



19. Partnership and Linkages

The International Cooperation in ICAR/DARE has been operating through the MoUs/Work Plans signed with various countries/International organizations with ICAR/DARE as the Nodal Department, and through participation of ICAR/DARE in the MoUs/Work Plans signed by the Department of Agriculture and Cooperation as the Nodal Department. Besides, Ministry of Science and Technology has developed Programme of cooperation with various countries and international organizations in which ICAR/DARE is the participating agency in the field of agricultural research. The Joint Commissions/Working Groups constituted by the Ministry of External Affairs, and the Ministry of Commerce have the component of agricultural research in which DARE participates directly or through the Department of Agriculture and Cooperation.

DARE organizes visits of foreign nationals on request. The Department also receives proposals for customized training courses for foreign nationals.

Work Plans

The following Work Plans have been signed during 2013-14 between ICAR and other institutions:

- Work Plan between ICAR-CIP
- Work Plan between ICAR-Bioversity International
- Work Plan between ICAR and INIA, Chile

MoU

- Memorandum of Understanding between School of Veterinary Medicine Pennsylvania, USA and ICAR signed on 21 August 2013 through exchange of letter.

Major Events

1. A group of 18 farmers from India and 2 officers of DARE/ICAR visited Malaysia from 14 to 23 April 2013 under ASEAN-India Cooperation.
2. The 3rd meeting of the ASEAN-India Working Group on 'Agriculture and Forestry' was held from 6 to 7 May 2013 in India.
3. The third issue of the *India-ASEAN Newsletter*



on Agriculture and Forestry was released during the 3rd ASEAN-India Ministers' Meeting on 'Agriculture and Forestry' held in Kuala Lumpur, Malaysia on 28 September 2013.

Collaborative Projects with ICAR

Following projects were approved for implementation :

- 'Improving food and Livelihood Security in Punjab through Water-Energy-Agriculture Management under climate change and variability centre'. Its partners are Punjab Agricultural University, Ludhiana, and International Development Research Centre (IDRC), Canada with the trustee of Columbia University, USA.
- 'Ensuring food security: harnessing science to project our grain harvest from insect threats project' was received from IARI, New Delhi and funded by Department of Science and Technology. Its partners are Australia (University of Queensland) and India (TNAU, IARI etc) under AISRF fund.
- 'Collection and evaluation of data for NIAS gene bank sorghum genetic resources under tropical climate condition being operated by CPBG, TNAU, Coimbatore. It was funded by NIAS, Tsukuba, Japan.
- 'Exploitation of Inter-Specific Biodiversity of Wheat Improvement' was funded by BBSRC, BMGF, DFID, ICAR (DWR, Karnal) and Department of Biotechnology. Its partners are DWR, Karnal, ARI, Pune, UK and Australia.
- 'Using rainwater harvesting for resilient local groundwater management in the presence of saline aquifers' was received from MPUAT, Udaipur and WTC (IARI) in collaboration of University of Western Sydney, Australia and funded by the Department of Science and Technology under AISRF fund. Its partner are Water Technology Centre, IARI, New Delhi and University of Western Sydney, Australia and MPUAT, Udaipur.
- 'Evaluation of three phase micro-nano-emulsion based delivery systems for selected nutraceuticals for intend use in functional foods' was received from NDRI, Karnal under India-Ireland cooperative science programme.
- 'Safe water for the future through Indo-Oz Network' was received from NBFGR, Lucknow. Its partner are Commonwealth Scientific and Industrial Research Organization (CSIRO), Australia, and NBFGR, and IITR, Lucknow.
- 'Value adding the gastropod fisheries and



