



संवादपत्र NEWSLETTER

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

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(Indian Council of Agricultural Research)



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हर कदम, हर उगर
किसानों का हमसफर
भारतीय कृषि अनुसंधान परिषद

AgriSearch with a human touch

In this issue

Research Highlights

- * Grafting of cultivated brinjal on wild brinjal
- * Characterization of local Nutmeg genotypes
- * Detection of Rotavirus in diarrhoeal cases
- * Goat production in Goa

Major Events

- * Coconut and arecanut farming need new directions in Goa
- * Training programme on Pig farming
- * Glimpses of Programmes under TSP
 - Agricultural Mechanization Program for Small and Marginal Tribal farmers of Goa
 - Supply of planting material of improved varieties of fruit crops
 - Distribution of high yielding vegetable crops seeds
 - Adoption of improved technologies in watermelon & cowpea cultivation
 - Awareness programme on "Clean milk production"

IPR Cell Activities

- * Agonda Goa- New Breed of Pig needs recognition
- * Commercialization of Technology for Indigenous Production of Bypass Fat
- * ICAR and CAZCAR sign MoU

New Initiatives

- * Demonstration on mussel culture
- * Programmes under Rashtriya Krishi Vikas Yojna

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From Director's Desk...

Biodiversity and conservation have been difficult issues in the ecological field. Biodiversity boosts ecosystem productivity where each species, no matter how small, all have an important role to play.

Our traditional systems of agriculture and medicine depend on plant and animal biodiversity. Agricultural products typically have qualities that derive from their place of production and are influenced by specific local factors, such as climate and soil. Conserving the wild ancestors and relatives of the cultivars is of paramount importance. There is an urgent need to protect and conserve these for the use by future generations.

In the new era of globalization, recognition and protection of rights of the farmers are also necessary.

India, as a member of the World Trade Organization (WTO), enacted the Geographical Indications (GI) of Goods (Registration & Protection) Act, 1999 which has come into force with effect from 15th September 2003. The Protection of Plant Varieties and Farmers Rights Act, 2001 (PPV & FRA) was enacted to establish an effective system for the protection of plant varieties and, the rights of the breeders and to encourage the development of new varieties of plants. Government of India has established PPV and FRA in the year 2005.

Under Articles 1 (2) and 10 of the Paris Convention for the Protection of Industrial Property, geographical indications are covered as an element of IPRs.


The PPV and FRA helps to protect the farmers' rights for their contribution towards conservation, improvement and making available the plant genetic resources for research and development. For stimulation of investment for research and new developments, the protection of plants breeders' rights is necessary. This can also facilitate the growth of the seed industry which in turn can ensure the availability of high quality seeds and planting material to the farmers.

Data published in the PPV and FR Authority website indicates that by the end of the year 2013, 5952 applications were received in the Plant Variety Registry for registration. During the year 2012-13 alone, 785 applications were received by the Authority for registration and for protection under the Act and the Authority issued 254 certificates of registration.

This Institute has helped in the process of obtaining GI status to a local beverage "Feni". Through the IPR Cell, this Institute is striving hard to register the local germplasm of crops with PPV and FRA. The state of Goa has many crops such as brinjal, okra, mango, local vegetables, flowers which are unique and need to be registered.

The Institute is also playing an important role in conserving and documenting the local genetic resources (plants, animals and microorganisms) by registering the same with NBPGR, NBAGR and VTCC.




N.P. Singh

RESEARCH HIGHLIGHTS

Grafting of cultivated brinjal on wild brinjal - A promising technology to manage bacterial wilt

Brinjal is cultivated in Goa during *rabi* season and the production is severely affected by the incidence of bacterial wilt caused by *Ralstonia solanacearum*. The disease is soil-borne and the locally preferred cultivar, *Agassaim* is highly susceptible. The pathogen is highly diverse and its management is a difficult task. In our research programme, a wild relative of cultivated brinjal is identified as resistant to this disease by inoculating diverse strains of the pathogen. The plants did not allow the pathogen to grow in their tissues resulting resistance. Seedlings of the wild type and *Agassaim*



Fruiting on the brinjal grafts



Harvested brinjal fruits from the grafts

were raised and the susceptible plants were grafted on the wild types. The resulting grafts were hardened and then inoculated with the pathogen. None of the grafts wilted and the histological studies indicated the failure of the pathogen to multiply sufficiently to cause wilt. Successful grafts were planted in the field which produced fruits of the *Agassaim* type. Consumer preference for the fruits from grafts is similar to the fruits from the seedling type. This technology could be a promising strategy in the management of bacterial wilt in brinjal.

