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SPICES NEWS



Indian Institute of Spices Research
Marikunnu (P.O.), Calicut, Kerala, India

Interaction and Evaluation

Research Advisory Committee meeting

The second meeting of the Research Advisory Committee (RAC) was held under the Chairmanship of Prof. S. Kannaiyan during 30-31 May 2006. The RAC expressed satisfaction over the implementation of the recommendations of last meeting and stressed the need for impact analysis of the technologies developed by IISR. The research achievements of 12 major projects, Action Taken Report on the recommendations and programme envisaged for the next year were presented.



National Biennial Group Meeting of research workers of AICRPS

The National Biennial Group Meeting of research workers of the All India Coordinated Research Project on Spices (AICRPS) was held at IISR, Calicut on 25-27 May 2006. Scientists from 15 State Agricultural Universities, Dept. of Horticulture, Dept. of Agriculture, Directorate of Arecanut and Spices, Spices Board, farmer's representatives & Agricultural input agencies apart from scientists of IISR, Calicut and NRC on Seed



Spices, Ajmer, Rajasthan attended the meeting. Dr K.V. Ramana, ADG (PC), ICAR, New Delhi inaugurated the meeting, which was presided over by our Director, Dr. V. A. Parthasarathy. During the three days deliberations, research results emanating from about 110 research projects covering 12 crops from 19 Coordinating Centers were discussed. Two varieties each of small cardamom, coriander, cumin and fenugreek and one variety each of fennel, anise and celery were recommended for state/ national release.

Staff Research Council

Annual SRC for year 2005-2006 was held on 17-18 March 2006 under the Chairmanship of Director, IISR. Around 56 projects came under review, 14 projects were closed and 10 new projects, including an externally funded project funded by the Ministry of Environment and Forest were launched.

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Research update

Surveys were conducted to collect the wild relatives of black pepper at Chimmony WLS, Parambikulam WLS and Nelliampathy forests. Altogether 49 Piper accessions were collected during the exploration. Unique collections from Nelliampathy forest include *P. galeatum* (male) with very long spike attaining about 24.5 cm and *P. sugandhi* with purple spike.

Total of 23 cardamom germplasm collections were made from cultivated and wild forest areas of Idukki, Chimmony, Nelliampathy and Palakkad regions of Kerala, which includes a specific morphological marker type with white labellum (normal flower has purple streaks in white labellum), high yielding bold capsule type, lower



P. sugandhi with purple spike

Highlights

- Germplasm - collection and conservation
- Comparative yield trials on cardamom
- Granite powder- a substitute for sand
- Regression model for yield prediction
- Assay of sucrose phosphate synthase
- Badnavirus- Amplification and cloning
- Phytophthora-Isolation & conservation
- Characterization of Indian *Radopholus*



Unique cardamom accession-flower with white labellum

elevation accessions and pseudostem with purple pigmentation.

Based on preliminary evaluation trials (PET), 59 selections and 11 hybrids of cardamom were

short listed for further evaluation under comparative yield trials (CYT). Morphological, yield and quality characters have been recorded in CYTI, II, III and IV. Among the Malabar type, the short listed genotypes with significantly high yield are SAM with yield of 1552.83 kg/ha and Ma 28 with yield of 1085.59 kg/ha. Among the hybrids, the short-listed genotypes are Nhy 35 (yield 1498.18 kg/ha) and Nhy14 (1193.37 kg/ha). Among the compound panicle type, AMB 2 with yield of 1770.75 kg/ha and among the Vazhukka type, VA 1 with yield of 1487.68 kg/ha has been short-listed.

The *ex-situ* gene bank presently contains 439 collections, hybrids and disease resistant selections of cardamom.

Out of 102 nutmeg accessions evaluated for yield, A11/25 was found to be the best, yielding 952 fruits per tree per year. In Garcinia, the clone of a very high yielding and late maturing type collected in 2000-01 had flowered in 3rd year after planting at farmer's field with the fruits maturing in September- October.

When dwarf clove was used as scion for approach grafting on ordinary clove, the resultant graft had the appearance of ordinary clove with an increase in the internodal length of the scion shoot.