- Aquaculture industry in India and Australia’.
- ‘Sustainable mariculture and Strategic research into Muricidae molluses for nutraceutical development’ was received from CMFRI, Kochi.
 - ‘Sustainable marine food security and carbon challenges under a changing climate in Australia and India’ was received from CMFRI, Kochi under DST-DIISR through AISRF fund.
 - ‘Application of dynamic simulation models to establish erosion-productivity relationships and soil organic carbon sequestration potential for a future changing climate’ was received from CSWCRT&I and Dehra Dun.
 - ‘US-India consortium for development of Sustainable Advanced Lignocellulosic Biofuel system (SALBS)’ was received from DSR, Hyderabad.
 - The research project ‘Enhancing resource uptake from roots under stress in cereal crops’ was funded by Sirium Minerals, PLC, United Kingdom at University of Agricultural Sciences (UAS), Bengaluru.
 - ‘Tracking finger millet blast pathogen interaction and durable resistance source using genetic and genomic tools’ as per the “Indo-Swiss” collaboration in Biotechnology (ISCB) call by DBT for association of Dr Dipnarayan Saha, PS, NBPGR, New Delhi as a collaborator under “Indo-Swiss” collaboration.
 - ‘Molecular epidemiology and rapid protection against Salmonellosis in India Pig Herds’ to support FADH research was received from NRC on Pig, Guwahati, Assam.
 - ‘Control of Newcastle disease and Infectious bursal disease in Poultry using Nano- particles stabilized pDNA and mRNA vaccines’ was received from IVRI, Izatnagar under DBT-BBSRC for collaborative proposals to support FADH.
 - ‘Development of Multiplexed diagnostic biosensor for infectious reproductive disease of cattle and buffaloes’ was received from IVRI, Izatnagar under DBT-BBSRC call for collaborative proposals to support FADH.
 - ‘Genetic diversity of wheat root micro-biome and its manipulation for improved productivity under drought stress in Australian and Indian environments’ was received from IARI, New Delhi.
 - ‘Global learning for local solution: Reducing Vulnerability of Marine-dependent coastal Communities’ was received from CMFRI, Kochi in collaboration with the Rhodes University, South Africa and other partner countries under MoES, India.
 - ‘DNA barcoding, molecular phylogenetic and evolutionary genetics of fish inhabiting Russian far East and Indian Water’ was received from NBFGR, Lucknow in response to the call from the DST-Russian Foundation for Basic Research.
 - ‘Development of Novel molecular diagnostic tests and Vaccination strategies for viral disease of cultured Salmonids’ was received from DCFR, Bhim Tal, Naini Tal.
 - ‘Revealing key immune molecules and pathway that underlie resistance or Susceptibility to white spot disease in wild and cultured decapods crustacean’ was received from CIBA, Chennai.
 - ‘Using ancestor plants to make rice more resilient to increasingly unpredictable water availability’ was received from CRRI, Cuttack under Joint call proposal for SCPRID.
 - ‘Molecular characterization of the causal agent of Epizootic Ulcerative Syndrome (EUS), *Aphanomyces invadans* and immune responses in farmed fish’ was received from NBFGR, Lucknow under BBSRC-DBT call for proposal to support FADH.
 - ‘Development and evaluation of novel nano-particle fish vaccine, delivery systems and associated diagnostic assays for economically important pathogens’ was received from CIFA, Bhubaneswar and called for support FADH.
 - ‘Genetic, Genomic and nutritional interaction of host resistance to internal parasites in Sheep’ under the joint call given by DBT(India) and BBSRC (UK) jointly submitted by CSWRI, Avikanagar, Rajasthan and NARI, Phaltan, Maharashtra.
 - ‘Generation of novel anti-tick vaccine against *Hyalomma anatolicum anatolicum* and *Rhipicephalus annulatus* via a reverse vaccinology approach’ was received from IVRI, Izatnagar under the joint call given by DBT and BBSRC on FADH.
 - ‘Development of high performing fish strains for sustainable aquaculture in Australia and India using state-of-art techniques’ was received from Central Institute of Freshwater Aquaculture (CIFA), Bhubaneswar under Indo-Australia collaboration for DBT-DIISR joint Research project.
 - ‘Root-shoot signaling in dry soils; consequences for root and shoot architecture and yield in wheat’ was received from IARI, New Delhi.
 - ‘Provision for Plant Protection and Quarantine Department Staff of the Ministry of Agriculture, Irrigation and Livestock of the Islamic Republic of Afghanistan in Plant Pest and Disease Diagnosis’ was received from the TNAU, Coimbatore.
 - ‘Comparative studies on zoonotic poxvirus isolates from India and Brazil- a biological and genome approach’ was received from the NRC on Equine, Hisar in collaboration with UFMG, Brazil under India-Brazil Inter-Governmental Programme of cooperation in Science and Technology.
 - ‘Expanding the *Brassica* germplasm base through collaboration with China and India’ was received from Punjab Agricultural University, Ludhiana.



- 'Improving food and Livelihood Security in Punjab through Water-Energy-Agriculture Management under climate change and variability centre'. Its partner are Punjab Agricultural University, Ludhiana, and International Development Research Centre (IDRC), Canada with the trustee of Columbia University, USA.
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Fund release to CG Institutes

India is donor member to CGIAR, therefore DARE/ICAR have made provisions both in Plan and Non-



Plan budget for donating fund to CGIAR System in 2013-14.

CENTRAL AGRICULTURAL UNIVERSITY

Imphal: The Central Agricultural University Act empowers CAU, Imphal to establish need based Agricultural Education Institutions in the North-Eastern Hills Region of India covering the 6 states (7 campuses) offering 9 undergraduate, 34 postgraduate and 11 Ph.D.courses.

The intake capacity of all undergraduate programmes is 378, out of which 287 students were admitted and 218 students passed out during 2013-14. The postgraduate students' intake in College of Agriculture, Imphal (48), Veterinary and Animal Husbandry, Aizawl (72), Horticulture and Forestry, Pasighat (10), Fisheries, Tripura (30), postgraduate studies, Barapani (48) and Agricultural Engineering and Post-harvest Technology, Sikkim (06) offers 34 postgraduate programmes with total intake capacity of 214, 107 students admitted and 50 students passed out (from 1 April, 2013 to 31 October, 2013).

