



ICAR Research Complex for Eastern Region, Patna
पूर्वी क्षेत्र के लिए भा.कृ.अनु.प. का अनुसंधान परिसर, पटना

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Contents

Research Highlights

Mineral Mixture "Swarna Min" for Livestock Developed	2
Zero Energy Cool Chamber for Storage of Fruits and Vegetables Developed	2
Sweet Flag and Vegetable Alocosia Introduced with Makhana	2
Rice Genotypes for Drought Tolerance Evaluated	2
Inter-stock for Induction of Dwarfing in Mango Cultivars Standardized	2
Plant Genetic Resource Management	3
Fish Culture in Low Lying Areas for a Sustainable Livelihood	3
Aquatic Weeds in Makhana	3

Transfer of Technology

Rice Fallow Management by Vegetable Cultivation	4
Demonstration of Drip Irrigation	4

Events Organized

NAAS Regional Chapter Meet	4
Workshop on Research Prioritization and Reconciliation in Eastern India	4
Interface Meeting on "Operationalization of District Level Contingency Plans in Bihar"	4
Field Day	5
Farmers-Scientists Interaction and Animal Health Camp	5
Institute Foundation Day	5
Institute Research Council (IRC) Meeting	5
Foundation Stone of KVK Ramgarh Laid Down	5
Hindi Pakhwara	5
Training Programme on Soil and Water Conservation	6
Farmers' Scientist Interaction	6
Distinguished Visitors	6
Swachha Bharat Mission	7
Honour & Awards	7
Selections/ Promotions/Transfers/Retirements	8

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From the Director's Desk



The eastern region of the country holds promise for a second Green Revolution, which can be accomplished through holistic management of land, water, crops, biomass, horticultural, livestock, fishery and human resources. As the eastern states support 34% human and 31% livestock population of India from 21.85% of geographical area, there is tremendous pressure on natural resources to sustain the ever increasing human and animal population. Small (<1 ha) and fragmented landholdings limit the adoption of improved technologies. The total water demand is projected to increase 900 BCM and the groundwater withdrawal from 303 BCM in 2000 to 423 BCM by 2050. The coastal areas are vulnerable to sea-water intrusion and cyclones. Further, the wetlands, which occupy an area of 4.05 million ha, need restoration for sustainable food production and conservation of biodiversity. In order to meet out the aforementioned challenges, the Institute is committed to take up these issues in the holistic manner to meet the food and nutritional requirement of the eastern region through network/ consortia approach involving other ICAR institutes, SAUs, and other agencies for generating location-specific agricultural production technologies through sustainable use of natural resources.

In order to strengthen the transfer of technology in Jharkhand, the foundation stone of new KVK at Ramgarh was laid down. The present issue of newsletter highlights the research achievements such as development of nutrient rich mineral mixture 'Swarna Min' to supplement the nutritional requirement of the livestock, energy efficient cool chambers for increasing shelf life of fruits and vegetables, identification of drought tolerant rice genotypes, evaluation of fruit crops germplasm, and transfer of technology activities including rice-fallow management through vegetable cultivation.

Research Highlights

Mineral Mixture "Swarna Min" for Livestock Developed

The deficiency of zinc, phosphorus, molybdenum and sulphur was detected during examination of soil, feeds & fodder and animal blood samples collected randomly from 14 districts in four agro-climatic zones of Bihar. A specific region based mineral mixture was prepared by the institute for Bihar. It was named as "Swarna Min" for marketing. The mixture contains calcium (25.46%), phosphorus (13.2%), iron (0.16%), copper (0.12%), manganese (0.16%), zinc (0.99%), cobalt (0.02%), iodine (0.04%) and sulfur (1.04%).



Zero Energy Cool Chamber for Storage of Fruits and Vegetables Developed

Sizeable amount of fruits and vegetables are lost after harvesting due to lack of cold/cool storage facility. In order to overcome this problem, a Zero Energy Cool Chamber (ZECC) was designed and erected for storing fruits and vegetables. This research showed that okra and tomato fruits were better preserved for optimum period of 6-8 days with ZECC than in open condition.