A method for isolating amplifiable genomic DNA from dried, powdered berries of black pepper was developed. Quality analysis of *Z. officinale* var. *rubens* indicated low fiber (1.25%), high starch (52.5%) and high dry recovery (43.8 %).

Granite powder can be used as a substitute for sand in black pepper nursery mixture. The treatment consisting of soil, granite powder and FYM in 2:1:1 proportion recorded maximum biomass (3.9g) of rooted black pepper cuttings compared to control, ordinary potting mixture (3.5g).

A regression model based on 11 years (1991 to 2001) data for prediction of black pepper

production in Kerala was developed with monthly rainfall as predictor. The model, $Y = 52915.1 + 286.3769^{\text{January}} + 23.2525^{\text{April}} - 14.7527^{\text{July}} + 33.907^{\text{September}}$ ($R^2 = 0.7057$) was used to predict black pepper production for Kerala State for 2002-03 and 2003-04. The predicted production deviated 15% in 2002-03 and 25% in 2003-04 in comparison to the official estimate.

Assay of sucrose phosphate synthase (SPS) enzyme activity in high and low yielding black pepper accessions revealed that SPS activity during juvenile stage does not influence productivity. Drought tolerant and susceptible black pepper accessions showed similar profiles for catalase and peroxidase isozymes indicating their non-utility for screening process.

β-Caryophyllene, a major ingredient in the essential oil was determined in different of black pepper varieties. The oil of Panniyur 1 at Ambalavayal has 16%, Pournami 19.8%, and HP-39 and Coll. 1020 at Peruvannamuzhi has 25% β-Caryophyllene.

Total DNA was extracted from *Badnavirus* infected black pepper leaves were used as template in PCR to amplify its genome. A portion of open reading frame (ORF) I (700 bp) and ORF III (600 bp) were amplified using degenerate primers synthesized to the conserved regions in badnaviruses. The PCR products were purified, cloned and sequenced. Multiple alignment of both nucleotide and deduced amino acid sequences showed that the virus is more close to *Piper yellow mottle virus* (PYMV) and *Banana streak virus*.

Exclusive websites for the All India Coordinated Research Project on Spices (www.aicrps.res.in), NRC Seed Spices, Ajmer (www.iisr.org/nrcss) and a web portal of IISR Library (SpiceE-Library) have been developed by our Bioinformatics Centre.

Phytophthora isolates infecting 35 host plants have been conserved in the repository. Eighty isolates of black pepper, 14 of Arecanut, 14 of vanilla, 12 of rubber, 11 of Colocasia, 10 of cardamom, 22 of cocoa, 18 of Betel vine, 16 of coconut, 5 of capsicum, 4 of Crossandra and 10 isolates from other hosts were sub cultured and maintained in carrot agar slants and sterile distilled water. A total of 400 *Phytophthora*

isolates were sub cultured during the year. The percentage of revival of cultures from distilled water varied from 41 to 87%. DNA from 240 *Phytophthora* isolates have been isolated and stored at -20°C . The yield varied from 500 $\mu\text{g/ml}$ to 2000 $\mu\text{g/ml}$ for each 0.1g of mycelium.

Resistant source for bacterial wilt in Zingiberaceae was found in *Curcuma amada*.

The burrowing nematode (*Radopholus similis*) infesting black pepper was characterized using ITS sequencing. ITS region of rDNA was amplified using specially designed species-specific primers, cloned and sequenced. The size of the PCR fragment is of 398bp and it has 98% sequence similarity with known *R.similis* populations across the world. Molecular characterization of an Indian isolate of *R.similis* was done for the first time.

New Projects

Biodiversity in Piper and Garcinia and identification of spots of species richness in Western Ghats using GIS and molecular markers, Funded by Ministry of Environment and Forests (Investigators: *Mathew PA, Johnson K George, Saji KV, Utpala Parthasarathy*)

Diagnostics & molecular characterization of pathogens of horticultural crops and their biocontrol organisms, ICAR sponsored winter school, 01-23 December 2006 (Coordinator: *Anandaraj M*).

