



SPICES NEWS

Indian Institute of Spices Research
Marikunnu (P.O.), Calicut, Kerala, India. www.spices.res.in



Vol. 19 No.1

January-June 2008

Half yearly

Research update

Molecular characterisation of ginger using RAPD/ISSR markers

Genetic profiling of traded ginger from India and China using twenty RAPD primers and fifteen ISSR primers gave consistent amplification pattern. Significant variation was observed between the produces from the two countries.

Intraclonal variability in turmeric using molecular tools

Characterisation of 22 Alleppey finger turmeric (AFT) accessions using 18 RAPD and 10 ISSR primers revealed moderate intraclonal variability. The UPGMA dendrogram constructed based on the similarity coefficients showed a single cluster with five groups. In this cluster, maximum similarity (99.12%) was observed between the accessions 577 and 579, which were collected from Puthencruz and Vengola, respectively. Accession 588 displayed a unique genetic architecture among the accessions studied by generating maximum number of unique bands in both RAPD/ISSR markers. The study reinforced the fact that AFT is not a single genotype rather than a mixture of few genetically distinct but morphologically not so distinct accessions.

Characterisation of *Curcuma* species based on 18S rRNA

Comparative sequence analysis of the 18S rRNA regions of three Indian *Curcuma* species, namely, *C. aromatica*, *C. longa* and *C. aeruginosa* revealed its sequence homology with the same Chinese species for these regions indicating that the entities recognized as *C. aromatica*, *C. longa* and *C. aeruginosa* in India and China are the same. However, there was no sequence homology with the Chinese population of *C. zedoaria* and the Indian population of *C. zedoaria*, there by suggesting that the entity recognized as *C. zedoaria* in these two countries may not be the same. However, the entity recognized as *C. zedoaria* in Japan showed perfect homology for the 18S rRNA regions with the Indian *C. zedoaria* population. This implies

that the entity recognized as *C. zedoaria* in India and Japan may be the same while *C. zedoaria* of China is distinct from the Indian and Japanese populations.

Cassia accession registered

One cassia accession (IC No. 370400, A1) was registered with NBPGR, New Delhi for its high cinnamaldehyde content in both leaf (80.5%) and bark (81.5%) oils.

Fungitoxic biosurfactant from bacteria

Zoosporicidal biosurfactant massetolide-A was isolated from the black pepper-associated endophytic bacterium, *Pseudomonas aeruginosa* IISRB35 (MTCC). This compound was highly inhibitory to zoospores of *Phytophthora capsici*, the causal agent of foot rot of black pepper.

Bean yellow mosaic virus in vanilla

Vanilla plants showing typical symptoms of chlorosis and leaf deformation collected from Madikeri district of Karnataka when subjected to RT-PCR using primers specific for five different potyviruses, gave specific amplification with primers specific to *Bean yellow mosaic virus* (BYMV). The PCR product was eluted, cloned in a TA vector and sequenced. The cloned region contained a portion of N1b and coat protein gene. The sequenced region of coat protein contained 778 bases, potentially coding for 259 amino acids. Sequence analysis based on per cent nucleotide, deduced amino acid identity and phylogenetic analysis clearly showed that vanilla isolate is a strain of BYMV.

Registration of microbial cultures

Four microbial cultures, viz., two

Inside

- 1 Research update
- 2 Personalia
- 5 News and Events
- 8 Transfer of Technology
- 9 Publications

Pseudomonas aeruginosa isolates (BP 35 and IISR 853), one isolate each of *Bacillus megaterium* (BP 17) and *Pochonia chlamydosporia* (IISR 1568) evaluated and found promising were deposited with IMTECH, Chandigarh as a prelude to their patenting under the Budapest Treaty. The MTCC registration numbers for the above deposits are 5410, 5411, 5409 and 5412, respectively.

New project

Ishwara Bhat A & Nirmal Babu K

Accredited Test Laboratory (ATL) under National certification system for tissue culture raised plants (DBT).

Personalia

Awards / recognitions

Deputation abroad

Sasikumar B

Deputed as Spice Technology Specialist to National Agricultural Research Institute, Guyana for a period of two years w. e. f. 2 June 2008.

Parthasarathy VA

Nominated to the Board of Management, Kerala Agricultural University by DG, ICAR, New Delhi

Eapen SJ

Member, Quality Testing Team to inspect black pepper nurseries of Department of Agriculture, Kerala Government.

Jacob TK

Chaired the session on *Spices* in the State level Research-Extension Interface-2008, CTCRI, Trivandrum, 7 May 2008.

Participation in seminars/ workshops/ conferences/ meetings

All Scientists

National workshop on Zingiberaceous spices-Meeting the growing demand through sustainable production, IISR, Calicut, 19-20 March 2008.

Anke Gowda SJ

Interaction meeting on Connecting, enhancing and sustaining environmental services and market values of coffee agroforestry in Central America, East Africa and India (CAFNET), Ponnampet, 13 May 2008.

Biju CN

Regional seminar on Pepper and cardamom, Cardamom Research Centre, IISR, Appangala, 25 March 2008.

Chempakam B

Training on Capacity building for IP protection and technology licensing in agriculture, KAU, Trichur, 18-20 February 2008.

Dinesh R

State level Research-Extension Interface-2008, CTCRI, Trivandrum, 7 May 2008.