Major deliverable/recommendable achievements of research in CAU

- A modern rice variety CAU-R3, a 100 days duration and plant height of 90 cm with an average rice yield of 4 tonne/ha was released for cultivation in the name of *Mangalphou* by the State Variety Release Committee as a contingency crop which can be sown as early as 1 March and as late as 1 August.
- A new rice variety CAU-R4, a 145 days duration and plant height of 145 cm with an average rice yield of 4 tonnes/ha was released for cultivation in the name of *Eenotphou* by the State Variety Release in Committee for general cultivation in low lying semi-deep water ecosystem, locally known as *Patlou* and as a component variety for paddy-cum-fish farming.
- The technology was standardized to grow pulses and oilseeds in rice fallow during *rabi* through exploration of rain- water harvesting opportunities. The highest yield income was obtained from pea followed by Lathyrus, lentil and rapeseed under local conditions of Manipur valley.
- Production technique of virus free planting materials in Khasi mandarin was standardized. Seventy one orchards along the Basar region of Pasighat were thoroughly studied for detection of *Citrus Tristezaclustero Virus* (CTV) and *Citrus Exocortis viroid* (CEVd). The detection of CTV was done by bioassay of CTV with indicator plant, enzyme-linked immunosorbent assay and diagnostic strips and CEVd by bioassay of CEVd and RT-PCR. Seeds from virus free citrus plants were sown and budded with the buds collected from selected virus free mother plants. Thirty



thousand certified budded planting material has been produced for distribution to farmers.

- Pineapple production in North-East India is 40% of the total production of the country but due to inadequate market facilities, high bulk and less price (less than ₹ 5/piece), lack of storage infrastructure, improper transport facilities, most of the produce are spoiled/wasted. A process of value added product development of pineapple powder was standardized using pineapple produced in the region for better storability and wider markets.

Achievements of CAU quality seed production:

Visualizing the need of quality seed production in NEH Region, the Central Agricultural University has started quality seed production. A large-scale demonstration of growing second crop of mustard following rice-harvest over an area of 1,100 ha in Manipur was conducted on farmers fields. This could add more than 7,700 q of mustard oilseed basket in Manipur.

Bundelkhand: The Department of Agricultural Research and Education has proposed establishment of Central Agricultural University for Bundelkhand Region, which covers 13 districts, i.e. 7 districts (Jhansi, Jalaun, Lalitpur, Banda, Chitrakoot, Hamirpur and Mahoba) of Uttar Pradesh; and 6 districts (Sagar, Damoh, Tikamgarh, Panna, Chatarpur and Datia) of Madhya Pradesh

'The Rani Lakshmi Bai Central Agricultural University Bill, 2013' is pending in the Rajya Sabha for the purpose.

OTHER ACTIVITIES OF CAU

(A) Foreign deputation cases

Following type of cases of deputation/training/study abroad/ foreign assignment/ position and the exchange of seeds/germplasm were attended to foreign countries.

- (i) Processing of applications for various training programmes abroad under various foreign governments announced by Department of Economic Affairs. DBTs Crest Award and DSTs BOYCAST Fellowship Programme against DBT/ DST open advertisements. UN/International organizations, International agencies in various fields of agricultural research and education.
- (ii) Processing of applications for various fellowships/ scholarships announced by ICAR, HRD, DST, CGISR organization, foreign governments, etc. for higher studies/ research/ Ph.D./Post-Doctoral Research abroad.
- (iii) Forwarding of applications of the Scientists for foreign assignments in foreign governments and International organizations.
- (iv) Circulation of vacancies notified by the CGIAR organizations, other International organizations/ agencies such as ADB, World Bank, Commonwealth Secretariat, United Nations, etc.

Number of foreign visit cases finally approved by the Competent Authority (CCA) during November, 2012 to November, 2013 are given here.

(B) Germplasm exchange matters

1. Biodiversity encompasses the variety of all life on earth. India is one of the 12-mega diverse countries of the world. With only 2.5% of the land area, India already accounts for 7.8% of the global recorded species. India is also rich in traditional and indigenous knowledge both coded and informal.
2. Biodiversity is a multi-disciplinary subject involving diverse activities and actions. The stakeholders in biological diversity include the Central Government, State Governments, institutions of local self-governmental organizations, industry, etc. One of the major challenges before India lies in adopting an instrument, which helps realise the objectives of equitable sharing of benefits enshrined in the Convention and Biological Diversity.
3. The Department of Agricultural Research and Education (DARE) and the ICAR have a rich tradition of exchange of plant genetic resources with several countries. These resources are crucial for enhancing productivity and quality of our crops. No country is self-sufficient in these resources and the future of crop improvement programmes depends on active international cooperation in the area of exchange of genetic resources.
4. Essentially, the germplasm exchange programme of DARE/ICAR through bilateral MoUs with other countries has been on a *quid pro quo* basis.
5. The cases of export of germplasm are processed in IC Division as per the provisions/ guidelines of the Biological Diversity Act, 2002 and the Biological Diversity Rules, 2004 also subject to guidelines/ notifications issued by Ministry of Environment and Forests, from time to time.
The six Bureaus/Institutes under ICAR system have been designated by the Ministry of Environment and Forests to act as repositories under the Bio Diversity Act, 2002 for different categories of biological resources:
 - (i) NBPGR : for exchange of plant germplasm
 - (ii) NBAGR : for exchange of animal germplasm
 - (iii) NBFGR : for exchange of fish germplasm
 - (iv) NBAII : for exchange of germplasm of agriculturally important insects
 - (v) NBAIM : for exchange of germplasm of agriculturally important micro-organism
 - (vi) IARI : for exchange of germplasm of algae fungal.
6. Cases of germplasm exchange are processed in DARE for approval of the competent authority





in consultation with the Bureaus/Institutes/Subject Matter Division.