Personalia

Awards/ Honours/ Recognitions

Anke Gowda S J
Kandiannan K
Venugopal MN

Invited as consultants on black pepper by TATA Coffee Ltd, Pollibetta, Karnataka.

Devasahayam S
Kandiannan K
Krishnamurthy KS
Kumar A
Shiva KN

Passed the Hindi Praveen Examination conducted by the Department of Official Language, Ministry of Home Affairs, Government of India.

Parthasarathy VA

Elected as Fellow, Indian Society of Citriculture

Sasikumar B

Nominated as fellow, Indian Society of Spices

Participation in Symposia/ Seminars/ Conferences/ Meetings**All Scientists/ Technical staff**

Workshop on Biodiversity and Bioresources Utilization organized by National Biodiversity Authority of India, Chennai, and IISR, Calicut, 21 January 2006.

The National Biennial Group Meeting of research workers of the All India Coordinated Research Project on Spices (AICRPS), IISR, Calicut, 25-27 May 2006.

Anandaraj M
Devasahayam S
Parthasarathy VA
Santhosh J Eapen

National Conference on Agro-biodiversity organized by National Biodiversity Authority, Chennai, 12-15 February 2006.

Anke Gowda SJ

Interactive meeting of Golden Jubilee Celebrations, Central Plantation Crops Research Institute, Regional Station, Vittal, 18 February 2006.

Bhat AI

International Symposium on Management of vector-borne viruses, ICRISAT, Hyderabad, 7-10 February 2006.

Indo-US workshop on Molecular Plant Virology, INSA, New Delhi, 11-12 February 2006.

Workshop on Commercialization of Biotechnology, Biotech Consortium of India Ltd, New Delhi, 02 March 2006.

Devasahayam S

Inter-Departmental Meeting between ICAR and CPWD Southern Zone III, Bangalore, 28 February 2006.

Jayashree E

40th Convention and Symposium of Indian Society of Agricultural Engineers, TNAU, Coimbatore, 19 January 2006.

Kandiannan K
Rajeev P

North East AgriExpo 2006 organized by Ministry of Agriculture, Ministry of Development of NE Region, Ministry of Rural Development (GOI), Confederation of Indian Industry and Nagaland Government, Dimapur, 27-31 March 2006.

Krishnamoorthy B

Workshop on Official Language Implementation, IISR, Calicut, 23 January 2006.

37th meeting of Town Official Language Implementation Committee Meeting, Calicut, 26 April 2006.

Parthasarathy VA

Selection Committee Meeting, ASRB, New Delhi, 27 January 2006.

Academic Council Meeting, KAU, Thrissur, 15 March 2006.

National Symposium on Molecular Breeding, IIVR, Varanasi, 20-23 March 2006.

ICAR Standing Finance Committee and Governing Body Meeting, ICAR, New Delhi, 30 March 2006.

Collaborative project on Germplasm and Library Networking, CPCRI, Kasaragod, 16 May 2006

Viva Voce Examination, Mangalore University, Mangalore, 17 May 2006.

Brainstorming session to consider biotech interventions for improved planting materials and product development on Zingiberaceae, DBT, New Delhi & Selection Committee Meeting, ASRB, New Delhi, 15 June 2006.

Prasath D

93rd Indian Science Congress, Indian Science Congress Association, Hyderabad, 03-07 January 2006.

Masters training programme on Organic spices production, Spices Board, Madikeri, 06 February 2006.

Masters training programme on Black pepper, Spices Board, Mudigere, 08 February 2006.

Santhosh J Eapen

BTIS Coordinators' Meeting, CPCRI, Kasaragod, 03-04 February 2006.

Sasikumar B

National Biodiversity Awareness Workshop, CTCRI, Thiruvananthapuram, 10-11 January 2006.

National Science Day, CWRDM, Kozhikode, 28 February 2006.

Thankamani CK

Brain storming session on Biodiversity conservation and eco development, Wayanad, 24 February 2006.

