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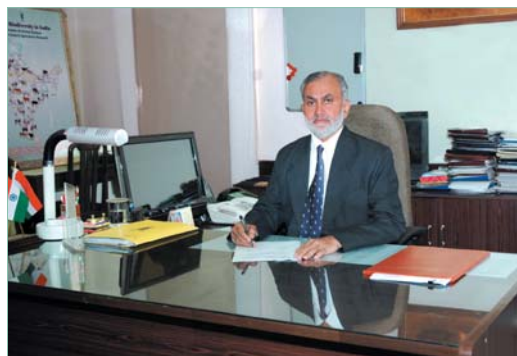
From the DG's Desk

Dear Readers,

Achieving food security is one of the priorities on the national agenda. At the current rate of population growth, it would be a challenging task to ensure food security which, as per the Food and Agriculture Organization, 'Exists when all people at all times have both physical and economic access to sufficient, safe and nutritious food that meets their dietary needs for an active and healthy life'.

Presently, more than half of world's population is malnourished particularly in the developing countries. As for India, the problem of micronutrient malnutrition is quite rampant especially in pregnant women and pre-school children. More than 50% pregnant women are anaemic and three out of four children below 5 years also suffer from iron deficiency. Similarly, millions of young children suffer from vitamin A deficiency leading to blindness.

To be healthy and active, the human body needs more than 20 mineral elements and about 40 essential nutrients like vitamins and amino acids. Most commonly observed deficiencies in unbalanced diet are iron (Fe), zinc (Zn), calcium (Ca), iodine (I), magnesium (Mg), selenium (Se) and vitamin A.



One of the approaches to address micronutrient malnutrition is through food fortification, such as enrichment of corn flakes with iron and calcium. Another practical way of combating hidden hunger would be through a novel way of 'Bio-fortification' of staple food crops. Bio-fortification refers to the genetic enrichment of food crops with enhanced level of desirable nutrients. Bio-fortified foods can supply essential nutrients year after year to the consumers, without much additional cost. Thus, bio-fortification is a cost-effective, long-lasting and sustainable approach to combat the problem of micronutrient malnutrition. Bio-fortification is attempted in staple food crops that are deficient in certain micronutrients by incorporating the gene(s) to synthesize a particular nutrient which is deficient in that

particular crop. For example, enrich rice with higher vitamin A content which is not available in rice.

The strategy of bio-fortification to supply micronutrients especially in developing countries involves making the staple foods they eat more nutritious by using both conventional plant breeding and biotechnological approaches. Conventional plant breeding could be successful when there is good variability for the traits of our interest between the crop species and within the crop itself.

Bio-fortification, a method of genetically enriching the staple food crops with essential micronutrients including vitamins, is a cost effective, people friendly and sustainable way of combating the problems of micronutrient malnutrition or the 'hidden hunger'.

Several studies have indicated that there are considerable genetic variations in the mineral concentrations of most of the crops. Even in cereals, enormous genetic variability for protein, iron and zinc has been observed, as for example, there is 4- to 5-fold variation for iron content in rice.

Nutritional content of various food crops; animal foods and fish in Indian context

Food	Protein (g/100 g)	Iron (mg/100 g)	Zinc (mg/100 g)
Cereals	2.5–10.5	1.3–6.5	1.1–2.2
Pulses	11.0–25.1	3.9–5.9	2.0–2.6
Fruits	0.2–1.1	~0.1	~0.1
Vegetables	0.6–3.0	~0.3	~0.2

Conventional plant breeding has good potential to increase the micronutrient density in staple food crops by careful screening of diverse genotypes, identifying the potential donors, making crosses and selection of genotypes having higher micronutrient content. This variability allows the plant breeders to improve the levels of micronutrients through simple breeding programmes. The success of developing quality protein maize (QPM) is one of the best examples of bio-fortification through conventional breeding programmes. Several QPM hybrids are now available and similar efforts are under progress in other crops as well.

Presently, several organizations are making concerted efforts to enhance the contents of iron, zinc, vitamin A and other minerals in staple food crops. Orange-flesh sweet potato lines with high levels of α -carotene (> 200 $\mu\text{g/g}$) and high-yielding beans with 50-70% higher iron content have been developed by conventional plant breeding. These conventional plant breeding approaches may be complemented with molecular marker-assisted selection to hasten the process of breeding. Such markers were identified for iron and zinc in rice which could be utilized in MAS. In cases where the genetic variability

for the micronutrients is limited, efforts are needed to introduce such traits from related species and other sources. The popular example of this kind of bio-fortification is 'Golden Rice' which is enriched with α -carotene. Two versions of Golden rice have been developed and were donated to Golden Rice Humanitarian Board and among the six events of Golden Rice, 2 were developed in the background of the American Kaybonnet variety. Marker-assisted introgression of these genes through backcross breeding in the background of Indian

popular varieties is under progress at the Indian Agricultural Research Institute, New Delhi; Directorate of Rice Research, Hyderabad; and Tamil Nadu Agricultural University, Coimbatore. Efforts are also being made to improve α -carotenoid content in cassava, sweet potato, maize, wheat and banana.

The concept of bio-fortified food is new to our society and therefore, besides intensifying research efforts on bio-fortified crops, it is not only necessary to create awareness about these cost-effective healthy foods but also to conduct impact assessment of these bio-fortified foods. Public acceptance of the bio-fortified food is also important especially in view of the change in colour of the products, for example Golden colour of vitamin A rich rice. Proper awareness campaigns have to be conducted to sensitize the consumers about the importance of micronutrient-rich foods in their diets. Efforts are also needed to reward the farmers who grow nutri-rich crops with higher price to encourage them to grow such bio-fortified crops.

Initially research efforts of agriculture were prioritized for achieving the self-sufficiency for food-grains and now the scope is also extended to the bio-fortification of staple food crops as a strategy to address the malnutrition problem. With a view to provide thrust to the bio-fortification, the ICAR, in the ongoing XII Five-Year Plan, is contemplating a research platform on bio-fortification wheat, maize, sorghum and millets. The programme would focus on evaluation of diverse genotypes as potential sources of micronutrients and introgression of high micronutrient in high-yielding popular varieties of staple food crops.

The research products would also require a strong policy and public support for their popularization which in the long run, could effectively be used to overcome micronutrient deficiencies in the human diet.


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WORKSHOPS, SEMINARS, INTERFACE MEETING, CONSULTATION, CONFERENCES, REVIEW MEETINGS AND BRAINSTORMING SESSION

XXIII Meeting of the ICAR Regional Committee No. 8



Coimbatore, 15 June 2012. Shri S. Damodaran, Hon'ble Minister for Agriculture, Government of Tamil Nadu., inaugurated the XXIII Meeting of the ICAR Regional Committee No. 8. Highlighting the role of agricultural researchers in achieving the agricultural growth rate of 4% during the XII Five-Year Plan, he hoped that this meeting will identify the gaps in research and in transfer of technologies and work towards this goal. Informing that the water deficit in 2025 will be about 31% in Tamil Nadu, he called upon the researchers to develop strategies in meeting this challenge. He released e-contents of the five-year Bachelor of Veterinary Science and Animal Husbandry course of the Tamil Nadu Veterinary and Animal Sciences University. Developed under the National Agricultural Innovation Project (NAIP) of the ICAR, the e-contents included creating multimedia e-learning modules, a shareable repository of learning resources in veterinary and animal sciences, and delivering e-modules online and offline in the form of CD/DVD.



Dr S. Ayyappan (Secretary, DARE and DG, ICAR) mentioned that Region No. 8 is the host for several spices and plantation crops. Though the productivity of crops such as rice, sugarcane, groundnut, coconut and pulses have improved in this region, the researchers should not remain complacent, he cautioned.

Lauding the ICT initiatives of Sugarcane Breeding Institute, Tamil Nadu Agricultural University and Tamil Nadu Veterinary and Animal Sciences University, Dr Ayyappan called upon the institutions of NARS to utilize the excellent IT potential of this region. Mentioning that 'Farmer-first' and 'Student-ready' are the major missions of the ICAR he focused on dryland agriculture, island agriculture, disaster management, agri-eco tourism, labour shortage and retaining youth in agriculture. Over 100 delegates participated in the 2-day meeting.

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XXII Meeting of the ICAR Regional Committee No. 1

Palampur, 8 June 2012. Mr G.H. Mir, Hon'ble Minister of Agriculture, Government of Jammu and Kashmir, inaugurated the XXII Meeting of the ICAR Regional Committee No. 1 at Chaudhary Sarwan Kumar Himachal Pradesh Krishi Vishvavidyalaya, Palampur, and emphasized the need of coordinated efforts to address the problems of hill agriculture. He said that

as most of the farming in hill states is rainfed, concerted efforts are required for soil conservation, development of drought-resistant crop varieties, quality seed production and farm mechanization. He released new publications and a variety of apple, and honoured scientists from the SK University of Agricultural Science and Technology of Kashmir,



Srinagar with Certificate of Appreciation during the inaugural ceremony.

Prof. V.L. Chopra, Guest of Honour, said that eight Regional Committees were constituted to address specialized farm problems of the different agro-climatic regions of the country. For better outcome, these meetings should address the challenges and suggest viable solutions for the concerned regions.

Dr S. Ayyappan (Secretary, DARE and Director General, ICAR) delivered key note address and said that this meeting is the first in line of Regional Meeting of ICAR specially focusing the discussions/ deliberations for development of hill agriculture in the ensuing XII Five-Year Plan. He emphasized the need of giving more importance to niche area of hilly states like horticulture, protected floriculture cultivation, meat production, agroforestry, studies on climate change and development of technologies for high-, mid- and low- hill areas. He emphasized on the importance of having germplasm of some of the important crops of the area like saffron, potato, walnut and Basmati rice.

Dr H.P. Singh (Deputy Director General, Horticulture) said that there is considerable increase in off-season vegetable cultivation in the region and the ICAR will continue to help the horticulture development in the area.

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First Annual Workshop on NICRA

Hyderabad, 12 June 2012. The first Annual Workshop of the National Initiative on Climate Resilient Agriculture (NICRA) was organized at Central Research Institute for Dryland Agriculture (CRIDA), Hyderabad. Dr A. K. Singh (Deputy Director General, NRM); Dr Y. P. Abrol, Chair of the Expert Committee and Dr B. Venkateswarlu (Director, CRIDA) addressed the inaugural session and deliberated on the issues. The project made good progress in one year as evidenced by the identification of good number of promising germplasm in different crops, like rice, wheat and pulses which retained reproductive performance at extremely low and high temperatures, strong evidence on the usefulness of on-farm water harvesting in adaptation of rainfed agriculture, further insights into the strategies for reducing emissions in paddy and identification of low carbon technologies for irrigated and rainfed production systems. The second component of the project, i.e. technology demonstration in 100 vulnerable districts will be reviewed separately through the zonal workshops. The action plan document of this component and the research highlights of the Project for 2010-12 were released on the occasion. Other publications and CDs released on the occasion available on NICRA website.

