

From the Director's Desk



The SW monsoon has arrived as expected albeit being slightly withdrawn. However, this did not hamper our cropping schedule and we have successfully completed the planting of ginger and turmeric in time. As on date about 650 beds in Chelavoor campus and 2498 beds in Peruvannamuzhi farm are complete.

Another important development has been the signing of an MOU with SUBICSHA (Sustainable Business De-

velopment of Innovative Coconut-based Micro-Enterprises for Holistic Growth and Poverty Alleviation) on 4th June, 2015 for manufacturing spice powders using our processing facility at Peruvannamuzhi. SUBICSHA has 522 women self help groups actively engaged in production and marketing of about 27 food products known for quality and purity. Commercial production of spice powders by SUBICSHA is scheduled to start by August 2015. I am also glad that our processing facility was issued with the "Manufacturing License" from FSSAI (Food Safety and Standards Authority of India) for commercial production of spice based products.

We licensed our black pepper micronutrient formulation to yet another entrepreneur (M/s Shrey Agritech, Hubli, Karnataka) who launched their product "Paniyoor-S" on 11 May 2015 at ICAR-IISR, Kozhikode. Also, the feedback on our micronutrient formulations from the KVKs, farmers and the licensees is very encouraging. Many farmers from the districts of Hassan, Chikmagalur and Coorg have been reporting excellent results and the market is upbeat about our micronutrient formulations. Our encapsulation technology is presently being tested in Junagadh and the seed coating technology using PGPR has evoked keen interest from MAHYCO for field testing on a range of vegetables.

All these irrevocably prove that we have been trying to look beyond immediate opportunities and create long-term prospects with relevance to our mandate. While we have established a solid track record, domain knowl-



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edge and world class infrastructure, it is imperative that we build enduring partnerships like the ones I mentioned above.

I am hopeful that we will continue to prosper by consciously building upon our existing strengths and add value to our efforts by making further progress especially on our analytical rigor for better comprehension and application of our research outcomes. This will help us to attain a path breaking position by prudently leveraging our unique domain knowledge in a competitive research environment.



M Anandaraj

Research update

Germplasm collection

Thirty eight accessions of cultivated black pepper were collected from Kottayam District of Kerala, which includes prominent cultivars like Narayakodi, Perumkodi, Kurielmundi, Neelamundi, Cholamundi and Nedumchola. One small cardamom (Malabar type) accession was collected from Kanni Elam growing tracts of Morkad, Thodupuzha, Idukki District.



A new cardamom accession

Production of healthy planting material of black pepper using column method at IISR farm, Peruvannamuzhi and Regional Station, Appangala

Nine columns were erected inside a polyhouse in the Germplasm nursery at IISR Farm, Peruvannamuzhi and planted with one variety of black pepper per column during October 2014. A total of 345 top shoots, 165 laterals, 445 single noded cuttings were obtained from two harvests till now from the nine columns. Varieties included Sreekara, Subhakara, IISR Thevam, IISR Malabar Excel, IISR Girimunda, Pournami, Panchami, IISR Shakthi and PLD-2.



Production of rooted cuttings of black pepper using vertical column at Peruvannamuzhi Farm