Venugopal MN

Ankegowda SJ

Prasath D

127th General Body Meeting of Kodagu Planter's Association, Madikeri, 23 June 2006.

Membership in committees/ professional societies

Anandaraj M

Member of a three member committee constituted by National Biodiversity Authority, Chennai to find out the facts about the alleged misappropriation of *Jatropha* at Indira Gandhi Agricultural University, Raipur, Chhattishgarh.

Lectures delivered

□ *Digital institutional repositories* In: Study circle meeting, IISR, Calicut, 06 January 2006 (Santhosh J Eapen).

□ *Biodiversity conservation activities in spices* In: National biodiversity awareness workshop, CTCRI, Thiruvananthapuram, 10-11 January 2006 (Sasikumar B).

□ *Black pepper cultivation practices* In: Farmers meeting, Ponnappasanthe, Virajpet Tq, Kodagu Dist, Karnataka, Organized by Spices Board, Virajpet, 17 January 2006 (Anke Gowda S)

□ *Bioinformatics – an introduction*, Department of Botany, The Zamorin's Guruvayurappan College, Kozhikode, 18 January 2006 (Santhosh J Eapen).

□ *Status of available technologies and future requirements for processing of spices* In: 40th Convention and Symposium of Indian Society of Agricultural Engineers, TNAU, Coimbatore, 19 January 2006 (Jayashree E).

□ *Microbial Biodiversity and their conservation* In: Workshop on biodiversity and bioresources conservation awareness, National Biodiversity Authority & IISR, Calicut, 21 January 2006 (Anandaraj M).

□ *Biodiversity and conservation of Spices- Indian Perspective* In: Workshop on biodiversity and bioresources conservation awareness, National Biodiversity Authority & IISR, Calicut, 21 January 2006 (Parthasarathy VA).

□ *Pests and diseases of black pepper* In: Farmers' seminar organized by Organization of Farmers for Establishment of Rights, Kotamangalam, 24 January 2006 (Santhosh J Eapen).

□ *Nematodes and their management in major spices* In: Training of youth on good agriculture practices in spices, IISR, Calicut, 31 January 2006 (Santhosh J Eapen).

□ *Post harvest processing of spices*, In: Training of youth on good agricultural practices, 02 February 2006 (John Zachariah T).

□ *Mechanization of production and post production operations in spices*: Lecture delivered to NABARD officers, CPCRI, Kasaragod, 08 February 2006 (Jayashree E).

□ *Pathogenic diversity in Phytophthora affecting horticultural crops* In: National conference on agrobiodiversity, National Biodiversity Authority, Chennai 12-15 February 2006 (Anandaraj M).

□ *Biodiversity of natural enemies of insect pests of spice crops* In: National conference on agrobiodiversity, Chennai, 12-15 February 2006 (Devasahayam S).

□ *Biodiversity of zingiberaceous spices and their conservation* In: National conference on agrobiodiversity, National Biodiversity Authority, Chennai, 12-15 February 2006 (Parthasarathy VA).

□ *Diversity of parasitic nematodes and their antagonists in spices* In: National conference on agrobiodiversity, National Biodiversity Authority, Chennai, 12-15 February 2006 (Santhosh J Eapen).

□ *Possibilities on the diversification of pepper based farming systems including yield targeting of black pepper* In: Brain storming session on biodiversity conservation and eco development, Wayanad, 24 February 2006 (Thankamani CK).

□□ *Plant viruses and their management for nurturing nature* In: National Science Day, Department of Biotechnology, University of Calicut, 27 February 2006 (*Bhat AI*).

□□ *Biodiversity of spices and medicinal plants conservation*, In: National Science Day, CWRDM, Kozhikode, 28 February 2006 (*Sasikumar B*).

□□ *Advances in molecular breeding of plantation and spice crops* In: National symposium on molecular breeding of crop plants, IIVR, Varanasi, 20-21 March 2006 (*Parthasarathy VA*).

□□ *Organic Spices* In: Appropriate technologies for sustainable horticulture, Department of Horticulture, Annamalai University. 20-21 March 2006 (*Parthasarathy VA*).