7. In the area of exchange of genetic resources, 26 cases received from friendly foreign governments/government sponsored agencies /International Organization agencies were processed in accordance with the provisions of Biodiversity Act and further guidelines notified in this regard. Approval of the competent authority in respect of 15 cases were conveyed.

AGRINNOVATE INDIA LIMITED

Agrinnovate India Limited is incorporated on 19 October 2011 as a Section 3 “For Profit” Company under the Companies Act, 1956 (No. 1 of 1956). It is owned by the Government of India and is under the administrative control of the Department of Agricultural Research and Education, Ministry of Agriculture. The authorized capital of the company is ` 100 crores and the initial paid up capital is ` 50 crores.

It has a specific focus on providing technical support in the form of consultancies, contract research, contract service, and customized capacity building for turnkey project etc. with committed technical backstopping provided by network of the ICAR institutions.

The Company, Agrinnovate India Limited through a corporate framework, shall add to the availability of such quality products and services in the market and take initiatives for global brand building.

Commercialization of Tissue Culture Technology of oilpalm: Agrinnovate India Ltd. has taken the initiative of transferring the technology for tissue culture of oil-palm developed by the Directorate of Oil-Palm Research (DOPR), Pedavegi. The technology at the laboratory- scale has been licensed on a non-exclusive basis to M/s Beejo Shetal for undertaking further developmental work on the technology.

Turnkey projects: To augment the eradication of the Foot-and-Mouth Disease (FMD) and to increase the availability of FMD vaccine, Agrinnovate India Ltd. has taken up the establishment of a modern plant with a capacity to produce 100-150 million doses of FMD vaccine under Public-Private Partnership mode at Yelahanka campus of Indian Veterinary Research Institute, Bengaluru. Through this initiative, the Company endeavours to augment the availability of vaccine thus supporting the Foot-and-Mouth Disease Control Programme launched by the Department of Animal Husbandry Dairying and Fisheries.

To further strengthen the Indo-Africa relationship, Ministry of External Affairs has launched the Indo-Africa Forum Summit-II. Agrinnovate India Ltd. is also assisting DARE on projects related to establishment of eight centres each for Soil, Water and Tissue Testing Laboratory, Farm Science Centre and Agricultural Seed Production-cum-Demonstration Centre in different countries in Africa.

Capacity building: Agrinnovate India Ltd. is working in collaboration with well-equipped state-of-art laboratories and world-class faculty of the ICAR Institutes to harness the opportunities for meeting the existing global demand for skill development and capacity building. The initiatives taken by the Agrinnovate India Ltd. in this context include:

Training-cum-workshop on Conventional and Molecular techniques for diagnosis of trans-boundary animal diseases: Realising that highly pathogenic and economically devastating transboundary disease respect no boundaries, a training-cum-workshop has been designed in collaboration with High Security Animal Disease Laboratory, Indian Veterinary Research Institute, ICAR, Bhopal. The programme would benefit 20 participants, (in two batches of 10 participants) from ASEAN Member States by enhancing their knowledge and capability for diagnosis of trans-boundary animal diseases by strengthening their technical and practical skills based on conventional and molecular techniques; and enable them to make early diagnosis for effective control of the diseases in their countries.

Training on IT Application for Agricultural Extension (e-Extension): The success of India for the advancement in IT application for agricultural extension or e-Extension at different levels from national, regional, provincial, to community levels is well-recognized. Capitalizing on this strength, Agrinnovate India Ltd. has developed a training programme in collaboration with Agriculture Extension Division of ICAR and National Academy of Agricultural Research Management, ICAR, Hyderabad, India on IT Application for Agricultural Extension (e-Extension).

Training on effective National Seed Quality Control System: To enhance the food security and the national agricultural production, quality seed of all kinds and varieties is a dominant and critical input. India has a well established quality seed production system with adequate safeguards for quality assurance to maintain the seed purity as it flows from the breeder to the farmer. To share these experiences and provide an opportunity to 22 participants from ASEAN Member States for capacity building, a training programme on Organizing and implementing an effective National Seed Quality Control System is being organised at Directorate of Seed Research, Mau.

West Africa Agricultural Productivity Programme: Agrinnovate India Ltd. has taken the initiative to partner with West Africa Agricultural Productivity Programme that intends to sponsor researchers and technical staff from Nigeria. These include 30 days training on Chick Vent Sexing to be organized in collaboration with Central Avian Research Institute, ICAR, Bareilly and a three weeks training on ‘Seed Quality Assurance’ to be organized at the Division of Seed Science and Technology, Indian Agricultural Research Institute, New Delhi.





OTHER ACTIVITIES OF DARE

Consultancies

Following deputation/ consultancy proposals were submitted.

