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News in Brief

From the DG's Desk

Dear Readers,

Historically, the coastal zones have supported the process of human settlement because of their favourable bio-physical and climatic features. More than half of the world population lives within 60 km of the shoreline and major cities, especially the international trade centres are located in the coastal areas. These coastal areas support diverse activities ranging from agriculture, fisheries to mining, oil exploration and tourism; and provide ecological services: CO_2 sequestration and climate regulation, decomposition of organic matter and regeneration of nutrients and coastal protection — many of which are critical to the functioning of the Earth system.

India is endowed with 8,129 km long coastline with 2.02 million km^2 of exslusive ecomomic zones and 0.506 million km^2 continental shelf. About one-fourth of the India's population lives in coastal region largely depending on marine resources for livelihood. There are nine coastal states, two union territories, and two unique oceanic island ecosystems, namely the Andaman and Nicobar islands and Lakshadweep. The Lakshadweep has 36 islands covering an area of 32 km^2 with a population of 60,595 while the A&N islands has 572 islands with 8,249 km^2 area and over 4.5 lakh inhabitants. These two island groups, located on either side of India fall under hot humid to par-humid island eco-region and are home for diverse species with wide range of genetic diversity. High rainfall, humid climate, and backwater creeks in these ecosystems are very conducive for faunal and floral diversity.

The livelihood of the people living along the west coast and in the island ecosystems hinges around plantation crops and fisheries while that in the east coast it is paddy-based cropping system, coastal aquaculture and capture fisheries. In both cases agriculture remains heavily dependent on the climatic conditions. Achieving sustainable food production to feed the

ever-growing population, the fragile nature of the ecosystems notwithstanding, is an enormous challenge. Any push to maximize yields would impose great strain on the natural resource base that supports agriculture. The agricultural development in these areas, therefore, requires, among other things, careful planning, implementation and capacity building of the stakeholders including extension officials. In the islands, tourism has emerged as a major livelihood option for the people. However, development of this sector is skewed towards area near to main urban centre. Thus a large proportion of rural population is out of this major economic activity. Agriculture, thus emerges as the most promising sector for the sustainable development and inclusive growth. With proper selection of production basket, agriculture can become a partner in tourism industry of islands by providing perishable products as well as unique indigenous products ensuring an equitable distribution of this sun rise sector to all islanders. Fisheries is another sector which has a huge potential, as the present level of exploitation of marine resources is just 22% of the potential.

The islands and coastal ecosystems are highly sensitive to climate change, which is emerging as a major challenge to human kind and India is no exception. Apart from the climate-related issues like sea level rise, salinization of groundwater due to seawater ingress, etc., the two island ecosystems in India portray altogether different scenarios for their vulnerability to climate change – in Lakshadweep, the low elevation above mean sea level is the issue while in A&N Islands the major issue is that they lie in the most severe seismic zone (zone V), where the adaptation strategies need to be evolved not only for the gradual sea-level rise but also for storm surges, tsunamis and flooding due to land subduction.

Coastal zones are among the most vulnerable to climate change. Abnormal changes in air temperature, rainfall and the increasing frequency and intensity of drought and floods have long-term implications for the viability and productivity of agriculture in these two ecosystems. The ocean is an important distributor of the planet's heat, with major ocean currents moving heat toward the poles from the equator. Global average sea level rose at an average rate of 1.8 (1.3 to 2.3) mm/year from 1961 to 2003 and at an average rate of about 3.1 (2.4 to 3.8) mm/year from 1993 to 2003. Global sea level has already risen by 10-20 cm in the past century. As per the Third IPCC report (2001) the global sea-level rise is likely to be 9-88 cm by the year 2100. This could lead to land loss, flooding, salinization and adverse impact on agriculture. Accelerated global sea-level rise is expected to have dramatic impacts in these regions where subsidence and erosion problems already exist. These trends make a strong case undertaking research to develop resilience against the impacts of temperature and sea-level rise and cyclones on crops, livestock and fish.

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At this stage, it is important to visualise the likely consequence of the climate change on agriculture and allied sectors and formulate action plans that may help in sustaining agriculture and food security even under the extreme climate change stress. The post-tsunami submerged areas in A & N Islands provide unique field conditions which can be used to predict the impact on flora and microbes due to submergence arising out of sea-level rise. In India, the strategy has to be different for the mainland coastal regions and the islands. The islands bear the maximum burnt of climate-associated disasters while they do not contribute to it. Hence the climate policy should focus on mitigation in mainland while in Islands, it should be adaptation–centric and pro-development unlike the conventional approach of responding to climate change as an environmental problem.

The coastal regions and islands are also exposed to other disasters like the 1999 Super cyclone in Odisha and 2004 tsunami. Thus the agricultural systems need to enhance their resilience to these natural disasters. Further we should also develop technological intervention modules which can be used in post-disaster situation for faster rehabilitation of livelihood through agriculture and allied activities. As for example, the Central Agricultural Research Institute, Port Blair demonstrated such module after tsunami 2004, which needs to be refined and be readied for future.

The focus has to be on ideological restructuring of coastal and island ecosystem for providing safe food and clean potable water through restricting chemicals and fertilizers and thus ensure sustainable livelihood. There needs to be an integrated approach for management of coastal resources to achieve a balance in the demands of different stakeholders. National research programmes towards assessing vulnerability, developing climate resilient production system, location-specific watershed management programmes and monitoring carbon footprint could help in environmentally and economically sustainable development of our national coastal regions.

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Workshop on Mountain Agriculture in Himalayan Region

Dehra Dun, 2 April 2011. Shri Harish Rawat, Union Minister of Agriculture (State) inaugurated two-day workshop on 'Mountain Agriculture in Himalayan Region: Status, Constraints and Potentials' organized by the Central Soil and Water Conservation and Research and Training Institute in association with HESCO. Shri Harish Rawat emphasized importance of modern technology-based farming systems, agroforestry and fisheries in the hilly region. He suggested that water harvesting by storing rainwater into small tanks has immense scope in the Himalayan region. The stored water can be effectively used to irrigate various crops by drip and sprinkler systems where people's participation through formation of Water Associations/Groups can play a pivotal role as demonstrated in many other places. He also emphasized on the importance of modern technology-based farming systems, agroforestry and fisheries in the mountainous region. Hence the extension mechanism must be strengthened further to disseminate these technologies to the farmers, especially to the women as they are the most important part of mountain agriculture.

Shri Trivender Singh Rawat, Minister of Agriculture, Uttarakhand, also emphasized on mountain agriculture with particular mention on the scope of water harvesting, high-yielding varieties and land consolidation in the hilly region.

Dr S Ayyappan (Secretary, DARE and Director General, ICAR) pointed out that as the soil fertility level is very low in mountainous region, promoting organic farming alone may cause big loss to farmers, and hence major focus should be on integrated nutrient management and application of balanced fertilizers. He also visited the project site on livelihood security in the rainfed areas of the north-western Himalayas in a cluster of four villages of Vikasnagar Block of District Dehra Dun. He also inaugurated participatory Water Resource Development Project undertaken in the area with active participation of local community. Under this project, a pipeline of about 3.5 km length has been laid out for diverting water from a perennial source to the command area which was totally rainfed with very low productivity. With this irrigation facility, a 3-fold increase in the yield was recorded which has ensured food security to the farmers.

Recommendations

- Inventorization, characterization and prioritization of natural resources of land, soil, water, biodiversity, livestock and fisheries along with trend analysis (past 20 years) of prevailing agriculture and other land use systems including socio-economic scenarios, zone-wise and state-wise, for holistic development of agriculture in the Indian Himalayan Region (IHR).
- Based upon delineation and prioritization of erosion risk areas, 'hot spots' and 'bright spots' need to be identified for restoration of degraded lands and their productive utilization by employing appropriate conservation measures.
- Since efficient design and performance of erosion control and water harvesting structures in the IHR mainly suffers from lack of adequate and reliable hydrological database, there is a strong need to develop a user-friendly hydrological database of rainfall and runoff by gauging representative micro-watersheds in the ongoing watershed development programmes undertaken by various state governments in the IHR.
- The major focus of on-going watershed development programmes should be on rejuvenation of drying springs and streams by adopting appropriate bio-engineering measures, which need to be regularly monitored for improvement of perenniality and seasonality with enhanced flow to facilitate proper water harvesting and recycling for agricultural purposes.

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Zonal Workshop of Krishi Vigyan Kendras of Zone I

Srinagar, 25 April 2011. The Zonal Workshop of Krishi Vigyan Kendras of Zone-I was held at Sher-e-Kashmir University of Agricultural Sciences and Technology Kashmir, Shalimar, Srinagar from 23 to 25 April 2011. The 62 KVKs from Jammu and Kashmir, Himachal Pradesh, Punjab, Haryana and Delhi participated in the workshop. The workshop was inaugurated by Dr Kiran D. Kokate, Deputy Director General (Agricultural Extension), ICAR. He advised the scientists to adopt right approach for more effective functioning of KVKs and also desired to have visible impact of trainings and FLDs/OFTs. A mobile lab-cum-exhibition unit is working for the services in farmers of Kashmir valley.