Sweet Flag and Vegetable Alocosia Introduced with Makhana

Alocasia [*A. macrorrhizos* L. (Schott.)] and two accessions of sweet flag namely, Bacch Sel-1 and Sel-2 were introduced with the makhana cultivation which was planted at the middle of terrace (0.75 - 1.0 m broad) of the pond where 5-10 cm of water was maintained throughout the year.



Sweet flag Bacch Sel-2 at nursery

Rice Genotypes for Drought Tolerance Evaluated

Thirty two rice genotypes were evaluated under dry direct-seeded condition for drought tolerance. Among the genotypes, IR 84899-B-179-16-1-1, IR 88964-24-2-1-4, IR 83387- B-B-27-4, IR83373-B-B-25-3, REWA 842 and RP 5212-56-12-9-3-2-1-1 were found promising under multiple stages drought stress condition than checks.



Inter-stock for Induction of Dwarfing in Mango Cultivars Standardized

A study was undertaken to test the feasibility of using interstocks for induction of dwarfing in vigorous and locally popular mango genotypes like Langra, Himsagar and Bombay Green. Two dwarf mango genotypes viz. Latra and Amrapali were used as interstocks. The results clearly indicated reduced growth of vigorous mango cultivars on Amrapali as interstock. The higher rate of increase recorded in case of Latra as interstock can be attributed to Juvenility factor which is evident from the higher number of

Fish Culture in Low Lying Areas for a Sustainable Livelihood

During rainy season, many low lying areas are inundated with water and farmers are unable to cultivate seasonal crops in those areas. Such land mass where the runoff water stagnates and remains for some times can be utilized through land manipulation to grow vegetables and fodder right in the midst of water logged areas. A total of 200 fishes (rohu 130 numbers, 49.7 ± 3.91 g and catla 70 numbers, 47.5 ± 4.36 g) were stocked and grown in trenches. At the end of 4 months, 81% recovery was recorded and 29.5 kg/ha production was obtained with an average body weight of rohu: 158.5 ± 8.6 g and catla 172.2 ± 12.53 g.

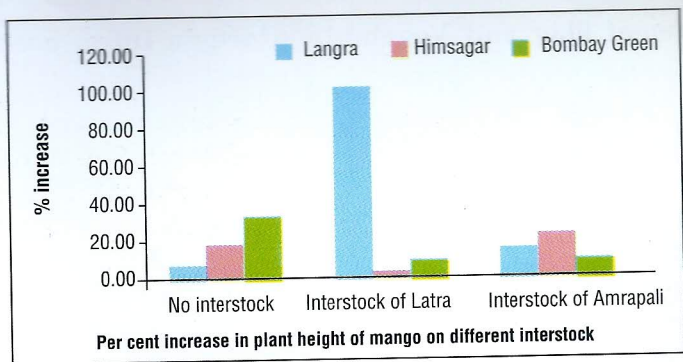


Aquatic Weeds in Makhana

The population density of different weed species was recorded from makhana fields. The highest density was recorded with *Marsilea quadrifolia* (132 plants/m²) while the lowest with *Eichhornia crassipes* (2 plants/m²). The density of *Ceratophyllum demersum*



Heavy infestation of *M. quadrifolia* in makhana fields



vegetative flushes recorded in case of plants with Latra as interstock.

Plant Genetic Resource Management

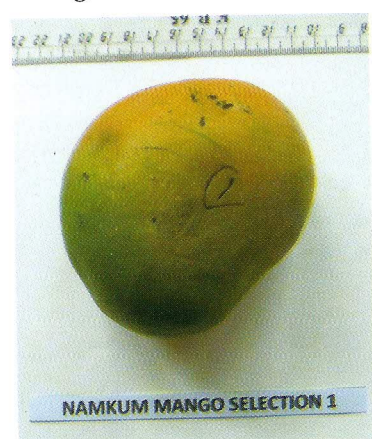
Jackfruit

Seventy seven genotypes collected from different regions of the country and conserved in the field gene bank of the institute were evaluated for fruit quality. Based on overall performance, the jackfruit genotype ICAR RCER JS-2-8/1 was found to be the most promising for fruit quality (medium sized fruits, cylindrical shape, pulp content-51.57%, rind-33.7%, TSS - 23.4°B).