Eapen SJ

BTIS Annual coordinators meeting, CSRTI, Mysore, 3-4 February 2008.

National seminar on IPR or Knowledge commons, State Planning Board, Trivandrum, 21 February 2008.

Launch workshop of Consortium of e-resources in agriculture, IARI, New Delhi, 30 April 2008.

Seminar on Biodiversity regime – opportunities and challenges, 22 May 2008, CMFRI, Mangalore.

Ishwara Bhat A

Consultation meeting on Protection of transgenic crops under PPVFRA with a focus on Bt-cotton, IISc, Bangalore, 13 February 2008.

Regional workshop on Management and monitoring of field trials of genetically modified crops, EPTRI, Hyderabad, 29 March 2008.

Operational level training for in-charge of Accredited test laboratories under the DBT sponsored project on National certification system for tissue culture raised plants, IARI, New Delhi, 28 April 2008.

Jacob TK

General body meeting of Horticultural development society, Calicut, 29 February 2008.

SAC meeting of KVK, Peruvannamuzhi, Calicut, 9 April 2008.

Launching function of biorefinery, Adimali, Idukki, 23 May 2008.

John Zachariah T

One-day Interactive workshop on tools and machinery for development of horticulture, CISH, Lucknow, 18 January 2008.

Interface between stakeholders and scientists, IARI, New Delhi, 30 January 2008.

Kandiannan K

Interactive meeting for finalization of Handbook of seed and planting material testing manual and labels for horticultural crops, CISH, Lucknow, 11-12 March 2008.

**Krishnamoorthy B
Prasannakumari N**

40th and 41st Town official language implementation committee meetings, Calicut, 17 December 2007 and 17 April 2008.

Kumar A

Network project meeting, NASC, New Delhi, 16 January 2008.

Second annual review meeting of AMAAS project, NASC, New Delhi, 7 May 2008.

National workshop on spice statistics, Calicut, 21-22 May 2008.

Mathew PA

Management committee meeting on ATMA, Office of the Principal agricultural officer, Calicut, 4 April 2008.

Processing possibilities of Agricultural produce, KINFRA Kuttiady, 7 April 2008.

Scientific advisory committee meeting of KVK, KVK, Peruvannamuzhy, 9 April 2008

Action plan meeting of KVKs, KAU, Trichur, 25-26 April 2008.

State level farmers' development workshop-cum exhibition, Coconut Development Board, Cochin, 9 June 2008.

Parthasarathy VA

Annual review meeting, RRI, Kottayam, 7 January 2008.

XXI Meeting of the ICAR Regional committee No. VIII, CTCRI, Trivandrum, 11-12 January 2008.

World spice congress, Goa, 28 January 2008.

DUS meeting at CPCRI, Kasaragod, 13 February 2008.

Brainstorming session on Adoption of technologies and research gaps in coconut, arecanut and cocoa, CARI, Port Blair, 14-16 February 2008.

Interactive meeting on Licensing of ICAR plant varieties/hybrids / inbred lines for commercial use by private seed agencies, New Delhi, 7 March 2008.

Meeting of annual action plan of state horticulture mission, SHM, Trivandrum, 24 March 2008.

First meeting of expert committee on medicinal plants, NBA, Chennai, 15 April 2008.

15th Meeting of the central subcommittee on crop standards notification and release of varieties for horticulture crops, ICAR, New Delhi, 16 April 2008.

DUS Meeting and launching of spices guidelines, PPVFRA, New Delhi, 27 May 2008.

Prasannakumari N

Subcommittee meeting of TOLIC, Calicut, 3 January 2008.

Prasath D

National workshop on spice statistics, DASD, Calicut, Kerala, 22–23 May 2008.

Senthil kumar R

Regional seminar on pepper and cardamom, Cardamom Research Centre, IISR, Appangala, 25 March 2008.

Interaction meeting on Connecting, enhancing and sustaining environmental services and market values of coffee agroforestry in Central America, East Africa and India (CAFNET), Forestry College, Ponnampet, 13 May 2008.

Srinivasan V

Annual group meeting of Network project on organic farming, UAS, Dharwad, 10–11 March, 2008.

National workshop on spice statistics, DASD, Calicut, 22–23 May 2008.

Membership in professional societies

Leela NK

Prasath D

Life member, Horticulture society of India, IARI, New Delhi.

Lectures delivered

Black pepper and cardamom cultivation, at Farmers' day organized by Department of Agriculture and Horticulture, Government of Karnataka, Madikeri, 4 January 2008 (Anke Gowda SJ).

Products from spices, delivered at the meeting organized by KINFRA on Food processing industries of Kerala, Trivandrum, 3 January 2008 (John Zachariah T).

Processing and value addition in spices, delivered to Agricultural officers, IHR, Bangalore, 23 January 2008 (John Zachariah T).

Pest management in black pepper, delivered at Flower Show-2008, Swapna nagari, Calicut, 11 February 2008 (Jacob TK).

Post harvest technology and value addition in pepper, ginger and turmeric, delivered at training programme on Spice production technology for officers of the north eastern states, IISR, Calicut, 20 February 2008 (Leela NK).

Modern techniques in insect pest management, delivered at Government College, Madapally, Vadakara, Calicut, 26 February 2008 (Jacob TK).