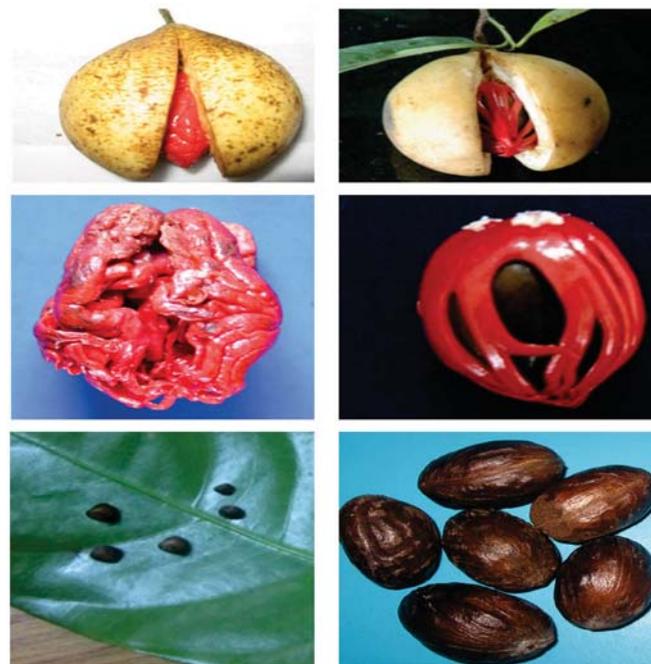
IISR Regional Station, Appangala also has initiated column method for producing healthy black pepper planting material. Around thirty columns have been erected and the growth was found to be very good on columns. Planting material of varieties which are in demand such as IISR Thevam, IISR Malabar Excel, Panchami, Pan-niyur-1 etc. are produced.



Black pepper on columns at Appangala

A rare seed sterile nutmeg

An unique, very rare seed sterile nutmeg accession having normal fruit but with rudimentary, seed and finely packed, multi tiered, human brain like mace is collected from a farmer's garden in the secondary center of domestication of the tree and characterized. Seed sterility though not strictly female sterility, in dioecious or rarely monoecious plant like nutmeg is hitherto not recorded and is a novelty.



Fruit, mace and seeds of sterile (a) and fertile nutmeg (b)



Punnathanam nutmeg gets National Innovation Foundation Award

A high yielding nutmeg variety named 'Punnathanam Jathi' evolved through selection for bold fruit/seed and high yield over the years by Mr. Varkey Thomman, Konnathady, Idukki and recommended by the Institute bagged the National innovation Foundation Award. Plants are early bearing, fruits are very bold. Weight of dry nut is 20g and dry mace 4 g. Average number of fruits per tree at the 20th year is 1750.



Mr. Varkey Thomman with his Punnathanam nutmeg

Allspice flowering and fruit setting

An allspice tree about 20 years old flowered and produced seeds at IISR Farm Pervannamuzhi, which is an unfriendly location for allspice flowering. Allspice seedlings raised from the last year's seeds are available at the farm for sale.

In Regional Station, allspice trees produced lot of flowers and all the trees showed heavy fruit set. Trees whose branches were pruned last season showed enhanced fruit set.



Allspice fruit set at Peruvannamuzhi farm



Allspice tree with heavy bearing at Appangala

Evaluation of new fungicides for rhizome rot in cardamom

Pot culture experiments were conducted with cardamom plants (variety: Appangala-1) to evaluate shortlisted fungicides, fenamidone + mancozeb (0.2%), captan + hexaconazole (0.2%) and tebuconazole (0.05%) against *P. vexans*, *R. solani* and *F. oxysporum*. Among the three fungicides tested, tebuconazole (0.05%) was effective against *R. solani* and *F. oxysporum* under glass house conditions. Whereas, the tested fungicides were not effective against *P. vexans*.

Personalia

Awards/ Honours/ Recognitions

Ankegowda S J

Dr S J Ankegowda, Head, ICAR-IISR Regional Station, Appangala was felicitated during the National seminar on spices and medicinal plants, organized by Research and Extension Unit of UAHS, at Brahmavar during 25-26 April 2015.