Dr Tej Partap, Vice-Chancellor, SKUAST-K addressed the gathering and stressed upon Programme Coordinators of KVKs to transfer the technology to the field for upliftment of farming community. Dr K. M. Bujarbaruah (Chairman QRT Zone-I) appreciated the work done by KVK's of the Zone-I under different climatic conditions and farming situations as frontline extension agency. Programme Coordinator of KVKs presented their impact of work in their respective area in the form of success stories, establishment of small-scale units etc. The work done by the KVKs in the field of farm mechanization, rural employment, micro-farm credits, dairy, goatry, piggery, backyard poultry, quality farm produce, farm productivity, innovative approaches and solving farmers problems to remove hurdles in increasing production and improving quality of farm produce as well as socio-economic conditions of the farming community was up to the mark.

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Zonal Workshop of Krishi Vigyan Kendras of Zone IV

Pantnagar, 14 May 2011. Dr A.K. Mehta, ADG (Agriculture Extension), ICAR, inaugurated the Zonal Workshop of KVKs (Uttar Pradesh and Uttarakhand) of Zone IV at GBPUAT, Pantnagar from 13 to 14 May 2011. He emphasized on increasing farmers' income by developing different innovative technology dissemination models through KVKs. Conservation agriculture, farm women-related technologies, increasing seed replacement rate, ensuring availability of good quality seed and planting material, post-harvest management, climate change, etc. need more attention. Public-Private Partnership is to go a long way.

Dr A.K. Singh, Zonal Project Director gave more thrust to bond research institutions with KVKs for faster technology dissemination and quick technological support. In this context, five research institutes (CISH, Lucknow; Directorate of Coldwater Fisheries Research, Bhimtal; CSWCRTI, Dehra Dun; Directorate of Research on Rapeseed Mustard, Bharatpur; and VPKAS, Almora) agreed to work together for outreaching their technologies through KVKs. The 20 KVKs identified and 36 kg seed of mustard (NRCHB 101 and NRCDRc 2) were provided for demonstration at farmers' field. It is being implemented at Zonal Project Directorate level in collaboration with the Indian Institute of Technology, Kanpur. Clientele group may be identified and accordingly short message capsules may be developed. Directors of Extension Education of State Agriculture Universities suggested that technology park should be developed at the KVKs. At least 10% KVKs of the zone should be converted into high-tech KVKs. Solar system should be arranged at the KVKs for solving the electricity problem. Maintenance fund should be provided by the Council for buildings and other infrastructures of the KVK after every five years.

Recommendations

1. Cowpea intercropping in maize, water-mill based integrated fish farming system, silvipastoral system for wasteland utilization of western Himalayas, peach-based agri-horticultural practices, vegetative barriers for erosion control in Western Himalayas and enhanced productivity in valley and Yamuna ravines should be focussed.
2. Present technologies for hill region like improved variety, seed production, production technology, protected cultivation, post-harvest technology and mushroom production should be emphasized.
3. Vivek Maize Hybrid 15, Vivek QPM 9, VL Baby corn in maize; VL Genhu 829 (dual purpose) in wheat; Vivekdhan 154 of paddy; VL Arhar 1 of pigeonpea; and VL Matar 8, VL Matar 11 in vegetable pea were recommended for hill KVKs.
4. *Trichoderma harzianum* for seed treatment, pine+grass cropping pattern for sloppy land for enhancing the production of grasses and protection from soil erosion were recommended for high hilly region.
5. Integrated fish farming for high altitude and ornamental fish trading may be initiated through a group of KVKs of Himalayan region.
6. Some KVKs may be identified to work with latest varieties of mustard, i.e. NRCHB 506, NRCDR 601 for salinity and NRCYS 0502 (yellow mustard) in collaboration with Directorate of Rapeseed-Mustard Research, Bharatpur.

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XVIII Zonal Workshop of Krishi Vigyan Kendras of Zone VII

Gwalior, 6 May 2011. The XVIII Zonal Workshop of Krishi Vigyan Kendras (Zone VII) was inaugurated by Prof. V. S. Tomar (Vice-Chancellor, Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya), who emphasized the urgent need of soil testing for higher productivity, and urged the Krishi Vigyan Kendras to give attention on the other parameters of soil including GPS based sampling to develop the soil fertility map along with consultancy given to farmers. Prof. Tomar laid emphasis on value-addition technologies for which specific laboratories should be developed at KVKs. He suggested the development of Specialized Training Centre like betel-vine in Balasore KVK (OUAT), Honey bee in Morena KVK, M.P., Farm Machinery at KVK-CIAE, Bhopal, etc. will help in providing technologies for production, packaging and marketing at the same place for easy implementation. Dr U. S. Gautam (Zonal Project Director, Zone VII, Jabalpur) informed that KVKs have produced more than 11,000 q seed along with 0.30 million planting material. As new initiatives, KVK-Agro-technology Park includes five components, viz. Crop cafeteria, Technology Desk, Visitors Gallery, Technology Exhibition and Technology Gate-valve, were discussed and finalized, and all KVKs were asked to prepare a plan for implementation of this Park. Further, KVK-Ring was discussed in which a group of three adjoining KVKs are to be functionally linked to each other for sharing knowledge and other resources and also for cross-learning with each other.

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Workshop-cum-Training Programme on Floriculture

Goa, 15 April 2011.The ICAR Research Complex for Goa in collaboration with Energy Resources Institute organized a Workshop-cum-Training Programme on Floriculture. About 50 farmers from different parts of Goa participated in this training. In the inaugural function, Dr N. P. Singh (Director, ICAR Research Complex for Goa, Old Goa) presided over the function. He emphasized the need for setting of hi-tech floriculture by availing subsidies from the state and central schemes, and assured that ICAR, Goa centre will extend full technical support for the interested farmers in this regard.

Shri Satish Tendulkar, Director of Agriculture explained the potential of different cut-flowers and loose flowers suitable for Goa climate. Shri Sandilya of the NABARD briefed the participants about the different financial options for farmers with respect to technology transfer, training and other floriculture activities. Later, technical sessions on different aspects of floriculture were conducted by the experts.

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XX Regional Committee Meeting of ICAR

Barapani (Shillong), 5 May 2011. His Excellency the Governor of Meghalaya, Shri Ranjit Shekhar Mooshahary, inaugurated XX Regional Committee Meeting of ICAR (Region III- North-Eastern States including Asom) at ICAR Research Complex for North-Eastern Hills Region. He urged agricultural research community to work for holistic agricultural development of the region especially for milk, mutton and other food products. HE the Governor of Meghalaya laid emphasis on further exploitation of amazing diversity in agriculture, horticulture and other sectors in the region by putting knowledge endeavours for higher productivity. His Excellency suggested that double cropping may be adopted in the region to raise productivity and maintain food security. Cultivation of strawberry in mid-hills may be promoted for livelihood security, and it has already started paying dividends in the region. He reiterated application of knowledge in research, as lot of scope exists for further advancement in agriculture and allied sectors. HE the Governor of Meghalaya launched 'Knowledge Information Repository in Agriculture', KIRAN, which is an umbrella arrangement to harness the power of scientific knowledge and technology for more food production in North-Eastern Hills Region through dynamic partnership and convergence among stakeholders.

Dr S. Ayyappan (Secretary, DARE and Director General, ICAR) highlighted the research and extension strategies specific for the region and said that the ICAR is continuously pursuing the vision of technology and innovation-led sustainable agriculture ensuring food, nutritional and livelihood security.

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V Annual Review Meeting of ICAR Niche Area of Excellence

Palampur, 28 May 2011. Dr V. L. Chopra (Ex-Secretary, DARE and DG, ICAR), Chief Guest, reiterated the importance of education as the core mandate even for Niche Area of Excellence programme. He enunciated

package of knowledge, operating skills, and infrastructure and policy environment as the four pillar of education through which one is enlightened with the cultivation of mind and oriented towards the critical needs of the society. He called for synergy between education and research endeavor through which elite minds can engage in coordinated, logical and result-oriented approach for technology generation leading to economical and quality growth. Time and resource management issues are more often the limiting steps in the successful progression. Funds *per se* are essential but only a partial requirement. Niche Area Excellence may inculcate these principles in the pursuit of excellence, through innovations *sans* routine and mundane work.

Dr Arvind Kumar, Deputy Director-General (Education) gave a brief overview of the thrust areas piloted by the Education Division in enhancing the quality and capacity building in the agricultural universities. He also traced the genesis and progress of the various centres in quality publications, technology development, innovation, capacity building, resource generation and linkages established. He also highlighted the new initiatives under consideration. He appreciated some centres for starting websites through which the visibility of the centres is being attained globally, attracting due recognition and collaboration. The inaugural session was followed by four technical sessions spread over two days wherein the programme-wise salient achievements made during 2010-11, technical programme for 2011-2012, were also presented. Fourteen experts drawn both from ICAR and State Agricultural Universities acted as resource persons and offered valuable suggestions in improving the niche areas.

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ICAR-Industry Meet again

New Delhi, 23 May 2011. The ICAR-Confederation of Indian Industries (CII) Industry Meet, 2011 was jointly organized by ICAR and Confederation of Indian Industry to foster and strengthen linkages with industries working in the area of agriculture and food processing sector.