Characterization of local Nutmeg genotypes



Twenty four seedling genotypes of nutmeg from local sources are being maintained in Germplasm collection under intercropping situation in coconut garden with objectives for studying variation in physico-morphological traits of fruits and nuts of local genetic resources of nutmeg, generating basic data

for characterization of genotypes to facilitate cataloguing and to identify potential genotypes for future use in crop improvement or direct clonal selection.

The collection comprises of female/bi-sexual genotypes from Lamgao, Mulgao (Bicholim), Khandola (Marcela) and Arla Keri (Ponda) villages and two male genotypes. Studies revealed the variation among nutmeg genotypes for growth habit (Conical/



Knema andamanica

Fruit maturity period in Nutmeg genotypes

Sr. No.	Accen.	April	May	June	July	Aug	Sept	Fruiting duration. (months)	Yield (fruits/tree) 2013				
1	NMA1			14	22	12	4	3.5	145				
2	NMC3		8	11	10	18	7	11	205				
3	NMD1	8	4	8	42	38	33	48	28	19	6	5.0	566
4	NMD2	6	38	36	8	14	41	25	63	72	18	4.5	789
5	NMD3				8	12	18	2				2.0	178
6	NME2			8	18	23	28	5				2.5	312
7	NME4		3	8	5	2	32	12	4			3.0	108
8	NME5		12	18	3	2	0	23	17			3.5	276
9	NMF3	28	16	18	11	9	6	16	18			4.0	159
10	NMF5	32	18	12	8	6	0	12	8			4.0	278
11	NMF6				9	14	18	23	32	21		3.0	348
12	NMG2				12	10	10	23	3			2.5	168
13	NMH2				24	12	19	21	6			2.5	255

Globular canopy), flowering pattern, bearing period and habit, yield per tree, physico-morphological traits of fruits, seed to mace ratio and per cent shelling. Such genotypes as NMD1, NMD2, NMF3 and NMF5 showed higher yield performance in the range of 96 to 321 fruits per tree (Table). Fruiting was observed to be staggered over 5 months in NMD1 and 2, while it was spread over four months in NMF3 and NMF5 genotypes with two peaks. NMF6 genotype, though high yielder, fruiting was spread over 3 months, starting from June first week.

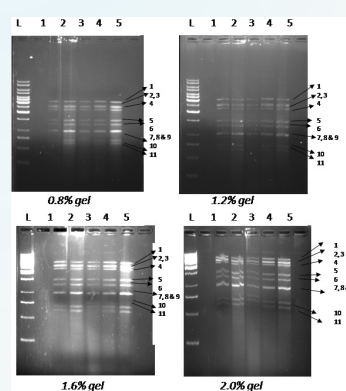
Kernel weight of the nutmeg accessions varied 1.34 to 3.24 g on dry weight basis. Higher shelling per cent of 66.03 was recorded in NME2 followed by 65.58 (NMD2), 65.18 (NMF3), 63.59 (NMD3) and 62.64 (NMF5), respectively. Dry mace weight varied from 0.22g to 1.36g in NME5 and NMC3, respectively.

A wild relative of nutmeg, *Knema andamanica* was also located in Canacona zone and added to Germplasm collection.

Detection of Rotavirus in diarrhoeal cases

A total of 142 diarrhoeal stool samples comprising from children (100) and piglets (42) were processed for extraction of dsRNA of rotavirus, and subjected to RNA-PAGE and AGE for its detection. Interestingly, 38 samples from children and 3 from piglets were found to be positive for rotavirus by AGE. However, RNA-PAGE could detect only 34 samples from children and 3 from piglets. Electrophoresis with 1.2% gel was found to be optimum. Out of 38 positive samples from children, 32 showed long electrophoretic patterns and remaining 6 showed short electrophoretic patterns. All the three piglet samples showed long electrophoretic patterns. AGE is found to be superior, efficient, less laborious, economical and time saving than the RNA-PAGE for rapid diagnosis of rotavirus from fecal samples of humans as well as animals.