Mango

Three new promising genotypes were collected from Namkum, Ranchi. Among the genotypes, Namkum Mango Selection-1 and Namkum Mango Selection-3



had regular bearing habit with high pulp (> 70%) and TSS (> 20° B) content in the fruit. Of the 23 hybrids evaluated 'Jawahar' was found most promising under eastern plateau and hill conditions (fruit weight-279.1 g, pulp content - 71.4%, TSS-25.72°B, TSS: acidity-211.62, fruit yield - 31 kg/plant).

and *Ipomoea aquatica* was 5 and 10, respectively. The highest protein content was recorded in the biomass of *I. aquatica* (25.00%) followed by *Azolla pinnata* (22.50%), *E. crassipes* recorded maximum biomass (200 kg/ha) on dry weight basis.

Transfer of Technology

Rice Fallow Management by Vegetable Cultivation

Vegetable production systems have been demonstrated in the farmers' field. One of the farmers Mr. Nanka Kachhap, could earn more than Rs. 65000/- by growing cucumber, cowpea (cv Swarna Mukut), sponge gourd (cv. Swarna Prabha), bitter gourd and chilli (Swarna Praphulya) during *kharif* and more than Rs. 15000/- from cabbage and brinjal (Swarna Pratibha) during *rabi* through drip irrigation and plastic mulching.



Demonstration of Drip Irrigation

Drip irrigation technology demonstration was conducted in farmers' fields covering 4 acre area in Ranchi. During the first year the adaption rate was 20%.



Events Organized

NAAS Regional Chapter Meet

NAAS regional chapter meeting on "IPR in agriculture" was held at ICAR-RCER, RC, Ranchi during 27th - 28th Feb, 2014. The meeting was attended by Dr. B. P. Bhatt (Director, ICAR-RCER, Patna), Dr. R. P. Singh Ratan (Director Extension Education, Birsa



Agricultural University), Dr. R. Ramani (Director, IINRG), Dr. S. Kumar (Ex-head, ICAR-RCER, RC, Ranchi), Dr. A. K. Singh (Head, ICAR-RCER, RC, Ranchi) and scientists of the centre.

Workshop on Research Prioritization and Reconciliation in Eastern India

A workshop on research prioritization and reconciliation in eastern India was organized at ICAR - RCER, Patna on 28th May, 2014. The workshop was chaired by Dr. B. P. Bhatt, Director, ICAR RCER, Patna. The purpose of the workshop was to prioritize agricultural research for eastern India, strengthening inter institutional research collaboration and to avoid duplicity and redundancy of research being conducted by different research institutes located in eastern India.



Interface Meeting on "Operationalization of District Level Contingency Plans in Bihar"

An interface meeting on "Operationalization of district level contingency plans in Bihar" was organized by CRIDA, Hyderabad in collaboration with ICAR-RCER, Patna on 26th June, 2014 at ICAR-RCER, Patna. The meeting was inaugurated by Shri Narendra Singh, Hon'ble Agriculture



Minister, Govt. of Bihar. Other dignitaries such as Dr A.K. Sikka, DDG (NRM & Extension), Shri Amrit Lal Meena, IAS, Principal Secretary, Department of Agriculture, Govt. of Bihar and Dr. (Mrs.) M. Maheshwari, Director, CRIDA were also present. The purpose of meeting was to discuss action plan related to district level contingency plan for Kharif 2014 in Bihar and its operationalization.