Safe use of pesticides, organized by the Vegetable and fruit promotion council of Kerala, Kunnamangalam, Calicut, 13 March 2008 (Jacob TK).

Organic farming in spices, delivered at Research-extension interface, Department of Agriculture, Calicut, 13 March 2008 (Srinivasan V).

Production technology of black pepper, delivered at Training programme on production management in major spice crops in north eastern states, Department of Horticulture, Dimapur, Nagaland, 25–27 March 2008 (Srinivasan V).

Variety and production management in ginger and turmeric, delivered at Training programme on production management in major spice crops in north eastern states, Department of Horticulture, Dimapur, Nagaland, 25–27 March 2008 (Kandiannan K).

Value addition in spices delivered to entrepreneurs, District Industries Centre, Vellayil, Calicut, 29 March 2008 (John Zachariah T).

Safe use of pesticides, Vegetable and fruit promotion council of Kerala, Vyapara Bhavan, Mukkom, Calicut, 4 April 2008 (Jacob TK).

Varieties and crop improvement in tree spices, delivered to the trainees of Production and processing technology of spices – course for the Department of Horticulture, Uttarkhand, IISR, Calicut, 1 May 2008 (Krishnamoorthy B).

High production technologies and integrated management in Chillies, delivered to the trainees of Production and processing technology of spices – course for the Department of Horticulture, Uttarkhand, IISR, Calicut, 2 May 2008 (Prasath D).

Insect pests and diseases of black pepper, ginger

turmeric and tree spices, delivered to Officers of Horticulture Department, UP, 3 May 2008 (Jacob TK).

Chemistry of flavour and quality of spices, delivered to the trainees of Production and processing technology of spices – course for the Department of Horticulture, Uttarkhand, IISR, Calicut, 5 May 2008 (Leela NK).

Search engines and search strategies, delivered at summer training programme on Techniques in biochemistry, biotechnology and bioinformatics, IISR, Calicut, 14 May 2008 (Eapen SJ).

Biological databases, delivered at summer training programme on Technics in biochemistry, biotechnology and bioinformatics, IISR, Calicut, 14 May 2008 (Eapen SJ).

Bioactive compounds from spices, delivered at the summer training programme on Techniques in biochemistry, biotechnology and bioinformatics, IISR, Calicut, 15 May 2008 (Leela NK).

Spices as functional foods and nutraceuticals, delivered to summer training programme on Techniques in biochemistry, biotechnology and bioinformatics, IISR, Calicut, 16 May 2008 (Shamina A).

Role of bioinformatics in biodiversity research, seminar on Biodiversity regime – opportunities and challenges, CMFRI, Mangalore, 22 May 2008 (Eapen SJ).

DNA Microarray technology, delivered at the summer training programme on Techniques in biochemistry, biotechnology and bioinformatics, IISR, Calicut, 22 May 2008 (Ishwara Bhat A).

Molecular approaches for detection and identification of viral pathogens, delivered at the summer training programme on Techniques in biochemistry, biotechnology and bioinformatics, IISR, Calicut, 23 May 2008 (Ishwara Bhat A).

Cardamom cultivation practices, delivered at the inauguration of Spices board's office at Bhagamandala, 4 June 2008 (Anke Gowda SJ).

Nanotechnology, delivered at Summer training programme on Techniques in biochemistry, biotechnology and bioinformatics, IISR, Calicut, 7 June 2008 (Eapen SJ).

Participation in trainings

Prasath D
Advances in Biometrical Techniques, IASRI, New Delhi, 8–28 February 2008.

Degrees awarded

Ph D

Name	Title of thesis	University
Lincy A K	Investigation on direct <i>in vitro</i> shoot regeneration from aerial stem explant of ginger (<i>Zingiber officinale</i> Rosc.) and its field evaluation	University of Calicut
Sumathi P	Studies on somaclonal variations in zingiberaceous crops	University of Calicut
Syamkumar S	Molecular, biochemical and morphological characterisation of selected <i>Curcuma</i> accessions	University of Calicut
Yamuna George	Studies on cryopreservation of spices genetic resources	University of Calicut

M Phil

Name	Title of thesis	University
Vinod V	Biochemical and molecular characterization of black pepper (<i>Piper nigrum</i> L) pericarp degrading bacteria	Acharya Nagarjuna University

News and events

Research Advisory Committee meeting

Research Advisory Committee for the period 2007-2010 was constituted with Dr N Mohanakumaran, Former Director of Research, KAU as Chairman. Dr Umesh Srivastava, Asst. Director General (Hort.II), ICAR, New Delhi, Dr I Irullappan, Former Dean, TNAU, Coimbatore, Dr M Udaya Kumar, Former Professor & Head, UAS, Bangalore, Dr KUK Namboothiri, Project Director, MS Swaminathan Research Foundation, Kalpetta, Dr NS Rao, Formerly Principal Scientist, PDBC, Bangalore are members of the new RAC. The first meeting of the Committee was held during 16–18



January, 2008. Thirteen mega projects were discussed and the recommendations made by the members were communicated to the council.