The Union Minister of Agriculture and Food Processing Industries, Shri Sharad Pawar, drew the attention of corporates to significant opportunities available in the agriculture sector, especially in research. Shri Pawar called upon industrialists to have closer interaction with the Indian Council of Agricultural Research and develop demand-driven technologies for benefit of small farmers and other marginalized social groups. Though ICAR's efforts towards technology commercialization and use of technology for benefit of the poor have given encouraging results, ICAR and industry need to identify priorities and evolve mutually agreed Research and Development strategies, Shri Pawar said. He urged industries to get involved in programmes of skill development in the rural areas, which will not only provide them skilled manpower for the agri-businesses, but also skilled manpower for other industrial activities, at the same time creating employment for lakhs of under-employed and unemployed members of our rural population.

The Union Minister of Agriculture State, Shri Harish Rawat, said that there has been an evolution in thinking of the ICAR, regarding pushing the frontiers of collaboration with private sector and other stakeholders. He emphasized the need for public-private partnership models to strengthen rural infrastructure to support faster agricultural development. He hoped that deliberations in the Meet will provide the right opportunity to the ICAR and Industry to develop the required understanding and governance framework for developing partnerships that harness the collaborative synergies for value creation, value protection, value sharing and value recovery; and explore opportunities for income and job creation along the value chain.

Earlier, Dr S. Ayyappan(Secretary, DARE and Director General, ICAR) enumerated an array of potential technologies, developed by the ICAR, for commercialization which included supportive farm machineries, nutraceuticals, value-added food products, diagnostics and immunologicals. The ICAR is vigorously pursuing issues concerned with IPR and technology commercialization and 58 patent applications have been granted, he said. To further the partnership with industries, the ICAR is working towards developing functional entrepreneurships, joint overseas initiatives and joint working groups in collaborative mode, he added. Concurrently, an exhibition was also organized to showcase ICAR technologies having business potential. Senior officials of the ICAR, Vice-Chancellors of Agricultural Universities and representatives from industries also participated in the meet.

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Review Meeting of KVK

Dehra Dun, 3 April 2011. Dr K. D. Kokate (Deputy Director General, Agricultural Extension) chaired a review meeting of Krishi Vigyan Kendra, Dehra Dun, in which several issues regarding upliftment and advancement of farming community and role of this KVK, in its strengthening were discussed.

Dr K. D. Kokate emphasized to cater to the needs of farmer and stressed that electronic advisory services are helpful, so these should be sent as agric-tips for updating the knowledge of farmers about the technological advancement taking place in the field of agriculture to cover even the distant farmers; and instructed to document service providers of the district and collect the State and Central Government Schemes running in the district. It was emphasized that collaborative efforts are needed for selection of operational villages where scientists ensure frequent visits for the holistic development of agriculture, horticulture and allied sectors.

During field visit Dr Kokate emphasized that outstanding hybrids/varieties of public sector should also be incorporated in the vegetable demonstrations along with private sector hybrids/varieties.

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QRT Interaction meet for KVKs of Maharashtra

Pune, 11 May 2011. The QRT Interaction Meet for Krishi Vigyan Kendras (KVKs) of Maharashtra, organized by Mahatma Phule Krishi Vidyapeeth, Rahuri in co-ordination with the Zonal Project Director, Zone-V, Hyderabad was inaugurated by Dr V.V.Sadamate [Advisor (Agriculture), Planning Commission, New Delhi and Chairman, QRT for KVKs of Zone-V] at College of Agriculture, Pune from 10 to 11 May 2011.

Dr V.V.Sadamate expressed the need for strong linkage between KVKs and ATMA and demanded for KVKs to act as backstopping centre for the frontline extension system. The KVK publications should reach the down line, he said. He underlined the role of KVKs in Comprehensive District Action Plan (CDAP), *Rashtriya Krishi Vikas Yojana* (RKVY) and XII Five-Year Plan. Dr Sadamate pointed out the role of KVKs in feedback mechanism. Participation of line departments in KVK programmes need to be increased by KVKs, he added.

At the outset Dr N. Sudhakar (Zonal Project Director, Zone-V, Hyderabad and Member-Secretary of QRT) briefed about the salient achievements of the KVKs and purpose of the interaction meet.

Dr K.D. Kokate (Deputy Director General, Agricultural Extension), stated that ICAR's initiatives for strengthening KVKs in the country are being strengthened. He opined that KVKs play role as Knowledge and Resource Centre for the district and expectations in view of XII Five-Year Plan. He added that e-connectivity needs to be utilized efficiently. Record of farmer's footprints to the KVK is essential.

Dr Suresh Kumar (Chairman, Working Group of Agricultural Extension, Planning Commission, and New Delhi) highlighted the role of KVKs for achieving food security. He stressed the need for preparation of plan by KVKs on farming situation with the adoption of location specific technologies.

The other discussed points are enumerated here.

1. Demand of SWOT analysis for improving the performance of Krishi Vigyan Kendras. The introduction of distance learning by KVKs.
2. There is need for farmer participatory approach by KVKs to strengthen their programmes. The identification of local germplasm and local breeds is needed by KVKs. Focus on value addition; drudgery reduction through custom hiring of implements and trainings for entrepreneurship development is needed.
3. The KVKs should organize extension activities through PPP mode and concentrate upon the need based training programmes.
4. The KVKs should undertake innovative programmes like *Hello Kastkar, Krishidoot Yojana* and *Kirtankar melawa* in Vidarbha region.
5. There is need for expanding the outreach programmes of Krishi Vigyan Kendras and spread of replicable models in other areas.

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Brackishwater Aquafarmers' Meet

Navsari, 8 April 2011. The Central Institute of Brackishwater Aquaculture (ICAR), Chennai, organized Brackishwater Aquafarmers' Meet at Navsari Agricultural University with the aim of popularizing CIBA technologies to the local brackishwater aqua-farmers, to review the trends in brackishwater aquaculture development in Gujarat and to exchange the views between farmers and scientific communities for further refinement and customizing according to the local agro-climatic conditions.

The meet was organized also to commemorate the successful harvest of banana shrimp farming demonstration for the third time, under the collaborative project of CIBA and NAU on the development of brackishwater aquaculture in Gujarat. Farming banana shrimp (*Fenneropenaeus merguiensis*) would be profitable for winter in Gujarat region, since the growth and survival of other commercial shrimps, such as tiger shrimp are poor.

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KVKs Interface Meet, 2011 inaugurated

Bhimtal, 6 June 2011. Shri Harish Rawat (Union Minister of Agriculture, State) inaugurated 2-day Krishi Vigyan Kendras Interface Meet at the Directorate of Coldwater Fisheries Research at Bhimtal, Uttarakhand. He said that there is a need of such meets as it gives platform for the interaction of experts, progressive farmers, KVKs and other stakeholders to address the major issues in coldwater fisheries sector, and appreciated the contribution of the institute in this direction. The Hindi magazine *Him Jyoti* and bulletin, *Nutrient Profiling of Coldwater Fish Species* were released. He opined to extend the technologies of the institute like poly-tank fish culture in the high altitude regions, and to give more emphasis to build more women organized societies in agriculture.

Dr K.D. Kokate (Deputy Director General, Agricultural Extension, ICAR) stressed about the resources available in the Himalayan belt and sustainable exploitation of the resources in effective manner to increase the productivity of the coldwater fish sector.

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Strategic pesticide use to enhance agriculture production and food security

New Delhi, 1June 2011. Dr S. Ayyappan (Secretry, DARE and Director General, ICAR) inaugurated the National Seminar on 'Transfer of Technology of Strategic Pesticides Use to Enhance Agricultural Production and Food Security,' at NASC Complex. He called for Public-Private Partnership, so as to gain synergy of each others strengths and take agricultural technologies to the doorsteps of the farmers across the country. He added that timely availability of quality inputs, including seeds, fertilizers and pesticides and educating the farmers and agriculture input dealers on judicious use of pesticides is vital, in which ICAR and Private Sector can play an important role. He also called for creating

para-professional and middle-level functionaries to assist in various department projects through appropriate training at the Krishi Vigyan Kendras, State Agricultural Universities and institutes of the ICAR. Professor R B Singh, from FAO said, the agrochemicals have played a pivotal role in the past in increasing agricultural productivity and production, and protecting and preserving the human and animal food, feed and health. These have become a topic of public debate, primarily due to their non-judicious and unscientific use, thus, a policy on their use needs to be in place, mentioned Prof Singh.

Dr K. D. Kokate, Deputy Director General (Agricultural Extension), highlighted the areas of Public-Private Partnership and called for providing quality inputs and services under single window support system, as their non-availability is a major hurdle in increasing crop productivity in the country.