Field Day

Field day-cum-training programme was organized at Hesapiri, Ranchi on 22nd March, 2014 under Bill & Melinda Gates Foundation funded ICRISAT-ICAR collaboration project entitled- "Tracking Changes in Rural Poverty through Household & Village Economies in South Asia". The programme was inaugurated by Dr. B. P. Bhatt, Director, ICAR RCER, Patna. Purpose of the programme was to acquaint farmers with latest and improved agri-horticultural technologies.



Farmers-Scientists Interaction and Animal Health Camp

A farmers-scientists interaction and animal health camp was organised by ICAR-RCER, Patna at Belsand village of Muzaffarpur district of Bihar on 11 March, 2014 under NAIP Component-3, sub project entitled "Improving livelihood security in salt affected Watersheds of Muzaffarpur and Sheohar districts of Bihar". A total of 51 farmers participated in the meet and the problems faced by the farmers in breeding, feeding and animal health were discussed in detail and the possible remedies to improve the productivity of different livestock species were elucidated.



Institute Foundation Day

The 14th foundation day of the institute was celebrated with great enthusiasm at main complex Patna on 22nd Feb 2014. Padmabhusan Shri Chandi Prasad Bhatt, a noted Environmentalist, Social activist and Magsaysay Award Winner graced this occasion as the Chief Guest. He focused on the impact of climate change and deforestation on agriculture in the Gangetic Basin.



Institute Research Council (IRC) Meeting

The IRC meeting was held under the Chairmanship of Director, ICAR-RCER, Patna during 23rd-24th June 2014 to review ongoing research projects and to discuss and approve new projects to be taken up by the scientists. All the scientists of the institute participated in the meeting.

Foundation Stone of KVK Ramgarh Laid Down

The foundation stone of KVK, Ramgarh was laid down on 27th August 2014 at Mandu, Ranchi, Jharkhand by Shri Radha Mohan Singh, Hon'ble, Union Minister of Agriculture, Govt. of India. Dr. S. Ayyappan, Secretary, DARE and Director General, ICAR presided over the function. A farmers fair-cum-kishan gosthi was also organized where more than 2000 farmers participated. Twelve progressive farmers were felicitated in the function by the Hon'ble Union Minister of Agriculture.



Hindi Pakhwara

Hindi pakhwara was organized in the institute from 14th Sept 2014 to 30th Sept 2014. The programme was inaugurated by Sri Narendra Singh, Hon'ble Agriculture Minister of Bihar. He urged the scientists of the institute to present their research outcomes in hindi and also to link the science with hindi.



Training Programme on Soil and Water Conservation

One week training programme on "Soil and water conservation for integrated watershed management programme" was organized by ICAR-RCER, Patna on 23rd August, 2014 for state govt. officials. The programme was inaugurated by Sri Narendra Singh, Hon'ble Agriculture Minister of Bihar. Hon'ble minister urged watershed management officials to involve villagers in their programme. He advised the officials to explain the benefits of the programme to the villagers for promoting watershed activities and involvement of the villagers during the programme implementation. Twenty five officials from Directorate of water conservation, Govt. of Bihar participated in the training programme.



Farmers' Scientist Interaction

Farmers' scientist interaction was organized at Uttar Simlabari, Jalpaiguri (WB) under Tribal Sub Plan on 10th Dec 2014 for improvement of livelihoods of the tribal community. Around 375 tribal community of the village are getting benefitted through improved agri-horti,



supply of quality seed materials, animal husbandry, water management and capacity building.

Distinguished Visitors

Shri Radha Mohan Singh, Hon'ble Union Minister of Agriculture, Govt. of India visited ICAR Research Complex for Eastern Region, Patna on 19th July, 2014 to review the work of the institute. He applauded the work and technologies developed by the complex and expressed his expectation for bringing 2nd Green Revolution in the eastern region of the country.



