishi Vigyan Kendras and assured the cooperation from the state agriculture department in implementing the NMSHE programme.

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Workshop on Post-Entry Quarantine

Tadong, 7 May 2016. To create awareness on Post-Entry Quarantine for restricting the entry of new insect pests and diseases from other countries along with seeds/planting materials/imported materials into the



State, the ICAR Research Complex for NEH Region, Sikkim Centre, Gangtok started two-day 'State Level Workshop on Post-Entry Quarantine' on 6 May 2016.

Dr Thomas Chandy (PCCF-cum-Principal Secretary, Forest, Environment and Wildlife Management Department, Government of Sikkim) emphasized on the significance of plant quarantine for biodiversity conservation in Sikkim. Dr Chandy also highlighted the importance of pest and diseases outbreak not only in agricultural crops but also in forest ecosystem due to introduction of planting materials infected with new pest and diseases. Dr Chandy stressed to follow the quarantine measures to restrict the exotic insect pests and diseases and invasive species to save the existing flora and fauna in Sikkim which is a global biodiversity hotspot.

Dr N. Sathyanarayana (Director, Bio-security, NIPHM) focused on the importance of plant quarantine for bio-security of the country. Dr Sathyanarayana added that awareness should be created among the farmers, policy makers, business holders etc. Shri P. T. Bhutia (Director, H&CCDD, Government of Sikkim) informed that the state department will extend full cooperation for the successful implementation of plant quarantine system in Sikkim.

Dr R. K. Avasthe (Joint Director, ICAR, Sikkim Centre) focused on the impending danger due to introduction of non-quarantined planting materials in the organic state like Sikkim. Dr Avasthe appealed to the officials to follow the rules and procedures of plant quarantine and post- entry quarantine before introducing new planting materials into the State as an extremely important measure to safeguard the precious biodiversity of Sikkim.

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Workshops on Indigenous Traditional Knowledge in Marine Fisheries

Cochin, 30 June 2016. Two data validation workshops, organized by Central Institute of Fisheries and Technology (CIFT) in collaboration with Vijnana Bharati, New Delhi, were conducted at its Institute from 29 to 30 June 2016, as a part of the ESSO-INCOIS Project on 'Indigenous Traditional Knowledge



in Marine Fisheries Sector of Kerala: Documentation and Analysis'. Dr Nikita Gopal (Principal Investigator of the project) informed that Traditional knowledge data were collected from the marine fishers of Alappuzha and Thrissur Districts of Kerala, and were validated through different participatory approaches such as preparation of seasonal calendar and lunar calendar related to fishing and participatory mapping of fishing grounds. Vernacular names of different fishes in both the districts were also documented during the workshop. Ten fishermen from Alappuzha district and nine fishermen from Thrissur district participated in the workshops.

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Annual Review Workshop of ICAR Consortium Research Platform on 'Genomics'

Lucknow, 7 June 2016. Dr Trilochan Mohapatra (Secretary, DARE and DG, ICAR) inaugurated an Annual Review Workshop of ICAR Consortium Research Platform on 'Genomics' at National Bureau of Fish Genetic Resources. Dr Mohapatra called for more attention on application of the large amount of data being generated in genomics, and emphasized upon working together cutting across disciplines for achieving high impact results through innovative ideas. The Deputy Director General (Fisheries Science), Dr J.K. Jena (DDG, Fisheries) highlighted network research programmes being undertaken by ICAR Fisheries Research Institutes.

Dr T. R. Sharma (Project Director, NRCPB) highlighted that the technology has transformed the sequencing and genomics research in present times and it is high time to focus efforts on using structural genomics data for functional genomics.

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Annual Group Meeting of AICRP on Agro-forestry

Solan, 20 June 2016. A three-day Annual Group Meeting of All India Coordinated Research Project (AICRP) on Agro-forestry was inaugurated by Dr V. S. Thakur (Vice Chancellor, Dr YSPUH&F) on 18 June 2016 at



Dr Y. S. Parmar University of Horticulture and Forestry (YSPUH&F). The deliberations were on 'dissemination of appropriate agroforestry models for the benefit of small-and marginal-farmers'; 'the need to redesign the technical programme keeping in view the current scenario and to initiate work ecosystem services of agroforestry' etc. During the meeting region-based new projects 'Terminalia based silvipasture for the lower Himalayas', 'Salix based for Kashmir valley', 'Eucalyptus-based agri-silviculture' and 'Shisham multi-location evaluation for Indo-gangetic', 'Gmelina-based system for Humid sub-humid', 'Ailanthus-based for arid region', 'teak based for semi-arid region', 'Melia based for tropical region' and '*Dendrocalamus stocksii*-based for high rainfall and coastal regions'.

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Annual Review Meeting of AICRP on Poultry Breeding and Poultry Seed Project

Tadong, 24 May 2016. Dr P. Senthil Kumar (Special Secretary, RMDD, Government of Sikkim) inaugurated four-day Annual Review Meeting of All India Coordinated Research Project (AICRP) on 'Poultry Breeding and Poultry Seed Project', organized by the National Organic Farming Research Institute, to review the progress made in poultry breeding and poultry seed project operating at 24 Centres across the country. Dr Senthil Kumar added that rural backyard poultry is the solution in future to meet the increasing demand for egg and poultry meat and requested the scientists to work more on backyard poultry sector for improving



the nutritional and livelihood security in rural areas. The four-day meet comprised five technical sessions on various aspects, viz. poultry breeding, nutrition, health, management and production and distribution of Vanaraja DOC in various states of India.

Dr R. S. Gandhi (ADG (AP&B)) said that 94% poultry is being reared by medium-and small-farmers, which gives nutritional and livelihood security to the rural farmers. Dr Gandhi emphasized the need for proper hygiene and overall management for higher return from poultry sector. Dr R. N. Chatterjee (Director, DPR, Hyderabad) said that aim of the project is to develop location specific varieties to meet the egg and poultry meat requirement of different regions in India. Dr Chatterjee said that the mandate of Project Directorate on Poultry is to increase the egg and meat availability by two and four folds, respectively from the present level.

Dr R. K. Avasthe (Joint Director, ICAR, Sikkim Centre) focused on upgradation of the ICAR Sikkim Centre to National Organic Farming Research Institute (NOFRI), and said that the National Organic Farming Research Institute is the second institute in the world dedicated to organic farming research, and the first in Asia, and assured the house that Institute will contribute to State's mission for animal sector conversion into fully organic in due course of time.

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16th Annual Review Meet of AICRP on Goat improvement

Mannuthy, 12 May 2016. Dr R. S. Gandhi, ADG (AP & B), inaugurated two-day 16th Annual Review Meet of AICRP on Goat Improvement, jointly organized by the Central Institute for Research on Goats, Makhdoom and Kerala Veterinary and Animal Sciences University, Mannuthy at College of Veterinary and Animal Sciences on 11 May 2016. The ADG (AP & B) emphasized upon the research on goat improvement through self-help groups, establishment of nucleus flocks, *in-situ* conservation of threatened goat breeds, value addition of goat meat and milk, capacity building of the stakeholders and development of package of management practices.

Dr M. S. Chauhan (Director, CIRG) stressed upon strategic research programme under AICRP on Goat improvement for sustainable goat development and to include more number of goat breeds under AICRP umbrella.

Sri Subrata Biswas (Vice Chancellor, KVASU and Agriculture Production Commissioner) emphasized the need to optimize the feeding practices and disease preventive measures for better returns to farmers.