□□ *Search Engines and Internet* In: Summer training in biotechnology, bioinformatics & biochemistry, 06 May 2006 (*Santhosh J Eapen*).

□□ *Biological Databases* In: Summer training in biotechnology, bioinformatics & biochemistry, 10 May 2006 (*Santhosh J Eapen*).

□□ *Tree spices*: Lecture delivered to Spices Board trainees, 06 June 2006 (*Mathew PA*).

Participation in trainings

Hamza S

Effective Technical Assistance in Management of Agricultural Research, NAARM, Hyderabad, 24-30th March 2006.

Managerial Skills for Technical Officers, Institute of Secretariat Training and Management, New Delhi, 22-26th May 2006.

Prakash KM

Training on Soil, Plant and Water analysis, IISR, Calicut, 20-24 March 2006.

Distinguished Visitors

Mr H C Joshi, Director (OC), ICAR, New Delhi, 23 January 2006.

Mr A Abdul Bari, Deputy Director (Agriculture), Calicut, 03 February 2006.

Mr Sanjay Dhotre, Member of Parliament, Akola, Maharashtra, 01 May 2006.

Mr R K Vijayakrishnana, GM (Mathrubhumi), 17 May 2006.

Mr C K Moosakoya, Principal, Markaz ITI, Karanthoor, 18 May 2006.

Appointment

Name	Post	Date
Anandaraj M	Project Coordinator, All India Coordinated Research Project on Spices	16/02/2006

Superannuation

Name	Post held	Date
Abdulla Koya KM	Scientist (SG)	30/06/2006
Ayyappan N	SS Gr IV	30/06/2006
Kurup KN	Principal Scientist (Agrl. Statistics)	30/06/2006

News and Events

National Science Day

National Science Day was celebrated on 27 February, 2006. Dr Shaukath Ali, Joint Director and Head, Regional Filaria Research and Training Centre, Calicut gave a lecture on *Elimination of lymphatic Filaria*.



International Women's day

International Women's Day was observed on 07 March 2006. Chief Guest Adv. Noor Bina Rasheed, former member, Kerala Women's Commission and Director, Social Welfare Board addressed the staff.



Institute Joint Staff Council meeting

The VI meeting of the IJSC was held at IISR, Calicut on 16 March 2006 under the Chairmanship of the Director, IISR.

SARANI – IISR Recreation Club

Staff Recreation Club celebrated its Annual Day on 22 May 2006. Sports, fun games and other events were conducted for the staff members and prizes were distributed. The highlight of the day was a drama by the staff of the institute. Dr. V. A. Parthasarathy, Director, presided over the function and Dr P.K. Gopi, Malayalam writer was the Chief Guest. SARANI merit award 2005 was also distributed during the occasion.