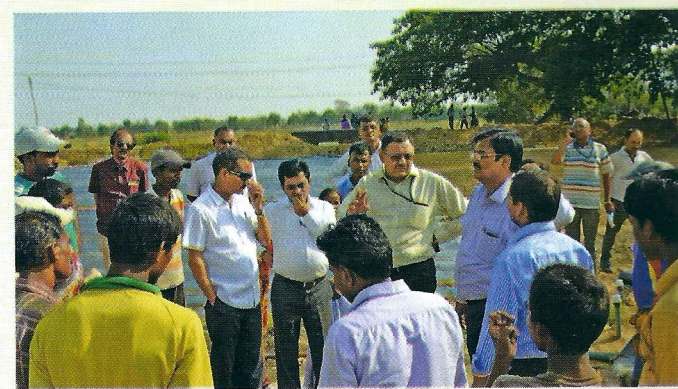
Dr. S. Ayyappan, Secretary, DARE and Director General, ICAR visited Hundru village near Ranchi, Jharkhand on 5th May, 2014 to review the programme on rice fallow system being implemented in the village by ICAR Research Complex for Eastern Region, Patna under Tribal Sub-Plan.



Dr. Gurbachan Singh, Chairman, ASRB, visited the Institute on 07.03.2014. He reviewed the online examination system of ICAR in the institute. He also had an interaction with the entire scientist of the institute.



Dr. Alok Kumar Sikka, Deputy Director General (NRM and Agricultural Extension), New Delhi along with Dr A.K. Singh, ZPD, Kolkata and Dr R.P. Singh Ratan, Director of Extension, Birsa Agricultural University, Ranchi visited Hundru, Chhota Ghagra and Saraitoli villages near Ranchi on 4th May, 2014 to review the progress of the work undertaken on technology dissemination in the different fields of agriculture, livestock and fisheries in the farmers' field by ICAR-RCER, Patna under the Tribal Sub-Plan.



U.S. Charge d'Affaires, **Michael Pelletier** and Consul General in Kolkata, Ms. Helen LaFave visited Sabajpura research farm of ICAR-RCER, Patna on 16th June, 2014 to monitor the progress of CSISA research platform activities funded by USAID and Bill and Melinda Gates Foundation.



Swachha Bharat Mission

Under the Swachha Bharat Mission Programme, the institute also organised the cleanliness programme on 2nd Oct and 28th Dec 2014. In this programme, all the staff of the institute actively participated in cleaning of the institute premise.



Honour & Awards

Dr. Bikas Das, B. P. Bhatt, A. K. Singh and R. S. Pan received prestigious Fakhruddin Ali Ahmed award 2013 for outstanding Research in Tribal Farming System.



Dr. Arun Kumar Singh was conferred Fellowship by Confederation of Horticulturists Association of India, New Delhi

Dr. U.R. Sangle received the best Poster Presentation award for poster presented on "Management of gram pod borer *Helicoverpa armigera* (Hubner) in chickpea through biopesticides" at International Symposium on "Role of fungi and microbes in the 21st Century- a Global Scenario" organized by Indian Mycological Society, Kolkata held from February 20-22nd, 2014.

Dr. A.K. Singh was awarded "ISA Associateship- 2012" by Indian Society of Agronomy on 18th November, 2014 during 20th National Conference held at PAU, Ludhiana.

Dr. Santosh Kumar received "Young Scientist Award" by the Society for Scientific Development in Agriculture and Technology (SSDAT), Meerut (U.P) for his outstanding contribution in the field of plant breeding on the occasion of "National Conference on emerging challenges and opportunities in biotic and abiotic stress management (ECOBASM 2014) during 13-14th December, 2014 at DRR, Hyderabad.

Dr. Ajay Kumar received the best paper award in oral presentation in "6th International Conference on Bioscience Research for Nutritional Security, Environmental Conservation & Human Health in Rural India" held at Indian Institute of Natural Resin and Gum, Ranchi from 22 - 24th December, 2014.

Dr. Rajni Kumari received Best Oral Presentation award at National Conference of Indian Association of Women Veterinarians and National Seminar on "Livestock Breeding Strategies for Productivity Enhancement towards Rural Prosperity" held on August 26-28th, 2014 at Anand, Gujarat.