Dr (Mrs) R. Manimekalai (Senior Scientist, CPCRI, Kasaragod) was appointed as a FAO-TCDC Consultant in project 'Development of capacities for early diagnosis, surveillance, spread prevention and integrated management of Weligama Coconut Leaf Wilt Disease' in Sri Lanka – Second Mission (duration from 23 March to 7 April, 2013).

Dr V.S. Santhosh Mithra (Senior Scientist, CTCRI, Thiruvananthapuram, Kerala) provided consultancy services to Michigan State University, USA as a Visiting J-1 Short-term Scholar from 30 March to 8 April 2013.

Dr U.C. Sud [Director (Acting) and Head, Division of Sample Survey, IASRI, New Delhi] provided consultancy services to Bangladesh Bureau of Statistics, Bangladesh in identifying and implementing a harmonized Crop-Cutting Experiments/Methodology under the FAO – TCP (the Bangladesh Project) Project as a TCDC Consultant to Bangladesh for 80 days–Third mission of consultancy duration from 20 to 30 April 2013; and Fourth mission of consultancy (duration from 17 to 26 September 2013).

Dr Hukum Chandra (Senior Scientist, IASRI, New Delhi) provided consultancy within the framework of the FAO project on 'Statistics from Space-support to Ethiopia to Improve Agricultural Statistics in Ethiopia as a consultant/Sampling Expert' from 27 July to 17 August, 2013.

Dr P. S. Naik (Director, IIVR, Varanasi) worked as a FAO/TCDC Consultant for international consultancy under Vanuatu's project TCP/VAV/3402 – Enhancing Capacity in Vegetable Production; (duration from 16 August to 4 October 2013).

Dr S.Anandan (Principal Scientist, Animal Nutrition Division, NIAN&P, Bengaluru) provided consultancy services to regional office, International Livestock Research Institute C/o ICRISAT, Patancheru, Andhra Pradesh for assisting in the activities of on going projects of ILRI for 60 days through multiple visits at ILRI, Hyderabad spread over two calendar years (2013 and 2014).

- Dr (Mrs) Prachi Mishra Sahoo (Senior Scientist, IASRI, New Delhi) provided short-term consultancy in Sampling as Expert in the field of 'Geographic Information System and Remote Sensing in Agriculture to Ministry of Agriculture, Sultanate of Oman from 15 September to 10 October, 2013 under the programme of African-Asian Rural Development Organization, New Delhi.
- Dr Renu Pandey (Senior Scientist, IARI, New Delhi) provided consultancy on 'Metabolic Pathways of Nutrient in Plants Applied on Foliage' for Virtual Fertilizer Research Centre Programme Office, Washington DC, USA.

- Dr George V. Thomas (Director, CPCRI, Kasaragod) provided consultancy on 'Coconut Sector Development in Asia and the Pacific Region' from 30 October to 1 November, 2013 at Bangkok, Thailand.

International Conferences/Workshops

More than sixty International Workshops/Conferences were held. Some of the International Conferences/Workshops are given here.

- Borlaug Global Rust Initiative (BGRI) technical workshop 2013 held at New Delhi from 19 to 22 August, 2013.



- International seminar on 'Greening Aquaculture and Fisheries' held at Society of Fisheries Technologists, Cochin from 18 to 20 April, 2013.
- International conference on 'Tropical Roots and Tubers for Sustainable Livelihoods under changing agro-climate' held at CTCRI, Thiruvananthapuram (Kerala) from 09 to 12 July, 2013.
- Organizing/ hosting of IX Session of the Technical Committee of Centre for Sustainable Agricultural Mechanization in 2013 in India by the Indian Council of Agricultural Research.
- International conference on 'Impact of Technological Tools on Food Security under Global warming Scenario' held at Shobit University, NH-58, Modipuram Meerut (Uttar Pradesh) from 11 to 12 May, 2013.
- Two day workshop on 'Emerging Practices of Open Educational Resources in Higher Education and Training' held at NAARM, Hyderabad from 16 to 17 May, 2013.
- International workshop on 'Status of Aquaculture in the SAARC Countries' held at Central Marine Fisheries Research Institute, Kochi from 5 to 7 June, 2013.
- International conference on 'Global Consultation on Millets Promotion for Health and Nutritional Security held at Directorate of Rice Research Auditorium, Rajendra Nagar, Hyderabad (Andhra Pradesh) from 18 to 20 December, 2013.
- Inception workshop/meeting on 'Regional Adaptive Trial on Selected Pulses in SAARC



member countries' held at National Bureau of Plant Genetic Resources, New Delhi from 12 to 13 July, 2013.

- Fourth International conference on 'Landscape and Urban Horticulture' held at Science City Auditorium, Kolkata (West Bengal) from 12 to 14 September, 2013.
- International conference on 'Role of Plant Biochemistry and Biotechnology in Food and Nutritional Security' held at Sri Venkateswara University Campus, Tirupati (Andhra Pradesh) from 11 to 14 December, 2013.
- World Agricultural Forum Congress, 2013 and Agri-Tech Trade Fair held at Hyderabad International Convention Centre, Hyderabad (Andhra Pradesh) from 4 to 7 November, 2013.
- Bayer Crop Science Limited International event on 'Rice Future Forum 2013' organized at Gurgaon (Haryana) from 8 to 10 October, 2013.
- Indo-German Bilateral workshop on 'Microbial Ecology and Application of inoculants in bio-control' held at IARI, New Delhi from 7 to 10 April, 2014.
- International conference on 'Agrarian' issues held at Kerala Institute of Local Administration, Thrissur, Kerala from 9 to 12 January, 2014.
- 'SOYCON-2014: International Soybean Research Conference' to be held at Indore in collaboration with Directorate of Soybean Research, Indore (Madhya Pradesh) from 22 to 24 February, 2014.