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Krishi Takniki Sangoshthi and Exhibition

Haridwar, 4 June 2011. A successful *Krishi Takniki Sangoshthi* and Exhibition was organized by the Govind Ballabh Pant University of Agriculture and Technology, Pantnagar and the Indian Council of Agricultural Research at Krishi Vigyan Kendra, Dhanauri, Haridwar, Uttarakhand, which was attended by a large number of visitors/farmers.The Minister of Agriculture and Food Processing Industries (State), Shri Harish Rawat, complimented ICAR and GBPUA&T for organizing the much needed programme and hoped that deliberations in the event shall provide the essential information in agriculture and livestock farming. The exhibition stall of the Indian Veterinary Research Institute, Izatnagar displayed the livestock technologies and technical literature in the exhibition. The Union Minister of Agriculture (State) Shri Harish Rawat and the Director, Prof. M. C. Sharma bestowed progressive livestock farmers with technical products and literature of IVRI. Each set consisted of Area Specific Mineral Mixture, Urea Molasses Mineral Block, Herbal anti-diarroheal, anti-

acaricide, Olniall along with 11 livestocks health related technical literature. In his address, Prof. Sharma termed hill agriculture as challenging due to difficult terrain, and emphasized that it is very difficult to attract rural youth to agriculture in the present era of development. Primary processing, marketing, efficient transportation, water harvesting, vegetable production, conserving natural resources were mentioned as key for the development of hill agriculture. Shri Rawat, MoS said that productive fertile land needs to be saved from non-agricultural purposes. Quality land is precious and for other purposes only unproductive land should be utilized. He said that KVK needs to be developed as institution and its staff to be given incentives as they are serving in remote areas.

For foothill districts of Uttarakhand, he suggested intensive vegetable production and marketing, intensification of sugarcane production per unit area with higher sugar recovery, crop management in marshy lands and high run-off situation, and raising the productivity of all the commodities along with processing and value addition.

Dr K.D. Kokate, DDG (Agriculture Extension) encouraged the farmers to adopt intercropping with sugarcane to raise per unit area productivity, add summer moong in rice-wheat system and think of building farmers' associations on sugarcane, rice, mango and litchi as these commodities hold potential in this area. He emphasised on building synergy of efforts with different departments and ICAR institutions to serve the farmers in a better way.

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International Linkages

Cultivation and collection of medicinal plants made easy

New Delhi. Dr S. Ayyappan (Secretary, DARE and Director General, ICAR) and Dr Gavin Wall, FAO Representative in India released the training material and expressed their views on skill development for evaluation of medicinal plants from natural ecosystem. The Director General, ICAR, released a training toolkit on Good Agricultural and Collection Practices (GACP) for medicinal plants at the launch function. This unique training material developed by the FAO and Directorate of Medicinal and Aromatic Plant Research serves the purpose and includes a variety of communication tools, such as a film and an illustrated booklet to deliver the core message of GACP principles. This toolkit was developed under a project implemented by FAO in India and Bhutan with support from the International Fund for Agriculture Development. Dr Ayyappan appreciated the efforts and said, the GACP training kit will be very useful for farmers, collectors, trainers and other stakeholders to impart standard and uniform training across the country. He also thanked FAO for completing this collaborative work within the stipulated time.

The Food and Agriculture Organisation of the United Nations, India, and the Directorate of Medicinal and Aromatic Plant Research of Indian Council for Agriculture Research have together developed an interactive training toolkit to facilitate better application of the WHO guidelines for good agriculture and collection practices for medicinal plants. The adoption of GACP in medicinal plant sector will improve livelihood by adding premium price to the produce and also generating additional employment in rural sector for the educated youth.This training toolkit is based on the guidelines for Good Agriculture and Collection

Practices for medicinal plants that were developed by the World Health Organization (WHO) in 2003. The guidelines were designed to ensure the safety, efficiency and quality of raw materials used in herbal medicine. FAO Representative, Mr Gavin Wall, said, the implementation of Good Agriculture and Collection Practices will improve the efficacy of herbal medicines in the market; ensure that medicinal plant resources are extracted from the wild in sustainable manner, and strengthen the position of the farmers and collectors in the market place.

Compliance to quality standards is necessary to consolidate our position in the world herbal market and towards this adoption of Good Agriculture and Collection Practices by farmers and collectors is an important starting point, said Dr Satyabrata Maiti, Director, Directorate of Medicinal and Aromatic Plants Research.

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Genomic selection in cattle and buffaloes

New Delhi, 12 April 2011. Dr R.M. Acharya (Ex Deputy Director General, Animal Sciences) inaugurated Indo-Denmark Workshop on Genomic Selection in Cattle and Buffaloes that was held at National Agricultural Science Centre Complex, New Delhi from 11 to 12 April 2011. The workshop was jointly organized by the Indian Council of Agricultural Research,New Delhi and Aarhus University, Denmark; and coordinated by Dr R.K. Sethi, Director, Central Institute for Research on Buffaloes, Hisar. The Danish delegation of five

members was lead by Dr Mogens Sandø Lund, Head of the Department Genetics and Biotechnology, Aarhus University, Denmark. The purpose of the workshop was to exchange knowledge and enhance cooperation between India and Denmark, focusing on the area of genomic information applied in animal breeding and biodiversity conservation. Dr R. M. Acharya emphasized the importance and need for genomic selection in Indian livestocks. There were four technical sessions in which presentations were made in the areas of: Livestock breeding programmes in India; Genomic selection in animal breeding; Genetics of complex traits; and Animal breeding plans.

Recommendations

- Traditional selection tools need to be combined with biotechnological tools to have higher rates of genetic improvement. Phenotypic and SNP data have to be combined for selection of animals using multivariate analysis for genomic selection.
- Quality data is a key for the success of genomic selection. More number of sire families need to be developed besides improving the accuracy of performance of recording system.
- Highly-skilled manpower in the area of bioinformatics, database development and management need to be developed under the exchange programme.
- Basic studies to understand GXE interactions and adaptive traits at genomic level need to be undertaken.
- It would be necessary to evaluate performance of genomically tested exotic bulls under Indian conditions.
- Genomic selection can be initiated in India by utilizing reference population of Friesian crosses and indigenous cattle available in various Institutional herds.
- Collaborative programme on genomic analysis and capacity building should be undertaken in buffaloes.
- High density SNP chip needs to be developed for buffaloes.
- Breeding strategies for genomic selection of cattle and buffaloes in organized herds need to be developed and tested.
- Scientific exchange and joint collaborative research and training programmes need to be developed in the areas of Bioinformatics, Association studies, and Genome Wide Selection.

Subsequently a meeting was held under the Chairmanship of Dr K.M.L. Pathak (Deputy Director General, Animal Sciences) and the team from Denmark to draft a Memorandum of Understandings based on the outcome of the 2 days workshop. It was agreed to have more interaction and have better quality data sharing between the two countries. It was also agreed to develop an MoU with detailed workplan at the earliest.

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Secretary, ICAR led delegation to Kenya, South Africa and Zambia

Pretoria,31 May, 2011.An Indian delegation led by Sh. Rajiv Mehrishi (Additional Secretary DARE and Secretary, ICAR) visited Pretoria (South Africa) from 28 to 31 May 2011. In South Africa, the delegation held discussions on various issues of mutual interest and possible collaborations with the Department of Agriculture, Forestry and Fisheries headed by Ms Sue Middleton, Acting DDG (Economic Development, Trade & Marketing), Dr Shadrack Moephuli, President & CEO, and Dr Mohammed Jennah, Executive Director, Research & Development, Agriculture Research Council (ARC) of South Africa.

On the basis of the discussions a Work Plan between ICAR and Department of Agriculture, Forestry and Fisheries, was signed by Ms Sue Middleton, Acting DDG, Economic Development, Trade & Marketing, Government of South Africa, and Shri Rajiv Mehrishi,

Additional Secretary (DARE) & Secretary, ICAR in the areas of aquaculture, crop production, and education & training in the presence of Shri Virendra Gupta, Indian High Commissioner, and Dy. High Commissioner Shri S.S. Kumaran.

Dr K.M.L. Pathak (Deputy Director General, Animal Sciences) and Dr A.K. Vasisht (Assistant Director General, PIM) visited Nairobi (Kenya) on 26 and 27 May 2011, and Lusaka (Zambia) on 2 and 3 June 2011. The delegation comprising Dr K.M.L. Pathak, Deputy Director General (Animal Science) and Dr A.K. Vasisht held discussions with the Dr Carlos Sere, Director General, ILRI , Dr John McDermott, DDG (Research), Dr Vish Nene, Director (Biotechnology Theme), Dr Iain Wright, Regional Representative - Asia, and Ms Liz Ogutu, Resource Mobilization Officer. On the basis of the discussions, both the sides identified key areas of mutual interest in crop science especially pulses, maize, fisheries and livestock including exchange of the germplasm. The discussions revolved around taking up joint research projects on food and fodder crops for sustainable animal production between ICAR and ILRI by using multi-dimensional crop improvement programmes and livestock nutritionists.The delegation to Zambia identified key areas of mutual interest between Golden Valley Agricultural Research Trust (GART) and ICAR in the areas of Animal Husbandry, including feed / fodder / nutrition and reproduction issues and goat husbandry, village poultry, crop science including semi-arid crops like cotton, and agricultural extension in the light of an MoU already signed between ICAR and GART in 2009.

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Agricultural Innovations

Protein-enriched snacks

NAIP has developed technology to produce protein-enriched snack from millets. Millets fortified foods like multigrain *roti*, biscuits, cookies, *lassi*, flakes etc. are commercialized and have changed the face of millets as nutricereals acceptable to present consumers.