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Annual Review Meeting of Outreach Programme on Zoonotic Diseases

Bengaluru, 17 June 2016. The Annual Review Meeting of 'Outreach Programme on Zoonotic Diseases' was inaugurated at Veterinary College. A total of 18 collaborating units are operational on 21 zoonotic diseases across the country and being coordinated by IVRI, Izatnagar, Bareilly. Dr R.K. Singh (Director, IVRI) emphasized that the individual project in Outreach Programme on 'Zoonotic Diseases' should aim strategies to reduce zoonotic outbreaks in animal-human interface and stress should be given for early detection of emerging pathogens due to climate change and rapid urbanization.

Dr Ashok Kumar, ADG (Animal Health), stressed about the commitment made by ICAR in studies on communicable diseases in 'One Health' perspective. Prof. S. Yathiraj (Dean, Veterinary College, Bengaluru) emphasized that the output of the project should be used as tools to mitigate the issues on early diagnosis, control and containment of zoonotic diseases.

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Annual Review Meeting of CRP on Vaccines and Diagnostics

Bengaluru, 17 June 2016. Dr H. Rahman (DDG, Animal Science) Chairman of ARM, emphasized that the Principal Investigator of the individual project in CRP should aim to develop the technologies/products, by inter-sectoral collaboration, which should be available at the farmers' field for immediate testing and intervention in the form of Lateral Flow Device, dip stick method and new generation recombinant vaccine with enhanced potency.

The Annual Review Meeting of ICAR-Consortia Research Platform (CRP) on 'Vaccines and Diagnostics' was inaugurated by Dr R.K. Singh (Director, IVRI, Bareilly) at Indian Veterinary Research Institute, Bengaluru campus on 16 June 2016 to review the progress of work carried out during 2015-16. Dr R.K. Singh (Director, IVRI) stressed that maximizing the aim of the consortium mode will be fulfilled only, if principal investigators of the project communicate effectively between livestock, fisheries and agriculture component, which will maximize the output.

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Annual Review Meeting of AICRP on Pig and Mega Seed

Goa, 7 June 2016. Dr Narendra Pratap Singh (Director, CCARI) inaugurated a two-day Annual Review Meeting

of All India Coordinated Research Project on Pig and Mega Seed Project on 6 June 2016 at Central Coastal Agricultural Research Institute (CCARI), and focused on the activities and technologies developed by the Animal Sciences Section at CCARI. Dr Santosh Desai (Director, Department of AH&VS) focused on the status of piggery in Goa, the different services provided by the Department of Animal Husbandry and Veterinary Services to the pig farmers. The progressive pig farmer Mr Custodio Fernandes expressed his views on how artificial insemination technology improved their pig farming and economic status. Mr Fernandes also expressed his concern towards market price fluctuation due to import of pigs from neighbouring states and disease spread. The Deputy Chief Minister Shri Francis D'souza urged the scientist to characterize and multiply the local breeds of pigs which are more disease resistant than the exotic pigs.

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Annual Group Meet of AINRP on Onion and Garlic

Kanpur, 5 April 2016. Dr N. K. Krishna Kumar (DDG, Horticultural Science) chaired a two-day VI Annual Group Meeting of All India Network Research Project on Onion and Garlic, organized by Directorate of Onion and Garlic Research at Indian Institute of Pulse Research in collaboration with Chandra Shekhar Azad University of Agriculture and Technology on 4 and 5 April 2016.



One light red onion variety 'DOGR-571' was recommended for *rabi* for South Zone VI based on results of Dharwad, Chitradurga, Bengaluru and Coimbatore. One long-day garlic variety 'CITH-G-3' was recommended for temperate zone of the country based on results of Almora, Srinagar and Mukteshwar. Production technologies one on use of micronutrients and other on salicylic acid were also recommended for increasing the productivity of onion in the country based on results of Almora, Srinagar and Mukteshwar. Production technologies: use of micronutrients and salicylic acid were also recommended for increasing the productivity of onion in the country.

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46th Annual Group Meet of AICRP on Soybean

Dharwad, 7 April 2016. Prof. D.P. Biradar (Vice Chancellor, University of Agricultural Sciences, Dharwad) inaugurated 46th Annual Group Meeting of All India Coordinated Research Project (AICRP) on Soybean that was jointly organized by Indian Institute of Soybean Research, Indore and University of Agricultural Sciences, Dharwad, from 5 to 7 April 2016.



Prof. Biradar focused on emerging problems in soybean cultivation, particularly the issues related climate change. Dr B.B. Singh (ADG,O&P) stressed upon more commitment and sincerity of soybean scientists in executing research work and proper documentation and categorically pointed out that research grants would be released based on the performances of the coordinating centres.

Major outcome of the AGM

- Based on yield, maturity period, resistance against major insects and diseases, six soybean varieties, viz. MACS 1407 and RKS 113 for North-Eastern zone, DSb 23-2 and KDS 726 for Southern zone; RVS 2002-4 for Central zone and SL 955 for North Plain zone were identified.
- New initiative has been taken up to develop yellow mosaic virus- resistant soybean varieties for central and southern zones.
- A tentative target of 16,645 q of breeder seed production of 31 soybean varieties was set for *kharif* 2016.
- Potential donors for resistance against major insects and diseases were identified and recommended for use in hybridization programme.
- Sowing time under delayed sowing conditions in Asom was recommended as August first week.
- Strategy for faster advancement of generations was framed to shorten varietal development time.
- Collection and protection of native soybean from north hill region will be taken up.

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Interaction Meet at NRC on Pigs

Asom, 14 May 2016. During interactive meeting with scientists at National Research Centre on Pigs, Dr T. Mohapatra, Secretary (DARE) and Director General

(ICAR), emphasized upon the importance of entrepreneurship development for meeting increased availability of pigs, and asked the scientists to look beyond artificial insemination to make available quality germplasm at farmers' field. The discussions were on the issue of transmission of animal diseases across international borders, heat tolerance in animals, utilization of agri-waste for animal feed, enrichment of agri-wastes and availability of swine fever vaccine. The DG, ICAR highlighted major issues of cross-border control of animal diseases. Regarding import of animals, DG intimated that there is a SAARC agreement, based on which superior germplasm from other SAARC countries could be requested for use in India. The DG (ICAR) focused on the development of piggery, and asked for adoption of villages, and strengthen *Mera Gaon, Mera Gaurav* programme of the Government of India, and increase visibility of the institute.

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Interactive Meet of West Zone Directors and Finance Officers of ICAR Institutes



Mumbai, 6 May 2016. The Secretary (DARE) and DG (ICAR), Dr Trilochan Mohapatra, inaugurated Interactive Meet of Directors and Finance Officers of ICAR Institutes (West Zone) at Central Institute of Fisheries Education. The Secretary (DARE) and DG (ICAR) addressed the the students of Masters and Doctoral programme and advised them to work for the sector and be the committed and dedicated citizens to help the Nutritional Security of the country with high end research.

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Interactive meeting with pomegranate farmers

Pune, 16 June 2016. Dr N. K. Krishna Kumar (DDG, Horticultural Science) chaired a Brain-storming session on 'availability of disease free planting material and latest development on management of bacterial bight disease and its management', organized by the Mahatma Phule Krishi Vishwavidyalaya and National



Research Centre on Pomegranate at the College of Agriculture, Pune. Several issues with respect to myths and reality of tissue cultured planting materials and management of bacterial blight in pomegranate were discussed. A joint working group committee involving scientists from National Research Centre on Pomegranate (Solapur), Mahatma Phule Krishi Vishwavidyalaya (Rahuri) and University of Horticultural Science (Bagolkot) was constituted for conducting survey of orchards and conduct research on performance of planting materials to formulate firm recommendation in view of the rapid area expansion of pomegranate and demand of disease free elite planting materials. Similarly, it was also decided to relook into the indiscriminate use of pesticide sprays by growers and formulate a single recommendation.