News and Events

Institute Research Committee Meeting

The Annual Institute Research Committee (IRC) meeting of ICAR-IISR was held during 01-02 May 2015. Dr. M. Anandaraj, the Director of the institute chaired the meeting. The Director emphasized the importance of prioritization of research programmes and priority should be given to the result oriented projects on developing intensive management technologies, water productivity, protected cultivation and secondary agriculture etc. and scientists should work with team spirit in multi-disciplinary mode. The session on Crop Improvement and Biotechnology was chaired by Dr. J. Rema, HD i/c (Crop Improvement and Biotechnology); the session on Crop Production and Post Harvest Technology was chaired by Dr. James George, Project Coordinator, AICRP (Tuber Crops), ICAR-CTCRI, Thiruvananthapuram & Dr. T. John Zachariah, HD (Crop Production and Post Harvest Technology); the session on Crop Protection was chaired by Dr. S. Devasahayam, HD (Crop Protection) and that of the session on Social Sciences by Dr. S.J. Ankegowda, Head, ICAR-IISR Regional Station, Appangala. During these two days, the progress made in each of the projects was presented and discussed. The technical programme for 2015/16 for each project was finalized.



A snap shot of the session on Crop Production & Post Harvest Technology

The following technologies were presented, discussed and approved for passing on to the extension agencies for further adoption.

• Management of cardamom thrips

A technology for the control of cardamom thrips (*Sciothrips cardamomi*) for Karnataka region has been developed by evaluating 11 insecticides and natural products in

Ishwara Bhat A

External Member, Board of examinations for conducting final Ph.D. Viva-voce, Department of Biotechnology, College of Agriculture, UAS, Dharwad, 18 June 2015.

Jayashree E

External Examiner, Qualifying examination of M.Tech (Agrl. Processing & Food Engg.) students of Kelappaji College of Agricultural Engineering & Technology, KAU, 5 May 2015.

John Zachariah T

Member, Domain expert group for reviewing project proposal, CSIR HQ, New Delhi, 30 June 2015.

Chairman, Ph.D. Viva-voce, School of Bio Sciences, MG University, Kottayam, 6 May 2015.

SPPS Meritorius Scientist Award 2015

Dr Rashid Pervez awarded SPPS Meritorius Scientist Award 2015 instituted by Society of Plant Protection Sciences, NCIPM, New Delhi for his contribution in Nematology.

Best Poster Presentation Award

Dr Rashid Pervez won the best poster presentation award for the research paper entitled 'Nematicidal activity of new generation pesticides against burrowing nematode, *Radopholus similis* (Cobb 1893), Thorne 1949 infesting black pepper' authored by Rashid Pervez & Eapen S J. In: 11th National Symposium on Dynamics of crop protection: challenges in agri-horticultural ecosystems facing climate changes, MPUA&T, Udaipur, Rajasthan, 23-25 April 2015.

ICAR-IISR bags medals at Inter-Institutional Sports meet at Kochi

Mr P. Muraleedharan, AAO bagged gold medal (High Jump) and silver medal (400 meter Race) and Mr P.K. Rahul, LDC bagged bronze medal (1500 meter Race) in ICAR Inter-Institutional Sports Meet held at ICAR-CIFT, Kochi during May 2015.





the field at Appangala (Karnataka) for 3 years. Combined analysis of data for 3 years indicated that, fipronil 0.005% recorded the lowest percentage of damage (6.5%) on the capsules that was on par with imidacloprid 0.0089%, thiamethoxam 0.0075% and spinosad 0.0135% when sprayed five times during February-March, March-April, April-May and September and October. It is concluded that spinosad (which is derived from *Saccharopolyspora spinosa*) can substitute synthetic insecticides for thrips control in cardamom, due to their less adverse effects on the environment. The insecticide also can be used in organic agriculture.

- **Pre-split harvest and etherel treatment to prevent aflatoxin contamination in nutmeg**

A simple technique of hormone treatment was developed to split open nutmeg fruits without exposure to soil. The methodology involves harvesting physiologically mature fruits when the colour of the rind change from green to pale yellow/yellow and dipping them in 500 ppm ethrel (2- Chloroethylphosphonic acid) solution for 10 minutes and then storing them in shade. By this method, 90-100% of fruits will be split in 18-20 hours.