Foreign scientist(s) to India

- Dr Jens Vanselow (German PI from Gene Expression Laboratory, Germany) visited NDRI, Karnal from 3 to 24 April, 2013 under DST-DAAD Project based personnel exchange programme on 'Understanding the role of micro-RNA (miRNA) mediated gene regulation during folliculogenesis and luteinization: a comparative study in buffalo and cow'.
- Dr Samartha Thankappan (Lecturer, University of York, United Kingdom) visited CRRI, Cuttack under the project 'Using wild ancestor plants to make rice more resilient to increasingly unpredictable water availability' from 16 to 17 August, 2013.
- Dr V. Puvanendran (Senior Scientist, Project Leader-FK Norway-Nofima Feasibility Study, Nofima) and Dr Atle Gudmund Mortensen (Project Leader-FK Norway-Nofima Feasibility Study, Norway) visited Central Inland Fisheries Research Institute, Barrackpore from 15 to 19 September, 2013.
- Dr (Ms) Jenny Stauber (Deputy Chief); Dr (Ms) Anupama Kumar (Principal Research Scientist), Dr Peter Bain (Scientist), and Ms Merrin Adams (Ecotoxicologist) will attend the training workshop on 'Ecotoxicology' under the AusAID

No. of approved cases pertaining to fellowship/scholarship/position/post in DARE

Fellowship/Scholarship/Position/Post	No. of cases finally approved
Department of Biotechnology (DBT) DBT Crest Award	24
Erasmus Mundus Scholarship	3
INDO-US Research Fellowship Programme	1
Fulbright Fellowship, USIEF-USA	3
DSSAT,G.O.I	1
DST's INDO- Australia Fellowship	3
Ph.D. ICAR International Fellowship	3
Pest Management- MASHAV-CINADCO-ISRAEL	2
Netherland Fellow NFP	4
ICAR Lal Bahadur Shastri Award	3
Other Training Programme abroad	4
Collaborative Programme	1
TWAS-CAS Fellowship	1
Endeavour Fellowship in Australia	2
ICARDA Position/Post	2
IWMI Position/Post	1
CIMMYT Position/Post	1
ICRISAT Position/Post	1
Total	60

project, 'Safe Water for the future through Indo-Oz Network" from 02 to 07 December, 2013 funded by AusAID under Public Sector Linkage Programme (PSLP) 2010-2011.

- Dr Ian Graham (Professor and Director, Centre for Novel Agricultural Products CNAP, Department of Biology, University of York, United Kingdom) visited CRRI, Cuttack under the project entitled 'Using wild ancestor plants to make rice more resilient to increasingly unpredictable water availability' under SCPRID from 11 to 12 November, 2013.

Technology development, evaluation, and promotion

- Dr V.V. Sumanth Kumar (Scientist, NAARM, Rajendranagar, Hyderabad) attended assignment of 'Scientist – ICT4D' at ICRISAT, Patancheru (Andhra Pradesh) from 22 January 2013 to 21 January 2016. Dr K. C. Bansal (Director, NBPGR, Pusa Campus, New Delhi) participated in the XIV Session of the Commission on 'Genetic Resources for Food and Agriculture, held at Rome from 13 to 19 April, 2013.
- Dr T. Srinivas (Senior Scientist, Agricultural Economics, CTCRI, Thiruvananthapuram, Kerala)



for the position/assignment of 'Project Socio-Economist' in International Centre for Agricultural Research in the Dry Areas, Aleppo, Syrian Arab Republic for three years.