The workshop was organized in five technical sessions covering the themes of : (i) vulnerability and impact assessments; (ii) adaptation and mitigation through natural resources management; (iii) crop improvement for multiple abiotic stresses; (iv) pest and disease dynamics under changing climate and impact on pollinators; and (v) adaptation strategies in livestock and fisheries. The Workshop was attended

by nearly 200 scientists from NARS system, other universities, IITs and NGOs who are partnering in different components of the Project. The projects under strategic research, sponsored and competitive grant components were reviewed for the work carried out during 2011-12 and the action plan for 2012-13 and the approach for XII Plan were finalized.

Major recommendations

- Organize thematic workshops to bring more clarity among all the participating scientists on the technical programme.
- The major goal of the project is to reduce losses at the farm level when a climatic event like droughts, floods, cyclone and frost occur.
- The focus is more on developing and testing technologies and practices which help farmers to cope with current climate variability, while we continue to assess the long term impacts of climate change which will be addressed through policy initiatives.
- Manuals on various thematic activities like carbon sequestration, conservation agriculture, use of bio char, measurement of GHGs and germplasm screening for multiple stresses will be brought out so that all the participating scientists collect the minimum data set and the experimental data will be comparable across crops and locations.
- Clear guidelines will be prepared by the core institutes to work out water, carbon and energy footprints of the interventions/practices being adopted in the project.

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Inception workshop on ‘Scientific Fisheries Management of Wetlands and Reservoirs of North-Eastern Region’

Guwahati, 20 June 2012. With the object to prepare an action plan for scientific management of selected wetlands and reservoirs of the north-east region as well as development/ refinement of model for pig-cum-fish farming through active collaboration of various State fisheries departments, Asom Fisheries Development Corporation, Bodoland Territorial Council and College of Fisheries, Lembucherra, Tripura, the Central Inland Fisheries Research Institute (CIFRI), Barrackpore organized an Inception workshop on ‘Scientific Fisheries Management of Wetlands and Reservoirs of North-Eastern Region’ at its Guwahati Regional Centre. Dr B. C. Jha (Head, Reservoir and Wetland Fisheries Division, CIFRI, Barrackpore) stated that the North-Eastern region had vast potential of open water fisheries development. Effective dissemination of CIFRI technologies/ management guidelines could bring appreciable changes in fish productivity scenario. However, effective collaboration among various stakeholders would be essential to realize the potential.

Dr A. K. Roy (Secretary, Fisheries, Government of Asom) has emphasized that CIFRI could play a significant role in development of wetland (beel) fisheries and called upon to take a more proactive role to avail the opportunity. He assured all possible help from the Department of Fisheries, Government of Asom.



Professor A. P. Sharma (Director, CIFRI, Barrackpore) requested all the stakeholders viz., state fisheries departments, AFDC, College of Fisheries, Lembucherra to bring in synergy for making effective and functional partnerships with community participation so as to achieve tangible results by creating success stories on open water fisheries development to be adopted by the stakeholders. Directors/ officials of state fisheries departments of Arunachal Pradesh, Meghalaya, Manipur, Asom and Tripura, BTC, AFDC and a few farmers provided valuable inputs in terms of their expectation from CIFRI, resources available in their respective states and steps to be taken for further development of wetlands and reservoirs fisheries.

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‘Cost-effective shrimp farming through adoption of indigenous innovative feed and better management practices’

Chennai, 10 April 2012. Dr P. Ravichandran (In-charge, Central Institute of Brackishwater Aquaculture (CIBA), Chennai) inaugurated the workshop and informed that the CIBA has developed an indigenous innovative and cost-effective shrimp feed technology using the locally available ingredients. The innovative cost-effective feed showed comparable results with other commercial feeds in field experiments in terms of feed stability, survival rate of the shrimps, water quality, feed conversion ratio (FCR) and productivity. He added that simple testing kits that have been developed by the CIBA are used for the analysis of pH, DO and metabolites such as ammonia-nitrogen and nitrite-nitrogen. Mrs Deepa S. Pillai (Manager, NABARD, Chennai), appreciated the work of the CIBA for successfully bringing out a low-cost indigenous feed using local source material thereby reducing the expenditure of farmers on the feed and replacing the commercial imported feed in shrimp farming. She also added various funding schemes available from the NABARD for aquaculture sector and the ways and means to apply for such funding.

Of the 25 shrimp farmers participated in the workshop, 12 were the farmers involved in the project trials and 13 were the progressive farmers, including the farmer, Shri O.S. Maniyan (Member of Parliament from the Mayiladuthurai Constituency). The farmers who used CIBA feed testified that the production cost was lower and the profit margin was higher (₹ 8–11/kg) in their ponds fed with CIBA shrimp feed. Besides, the soil and water quality of the ponds was better. The growth of the shrimps and the FCR were almost same for the CIBA feed and the high cost commercial feed existing in the market.

The farmers were taken to the feed-mill facility of the CIBA located at Muttukkadu, 40 km away from the Hq, and were explained about the feed production techniques, step-by-step, using different machines, viz. hammer-mill, micro-pulveriser, mixer, ring die pellet mill and post-pellet conditioning chamber.

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KVK's Zone I workshop

Palampur, 20 May 2012. Dr S. K. Sharma (Vice Chancellor, CSKHPKV, Palampur), the Chief Guest, inaugurated a 3-day Zonal Workshop of 67 Krishi Vigyan Kendras of Zone-I comprising Delhi, Haryana, Punjab, Himachal Pradesh, and Jammu and Kashmir at the Chaudhary Sarwan Kumar Himachal Pradesh Krishi Vishwavidyalaya (CSKHPKV), to review the progress of Krishi Vigyan Kendras during 2011-12



and to prepare action plan for 2012-13. He recalled the efforts of ICAR/Zonal Project Directorate of Zone I in organizing the Farmer-Scientist Interactions in Haryana and Punjab and discussions on climatic change, increasing cost of the agricultural inputs and depleting natural resources as major challenges of agricultural production and urged the KVKs to address them. Dr A. M. Narula (Zonal Project Director, Zone I) elaborated the efforts made by the Directorate during 2011-12 in providing technical support to the KVKs. He also appraised the new initiatives to be taken during XII Five-Year Plan like Farmer First, e-Extension, specialized KVKs, Farm Innovation Fund, Mini-Seed Processing Facilities etc. There was also a presentation on 'Future Trading of Agricultural Commodities'. More than 100 scientists participated in the Zonal workshop.

Recommendations

- The Krishi Vigyan Kendras (KVK) have been given the responsibility of whole district. The Directorate of Extension Education should make plan of each KVK to increase its outreach.
- Public representatives/district administration should be involved in KVK activities to apprise them about KVK mandates and activities.
- The KVKs in the paddy-wheat belt of Punjab and Haryana including KVK, Kathua will select one village each and saturate those villages with appropriate Resource Conservation Technologies through different activities. These KVKs will communicate the name of the selected village to the Zonal Project Directorate within one month period.
- The KVKs of Punjab will conduct OFTs on Leaf

Colour Chart (LCC) taking 4 varieties of paddy to see the efficacy of LCC on different varieties.

- Each KVK will compile the frequently asked questions by the farmers and their remedies offered and send to the Zonal Project Directorate within 15 days period.
- Capacity building of members of Panchayati Raj Institutions should be done and should be separately reported.

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KVK's Zone IV workshop

Kanpur, 21 May 2012. Dr A.K. Bakshi (Vice Chancellor, Sardar Vallabh Bhai Patel University of Agriculture and Technology, Meerut) inaugurated the Annual Zonal Workshop of 81 Krishi Vigyan Kendras (KVK) of Zone IV, comprising Uttar Pradesh and Uttarakhand in which 14 innovator farmers of these states shared their innovative experiences. Dr Bakshi advised for involving farmers groups at pilot basis in this activity, and stressed for feedback documentation and its supply to researchers for further research. Further Dr Babu Ram (Director Extension, SVBPUAT) stressed on enhancing cropping intensity, enhancing soil health and diversifying towards fruits and vegetables.



Dr A.K. Singh (Project Director, Zone-IV) highlighted the XII Five-Year Plan initiatives like carp hatchery, diagnostics, integrated farming systems, rainwater harvesting, specialized KVKs etc. to be taken up. He focused on 'Farmer First', 'Farm Innovation Fund' and 'the concept of e-farmers' and suggested that these to be pursued in XII Five-Year Plan and the role of KVKs in this context. 'Small Farmer-Happy Farmer' was one of the brightest reflections from the presentations made by the small farmers. Some of the farmers claimed higher income from vegetable cropping system and raising the organic carbon in the soil between 0.6 and 0.8; technique of managing old mango-orchards and harvesting fruits ('chausa' variety of mango) valued up to ₹ 37,000/plant/annum; experiences of earning ₹ 2.4 lakh/ha from peach based system and up to ₹ 4 lakh/ha from litchi along with vegetables as intercrops.

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Annual Review Workshop of KVKs of Zone VI

Navsari 14 June, 2012. Dr K D Kokate, Deputy Director General (Agricultural Extension) inaugurated a three-day Annual Zonal Workshop of Zone VI on 12 June 2012 at Navsari Agricultural University (NAU), Navsari. He pointed out that now-a-days Krishi Vigyan Kendras (KVKs) are discussed at international level and playing a strong role in overall development of farming community in our country. The KVKs of Rajasthan and Gujarat are doing excellent work in arid and semi-arid areas where water-conservation technology requires an urgent attention. He cited the example of KVK, Kannur as a role model in different aspects of agricultural development for the farming community. He said that all the KVKs should work on some new initiative like, e-extension, voice-SMS, e-farmer-agric-Alert and web-enabled technology contents. He emphasized that in XII Five-Year Plan focus of attraction would be Farmers First and Secondary Agriculture to address the major issues of the farmers for their livelihood security and increase the agricultural income.

Dr A. R. Pathak (Vice Chancellor, NAU, Navsari) expressed his satisfaction over lead role being played by the KVKs and the linkage between the KVKs and the line departments for meeting the technical needs of the farmers. He further congratulated the ICAR for having a strong network of 630 KVKs in the country. He emphasized the role of KVKs in technology assessment, refinement, demonstration and also empowering the small and marginal farmers as well as farm women in the country. The scientists briefed about the growth and salient achievements of KVKs of Zone VI and also highlighted the new initiatives proposed for the strengthening of KVK system of Zone VI highly affected with arid and semi-arid climatic conditions during the XII Five Year Plan. They further informed that the achievements of each KVK and action plan for 2012-13 will be discussed to achieve the targets under KVK envisaged by the Planning Commission of Government of India. About 70 KVKs of Zone VI comprising Rajasthan and Gujarat have participated in the workshop and presented the annual progress report for 2011-12 and action plan for 2012-13.