- **High yielding short duration turmeric variety**

The high yielding short duration (160-180 days) turmeric line (Acc. 48) was developed through germplasm selection. In the yield evaluation trial during 2009-2012, maximum mean yield over three years was recorded in Acc. 48 (31.95 t/ha). It is also performing well under multi locational farmers field trials (2013-15, 39.73 t/ha) in Tamil Nadu, Andhra Pradesh, Kerala and Karnataka compared to national and local checks. It has a high curcumin content (5%).

News from Institute Technology Management Unit

Launching of black pepper micronutrient mixture 'Paniyoor-S'

The product launch ceremony of black pepper micronutrient mixture 'Paniyoor-S' was organized on 11 May 2015 at ICAR-IISR. The product was launched by Dr. M. Anandaraj in presence of Dr. Kiran Anegundi, Chairman, Shrey Agritech, Hubli, an authorized licensee of the micronutrient technology. Dr. Kiran made his remarks

on the success of this product in black pepper growing regions of Karnataka. The meeting was attended by selected progressive farmers from Kerala, Karnataka and other representatives from both the organizations.



Launch of black pepper micronutrient mixture 'Paniyoor-S'

Signing of MoU with M/s SUBICSHA Coconut Producers Company Ltd. and Mr. Nadeer, a start up entrepreneur

ICAR-IISR, Kozhikode has entered into a Memorandum of Understanding with SUBICSHA, Coconut Producers Company Ltd. for utilizing Processing facility for spices at Peruvannamuzhi. The organizations signed MoU on 04 June 2015, in a function held at ICAR-IISR campus. The function was presided over by Dr. M. Anandaraj, Director ICAR-IISR. Shri. Kunhahammed Master, Chairman SUBICSHA, and management team of both organizations attended the function. Another agreement for utilising the facility was signed with Mr. P. M. Nadeer, a start up entrepreneur on the same day.



Signing of MOU between ICAR-IISR and M/s SUBICSHA

Environment day celebrations at ICAR-IISR

The Indian Institute of Spices Research took a less travelled route to mark the occasion of World environment day on 5 June 2015, when the institute planted some rare tree species in its campus at Chelavoor, Kozhikode. The



plantation drive was inaugurated by Dr. M Anandaraj, Director, ICAR-IISR with the planting of a Naagalingam tree (canon ball tree) at the office premises. The institute also established a star garden (*Nakshathra vanam*), planting of tree saplings that correspond to each lunar star sign, in its campus. A special lecture on the importance of biodiversity for environmental security was delivered by Sri. N T Sajan, Deputy Conservator of Forests, Social Forestry Extension Division, Kozhikode. Other rare trees planted during the day include rudraksha (*Elaeocarpus ganitrus*), kadamba (*Neolamarckia cadamba*), irippa (*Madhuca indica* Gmel.) and black pearl tree (*Majidea zanguebarica*).



Sri. N T Sajan, Deputy Conservator of Forests delivering the environment day lecture

ICAR-IISR conducts ICAR's All India Entrance Examination

IISR, Kozhikode conducted ICAR's 20th All India Entrance Examination for admission to U.G. and P.G. degree programmes in agriculture and allied science subjects during 11-12 April 2015. In Kozhikode centre, 8780 candidates enrolled for U.G. and 330 candidates enrolled for P.G. entrance examination. Dr A. Ishwara Bhat, Principal Scientist was the nodal officer for the conduct of the programme.

ICAR-IISR to host Swasraya Bharath 2015 at Kozhikode

Swasraya Bharath-2015, the annual science event organized by Swadeshi Science Movement, Kerala (SSMK) will be held at Kozhikode during 15-21 October 2015. Dr M. Anandaraj, Director, ICAR-IISR is the Chairman of the organizing committee. The event will be jointly hosted by IISR, Kozhikode and SSM, Kerala. The main aim of the event is to popularize science through various channels such as seminars, science quiz and drama, student-teacher interaction, science exhibitions and demonstra-

tions etc. A series of satellite seminars covering various aspects of science are planned in different institutions across North Kerala. Actions plan meetings involving various institutions are going on at IISR to organize the show in a befitting way.