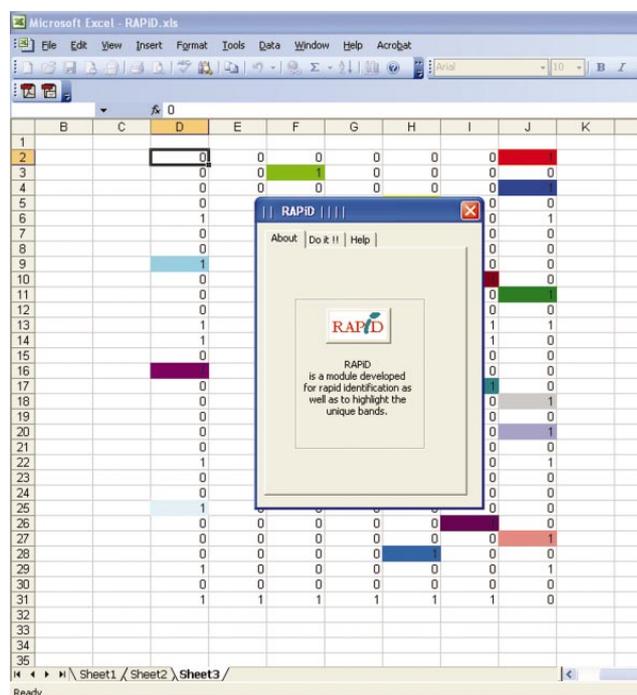


हिन्दी अनुभाग

राजभाषा कार्यान्वयन समिति की बैठक तिमाही में दो बार आयोजित की। श्री पी के जनार्दनन, सहायक, आई आई एस आर, कालिङ्कट और श्री टी एच नागराज, सहायक प्रशासन अधिकारी, आई आई एस आर इलायची अनुसंधान केन्द्र, अप्पंगला को 2-4 फरवरी 2006 को राष्ट्रीय कृषि अनुसंधान प्रबन्ध अकादमी, हाइदराबाद में आयोजित गहन हिन्दी प्रशिक्षण व कार्यशाला में भाग लिया। दिनांक 23.1. 2006 को संस्थान में एडु दिवसीय हिन्दी कार्यशाला आयोजित की। श्री हरीश चन्द्र जोशी, निदेशक (राजभाषा), भारतीय कृषि अनुसंधान परिषद, नई दिल्ली ने प्रस्तुत कार्यशाला का उद्घाटन किया। स्पाइसस न्यूज जुलाई दिसंबर 2005 का हिन्दी रूपेन्तर प्रकाशित किया। अखिल भारतीय समन्वित मसाला अनुसंधान परियोजना का कार्यकारी सारांश हिन्दी में अनुवाद करके वार्षिक रिपोर्ट में सम्मिलित किया। एन प्रसन्नकुमारी, हिन्दी अनुवैदक ने दिनांक 17. 4.2006 को आयोजित नगर राजभाषा कार्यान्वयन समिति की उप समिति बैठक में भाग ली। एन प्रसन्नकुमारी, हिन्दी अनुवैदक, बी कृष्णमूर्ति, हिन्दी अधिकारी ने दिनांक 26.4.2006 को आयोजित नगर राजभाषा कार्यान्वयन समिति की बैठक में भाग ली। श्री वी सी सुनिल, उच्च श्रेणी लिपिक, कमारी रहना, के एम, निम्न श्रेणी लिपिक और कमारी अनुपमा एन के, निम्न श्रेणी लिपिक ने राजभाषा विभाग द्वारा प्रयोजित सी डेक, कोचिन के माध्यम से आयोजित दिनांक 9 से 13 जनवरी 2006 तक हिन्दी में कंप्यूटर का आधारभूत ज्ञान (विन्डोज वैंतावरण में) विषय पर प्रशिक्षण कार्यक्रम में भाग लिया। हिन्दी शिक्षण योजना के जुलाई नवंबर 2005 सत्र में संस्थान के पांच अधिकारियों ने प्रवीण परीक्षा एवं सैंत कर्मचारियों ने प्राज्ञा परीक्षा पास की।

Bioinformatics Centre

Software called 'RAPiD' that helps in identifying unique bands from PAGE data was developed. A new database on *Phytophthora* cultures conserved



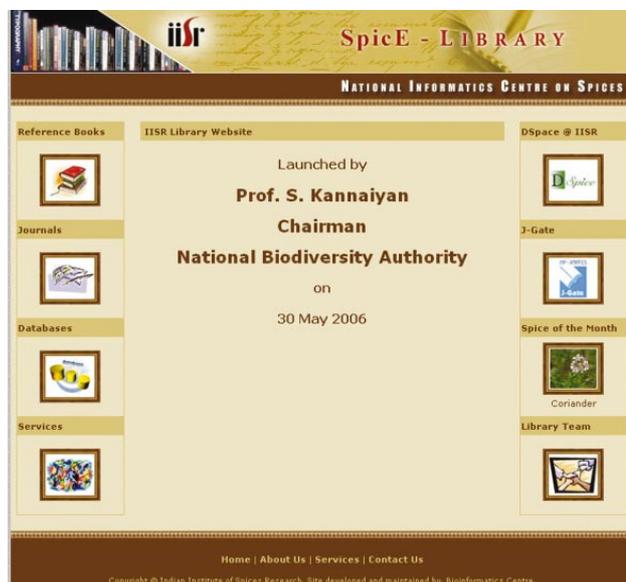
in the National Repository of *Phytophthora* at the institute was developed.