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KVK's Zone VII workshop

Bastar, 4 May, 2012. Shri Baiduram Kashyap, MLA, Chitrakot inaugurated XIX Zonal Workshop for Krishi Vigyan Kendras (KVKs). He emphasized upon the livelihood models for marginal and landless tribals, so that they could continue in the farming for long period. He urged all the KVKs for making pro-farmers efforts for their betterment. Dr S.K. Patil (Vice Chancellor, Indira Gandhi Krishi Vishwavidyalaya,



Raipur) said that KVKs have to identify the mechanism to disseminate technical information faster by making paradigm shift from 'input-based agriculture' to 'Knowledge-based agriculture' so that clear differentiations could be made for the work of KVKs and the departments. Shri Lachhram Kashyapji (Chairman, Zila Panchayat) said that agriculture and forest produce are the major source of livelihood of the tribal people. He urged scientists of KVKs to work on the organic manure availability and its use by the farmers rather than dependency on the chemical fertilizer.

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KVK interface for strengthening technology application in agriculture of Bihar

Patna, 30 May 2012. Dr Mangala Rai (Agriculture Advisor to Chief Minister, Bihar) chaired a one-day Krishi Vigyan Kendra (KVK) interface for strengthening technology application in Agriculture of Bihar at the Bihar Veterinary College, Patna. He emphasized on making KVKs more efficient, effective and relevant for the cause of farming community, and highlighted the need for better monitoring and analysis of actual area expansion and technologies suitable to address thrust areas of the district. He advised for development of Zone-specific action plan in the context of roadmap of agriculture of Bihar with delineated role and responsibilities of KVKs.

Dr K.D. Kokate (Deputy Director General, Agricultural Extension) observed that KVKs need to consider expectation, demand and need of farming community before initiating their activities. He also briefly presented the initiatives taken by the ICAR in strengthening KVKs during XIIth Five-Year Plan. Dr A.K. Singh (Zonal Project Director, Zone II, Kolkata) presented the achievements of KVKs of Bihar during the last five years and involvement of KVKs in various centre/ICAR sponsored schemes. He also presented a brief account of proposed facilities for the XII Five-Year Plan in respect of KVKs.

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Zone VIII KVKs Annual Review Workshop

Chennai, 7 June 2012. Shri Sandeep Saxena, (Agricultural Production Commissioner and Secretary to Government of Tamil Nadu) inaugurated a Annual Review Workshop of Krishi Vigyan Kendras of Zone VIII for the year 2011-12 at Madras Veterinary College, Tamil Nadu Veterinary and Animal Sciences University (TANUVAS) and said that Krishi Vigyan Kendras(KVKs) should make farmers to feel proud about their farming by establishing close link between research and extension. He expressed that KVKs should take a lead to educate the extension personnel on the latest technologies so as to increase the adoption rate by the farmers.



Dr R. Prabakaran (Vice Chancellor, TANUVAS) stressed the lead role being played by the KVKs on technology front at district level for meeting the technical needs of the farmers. He expressed his happiness for increasing the KVKs network with more than 600 KVKs in the country. The ICAR institutes of Zone-VII made presentations on latest technologies. Directors of ICAR Institutes, Directors of Extension from State Agricultural Universities, Scientists from Zonal Project Directorate, Zone VIII, Professors from Directorate of Extension, Officials from Department of Agriculture, Tamil Nadu and Programme Coordinators of 80 Krishi Vigyan Kendras of Zone VIII comprising Karnataka, Tamil Nadu, Kerala, Goa, Puducherry and Lakshadweep participated in the workshop.

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XXIII Group Meeting of AICRN Project on underutilized crops

Rahuri, 3 May 2012. The XXIII Group Meet of All India Coordinated Research Network (AICRN) on Underutilized Crops, jointly organized by Mahatma Phule Krishi Vishwavidyalaya (MPKV) and ICAR (Hq), was held at Rahuri. Dr Swapan Kumar Datta (Deputy Director General, Crop Science) underlined the nutritional importance of these underutilized crops and hoped for advanced research on various aspects

of these crops. Dr T.A. More (Vice Chancellor, MPKV) called for development of research and stringent efforts for transfer of technology of underutilized crops to farmers at grass-root level. More than 150 scientists from 20 states of India participated in the Group Meet.

The All India Coordinated Research Network on Underutilized Crop project is conducting research on 30 crops of food, fodder and industrial value through 13 main, 5 co-operative and 3 voluntary centres located in diverse agro-climatic zones of the country. The research works done during 2011-12 at various centres were presented by scientists on varietal improvement, crop production, quality aspects and nutritional quality/value-addition. The research programme planning for 2012-13 was also formulated for Hills as well as Plain regions of India as per future requirements and strategies to create awareness among the farmers regarding underutilized crops.

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Farmers' training and *Krishak Goshthi*

Lucknow, 10 April 2012. Shri Harish Rawat ji (Union Minister of State for Agriculture and Food Processing Industries and Parliamentary Affairs) inaugurated a two-day Farmers' training and *Krishak Goshthi* on 'Sugarcane Production Technologies', at RBNS Sugar Mill, Laksar, Haridwar (Uttarakhand) on 9 April 2012 and said that sugarcane is an important cash crop of Haridwar district as the crop is cultivated on 53,736 ha area which is about half of the total cane acreage in Uttarakhand (1.08 lakh ha). Out of 10 sugar mills in the state, the Haridwar district has 3 sugar mills, namely Laksar, Liberhedi and Iqbalpur, and in Laksar Sugar Mill the area under cane is 25,000 ha, which is almost one-fourth of total cane area in the state. So, the prosperity of farmers and state depends upon the cultivation status of quality sugarcane in Laksar Sugar Mill zone area and in the Haridwar district as well. The Union Minister of State for Agriculture urged upon the scientists to formulate programme to address the problems of low cane and sugar productivity in the area.

Dr Solomon (Director, Indian Institute of Sugarcane Research) presented a brief note of account on 'sugarcane cultivation and processing status of Uttarakhand', and also appraised about the technologies developed by the IISR and benefit of training programme to the cane growers of Haridwar district. The other discussed topics were Improved sugarcane varieties, Planting methods and crop management, Integrated nutrient management, Integrated pests, diseases and weeds management, Water saving irrigation methods, Ratoon management, Sugarcane machines etc. During the programme, a training and an exhibition were also organized in which 20 organizations like pesticide/

fertilizer manufacturers, research institutes, agricultural equipment manufacturers, Krishi Vigyan Kendras, State development departments etc. showcased their products/technologies. In the two days training programme about 1,500 farmers from Haridwar district participated.

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Annual Group Meeting of All-India Coordinated Research Project on Tuber Crops

Udaipur, 18 June 2012. The Department of Horticulture, Rajasthan College of Agriculture and All-India Coordinated Research Project on Tuber Crops organized three-day Annual Group Meeting at Maharana Pratap University of Agriculture and Technology (MPUAT), Udaipur. Dr O. P. Gill (Vice Chancellor, MPUAT) while presiding the inaugural session, stressed for inter-cropping, low cost production technology, disease management and need of quality seed of horticulture crops. He said that India has achieved self-sufficiency in food security and stands second after China in the production of horticulture crops. Dr H. P. Singh (Deputy Director General, Horticulture) speaking as Chief Guest, emphasized that despite highest food production India need to improve technology for agriculture development to meet the demand of increasing population in the next 20-25 years. He pointed out the need of High-tech horticulture, improved cultivars (seed), disease diagnostics, micro irrigation, collection, characterization and multiplication of improved seed of horticulture crops. The best centers award was given to Rajendra Agriculture University, Dholi, Bihar. More than 60 scientists from all over the country are participating in the meeting.

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Development of surveillance programme for aquatic animal diseases

Lucknow, 18 April 2012. To minimize the impact of diseases, a two-day National Consultation on 'Development of Surveillance Programme for Aquatic Animal Diseases' was started on 17 April 2012 at the National Bureau of Fish Genetic Resources, in collaboration with Department of Animal Husbandry, Dairying and Fisheries, Government of India; National Fisheries Development Board, Hyderabad and Aquatic Biodiversity Conservation Society, Lucknow. Prof. Indrani Karunasagar delivered Presidential lecture and emphasized the need of level III diagnosis particularly meta-genomics in detecting the causative agents of syndromes, viz. epizootic ulcerative syndrome and monodon slow growth syndrome.



Dr C. V. Mohan (Research and Development Manager, NACA, Thailand) shared his experiences on the global scenario of aquatic animal disease surveillance programmes. He appreciated the efforts of, the NBFGR for taking this initiative and assured support of the NACA in developing a national surveillance programme on aquatic animal diseases.

Dr J. K. Jena (Director, NBFGR) stressed the urgent need to minimize the impact of diseases and mentioned that the present consultation would help in developing a roadmap for national surveillance programme for aquatic animal diseases and manage the disease risks associated with aquatic animal trade.

Technical sessions were held on thematic area, marine and brackish-water diseases and freshwater diseases.

The consultation recommended that a 'National surveillance programme for aquatic animal diseases' be initiated in the selected states of fisheries and aquaculture importance in the first phase.

It also suggested that the programme should be initiated from the 2012-13 initially for five years in a network project mode with the involvement of state fisheries departments, ICAR fisheries institutes, college of fisheries and selected organizations with adequate expertise/capacity which should be continued as an ongoing/regular national programme.

The NBFGR will act as a nodal agency to formulate the proposal in consultation with identified network partners and further coordinate the programme.

The consultation agreed on a national list of diseases to be included under national surveillance programme in selected 14 states in first phase for the purpose of implementing national disease control strategies and meeting international obligations.

Nearly forty experts from all over the country as well as experts from Network of Aquaculture Centres in Asia-Pacific, Thailand participated in this meeting.

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Brainstorming session on quality standards for bio-fertilizers

Rahuri, 4 June 2012. Dr T. A. More (Vice Chancellor, Mahatma Phule Krishi Vishwavidyalaya) inaugurated the brainstorming session on Quality standards for biofertilizers to manufacturers and liquid biofertilizer manufacturing plants at the MPKV, Rahuri under the *Rashtriya Krishi Vikas Yojana*. He appealed to the farmers to take advantage of the facility of liquid biofertilizer manufacturing plants. He said that efforts are required for overcoming the constraints in development and adoption of this technology. A total of 28 biofertilizer manufacturers attended the session.

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VI workshop of AICRP on Ergonomics and Safety in Agriculture

Bhopal, 2 June 2012. Dr M.M. Pandey (Deputy Director General, Agricultural Engineering) inaugurated a three- day VI workshop of AICRP on 'Ergonomics and Safety in Agriculture' at the Central Institute of Agricultural Engineering (CIAE) on 31 May 2012. He lauded the work done by AICRP on Ergonomics and Safety in Agriculture in creating farm safety awareness and developing safety devices/ practices for minimizing accident in agriculture. The work done in generating anthropometric and strength database of agricultural workers and its application in development of agricultural tools and equipment was also appreciated by him. Dr A.K. Tiwari [Deputy Advisor (Agriculture) Planning Commission, Government of India] highlighted the need of mechanization to meet the increasing demand of food production at reduced cost. He advocated that benefits of mechanization should reach to all the stakeholders including small and medium farmers and landless labourers. He promised support for activities to take the project findings and results to stakeholders.

