



संवादपत्र NEWSLETTER

गोवा के लिए भा.कृ.अनु.प. का अनुसंधान परिसर
(भारतीय कृषि अनुसंधान परिषद)

ICAR RESEARCH COMPLEX FOR GOA
(Indian Council of Agricultural Research)



Vol. 16 No. 3

ISO 9001 : 2008 Certified Institute

September to December, 2014



हर कदम, हर उगर

किसानों का हमसफर

भारतीय कृषि अनुसंधान परिषद

Agrisearch with a human touch

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Personalia

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Printed at: **Impressions**, Belgaum

From Director's Desk...

ICAR Research Complex for Goa (ICAR RC Goa) is one of the research Institutes under Natural Resource Management (NRM) division of Indian Council of Agricultural Research (ICAR), New Delhi. ICAR RC Goa conducts multidisciplinary research in agriculture, animal sciences and fisheries. This Institute plays a major role in promoting excellence in agriculture and is mainly involved in research activities which are aimed at improving the production and productivity of major crops of this region through various strategies. ICAR RC Goa is spread over 53 ha in which all the major infrastructure and experimental field for research work are established. In 1983, a Krishi Vigyan Kendra (KVK) was established in this Institute to provide transfer of technology to the farming community of Goa.



The Institute carries out strategic and applied research specific to this region, in field and horticultural crops, livestock and fisheries. The research activities of the Institute are grouped under five functional sections *viz.*, Natural Resource Management, Crop Science, Horticulture Science, Animal Science and Fisheries Science. The Institute is also a regular centre for AICRPs on cashew, integrated farming system (IFS) and pig and a voluntary centre for AICRP on rice, arid legumes and vegetable crops. In addition to Institute projects, research projects are also funded by ICAR through various network and collaborations, Department of Science and Technology and Department of Biotechnology. Extension and development projects are channeled through various development programmes like Tribal Sub Plan, Rashtriya Krishi Vikas Yojana and other developmental agencies.

Salient research achievements of the Institute during the last five years are grouped under the following areas: Identification of promising crop varieties/accessions of field and horticultural crops; Development of suitable soil and water conservation measures in coconut and mango; Development of integrated farming system models for west coast region; Development of eco-friendly management practices of major insect pests and diseases in plantation, fruit crops, field crops and vegetable crops; Development and standardization of production technologies for field and horticultural crops of Goa; Standardization of low cost protected structures for vegetable and flower crop production; Standardization of packages for rearing cattle, goat, buffalo, rabbit, pig and poultry; Standardization of hydroponics green fodder production and bypass fat production; Disease diagnosis and animal health management; Standardization of ornamental fish culture, carp culture and brackish water fish farming; Standardization of mussel farming practices; Dissemination of PFZ advisories and validation of advisories; and Exploration of fish diversity of Goa.

The Institute celebrated silver jubilee during 2014. Considering the impact created by the Institute in coastal agricultural research, Indian Council of Agricultural Research, New Delhi has decided to upgrade the Institute and the name of the Institute has been changed to ICAR-Central Coastal Agricultural Research Institute (ICAR-CCARI) to facilitate research along the coastal regions of India.

N.P. Singh

(Narendra Pratap Singh)

RESEARCH HIGHLIGHTS

Integrated farming system model for the lowland situations of Goa

[N P Singh, Director and G R Mahajan, Scientist (Soil Science)]

A rice based farming system model (crop-livestock-mushroom) has been developed on 0.7 ha area for typical lowland situations of Goa. Different enterprises of the model are crops (rice followed by sweet corn/brinjal/groundnut/cowpea – 0.4 ha), forage grown bunds (Hybrid napier - 0.032 ha), Dairy (24 m²), mushroom (21 m²), Vermicomposting (10 m²) and kitchen garden (80 m²). The net return from the above-mentioned model was ₹ 1.17 Lakhs during one year and this is excluding the cost of farm employment generated and products recycled within the system. The value of the farm employment generated and value of products recycled within farm was ₹ 1.01 lakh and ₹ 0.32 lakh. Besides the higher net profit, the system



also has an advantage of the round the year income and positive effect on the soil health.