Institute Research Council meeting

The annual Institute Research Council (IRC) meeting was held during 21–23 January 2008. The sessions on Crop improvement and biotechnology, Crop protection and Social sciences were chaired by the Director, Dr VA Parthasarathy and co-chaired by the respective Heads of Divisions. The session on Post harvest technology was chaired by Dr Nanda, Project Coordinator, CIPHET, Ludhiana as well as Dr SJK Annamalai, Head, Farm machinery, CIAE Regional Station, Coimbatore. Dr J Thomas, Director, ICRI



chaired Crop production as well as Cardamom sessions.

QRT Report submitted

The Quinquennial Review Team (QRT), that was constituted under the chairmanship of Dr G Kalloo, Vice-Chancellor, JNKVV, Jabalpur, to review the work done at the Institute and AICRPS centres, during the period 1 January 2002–31 December 2006, submitted the report to the Director General, ICAR, New Delhi, on 5 March 2008.



IJC meeting

The Institute Joint Council (IJC) meetings were held on 31 March 2008 and 30 June 2008 and presided over by the Director.

Launching of DUS test guidelines for spices

The Distinctiveness, Uniformity and Stability (DUS) test guidelines for spices (black pepper, cardamom, ginger and turmeric) prepared by the Task force 7/2007, PPVFRA were launched on the website of PPVFRA (www.plantauthority.gov.in) on 27th May, 2008 in a



function held at NASC complex, New Delhi. Prof. VL Chopra, Member of planning commission (Science & Technology) launched these descriptors on the website. During the inaugural function Shri RK Trivedi, Registrar, PPVFRA, welcomed the delegates. Dr P L

Gautam, DDG (Crop Science), ICAR, New Delhi emphasized the urgent need to prepare the DUS test guidelines for the crops most important to India. Dr S Nagarajan, Chairman, PPVFRA delivered a lecture on registration of plant varieties. Dr KV Ahamed Bavappa chaired the session on DUS test guidelines for spices. Dr V A Parthasarathy, Director, IISR, Calicut and Member secretary, Task force 7/2007 also participated in the launching function of DUS test guidelines for spices.

Consultancy processing cell

During January–June 2008, the revenue generation through consultancy activities was around Rs 1.15 lakhs. The major share was from analysis of soil and manure samples for different nutrients from different farmer’s clusters and private entrepreneurs. Other consultancy services offered were analysis of biocontrol agents, biochemical constituents and visits to private farms based on requests.

National Science day

National Science day was celebrated in the Institute on 28 February 2008. Dr PN Unni, Scientist E-2 & Coordinator (Biotechnology), CWRDM, Calicut, gave a lecture on *Wet lands - values and biodiversity*.

International Women’s day

International Women’s day was celebrated in the Institute on 14 March 2008. Mr Vimeesh, Teacher, Art of living Organization, Calicut was the chief guest.



Sarani – IISR Recreation club

The new year 2008 was welcomed with a noble gesture of donating cash and articles to the *Prasanthi school for children with special needs*, Calicut, Kerala. Contributions were also made to the National foundation for communal harmony, New Delhi and the State Handicapped persons’ welfare corporation. The annual club day was organized on 9 May 2008 and Shri Babu Swamy, Film and TV artist was the chief guest. It was followed by various cultural events,

including the performance by a mimicry troop, *Tom & Jerry*. Awards were given to the children of staff who scored highest marks in standard X, State/CBSE public examinations. *Sarani* also organized the farewell functions of the superannuating/ voluntarily retiring members during the period.



हिन्दी अनुभाग

जनवरी से जून 2008 तक की अवधि में राजभाषा कार्यान्वयन समिति की तिमाही बैठकें दो बार आयोजित हुईं! हिन्दी के प्रति सभी स्टाफों को अवगत कराने के लिए प्रस्तुत अवधि में एक हिन्दी कार्यशाला आयोजित की! श्रीमती बी बिन्दु और श्री ई राधाकृष्णन, हिन्दी प्राध्यापक, हिन्दी शिक्षण योजना, कालिकेट ने हिन्दी टिप्पण एवं आलेखन के बारे में क्रमशः 7-3-2008 और 23-6-2008 को कक्षाएं चला दीं! जुलाई - दिसंबर 2007 में जारी किये स्पाइसस न्यूज का अनुवाद करके 'मसाला समाचार' नाम से हिन्दी में प्रकाशित किया! संस्थान के रिसर्च हाइलाइट्स 2007-08 का हिन्दी में अनुवाद किया! प्रस्तुत अवधि में दो तिमाही प्रगति रिपोर्ट एवं एक वार्षिक रिपोर्ट तैयार करके भेजी गईं! सुश्री एन प्रसन्नकुमारी, हिन्दी अनुवादक ने दिनांक 29-3-2008 को आई आई एस आर प्रायोगिक क्षेत्र, कृषि विज्ञान केन्द्र, पेरुवन्नामुषि एवं 4-4-2008 को आई आई एस आर, इलायची अनुसंधान केन्द्र, अप्पंगला में हिन्दी कार्यान्वयन के संबन्ध में निरीक्षण किया! संस्थान के सभी नाम पट्ट दिवभाषी रूप में बनाया गया! सुश्री एन प्रसन्नकुमारी ने 3-1-2008 को नगर राजभाषा कार्यान्वयन समिति की उप समिति बैठक में भाग ली! दिनांक 17-4-2008 को होटल अस्मा टाअर में आयोजित नगर राजभाषा कार्यान्वयन समिति की बैठक में श्री बी कृष्णमूर्ति, हिन्दी अधिकारी एवं सुश्री एन प्रसन्नकुमारी, हिन्दी अनुवादक ने भाग ली!