A non-vegetable producing area is now a hub of vegetable production

In the Rauni and surrounding villages comprising more than 250 families, the major livelihood source was cultivation of paddy and wheat and the resultant net income was nearly ₹ 30,000 to 35,000/ha. The other agricultural activities like commercial vegetable, floriculture, livestock units etc. were either absent/ negligible or uneconomical (livestock). The population comprises about 25% landless and nearly 70% small land holders (marginal and small farmers). Various interventions from the NAIP Component-3 of this project "Holistic approach for sustainable livelihood security through livestock based farming system in Barabanki and Raebareli districts of Uttar Pradesh" were done to diversify the livelihood as per their choices and enhancing the net family income to a reasonable level. Out of these families, 24 landless families opted for riverbed vegetable cultivation. These families now improved the practices further by dividing the bank into hybrid *bhindi* (*Abelmoschus esculentus*) portion on lower bank, hybrid tomato (*Lycopersicon esculentum*) in middle portion along with cucurbitaceous vegetables from the earlier practice of cucurbits alone by a family. Thus, the net return jumped many-fold. The earlier irrigation by bucket is changed into community based portable engine irrigation. The major shift has been in vegetable cultivation and its horizontal expansion. Now besides above landless families, 52 families mainly comprising youth who have never gone for vegetable cultivation (except 2 families), have opted for off season vegetable cultivation mainly targeting summer *bhindi*, summer and rainy season tomato and integrating it with floriculture, banana, rural poultry, cucurbits etc. This has assured nutritional security to these poor families also. The net income per ha has been enhanced to ₹ 0.15 to 0.4 million/ha. The shift of the area from non-vegetable producer to hub of seasonal/off season vegetable production is the real impact of NAIP/ICAR, and in coming years will also become hub of flowers, honey, guava, milk, meat and banana.

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Utilization of banana pseudo-stem

NAIP standardized the protocol for utilization of Banana Pseudo stem for fiber and other value added products. The pseudo stem, otherwise wasted, used for value added products such as textile grade fiber, high value currency paper, micro crystalline powder etc.

Multiple water use for income generation in Chaur of eastern India

Integrated farming using multiple water use interventions in flood plain wetlands named *chaur* leads to enhancement in rice and fish production, and other crops like wheat, mustard, tobacco etc. An attempt was made to improve the livelihood of small farm holders (20 households of Kaincha chaur) of Janadha Block in Vaishali district Bihar, from 2008 to 2010, under the FPARP, funded by Ministry of Water Resources (Government of India). During the endeavour, aquaculture formed a substantial part of adoptable technologies which lead to multiple use of abundant water for enhancing productivity to improve upon food security, health and environment which ultimately improved livelihood of the resource poor farmers whose well being, by and large, depends upon this fragile but potential productive ecosystem. Traditionally, the farmer's cultivate the major crops

like rice (av. production 2.0 tonne/ha), wheat (av. production 2.5 tonne /ha), and maize (av. production 3.0 tonne /ha), however, extra income generation was very limited. Most of the area of the *chaur* is cultivated for single crop only during normal rainfall situation but in drought years, opportunities do exists in larger areas for raising more than one crop. Keeping these facts in view, five alternative farming activities: (*i*) fish culture in cages, (*ii*) fish culture in low land through pen culture and trenches, (*iii*) rice-fish culture in seasonal waterlogged areas, (*iv*) horticulture-vegetable and livestock production in pond system, and (*v*) raising of fish seed from low cost eco-hatchery, were undertaken for demonstrations of integrated agro-aquaculture systems so as to uplift the socio-economic status of rural poor.

In rice-fish system, rice productivity was recorded to be 4.0 tonnes/ha compared to average yield of 2.0 tonnes/ha in traditional way of cultivation. Similarly, cultivation of bottlegourd on the embankment of pond, yielded 20.0 tonne /ha additional vegetable crop enhancing income of farmers by ₹ 100,000/ha. Further, traditional yield of fish of 2.0 tonnes/ha from the pond got increased to 3.6 tonnes/ha which resulted additional increase in income of ₹ 150,000 per ha. The eggs produced through integration of ducks yielded an additional income of ₹ 262,800/ha. Fish fingerlings raised through cage culture helped farmers in availability of fish seed for stocking of the wetlands. It also gave estimated gross return of ₹ 1,014 from one crop per cage of 9 m^2. Fish seed production in ten days through eco-hatchery ensured fish seed availability to the farmers. They were benefited with 80 lakh fish seeds with estimated income of ₹ 80,000. Benefit: cost ratio for cage culture demonstration was worked out to be 2.02 while it was 8.4 in polyculture of fish in pond.

Shri Tripurari Chaudhary, a progressive farmer, who had major land holding (12 acres) in the working site was identified to lead all other farmers and to assist the scientists to undertake all the interventions in participatory mode. This farmer used to get an income of ₹ 200,000 from the various crops and ₹ 50,000 from the fisheries activities per annum. Besides, technological gain related to various IFS modules operation and financial gain with the increase of income by ₹ 200,000/year, the farmer at the end of the project took the initiative in establishing a commercial fish hatchery as a result of getting acquainted with the technical know-how provided by the scientists of ICAR-RCER, Patna. He was also helped in his endeavor by organizations like CIFA, Bhubaneswar; Department of Fisheries, Bihar and the financial institution such as Oriental Bank of Commerce, Hazipur, Vaishali. He finally established a commercial hatchery for fish seed production with a capacity of 40 lakh spawn per day at Jandha, Vaishali, in Bihar. Many farmers are coming forward to adopt techniques of multiple uses of water for their farming approach.

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Integrated rural poultry — self employment to landless masses

Poverty eradication amongst the rural landless population is a major challenge to scientists, extension functionaries and planners as they lack the basic capital resources and technological back up. The situation is more or less similar with marginal farmers also. The family size varies between 5 and 10 and whatsoever family earning comes, it is meager to even making health and nutritional security is not considered by

them as priority. Lack of resources does not permit them to adopt any venture which can provide sustainable and reasonable livelihood security.

A beginning under the NAIP-3 (ICAR) project "Holistic approach for sustainable livelihood security through livestock based farming system in Barabanki and Raebareli districts of Uttar Pradesh" was made through strategic research and interventions. Chicks of Nirbhik and Shyama, CARI Hitkari, CARI Upkari strains of fowl were provided in the batches of 50 to these landless families. Temporary shelters were constructed by farmers for the birds. A total of 250-500 chicks in batches on nominal cost were provided and the total investment during the period by farmers was between ₹ 500 and 1,500 which they could afford. The birds were allowed to graze and grazing was supplemented with *in-situ Azolla* cultivation (*Azolla pinnata* spp.) and feeding which contains about 22 % crude protein. The birds attained body weight more than 1.6 kg by fourth month and majority of them were sold live @ ₹ 200 to 250/bird. A total of 604 families were intervened and the total earning from average of 400 birds ranged from ₹ 6,000 to 100,000. Farmers were simultaneously intervened with off season vegetables as summer tomato, *bhindi*, rainy season tomato using hybrid seeds and micro-irrigation arrangements. Cucumber, muskmelon, watermelon, brinjal, chilli, gladiolus etc. were also intervened either using foundation seed or of elite varieties on the available (backyard) land, if any. This has supplemented nutritional security besides subsidiary income. Out of these, 51 farmers used the income to upgrade the venture into deep litter broiler farming. Many of them have harvested 6 to 7 crops of broiler. Each rotation of 250 broiler batch (42 to 45 days) provide them net earning between ₹ 10,000-15,000. Some of them are trying to upgrade the venture up to 2,500 chicks per batch so that they can opt for contract farming. Under contract farming ₹ 10/chick is fetched and all the cost including mortality is borne by the supplier. Some farmers are rearing grown up birds (Shyama strain) for egg production. The eggs are being consumed by children as well as older family members which was never available to them, besides being sold in the local market. Many of these farmers while improving their economical and nutritional security diversified their livelihood base which includes dairy, goatery, vegetables, floriculture, activities of NAIP etc. Presently availability of backyard chicks is from CARI, Izatnagar alone and that of broilers from either CARI or from far off places. This irregular chick supply is hampering the rapid growth of venture and thus self employment. Regeneration of chicks locally will supplement the activities. While reviewing the progress, during discussion with farmers, particularly housewives and girl child's, the elated members narrated that they will now never see the ugly face of poverty again due to their awareness and technological empowerment. Their hearty bonding and indebtness to ICAR is reflected in their words and faces.

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Conceptualization of water storage device for rivers dried after cessation of monsoon rain

The state of Jharkhand receives plenty of rainwater (annual average rainfall >1300 mm) during monsoon months. Inspite of good rainfall, the state is having only 10% cultivable area under irrigation. The majority of farm families are practicing rainfed monocropped agriculture in vast area due to non availability of irrigation water during *rabi* (winter) and *zaid* (summer) seasons. Only few farm families are growing *rabi* crops by using flowing water in small perennial rivers, creeks, ponds and wells. A number of rivers have been originated in this state with wide catchment area. During rainy season the volume of water flow in these rivers is huge in amount with fast current, but the water recedes quickly after the termination of rain and the river bed full of sand becomes dry.