- Dr K. V. Prabhu (Head, Division of Genetics, IARI, New Delhi) and Dr (Mrs) Kavita Gupta (Principal Scientist, Plant Quarantine Division, NBPGR, Pusa Campus, New Delhi) participated in the APAARI's organized Stakeholders Dialogue on 'Biosafety Regulations in the Asia Pacific Region' held at Royal Princess Hotel, LarnLaung, Bangkok, Thailand from 16 to 17 April, 2013.
- Dr T. Mahapatra (Director, CRRI, Cuttack) attended the special session of the International Rice Commission at FAO (Hqrs.) from 13 to 14 June, 2013 Rome, Italy.
- Dr Vishal Nath (Director, NRC for Litchi, Muzaffarpur, Bihar) attended meeting on Improving productivity and quality of Litchi in Chiangrai, Chiangmai and Bangkok, Thailand from 26 May, 2013 to 1 June, 2013 under FAO project on Litchi.
- Dr Atmaram Mishra (Principal Scientist, DWM, Bhubaneswar, Odisha) assignment of 'Senior Research - Agricultural Water Management' at IWMI, Sri Lanka and posted at IWMI's Southern Africa Office in Pretoria, South Africa for three years w.e.f. 01 July, 2013.
- Dr K. K. Singh (ADG, PE, ICAR Hqrs.) attended the IV Meeting of FAO-UNEP Agri-Food Task Force on 'Sustainable Consumption and Production' at Food and Agriculture Organization (Headquarters) in Rome, Italy from 10 to 12 June, 2013.
- Dr C.N. Ravishankar (Principal Scientist, CIFT, Kochi) attended the World Bank Global Food Safety Partnership Training programme on Good Aquaculture Practices organized by NACA in Indonesia from 17 to 22 June, 2013.
- Dr (Mrs) Gurinderjit Randhawa (Principal Scientist, NBPGR, New Delhi) attended a meeting on GMO testing in the Regional Biosafety Workshop at Bangkok, Thailand from 17 to 20 June, 2013.
- Dr Hanuman Sahay Jat, (Senior Scientist, CSSRI, Karnal, Haryana) attended assignment of 'Senior Scientist (Research Platform Coordinator)' at CIMMYT (International Maize and Wheat Improvement Centre) India Office located at Karnal (Haryana) 3 years (fixedterm) [from the date of joining the CIMMYT India Office, Karnal, Haryana] as a nationally recruited staff (Grade VI).
- Dr C.S. Prasad, (Director, NIANP, Bengaluru) attended the FAOAPHCA Regional Workshop on 'Animal Feed Resources and their Management in the Asia-Pacific Region' at Bangkok from 13 to 15 August, 2013.
- Prof. Swapan Kumar Datta [DDG (CS), ICAR, New Delhi] and Dr Pratibha Brahmi (Principal Scientist, NB PGR, Delhi) attended the Third High Level Round Table on the ITPGRFA. It was organized under the patronship of the Government of Indonesia from 2 to 4 July, 2013 at Bandung, Indonesia.
- Dr RaghavendraBhatta (Principal Scientist, NIANP, Bengaluru) attended the Workshop on 'Life – Cycle Assessment on Animal Feeds' in Beijing, China from 8 to 10 July, 2013.
- Dr S. Anandan (Principal Scientist, NIAN&P, Bengaluru) participated in the FAO–APHCA Regional workshop on 'Animal Feed Resources and their Management in the Asia-Pacific Region' at Bangkok from 13 to 15 August, 2013.
- Dr Shalander Kumar (HD-VI and Principal Scientist, CAZRI, Jodhpur) attended assignment of 'Scientist – Dryland Systems in South Asia' in the Special Project Scientist (SPS) cadre at ICRISAT, Patancheru, (Andhra Pradesh) for 3 years.
- Dr (Mrs) Sandhya Gupta and Dr (Mrs.) Rekha Chaudhury (Principal Scientist, TC & CP Unit, NBPGR, Pusa Campus, New Delhi) participated in the 2 ISHS International Symposium on 'Plant Cryopreservation' at Fort Collins, Colorado, USA from 11 to 14 August, 2013
- Dr A.P. Dineshababu (Principal Scientist, CMFRI, Cochin) participated in APFIC Regional Expert Workshop on 'Tropical Trawl Fishery Management' held at Phuket, Thailand from 30 September to 04 October, 2013.
- Dr B. R. Shome (Principal Scientist, Project Directorate on Animal Disease Monitoring and Surveillance, Bengaluru) participated in Second Regional Epidemiology Networking workshop between 13 and 14 August, 2013 at Paro, Bhutan organized by ECTAD, FAO, Nepal.
- Dr Aniket Sanyal (Principal Scientist, PD-FMD, IVRI Campus, Mukteshwar) continued as National Consultant-Senior Scientific Officer at FAO for one year i.e. upto 14 June, 2014.
- Shri Rajesh Ranjan (Director, DARE) participated in the 'Commonwealth Agricultural Bureaux International's XVIII Review Conference' held in Oxford, United Kingdom from the 26 to 28 June, 2013.
- Dr A.K. Misra (Project Coordinator, AICRP on Sub-tropical Fruits, CISH, Lucknow) attended the FAO/TFNet/MARD Events International Symposium on 'Superfruits: Myth or Truth'; International Tropical Fruits Network (TFNet) Board of Trustees Meeting; and Workshop on 'Policies to Facilitate Small-holder Integration into Tropical Fruits Value Chains and Markets' held at in Ho Chi Minh City, Vietnam from 1 to 6 July, 2013.
- Dr T.P. Rajendran (Officer on Special Duty, NIBSM, Raipur, Chattishgarh) participated in Biological weapons Conventions's: meeting of Experts in Geneva from 12 to 16 August, 2013.
- Dr M. Anandraj (Director, IISR, Calicut) attended



the IPCR&D Committee meeting and International Seminar on 'Spice, Medicinal and Aromatic Plants' from 28 to 30 August, 2013 at Jakarta, Indonesia'.

- Dr Sushil Pandey (Senior Scientist, Seed Technology, NBPGR, New Delhi) worked at ICRADA as a 'Seed Specialist' implemented Harmonized Support for Agriculture Development project in Iraq in collaboration, MoA, Baghdad and MoAWR, Kurdistan. It was funded by USAID from 28 September 2013 to 31 March 2014.