Coastal saline soils of Goa behaves spatio-temporally different

[G R Mahajan, Scientist (Soil Science)]



Analysis of the soils of four typical salinity groups – non-saline, weakly saline, moderately saline and

strongly saline in three different seasons – monsoon, winter and summer exhibited typical variations in the chemical and microbiological properties. The soils were most biologically active during the monsoon followed by winter and lowest in summer. The order of biological activities during all three seasons were observed as: non-saline > weakly saline > moderately saline > strongly saline. The soil organic carbon stock correlated positively and strongly with the biological activities. This suggests that the addition of organic matter as a countermeasure to manage the coastal saline soils of Goa.

Management of cashew stem and root borer with newer insecticides and Sealer cum Healer

[R Maruthadurai, Scientist (Agricultural Entomology)]

Cashew stem and root borers (CSRB) are the most notorious pest on cashew. Three insecticides namely Imidacloprid, Fipronil and Thiamethoxam were screened for the management of CSRB. Scoring of trees was assigned based on the severity of Infestation. Heavily infested trees were treated with above said insecticides at 5 ml/ litre of water @ 5 litre/ tree and mild infested trees were treated at 3 ml/ litre of water @ 3 litre/ tree. Re-infestation (~10%) was recorded in the treated trees. Simultaneously, Sealer cum Healer was evaluated for CSRB management. Re-infestation was not observed in the Sealer cum Healer treated trees.



Red ant technology for the management of tea mosquito bug in cashew

[R Maruthadurai, Scientist (Agricultural Entomology)]

Tea mosquito bugs (TMB), *Helopeltis* spp. (Hemiptera: Miridae), are very serious pest on cashew and causes damage to an extent of 30–40% yield loss. Red ant or Weaver ant, *Oecophylla smaragdina* (Fabricius) (Hymenoptera: Formicidae) is a potential biological control agent for TMB. An experiment was carried out to manage TMB in cashew through augmentative use of red ants. Predatory ant nest colonies (75 Number) were brought from distant tree and introduced in cashew trees. The results revealed that the damage score of 1 was recorded in trees colonized by red ants, whereas maximum damage score of 4 was recorded



in trees without red ants colonies. The TMB adult and nymph population was significantly lower in plants colonized by red ants.

Enhancement of milk yield, growth and amelioration of heat stress in buffalo, cattle and rabbit by managerial and nutritional intervention

[S K Das, Principal Scientist (Livestock Production Management)]

Experiments were carried to reduce heat stress to improve milk production in buffalo by managerial intervention through manual cooling of buffalo by splashing of water twice daily and by nutritional intervention i.e. supplementation of bypass fat @ 20 g/lit of milk to the feed. Results revealed that heat stress was overcome by 27% and milk yield was increased substantially. Effort was made to reduce heat stress on cattle by supplementation of bypass fat @

20 g/calf to the feed. Results indicated that heat stress was overcome by 34% and growth was enhanced by fortification of feed with the bypass fat. In rabbits, effort was made to reduce heat stress on rabbit by use of phytochemical i.e. “Stressrock” marketed by Ayurved in water @ 1%, consecutive four days once in a month. Results revealed that reduction of growth was overcome around 35 % by adding of phytochemical in drinking water regularly particularly during summer.

Exploration of freshwater fish diversity in Goa

[Sreekanth G B and Manju Lekshmi N, Scientist (Fisheries Resource Management)]



To catalogue the freshwater fish diversity in the Western Ghats, NBFGR Kochi Unit in collaboration with ICAR Research Complex for Goa conducted intensive appraisal of fish diversity in freshwater habitats in Goa. Nine sampling locations covering the two major river systems in Goa, Mandovi and Zuari, were sampled

intensively using cast net, drag net, trap and scoop net. The sampling yielded a total number 55 fish species and 13 crustacean. This is one the first intensive efforts to catalogue the freshwater fish diversity in Goa. The major species obtained during the survey were *Pethia setnai*, *Haludaria pradhani*, *Rasbora dandia*, *Aspidoparia morar*, *Devario malabaricus*, *D. aequipinnatus*, *Garra mullaya*, *Aplocheilus lineatus*, *Dawkinsia filamentosa*, *Mystus malabaricus*, *Schistura altipedunculatus*, *Carinotetraodon travancoricus*, *Channa gachua*, *Puntius mahecola*, *Puntius vittatus*, *Systemus sarana subnasutus*, *X. cancila*, *Aplocheilus kirchmayeri* and *Pseudosphromenus cupanus*. Crustaceans observed during the survey were *Macrobrachium canarae*, *M. malcolmsonii*, *M. cf. gracilirostre*, *Caridina cf. babaulti*, *C. cf. gracilirostris*, *C. cf. hodgarti* and *Parathelphusa* sp.