Dr L.P. Gite (Project Coordinator) highlighted the achievements of the Project that included design of tractor roll over protective structure, indicator to alarm the operator in case of tractor-trailer side overturning possibility, measures to prevent axial flow thresher accidents, chaff cutter safety devices, pedal-operated maize-dehusker sheller, pedal-operated *ragi* pearlier, palmyra tree climber, hand-operated machines, namely coconut dehusker, arecanut rotary peeler, arecanut rotary dehusker, women friendly two row rice transplanter and cono weeder. For material handling in hill areas, a gravity ropeway system has also been developed. Interventions for minimizing occupational health problems to tractor operators were also reported by

him. The participants visited ergonomics laboratory of the CIAE to get acquainted with latest available instrumentation. About 50 participants from ten cooperating centres and the host institutes attended the workshop.

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XVIII Institute Research Council meeting



Bharatpur, 7 June 2012. The Directorate of Rapeseed-Mustard Research organized its XVIII Institute Research Council (IRC) meeting on 7 June 2012 under the Chairmanship of the Director of DRMR. Individual scientists presented progress of work done during year 2011-12. Dr S.S. Banga, ICAR National Professor was the subject matter expert. Dr. Banga emphasized the need for pre-breeding. The chairman suggested for screening of the germplasm for *Orobanche* parasite at hotspot, Avar village, Bharatpur and to standardize screening techniques.

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Meat Tech-2012

Chennai, 8 June 2012. Dr B S Prakash (Assistant Director General, Animal Nutrition and Physiology) delivered the theme address in the event and highlighted the strength and opportunities of Indian meat industry in the global scenario and expressed concerns regarding linkage between research and development institution and industries to resolve the problems for enhancing the productivity. The Ministry of Food Processing Industries would be making substantial investments to create a 'Brand India' for wholesome hygienic meat products and by-products, and to enhance the livelihood security of millions of livestock owners, he added. A delegation of seven scientists participated in the Meat Tech conference and interacted with the delegates. The National Research Centre on Meat (NRCM), Hyderabad collaborated as knowledge partner with Tamil Nadu Technology Development and Promotion Centre

(TNDPC) of the Confederation of Indian Industry (CII) and conducted the Meat Tech-2012 conference at Chennai.

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Hindi workshop at DRMR

Bharatpur, 25 May 2012. Sh. Vasudev Gupta (ex-Director, RSERTI, Udaipur) inaugurated one-day Hindi workshop at the Directorate of Rapeseed-Mustard Research on 25 May 2012 and said that language is a strong medium of expression and Hindi is not confined to any region. He described the constitutional status of Hindi and rules and sub-rules and clauses in detail. He also said that use of Hindi language should be increased in legislative, executive and judiciary work. Dr Y.P. Singh (Principal Scientist) appreciated such type of workshops for motivating the people for using Hindi in their official work.

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Review Meeting of XII Five-Year Plan of four institutes through video conferencing

New Delhi, 19 May 2012. Dr S. Ayyappan, Secretary (DARE) and Director General (ICAR) reviewed the proposed activities of XII Five-Year Plan of four institutes, namely Central Institute of Agricultural Engineering, Bhopal; Indian Institute of Horticultural Research, Bengaluru; Indian Institute of Pulses Research, Kanpur; and Water Technology Centre for Eastern Region, Bhubaneswar, on 19 May 2012 from Krishi Bhawan. He discussed in detail about the important research activities with Directors and Head of Departments for 30 min. with each institute. The new format of the online-meeting through Video Conference was appreciated. Dr Ayyappan the directors of the Institutes to allow other nearby ICAR institutes also to use their video-conference facility for online meetings. Video conference and IP Telephony systems have been implemented and operationalized by the ICAR in the 20 ICAR institutes. Video conference has multiple benefits in terms of time saving, cost saving and enhanced manpower productivity.

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Plant Breeders' Meet

New Delhi, 4 May 2012. A two-day meeting of the All India Plant Breeders' Meet, organized to have a dialogue with plant breeders to address issues and concerns especially with respect to plant genetic resources utilization, and to gather the suggestions for ICARs XII EFC Plan Proposal, was started at the National Bureau of Plant Genetic Resources (NBPGR)

on 3 May 2012. There were three technical sessions: (i) Germplasm maintenance, supply and pre-breeding; (ii) Germplasm evaluation and enhanced utilization, and (iii) Action plan for enhanced utilization of germplasm. Dr S. Ayyappan, Chair of the session, urged the plant breeders to use this platform to give their opinions on the policy matters related to crop improvement under the ICAR's XII EFC Plan. He informed that breeders should keep in view the five major themes proposed by the ICAR namely, (i) input use efficiency, (ii) climate resilient varieties, (iii) health, (iv) farm mechanization, and (v) social dimensions of agriculture. Dr Ayyappan expressed his concern on the reduced rate of germplasm exchange and also in registration of material. In future, multi-stress tolerant varieties would be required and urged the breeders to review the status of ICAR's capacity to address this. He informed that All India Coordinated Research Projects (AICRPs) had been reviewed and consortia platforms are being conceived in the XII Five-Year Plan of ICAR.

Dr P.L. Gautam (Chairman, Protection of Plant Varieties and Farmers' Rights Authority) suggested that just like the 'Global Taxonomy Initiative' created under the Convention on Biological Diversity (CBD), to address the lack of taxonomic information and expertise, a 'Global Initiative for Plant Breeding' can be conceived for capacity building (including new tools and technology) and facility enhancement for plant breeders. The role of the NBPGR in providing service for Plant Genetic Resources Management was emphasized and all its activities like germplasm exchange and collection, characterization, evaluation, conservation and registration be further strengthened. Dr Gautam also suggested that a 'National policy on plant breeding and plant genetic resources management' be developed, and that the AICRPs should be strengthened. Dr H.S. Gupta (Director, Indian Agricultural Research Institute) suggested that in future there is a need to increase the biological index of crops. He informed that to achieve a 2% gain in food crops, about 1% would be genetic gain while the other 1% would come from good crop-management practices. He said that with the advent of molecular tools, plant breeding has become very precise. However, quick accesses to a wide array of germplasm need to be taken up for broadening the genetic base. He also suggested that pre-breeding work be done by AICRPs. Dr S. Mauria ADG (IP&TM), ICAR, flagged three issues: (i) development of multi-stress tolerant varieties, (ii) internalization of what ails Indian plant breeding, and (iii) understanding the role of intellectual property rights (making knowledge, process and material available). Dr K C Bansal flagged major issues: (i) limitations in germplasm use; (ii) lack of characterization and evaluation data, (iii) lack of adequate users, (iv) narrow genetic base in crop varieties, and (v) lack of pre-breeding initiatives.

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ICAR scientists decode tomato genome in partnership with International consortium

New Delhi, 31 May 2012. The National Research Centre on Plant Biotechnology, IARI, one of the ICAR institutes; National Institute of Plant Genome Research, and South Campus, University of Delhi, Delhi have contributed in Tomato Genome Consortium (TGC), a group of 14 countries, namely Argentina, Belgium, China, France, Germany, India, Israel, Italy, Japan, Korea, Netherlands, Spain, United Kingdom and United States of America. These countries have decoded the genomes of the cultivated tomato (*Solanum lycopersicum* L.) and its closest wild relative, *Solanum pimpinellifolium* L. The Indian project was financed by the Department of Biotechnology, Government of India and supported by the ICAR. Indian initiative on Tomato Genome Sequencing was a part of the Tomato Genome Consortium. It involved 24 scientists from three institutions, namely . This important result which will reduce costs and streamline efforts to improve tomato production, combating pests and drought, is published in *Nature India's Contribution: India* contributed sequencing of the gene-rich region of the tomato chromosome 5 (tomato has total 12 chromosomes) and provided further support to generate 5-fold sequence coverage of the entire tomato genome by Next Generation Sequence (NGS)



technology. Indian Team also participated in performing annotation of all predicted proteins using international databases as a part of the International Tomato Annotation Group (ITAG). Simultaneously, Indian researchers have taken up analysis of specific genes/gene families related to disease resistance, abiotic stress tolerance and ripening based on transcriptome (RNA sequence) data and comparative genomics. The outcome is expected to greatly accelerate improvement of tomato varieties by molecular breeding.

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Memoranda of Understandings

- **MoU signed between ICAR and KazAgroInnovation (KAI), Kazakasthan:** A Memorandum of Understandings between ICAR and KazAgroInnovation (KAI), Kazakasthan has been signed in Kazakasthan on 31 May 2012.
- **MoU signed between IVRI and M/s. PPIPL, Mumbai:** A meeting of the Institute Technology Management Committee of Indian Veterinary Research Institute (IVRI) was held on 18 May 2012 to discuss collaborative/sponsored projects of IVRI proposed under PPP model for commercialization under the Chairmanship of Prof. M.C. Sharma, Director and Vice-Chancellor, IVRI. An Memorandum of Understandings was signed by the Director, IVRI and the representative from M/s. Pfizer Pharmaceutical India Private Limited, Mumbai for commercialization of a collaborative project entitled 'Investigation on Prevalence of Bovine Viral Diarrhea Virus'.
- **MoU signed between IVRI and PHFI, New Delhi:** A Memorandum of Understanding was signed between IVRI, Izatnagar and Public Health Foundation of India (PHFI), New Delhi on 21 May 2012 for providing a consultancy services under the 3-year project entitled 'Identifying sources, pathways and risk drivers in ecosystems of Japanese Encephalitis (JE) in an epidemic-prone North India district'. The project involves data collection by household surveys, GPS and remote sensing as well as sample collection from vectors, humans and swine. The study aims to contribute to the improvement of the health and livelihoods of rural population of India residing in areas at risk of J.E. The MoU was signed by Prof. M.C. Sharma, Director and Vice Chancellor, IVRI and Dr Manish Kakkar, Senior Public Health Specialist, PHFI, New Delhi.