RT-PCR conditions were standardized for the detection



of the VP4 gene of rotavirus from extracted dsRNA from faecal samples using Con3 and Con2 oligonucleotide primers designed to partially amplify the VP4 gene of all the Group A rotaviruses. For standardization, two control samples which

were positive by RNA-PAGE were used. Variations to optimize concentrations tried were: annealing temperature from 48-60°C; primer concentration from 10 to 20 pmol; MgCl₂ from 1.5 to 3 mM; template volume from 2 µl to 8 µl and M-MuLV-RT from 20-200 units. The PCR product size (876bp) was determined by comparing with a standard molecular weight marker.

Goat production in Goa

Konkan Kanyal and Osmanabadi goats are well adapted to coastal conditions. Ten does delivered during October-December, 2013, out of which three were twin births and seven single births. Average birth weight of male and female kids was 2.712 ± 0.210 kg and 2.560 ± 0.150 kg, respectively with overall mean value of 2.653 ± 0.139 kg. Breed wise average birth weight were found to be 3.266 ± 0.370 , 2.900 ± 0.105 and 2.422 ± 0.084 kg in Konkan Kanyal, Osmanabadi and crossbred (K x O) kids, respectively. Sex ratio was 1.6 : 1. Growth rates in Konkan Kanyal, Osmanabadi and Crossbred (K x O) finisher goats were observed to be 45.20 ± 3.1 , 43.71 ± 4.80 and 54.00 ± 2.71 g / day, respectively.



Konkan Kanyal female goat

MAJOR EVENTS

Coconut and arecanut farming need new directions in Goa



A “Scientist-Extension Personnel- Farmers Interface Meeting on Scientific Coconut and Arecanut Farming” was organized by ICAR Research Complex for Goa, Old Goa and KVK (North Goa) in collaboration with Central Plantation Crops Research Institute (CPCRI), Kasargod on 7th November, 2013. About 150 progressive farmers, extension officials from the line department, representatives from Zuari Industries Ltd and Sesa Goa Ltd actively participated in the interface programme. While delivering the introductory remarks, Dr. Narendra Pratap Singh, Director emphasized the need for such an interface meeting to facilitate the effective transfer of improved production technology

to the needy farming community. On this occasion, Shri P. Tufani, Director, Directorate of Agriculture, Government of Goa highlighted the practical problems such as difficulties in harvesting, disease and insect pest problems faced by the farmers in coconut and arecanut farming in Goa. Dr. G. V. Thomas, Director, Central Plantation Crop Research Institute, Kasargod recounted the potential of these two crops, need to promote tender water and product diversification and intercropping benefits for sustainable farming. In his inaugural address, Shri D. P. Dwivedi, Secretary, Agriculture, Government of Goa critically noted the ever increasing demand due to increased consumption in non coconut growing areas of the country and hence the need for meeting the same.

Resource persons from CPCRI, Kasargod apprised the gathering about the improved varieties and hybrids of coconut and arecanut available in the country for different regions, various intercropping options, scientific crop production and protection practices and their timely operations for sustainable farming.

Training programme on Scientific Pig farming

A training programme on Scientific pig rearing was organized on 21 December 2013. The programme was graced by Dr. J. S. Chauhan, ADG (Seeds), ICAR, New Delhi as Chief Guest. Mr. P. Tufani, Director, Department of Agriculture, Govt. of Goa and Dr. Narendra Pratap Singh, Director of the Institute were also present. Twenty-two farmers attended the training. Various talks on pig rearing were delivered by the scientists of the Institute.



Glimpses of Programmes under Tribal Sub Plan

Agricultural Mechanization Program for Small and Marginal Tribal farmers of Goa



ICRA Research Complex for Goa has implemented the programmes under Tribal Sub Plan in different areas of Goa which are dominated by tribal community. The farming patterns and mechanization requirements of the tribal farmers were assessed by a team of Scientists comprising of Dr. E.B. Chakurkar, Dr. A.R. Desai, Dr. Mathala Juliet Gupta and Dr. M. Karunakaran. Based on the needs as expressed by the farmers and their farming patterns, it was decided to distribute power tillers with trailer, mini rotary tillers, brush cutters, threshers and winnowing fans.