A view of the Swasraya Bharath-2015 action plan meeting

News from library

Subscription to EBSCO Discovery tool and six Indian journals were renewed. Five new books and two technical reports were added to the library stock. Two issues of the electronic version of 'AGRI titbits' were published. During the period, 41 external and 55 internal users made use of library facilities. The complete work of Swami Vivekananda (9 volumes) was received from Advaita Ashrama, Kolkata.

हिन्दी अनुभाग

राजभाषा कार्यान्वयन समिति की बैठक

संस्थान में दिनांक २२ जून २०१५ को राजभाषा कार्यान्वयन समिति की बैठक डा. एम. आनन्दराज, निदेशक की अध्यक्षता में संपन्न हुई। बैठक में गत तिमाही में किये गये कार्यों की समीक्षा की गयी। इसके अतिरिक्त राजभाषा विभाग द्वारा निर्धारित वार्षिक कार्यक्रम के अन्तर्गत संस्थान में पिछले वर्ष की राजभाषा कार्यान्वयन की बिन्दुवार समीक्षा एवं चर्चा हुई।

कार्यशाला का आयोजन

संस्थान में दिनांक १७ जून २०१५ को हिन्दी कार्यशाला आयोजित की गयी। प्रस्तुत कार्यशाला में श्री के. वी. महीन्द्रन, प्रबन्धक (राजभाषा), भारतीय स्टेट बैंक, कोषिकोड ने हिन्दी टिप्पणी एवं मसौदा लेखन पर व्याख्यान दिया। इस कार्यशाला में संस्थान के १७ अधिकारियों एवं कर्मचारियों ने भाग लिया।





प्रकाशन

प्रस्तुत तिमाही में मसाला समाचार (अंक २६ खंड १), अनुसंधान के मुख्य अंश (२०१४-१५) एवं अखिल भारतीय समन्वित मसाला अनुसंधान परियोजना की वार्षिक प्रतिवेदन (२०१४-१५) का सार आदि का अनुवाद करके प्रकाशित किया।

नराकास गतिविधियां

सुश्री एन. प्रसन्नकुमारी ने नगर राजभाषा कार्यान्वयन समिति द्वारा दिनांक २१ अप्रैल २०१५ को भारतीय प्राणी सर्वेक्षण कार्यालय में आयोजित हिन्दी कार्यशाला में भाग ली। डा. एस देवसहायम, डा. राशिद परवेज़ तथा सुश्री एन. प्रसन्नकुमारी ने दिनांक २८ अप्रैल २०१५ को भारतीय प्रबन्धन संस्थान, कुन्नमंगलम, कोषिकोड में आयोजित नगर राजभाषा कार्यान्वयन समिति की ५५ वीं अर्ध वार्षिक बैठक में भाग लिया। डा. राशिद परवेज़ ने १५ जून २०१५ को स्टेट बैंक ऑफ़ त्रावणकोर, एरंजिपालम में नराकास राजभाषा सम्मेलन २०१५ की कोर समिति की बैठक में भाग लिया।



Distinguished Visitors

Dr K. Ramasamy, Vice-chancellor, TNAU, Coimbatore, 9 April 2015

Mr Raju Barwale, Managing Director and **Mr Aashish Barwale**, Director, MAHYCO, Mumbai, 19 May 2015

Dr Rajendra Marathe, Team Leader, MAHYCO Seeds, Jalna, 19 June 2015

Dr N. Kumar, Professor & Former Dean (Hort), TNAU, Coimbatore, 27 June 2015

Transfer of Technology

Extension activities

Ankegowda S J

Delivered a lecture on scientific cultivation of cardamom and black pepper in Crop seminar, Organised by Hassan District Planters Association and Spices Board at Hethur, 2 May 2015.