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Latest ICAR Publications

- *Fishing Craft and Gears of Asom*
- *Natural Resins and Gums : Ecological Approach for Economic Development of Disadvantaged Areas*
- *Post-harvest Management and Processing of Fruits and Vegetables*
- *Biology of Bruchidae – Structures, Development and Control*

Success stories

Zero tillage cultivation of rapeseed-mustard in Imphal East district by tribal farmers

Imphal. The Directorate of Extension Education, Central Agricultural University, Imphal implemented an extension project on 'Augmenting Rapeseed-Mustard Production of Tribal Farmers of North-eastern States for Sustainable Livelihood Security' in collaboration with Directorate of Rapeseed-Mustard Research, Bharatpur under Tribal Sub-Plan (TSP) in Imphal East District, Manipur during *rabi*, 2011. The project aims at on-farm demonstrations, participatory varietal selection trials of rapeseed-



mustard cultivars and improving tribal farmers' growing practices of these crops in Manipur. Due to lack of irrigation facilities and uncertainty of rain during *rabi*, farmers in Manipur are reluctant to grow *rabi* crops and vast area in the State remains fallow after rice from November to June. Taking into consideration the above facts, yield performance of rapeseed varieties, M 27, TS 36 and Ragini and mustard varieties, Pusa Agrani, Pusa Mahak, NRCHB 101 and NPJ 112 were evaluated in 55 ha under zero tillage cultivation and compared with crops grown in 40 ha under conventional tillage.

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Pheromone traps increase farmers profits

Kanod. Shri Bharat bhai is a farmer residing in Kanod village of Kalol *taluka* of district Panchmahal (Gujarat). He grows cucurbitaceous vegetables that include coccinea and bitter gourd. Since past several years, he was suffered due to infestation of fruit fly (*Bactrocera cucurbitae*), an insect that decimates in cucurbit crops and was in great losses. At the time of survey the experts of the Krishi Vigyan Kendra, Panchmahal visited his farm and his neighboring farm and found severe attack of fruit fly in coccinea and bitter gourd. During discussion with the farmers, it



was observed that farmers were ignorant about control measures. Some of them were tried to spray insecticide to control the fruit flies. Due to lack of awareness, skill and knowledge, infestation could not be effectively reduced. At this juncture, experts of Krishi Vigyan Kendra explained the importance of pheromone traps in control of fruit fly. Also trained the farmers to use pheromone traps. Various extension activities i.e. vocational trainings programmes, technology demonstrations programmes, diagnostic services/visits, telephone helpline etc. were carried out to control the infestation. The KVK introduced the low cost pheromone traps, prepared by the KVK, Panchmahal, among the farmers also guided them for its installation at the field. With the help of these traps, population was monitored and managed. The time of pesticides spraying was decided after observing the threshold level of fruit flies population. The pheromone trap demonstrated in the cucurbits field. Bharat *bhai* informed that insects flock in the bottle to die. Result of these demonstration of pheromone traps eliminate hundreds of flies daily, the traps reduce the cost of pest control, farmers of the villages were fully satisfied with control of fruit flies. Farmers gained the gross return of ₹ 53,880.00 to ₹ 70,250.00/ ha with cost benefit ratio 1: 3.19.

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Awareness campaign for animal adaptability to have high productivity and health care

Lembucherra. The ICAR Research Complex for North-Eastern Hills Region, Tripura Centre in Lembucherra, West Tripura has initiated various activities under the national project on 'National Initiative on Climate Resilient Agriculture' (NICRA), to study the impacts of climate change on crops, livestock and fisheries,



in our country. The climate changes may have an obvious impact on economic viability of livestock production systems in Tripura. Change in climate may affect certain parasites, pathogens and disease vectors. Keeping in view the importance of climate-related animal diseases, viz. Black Quarter, Haemorrhagic Septicaemia, Foot-and-Mouth Disease, *Peste des Petits Ruminant*/Goat Plague, Swine Fever in pigs, Ranikhet Disease, Infectious Bursal Disease, Salmonellosis, Bird flu in poultry, the ICAR Research Complex for North-Eastern Hills Region, Tripura Centre organized awareness campaign programme and animal health camp consecutively in February, March and May 2012 in three different districts, viz. South Tripura, West Tripura and Dhalai of Tripura, to

make the livestock owners understand about the care, management and preventive measures through deworming and vaccination in time for protecting the valuable livestock property under climate change scenario.

Animal health campaign organized in Tripura was noted in such awareness. The ICAR Research Complex for North-Eastern Hills Region, Tripura Centre, Krishi Vigyan Kendra, Tripura Animal Resource Development, Department and Tripura College of Veterinary Science and Animal Husbandry joined hands together to make success of such animal health campaign.

A total of 581 animals, covering buffaloes, goats, pigs and 662 poultry birds and ducks, were examined for general health conditions and reproductive problems, if any, and treated as per the needs. Mass vaccination against Black Quarter, Haemorrhagic Septicaemia, Foot-and-Mouth Disease in cattle, *Peste des Petits Ruminant* in goat/Goat Plague, Swine fever in pigs, Ranikhet disease, Infectious Bursal Disease in poultry were done. Various veterinary medicines like vitamins, mineral mixtures, liver tonic etc. were provided to the farmers for their livestock to improve health conditions and augment production. Awareness and animal health campaign have brought a great impact on farming community and enormous interest among the farmers in Tripura.

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Celebrations

66th Foundation Day of CRRI

Cuttack, 23 April 2012. The Central Rice Research Institute, Cuttack, celebrated the 66th Foundation Day on 23 April 2012. Prof. M.S. Swaminathan (Member of Parliament, Rajya Sabha) was the Chief Guest.

Prof. Swaminathan emphasized upon anticipatory and participatory research for fulfilling the aims of



‘National Food Security Bill’ and ‘Meeting the Challenges of the Farm Sector’. He added that the country achieved the all-time record 100 million tonnes rice production in 2012 A.D. And now we should aim at 150 million tonnes production of rice by 2030 A.D. To make farming more popular among the *mahila kisan* and youngsters, an action plan needs to be prepared for the ‘International Year of Family Farmers’.

Prof. S.K. Datta (Deputy Director General, Crop Sciences, ICAR) suggested changing rice farming into agri-business ventures for generating good price, income and better employment opportunities. Dr Trilochan Mohapatra (Director, CRRI) highlighted the significant achievements of the institute and future challenges of rice research. About 300 farmers including farm-women, scientists and students attended the function. On eve of the 66th Foundation Day, Prof. B.C. Tripathy (Vice Chancellor, Ravenshaw University, Cuttack) delivered lecture on ‘Increasing carbon and nitrogen use efficiency of plants: A genetic approach.’

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CIFE celebrates 51st Foundation Day

Mumbai, 6 June 2012. Dr Gurbachan Singh (Chairman, Agricultural Scientists Recruitment Board) inaugurated the 51st Foundation Day of the Central Institute of Fisheries Education (CIFE), Mumbai and advocated for innovations and farmers friendly technologies for enhancing productivity and sustainability. He emphasized on quality human resources through improved agricultural education and research programmes. He lauded the organization and its leadership for the modern infrastructure and quality of teaching standard and the students. Dr Rajan Welukar (Vice Chancellor, Mumbai University) stressed the use of Information Communication Technology in higher education and inspired the students to compete globally and bring a change in perception and delivery through advanced knowledge and innovations.

Dr W.S. Lakra (Director, CIFE) highlighted the achievements of the institute in the field of saline aquaculture, genetics, pathology, cage culture, radio-ecology etc.

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World Environment Day

Jalore, 5 June 2012. Shri Devji M. Patel (Member of Parliament) inaugurated World Environment Day on 5 June 2012 at the Krishi Vigyan Kendra, Jalore. He said that 58% of total population is earning livelihood from agriculture in India and added that KVK, research centres and agriculture departments of State should work jointly to provide momentum to agricultural development in the district. The Krishi Vigyan Kendra (KVK) is the school of farmers for learning new agro-techniques for their livelihood



security and improving the production and productivity of crops and livestock. Such camps should be organized in every *Panchayat Samiti*, he added.

Dr Y. V. Singh (Zonal Project Director, Zonal Project Directorate, Zone-VI) said that KVKs have different roles when compared with state government operated extension departments. The KVKs are working as knowledge resource centres in the districts to provide technological backstopping by

conducting demonstration at farmers' fields. Now, emphasis is being given on 'Farmers First' programme to bring scientists to work with farmers and resolve their problems. Some of the KVKs have to work as specialized KVKs to act as leading centre in a cluster of 5 to 6 KVKs.

Dr P. N. Kalla (Director, Directorate of Extension Education, Swami Keshwanand Rajasthan Agricultural University, Bikaner) said that seeds of greengram or mungbean and clusterbean are being provided to the farmers to replace the traditional variety with high-yielding cultivars. Diagnostic mobile van to analyse soil and plant samples and treat animals will operate in all 13 *Panchayat Samiti* for one month where three scientists in the disciplines of soil science, plant protection and animal husbandry are working, he informed.

Large number of farmers, farm-women and nearly 50 agricultural officials of Krishi Vigyan Kendras, State Agricultural University and line departments participated in the celebration.

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Earth Day

Bharatpur, 22 April 2012. To commemorate 'Earth Day' the Directorate of Rapeseed-Mustard Research (DRMR) organized a seminar on 'Climate change and Greenhouse effect' was delivered by Dr Dinesh Kumar (ICAR National Professor, PAU, Ludhiana) highlighted the impact of climate change and greenhouse gases on agriculture leading to decline in global production and also global warming.

Dr J.S. Chauhan (Director, DRMR) said on the occasion that we are facing number of problems due to global warming. We should plant more trees and conserve our natural resources to combat global warming and natural hazards. On this occasion a painting competition at Central School was organized. The winners of painting competition were honoured by giving away prizes.

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Sunderban Day

Barrackpore, 3 June 2012. The Central Inland Fisheries Research Institute (CIFRI), Barrackpore celebrated XVth Sunderban Day on 3 June 2012 in the honour of the birthday of Sir William Roxburgh, the foremost of the Botanists who worked extensively for the Sunderbans. Prof. Amallesh Chaudhury (Secretary, SD Marine Research Institute, Sagar Island) shared his experiences of working in Sunderban for the last 50 years. The *CIFRI Compendium on Sunderbans-Retrospect and Prospects* was released on the occasion.



Dr C.S. Chakraborty (Vice Chancellor, West Bengal University of Animal and Fishery Sciences) highlighted that during post Aila period there is a change of fish and benthos species structure which may be studied with special stress on non-availability of some species. He stressed upon hilsa juvenile availability pattern in entire Hooghly Matlah estuary. Representatives from Department of Fisheries (Government of West Bengal), Sundarban Development Board, NGO's elaborated the real problems faced by them in implementing the schemes for Sundarban.

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Agricultural Education Day celebration in CIBA

Chennai, 8 June 2012. Dr S. M. Pillai (Principal Scientist and Officer-in-Charge, Prioritization Monitoring and Evaluation Unit of the Institute) delivered the introductory remarks followed by a talk delivered by Dr A.G. Ponniah (Director, CIBA) emphasizing the necessity of education and its importance in the fast developing sectors, particularly in agriculture, fisheries and aquaculture in the country on the occasion of Agricultural Education Day, celebrated on 8 June, 2012 at the Central Institute of Brackishwater Aquaculture (CIBA, ICAR), Chennai. The day was observed in recognition of the date of start of the Ph.D. programme in CIBA. On this occasion, a debate was conducted on 'Privatization of Education' and the research students of CIBA actively participated in the debate. The pros and cons in both private and public educational systems were discussed in depth.