In the NAIP adopted villages in Jamtara and Dumka districts, small river (Joria) and creeks flow with full of water during rainy season, but the water flow reduces to a great extent during dry months. The water flow in the relatively larger rivers like Mayurakshi and Bhurbhuri flowing in the Jama block of Dumka district also become thinner but these rivers are having wide sand filled river bed. After termination of rain, the water flow below sand beds. The farm families residing in the villages, situated on the bank of these rivers, lift water with the help of diesel/electric operated pumps by making small ditches and irrigate rabi crops grown in small area.

The small ditches made in river bed usually get choked with in a short duration due to sand sliding during operation. The farmers spend lot of time in cleaning the ditches during pump operation. Considering availability of sufficient water under the sand bed, wastage of farmers' time in maintaining the ditch and eagerness of farmers in increasing area under *rabi* cultivation, the suggestion was sought from practising farmers to overcome the problems arised in maintaining the ditches use for lift irrigation. With farmer participation it was decided that the empty engine oil drum should be used for developing *kund* (water tank) in the river. The idea was to make a perforated cylinder by removing both the upper and lower lids and make drill small pores in the body of drum. Then this drum will be inserted in the sand bed by removing the sand inside the drum manually. Removal of sand from inside of the drum was not feasible manually because of the small diameter of the drum. It was further thought that kund should be made by joining two engine oil drums but the cost involved was little high. After exploring the Dumka market, it was finally decided that the kund should be developed using iron sheet and iron bar by joining the two ends of iron sheet with vertical and horizontal iron bar enforcement.

Advantages

Saving by using *Ramakant Nadi Kund* in 3 years was ₹ 14,165. Other farmers are also demanding *Ramakant Nadi Kund*. If provided, it will help in increasing the area under *rabi* and laid season crops. This process will lead to increased cropping intensity, more on-farm employment, more income of farm families and no or low male out migration from villages.

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Economic empowerment of tribals of north-east hills region through rabbitry

People of Nagaland are predominantly non-vegetarian and relished meat from a variety of possible sources. Common domestic animals used for meat are pig, cattle, buffalo, goat, poultry and dogs. Despite very high demand for the animal products in the region, the livestock reared in the state for the production of meat, egg, milk etc. are of inferior genetic makeup and therefore produce comparatively less meat. An attempt was made by Krishi Vigyan Kendra (NRC on Mithun), Phek, Nagaland, to lessen the deficit of meat (6520 MT/annum) in Phek district by popularizing backyard rabbitry among the tribal communities as a source of quality meat and livelihood option. The aim of the programme was to popularize rabbitry so that each household of the village should have minimum a pair of rabbit. Rabbit being highly prolific and fast growing found to be the better option to address the issue related to meat deficiency in the region. Early maturity, short gestation period, higher litter size per kindling and fewer incidences of diseases were the added advantages. Initially rabbitry was introduced in 2008-09 as pilot study programme in two villages of the district i.e. Porba Upper Khel and Gidemi. Subsequently in the next year after realizing the initial success and acceptability among the farmers in these two villages, the programme was extended in another five villages i.e. Sakaraba, Porba Lower Khel, Pfutseromi, Kikruma and Thevopisü.

Horizontal sharing of rabbit kids among the members of Self Help Groups was planned as a strategy to promote this animal among the farm women under backyard rabbitry programme. After three years of intervention, it was observed that the rabbitry is well adaptable under the backyard conditions in Phek and it was adopted by all categories of the farmers. The primary beneficiary were 240 farm-women and it was further expanded to another 210 farm families as secondary and tertiary beneficiaries. The cumulative gain realized by all the families through backyard rabbitry is about ₹ 27.92 lakhs in a year. This experience showed that the novel idea of horizontal sharing of kids could be a better approach for rapid and efficient dissemination of technology among the tribal communities in the region and rabbitry can be adopted as successful vocational enterprise in North- East Hills Region.

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Celebrations/Farmers Corner/Capacity Building

50 Years of CIFE

Mumbai, 6 June, 2011.Dr S. Ayyappan (Secretary, DARE and Director General, ICAR) recalled the contributions by the former personnel of this Institute who established it from a training Institute to in-service fisheries personnel in 1961 rededicating the Central Institute of Fisheries Education, Mumbai on the completion of 50 years of its existence. He emphasized upon the efforts made by the Institute not only in the area of education, but also in fisheries research and extension giving examples of carp hatchery, aquaculture revolution in Andhra Pradesh, shrimp farming in inland saline soils and reclamation of degraded areas in Maharashtra through aquaculture. He added the new initiatives in pipeline under the XII Five-Year Plan of the ICAR and highlighted upon the aspects like National Agriculture Innovation Project, introduction of new awards, career advancement, overseas exposure to faculty and students, etc. The Director General also inaugurated Girls' Hostel, Residential Quarters, Personality Development and Placement Cell and Microbiology Lab for Post-Harvest Technology at Central Institute of Fisheries Education.

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Silver Jubilee celebrated at CIFA

Kausalyaganga,1 April 2011. Dr Ambekar E. Eknath, Director, CIFA, said that institute has developed off-season breeding technology for carps that would ensure year round supply of quality seeds, thus benefiting fish farmers through the country. To mark this occasion CIFA released a 'Special Day Postal Cover' in association with Department of Post, Government of India, which is the first of its kind in the National Agricultural Research System. The cover depicts frontal view of main building and few important activities being carried out at the CIFA. The front of the special cover depicting fishes, women in the fishery industry and laboratory, freshwater reservoirs has been designed to accommodate the freshwater aquaculture, fishery industry, innovation in the technology and environmental aspects. The cover also has a postal cachet mark (a design or artwork) comprising two popular varieties of carp fish, rohu and catla.

The back of the cover has a brief introduction to the Institute and its activities. The institute as a premier research institute devoted to freshwater aquaculture research and development, starting its journey in the year 1987. Over the last two decades of devoted research, the institute has developed several epoch-making technologies that has revolutionized freshwater aquaculture sector in India. Release of special day cover on silver jubilee year is the first of its kind in the National Agricultural Research System.

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Kishan Bhavan inaugurated at CPRI

Shimla, 03 June 2011. Dr S. Ayyappan (Secretary DARE and Director General, ICAR) inaugurated the "*Kishan Bhavan*" at Central Potato Research Institute, and also chaired the Steering Committee Meeting of the MM-I for the centrally sponsored scheme of " Horticulture Mission for North-East and Himalayan States" and also visited Central Potato Research Institute, its regional stations at Kufri and Fagu and other ICAR regional stations located at Shimla. He stressed that MM-I is a technology mission aimed at generating location and crop specific technologies that need to be transferred to the end-users through transfer of technology activities.After inspecting all the infrastructure facilities of the institute, he said that Institute has created world class research facility and it would score 'A' for each and every laboratory I have visited. This farmers' hostel with the capacity to accommodate 18 guests will help the institute to accommodate farmers coming from different corners of the country for training on specific areas of potato cultivation, he added.

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Online Examination Centre inaugurated at ASRB

New Delhi, 24 May 2011. Shri Harish Rawat, Union Minister of Agriculture (State) inaugurated the National Online Examination Centre at Agricultural Scientists' Recruitment Board, Krishi Anusandhan Bhavan and said that the modern facility for conduct of Online examination of Agricultural Research Services is in tune with the current developments in Information, Communication Technology Sector in India. He added that this is the first scientific organization in India where the examination of National Eligibility Test (NET) and Agricultural Research Services would be conducted 'Online'. Agricultural Scientists' Recruitment Board (ASRB) shall be conducting NET examination in 23 disciplines at 25 select centres of the country from Kashmir to Andamans simultaneously. He appreciated and commented that in the current globally competitive environment, the long term success of any organization would to a large extent depending upon its ability to induct and retain the best quality manpower. By revolutionizing the manpower induction system, ASRB has indeed made a commendable contribution to the ICAR system, he added.

Dr S. Ayyappan(Secretary, DARE and Director General, ICAR) congratulated Agricultural Scientists' Recruitment Board for establishing a National Network to conduct Online Examination for recruitment of Agriculture Research Services. Dr Ayyappan added, this facility will go a long way in conduct of scholarship examinations of ICAR, admission system and all allied service examinations which have become an integral part of Human Resource Development.

Dr C. D. Mayee (Chairman, ASRB) announced that Agricultural Research Services has achieved another milestone in the history of Recruitment. He added that ASRB has taken up the massive job of recruitment of more than 300 posts of Assistants for the first time

using the online – mode. The total scientific manpower in ICAR Institutes is around 6,000 and that in Agricultural Universities is more than 25,000.The sole responsibility of feeding appropriate scientific human resource to the National Agricultural Research Services lies with ASRB.

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On-line examination centre at CIFA inaugurated

Kausalyaganga. The Agricultural Scientists Recruitment Board (ASRB), the sole agency for selection of scientists for the Agricultural Research Service (ARS) is going online. ASRB will conduct on-line examination for National Eligibility Test (NET) required for the aspirants of Assistant Professors in Farm varsities as well as selection of scientists in the ARS. The examination will be simultaneously conducted is 25 centres across the country including Bhubaneshwar said Dr. M. J. Modayil, Member, ASRB, New Delhi. He inaugurated the exam centre, having 100 seat capacities, at the Central Institute of Freshwater Aquaculture.