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Interface meeting with KVK, farmers

Idukki, 17 April 2016. Dr Trilochan Mohapatra (Secretary, DARE and Director General, ICAR) inaugurated an Interactive Meeting with farmers at Krishi Vigyan Kendra (KVK), and pointed out that the objectives of this interface meeting is to understand the problem of farmers, to find out meaningful solutions and implement them, and focus on different schemes of Government of India: Soil-health card for importance of soil health, Agri Insurance Scheme and support for Organic Farming which are channelized through KVKs for the benefit of the farmers. Dr Mohapatra urged the farmers to concentrate on Integrated Farming System models and promote their agricultural enterprises in an organic way for ensuring sustainable income. The DG, ICAR also focused on the Scheme and Slogan “Mera Gaon Mera Gaurav” putforth by the Union Minister for Agriculture and Farmers’ Welfare, Shri Radha Mohan Singh.

Brochures in Malayalam on various scientific technologies in Plant-Protection, Animal Husbandry and Soil Science were released during the meeting by the dignitaries. Around 243 farmers from different locations of Idukki district actively participated in the interaction session that followed and the queries from the farmers were answered by the scientists.

Shri Chhabilendra Roul (Secretary, ICAR) specified the

role of KVK as the link with farmers to collect their feedback on scientific technologies and to report them to ICAR system.

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Interactive Meet on Camel and Human Medicine

Bikaner, 16 May 2016. Dr H. Rahman (DDG, Animal Science) focused on the achievement of collaborative project, ‘Camel and Human Medicine’, with the collaborating centres, viz. National Research Centre on Camel (NRCC) and Radiation Medicine Centre, Bhabha Atomic Research Centre (Mumbai). Dr Rahman revealed that with sustained efforts of scientists of NRCC and BARC for nearly seven years, the standard diagnostic kit for thyroid cancer has been prepared. This Immuno Radio Metric Assay kit utilizes the special properties of Camelina antibodies to diagnose thyroglobin (Tg) molecule present in the thyroid cancer. This can be effective in detecting thyroid cancer monitoring the cases showing recurrence. Dr Rahman also appreciated the other aspect of this programme of developing diagnostic/therapeutic module for tuberculosis in human and animals using camelina antibodies.



During the technical session the details of the validations carried out involving about 1,500 cases and scientific details of Kit prepared were presented. The antibodies in camels after repeated booster of antigen and harvesting of PBMCs. While elaborating the details of collaborative projects NRCC have with other institutes of repute, Dr N.V.Patil (Director, NRCC) also informed about the significant achievements of NRCC.

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Interactive Meet between Farmer-Scientist under Tribal Sub-Plan

Bhubaneswar, 24 May 2016. The Central Institute of Fisheries Aquaculture (CIFA) has undertaken several programmes in different parts of the country for the benefit of tribal and other backward fish farmers. With the aim to make people aware about scientific



fish culture and its benefits; and also to increase fish production and productivity from their ponds; production and supply of quality fish seed in the locality; adoption of better management practices for enhancement of fish production in a sustainable way, Under Tribal Sub-Plan Programme, the Central Institute of Freshwater Aquaculture organized a Farmers-Scientist Interaction Meet on 'Freshwater Aquaculture as Livelihood Option for Tribal Farmers'. Dr P. Jayasankar (Director, CIFA) apprised the farmers that the institute would—establish portable carp hatchery for quality fish seed production in the area; suggest BMPs; and carried out capacity building.

Dr B.C. Mohapatra (Chairman, TSP, CIFA) briefed the gathering about the programmes undertaken by the institute in the country and specifically in Banpur area.

The CIFA had adopted all the 20 villages of this Grampanchayat (25 ponds of 21 acre water area) as 'Area Saturation Model' of fishery technology dissemination programme. In 15 villages *Mera Gaon*, *Mera Gaurav* programme has been implemented.

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All India Marine Fish Landings Data announced at CMFRI

Kochi, 30 April 2016. Dr A Gopalakrishnan (Director, CMFRI) chaired Press Meet on 'All India Marine Fish Landings Data' at the Central Marine Fisheries Research Institute, and released the marine fish landings data. Dr Gopalakrishnan elaborated that the marine fisheries sector in India supports 4 million fishermen population living in 9 maritime states and 2 union territories for their livelihood by providing employment to nearly 9.9 lakh fishermen. More than 1,000 species were reported in the landings. CMFRI, which is mandated with monitoring and assessment of marine fishery resources in the Indian EEZ makes estimates of species-wise, gear-wise and fishing zone-wise landings by collecting information from the 1,511 marine fish landing centres existing in the country through a scientific sampling design developed by the Fishery Resources Assessment Division.



The total marine fish landings from the mainland of India during 2015 is estimated as 3.40 million tonnes registering 5.3% decline compared to 3.59 million tonnes in 2014. The region-wise estimated fish production showed that the north-east region, comprising West Bengal and Odisha contributed 7.6% to the total production while South-East Region (Andhra Pradesh, Tamil Nadu and Puducherry) contributed 31.8%. On the west coast, south-west region comprising Kerala, Karnataka and Goa recorded 29.2% while the north-west region comprising Maharashtra, Gujarat, and Daman & Diu contributed 31.4%. Gujarat remains as the major contributor to the total landings followed by Tamil Nadu and Kerala. Oil sardine, the major single species fishery along the Indian coast witnessed a drastic decline in its landings, amounting to half of its previous year catch. The landings of lesser sardines, Indian mackerel, threadfin breams and scads improved compared to the last year while other resources such as penaeid and non-penaeid prawns, Bombay duck and croakers showed decrease in catch. The high value fish Hilsa Shad, which is the main driver for the success of the fishery in West Bengal, showed improvement in the landings with 20,659 tonnes in 2015 than 5,247 tonnes in 2014. The estimated value of marine fish landings during 2015 at landing centre level was ₹ 40,100 crore (26.3% increase over 2014) and ₹ 65,180 crore at the retail level (24.5% increase). The unit price per kg of fish at landing centre level was ₹ 118 (32.8% increase) and ₹ 191 at retail level (30.8% increase).

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Road map of 'A' zone for increasing productivity of pearl millet...

Jodhpur, 18 June 2016. A Brainstorming session, jointly organized by AICRP on Pearl Millet and CAZRI, Jodhpur, was held on research priorities, partnerships and policies for increasing productivity of pearl millet in drought prone arid north-west plains. Dr J.S. Sandhu (DDG, Crop Science) emphasized that pearl millet is an important crop in north-western parts including Rajasthan, Gujarat and Haryana where this crop is playing important role in providing food and fodder security. There is need to put this zone as a high priority zone for carrying out further research and development. Dr Balraj Singh (Vice Chancellor,



Agriculture University, Jodhpur) mentioned that there is need to establish more AICRP research centres of pearl millet in Rajasthan and also shared the experience of multiplying seed of pearl millet hybrid MPMH17 at Jodhpur during summer.