Four sets of farm machineries were distributed to Nuvem tribal Farmers' groups at the hands of Shri. Francisco Sardinha, Hon'ble Member of Parliament, South Goa. The beneficiaries included 75 farmers belonging to Nuvem Scheduled Tribal Farmers Association, Salcette, Valley View Apartment, and 21 farmers belonging to Baida Xhetkarancho Ekvott, Nuvem, Salcette and Duguem Farmers Group, Nuvem, Salcette. In his welcome address, Dr. Narendra Pratap Singh, Director explained the background about the program and the various areas in which ICAR Research Complex for Goa is striving for the service of farmers of Goa. Dr. Mathala Juliet Gupta, Project Leader, pointed out the achievements of the project and the difficulties in its implementation. The Chief Guest, Shri Francisco Sardinha addressed the gathering and appreciated the work of ICAR. He also motivated the farmers to fight for their rights and also requested ICAR Scientists to do need based research to save farming in Goa.

Another programme was organized for distribution of twelve sets of machineries to 138 farmers belonging Pale, Neturlim, Canacona and Quepem. The function was graced by Shri Ramesh Tawadkar, Hon'ble



Minister for Sports, Youth and Tribal Welfare, Govt. of Goa, Hon'ble MLA of Sanquelim constituency, Shri. Pramod Sawant, Shri. Dattaprasad Kholkar, Deputy Chairman, Goa State Planning Board and Shri. Satish Tendulkar, Director of Agriculture, Govt. of Goa. Dr. Narendra Pratap Singh welcomed the guests and the farmers and narrated about the Tribal Sub Plan programmes of the institute. Shri. Satish Tendulkar appreciated the sincere efforts of the Institute for the Tribal farmers and told about the various schemes of the state Government available for the tribal farmers. Shri. Pramod Sawant appreciated ICAR for its dedicated work for Goa while pointing out to the farmers that after 50 years of Independence Goa was still not self-sufficient in food. Shri. Dattaram Kholkar expressed his gratitude to ICAR for its service for the farmers of Goa. The Chief Guest, Shri. Ramesh Tawadkar appreciated the Institute for its untiring work for Goan farmers' and urged the tribal farmers to explore new and improved areas to improve production and also make organic farming their success mantra. The program was coordinated by Dr. M.J. Gupta, Scientist and vote of thanks was proposed by Dr. M. Karunakaran, Coordinator, TSP Projects and Scientist (Animal Reproduction).



Supply of planting material of improved varieties of fruit crops

A programme for supply of planting material of improved varieties of fruit crops was organized at Karamgad wada of Gaondongruim, Canacona on 19 October, 2013. During the programme, Dr. Narendra Pratap Singh, Director, ICAR Research Complex for Goa and Mr. Barkelo Velip, Panch of Gaondongruim village distributed quality planting material of acid lime (Var. Sahi Sharabati : 750 nos) and Guava (Vars. Lalit and Shweta : 650 grafts) to the farmers for planting in the Homestead gardens for supporting the nutritional security budgeting. Dr. N.P. Singh appraised the farmers' groups about the various forms of help that the Institute would be able to provide under the TSP programme. Earlier, farmers' groups who were benefited in previous year's programmes, voluntarily shared their feedback and experiences of having obtained higher cashew nut yields and double benefits through adoption of the technology imparted to them.



About 200 farmers were provided with NPK fertilizers and micro nutrients for adopting the “Productivity Maximization Practices (PMP) in cashew. Field demonstration of nutrient application to cashew trees was also conducted by ICAR Scientists Drs. A.R. Desai, R. Maruthadurai and Z.B. Dubal for improving the productivity.

Adoption of improved technologies in watermelon and cowpea cultivation



The Institute has launched a programme on ‘Adoption of improved technologies in watermelon and cowpea cultivation for higher income of tribal community of Goa’ under TSP Programme for the benefit of tribal farmers of Dhulape, Verna on 13 November, 2013.