Bioinformatics News

Bioinformatics centre of the Institute has taken up annotation of ESTs of spices using *in silico* tools. In the first phase, annotation of ESTs of ginger and turmeric mined from the public databases has been completed. The mined ESTs were first made into contigs using a sequence assembly program, CAP3. This information was used to annotate them using an

EST/Contigs

- Spices SSRs
- SNP Results
- Primer Results
- Est Annotation
- Gene Search
- SSR TOOL**
- BLAST**

Welcome to Spice EST database

SPICEST -Spices EST Annotation Database is consist of two spice like turmeric and ginger EST database and SNP database. It can be accessible through online. EST Data records were downloaded from NCBI open source database. All EST records for *Curcuma longa* and *Zingiber officinale* were mined and stored in MySQL database. These ESTs were assembled using sequence assembly programme like CAP3. Contigs results were provided in the database. This EST records were separated as a tissue based EST libraries and further analysed and the results were stored in the databases. By searching and navigating the menus we can retrieve the results of identified SSRs from EST with five different SSR identification tools - MISA, ETFA, SSR PRIMER, SSRIT and WEB TROLL (for both *Curcuma* and *Zingiber*). Using this SSRepeat target primers were designed by PRIMER3 software and primer quality were checked using FAST PCR. These primers results can be retrieved from the database. Primers are being validated in wetlab. All ESTs of both spices were annotated using ESTPASS server. These results were used to find the putative gene and metabolic pathway.

SPICESNP database is developed for both spices turmeric and ginger or else this database can be called as Mined SNPs from EST libraries of *Curcuma longa* and *Zingiber officinale*. In this database two programs like CAP3 and AUTOSNP are used for analysis. SNP results can be retrieved by clicking the list of contigs, which is derived from *Curcuma* leaves and rhizomes ESTs provided with transition, transversion and indel polymorphism.

This 'SPICEST' database would help the scientific community those who are working on turmeric and ginger. The result of this study has many practical implications for *Curcuma* and *Zingiber* breeders.

EST PASS server and the results were stored in a MySQL database called SpicEST. The data were also used for discovering SSRs, SNPs, primers and putative genes. Five SSR tools' results were provided in the database. Using the ESTs, primers were also designed, which are being validated through wet-lab studies. SpicEST will be launched immediately after validation and testing.

During January-June 2008, two students successfully completed their MSc project and two trainees have joined under the traineeship programme.

News from Library

The newly constructed library building of the Institute was inaugurated by Dr H P Singh, DDG (Hort.), ICAR,



New Delhi on 18 March 2008. The present spacious building houses an extensive stack room and periodicals section with advanced facilities for accessing electronic resources. IISR library has become a part of the Consortium of electronic resources in agriculture (CeRA) launched under the NAIP project of ICAR. CeRA resources such as Annual Reviews, Springer Link and CSIRO publications can be accessed through SpicE-Lib, the user-friendly web portal of the IISR library. Other electronic resources like online journals, databases like J-Gate etc. can also be accessed through this portal. A trial version of EBSCO was also made available to access online resources such as CABI Direct and AGRVOC. During the period 45 reference books, 69 gratis books, 4 theses, 8 technical reports, 11 project reports and 11 CDs were added to the library collection.

News from Human Resource Development

M Sc/ M Phil Project work

Two students undertook their MPhil project work in Biotechnology and twenty-two students completed their MSc project work in Biotechnology/ Biochemistry/ Microbiology/ Plant Pathology under the guidance of the scientists of the Institute.

Post-M Sc training

Four candidates under went hands-on-training in various techniques of Microbiology and Biotechnology.

Summer training for M Sc students

Twenty-four students from various universities attended the summer training programme on Techniques in Biochemistry, Biotechnology and Bioinformatics.

Transfer of Technology

Agricultural Technology Information Centre

The technology inputs distributed from the centre during January–June 2008 include quality planting material of improved varieties of spices, biocontrol agents, vermicompost, fresh whole spices and scientific publications including extension literature. During the year 2007-08, planting material worth Rs 51,415 was distributed from the centre. The proceeds from sale of publications amount to Rs 36,843. Eight hundred and twenty seven farmers who visited the centre were benefited from advisory services. This includes 273 farmers from Calicut district, 170 farmers from other districts of Kerala and 384 farmers from outside the state. One thousand one hundred and forty four students from various



educational institutions visited the centre. An amount of Rs 5,750 was realized through soil and manure sample analysis. *Trichoderma* and other bioagents' formulations worth Rs 16,478 were distributed to farmers.

Out Reach

Front line demonstration programme on performance of improved varieties of black pepper released from IISR was laid out in 18 farmers' plots selected by PRA method. The three villages selected were Anakkampoyil, Koorachund and Thalayad in Calicut district. A multi disciplinary team of scientists visited these plots as per a schedule to follow up and provide advisory services. Under the programme, each farmer was given 200 cuttings of improved varieties and critical inputs required at the time of planting, free of cost.

During January–June 2008, the Institute participated in five exhibitions; four at national level and one at district/ state level.