Dr O.P. Yadav (Director, CAZRI) emphasized greater and rigorous testing of material in the target environment and also highlighted the importance of the strengthening of breeding programme for developing drought-tolerant varieties. Dr K.N. Rai (Ex-Director, Harvest Plus at ICRISAT), commented that success of pearl millet has been greater in northern and peninsular parts of country than north-western part, primarily due to adverse climatic conditions and limited choice of cultivars for this region. Dr V. Tonapi (Director, IIMR, Hyderabad) also focused on the value-addition of work done in pearl millet and other crops. The road map should including mapping of 'A' zone according to availability of the resources, upscaling and out scaling of existing agro-techniques and enhancing seed production and marketing through various public and private sector agencies for enhancing pearl millet productivity and stability in the zone.

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Phytochemicals: in nutraceutical and bio-medicine fields

Pune, 17 June 2016. The National Research Centre for Grapes and Directorate of Floriculture Research in association with the Society for Advancement of Viticulture and Enology organized a one-day Brainstorming session on 'Phytochemicals: possible applications in nutraceutical and bio-medicine fields' to explore the possibility of planning inter-disciplinary research programmes on this emerging research area.



Dr N.K. Krishna Kumar (DDG, Horticultural Science) chaired the session and reflected upon the plant biodiversity and wealth of the phytochemicals with diverse applications in bio-medical fields. Dr Krishna Kumar also urged the participating scientists to take active initiatives in developing innovative and collaborative interdisciplinary research programmes on phytochemicals in collaboration with relevant organizations from ICMR, CSIR and various universities. Eminent speakers from various institutions made their presentations on: Phytochemicals research including exploration of biological potential of phytochemicals from grapes, pomegranate and flowers; Development of health benefitting nutraceutical products; *In-vitro* and *in-vivo* assays for evaluating phytochemicals for prevention and treatment of human diseases; Assessment of bioavailability of phytochemicals etc. The National Research Centre for Grapes introduced their spray-dried anthocyanin formulation from in-house developed grape hybrid Medika and also presented its composition and preliminary anti-cancerous activity.

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Rabi sammelan at KVK

Uttarkashi, 5 April 2016. Sri Mahidhar Singh Tomar, Chief Agriculture Officer, inaugurated *Rabi Sammelan-cum-Krishi Mela* at Krishi Vigyan Kendra, Chinyalisaur. Sri Tomar explained about various schemes of agriculture department and also emphasized on the importance and the process of quality seed production by the farmers. A *Krishak Goshthi-cum* scientist-



farmers-interaction meet was organized. The scientists informed about the various technologies developed at VPKAS, Almora for the hill farmers; and discussed about soil and water conservation techniques useful for hill agriculture and fodder production practices. The scientists motivated farmers to participate in such events to get more benefits. On this occasion set of horticulture kits along with power sprayers were distributed to farmers of Harshil-Bagori area of Uttarkashi district under Tribal Sub-Plan scheme.

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Tribal Fish Farmers' Meet

Kalyani, 16 June, 2016. Dr Trilochan Mohapatra (Secretary, DARE, and DG, ICAR) visited Kalyani Field Station, Rahara RRC of Central Institute of Fisheries and Aquaculture. The DG, ICAR reviewed research work on diversified fish species, particularly on catfish, carps and hilsa. Dr Mohapatra provided useful tips for addressing some key research issues. Dr T. Mohapatra emphasized on integrated farming system for the economical development of the resource-poor farmers. The DG, ICAR released two pamphlets, viz. 'Nutrition Facts' and 'Dissemination of Freshwater Aquaculture Technologies in Bali Island, Sunderban, West Bengal'.



An exhibition on the activities of the centre was arranged. A Tribal Fish Farmers' Meet (*Jalabhumi Diwas*) was organized on the occasion to share their experience and benefits gained by adopting CIFA technologies.

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Application of Metagenomics and Microbiomes to augment Fish Production...

Bhubaneswar, 21 June 2016. A Brainstorming meet on application of metagenomics and microbiomes to augment fish production and productivity was held at Central Institute of Fisheries and Aquaculture (CIFA). Dr P. Jayasankar (Director, CIFA) highlighted the



relevance of metagenomics and microbiomes in facilitating faster growth, better immunity and disease resistance of fish, which all play vital role in higher production and productivity as well as in ensuring higher farm income.

Dr A.G. Ponniah (Ex-Director, CIBA) suggested harnessing bacteria in terms of probiotic interventions to improve pond productivity leading to higher fish production.

Salient recommendations

- Understand the role of nutrient-phytoplankton-feed chain in pond culture systems.
- Collect base line information on most productive or less productive aquaculture ponds.
- Study the technical and economic efficacy of probiotics in freshwater aquaculture systems.
- Study nutrient dynamics in freshwater system, Micro-cosm and mesocosm.
- Research on soil water interface *vis a vis* microbiome diversity and pond health.
- Review the literature on metagenomics, microbiomes and their application in aquaculture.

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Workshop on Agri-Business Incubation

Kolkata, 15 June 2016. The Secretary (DARE) and Director General (ICAR), Dr Trilochan Mohapatra, Chief Guest at Workshop on Agri-Business Incubation, organized by Agri-Business Incubation Centre of National Institute of Research on Jute and Allied Fibre Technology, suggested that before captivating entrepreneur, we should study them according to the



guideline for assuming the success rate of them. Dr Mohapatra also added to share the experiences with other Incubation Centers regarding their success and failure for making strategies at National Institute of Research on Jute and Allied Fibre Technology. After that there was the launching of ABI Website by the Dr Trilochan Mohapatra (Secretary, DARE and Director General, ICAR). In this website all the guideline and brief description of potential technologies were available for the incubates. The main objective of this Incubator was to translate the developed Agro-

Technologies into Business ventures and nurturing the next generation potential entrepreneurs to grow. The ABI unit at NIRJAFT was giving thrust to provide facilities like office infrastructure, laboratory, pilot plant, and other Commercial facilities. This was to satisfy the need of the entrepreneurs that stays in incubation for a period sufficient to overcome risk and instill confidence among them. There were number

of deliberations from renowned scientists.

Four MoU and Four MoA were signed between ICAR-NIRJAFT and different JDP (Jute Diversified Product) Manufacturers who wanted to do business adopting different NIRJAFT Technologies.

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International Linkages

BRICS Experts Meeting for BRICS Agricultural Research Platform

New Delhi, 28 June 2016. In the beginning decision of the 5th Meeting of the BRICS Agricultural Cooperation Working Group in Moscow, held between 12 and 13 August 2015, where India was asked to provide more information on the Centre with regard to the prioritized activities and funding requirements was discussed.

Dr T. Mohapatra (Secretary, DARE and DG (ICAR) chaired the BRICS Expert Meeting to discuss and develop the framework document of BRICS Agricultural Research Centre. Officials from South Africa, China, Russia and Brazil, and Indian delegation from DARE, ICAR and Union Ministry of External Affairs participated in the meeting. Dr T. Mohapatra highlighted the need to establish the BRICS Agricultural Research Centre with cooperation of member countries, and mentioned that there is existing bilateral cooperation in agricultural research and education in identified activities between the BRICS countries. However, there is need to harness the potentials and strengths of one or more countries for the benefit of all BRICS states. The Secretary (DARE) and DG (ICAR) then requested for input and suggestions to improve the draft concept proposal. The representatives of the member countries namely, Brazil, Russia, China and South Africa emphasized the importance of ensuring food security, eliminating hunger and poverty through increased agricultural production, productivity and sustainable management

of natural resources. A detailed presentation on the Concept Note on BRICS Agricultural Research Centre was made by India. There was a discussion about the proposed physical structure of the Centre. Most countries raised financial issues and contribution of different countries thereto. It was deliberated whether the BRICS Agricultural Research Centre should be a virtual or physical centre. The vision, mission, mandate, objectives, broad activities and mode of operation were discussed.