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Technology transfer, credit counseling and market advocacy

Washim, 27 April, 2011.The NABARD has sanctioned a pilot project for technology transfer, credit counseling and Market Advocacy through Farmers Clubs in Washim District. In this programme initially 20 master farmers will be trained, and 20 will be trained in next phase. The master farmers are expected to train other farmers in the village on all aspects in which they were trained. The master farmer will be developed as one stop knowledge centre for the village with the confidence and ability to guide and counsel the others in the village. The farmers will be selected by NABARD and KVK from the Farmers clubs in Washim District. The KVK will provide the list of selected 20 farmers including names of the farmers' club, club ID given by NABARD, mobile numbers and postal addresses, name of the promoting agency, Bank Branch with which club has saving account and account number. The KVK will prepare the comprehensive activity chart and action plan indicating the specific dates for each training and submit a copy of the same at least 15 days in advance to NABARD, Pune. The NABARD will adhere to the activity chart for the entire range of activities. The KVK shall be responsible for overall implementation of activities envisaged. The project will be implemented by December 2012 covering two crop seasons. It will also ensure hand-holding services to the master farmers throughout the project period spread over two cropping seasons.

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A new building for College of Fisheries, Guwahati

Guwahati, 4 May 2011. Dr S. Ayyappan visited College of Fisheries and laid foundation stone for new College building at Guwahati, Asom and deliberated upon the scope and potential of fisheries education in overall agricultural development of the state. He inaugurated central library and interected with the scientific and academic personnel at Shillong campus of Central Agricultural University, Manipur. He urged the experts of different research areas to streamline research strategies in the north-eastern – hills region, and priorities for holistic development of agriculture and allied sectors in the north-eastern region. He stressed upon huge potential of biodiversity of the region, conservation agriculture, acid soil amelioration, effective rainwater management, organic farming, integrated farming and value addition of agricultural produce through processing.

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Diagnostic Laboratory inaugurated

Navsari, 8 April 2011. A new diagnostic laboratory was also inaugurated at Navsari Agriculture University campus to cater to the need of the aqua-farmers for analysing the soil and water samples from the aquaculture farms to keep the pond environment conducive for aquaculture. The laboratory has all the facilities required for the analyses of water, soil, mircobiological and molecular biological procedures, particularly the PCR test, which is essential for disease diagnosis and crop loss in shrimp farming.

Dr S.D. Tripathi suggested that the technologies developed at CIBA can be very well implemented in Gujarat, through the collaborative project and other activities of CIBA. He suggested farmers not to depend upon only one species of shrimp, viz. the tiger shrimp, but to go for diversification in aquaculture with the technologies. He appreciated the initiation taken by CIBA establishing the diagnostic laboratory for the benefit of the aqua-farmers of this region.

The DDG (Fisheries) Dr Meenakumari, emphasized that there is an urgent need for quality shrimp seed in this region, hence, a shrimp hatchery can be setup in this region with the NFDB funding. She appreciated the establishment of the demonstration ponds of Danti farm by the university with the scientific inputs from CIBA, which will be useful for continued demonstrations and trial culture of various brackishwater candidate species for culture in the years to come. Dr A.G. Ponniah, Director, CIBA mentioned that, high salinity in summer and low temperatures in winter are the major challenges faced in Gujarat. As monoculture of the tiger shrimp *P. monodon* is highly risky, for the sustainability of

aquaculture, multiple cropping is the need of the hour. He suggested farmers to take up banana shrimp farming, particularly during the low temperature regimes. He further added that, farm economy can be improved by integrating shrimp farming with cultivation of halophytes as an integrated farming system. He assured the farmers that the two CIBA technologies, (*i*) use of a bio-remediating agent the "Baggase" for water quality improvement, and the (*ii*) immuno-stimulant "CIBASTIM" can improve farm productivity by at least 10%. He also complemented the shrimp farmers in Gujarat who have followed better implementation of BMPs/Biosecurity measures in shrimp farming. Since Gujarat has the advantage of well structured ponds, unlike in other states, it would be ideal to go for 'Farm Research' in a better way in Gujarat.

In the technical session, Dr Manoj Sharma, an aqua farmer and a consultant who has helped establishing many shrimp farms in Navsari and Surat region in the past 12 years, shared his success story in shrimp farming with the gathering. Mr Saji Chako, who is a progressive aqua-farmer in Navsari region and initiated the banana shrimp culture in 2008 with the technical inputs and the hatchery produced seed from CIBA shared his achievement of producing shrimp of about 30 g average size in winter. In the interaction session, various issues related to the environmental, feed and health management in shrimp farming were discussed among the aqua-farmers and the scientists of CIBA and NAU.

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Administrative Building of KVK, Delhi Inaugurated

Delhi, 1 May 2011. Smt Sheila Dixit, Chief Minister of Delhi, inaugurated the Administrative Building of KVK, Delhi; and launched its web site (www.kvkdelhi.org).

Dr K.D. Kokate, Deputy Director General (Agriculture Extension) was the Guest of Honour at this function. He lauded the activities of Krishi Vigyan Kendra, Delhi and stressed upon the need of secondary agriculture for enhancing the profitability of farmers. A 2-day seminar was held on "Vegetable cultivation in Peri-Urban areas of Delhi", and an agricultural exhibition was also organized by Krishi Vigyan Kendra, Delhi.

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Polyfarming Harvest *Mela* and Interaction Meet

Kakdwip, 11 March 2011. The Kakdwip Research Centre (KRC) of the Central Institute of Brackishwater Aquaculture (ICAR) has been demonstrating the on-farm trial of polyfarming of fishes along with shrimps in the mangrove area on integrated basis, under an NAIP Project, at the farm of Mr Subhrangsu Jana, a farmer at Uttar Chandan Piri, Namakhana, 24 Paraganas (South), West Bengal since June 2010.

To popularize the polyfarming technology and to have an interaction among the stakeholders in Sunderban area, an interaction meet was organized at farm site, Uttar Chandanpiri. Mr Subhrangsu Jana shared his experience with all other farmers of 24 Paraganas (South) district. He emphasized on the importance of brackishwater aquaculture in Sunderban and how it can be done without harming the natural environment. He explained about the economic gain of polyfarming in Sunderban area with an amount of ₹ 1.5 lakh/ha/crop from the polyfarming of the fishes grey mullet, stripped mullet, pearlspot and the tiger shrimp *Penaeus monodon*. Dr A. G. Ponniah (Director, CIBA) complimented the farmer for his success in polyfarming venture. The beneficiaries of the NAIP project were given agricultural farm implements on that occasion and beneficiaries from other adopted villages were taken to the farm site for motivating them. They witnessed the harvest and expressed their happiness by seeing a successful venture of polyfarming.

Recommendations

1. To develop a seed bank for all brackishwater fish and shrimp in Namakhana area for easy accessibility and constant supply to the small farmers.
2. To develop easy marketing channel for farm produce within the Sunderban area.
3. Provision of proper and constant technical guidance to all farmers irrespective of the species and culture habitats (freshwater or brackishwater).
4. Conducting more awareness programmes on recent advances in brackishwater aquaculture and preparation of printed material or video discs in local language.
5. Conducting more awareness programmes on the importance of sustainable and environment friendly brackishwater aquafarming in the fragile ecosystem of Sunderban mangroves.

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ICAR Zonal Tournament of Eastern Zone

Izatnagar. A five-day ICAR Zonal Tournament of Eastern Zone was inaugurated at Indian Veterinary Research Institute by Dr R.B. Singh (President, National Academy of Agricultural Sciences, New Delhi) who emphasized the importance of games and sports and said that a true sportsman knows how to handle pressure situation of life with smiling face. The zonal tournament was hosted and organized by IVRI, Izatnagar where, more than 400 sports persons representing 14 ICAR institutes of Eastern and North-Eastern regions participated. The Chief Guest of the closing ceremony was Dr S.A.H. Abidi (Former Member, Agricultural Scientists' Recruitment Board, ICAR, New Delhi).He congratulated the winners and encouraged them by presenting trophies, medals and certificates. Prof. M.C. Sharma, Director IVRI, remarked that this kind of activities provide a very good opportunity to all the sportspersons to express their sportsman sprit and skills during the tournament.

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World Veterinary Day

Izatnagar, 30 April 2011. The Indian Veterinary Research Institute organized a two-day World Veterinary Day Celebrations at its Izatnagar campus under the Chairmanship of Prof. M.C. Sharma, Director, IVRI. During the occasion, a free vaccination-cum-health check up camp for small and large animals was inaugurated by the Director. In the camp free treatment and vaccination against rabies were given to more than 300 animals. An extempore elocution and quiz competitions were also organized for the students of IVRI and prizes distributed to the winners.