RSYV/VSAT Video conferencing sessions

Under the Rashtriya Sam Vikas Yojana/ VSAT programme sponsored jointly by ISRO and Kerala State Planning Board, four video conferencing lessons were broadcast to the four village resource centres in Wayanad district of Kerala.

Training for development

Under the externally funded scheme Technology mission for integrated development of horticulture in north eastern (NE) states including Sikkim, a training course on Production management in major spices in NE states was organized at Dimapur, Nagaland in March 2008, in which 60 extension functionaries of Department of horticulture, Nagaland and progressive farmers from 10 districts of Nagaland participated.

The Institute organized the following extension programmes:

❖ *Spices production management*, sponsored by

Spices Board for the officers of Department of Horticulture in north eastern states, 18–20 February 2008.

- ❖ *Production and processing technology of spices*—course for the Department of Horticulture, Uttarkhand, 1–6 May 2008.

Krishi Vigyan Kendra

Training to women SHGs on bush pepper production

The Krishi Vigyan Kendra organised 34 training programmes on various subjects during the period. A total of 1115 participants benefited out of these programmes. A gardeners training programme of six month duration was started on 22 February 2008 with the assistance of State Horticulture Mission. The ninth SAC meeting was conducted on 9 April 2008. The KVK organized three field days and a seminar on Milch cow management for the members of milk societies, Eramangalam on 22 March 2008.



The Kendra conducted Front line demonstrations on

- HYVs of IISR ginger varieties
- HYVs of IISR black pepper varieties
- Introduction of a high yielding variety of *Amorphophallus* namely *Sree padma*
- Milk production performance in dairy cattle by feeding with silage under scarcity conditions

The OFT programmes conducted by the Kendra include

- ❖ Performance of *Pseudomonas fluorescens* and vermicompost for foot rot management in black pepper
- ❖ Fertility management in repeat breeder cows following double PGF2a injection
- ❖ Oestrus synchronization and fertility in goats with frozen semen under field conditions

During the period, the KVK has participated in three exhibitions. Farmers' study tours were conducted to KAU, Trichur, Govt. Goat farm and fodder unit, Kommeri, Kannur and Malabar botanical garden, Olavanna.

During the period Rs. 61618/- was generated under the revolving fund scheme. A total of 475 farmers visited KVK and consulted on various aspects.

Publications

Research papers

Anke Gowda SJ (2008) Optimum leaf stage for transplanting small cardamom seedlings from primary nursery to polybag nursery. *Indian Journal of Horticulture* 65(2):252-254.

Balaji S, Bhat AI & Eapen SJ (2008) A phylogenetic re-examination of *Cucumber mosaic virus* isolates based on 1a, 2a, 3a and 3b proteins. *Indian Journal of Virology* 19: 17-25.

Dhanya K, Jaleel K, Syamkumar S & Sasikumar B (2007) Isolation and amplification of genomic DNA from recalcitrant dried berries of black pepper (*Piper nigrum* L.)—a medicinal spice. *Molecular Biotechnology* 37:165-168.

Hamza S, Srinivasan V & Dinesh R (2007) Nutrient diagnosis of black pepper (*Piper nigrum* L.) gardens in Kerala and Karnataka. *Journal of Spices and Aromatic Crops*. 16: 77-81.

Jacob John, Leela NK, Sreekumar KM, Aneesh RY & Hema M (2007) Phytotoxicity of leaf extracts of multipurpose trees against insect pests in bitter melon (*Momordica charantia*) and brinjal (*Solanum melongena*). *Allelopathy Journal* 20: 411-418.

Jaleel Kizhakkayil, Elizabeth Thomas & Sasikumar B (2008) Molecular characterisation of traded black pepper (*Piper nigrum* L.) from India, Indonesia, Vietnam and Malaysia. *Indian Journal of Biotechnology* 7:210-213.

Joseph John K, Senthil Kumar R, Suresh CP, Johnson George K & Abraham Z (2008) Occurrence, distribution and economic potential of seashore mangosteen (*Garcinia hombroniana* Pierre) in India. *Genetic Resources and Crop Evolution* 55: 183-186.

Kandiannan K & Chandaragiri KK (2008) Monetary and non-monetary inputs on turmeric growth, nutrient uptake, yield and economics under irrigated conditions. *Indian Journal of Horticulture* 65(2): 209-213.

Krishnamoorthy B, Rema J & Mathew PA (2005) Acc. C1 (INGR No. 05029; IC 370415)-A Chinese cassia or cinnamon (*Cinnamomum cassia*) germplasm with high oleoresin content. *Indian Journal of Plant Genetic Resources* 18(3):282-317.

Krishnamoorthy B, Rema J & Mathew PA (2005) Coll. No.197 (INGR No. 05029; IC 438344)- A dwarf clove (*Syzygium aromaticum* (L.) Merr. & Perry) germplasm. *Indian Journal of Plant Genetic Resources* 18 (3):282-317.

Krishnamoorthy B, Rema J & Mathew PA (2006) D-3 (INGR No. 06031; IC 370425), A Chinese cassia (*Cinnamomum cassia*) germplasm with high oil and high cinnamaldehyde content. *Indian Journal of Plant Genetic Resources* 19(2):308.

Krishnamurthy KS, Rema J, Mathew PA & Krishnamoorthy B (2008) Identification of suitable *Myristica* species/ related taxa as rootstock to combat drought in nutmeg. *Indian Journal of Horticulture* 65(2):204-208.