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International Biodiversity Day at CIFE

Mumbai, 22 May 2016. Hon'ble Governor of Maharashtra, Shri. C. H. Vidyasagar Rao, was the Chief Guest on the International Day for Biological Diversity 2016 at CIFE.



The Union Minister of State for Ministry of Environment, Forest and Climate Change; Shri Prakash Javadekar appreciated the theme of Biodiversity. An exhibition was organized by the Central Institute of Fisheries Education (Mumbai), Central Marine Fisheries Research Institute (Kochi), and Central Institute of Fisheries Technology (Cochin). Interesting exhibits, posters and other material highlighting the role of biodiversity and its main streaming in sustaining livelihoods were displayed.

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Ethiopian delegation visits National Research Centre on Meat



Hyderabad, 8 June 2016. A high level Ethiopian delegation under Mr Mebrahtu Gebru (State Minister,

Ministry of Industry) visited National Research Centre on Meat. Dr V.V.Kulkarni (Director, NRC Meat) made a presentation on meat sector in India and the role of National Research Centre on Meat.

Ethiopian Delegation members were highly impressed with the research facilities like experimental abattoir, meat quality evaluation, residue analysis, proteomics and meat species identification laboratories of the institute. They also visited the Meat Product Processing facility and interacted with entrepreneurs undergoing training at the Centre. The delegation expressed their interest to collaborate with NRC on Meat and sought its help in identifying gaps in their meat sector and inputs for establishing meat species identification, value addition and clean meat production facilities at their place.

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Celebrations

Farmers' fair and farm field school

Meerapur Dalpat, 25 May 2016. The Union Minister of State for Agriculture, Dr Sanjeev Kumar Baliyan, inaugurated the Farmers' Fair and Farm Field School, organized by Indian Institute of Farming Systems Research, Modipuram, at Meerapur Dalpat village of district Muzaffarnagar, and focused on depletion and pollution of groundwater which has become a serious issue in western Uttar Pradesh. Dr Baliyan stressed the need for judicious use of groundwater and to adopt water conservation measures so that the future generations may not face any hardship of water scarcity. Earlier a field demonstration was organized in Meerapur Dalpat village on trench and pit method of sowing and micronutrient application in sugarcane.

Dr Azad Singh Panwar (Director, IIFSR) briefed about the schemes, which are being implemented for farmers' welfare by the Government of India such as Soil Health Card Scheme, Prime Minister's Crop Insurance Scheme, Prime Minister's Agriculture Irrigation Scheme and National Agriculture Market etc.

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Kisan Mela

Hattal, 15 April 2016. The Indian Institute of Soil and Water Conservation (IISWC) sensitized farmers on water resource development and improved agriculture during a *Kisan mela* at Hattal village in Tuni Tehsil of Dehra Dun District. Dr Alok Kumar Sikka (the then DDG, NRM) dedicated the assets on water resource developed by the IISWC under Tribal Sub-Plan (TSP) to the villagers for the use in irrigation and augment agriculture production. In his chief guest address, Dr

Sikka emphasized on judicious use of soil and water resources, soil-health management, crop diversification, water budgeting and effective water utilization and the need of sustainable agriculture in hills in tune with the changing climate. Dr Sikka pleaded that farmers must actively participate in Government schemes so that indented benefits are realized.

Dr P. K. Mishra (Director, IISWC) informed about the activities and achievements made through participatory interventions under the TSP programme by the Institute. The scientists explained the accrued benefits of water resource developed and other interventions made. Hattal and Sainj villages are now getting 670 cubic metre water over 24 hr for irrigation and that changed the agriculture scenario in the area. In last two years, farmers have produced vegetables, mainly tomatoes and cauliflowers worth ₹ 2.5 crore. In this *mela*, 200 farmers, scientists, technical officers actively participated.

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28th Foundation Day of Central Agro-forestry Research Institute

Jhansi, 8 May 2016. Dr V.N. Sharda (Member, ASRB) Chief Guest of the 28th Foundation Day of the Central Agro-forestry Research Institute, suggested to undertake long-term experiments involving all important land uses of the country and study all relevant parameters by involving scientists of different disciplines. The Member (ASRB) asked scientists to undertake research which is pro-active, anticipatory, problem-solving, result-oriented and farmer participatory, and in a network mode and emphasized

on protection and optimum utilization of natural resources as well as diversification of production while working with farmers and solving the problems in real field situations. Dr Sharda said that agroforestry is the only solution for bringing one-third area of land under forest cover, and advised that Sloping Agriculture Land Technology (SALT) need to be explored in agroforestry. Food, fruit, fodder, fuelwood, timber and furniture demand of 2050 A.D. for human and animal population will be fulfilled by agro-forestry, Dr Sharda added.

Dr P.K. Ghosh (Director,IGFRI) appreciated the contributions made by the Central Agro-forestry Research Institute (CAFRI) and focused on 'National Agro-forestry Policy-2014' that gave more challenges to CAFRI.

Dr O.P. Chaturvedi (Director,CAFRI) mentioned about the sustainable development, ecosystem services and rural livelihood issues in agro-forestry, adopted villages in Uttar Pradesh and Madhya Pradesh under '*Mera Gaon, Mera Gaurav*' programme, organization of 'World Soil Day' and *Jai Kisan-Jai Vigyan*.

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70th Foundation Day of NRRI

Cuttack, 23 April 2016. Dr Trilochan Mohapatra (Secretary, DARE and DG, ICAR) inaugurated the 70th Foundation Day of the National Rice Research Institute and *Dhan Diwas*, and emphasized that the technology transfer system must understand very well the needs and problems of the farmers, and advised to hold zonal review meetings to assess the technology application and success. Dr Mohapatra focused on *Vision 2050 of Agriculture* and called upon the stakeholders to find out models of production for Indian agriculture, quality enhancement, doubling of farm income through appropriate market strategy, food processing and value chain. Dr Mohapatra laid the foundation stone of the Administrative Building of the KVK, Cuttack.

Dr Mohapatra also inaugurated an Agricultural Exhibition showcasing technologies of NRRI including its regional stations and KVKs, all ICAR institutes and centers located in Odisha, and OUAT through its KVKs and state line departments

Dr A.K. Singh (DDG, Agriculture Extension) highlighted the role of KVKs in agricultural development of the districts and requested the research institutes to provide their technologies for further refinement in their locations.

Dr A.K. Nayak (Director, NRRI) highlighted the significant achievements of the institute, especially the recently released varieties including high protein rice and their suitability for different ecologies, rice-value chain and IT-based Rice Xpert mobile APP. Special

programmes like planting of saplings by the guests, field visit for the farmers, scientists-farmers interaction involving about 250 farmers and farm-women under '*Mera Gaon Mera Gaurav*' programme of the institute.

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19th Foundation Day of DOGR

Pune, 16 June 2016. Dr T.A. More (Ex-VC, MPKV, Rahuri), Chief Guest on the 19th Foundation Day of Directorate of Onion and Garlic Research at Rajgurunagar, highlighted achievements and benefits of Directorate of Onion and Garlic Research. Ten progressive farmers of onion and garlic from different parts of India were also felicitated on this occasion for their contribution to onion and garlic cultivation. Samples of onion and garlic brought by the farmers were also displayed. Recently established infrastructural facilities such as exhibition-cum-communication centre, Library, AKMU and Conference Room in the new building of this Directorate were inaugurated by the chief guest. A talk on improved cultivation practices for onion and garlic was delivered for the benefit of the farmers. They were also shown the onion and garlic cultivation activities being carried out at DOGR.