Exploration of fish diversity in Zuari estuary, Goa

[Sreekanth G B and Manju Lekshmi N, Scientist (Fisheries Resource Management)]



A study was carried out to catalogue the fish and shellfish diversity along the estuarine ecosystem of Zuari mouth. About 186 aquatic species - 150

finfish species (Pelagic-65, Demersal-85) and 36 shellfish species (17 crustacean species and 19 molluscan species) were collected during the study. The 150 finfishes belonged to 45 families (Pelagic-18, Demersal-27). The 36 shellfish species were belonging to 19 families (Crustaceans-4, Molluscans-15). The confirmation of new records (flatfish and puffer fishes) is also in progress. The study highlights high diversity of aquatic resources along the Zuari estuarine coastal ecosystem inspite of the effects from pollution, coastal development and illegal fishing. As a result of the research report, the patrolling is made stringent along the Zuari mouth by the Government of Goa and illegal mechanised fishing reduced considerably. With the help of fishermen community and resource enhancement approaches, the fisheries resources in this ecosystem can be sustainably managed and utilised.

NEW INITIATIVES

Germplasm resources of Ornamental Coleus in Goa

[Safeena SA, Scientist (Floriculture and Landscaping)]

Coleus (*Solenostemon scutellarioides*, family Lamiaceae (Labiatae)), a plant with large colourful leaves grown as ornamental and it is native of tropical Asia, Africa and Australia. Coleus grows best in beds, foundations, borders, planters, hanging baskets, or containers. They provide a bold texture and a thick density in the landscape. Considering its landscape value, collection, conservation and evaluation of different ornamental coleus were initiated at the Institute. At present, 19 types have been collected, maintained and evaluated for their suitability for landscape use.



Introduction and evaluation of tuberose varieties under agro-climatic conditions of Goa

[Safeena SA, Scientist (Floriculture and Landscaping)]



Tuberose, commonly known as Rajanigandha (*Polianthes tuberosa* L.) belongs to the family

Amaryllidaceae. It is one of the most important tropical ornamental bulbous flowering plants cultivated commercially for cut as well as loose flower crop. Considering its economic importance and wider adaptability to weather and soil conditions, studies to evaluate the performance of different varieties of tuberose on growth, flowering and yield of China aster under agro climatic conditions of Goa were initiated.

MAJOR EVENTS

संस्थान द्वारा इस वर्ष मनाए गए हिन्दी सप्ताह का संक्षिप्त विवरण

इस वर्ष संस्थान द्वारा दिनांक ११ सेप्टेम्बर २०१४ से १९ सेप्टेम्बर २०१४ तक हिन्दी सप्ताह का आयोजन किया जा गया। हिन्दी सप्ताह कार्यक्रम का उद्घाटन माननीय निदेशक महोदय जी के करकमलों से हुआ, इस अवसर पर उन्होंने हिन्दी के गौरवपूर्ण इतिहास का वर्णन किया, साथ ही संस्थान के सभी कर्मचारियों को हिन्दी में काम करने हेतु प्रेरित किया। संस्थान में मनाए गए हिन्दी सप्ताह के दौरान कर्मचारियों के लिए अनेक प्रकार की प्रतियोगिताएं जैसे

की निबंध लेखन, टिप्पणी लेखन, पत्र लेखन, गायन, सस्वर कविता पाठन आदि प्रतियोगिताओं का आयोजन किया गया, जिसमें संस्थान के अधिकांश कर्मचारियों ने उत्साह के साथ भाग लिया। इस अवसर पर संस्थान के कर्मचारियों के बच्चों के लिए भी अनेक प्रतियोगिताओं का आयोजित की गयी। मासिक स्टाफ मीटिंग में हिन्दी सप्ताह कार्यक्रम में आयोजित विभिन्न प्रतियोगिताओं के विजेता प्रतिभागियों को पुरस्कार से सम्मानित किया गया।