Rema J, Krishnamoorthy B & Mathew PA (2007) *Cinnamomum citriodorum* Thwaites- An addition to the *Cinnamomum* germplasm at Indian Institute of Spices Research, Calicut, Kerala, India. *Indian Journal of Arecanut, Spices and Medicinal Plants* 9(1):10-11.

Rema J, Mathew PA & Krishnamoorthy B (2008) Vegetative propagation of allspice. *Indian Journal of Horticulture* 65(1):65-68.

Sasikumar B, Saji KV & Johnson George K (2007) Spike proliferation in black pepper (*Piper nigrum*L.). *Fruits* 62:325-328.

Siju S, Bhat AI & Hareesh PS (2008) Identification and characterization of a *Badnavirus* infecting betel vine and Indian long pepper. *Journal of Plant Biochemistry & Biotechnology* 17:73-76.

Suseela Bhai R, Anandaraj M, Sarma YR, Veena SS & Saji KV (2008) Screening of black pepper (*Piper nigrum* L.) germplasm for resistance to foot rot disease caused by *Phytophthora capsici* Leonian. *Journal of Spices and Aromatic Crops* 16 (2):115-117.

Suseela Bhai R & Sarma Y R (2008) Spatial distribution pattern of *Phytophthora* inoculum in cardamom soils. *Indian Phytopathology* 61(1): 95-98.

Thankamani CK, Srinivasan V, Hamza S, Kandiannan K & Mathew PA (2007) Evaluation of nursery mixture for planting material production in black pepper (*Piper nigrum* L.). *Journal of Spices and Aromatic Crops* 16: 111-114.

Utpala Parthasarathy, Prasath D, Jayarajan K & Parthasarathy VA (2008) Multivariate analysis of cardamom in Karnataka. *Indian Journal of Horticulture* 65(2): 196-200.

Popular articles

Anke Gowda SJ (2008) To increase yield in black pepper adopt improved practices. *Spice India* (Kannada): 21(3):24-29.

Anke Gowda SJ & Venugopal MN (2008) Cardamom cultivation practices to increase yield. *Sujatha Sanchike* (Kannada), 14(7):20-28.

Jacob TK (2008) Success story: Value addition means mushrooming success. *The Hindu Daily* (Farmers Notebook), dt. 27 March 2008.

Jacob TK (2008) Success story: Livestock based agriculture, a lifeline in times of distress. *The Hindu Daily* (Farmers Notebook), dt. 22 May 2008.

Krishnamoorthy B (2007) Grafted black pepper for avoiding *Phytophthora* foot rot disease. *Spice India* 20(7): 21-24.

Krishnamoorthy B (2007) Kokum (Tamil). *Spice India* 20 (11): 18-22.

Krishnamoorthy B (2007) Spices in home gardens (Hindi). *Spice India* 19(10):16-17.

Krishnamoorthy B (2007) Tejpat (Tamil). *Spice India* 20 (3):17-19.

Rema J, Abirami K, Krishnamoorthy B & Mathew PA (2008) Detopping – a simple technique for rapid production of orthotropic scions in nutmeg. *Spice India* 21(4):16-17.

Rema J, Mathew PA & Krishnamoorthy B (2008) *Garcinia hombroniana* Pierre – a lesser known tree spice. *Spice India* 21(1):28-29.

Sasikumar B (2007) New varieties of spices. *Kerala Karshakan* 53 (6):46.

Sasikumar B & Elizabeth Thomas (2007) Indian cardamom is superior in quality. *Karshakasree* 13(1):36-37.

Zachariah T J (2008) Increase in consumption of products from spices, *Spice India* (Malayalam) 21(5):31-34.

Book

Krishnamurthy KS, Prasath D, Kandiannan K, Suseela Bhai R, Johnson George K & Parthasarathy VA (2008) Compilation of Lead Papers: National workshop on zingiberaceous spices – Meeting the growing demand through sustainable production. Indian Institute of Spices Research, Calicut, 19-20 March 2008. pp 200.

Book chapters

Abraham Z & Senthil Kumar R (2007) Kokum, Malabar tamarind and Mysore gamboge In: Peter KV & Abraham Z (Eds.), Biodiversity in Horticultural Crops Vol. 1, Daya Publishing house, Delhi, pp 309–319.

Bhat AI (2008) Viral diseases of some important spice crops. In: Rao GP, Myrta A and Ling KS (Eds.), Characterization, diagnosis and management of plant viruses, Vol. 2, Horticultural crops, Studium Press LLC, USA pp 223–248.

Krishnamoorthy B, Rema J & Mathew PA (2007) Tree spices In: Biodiversity in Horticultural Crops Vol. 1: Peter KV & Abraham Z (Eds.), Daya Publishing House. pp 256–277.

Parthasarathy VA, Srinivasan V & Dinesh R (2007) Organic production of spices-potentials and prospects. In: Munda GC, Ghosh PK, Das Anup, Njachan SV and Bujarbaruah KM (Eds.), Advances in organic farming technology in India, ICAR Research Complex for NEH Region, Umiam, Mehalaya, pp 259–269.