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Annual Day of IISWC

Dehra Dun, 7 April 2016. Dr Savita (Director, Forest Research Institute) inaugurated Annual Day of Indian Institute of Soil and Water Conservation. Citing an example of afforestation programme executed in Shimla, Himachal Pradesh that sustained potable water source for over 10,000 people, Dr Savita emphasized the importance of managing soil, water and forest resources for the welfare of ecosystems and lives on earth and focused on the activities and targets of 'National Mission for Clean Ganga', on the needs of maintaining environmental flows and association of forest resources to sustain water resources and biodiversity. Dr Savita highlighted various drivers of natural resource management, new areas of research and required collaboration at various levels.

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World Environment Day 2016

Tura, 6 June 2016. The Krishi Vigyan Kendra celebrated World Environment Day at L.P. Chunmati School, Sangsanggre, Tura with a participation of 36 students. Dr Tanmay Samajdar (Programme Coordinator, KVK, Tura) shared about the objectives and importance for observing World Environment Day. Dr Samajdar said that the current changes in climate that increase the global warming should be properly managed and take



care through afforestation and other related human activities. The KVK personnel planted 27 fruit and 14 forest trees in the school premise.

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Gram Uday se Bharat Uday Abhiyan programme

Avikanagar, 24 April 2016. The Central Sheep and Wool Research Institute, organized eleven-day 'Gram uday se bharat uday abhiyan' from 14 April to 24 April 2016 to create awareness about newly launched agricultural and other schemes of Government of India such as 'Pradhan Mantri Fasal Bima Yojna', 'Pradhan Mantri Krishi Sinchai Yojna', 'Soil Health Card' etc. The Institute organized *Kisan Sangosthis* in Rindliya Bujurg, Tantiya, Bheepur, Soda and Amla villages of Malpura Tehsil during this period. A large number of farmers benefitted from 'Gram uday se bharat uday abhiyan' during these ten days. The CSWRI is reaching farmers through Transfer of Technology programme, *Mera Gaon Mera Gaurav*, *Sansad Adarsh Gram Yojana*, Mega Sheep Seed Project and Tribal Sub-Plan programme run by the Institute.

Dr H. Rahman (DDG, Animal Sciences) interacted with poor and landless sheep/goat farmers in village Amla on 23 April 2016 and advised them to form Self-Help Groups and Cooperative Societies to get a better price of their produce. Dr S.M.K. Naqvi (Director, CSWRI) informed that his Institute has been working closely with the sheep farmers for their livelihood security.

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Swachhta Pakhwara

KVK, Tura

Tura, 25 May 2016. A special *Swachhta Pakhwara* was celebrated from 16 to 25 May 2016 at KVK, Tura. Dr Tanmay Samajdar (Programme Coordinator) administered the pledge at KVK on 16 May 2016 and briefed about the importance of cleanliness in raising the efficiency and performance and bringing conducive work atmosphere in the KVK. As a part of the *Swachhta Pakhwara*, the pledge was also administered by the Programme Coordinator to the

schools and students of Chunmati L.P. School, Sangsangre, West Garo Hills on 18 May 2016.

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NRC on Grapes

Pune, 25 May 2016. A special *Swachhta Pakhwara* was celebrated from 16 to 25 May 2016 at National Research Centre on Grapes (NRCG). The Centre undertook special cleanliness drive within and around its premises. One day waste material from laboratories and vineyards was collected at one place. Subsequent



days it was classified into non-degradable (paper, cardboard boxes, glass, plastic etc.) and biodegradable material. All staff was informed about importance of classification and waste disposal system. On the last day of the programme NRCG enhanced public awareness through same message in procession with banners to a nearby village Shewalewadi. The NRCG guided villagers on awareness of waste disposal. Further programmes have been planned for composting of biodegradable material involving villagers and staff of NRCG.

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Second International Yoga Day

ICAR headquarters

New Delhi, 21 June 2016. The International Yoga Day was organized at NASC Complex in the guidance of Instructors from Morarji Desai National Institute of Yoga who demonstrated various *Yoga asanas*.

IIVR

Kushinagar, 21 June, 2016. Jagat Narayan yoga expert, conducted various exercises like *Yoga asans*, *pranayam* etc. at Indian Institute of Vegetable Research (IIVR).



Shri Narayan emphasized that the regular practice of these *aasans* and *pranayam* would be helpful in relieving of body pains and remedy for several diseases such as diabetes, cardiovascular and degenerating diseases.

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DOGR

Pune, 21 June 2016. Yoga lesson was delivered by Shri Yashwant Bombale and Shri Ramdas Tambe, Yoga Instructors from *Patanjali Yog Peeth* on the International Yoga Day, organized by Directorate of Onion and Garlic Research, at its premises Rajgurunagar.

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CIFRI

Kolkata, 21 June 2016. On the International Yoga Day the experts, Mrs Romela Mustafi and Mr Sujit Ghorei of Yoga Kendra, Barrackpore (based on the Common Yoga Protocol provided by Ministry of AYUSH,



Government of India) supervised Yoga Session that was conducted at Central Inland Fisheries Research Institute, Barrackpore.

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IIWM

Bhubaneshwar, 21 June 2016. The Indian Institute of Water Management performed Mass yoga between 6 and 7.30 am, as per the Common Yoga Protocols, issued by Ministry of Ayush, Government of India in the guidance of Shri Dhruvajyoti Chowdhury, Youth Coordinator and yoga expert.

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IISR

Kozhikode, 21 June 2016. International Day of Yoga was celebrated in all the three campuses of Indian Institute of Spices Research (IISR). At the headquarters, Yoga Acharya K. M. Rajesh (Director, Swasthik Holistic Yoga Research Centre, Kozhikode)

briefed the gathering about the history and development of yoga, importance of yoga and need to adopt yoga as a holistic approach for health and well being of mankind. This was followed by a yoga demonstration-cum-training class in which all the categories of staff in the institute participated.

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CIFT

Cochin, 21 June 2016.

'The significance and importance of yoga in our daily life' was deliberated by Shri Kaithapram Vasudevan Namboothiri (Director, Patanjali Yoga Research and Training Centre, Cochin) who described the different types of yoga and its power to improve concentration, memory power, and physical fitness.



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Veraval Research Centre, CIFT

Veraval, 21 June 2016. Shri M. Thakar Abhay Kumar (from Shree Somanth Sanskrit University) started the session with the origin of yoga and covered importance, health benefits, types of yoga, major subdivisions etc. The demonstrations were on basic Asanas and different Pranayama techniques.

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Mumbai Research Centre, CIFT

Mumbai, 21 June 2016. At the Mumbai Research Centre Dr P. Chatterjee (Physician and Yoga Practitioner) and Smt. Rekha Chatterjee (a trained Yoga teacher) conducted classes on yoga followed by demonstrations on different yoga techniques like Asanas and breathing exercises. The classes were followed by yoga demonstration explaining specifically which technique is helpful in relieving different diseases like arthritis, diabetes, hormonal problems etc.

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Visakapatanam Research Centre, CIFT

Visakapatanam, 21 June 2016. With the theme 'Yoga for Harmony and Peace' a yoga session of around 60 minutes was started with chanting of 'Om' followed by *Asanas* such as Vajrasana, Tadasana, Vrikshashana, Ardha chakraasana, Trikonaasana, Bhadrasana, Makarraasana, Bhujangasana, Shalabhasana, Setubandhasana, Ardha halasana, Pavana muktaasana and Shavaasana. Yoga day celebration ended with Kapaalabhaati, Pranayama, Bhramaree Pranayama and Dhyana.