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Field day on wheat

Sultanpur, 10 April 2012. A field day on wheat was organized at village Sultanpur, Block Barnoti, Tehsil Hiranagar, district Kathua.

Utility of the function included horizontal spread of new varieties of wheat 'DBW 621-50', 'HD 2967', 'PBW-621' in the region; awareness and management about yellow rust which is becoming a killer disease in the region; dissemination of information about new production technologies for increasing the production and productivity of all crops in general and wheat in particular; and field day was organized on the field where first-line demonstration on Wheat ('DBW 621-50') was laid. It helps in dissemination of production technology of new varieties among the masses.

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World Veterinary Day

Izatnagar, 28 April 2012. Prof. M.C. Sharma (Director, and Vice-Chancellor, IVRI) chaired the 'World Veterinary Day' observed at its Izatnagar campus. Commensurating with the global theme-2012 of the World Veterinary Association—the 'Antimicrobial Resistance' – a lecture on 'Veterinary and medical prospective on one health' was delivered by Dr S.K. Srivastava (former Director, NRC, Equines). A 'C.M. Singh Essay Competition' for students was also organized by the C.M. Singh Endowment Trust. In this competition, seven students were awarded. In free vaccination and clinical health check camp, 300 dogs and more than 100 other animals were checked up and vaccinated at Referral Veterinary Polyclinic.

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National Technology Day

New Delhi, 11 May 2012. The 'National Technology Day' was observed by the ICAR at Krishi Bhavan, New Delhi. On this occasion, six technologies of the Indian Veterinary Research Institute, Izatnagar were transferred to three commercial houses: Indian Immunological Ltd., Institute of Animal Health and Veterinary Biological, and Vivimed Labs by Dr S. Ayyappan, Secretary (DARE) and DG (ICAR) who complemented the IVRI for the successful development and transfer of these technologies to various commercial houses on the 'National Technology Day'. In this regard, three Memoranda of Understandings were signed by Dr M.C. Sharma (Director, IVRI) and the representatives of the concerned commercial houses—Dr K. Balasubramanyam (Managing Director, Indian Immunological Ltd., Hyderabad); Dr Renuka Prasad (Director, Institute of Animal Health and Veterinary Biological, Bengaluru) and Dr Manohar Rao (Managing Director, Vivimed Labs, Hyderabad).

The six technologies developed in the form of vaccines and diagnostics included Goat Pox and Swine Fever vaccines transferred to M/S Indian Immunological Ltd., Hyderabad; PPR, Goat Pox and Sheep Pox vaccines to M/S Institute of Animal Health

and Veterinary Biological, Bengaluru and; *Brucella abortus* and Blue Tongue detection kit to M/s Vivimed Labs, Hyderabad. These technologies will be used in the National Disease Control Programmes being initiated by Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture, Government of India. The total license fee for these technologies was worked out as ₹ 127 lakh with royalty on production basis for 10 to 15 years.

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IARI develops lighthouse villages

New Delhi, 12 April 2012. The Indian Agricultural Research Institute (IARI) has launched a programme of Integrated Development in 5 adopted villages in the National Capital Region. The villages are Dhani Kumbhawas (Gurgaon), Beewan (Mewat), Badarpur Said (Faridabad), Rajpur (Sonipat) and Soodna (Panchsheel Nagar). The project aims at developing a model of market-led agricultural production system, which can be emulated by the other villages in the peri-urban areas. The purpose of adopting these villages is to demonstrate all IARI technologies for maximizing the profit of the farmers in a peri-urban agricultural production system. The



Director IARI, Dr. H.S. Gupta, addressing the farmers at Dhani Kumbhawas, during a *Krishak Evam Vaigyanik Vichar Goshthi*

technologies include high-yielding varieties (agri-horticultural crops), integrated pest management, protected cultivation and conservation technologies. Special emphasis is being given to develop the entrepreneurship and group mobilization amongst the farmers of the adopted villages. The women are integral part of the programme activities. The training is imparted to the women farmers also to develop their enterprises on the value-addition of the flowers and seasonal vegetables. The programme is being executed by a team of scientists of CATAT and other subject matter specialists of IARI. Regular field days are organized to educate and mobilize the farmers. The programme has been given highest priority and is being monitored at highest level.

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Capacity Building

RRC, CIFA Inaugurated

Anand, 2 June 2012. Dr S. Ayyappan, Secretary (DARE) and Director General (ICAR) inaugurated Regional Research Centre of the Central Institute of Freshwater Aquaculture (CIFA) at Anand, Gujarat on 2 June 2012 in presence of Dr A. M. Shekh, Vice-Chancellor, Anand Agricultural University and Dr P. Jayasankar, Director, CIFA. He emphasized on applied research and extension programmes in freshwater aquaculture for the benefit of the people of this region. He urged the scientists of the centre to work for and with the fish farmers of the region.



This centre at Anand is the fourth regional research centre of the CIFA and is presently functioning in the ATIC building of Anand Agricultural University, Anand with the objective of (i) developing location specific technologies for freshwater fish farming for the region, (ii) standardization of breeding and culture techniques of regionally important freshwater fish species, (iii) capacity building of line department officials and (iv) imparting need-based training for fish farmers and entrepreneurs. The centre was opened at Anand by signing a Memorandum of Understanding between AAU and CIFA in August last year.

Dr. Ayyappan expressed thanks to the Vice-Chancellor of Anand Agricultural University for providing the space for the establishment of RRC of CIFA at Anand. The VC extended his best wishes for the successful programmes of the research centre of CIFA in Gujarat.

Dr Satyabrata Maiti, Director, Directorate of Medicinal and Aromatic Plants Research Institute, Heads and In-Charges of different ICAR research organisations located in Gujarat also attended the inauguration programme of the centre.

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Hi-tech Horticulture Nursery-cum-Green House inaugurated

Udaipur, 11 June 2012. Sri Jitendra Choudhury (Minister of Rural Development, Government of Tripura) inaugurated a Hi-tech Horticulture Nursery-cum-Green House, established under MGNREGA programme of Bokafa Block at Krishi Vigyan Kendra,



Plantation of Sweet Orange (Mausambi) by Hon'ble Minister of Rural Development, Government of Tripura, Sri Jitendra Choudhury and Sri Himanshu Roy, Chairman, South Tripura Zilla Parishad on 11 June 2012 at KVK, South Tripura.

Birchandra Manu, South Tripura. He emphasized up on adoption of new technologies being provided by the ICAR and KVK, and requested to work upon the crop planning as per soil suitability of Tripura and also urged farmers to cultivate their land for fulfillment of the food requirement of increasing population of the state. There is need to change conventional farming system by integrating livestock, fishery and rural enterprises. He focused on the establishment of Nursery-cum-Green House and fruit orchard in every Block of the district as per the model of KVK, South Tripura to meet requirement of planting materials and thereby enhancing the farm income of farmers.

This nursery has the capacity to produce more than 50,000/year fruits and vegetable planting materials. Dr M. Datta (Joint Director, ICAR, Tripura Centre) informed the farmers and public representatives about the ICAR programmes of seed and piglet distribution and appreciated the Farmer-KVK relationship in transferring the ICAR technology to the farmers' field through NICRA, Tribal Sub-Plan and other similar projects. The Krishi Vigyan Kendra, Birchandra Manu and ICAR jointly distributed about 1,000 kg of rice seeds, 150 kgs each of ICGS 76 groundnut and hybrid maize seeds, 30 kg each of Arka Anamika okra, Kashi Kanchan cowpea seeds to about 300 farmers of South Tripura and Gomati district; and Ghunghru piglets to 5 tribal farmers with housing facility under different demonstration projects of ICAR.

Dr A.K. Singh (Programme Coordinator of KVK, South Tripura) informed the significance of the improved variety of groundnut, lentil, green gram, red gram and cowpea, and said that the farmers' income enhanced up to about ₹ 30,000/ha. He also informed about the on-farm trials and KVK, South Tripura 2012 demonstration on "Balanced use of fertilizer in high-yielding varieties of maize and rice under SRI and

ICM system; control of pests and diseases through integrated pest management and IDM; mushroom cultivation through self-help group; pig-cum-fish and duck-cum-fish farming along with backyard pond aquaculture; development of mini-dairy for milk production, development of skills of rural youth for grafting of Amrapali mango planting materials and establishment of private horticulture nursery; introduction of new breeds of poultry (Gram Priya, CARI-Nirbhic, Khakhi Cambel and Vigova Super-M); value addition of fruits, vegetables & spices, Zero cool energy storage, Tailoring, Stitching and Rural Craft and Nutrition Gardening for the Farm women; and Homestead Farming System by integrating six enterprises together in which each farmer rearing 15-20 poultry and 2-4 goats, producing 3-4 tonnes vermicompost, mushroom, vegetables, spices and fruits just from 0.16 ha (1 kani) homestead land and earning about ₹ 65,000/year. Four farmers of the district got "Innovative farmer Award" during 2010-12 in the field of disease control in fishes, modified honey extractor, Mini-dairy and Integrated Paddy-cum-Fish in rubber grown areas at Jaipur, Mysore, Shillong and Hyderabad. The programme was conducted by Smt. Mandira Chakraborti, SMS (Agronomy).

Plantation of Sweet Orange (Mausambi) by Hon'ble Minister of Rural Development, Government of Tripura, Sri Jitendra Choudhury and Sri Himanshu Roy, Chairman, South Tripura Zilla Parishad on 11 June 2012 at KVK, South Tripura.

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Secondary and speciality agriculture to ensure health and nutritional security

Anand, 2 June 2012. Dr S. Ayyappan (Secretary, DARE and Director General, ICAR) inaugurated guest house facility at the Directorate of Medicinal and Aromatic Plants Research and urged scientists to work on secondary and speciality agriculture to ensure health and nutritional security. He stressed upon the need and importance of the research on high value



medicinal compounds and functional foods and appreciated the research efforts made by the Directorate for sustainable production and utilization of major agriculturally important medicinal and aromatic plants to meet increasing demand of the herbal industry. Dr A. M. Shekh (Vice Chancellor, Anand Agricultural University, Anand) discussed the problems faced by the medicinal plants growers in Gujarat and other parts of the country. Prof. Harish Padh (Vice Chancellor, Sardar Patel University, Vallabh Vidya Nagar) complimented the Directorate. Dr Satyabrata Maiti (Director, DMAPR) highlighted the growth and achievements of the Directorate.

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Launching of mobile research laboratory under NICRA project

Kolkata, 27 June 2012. Dr S. Ayyappan (Secretary, DARE and DG, ICAR) launched a Mobile Research Laboratory, sanctioned under the NICRA project, 'Assessment of spawning behaviour of major fish species in inland environment to harness the beneficial effects of temperature' being implemented at Central Inland Fisheries Research Institute. The state of the art facility is equipped with essential equipments and facilities like water storage and purifier, long-life battery and UPS, generator, fridge, incubator, centrifuge, weighing balance, multiparameter water analyser, UV-Vis spectrophotometer, and water and sediment sampler etc. to perform days or months of field research. It will enable scientists to conduct essential tests in field and provide facility for proper storage and analysis of research samples. The unique facility would strengthen the research programme on assessing the impact of climate change and developing adaptation



strategies in Inland fisheries sector. Dr Samir Bhattachariya, INSA Professor, Vishwa Bharati, Kolkata was also present.