Technical publications

Mathur PN, Muralidharan K, Parthasarathy VA, Batugal P & Bonnot F (2008) Data analysis manual for coconut researchers, Biodiversity Technical Bulletin No.14, Biodiversity International, Rome, Italy, p 240.

Shiva KN & Srinivasan V (2008) Black pepper–package of practices (Milagu) (Extension pamphlet in Tamil), Director, IISR, Calicut, Kerala, p 24.

Shiva KN & Srinivasan V (2008) Ginger–package of practices (Inji) (Extension pamphlet in Tamil), Director, IISR, Calicut, Kerala, p 16.

Shiva K N & Srinivasan V (2008) Turmeric–package of practices (Manjal) (Extension pamphlet in Tamil), Director, IISR, Calicut, Kerala, p 16.

Papers presented in workshop/ seminar/ symposium

Anandaraj M, Johny AK & Kandiannan K 2008 Technologies for sustainable production of turmeric. In: Krishnamurthy KS, Prasath D, Kandiannan K, Suseela Bhai R, Johnson George K & Parthasarathy VA (Eds.) National workshop on zingiberaceous spices – Meeting the growing demand through sustainable production, Indian Institute of Spices Research, Calicut, 19-20 March 2008, pp 51–63.

Parthasarathy VA, Anandaraj M & Krishnamoorthy B (2007) Technologies developed at Indian Institute of

Spices Research, Calicut. Souvenir of Horticultural Summit 2007- Shareholders' meet for accelerated development of Horticulture. 16-19 June 2007, Confederation of Indian Horticulture. Central Institute for Subtropical Horticulture, Lucknow. pp 88–95.

Parthasarathy VA (2008) Spices – Status and prospects. In: Technical Souvenir 2008. Annamalai University, Faculty of Agriculture Alumni Association, Annamalai University, pp 226–235.

Parthasarathy VA, Kumar A, Krishnamurthy KS, Srinivasan V (2008) Ginger – technologies for sustainable production. In: Compilation of lead papers Krishnamurthy KS, Prasath D, Kandiannan K, Suseela Bhai R, Johnson George K, Parthasarathy VA (Eds.), National workshop on zingiberaceous spices: Meeting the growing demand through sustainable production, Indian Institute of Spices Research, Calicut, pp 16–25.

Sasikumar B (2008) Other economically important Zingiberaceous plants, In: Compilation of lead papers Krishnamurthy KS, Prasath D, Kandiannan K, Suseela Bhai R, Johnson George K, Parthasarathy VA (Eds.), National workshop on zingiberaceous spices: Meeting the growing demand through sustainable production, Indian Institute of Spices Research, Calicut, pp140–144.

Venugopal MN, Anke Gowda SJ, Biju CN & Senthil Kumar R (2008) Status and prospects of cardamom cultivation in Karnataka. In: Krishnamurthy KS, Prasath D, Kandiannan K, Suseela Bhai R, Johnson George K & Parthasarathy VA (Eds.) National workshop on zingiberaceous spices – Meeting the growing demand through sustainable production, Indian Institute of Spices Research, Calicut, 19–20 March 2008, pp 97–109.

Radio talk

Anke Gowda SJ

Processing and marketing of ginger, AIR, Madikeri, 18 January 2008

Cardamom cultivation practices in Karnataka, AIR, Madikeri, 19 April 2008.

Video conference

Pests and diseases of black pepper, for farmers of Wayanad District, 28 April 2008 (Jacob TK).

Processing and value addition in spices for farmers of Meppadi, Sulthan Bathery and Mananthody, 11 January 2008 (John Zachariah T).

Transfer

Shri. Subramanian RN, Assistant, was transferred from IISR Regional Station, Appangala to IISR Calicut, w.e.f. 7 January 2008.

Promotion

Smt. Sali PV, Personal Assistant, was promoted as Private Secretary w.e.f. 4 July 2007.

Retirement

Name	Post	Date
Ms Radha V	Asst. Fin. & Accounts Officer	31-01-08
Shri Balakrishnan V	SS Gr. II	31-01-08
Shri Vijayan Nair V P	SS Gr. II	31-01-08
Shri Sachidanandan M K	Asst. Fin. & Accounts Officer	1-03-08
Shri Balakrishnan Nair K	SS Gr. II	31-5-08
Shri Prabhakaran Nair P	SS Gr. II	30-6-08
Shri Kunhayyappan E	SS Gr. IV	30-6-08



Wedding

Mr Vinod V, IISR, Calicut with Ms Sheji Chandran IISR, Calicut.

Ms Jibi Mary Varghese IISR, Calicut with Mr Saiju George, Kottarakkara.

Congratulations and best wishes to the married couples

SPICES NEWS

A newsletter of Indian Institute of Spices Research
An Institution of Indian Council of Agricultural Research (ICAR),
Marikunnu P.O., Calicut - 673 012, Kerala, India.
Phone: 0495 2731410, Fax: 0495 2731187

A PDF version of the newsletter is also available at <http://www.spices.res.in/newsletter/index.php>

Publisher	Editors	Cover design and photo credit
Parthasarathy VA Director, IISR, Calicut	Leela N K, Rajeev P Sushamadevi CK	Sudhakaran A

Acknowledgements
To all contributors

Printed at : Printers Castle, Kochi-682 016, Ph:0484-2356686
E-mail: printerscastle@gmail.com