Noni Search 2014 - Ninth National Symposium "Noni for Everyone"



The Ninth National Symposium on Noni Research "Noni Search-2014" was held at the International centre, Goa during 27th to 28th September, 2014. The symposium was organised by World Noni Research Foundation, International Society for Noni Science (Chennai), ICAR Research Complex for Goa and Dr. BSKKV, Dapoli. The symposium was inaugurated by Mrs. Mridula Sinha, Hon. Governor of Goa and presided over by Dr. K. E. Lawande (Vice Chancellor, Dr.BSKKV, Dapoli) and Dr. R. R. Hanchinal,

(Chairman, Protection of Plant Variety and Farmers Right Authority, New Delhi). Symposium had 20 oral presentations by scientists from 15 research organisations. Dr. Kirti Singh (Chairperson, WNRF and President, ISNS), Prof. P. I. Peter (Chairman, Noni Biotech, Chennai) and members of RAB briefed about the outcome of the symposium. The two days National Symposium had seven technical sessions including a special session on success stories after using divine Noni. Honourable Governor of Goa released two technical bulletins and Annual Report 2013-14. The symposium stressed for intensifying clinical studies on Noni to manage new life style diseases like cancer, cardio-vascular disorders, diabetes, obesity and arthritis. The Research Advisory Board (RAB) of WNRF was held on 29th September 2014 at ICAR Research Complex for Goa, Old Goa reviewed all the ongoing projects funded by WNRF, Chennai.

"Swachh Bharat Mission" set in motion



Owing to the importance of "Swachh Bharat Abhiyan" or Clean India Mission" led by the Government of India, the ICAR-ICAR Research Complex for Goa

has actively organised various activities between 25th September and 2nd October, 2014. The main objective was to propagate a cleanliness drive in and around the Institute and the surroundings of Old Goa. All the staff of the Institute and Krishi Vigyan Kendra (KVK) undertook a cleanliness drive. The Institute has carried out the following activities under the "Clean India Mission". On this occasion, all the Institute staffs took pledge to keep and maintain cleanliness. A silent procession was also organised to create awareness and motivate the people of Old Goa for maintaining individual hygiene and cleanliness of the surroundings.

Group Meet on Moongbean and Urdbean for Spring/Summer and Rice fallow Cultivation

A group meet for Spring, Summer and Rice fallow cultivation of Moongbean and Urdbean under All India Co-ordinated Research Project on “MULLaRP was held at ICAR-ICAR Research Complex for Goa, Old Goa on 22nd November, 2014. Dr. B. B. Singh, Assistant Director General (Oilseeds and Pulses), ICAR, New Delhi was the Chief Guest of the programme. Dr. Narendra Pratap Singh, Director, ICAR-ICAR Research Complex for Goa in his welcome address emphasised the need and scope for pulse research in the coastal region. Dr. N. P. Singh, Director, ICAR-Indian Institute



of Pulses Research (ICAR-IIPR), Kanpur delivered the introductory remarks, while Dr. Sanjeev Gupta, Project Co-ordinator (MULLaRP) delivered the exhaustive report on research achievements and future programmes.

Brainstorming Session on prospects and potential of pulses for coastal region

A Brainstorming Session on prospects and potential of pulses for coastal region was held on 23rd November, 2014 at ICAR-ICAR Research Complex for Goa, Old Goa. Dr. Narendra Pratap Singh, Director, requested the expert group to suggest research plan for the pulses production in the coastal areas. Dr. B. B. Singh, Assistant Director General (Oilseeds and Pulses), ICAR,

New Delhi, highlighted the scope of pulses especially mungbean, urdbean and cowpea in the coastal areas and cautioned for designing approaches east and west coast differently. Suitable crops, varieties, production practices and crop protection measures were discussed. Priorities of introducing pulses in coastal areas were identified through discussions and it is proposed to prepare a strategic plan.