The Bioinformatics Centre of the Institute has developed an exclusive website (www.aicrps.res.in) for the All India Coordinated



Research Project on Spices. The website was formally launched by Dr. K.V. Ramana, ADG (PC), ICAR, New Delhi on 25 May 2006 during the AICRPS Workshop.

A web portal of IISR Library, SpicE-Library developed by the Bioinformatics Centre of the Institute was launched on 30 May 2006 by Prof. S. Kannaiyan, Chairman, National Biodiversity Authority. This portal is a single window system



wherein all the offline and online resources of the library are organized at one place and is available through LAN.

The centre also conducted training on web site development for institutes under Horticulture Division of ICAR.

Transfer of technology

Trainings

□ □ Training programme on good agricultural practices for rural youth sponsored by ICRI, Myladumpara, 31 January to 02 February 2006 and 05 to 07 June 2006. (Rajeev P).

□ □ Training on Multiplication of *Trichoderma* to MSSRF staff, Kalpetta, 13-18 March 2006 (Susheela Bhai R).

□ □ Training on Soil, Plant and Water analysis to Technical Officers / Training Associates of south zone KVK, 20-24 March 2006 & 19-23 June 2006 (Jacob TK, Dinesh R, Srinivasan V, Hamza S).

□ □ Training on Biochemistry, Biotechnology and Bioinformatics to M.Sc. Students, 05 May-03 June 2006 (John Zachariah T, Santhosh J Eapen, Susheela Bhai R).

Publications

Research papers

Bhai R S, Kishore VK, Kumar A, Anandaraj M, Santhosh J Eapen (2005) Screening of rhizobacterial isolates against soft rot disease of ginger. *J. Spices and Aromatic Crops*, 14: 130-136.

Bhat AI, Bhadrarmurthy V, Siju S, Hareesh PS (2006) Detection and identification of *Cymbidium mosaic virus* infecting vanilla (*Vanilla planifolia* Andrews) in India based on coat protein gene sequence relationships. *J. Plant Biochemistry & Biotechnology*, 15: 33-37.

Bhat AI, Madhubala R, Hareesh PS, Anandaraj M (2006) Detection and characterization of the phytoplasma associated with a phyllody disease of black pepper (*Piper nigrum* L.) in India. *Scientia Horticulturae*, 107:200-204.

Devakumar K, Jayadev K, Rajesh MK, Chandrasekar A, Manimekalai R, Kumaran PM, Parthasarathy VA (2006) Assessment of the genetic diversity of Indian coconut accessions and their relationship to other cultivars, using microsatellite markers. *IPGRI News letter*, 145: 38-45.

Dhirendra Singh, Jain UK, Rajput SS, Khandelwal V, Shiva KN (2006) Genetic variation for seed yield and its components and their association in coriander (*Coriander sativum* L.) germplasm. *J. Spices and Aromatic Crops* 15: 25-29.

Diby Paul, Jisha PJ, Sarma YR, Anandaraj M (2005) Rhizospheric *Pseudomonas fluorescens* as rejuvenating and root proliferating agents in Black Pepper. *J. Biological Control*, 14: 122-129.

Elizabeth Thomas, Jaleel Kizhakkayil, John Zachariah T, Syamkumar S, Sasikumar B (2006) Comparative quality characterization of Indian, Sri Lankan and Guatemalan cardamoms. *J. Food, Agril. Environ.* 4:129-134.

Geethalakshmi P, Parthasarathy VA, Niral V (2006) Polymorphism of isoperoxidases in coconut cultivars. *Indian J. Hort.* 63: 73-75.

Hamza S, Sadanandan AK (2005) Soil amendments and molybdenum on yield and quality of black pepper (*Piper nigrum* L.). *Indian J. Agric. Sci.* 75: 735-737.

Hareesh P S, Madhubala R, Bhat AI (2006) Characterization of *Cucumber mosaic virus* Infecting Indian long pepper (*Piper longum* L.) and Betel vine (*Piper betle* L.) in India. *Indian J Biotech.* 5: 89-93.

