



ICAR-Indian Institute of Spices Research  
Marikunnu (P.O.), Kozhikode, Kerala, India

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### Tribal Development Programme on black pepper and turmeric cultivation in Vishakapattanam, Andhra Pradesh

Spices Board, Guntur, AICRP on Spices Centre, HRS Chintapalle of Dr. Y.S.R Horticultural University and ICAR-Indian Institute of Spices Research, Kozhikode jointly organized a training programme on “Scientific cultivation of Black pepper and Turmeric” in the tribal regions of Chintapalle, Paderu and Vishakapattanam on 17, 18 & 19 November 2017, respectively. On 16 November 2017 Shri. Chiranjiv Choudhary, IFS, Vice-Chancellor, Dr. Y.S.R Horticultural University, inaugurated the black pepper nursery and training centre at Chintapalle. Dr. P. S. Sreekantan Thampi, Deputy Director, Spices Board, Guntur, Dr. Dilip Babu, Director of Research, Staff of Dr. Y.S.R Horticultural University, Officials of Department of Horticulture, Andhra Pradesh and Spices Board took part in the inauguration of nursery. The Scientists of ICAR-IISR demonstrated different methods of black pepper multiplication to the nursery staff.

### ICAR-IISR signs MoC with Government of Andhra Pradesh on 16 October 2017

ICAR-Indian Institute of Spices Research, Kozhikode signed a Memorandum of Cooperation (MoC) with Andhra Pradesh government and would serve as a knowledge partner in developing technologies related to the development in spices production and processing. As per the memorandum, the Institute will work with Andhra Pradesh government for developing technologies to increase efficiency and reduce post harvest losses for the spice industry

Shri. Chiranjiv Choudhary, IFS, Vice-Chancellor, Dr. Y.S.R Horticultural University and Agriculture Production Commissioner, Andhra Pradesh, interacting with scientists of ICAR-IISR and Spices Board



Dr. E. Jayashree receiving the MoC from Shri. N. Chandra Babu Naidu, Chief Minister, Andhra Pradesh

stake holders. The institute also expressed its readiness in developing technologies towards value chain management in spices, supply quality planting material, promote spice export, find new sources of food products, integrate human resources in spice industries, reduce costs and modernize spice processing. The MoC was exchanged between Dr. E. Jayashree, Principal Scientist, ICAR-IISR and Shri. M. Girija Shankar, IAS, Secretary to Government, Industries and Commerce Department in the presence of Shri. N. Chandra Babu Naidu, Chief Minister of Andhra Pradesh during the Food Processing Summit organized by Andhra Pradesh government on 16 October 2017 at Amaravathi, Andhra Pradesh.

## RESEARCH UPDATE

### Complete genome sequencing of *Banana bract mosaic virus* isolate infecting cardamom

The complete genome of *Banana bract mosaic virus* (BBrMV) causing chlorotic streak disease of cardamom in India was determined for the first time from a naturally infected cardamom var. *Njallani Green Gold*. The complete genome has 9708 nucleotides excluding poly (A) tail and has the genome organization similar to BBrMV isolates infecting banana and flowering ginger (*Alpinia purpurata*). The virus has a single open reading frame of 9372 nucleotides that encodes for a polypeptide of 3124 amino acids. The length and arrangements of different proteins in BBrMV-Cardamom was like other BBrMV isolates except for the P1 protein that showed a single amino acid deletion. Comparison with three available complete genome sequences revealed that, BBrMV-Cardamom isolate is closer to BBrMV-Banana isolate from India (BBrMV-TRY) (96.7% identity) than to BBrMV-Banana isolate from Philippines and flowering ginger isolates from USA (94.5%). Analysis of polyprotein and their individual proteins also showed close identity of BBrMV-Cardamom and BBrMV-TRY.

### *In vitro* antagonistic activity of fungal endophytes against *Fusarium oxysporum* f.sp. *vanillae*

FVREn1, an endophyte isolated from vanilla representing Kodagu region showed an inhibition of 72.9% over control against *Fusarium oxysporum* f.sp. *vanillae*, with siderophore production index of 2.5. The isolate was also found to produce volatile antibiotics inhibiting the growth of pathogen.

### Low-risk insecticides for the control of shoot borer attacking ginger

Trials conducted for two years under field conditions at Peruvannamuzhi to evaluate low risk insecticides for the

control of shoot borer (*Conogethes punctiferalis*), a serious insect pest of ginger indicated that, insecticides such as chlorantraniliprole (0.01%), flubendiamide (0.02%), spinosad (0.135%) and cyantraniliprole (0.0005%), were effective in controlling the pest, when sprayed at fortnightly intervals starting from the second fortnight of July to the first fortnight of November.

## PERSONALIA

### Awards/ Honours/ Recognitions

#### Ankegowda S J

Member Secretary, Varietal Evaluation Committee - AICRP on Spices.

Member, Committee on Accreditation of Spice nurseries in Karnataka.

#### Ishwara Bhat A

Best poster award in the Plant Virology section for the poster entitled 'Complete genome sequencing of Banana bract mosaic virus infecting cardamom revealed its closeness to banana infecting isolate from India' authored by Bhat A I, Pamitha N S, Gopika A & Biju C N. Presented at the 26<sup>th</sup> National conference of Indian Virological Society on 'Viruses to Viromes in Health and Diseases' held at Nitte University, Mangaluru during 7-9 December 2017.

External Examiner, Final viva-voce examination of M.Sc. (Integrated) Biotechnology at the College of Agriculture, KAU, Vellayani, 02 November 2017.