Participated in inaugural farmers meeting of Vivekananda Krishikara Balaga, Gowthalli, Mudigere Tq, Chikmagalur and spoke on scientific cultivation of black pepper, 30 June 2015

Kandiannan K

Visited Attappady Co-operative Farming Society, Attappady for supply of black pepper rooted cuttings and demonstrated the multiplication under TSP, 26 June 2015.

Prasath D

Extension lecture on 'Quality planting material production in black pepper' in Nursery and high production technology in black pepper for Amalgamated Plantations Private Limited at AICRP on Spices, Assam Agricultural University, Kahikuchi, Assam, 22 May 2015.

Rajeev P

Follow up field visits to Attappady Tribal farming Cooperative Society, Palakkad, Kerala to supervise infrastructure of naturally ventilated poly house under TSP, 8 May 2015.

ICAR Research complex for NEH Region, Dimapur, Nagaland to follow up demonstration of single sprout transplanting of ginger and turmeric, 25 May 2015.

Attappady Tribal farming Cooperative Society, Palakkad to initiate demonstration on black pepper nursery under TSP, 26 June 2015.

Santhosh J Eapen

Visited farmers' plots at Thamarassery, Anakkampoyil & Muthappanpuzha, Kozhikode District, 22 April 2015.



Sharon Aravind

Delivered a lecture on scientific cultivation of black pepper and cardamom in National Horticulture Mission training for Officers of Deputy Director of Horticulture, Cuddalore, Tamil Nadu at ICAR- IISR, RS, Appangala, 28 May 2015

Suseela Bhai R

Inspection of Bud rot affected coconut plantations in Kavalumpara Panchayath along with DD Agriculture, 23 June 2015.

Jayashree E

Organised the In-plant training for the Final year students of B.Tech (Ag. Engg.) of Kelappaji College of Agricultural Engineering & Technology, Kerala Agricultural University, Tavanur at ICAR-IISR, Kozhikode, 4-13 April 2015.

Lectures Delivered

Ankegowda S J

Cultivation of cardamom, black pepper, ginger and nutmeg, training programme for newly appointed staff of Spices Board (North-East Region) organized by Spices Board and ICAR-IISR RS, Appangala at Biligeri, 20-21 May 2015.

Biju C N

Nursery management in black pepper and small cardamom and crop protection in black pepper, training programme for newly appointed staff of Spices Board (North-East Region) organized by Spices Board and ICAR-IISR RS, Appangala at Biligeri, 20-21 May 2015.

Jayashree E

Post harvest processing and incubation facility for spices, students from Kelappaji College of Agricultural Engineering & Technology, KAU, Tavanur, ICAR-IISR, 6 April 2015.

Processing of Spices, Technology based entrepreneurship development programme organized by Technology Business Incubator, NIT, Kozhikode, 3 June 2015.

John Zachariah T

Innovations in post harvest management of spices: black pepper, cardamom, ginger, turmeric and other associated spices crops: North East perspective, IIE Campus, Guwahati (organized by Indian Institute of Plantation Management, Bengaluru), 22 May 2015.

Kandiannan K

Climate and weather - a changing scenario, Officers of Department of Agriculture, Kozhikode, ICAR-IISR, Kozhikode, 25 June 2015.

Rajeev P

Post harvest technology and value addition in black pepper, Workshop on Advances in production management in black pepper for Technical staff of M/s Amalgamated Plantations Pvt. Ltd., AAU, Kahikuchi, 23 May 2015.

Radio talk

Ankegowda S J

Black pepper cultivation practices in pre monsoon season, AIR, Madikeri, 13 June 2015.

cardamom cultivation practices in pre monsoon season, AIR, Madikeri, 17 June 2015.

Manoj P S

General programmes of KVKs: Activities of KVK, Peruvannamuzhi, 3 June 2015.