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Centenary building inaugurated

Rahuri, 10 June 2012. Her Excellency the President of India, Hon'ble Smt. Pratibha Patil, inaugurated the Centenary Building of College of Agriculture, Pune affiliated to Mahatma Phule Krishi Vishwavidyalaya. She stressed upon the need to improve rainfed agriculture to bring second green revolution and the need for more investment in agricultural research, so that new technologies can be developed to increase profitability in farming. She urged to increase the use of modern technologies that can be effectively done, if the educated lot takes up farming, she added. There is an urgent need to strengthen extension mechanism to expedite the transfer of innovations from laboratories to fields.

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Visits

DG, ICAR visited to Amritsar

Amritsar, 7 June 2012. Dr S. Ayyappan (Secretary, DARE and DG, ICAR) along with a team comprising Dr K.D.Kokate (DDG, Agriculture Extension), Dr A.M.Narula (Zonal Project Director, Zone-I) and Director of Extension Education of Punjab Agriculture University visited fruit orchards of Major Manmohan Singh, a progressive farmer of Amritsar, at village Tabalpura near Ramdas tehsil nearing Pakistan Border. Dr Ayyappan also interacted with farmers of the village and listened to their problems particularly construction of temporary bridge at the bank of river Rabi for transportation of inputs and produce.

The team also visited site of KVK, Amritsar in



Nagkalan village to see the progress of construction of Administration Building; Verka orchards at village Firivarian and inaugurated Verka turmeric processing

plant set up by Major Manmohan Singh. During interaction with farmers, Dr. Ayyappan emphasized the importance of value addition in different crops and also invited farmers to speak about their problems.

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DG, ICAR visited CIFE

Mumbai, 26 May 2012. Dr S. Ayyappan (Secretary, DARE and Director General, ICAR) visited the Central Institute of Fisheries Education (CIFE) to inaugurate new upcoming facilities including International Guest House, Boys Hostel, Academic Building, Type V residences etc. Dr Ayyappan suggested to start new



Human Resource Developments courses to attract international students, young scientists and other stakeholders to take new technologies and knowledge to farmers for large-scale adoption throughout the country. Dr W.S. Lakra, Director (CIFE) was also present with the DG during the visit.

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DG, ICAR visits Biomass-based electricity plant at village Mana

Bhopal, 6 May 2012. Dr S. Ayyappan (Secretary, DARE and Director General, ICAR) visited on 6 May 2012, the 100 kW biomass-based electricity generation plant installed at village Mana of Raisen district by the Central Institute of Agricultural Engineering in collaboration with Raisen Municipal Corporation under the National Agricultural Innovation Project. The entrepreneurs who have adopted the technology



of briquetting of agricultural residue were also present there during the visit along with Chief Municipal Officer of Raisen Municipal Corporation. Dr Ayyappan said that this technology would empower the rural people. He also encouraged the scientists to take the technology further for large-scale adoption throughout the country.

Dr B.S. Bisht (Vice Chancellor, GBPAUT, Pantnagar) also visited the Power plant and showed interest in the technology demonstrated in the field. He said that the technology would help in setting up the agro- enterprises in production catchment and supplements the energy needs of the rural sector.

DDG visited at KVK, Gandhinagar

Gandhinagar, 20 May 2012. Dr K. D. Kokate (Deputy Director General, Agricultural Extension) visited Krishi Vigyan Kendra to monitor the performance of Krishi Vigyan Kendra (KVK), status of infrastructure development and to interact with farmers. Dr Kokate interacted with farmers, farm-women and youth, and taken their views, role of KVK and other related issues to increase profitability. He suggested to publish a folder containing information regarding all development schemes of state and central government offered in the district, regular participation of Directorate of Extension Education and KVK scientists in radio and doordarshans' agriculture programmes to improve visibility of KVKs, each KVK should have production and selling of biofertilizers and biopesticides, and establish water harvesting unit.

Dr Kokate also chaired a meeting with four Directors of Extension, Agricultural Universities of Gujarat and made valuable suggestions: Establish KVK model farm/crop cafeteria demonstrating important crops of the district, strong database of the district at each Krishi Vigyan Kendra, provide strategies to development departments for improving agriculture scenario in the district, adopt cluster/group approach for wider and rapid spread of agricultural technologies, and Encourage people's participation in the KVK programmes.

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Visit of DDG (Education) at Farmers' field

Since there was no rain throughout the crop period during *rabi*, 2011, the growth and yield parameters in all the rapeseed-mustard varieties were better in zero tillage practice than conventional tillage due to residual soil moisture after rice harvest. Under participatory varietal selection trials, yellow *sarson*, Ragini among rapeseed varieties gave maximum yield of 8.0 to 14.0 q/ha with average yield of 10.0 q/ha, whereas NRCHB 101 among mustard varieties gave

the maximum yield of 8.0 to 11.0 q/ha with average yield of 10.2 q/ha both in zero tillage cultivation. Under on-farm demonstrations, not only no tillage (zero tillage) practice, use of 4 (four) bee colonies/ha during crop bloom of rapeseed for pollination and spray of botanical pesticides without affecting pollinators population and to harvest organic honey were demonstrated. More than 170 farmers across 9 villages of Imphal East District who were involved in the project improved their income and changed their fortune by getting average net profit of ₹ 27,000/ha including cost of honey within 105 days with a low investment of ₹ 7,800/ha. All the farmers attended 8 on-farm and 2 on-campus training programmes on 'Rapeseed-mustard production technology in rice fallow' and 60 farmers from the project site visited the Directorate of Rapeseed Mustard and Research, Bharatpur on exposure trip and sensitized. To popularize high-yielding mustard varieties like NRCHB 101, Pusa Agrani etc. under scientific cultivation, the University has constructed three water harvesting structures in three villages of project site with micro-irrigation facilities covering a total area of 2.5 ha with 64,063 m³ of harvested water and irrigable command area of 44 ha. The innovative message of zero tillage cultivation of rapeseed-mustard has spread in neighbouring districts

and around 1,000 ha in three valley districts of Manipur are being covered during current *rabi* 2012 in Manipur.

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Rajasthan Kisan Ayog visited DRMR

Bharatpur, 4 May 2012. The chairman and members of Rajasthan *Kisan Ayog* visited Directorate of Rapeseed-Mustard and Research and had an interaction meeting with scientific staffs. Dr Y. P. Singh (Principal Scientist) made a presentation on the achievements of this Directorate and programme to the members. Sh. Naryan Singh (Chairman, Rajasthan *Kisan Ayog*) expressed concern that farmers are not getting remunerative prices for their crop produce. Citing example of mustard, main crop of Rajasthan, he suggested that crop should be categorized on the basis of quality so that farmers fetch premium prices of quality produce. He urged that research should adequately be addressed climate change and associated problems. He emphasised on more linkages and better communication between scientists and farmers.

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Convocation

XXVIII MPKV Convocation



Rahuri, 7 April 2012. The XXVIII Convocation of Mahatma Phule Krishi Vishwavidyalaya, was organized at central campus, Rahuri. Shri Radhakrishna Vikhe Patil,

Hon'ble Minister of Agriculture and Marketing, Maharashtra and Pro-Chancellor of the University) and Dr S. Ayyappan, Secretary (DARE) and Director General (ICAR) were chief guests on this occasion. Dr S. Ayyappan said that to improve the curriculum, a one-year composite programme has been recommended with the name Rural Entrepreneurship and Awareness Development Yojana (READY) that will have three components: Experiential Learning (EL), Rural Agricultural Work Experience (RAWEX) and In-plant training/industrial attachment. The Experiential Learning will thus, provide the students an excellent opportunity to develop analytical and entrepreneurial skills and knowledge and confidence in their ability to design and execute the project work through meaningful hands-on experience.

The Farmers-Scientists Forum, a participatory research model is being promoted for dissemination of technologies. Regular need-based training programmes are organized for different stakeholders.

Dr T. A. More put forth some of the proposals of the university for consideration of the Council. Degrees were awarded to 24 Ph.D. candidates, 271 Post-graduate holders and 1,861 degree holder candidates. Medals were given by Pro-Chancellor Shri Radhakrishna Vikhe Patel to outstanding candidates.

The Eco-friendly Plant Disease Management and Beneficial Microbes Research Laboratory and Post-harvest Technology Centres were also inaugurated by the dignitaries.

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Award

CIFE students received International Altech Young Scientist award

Mumbai. Two students of Fish Genetics and Biotechnology Division of Central Institute of Fisheries Education, Mumbai, Mr Mohd Ashraf Rather and Ms Ramya V.L. have been awarded Altech Young Scientist award by Altech Inc., USA for their outstanding research work in the area of Nanotechnology. Mohd Rather secured first position in Asia-Pacific zone and was invited to USA to participate in the workshop conducted by Alltech Inc.