Jain UK, Dhirendra Singh, Balai OP, Shiva KN (2006) Genetic divergence in fenugreek (*Trigonella foenum-graecum* L.) germplasm. *J. Spices and Aromatic Crops* 15: 59-62.

Krishnamoorthy B, Mathew PA, Rema J, Minoo Divakaran, Jayarajan K (2006) Soft wood grafting of *Garcinia xanthochymus* (Hook. F.) [Syn. *G. tinctoria* (Wight)]. *J. Spices and Aromatic Crops* 15: 63-64.

Madan MS, Ramana KV, Manoj KA, Anandaraj M, Suseela Bhai R, Meera IS (2006) Economic viability of large-scale production of the biocontrol agent *Trichoderma harzianum* Rifai. *J. Spices and Aromatic Crops* 15: 48-51.

Mathew PA, Rema J, Krishnamoorthy B (2006) Reversal of dwarfness in a short-statured variant of clove (*Syzygium aromaticum* (L.) Merr. & Perry) by approach grafting. *J. Spices and Aromatic Crops* 15: 57-58.

Suseela Bhai R, Kishore VK, Kumar A, Anandaraj M, Eapen S J (2005) Screening of rhizobacterial isolates against soft rot disease of ginger (*Zingiber officinale* Rosc) *J. Spices and Aromatic Crops* 14: 130-136.

Suseela Bhai R, Sarma YR (2005) Characterization of *Phytophthora* de Bary inciting Capsule Rot / Azhukal and leaf blight disease of cardamom (*Elettaria cardamomum* Maton) *J. Plantation Crops*, 33: 193-203.

Venugopal MN, Prasath D, Ravindra Mulge (2006) IISR Avinash- a rhizome rot resistant and high yielding variety of cardamom (*Elettaria cardamomum* Maton). *J. Spices and Aromatic Crops* 15: 14-18.

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Radio talks

Date	Topic	Speaker
02/01/06	Processing of vanilla	Manoj PS
02/04/06	Changing scenario of agricultural research	Sasikumar B
08/05/06	Complete care of ginger and turmeric	Prakash KM
01/06/06	Live phone-in program on ginger varieties and cultivation	Sasikumar B
17/05/06	What are oleoresins and essential oils?	John Zachariah T
19/05/06	<i>Trichoderma</i> for Biological Control	Santhosh J Eapen

Success story

SPICE VARIETIES FROM IISR- FARMERS' PERCEPTION

The ginger varieties, Varada, Mahima and Rejatha and turmeric varieties, Prabha, Prathibha, Alleppey Supreme and Kedaram have emerged as the favorite of the growers in the country so much so that the Institute is getting a slew of requests for planting materials of these varieties from far away states like Maharashtra, Rajasthan, Himachal Pradesh etc. besides the home turf of these crops.

Success stories of Varada, Mahima, Prabha and Prathibha are reported frequently in the vernacular and national press besides the electronic media. These crop varieties are replacing many traditional crops such as sugarcane in Western Maharashtra and paddy in Kerala.



Our scientists (Dr. B. Sasikumar, Dr. K. Kandiannan and Dr. P Rajeev) with ginger and turmeric growers of Satara, Maharashtra.

High yield coupled with good quality are the prime factors responsible for the acceptance of these varieties by the farming community. Farmers like Mr. K. Sasikumar of Nattinchira, Trissur, Kerala and Mr. Satyajit Veer, Mr. Prakash Y. Pol and Dr. Prakash Dalvi of Satara, Maharashtra are a few of the beneficiaries of these varieties. On learning about the success of these varieties, Mr. Sanjoy Dhotre, M.P. from Akola, Maharashtra also visited the Institute to have first hand information as well as planting materials.

Since their release almost 10 years ago, these varieties have spread far and wide in the country. In addition to these varieties, the nutmeg variety, Viswasree and black pepper varieties IISR Thevam, IISR Malabar Excel and Sreekara are also becoming popular.

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