Pradeep B

Brackish water aquaculture-Matsyasamrudhi, 26 May 2015.

'Aquarium Orukkumbol (Preparation of aquarium)', Interview with Mr. Saji, Madathippambil engaged in IFS, Short interview with KVK supported farmers George Panakkavayal, Koorachundu and Omana Devasya, Chempanoda, 10 June 2015.

Sasikumar B

Biodiversity as a gene pool, AIR, Kozhikode, 22 May 2015.





Suseela Bhai R

Kurumulakinte mazhakkala paricharanam, AIR, Kozhikode, 29 June 2015.

Technology inputs and Advisory services from ATIC

Six hundred and eighty two farmers (including 294 farmers from outside the district) availed advisory services of ATIC during April-June 2015. Apart from this 166 students from different schools and colleges were given exposure visit to the activities and facilities of the institute. The total revenue generated from the sale of technology and information products was Rs. 2,00,668 during the period.

Training of extension functionaries

Training on organic cultivation of turmeric and yam for tribal farmers

The institute conducted a training programme on “Production technology for organic cultivation of turmeric and yams” in collaboration with MSSRF, Kalpetta on 15 May 2015. Selected tribal farmers representing 14 tribal hamlets participated in the training programme. About 300 kilogram planting material of high yielding turmeric variety IISR Pratibha and 600 kilograms of the highly popular Elephant foot yam variety ‘Gajendra’ was distributed among the hamlets. The distribution of the planting material was done by Dr. Anilkumar, Director, Community Agro biodiversity Centre, MSSRF, Kalpetta. Thirty tribal farmers and field coordinators of the tribal hamlets benefitted from the training programme.



Dr. Anil kumar, MSSRF handing over planting material of yam to a participant

New Recruits of Spices Board visit ICAR-IISR

As a part of induction training programme titled “Bharat darshan”, a 24 member group from Spices board comprising of newly recruited staff from various offices of the board visited ICAR-IISR on 22 May 2015. The visiting group was provided an orientation to the activities of the institute. The group visited the research labs of the institute and got familiarized with the latest technological developments in the field of spices research.

Krishi Vigyan Kendra

Front Line Demonstration

The following front line demonstrations were conducted

- Demonstration of pro-tray technique of ginger
- Demonstration of use of PGRR encapsulated bio-capsules for management of soft rot of ginger
- Seed production of pearlspot fish in fresh water area
- Production and marketing of value added products

On Farm Testing

The following on farm trials are in progress

- Culture of Asian Seabass (*Lates calcarifer*) in brackish water ponds
- Performance evaluation of IISR nutrient mix on yield of black pepper
- Performance evaluation of grafted black pepper

Training Programmes

A total of 27 training programmes were organized for farmers, rural youth and extension functionaries. 884 persons attended the programmes. The KVK personnel made 34 field visits on request by farmers, 147 consultancy services and conducted one field day at Chemanchery. During the period, 811 farmers visited KVK. KVK also organized District level Balashasthra congress during 5-6 May 2015.



Publications

Research papers

Kandiannan K, Anandaraj M, Prasath D, John Zachariah T, Krishnamurthy K S & Srinivasan V 2015 Evaluation of short and tall true turmeric (*Curcuma longa*) varieties for growth, yield and stability. Indian Journal of Agricultural Sciences 85: 718-720.

Parvathy V A, Swetha V P, Sheeja T E & Sasikumar B 2015 Detection of plant-based adulterants in turmeric powder using DNA barcoding. Pharm. Biology DOI: 10.3109/13880209.2015.1005756.

Muthamil Selvan, Thankamani C K, Annamalai S J K & Jayashree E 2015 Design and development of power-operated continuous-run potting machine for seedling-nursery. Indian Journal of Agricultural Sciences 85: 817-820.