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Tenth Convocation of Central Institute of Fisheries Education

Mumbai, 9 April 2011.The Tenth Convocation of the Central Institute of Fisheries Education was held on 09 April 2011 at its newly-developed Yari Road Campus. Dr M. S. Swaminathan, a Member of Parliament (Rajya Sabha) and Chairman, M.S.Swaminathan Research Foundation, Chennai, graced the occasion as the Chief Guest. While delivering the Convocation Address, he congratulated the recipients of degrees and medals, and suggested that CIFE's vision should be to become a global player in specialized human resource development in fisheries with academic and research excellence. He advised the students to take up such programmes that could save the coastal communities from natural calamities like earthquakes, tsunamis and natural disasters. He asked the scientists and scholars to

give thought to methods of enhancing powers to the coastal communities to cope up with mega-disasters and incorporate such degree programmes at CIFE so that the fishing communities get prepared to adapt themselves to such disasters

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XXVII Convocation at Mahatma Phule Krishi Vidyapeeth

Rahuri, 25 April 2011. The XXVII Convocation of Mahatma Phule Krishi Vidyapeeth, was organized at the central campus, Rahuri. His Excellency the Governor of Maharashtra and Chancellor Shri K. Sankaranarayanan, presided over the function.Dr T.A. More, Vice-Chancellor of this University reviewed the progress and informed that the infrastructure was developed and ultra modern research facilities were created for the Post-graduate and Ph.D. students.

Dr Vijay Bhatkar, Director, ETH Research Laboratory, Pune, elaborated the vision for advanced education and research in agriculture and role of Information and Communication Technology (ICT) in achieving agrarian prosperity in India. He said that there is a great scope for integrating ICT in agriculture. He added that we require now the Second Green Revolution that is sustainable, integrative and inclusive.

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Attention Contributors

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On-line Journal of Fisheries Launched

Visakhapatnam, 11 June 2011. Dr S Ayyappan, Secretary (DARE) and Director General (ICAR), launched the on-line *Indian Journal of Fisheries* on the ICAR website. He also inaugurated the newly extended wing of the Central Marine Fisheries Research Institute-Central Institute of Fisheries Technology lab-cum-office complex. Dr Ayyappan also dedicated the mariculture laboratories of the Visakhapatnam Regional Centre of CMFRI to the nation.

Dr S. Ayyappan in his inaugural address commented the efforts and contributions of the scientists and staff of the two centres. He highlighted the need for increasing the fish production of the country with innovative technologies like that of open sea cage culture initiated by CMFRI. He also commented the strides made by CIFT in processing of new fish species like *Pangasius* which led to increased profits for *Pangasius* farmer. Dr S. Ayyappan emphasized the importance of high value products from fish which would be the focus of the National Agricultural Entrepreneurship Project to be launched by the ICAR soon.

Dr B Meenakumari, DDG (Fisheries) emphasized that the fisheries sector is the most powerful in employment generation as well as income generation. She emphasized that the centres of CMFRI and CIFT at Visakhapatnam were key centers for fisheries research on the East coast of India. She highlighted the achievements of green mussel spat production and greasy grouper brood stock maintenance by CMFRI and enhanced hygienic conditions of fishing harbours by CIFT.

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Visits

DG, ICAR visits IISR

Calicut, 30 April 2011. Dr S Ayyappan (Director General, ICAR and Secretary, DARE) visited the Indian Institute of Spices Research, and appreciated the on-going research programmes of the Institute. He also advised the young scientists to take up challenges in the field of agricultural research. "The institute should also take initiative for expert consultancy in areas of germplasm conservation and value addition of spice crops," he added. He visited the Library, Bioinformatics Centre, and various laboratories. Having a look at the working of ARISOFT, the office automation software, he complimented the efforts of Director and staff in making IISR a paperless office. Dr S Ayyappan visited the Experimental farm and Krishi Vigyan Kendra of the Indian Institute of Spices Research at Peruvannamuzhi.

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Deputy Director General visits KVK

Dr K.D. Kokate, DDG (Agricultural Extension), ICAR visited six KVKs of Zone-II in West Bengal and Bihar to assess the performance of the KVKs, status of infrastructure development and to interact with farmers, KVK personnel and university authorities on various KVK related issues. In KVK, Nadia of West Bengal, he appreciated the efforts of the KVK staff and advised them to develop suitable mechanization for disposing the planting materials and further enhancing revolving fund. In Katihar and Purnea KVKs of Bihar, he interacted with group of farmers. At Purnea, farmers requested for scientific method of makhana cultivation (locally called 'Black Gold').In KVK Araria and Kisanganj, the DDG (Agricultural Extension) stressed on selecting crop/agroforestry having the traits to withstand waterlogging. At KVK, Uttar Dinajpur,West Bengal, he requested for coordinated efforts to develop roadmap on fishery development for all the KVKs of West Bengal.

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Trainings

- 'Pest and Disease Management of major spice crops of Goa' on 20 April, 2011 at ICAR Research Complex for Goa.
- 'Disease Diagnostic and Management in Brackish water Aquaculture' at Kakdip Research Centre of the CIBA , Kakdip, West Bengal from 9 to 13 May, 2011.
- 'Statistical Techniques for Data Collection and Analysis', from 25 April to 7 May, 2011.
- 'Data Analysis Using SAS at Pt. Deen Dayal Upadhayaya Veterinary University and Gau-Anusandhan Sansthan, Mathura by IASRI, New Delhi from 16 to 21 May, 2011.
- 'Disease Diagnostics And Management In Brackish Water Aquaculture' at Kakdwip Research Centre, CIBA from 9 to 13 May 2011.
- "Processing of meat and poultry products," at IVRI, Izatnagar from 8 to 9 June 2011.
- 'Recent Advances in Freshwater Aquaculture' from 15 to 20 June, 2011 in a bid to hone the skills of District Fishery Officers of Bihar.

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Personnel

Protocol Activities

- A 3-member Afghan delegation headed by H.E. Mr. Abdul Rahman Ghafoori (President General of Central Statistics Organization, Government of Afghanistan) visited Chadhury Charan Singh Haryana Agriculture University, Hisar on 1 June 2011.
- Dr Abdul Islam(Senior Scientist, ICAR Research Complex for Eastern Region, Patna) participating in the Global Research Alliance and Norman E. Borlaug International Agricultural and Science and Technology Fellowship Programme 2010 for training and collaborative research in the area of Climate Change at Colorado State University, USA from 1 April to 30 June 2011.
- Dr S. Ayyappan (Secretary, DARE and DG, ICAR) visited Rome to participate in the meeting pertaining to future-collaboration between ICAR and the Biodiversity International at Rome, Italy from 25 to 28 June 2011.
- Dr T.P. Trivedi (Project Director, DKMA) visited Dhaka, Bangladesh for participation in the Training Workshop on Coherence in Information for Agricultural Research for Development (CIARD) and strengthening RAIS in the SAARC Countries from 10 to 12 May 2011 at BARC Complex, Dhaka, Bangladesh.
- Dr Usha Moza (Principal Scientist, Fisheries Division, ICAR Hqrs., New Delhi) visited Paris, France from 18 to 20 May 2011 as a member of the Indian delegation led by Additional Secretary (Agriculture), Department of Agriculture and Cooperation.
- Shri Rajiv Mehrishi(Additional Secretary, DARE & Secretary, ICAR) visited South Africa from 28 May to 1 June, 2011 to work out the Work Plan under the Mo U signed between India and South Africa.
- Dr K.M.L. Pathak (Deputy Director General, Animal Sciences) and Dr Amit Kumar Vasisht, Assistant Director General (Plan Implementation & Monitoring), ICAR visited Kenya and South Africa from 26 May to 3 June, 2011 to discuss livestock issues at International Livestock Research Institute, Kenya, Nairobi; and to work out the Work Plan under the MoU signed between India and South Africa.
- Dr Swapan Kumar Datta, Deputy Director General (Crop Science), ICAR visited, USA to attend (i) Meeting on Wheat and Rice at Ithaca, New York, USA from 9 to 11 June, 2011; and (ii) Workshop on Wheat Rust under the Borlaug Global Rust Initiative at St. Pau, Minnesota, USA from 13 to 14 June, 2011.

Appointments

- Dr S Arulraj is appointed as Director in Directorate of Oilpalm Research, Pedavegi on 19 April, 2011.
- Dr K.S. Varaprasad is appointed as Project Director in Directorate of Oilseeds Research, Hyderabad on 1 May, 2011.
- Dr Indu Sharma is appointed as PD in Directorate of Wheat Research, Karnal on 1 May 2011.
- Dr Habibar Rahman is appointed as PD in Project Directorate Animal Disease Monitoring and Survellance, Bengaluru on 1 May 2011.
- Dr V.P.Singh is appointed as Joint Director (Academic) at IVRI, Izatnagar on 3 May, 2011.
- Dr K.C. Pandey is appointed as Project Coordinator in CIAE, Bhopal on 2 June 2011.
- Dr R.K. Gupta assumed the charge of Director, CIPHET, Ludhiana on 22 June 2011.

Retirements

- Dr D.M. Hegde (PD, Directorate of Oilseeds Research, Hyderabad) retired on 30 April 2011.
- Dr S.S. Singh (PD, Directorate of Wheat Research, Karnal) retired on 30 April 2011.
- Dr K Prabhudas (PD, Project Directorate Animal Disease Monitoring and Survellance, Bengaluru) retired on 30 April 2011.
- Dr V.A. Parthasarthy (Dir., Indian Institute Spices Research, Calicut) retired on 30 April 2011.
- Dr N.K. Tyagi (Member, ASRB) has completed his tenure on 12 June 2011.
- Dr R.J. Rabindra (Director, National Bureau of Agriculturally Important Insects, Bengaluru) relieved on 30 June 2011.

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