Under this programme cultivation of two important crops namely, watermelon and cowpea was supported. Farm inputs like seeds of cowpea (Alsando) and water melon were distributed along with bio-control agents to the farmers. Further to assist the farmers, two extension folders on production guidelines of these crops were printed and distributed. On this occasion Dr. Narendra Pratap Singh, Director highlighted the importance of scientific cultivation of cowpea and watermelon. He assured the farmers of all scientific and technical help from ICAR throughout the crop period. Scientists highlighted the salient points in growing the crops for maximum production and benefit. This programme was attended and facilitated by the Sarpanch of Dhulape, Verna.

Awareness programme on "Clean milk production"

An awareness programme on “Clean milk production” was organized under the aegis of Tribal sub plan and a project sponsored by Department of Biotechnology, Government of India under societal development programme at Bhati, Sanguem in collaboration with Goa State Cooperative Milk Producers’ Union Ltd., Curti on 13 December, 2013. The awareness programme focused on prevention of mastitis and

infertility problems in dairy animals. Over 60 farmers from Bhati and nearby villages participated in the programme. Shri. Subhash Faldesai, Hon. MLA, Sanguem Constituency and Chairman, INFOTECH Corporation graced the occasion as Chief Guest. Dr. N. P. Singh, Director, ICAR Research Complex for Goa, Dr. M.A. Bale, Veterinary Officer, Goa Dairy, Dr. Nitin Naik, Veterinary Officer, Sanguem

Dispensary, Shri. Chutgo Ramgaonkar, Chairman, Milk Cooperative Society, Bhati, Shri Shashikant Velip, Milk Cooperative Society, Vilian, Dr. E.B. Chakurkar, Principal Scientist, Dr. S.B. Barbuddhe, Principal Scientist and PI of the project, and Dr. Z.B. Dubal, Coordinator, TSP and Scientist participated in the deliberations. Talks on clean milk production, foodborne infections, infertility in dairy animals were delivered. The use of mastitis detection kit was demonstrated to the farmers. Kits containing mineral supplements and veterinary medicines were distributed to the farmers.



Distribution of high yielding vegetable crop seeds



Vegetable seed kits produced, processed and packed at the Institute were distributed to 55 farmers of Curtorim

on 12 November, 2013 under TSP programme. The kits comprised of brinjal (Bholanath and Surya-both resistant to bacterial wilt disease), chilli (Kashi Anmol-dwarf variety for green chilli production), vegetable cowpea (Kashi Kanchan-dwarf vegetable cowpea) and amaranthus (Local red amaranthus). The vegetable seed kits were distributed at the hands of Shri. Aleixo Lourenco, Hon'ble MLA, Curtorim in presence of Dr. N. P. Singh, Director, ICAR Research Complex for Goa. The seed distribution was facilitated by Dr. M. Thangam, Senior Scientist (Hort.-Vegetable Science). During the seed distribution programme, cultivation tips were given farmers on different vegetable crops.

IPR CELL ACTIVITIES

Commercialization of Technology for Indigenous Production of Bypass Fat

A Memorandum of Agreement (MoA) was signed for commercialization of the technology for 'production of bypass fat indigenously for dairy animals' between ICAR Research Complex for Goa, Old Goa and Jeevansanjivani Rural Development Foundation, Govind Dairy Campus, Phaltan, Satara, on 9th December, 2013. The MoA was signed by Dr. Narendra Pratap Singh, Director representing the ICAR and Mr. G. M. Dhupal, President, represented the Jeevansanjivani Rural Development Foundation. Bypass fat (rumen protected fat) is the dietary fat, which is modified in such a way that it is not digested in the upper part (rumen) of digestive tract, but gets digested in lower part of the digestive tract of the dairy animals and therefore, is the best choice as 'energy rich feed supplement' for sustainable milk production. Dr. P. K. Naik, Senior Scientist (Animal Nutrition), who has developed the technology, highlighted the importance of bypass fat for dairy animals. The supplementation of

the bypass fat to dairy animals at the rate of 15-20 g/ kg milk production can increase milk yield up to 20% and improve reproductive performances and health of dairy animals.