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Capacity Building

Foundation stone of the College of Horticulture laid at Thenzawl

Aizawl, 18 June 2016. Shri Radha Mohan Singh, Union Minister of Agriculture and Farmers Welfare, laid foundation stone of the College of Horticulture, Thenzawl, Mizoram, under the Central Agricultural University, Imphal at College of Veterinary Sciences and Animal Health, Selesih, and Mizoram. Shri Singh said that North-Eastern Hills Region with its diverse agro-climatic plethora with excellent and long monsoons has tremendous potential for horticulture. The Union Minister of Agriculture and Farmers Welfare, informed that it is decided to establish Indian Agricultural Research Institute in Asom for ushering Second Green Revolution. The Union Minister of Agriculture and Farmers Welfare briefed about various schemes and programmes like Mission for Integrated Development of Horticulture,, Horticulture Mission for North-East and the Himalayan states, and National Horticulture Board which are already active in the region. For overall development of agriculture in Mizoram, Central Government is funding schemes like *Rashtriya Krishi Vikas Yojana*, Agriculture Technology Management Agency, National Food Security Mission, Union Minister of Agriculture and Farmers Welfare, added.

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MoA inaugurates Administrative building of KVK, Malhana

Deoria, 11 June 2016. The Union Minister of Agriculture and Farmers Welfare inaugurated Administrative building of Krishi Vigyan Kendra, Malhana, Deoria. Besides Shri Singh also inaugurated *Kisan Gosthi* and *Krishi Vikash Parve*, organized by

Indian Institute of Vegetable Research, Krishi Vigyan Kendra, Malhana, Deoria, KVK Kushinagar and National Horticultural Research and Development Foundation, and focused on *Pradhan Mantri Fasal Bima Yojana*, *Pradhan Mantri Sichai Yojana*, *Ujwala Yojana*, Soil-Health Card etc. Shri Singh urged the farmers to take advantage of the schemes for enhancing their income and profitability. About 3,000 farmers, farm-women and rural youth from various part of eastern Uttar Pradesh participated in this programme.



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Upliftment of the economic condition of rural women through self-employment

Patna, 27 June 2016. The Union Minister of Agriculture and Farmers' Welfare, Shri Radha Mohan Singh, inaugurated the five-day training programme on 'Ornamental Fish Culture and Management for Livelihood Improvement of Rural Women' at ICAR Research Complex for Eastern Region, with effect from 27 June 2016. Shri Singh said that with the aim to improve the economic condition of rural women through self-employment a training centre on 'ornamental fish culture and production' has been established recently at ICAR Research Complex for Eastern Region, for imparting training to rural women for their livelihood improvement and empowerment through ornamental fish farming. Around 25 farm-women from different parts of Bihar participated in the training.

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Visits

Union Minister of Agriculture and Farmers Welfare visits ATARI, Kolkata

Kolkata, 21 June 2016. The Union Minister of Agriculture and Farmers Welfare, Shri Radha Mohan Singh, visited Agricultural Technology Application Research Institute, and emphasized on the establishment of additional Krishi Vigyan Kendras in the districts of North 24 Parganas, Malda and Jalpaiguri of West Bengal. Shri Singh also released compilation, *Krish-Purbi*.

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DG,ICAR visits NRC on Pig

Guwahati, 18 June 2016. Dr Trilochan Mohapatra, Secretary (DARE) and Director General (ICAR), suggested to undertake in depth research in pig breeding and other areas for bringing excellence in pig production in the country during his visit at National Research Centre on Pig, Rani. The Director General (ICAR) appreciated the institute for taking lead in popularizing value added pork products in the country through private entrepreneurs.



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MoA(S) inaugurates Farmers' Fair and Farm Field School at IIFSR

Navala, 7 May 2016. The Union Minister of State for Agriculture and Farmers' Welfare, Dr Sanjeev Baliyan, inaugurated one day 'Farmers' Fair and Farm Field School' at Indian Institute of Farming Systems Research (IIFSR), Modipuram, and emphasized about



depletion and pollution of groundwater which is a serious issue in western Uttar Pradesh, and also appealed to all the farmers to conserve the water for agriculture and its purity for drinking purpose. Dr Baliyan advocated for custom hiring of improved implements being used in cultivation of sugarcane through co-operative society in the village for making agricultural operations easier and faster which will also generate employments for youths in the villages. A practical demonstration was organized on automatic mechanical planting of sugarcane. About 5,000 farmers belonging to 85 villages of western Uttar Pradesh participated in the programme.

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Union Minister of State for Agriculture and Farmers' Welfare, visits at DRMR

Bharatpur, 6 May 2016. The Union Minister of State for Agriculture and Farmers Welfare, Shri Mohan bhai Kalyan ji bhai Kundariya, visited Directorate of Rapeseed Mustard and Research, and interacted with farmers.



Shri Kundariya emphasized to take the advantage of research development to the farmers' at field level and added that prime objective of the Government of India was to make the welfare of the farmers through implementation of the different centrally sponsored programmes like *Pradhan Mantri Fasal Bima Yojana*, *Pradhan Mantri Krishi Sinchai Yojana*, Soil-Health Card, e-NAM (National Agriculture Market), *Mera Gaon, Mera Gaurav* etc.

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Union Minister of State for MSME visits at ICAR Research Complex for Eastern Region

Patna, 14 June 2016. The Union Minister of State, Micro-, Small- and Medium-Enterprises (MSME), Shri Girja Singh visited experimental farms: cattle, goat, buffalo, duckery and poultry unit of the ICAR Research Complex for Eastern Region and interacted with the scientists.



The Union Minister of State for MSME lauded the experiments being conducted by the institute with a special mention to area specific mineral mixture 'Swarna Min' developed by the scientist of ICAR-RCER, as well feed block. Shri Singh also urged the scientists to work for the farmers and to disseminate the developed technologies to the farmers' fields. Union Minister of State for MSME advised the scientists and the farmers to cultivate drumstick/ sahan (Moringa oleifera) and use it as fodder for cattle, goat and poultry to reduce the feed cost.

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DG, ICAR emphasized to develop feasible and sustainable cotton technologies

Mumbai, 6 May 2016. Dr Trilochan Mohapatra [Secretary (DARE) and Director General (ICAR)] visited Central Institute of Research on Cotton Technology, and urged that the Institute should emerge as a centre of excellence for cotton and other natural fibres. The



Institute should focus its research efforts on development of technologies that are economically feasible and sustainable, and also provide incubation facility to graduate the incubates to develop promising and viable start-ups. Dr Mohapatra also emphasized that there should be self-assessment of the performance of the institute in terms of number of technologies developed and licensed, reached to stakeholders in addition to research publications with high citation index. Dr Mohapatra also visited the nanocellulose pilot plant producing nanocellulose and exhibition centre of the Institute.

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DG (ICAR) chairs Review Interactive Meet with Finance Heads in NEH Region

Umiam, 14 May 2016. Dr Trilochan Mohapatra [Secretary (DARE) and Director General (ICAR)] visited ICAR Research Complex for NEH Region, Meghalaya to attend two-day Review Interactive Meet with the Finance Heads of the ICAR Institutes of East Zone.



Dr Mohapatra stressed upon strengthening coordination among different stakeholders/ institutes in agriculture and allied sectors through regular interface. The DG (ICAR) emphasized on the role of social media to reach a large number of farmers within a short span of time with more effect. Mrs. Kalpana Mohapatra, wife of Director General (ICAR) inaugurated the 'Rongali Bihu Utsab' in the residential premises of the Institute.