Mussel culture technology demonstration –Second phase

A total of four units (one unit of rack/ famer group) were selected for trials in different areas of Goa (Batim-Chiral Bhat (2 units); Goa Velha (one unit), Madkai (one unit) under the financial assistance of National Fisheries Development Board (NFDB), Hyderabad. The scientific advisories on monitoring mussel growth

parameters, environmental parameters and culture maintenance up to the harvest would be provided by Fisheries Section of ICAR Research Complex for Goa. The groups, who have undertaken the culture technique in the last period, are continuing the culture in the current year.

National conference on Innovation in Traditional Practices for the Cultivation of Fruits, Vegetables and Plantation crops



National conference on “Innovation in Traditional Practices for the Cultivation of Fruits, Vegetables and Plantation crops” was organized by Asian Agri-History Foundation (AAHF) in collaboration with ICAR-ICAR Research complex for Goa during 11th to 12th December, 2014. The conference was inaugurated by Dr. Y.L. Nene, a well known plant protection scientist in the country and Retd. Justice V.S. Dave was the guest of honour. The conference was organised to promote

and popularize traditional practices in the agricultural field. The conference had discussions on region-wise information on traditional agricultural practices, yogic agriculture, conservation of agricultural biodiversity, indigenous technical knowledge in various aspects like general agricultural practices, biological disease management, local germplasm conservation, traditional processing methods in agriculture and preservation of indigenous technical knowledge. The conference was concluded with suggestions and recommendations for maintaining and improving the knowledge on these traditional practices for the cultivation of agricultural crops and modernizing and fine tuning ancient traditional techniques for sustainable and eco-friendly agriculture.

Workshop/Seminar/Symposia/Training attended

Date	Name of Scientist	Programme	Venue
8 th September 2014	Dr. N. P. Singh	Lecture of Dr. Jose Graziano da Silva, Director General, FAO	NASC Complex, New Delhi
15 th to 17 th September, 2014	Dr. S. K. Das	2 nd International Conference on Animal and Dairy Science	OMICS Publishing Group, Hyderabad, Andhra Pradesh
10 th October, 2014	Dr. N. P. Singh	X Joint Annual Conference of ISMOCD & IAE Goa	Kala Academy, Panjim, Goa
27 th October to 1 st November, 2014	Dr. N. P. Singh	4 th International Rice Congress	IRRI, Philippines Bangkok, Thailand
17 th to 18 th October, 2014	Dr. N. P. Singh	Meeting of ICAR Regional Committee No. VII	IGKV, Raipur, Chhattisgarh
28 th October, 2014	Dr. M. Thangam	RFD midyear review meeting	NASC Complex, New Delhi
6 th to 9 th November, 2014	Dr. S. A. Safeena	Sixth Indian Horticulture Congress	Codissia Trade Fair Complex, Coimbatore, Tamil Nadu
8 th to 11 th November, 2014	Dr. S. K. Das	7 th National Extension Education Congress	ICAR Research Complex for NEH Region, Barapani, Meghalaya
12 th to 15 th November, 2014	Ms. Manju Lekshmi N., Mr. Sreekanth G. B.	10 th Indian Fisheries and Aquaculture Forum-2014	NBFGR, Lucknow, Uttar Pradesh
17 th November 2014	Dr. N. P. Singh	Fodder Meet	IGFRI Jhansi, Uttar Pradesh
18 th to 19 th November, 2014	Dr. N. P. Singh	National Symposium on "Agricultural Diversification for Sustainable livelihood and Environmental Security"	Punjab Agricultural University, Ludhiana, Punjab
19 th November, 2014	Dr. S. A. Safeena	Training and Capacity building programme on "Preserving Indigenous Flora & Fauna, Local varieties and breeds"	The International Centre Goa, Dona Paula, Goa
1 st to 3 rd December, 2014	Dr. S. Priya Devi	National seminar on "Strategies for conservation, improvement and utilization of underutilized fruits"	CHES, Kodagu, Karnataka
5 th to 7 th December, 2014	Dr. N. P. Singh	National Seminar cum Exhibition on Pomegranate for Nutrition, livelihood Security and Entrepreneurship Development'	NRC Pomegranate, Solapur, Maharashtra
10 th to 12 th December, 2014	Dr. V. Arunachalam Dr. R. Maruthadurai	PLACROSYM XXI	Gateway Hotel, Kozhikode, Kerala
11 th to 12 th December, 2014	Dr. N. P. Singh Dr. A. R. Desai Dr. M. Thangam Dr. S. Priya Devi Dr. S. Safeena Dr. R. Ramesh Dr. R. Maruthadurai	National Conference on Innovation in traditional practices for cultivation of fruit, vegetable and plantation crops"	ICAR Research Complex for Goa, Old Goa 403 402, Goa.
18 th to 20 th December, 2014	Dr. R. Solomon Rajkumar	XXXI Annual Conference of Indian Poultry Science Association and National Symposium on "Poultry Production for Global Trade"	VCRI(TANUVAS) , Nammakkal, Tamil Nadu
22 nd to 24 th December 2014	Dr. N. P. Singh Dr. G. R. Mahajan	31 st Biennial workshop of AICRP on IFS	Tamil Nadu Agricultural University, Coimbatore, Tamil Nadu
24 th to 27 th December 2014	Dr. N. P. Singh	Silver Jubilee symposium on Strategic Approaches for Horticulture Research Education and Development - Way forward	NASC Complex, New Delhi