VIP delegations

1. His Excellency Mohannad Salman Al-Sady (Minister of Water Resources, Iraq) visited Indian Agricultural Research Institute, New Delhi on 20 May, 2013.
2. A 3-member delegation led by His Excellency Lakshman Senewiatne (Minister of Sugar Industry Development, Sri Lanka) visited Indian Institute of Sugarcane Research, Lucknow from 15 to 19 June, 2013.
3. His Excellency Inia Batikoto Seruiratu (Minister for Agriculture, Fisheries, and Forest and Rural Maritime Development, Fiji) accompanied delegation at Indian Agricultural Research Institute, New Delhi on 3 October, 2013.

Visit of foreign scientists to India during 2013

- Prof. Mukund V. Karwe (Professor and Chair, Rutgers University, USA) visited Central Institute of Fisheries Technology, Kochi between 18 and 31 October 2013.
- Under the NAIP sponsored training programme Dr Timothy Houlton (Senior Scientist, BeCA-ILRI Hub, Nairobi, Kenya CISH, Lucknow) visited from 11 to 24 November 2013.

Visits of Secretary (DARE) and DG, ICAR and Additional Secretary (D) and Secretary, ICAR under CG

- Deputation of Shri. Arvind R. Kaushal (Additional Secretary (DARE) & Secretary, ICAR), Dr. A.K. Sikka (DDG (NRM), ICAR), Sh. Rajesh Ranjan (Director (IC), DARE), Dr. R.P. Dua (ADG (FFC), ICAR), Sh. Sarvesh Rai (Director (Trade), DoAC), and Dr. S.K. Mukherjee (Advisor (FE), DoAC), to participate in BRICS – 3rd Agricultural Experts Working Group (AEWG) meeting held at Pretoria, South Africa from 26 to 27 August, 2013.
- Deputation of Dr. S. Ayyappan (Secy(D) & DG, ICAR) to participate in the ICRISAT Governing Board Meeting held at Dakar Senegal from 7 to 10 April, 2013
- Deputation of Dr. S. Ayyappan (Secy (DARE) & DG, ICAR) to participate in the GLAST-2013 held in Beijing China during 5-6 June, 2013.
- Deputation of Dr. S. Ayyappan (Secy (D) & DG, ICAR) to participate in the IIRI Board of Trustees Meeting held from 3 to 5 April, 2013 at IIRI

Hqrs Philippines

- Deputation of Shri Arvind R. Kaushal (Additional Secretary (DARE) & Secretary, ICAR) to visit IIRI (HQs,) Los Banos Philippines from 29 April to 02 May, 2013.
- Deputation of Dr. S. Ayyappan (Secretary (DARE) & DG, ICAR) to participate in ICARDA BOT Meeting held in Kuwait City, Kuwait during 28 April to 3 May, 2013.
- Deputation proposal of Shri. Arvind R. Kaushal, (AS (D) & Secy, ICAR) to visit research facilities in Kiboko Njoro and Naivasha in Nairobi on 25 and 26 September 2013.
- Deputation of Dr.S. Ayyappan (Secretary (D) and DG, ICAR) to attend the IIRI Board of Trustees Meeting at Bujumbura, Burundi from 28 to 30 October, 2013
- Deputation of Dr. S. Ayyappan (Secy (D) & DG, ICAR) to attend the FC-10 meeting at Kenya on 5 to 8 November 2013.

Fellowships

The Education Division, ICAR has nominated 65 foreign students for Ph.D., 107 foreign students for M.Sc./M.V.Sc. and 65 foreign students for B.Sc./B.V.Sc. for pursuing undergraduate, Postgraduate and Doctoral programmes in various Agricultural Universities/ICAR Deemed Universities under India-Africa Forum Summit, 2008 and Indo-Afghanistan Fellowship programme, Nepal-Aid-Fund and self-finance scheme.

Approved deputation visit of Indian Scientist(s) to abroad

- Three scientists of National Research Centre on Equines, Hisar (Haryana) were deputed for taking part in a laboratory exchange programme under OIE Twinning Project 'Diagnosis on Glanders' at Institute of Bacterial Infections and Zoonoses, Jena, Germany as per details given below:
 - (i) Dr. R.K. Singh (Director) from 25 April to 01 May 2013.
 - (ii) Dr. Praveen Malik, Principal Scientist during 25 April to 31 May 2013.
 - (iii) Dr. Harisankar Singha, Scientist during 25 April to 31 May 2013.

ICAR – Foreign institutions collaborations

There were conferences/seminars/workshops (7), trainings (3), and bilateral visits (4).

Undert multilateral programme, a delegation led by Shri Sharad Pawar, Union Minister of Agriculture and Food Processing Industries visited Kuala Lumpur, Malaysia to attend 3rd ASEAN-India Agriculture Ministers Meeting on 28 September 2013. Dr S. Ayyappan [(Secretary (DARE) and DG (ICAR)] and Shri Sanjeev Chopra (Joint Secretary, DoAC) were also part of the delegation.

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