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DG, ICAR visits CMFRI

Kochi, 18 April 2016. The Secretary (DARE) and DG, ICAR, Dr Trilochan Mohapatra released β Nodadetect - a single tube Reverse Transcription Loop mediated Isothermal Amplification (Single tube RT-Lamp) diagnostic kit for the detection of betanoda virus in infected marine fishes like cobia and sea bass at Central Marine Fisheries Research Institute (CMFRI). The kit is highly specific and cost effective. The



hatchery production of healthy, disease-free marine fish seeds is economically important in the context of enhanced marine fish seed requirements arising out of the increasing popularity of Marine cage culture along the Indian coast. The web site of the Indian Marine Mammal Stranding and Sighting Network (IMMSSN), to be operated by the CMFRI, was also launched.

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DG, ICAR visits IISR

Lucknow, 8 June 2016. Dr Trilochan Mohapatra (Secretary, DARE and Director General, ICAR) visited laboratories and workshops of the Indian Institute of Sugarcane Research (IISR) and got acquainted with various research and developmental activities of the Institute. Dr Mohapatra emphasized that there is a



need of intensive research in the field of integrated pest and disease management by developing efficient strains of *Trichogramma* or discovering new bio-control agents. Before commercialization of any proven technology, it needs to be properly validated and economically analyzed. Dr Mohapatra also suggested that entrepreneurial development programmes may be chalked out by the Institute and should be implemented to attract rural youth in agriculture. Dr Mohapatra stressed the need of paradigm shift in sugarcane research in India, and urged the scientists to think out of the box to develop technologies which can increase the existing sugarcane yield with minimum inputs and having sugar recovery by 1.5-fold.

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DG (ICAR) visits CIFT



Cochin, 18 April 2016. Dr Trilochan Mohapatra (Secretary, DARE and DG ICAR) visited Central Institute of Fisheries Technology and emphasized the need for giving more respects to the women employees of the Institute.

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DG, ICAR visits KVK, Kottayam

Kottayam, 19 April 2016. Dr Trilochan Mohapatra (Secretary, DARE and Director General, ICAR) visited Krishi Vigyan Kendra (KVK) including the farm and had interactions with the farmers, and advised that since rice, coconut, banana, tuber crops and vegetables are the major crops of the district, assessment and demonstrations of technologies in these crops to be given more emphasis in addition to Integrated Farming System Models. The marketing issues of the farmers could be solved to a greater extent by establishing Farmers Producer's Groups and ensuring their sustainability.



Dr Mohapatra opined that farm intensification and diversification with other enterprises would help the farmers in tackling the problem of price fluctuations. Dr Mohapatra said that Prime Minister of India is highly concerned about farmers and has instructed all the concerned authorities to take steps to double the annual income of farmers. Dr Mohapatra ensured that ICAR will take necessary steps for sustaining rice cultivation of Kuttanad region in a profitable manner through appropriate technologies.

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DG, ICAR visits NDRI

Karnal, 14 April 2016. The valedictory function of an annual Inter-University Youth Festival (Reverie-2K), organized by NDRI Students Union, was chaired by Dr Trilochan Mohapatra [Secretary (DARE) and DG (ICAR)].

Dr Mohapatra inaugurated a series of lecture on 'Nutritional Pharmacology' organized by the National Academy of Dairy Sciences, India. Referring the science as tool of development, Dr. Mohapatra maintained that science helps in laying foundation of technology that leads to development of the nation, so the scientists should contribute more in development of user friendly technology to address the challenges faced by the dairy sector.

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DG (ICAR) visits ATARI, Zone-III

Umiam, 14 May 2016. Dr Trilochan Mohapatra [Secretary (DARE) and DG (ICAR)] urged that the institute should reach to the farmers for solving farm related problems through technology demonstration and dissemination at ATARI, Zone-III. Dr Mohapatra also emphasized on the preparation of 'Technology Basket' of the validated technologies so as to increase the accessibility of technological options for the benefit of the SMSs of Krishi Vigyan Kendras in the North-east region to disseminate the technologies at a faster pace.



During interaction Dr Mohapatra emphasized for working as team in missionary zeal so as to generate suitable technologies for the benefit of the farmers of Northeast India and advised all the scientists to publish quality papers having high citation index. Initiatives should also be taken for transforming such published research findings into viable technology for its wider acceptance in the farmers' field. Dr Mohapatra further stressed on need to conduct the evolution studies on various plant species in the context of climate change as north-east of India is biodiversity hotspot which can be utilized for future crop improvement programmes to strengthen the hilly agriculture.

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Director General, ICAR visits CIFE, Kolkatta Centre

Mumbai, 15 June 2016. Dr Trilochan Mohapatra (Secretary DARE and DG, ICAR) emphasized the need for ensuring value chain in the process of training and stressed on delivery of training to stakeholders at nearby centres for the convenience of the participants at the centre of Central Institute of Fisheries Education (CIFE). The DG, ICAR stressed on the role of the CIFE as a nodal institute for delivery of technology through training programmes which are of immense importance in the effort at skilling the stakeholders. The DG, ICAR launched the online training programme of on Culture of Pacific white shrimp *Litopenaues vannamei*.



Dr T. Mohapatra also inaugurated the 'New Fish Quality Control laboratory' in the CIFE, Kolkatta campus and also released the CIFE-DO (Dissolved Oxygen Test Kit) developed by the Centre.

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Annual Convention of Sugarcane and Sugar Sector at IISR

Lucknow, 30 April 2016. Shri Pravir Kumar (Agriculture Production Commissioner, Government of Uttar Pradesh) inaugurated two-day Annual Convention and Technical Expo-2016, jointly organized by Indian Institute of Sugarcane Research (IISR) and North Indian sugarcane and Sugar Technologists' Association (NISSTA), at IISR on 29 April 2016. Shri Pravir Kumar urged industry to promote innovative cane production technology for maximizing farmers' income. Shri Kumar appealed the stakeholders for sustainable sugarcane forming to conserve natural resources.

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ICAR-IIRR and CSIR-Scientist win award for product development

New Delhi on 11 May 2016. His Excellency President of India, Shri Pranb Mukherjee Conferred The Biotech Product and Process Development and Commercialization Award for 2016 to a joint team from ICAR-Indian Institute of Rice Research, and CSIR-Centre for Cellular and Molecular Biology for the development and commercialization of Improved



'Samba Mahsuri', a bacterial blight-resistant rice variety at Vigyan Bhawan. The award has been instituted by the Department of Biotechnology, Government of India to recognize outstanding contributions of scientists and innovators in the field of product development in biotechnology.

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Personnel

Appointments

Nil (between 1 April and 30 June 2016)

Superannuations/Tenure Completion

Name, designation, address	Date, superannuation's/tenure completion
Dr D. K. Sharma, Director, CSSRI, Karnal	Tenure completed on 20 April 2016
Dr K. C. Bansal, Director, NBPGR, New Delhi	Tenure completed on 26 April 2016
Dr P. S. Minhas, Director, IASRI, Baramani	Superannuated on 30 April 2016
Dr A. Verghese, Director, NBRI, Bengaluru	Superannuated on 31 May 2016
Dr C. Chattopadhyay, Director, NCIPM, New Delhi	Selection outside ICAR relieved on 25 June 2016
Dr K. S. Varaprasad, Director, IIR, Hyderabad	Superannuated on 30 June 2016
Dr Debasis Nag, Director, NIRJAFT, Kolkata	Superannuated on 30 June 2016

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