ICAR and CAZCAR sign MoU



ICAR Research Complex for Goa, Old Goa and CAZCAR Heritage Distillers, Mapusa signed Memorandum of Understanding (MoU) for research on improvisation of traditional process of fermentation of cashew apple juice for feni production on 17th December, 2013. Goa is the only state in India where cashew apples are used for feni making. However, the major constraints faced by the people involved in feni industry include lack of consistency in quality, non-standardized processes in case of both product quality and for processes such as juice extraction, fermentation, distillation

and variation in these processes and unattractive packaging,

Keeping the above constraints in view, Dr. Narendra Pratap Singh, Director, ICAR Research Complex for Goa and Shri. Gurudatta D. Bhakta, Managing Partner, CAZCAR, Mapusa representing public and private sectors, respectively signed the MoU for furthering the cause of boosting the feni production industry and removing its tag as country liquor. The purpose of public-private partnership through the MoU is mainly for enhancing the quality of the traditional product by way of refining the traditional wisdom. The partnership research will give technological boost to the manufacturers in particular and the state of Goa in general. The process of technology development under MoU is of multidisciplinary nature involving Microbiology and Horticulture. Dr. S.B. Barbuddhe, Principal Scientist (Veterinary Public Health) and Dr. A.R. Desai, Senior Scientist (Horticulture) will facilitate the research from the ICAR side.

Agonda Goa- New Breed of Pig needs recognition



A medium sized, compact black coloured pig has been reared in Goa traditionally, known as “Gavthi Dukor” i.e. village pig and preferred by local population due to less maintenance cost, better

adaptability and consumer preference. These pigs are slow growing pigs, with rough bristles, show little wilderness and can sustain in scavenging situation and preferred for sausage making by local sausage industry. Females are good mothers. This breed has been used for production of crossbred pigs which are performing better than exotic and gaining popularity among pig growers.

An application for registration of the breed, “**Agonda Goa Pig**” has been submitted to National Bureau of Animal Genetic Resources, Karnal.

NEW INITIATIVES

Demonstration on mussel culture

Goa has an enormous water resource potential for mariculture development while only a few people are engaged in coastal mariculture. ICAR Research Complex for Goa initiated demonstrations on Mussel culture in Goa Velha and Curtorim villages on 29th November 2013. The program is being co-ordinated by Manju Lekshmi. N., Scientist- FRM under the technical guidance of Dr. K. K. Philipose, Officer In-Charge, CMFRI, Karwar centre. Dr. Narendra Pratap Singh, Director, ICAR Research Complex



for Goa spoke about the importance of mariculture in Goa. Under this initiative, low cost technologies on mussel, oyster, small scale cage culture, capture

based culture techniques and integrated farming will be provided at suitable sites for the farmer groups.

Programmes under Rashtriya Krishi Vikas Yojna

ICAR Research Complex for Goa, Old Goa has been granted various programmes under Rashtriya Krishi Vikas Yojna.

Title	Principal Investigator	Budget (Rs. Lakhs)	Date of start
Crossbreed Pig Production using controlled breeding through synchronization of estrous in Goa	Dr. E.B. Chakurkar	45.00	December, 2011
Generation of elite planting material of horticultural crops of Goa	Dr. V. Arunachalam	27.80	December 2011
Establishment of protected structure for high value flower and vegetable crops for training and demonstration	Dr. M. Thangam	59.00	December 2011
Empowering farmers of Goa for sustainable adoption of low cost protected cultivation structures through training and demonstration	Dr. M.J. Gupta	44.50	April 2012
Rural Poultry production for livelihood security in Goa	Dr. B.K. Swain	33.70	December 2011
Production and supplementation of bypass fat to dairy animals for enhancement of milk production and livelihood security of dairy farmers of Goa	Dr. P.K. Naik	77.90	September 2013
Demonstration of precision farming technologies (PET) in banana, pineapple and papaya in farmers field in Goa	Dr. S. Priya Devi	59.00	September 2013
Conservation of traditional varieties of vegetable crops and entrepreneurship development for its seed production under vegetable initiative for urban clusters	Dr. M. Thangam	40.00	September 2013
Standardization of micronutrient doses for various crops of Goa	PC, KVK, North Goa	17.00	April 2012
Establishment of demonstration unit on integrated agriculture model for sustainable agriculture	PC, KVK, North Goa	54.00	December 2011
Upgradation of training facilities for advance training to farmers and other stakeholders in Goa	PC, KVK, North Goa	59.00	September 2013