Book chapters

Santhosh J Eapen 2015 Spice Bioinformatics. In: Kesavachandran R & Raji Radhakrishnan S (Eds.) Agricultural Bioinformatics. New India Publishing Agency, New Delhi, pp.271-281.

Technical bulletin

Santhosh J Eapen 2015 Role of phenyl propanoids in black pepper – burrowing nematode interactions. ICAR-Indian Institute of Spices Research, Kozhikode, 33pp.

Popular article

Pervez R 2015 Adarak ki fasal ke adarsh shaturoo. Malabar Jyoti 4: 17-18.

Sasikumar B & Biju C N 2015 Keralada Ambanaad Estate -Lavangakke hosa gamyasthanana. Spice India (Kannada) 28(3): 4-6.

Sasikumar B, Prasath D & Lijo Thomas 2015 Varada's Triumph, Joseph's too. Spice India 28(4):18-19.

Sasikumar B, Lijo Thomas & Prasath D 2015 Varada's varam. Kerala Karshakan (Malayalam) 60(10): 63.

Sasikumar B, Saji K V, Rema J & Lijo Thomas 2015 Nutmeg variability is amazing. Kerala Karshakan 60(9): 48-49.

Senthil Kumar C M, Jacob T K & Devasahayam S 2015 Integrated pest management in black pepper (in tamil). Spice India 28(5): 18-22.

Senthil Kumar C M, Jacob T K & Devasahayam S 2015. Insect pests of tree spices and their management. Vikaspedia.in (epub)

Sharon D'Silva, Sujatha A M, Biju C N & Ankegowda S J 2015 Scale insects – An alarming problem in black pepper. Spice India 28(4): 10-12.

Sheeja T E, Jayashree E, Srinivasan V & Saneera M 2015 Sugantha vila rangath samrambakarku prothsahanayumayi IISR. Samrambham (online magazine) 2 (June): 16-17.

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New Appointment

Name	Post	Date of joining
Mr Anoop Joseph	SRF (Computer Science), PhytoFuRa	01-04-2015
Mr Mohammed Faisal Pearan	Scientist (Plant Pathology)	13-04-2015
Mr Agath Martin	JRF (Computer Science), DISC	20-05-2015
Dr Alagupalamuthirsolai	Scientist (Plant Physiology)	15-06-2015
Mr Vivek Srivastav	JRF (Bioinformatics), DISC	23-06-2015

Promotion

Name	Promoted as	w.e.f
Dr Sheeja T E	Principal Scientist	27-01-2014
Ms Seema M	Upper Division Clerk	23-04-2015

Transfer

Name	Post	Joined at
Dr Awadesh Kumar	Scientist (Plant Biochemistry)	ICAR-NRRI, Cuttack on 30-04-2015
Dr Rajna S	Scientist (Agricultural Entomology)	ICAR-IARI, New Delhi on 25-04-2015
Dr Prativa Lakhotia	Scientist (Spices, Plantation, Medicinal & Aromatic Plants)	ICAR-IARI, New Delhi on 30-05-2015

Retirement



Mr Mohandas E K
Skilled Support Staff, 31-05-2015



Smt. Nagamma H B
Skilled Support Staff, 31-05-2015



Mr Unni Nair I
Skilled Support Staff, 31-05-2015



Dr Sushamadevi C K
Senior Technical Officer, 31-05-2015



Mr Chandaran Nair K
Skilled Support Staff, 30-06-2015





SPICES NEWS

A newsletter of Indian Institute of Spices Research

An Institution of Indian Council of Agricultural Research (ICAR),
Marikunnu P.O.,

Kozhikode-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

Anandaraj M
Director,
IISR Kozhikode.

Editors

Krishnamurthy K S
Senthil Kumar C M
Rajeev P

Cover design and Photo credit

Sudhakaran A

Typesetting : Deepthi P

Printed at: G K Printers, Kaloor, Cochin - 682 017. Phone : 0484 2340013. Email : gkcochin@gmail.com