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Trainings

Trainings held

- The Zonal Project Directorate, Zone IV, ICAR, Kanpur and National Rainfed Area Authority, jointly organized a three-day training programme, based on finalizing technological strategy for Bundelkhand Region of Uttar Pradesh for enhancing crop production and livelihood security, at Krishi Vigyan Kendra, Deendayal Research Institute, Chitrakoot from 27 to 29 April 2012.
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- The Krishi Vigyan Kendra, Kurukshetra and Crystal Phosphates Crop Protection under the guidance of Zonal Project Director, Zone I, ICAR organized one-day Farmers' Training Camp on 'Increasing productivity of paddy and sugarcane at KVK Kurukshetra' on 14 May 2012.
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- A three-week summer school on 'Farmers' empowerment and entrepreneurial development through livestock farming', sponsored by ICAR, New Delhi, was organized by the Livestock Production and Management Section of IVRI from 14 May to 3 June, 2012. It was attended by 25 participants.
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- A five-day short course on 'Nutritional interventions for improving reproductive efficiency in dairy cattle', sponsored by Odisha Livestock Resources Development Society, Bhubaneswar, Government of Odisha was organized by the Centre of Advanced Faculty Training in Animal Nutrition, IVRI, Izatnagar from 19 to 23 April, 2012.
e mail: dirivri@ivri.res.in
- A ten-day training course on 'Ultrasonography' was held from 19 to 28 April, 2012 at Division of Surgery, IVRI, Izatnagar, wherein 12 Veterinary Officers from Department of Animal Husbandry, Government of Uttar Pradesh participated.
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- A special training for Tribal farmers was organized at Krishi Vigyan Kendra, Dausa, Swami Keshwanand Rajasthan Agricultural University on 30 June, 2012. Hon'ble State Minister of Technical Education (Agriculture), Shri Murari Lal Meena, inaugurated and stated that the development of the state is possible only when the farmers of the state are progressive. He advised to the farmers to adopt innovation in agriculture and enhanced the production. The use of advance technology is the key of success in agriculture.
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- Dr Padam Singh, Ex - Member National Statistical Commission, New Delhi inaugurated a training programme on 'Data Analysis and Interpretation : Use of Statistical Softwares', sponsored by the Central Statistical Organization, Ministry of Statistics and Programme Implementation, Government of India. It was organized for 38 ISS Probationers of XXXIII Batch of IASRI, New Delhi from 14 May to 1 June 2012.
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- An international training programme on Techniques for estimation and forecasting of crop production in India was organized from 23 May to 2 June 2012 in which seven officials from Ethiopian Central Statistics agency participated.
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- The National Research Centre on Mithun, Jharnapani and Krishi Vigyan Kendra, Lumami, Nagaland University jointly organized Health camp and training programme in Satakha block at Xuivi Village of Zunheboto district. During the training programme detailed information regarding the preventive measures for various common disease outbreaks were provided. As the Mithuns are reared in forest and only common salt is the main input, Mithuns suffer from different deficiency diseases and reproductive problems. The farmers were advised to supplement mineral mixture to address the mineral deficiency problem. Mithumin an area specific mineral mixture developed by National Research Centre on Mithun was also provided to the Mithun owners for feeding. All together 41 farmers participated and large number of animals were vaccinated against Foot-and-Mouth Disease. During the vaccination programme the different samples were collected from Mithun for investigation of various diseases in the village. Scientists from both the organizations answered the queries of the farmers regarding better livestock production and health management. Mr Toshiho Naga, Village Council Chairman expressed his gratitude to the scientists and Director, NRC on Mithun for the efforts taken by them. The main objective of the programme was to create awareness among the Mithun rearers regarding various types of diseases and their control and management factors that affect the productivity and reproductive capability of the animals. There are about 300 Mithuns in the village and Mithun farmers suffer heavily due to outbreak of Foot-and-Mouth Disease and anthrax.
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Trainings to be held

- A training will be held during 1 to 21 August 2012 on 'Current clinical techniques and protocols in farm and pet animal practice'. Training Co-ordinator Dr A.P. Nambi.
e mail nambi529@yahoo.com

- A training will be held on 'Principles and practices in imaging and endoscopy in farm and pet animal practice' from 21 November to 11 December 2012.
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- A training will be organized during 22 August to 11 September 2012 'Nutritional and management strategies to exploit the genetic potential of hybrid poultry'. Training Co-coordinator, Dr S.C. Edwin.
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- A training is scheduled to be held 5 to 25 September 2012 'Application of diagnostic ultrasound techniques in animal reproduction'. Training Co-ordinator, Dr V.K.Gandotra.
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- A training will be held on 'Physio-Molecular Approaches for Improving Abiotic Stress Tolerance and Sustaining Crop Productivity' from 17 September to 7 October, 2012. Training Co-ordinator, Dr A.H. Khan.
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- A training is scheduled to be held from 20 November to 10 December 2012 on 'Current biochemical and molecular techniques for nutritional enhancement and stress tolerance in crop plants'. Training Co-ordinator, Dr R.D. Rai.
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- A training on 'Statistical Models for Forecasting in Agriculture' will be held from 11 September to 1 October 2012. Training Co-ordinator, Dr V. K. Bhatia.
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- A training will be held from 3 to 23 October 2012 on 'Recent Advances in Sample Survey and Analysis of Survey Data using Statistical Software'. The training is on 'Recent Advances in Designing and Analysis of Agricultural Experiments'. The duration is 6 to 26 December 2012.
- A training will be held on 'Microbiological processes in soil carbon dynamics and sequestration vis-à-vis anticipatory climate changes'. Training Co-ordinator, Dr K. Kumar. Duration is 1 to 21 February 2013.
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- A training is scheduled to be held during 19 November to 9 December 2012 on 'Biotechnological applications in Veterinary Parasitology'. Training Co-ordinator, Dr Placid E.D' Souza.
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- A training will be held from 21 November to 11 December 2012 on 'Principles and practices in imaging and endoscopy in farm and pet animal practice'. Training Co-ordinator, Dr A. P. Nambi.
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**INDIAN COUNCIL OF
AGRICULTURAL RESEARCH
(EDUCATION DIVISION)**
KAB- II, PUSA, NEW DELHI - 110012

**NOMINATIONS FOR
TWO ICAR - NATIONAL PROFESSORIAL CHAIRS &
ONE NORMAN BORLAUG CHAIR IN INTERNATIONAL
AGRICULTURE IN ICAR-AU SYSTEM**

The nominations of eligible eminent scientists/faculty members are invited for **ICAR- National Professorial Chairs (Two) and Norman Borlaug Chair in International Agriculture (One) in ICAR-AU system** through the Vice-Chancellors of Agricultural Universities/ Directors of ICAR Institutes/ Eminent Scientists/Presidents, National Academies latest by **31st July, 2012** along with their biodata and project proposals in the prescribed format available at ICAR Website www.icar.org.in. The nominations must reach the Deputy Director General (Education), Indian Council of Agricultural Research, KAB-II, Pusa, New Delhi-110012 latest by the closing date. Those who have been nominated in response to the earlier ICAR notification dated **7th April, 2011, 8th June, 2011 and 18th January, 2012** need not be nominated again.

PRUNITICARI/2012 **ADG (HRD), Education Division, ICAR**

LAST DATE FOR NOMINATION: 31st July, 2012

Dr D.K. Agarwal takes over as New Project Director of DKMA

New Delhi, 1 June 2012. Dr D.K. Agarwal (Principal Scientist), Agricultural Knowledge Management Unit, has taken over the charge of Project Director in the Directorate of Knowledge Management in Agriculture, ICAR from Dr T. P. Trivedi who was superannuated on 31 May 2012. Dr D. K. Aggarwal is one of the key functionaries of the Indian Council of Agricultural Research (ICAR) dealing with the work of the Agriculture Knowledge Management Unit.



Born on 2 April 1951, Dr Agarwal obtained Gold medals in B.Sc. from Delhi University as well as in Postgraduate Diploma in Agricultural Statistics. He did his M.Sc. from IARI, New Delhi and Ph. D. from Ruhelkhand University. He started his career as a Scientist after getting through Agricultural Scientists' Recruitment Examination in 1976. Dr D.K. Agarwal has taken diverse mix assignments in the ICAR System. He has played an important role in creation of Video Conferencing, I.P. Telephony, facilitating the different ICAR institutes. He has also played a pivotal role in a National Knowledge Software Project of Government of India that has provided link to number of ICAR institutes and State Agricultural Universities. A centralized secure state-of-art data centre is being established for providing e mail and web site hosting server for the whole ICAR System.

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Personnel

Appointments

- Dr S. K. Chattopadhyay exercising as Director, Central Institute for Research on Cotton Technology, Mumbai w.e.f. 1 June 2012.
- Dr D. K. Agarwal exercising as Project Director, Directorate of Knowledge Management in Agriculture w.e.f. 1 June 2012.
- Dr S.K. Chakrabarti has joined as Director, Central Tuber Crops Research Institute, Thiruvananthapuram on 02 April 2012.
- Dr S.K. Bandyopadhyay has joined as Member, Agricultural Scientists' Recruitment Board on 14 May 2012.
- Dr K.N. Babu has joined as Project Coordinator (Spices), Indian Institute of Spices Research, Calicut on 16 May 2012.
- Dr P.M. Govindakrishnan has joined as Project Coordinator (Potato Improvement), Central Potato Research Institute, Shimla on 17 May 2012
- Dr P.S. Minhas has joined as Director, National Institute of Abiotic Stress Management, Baramati on 13 June 2012.
- Dr M. Gangadhara Nayak shall exercise all administrative and financial powers (except statutory powers) in the Directorate of Cashew Research, Puttur, as delegated to the Directors of the ICAR Research Institutes by the Council.
- Dr A. K. Roy shall exercise all administrative and financial powers (except statutory powers) in Indian Grassland and Fodder Research Institute, Jhansi as delegated to the Directors of the ICAR Research Institutes by the Council.
- Dr V.M. Mayande has resumed his duties as Principal Scientist at CRIDA after completion of deputation as Vice Chancellor of Dr Punjab Rao Deshmukh Krishi Vidyapeeth, Akola.

Superannuation

- Dr R. K. Mittal A.D.G. (EQ&AR), ICAR (Hq), New Delhi, is relieved from the Council's service-w.e.f. 11 May 2012.
- Dr A.J.O. Shaikh, Director, Central Institute for Research on Cotton Technology, Mumbai is superannuated from the council's service w.e.f. 31 May 2012.
- Dr T.P. Trivedi, Project Director, Directorate of Knowledge Management in Agriculture is superannuated from the post of w.e.f. 31 May 2012.
- Dr R.S. Birader, Joint Director Central Institute of Fisheries Education, Mumbai is superannuated on 31 May 2012.
- Dr M.G. Bhat, Director, Directorate of Cashew Research, Puttur is superannuated on 30 June 2012.
- Dr S.A. Faruqi, Project Coordinator (Forage Crops) and Acting Director, Inland Grass and Fodder Research Institute, Jhansi is superannuated on 30 June 2012.

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Protocol Activities

- H.E. Mr. Luis Mayol Bourohon (Minister of Agriculture of Chile) and accompanied delegation visited ICAR and National Bureau of Plant Genetic Resources, New Delhi on 4 May 2012.
- His Excellency Mr Jose Pacheco (Minister of Agriculture, Government of the Republic of Mozambique) visited Indian Agricultural Research Institute, New Delhi on 14 June, 2012, and Directorate of Wheat Research / National Dairy Research Institute, Karnal on 15 June, 2012.
- Sh. Rajesh Ranjan (Director, DARE) as part of the delegation mounted by the Ministry of External Affairs visited Mexico City from 15 to 16 April, 2012 to attend the V India- Mexico Joint Commission Meeting.
- Dr Arvind Kumar (Deputy Director General, Agriculture Education) visited as member of the delegation led by Hon'ble Union Agriculture Minister to Netherlands from 23 to 26 May, 2012 to attend the Joint Working Group Meeting on Agriculture.
- Dr Umesh Srivastava (ADG, Horticulture II) and Dr C. Devakumar (ADG, EPD) visited Kazakasthan for signing an Memorandum of Understanding with KazAgroInnovation(KAI) from 31 May to 1 June 2012.
- Deputation of Shri Rajiv Mehrishi (Special Secretary, DARE and Secretary, ICAR) to New York, USA (between 7 and 9 June 2012); and to Mexico from 10 to 14 June 2012 (excluding journey time) to see research facilities and laboratories being upgraded at CIMMYT to bring such facilities for the BISA centres in India.

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