PARTICIPATION IN SEMINARS / SYMPOSIA / TRAININGS

Dr. N.P. Singh

- 8th National Symposium on Noni held at Bangalore during 29 -30 October, 2013.
- National conference on strategic development of Cashew held at Ranchi during 20–21 November, 2013.
- National Group meeting of AICRP on IFS held at Umiam, Meghalaya during 2-4 December, 2013
- Inaugural ceremony of Regional Science Congress and delivered keynote address at Jawahar Navodaya Vidyalaya, Canacona, Goa, 14 Nov. 2013
- Valedictory function of the training Course on Management Strategies for Sustainable Livestock Production against Impending Climate Changes organised by NDRI, Adugodi, Bangalore, 25 November, 2013
- National Workshop on Packaging of Ethnic Foods at Hotel Mandovi, Goa, 21 December, 2013

Dr. B. L. Manjunath

- International seminar on organic agriculture held at Bangalore during 14-16 November, 2013.
- National Group meeting of AICRP on IFS held at Umiam, Meghalaya during 2-4 December, 2013.

Dr. Gopal Mahajan

- 78th Annual Convention of Indian Society of Soil Science held at Jodhpur during 23-26 October, 2013. Received Best Doctoral Research Presentation Award 2013.

Dr. S. B. Barbuddhe

- International conference on advances in biotechnology and bioinformatics held at Pune during 25-27 November, 2013.

Dr. A. R. Desai

- National Symposium on Cashew held at Shimoga, during 29-30 October, 2013.
- National Conference on strategic development of cashew held at Ranchi during 20 – 21 November, 2013.
- National conference on spices held at Shimoga during 19-21 December, 2013.

Dr. Manohara K. K.

- 10th National Symposium on Managing Natural Resources held at Bharuch, Gujrat during 11-14 December, 2013.

Dr. M. J. Gupta

- 10th Annual Workshop AICRP on Application of Plastic in Agriculture held at Junagadh during 7-9 October, 2013.

Dr. Safeena S.A.

- Second International conference on Ecosystem Conservation held at Thiruvanthapuram during 3-5 October, 2013.

Mr. Sreekanth G. B.

- National Training Programme on SAS for Developing Predictive Models in Agriculture, Animal and Aquaculture Research held in Mumbai during 18-23 November, 2013.

Ms. Manju Lexmi N.

- Second International conference on ecosystem conservation held at Thiruvanthapuram during 3-5 October, 2013.

PERSONALIA

Foreign Deputation

- Dr. V Arunachalam, Principal Scientist (Horticulture) attended the NAIP HRD Component Open International Training on Allele mining (Natural Resource Management) at University of Leicester, LE1 7RH United Kingdom from 01.10.2013 to 24.12.2013 at the Molecular Cytogenetics Laboratory. He worked on WRKY and NBS-LRR sequences of banana.



Appointments

- Dr. Binsila B. Krishnan, Scientist (Animal Reproduction) joined the Institute w.e.f. 17-10-13.
- Dr. P. Muniswamy, Scientist (Biotechnology- Animal Science) joined the Institute w.e.f. 27-11-13, transferred from Project Directorate on Foot & Mouth Disease, Mukteshwar.

Transfers

- Dr. Sanat Kumar, Farm Superintendent, transferred to CPRS Jalandhar w.e.f. 28-10-13.
- Dr. B. K Swain, Principal Scientist, transferred to CARI Regional Station, Bhubaneshwar w.e.f. 26-10-13.

PARTICIPATION IN KRISHI VASANT - 2014

ICAR Research for Goa will be participating in Krishi Vasant 2014 to be held in Nagpur during 9 - 13 February 2014. The Institute will exhibit various research activities. Besides, scientists from the Institute will participate in the discussions on various aspects of agriculture and allied activities.