PERSONALIA

Awards/Recognition

Dr. Narendra Pratap Singh

- Deputed for 4th International Rice Congress held at Bangkok International Trade & Exhibition Centre (BITEC), Thailand from 27th October to 1st November, 2014
- Deputed to visit the International Rice Research Institute (IRRI) headquarters at Philippines from 2nd to 5th November, 2014 to have an overview of the Rice Breeding and Agronomic activities
- ISA Gold medal 2011 by Indian Society of Agronomy, Indian Agricultural Research Institute, New Delhi for outstanding contributions in Agronomy

Mr. Sreekanth G. B.

- Recognized as International open water diver (up to 18 m) by PADI with certification number 1411AZ1637 from 26th October, 2014.

Sports Award 2014 - West Zone Sports Tournament 2014 at ICAR -CAZRI, Jodhpur, Rajasthan

- First place in Men's Relay (4×100 m)
- Second place in Football and Volleyball
- **Dr. M. J. Gupta** - Overall champion women's - (1st place - 100 mtrs race, Discus throw, Badminton singles; 2nd place - 200 mtrs race, high jump, shotput, javellin throw).

Superannuation

Shri. H. R. Prabhudesai, Subject Matter Specialist (Agronomy) superannuated w.e.f 31-12-2014

Appointments

Dr. Sanjay Kumar Udharwar, Subject Matter Specialist (Animal Science) w.e.f. 02-09-2014.

Shri. Vinod Ananda Ubharhande, Farm Superintendent (Senior Technical Officer) w.e.f. 24-11-2014.

Promotion

Shri Sanjeev Kumar Singh, Technician, selected for the post of Farm Manager T-4 at ICAR-CIARI, Port Blair, Andaman and Nicobar w.e.f 10-12-2014.

Transfer from ICAR-ICAR Research Complex for Goa, Goa

Dr. Prafulla Kumar Naik, Sr. Scientist (Animal Nutrition) transferred to ICAR-Central Avian Research Institute, RC, Bhubaneswar. w.e.f 25-10-2014

Dr. Binsila B Krishnan, Scientist (Animal Reproduction and Gynaecology) transferred to ICAR- National Institute of Animal Nutrition and Physiology, Bangalore. w.e.f 25-10-2014.

Shri Raghav Kiran Kumar G., Stenographer Grade.III transferred to Directorate of Oilseed Research, ICAR, Hyderabad w. e. f. 31-12-2014

Transfer to ICAR-ICAR Research Complex for Goa, Goa

Dr. R. Solomon Rajkumar, Scientist (Livestock Products technology) transferred from NRC on Meat Hyderabad w. e. f. 3-11-2014.

Dr. Susitha Rajkumar, Scientist (Veterinary Pathology) transferred from NRC on Meat, Hyderabad w. e. f. 17-11-2014.