Dr. A.K. Choudhary received "Distinguished Scientist Award" during the National Conference organized jointly by Society for Scientific Development in Agriculture and Technology (SSDAT), Meerut, Astha Foundation, Meerut and Directorate of Rice Research (DRR), Hyderabad during December 13-14th, 2014.

Selections/ Promotions/Transfers/Retirements

Our new colleagues

Mr. Ved Prakash joined as Scientist (Agrometerology) at ICAR-RCER, Patna w.e.f. 09.04.2014.

Ms. Snatashree Mohanty joined as Scientist (Fish Health) at ICAR-RCER, Patna w.e.f. 09.04.2014.

Dr. A.K. Choudhary, Principal Scientist (Genetics and Plant Breeding) joined ICAR-RCER, RC for Makhana, Dharbanga w.e.f. from 10.05.2014.

Dr. Sridhar Gautam, Senior Scientist joined ICAR-RCER, Regional Centre Ranchi w.e.f. 03.06.2014

Sh. Pradip Kumar Sarkar joined as a Scientist (Agroforestry) at ICAR-RCER Regional Centre, Ranchi w.e.f. 16.08.2014

Sh. Mahesh Kumar Dhakar joined as a Scientist (Fruit Science) at ICAR-RCER Regional Centre, Ranchi w.e.f. 25.08.2014

Miss Anuradha Srivastava joined as a Scientist (Fruit Science) at ICAR-RCER Regional Centre, Ranchi w.e.f. 25.08.2014

Dr. Tarkeshwar Kumar joined as a Scientist (Aquaculture) at ICAR-RCER, Patna w.e.f. 12.10.2014

Miss Tshering Lhamu Bhutia joined as a Scientist (Vegetable Science) at ICAR-RCER, Patna w.e.f. 13.10.2014

Dr. S.K. Gupta joined as a Scientist (Vet. Microbiology) at ICAR-RCER, Patna w.e.f. 10.11.2014 on transfer from IVRI, Izatnagar.

Dr. Rajvir Sharma, Principal Scientist (Agronomy) joined as Head, ICAR-RCER Research Centre for Makhana, Dharbanga w.e.f. 10.11.2014.

Dr. J.S. Mishra, Principal Scientist (Agronomy) joined as Head, DCR, ICAR-RCER, Patna w.e.f. 27.11.2014.

Promotions

Dr. S. K. Nayak has been promoted to Senior Scientist with RGP from Rs 8000 to 9000 w.e.f. 15.04.2014

Dr. Sridhar Gutam has been promoted to Senior Scientist with RGP from Rs 8000 to 9000 w.e.f. 09.05.2014.

Dr. A.K. Singh has been promoted from Principal Scientist to Head w.e.f. 05.11.2014.

Transfers

Dr. B.R. Jana, Scientist transferred from ICAR-RCER, Patna to ICAR-RCER Research Centre for Makhana, Dharbanga w.e.f. 27.05.2014

Dr. A.K. Thakur, Principal Scientist transferred from ICAR-RCER, Patna to ICAR-RCER Research Centre for Makhana, Dharbanga w.e.f. 27.05.2014

Sh. Murari Maharaj, T-3 (Jeep Driver) transferred to Research Centre for Makhana, dharbanga w.e.f. 02.06.2014

Dr. B.K. Chaudhary, Scientist transferred from ICAR-RCER, Patna to ICAR- NIBSM, Raipur w.e.f. 15.11.2014

Dr. A. Haris, Principal Scientist transferred from ICAR-RCER, Patna to ICAR w.e.f. 18.12.2014

Retirements

Sh. Atma Ram, SSS (Messenger) w.e.f. 31.05.2014.

Dr. Alok Kumar Jain, Senior Scientist w.e.f. 31.08.2014.

Dr. R.D. Singh, Principal Scientist w.e.f. 30.09.2014.

Sh. M.N. Choudhary, Technical w.e.f. 30.09.2014.

VRS

Sh. Chandan Hembrom, Sr. Technician (Farm) w.e.f. 11.06.2014

Sh. Mahadeo Toppo w.e.f. 05.12.2014.

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