Subject Expert, TAC meeting of the DBT-BIRAC PDF fellow at TNAU, Coimbatore.

#### Johnson George K

Co-chairman, Session on Crop Improvement & Biotechnology, 29<sup>th</sup> ARC meeting on Small cardamom and other spices at ICRI, Myladumpara, 13-14 December 2017.

#### Mohammed Faisal Peeran

External expert of selection committee for recruitment of Project Assistant under Consortium Research Platform on Vaccines & Diagnostic Project at CHES, Chettalli, 18 December 2017.

Reviewer, Journal of Mycology and Plant Pathology.

#### Santhosh J Eapen

Chairman, Session on Crop Protection, XXVIII Workshop of AICRPS, HRS, Dr. Y.S.R HU, Guntur, Andhra Pradesh.

Reviewer, Indian Journal of Agricultural Sciences.

#### Senthil Kumar CM

Invited lecture, DST-SERB School in Insect Biology 2017, St. Joseph's College, Devagiri, Kozhikode, 22 October to 5 November 2017.

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## **Participation in Symposia/ Seminars/Workshops/ Conferences/Meetings**

**Aarthi S, Akshitha H J, Biju C N, Kandiannan K, Krishnamurthy K S, Leela N K, Muhammed Nissar V A, Nirmal Babu K, Rema J, Santhosh J Eapen, Sharon A & Thankamani C K**

28<sup>th</sup> Workshop of AICRP on Spices, HRS, Guntur, Andhra Pradesh, 10-12 October 2017.

### **Ankegowda S J**

Krishimela 2017, R & E Unit, UAHS, Bhramavar, 14 October 2017.

138<sup>th</sup> Annual GB Meeting of Codagu Planters Association, Kushalnagar, 16 October 2017.

KPA-UPASI Coffee Conference Technical Session at Hotel Orchids, Bengaluru 26 October 2017.

Quality Improvement Programme in Cardamom, ICAR-IISR Regional Station, Appangala, 29 December 2017.

Seminar on Coffee and Black pepper, Thithimathi, 28 November 2017.

Field Day of Paddy and Interaction Programme on Integrated Farming, UAHS, Ponnampet, 28 November 2017.

Consultative meeting of Consortium of Agroforestry, College of Forestry, Ponnampet, 29 November 2017.

Committee on Accreditation of Spices nurseries in Karnataka, 20-25 November 2017.

Black pepper crop estimation of BBTC Group Estate, 08 December 2017.

MDP on Leadership Development (pre-RMP programme), ICAR-NAARM, Hyderabad, 12-23 December 2017.

### **Biju C N**

Monthly Technology Advice meeting, ICAR-IISR, Kozhikode, 24 November 2017.

### **Ishwara Bhat A**

26<sup>th</sup> National Conference on Viruses to Viromes in Health and Diseases, IVS, Nitte University, Mangalore, 07-09 December 2017.

### **Jayashree E**

Food Processing Summit-2017 meeting, Vijayawada, Andhra Pradesh, 16 October 2017.

QRT Review Meeting of the Project CRP on Secondary agriculture - Establishment of agro-processing centre of ICAR-IISR, ICAR-CPCRI, Kasaragod, 16-17 November 2017.

International Workshop on Agro-Processing and Value Addition (VAIGA-2017), KAU, Thrissur, 30 December 2017.

### **John Zachariah T**

Doctoral Committee of Ph.D. student, Ms. R Sivaranjani, Scientist at Mangalore University, Chikka Aluvara, Kushalnagar, 23 October 2017.

### **Manoj P S**

ToT Training of Gardeners, SAMETI, Trivandrum, 30 October to 01 November 2017.

### **Nirmal Babu K**

Assessment Committee meeting of Dr. Ratha Krishnan, New Delhi, 16 October 2017.

Special lecture series on Recent trends in Botanical Sciences, Mangalore University, Mangaluru, 26 October 2017.

Centre-State Interactive Meet at ICAR-CTCRI, Thiruvananthapuram, 28 October 2017.

Meeting of Vice Chancellor of KAU, KVK officials, Directors of ICAR Institutions in Kerala and Senior Officials from Department of Agriculture, SAMETI, Thiruvananthapuram, 28 October 2017.

Inaugural function of 11<sup>th</sup> Indian Fisheries and Aquaculture Forum: Fostering Innovations in Fisheries and Aquaculture – Focus on Sustainability and Safety, Kochi, 21 November 2017.

Viva-voce exam of Ph.D./M.Sc. students, KAU, Thrissur, 08 December 2017.

### **Praveena R**

ICAR sponsored Short Course on Nanotechnological Approaches in Pest and Disease Management, ICAR-NBAII, Bengaluru, 15-24 November 2017.

### **Rathakrishnan P**

State Central Institutions Interaction Meet, ICAR-CTCRI, Thiruvananthapuram, 28 October 2017.

Haritha Sangamam 2017 - Haritha Keralam Mission first anniversary group meeting, Thiruvananthapuram, 14 December 2017.

### **Thankamani C K**

12<sup>th</sup> Annual group meeting of Network project on Organic Farming, ICAR-IIFSR, Modipuram, 18-19 December 2017.

### **Aarthi S & Muhammed Nissar V A**

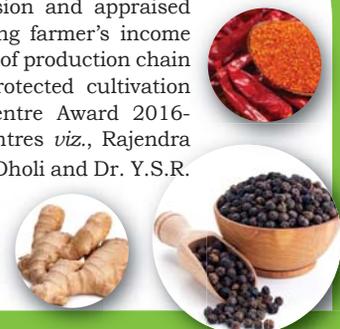
Coordinators for Horticultural Industrial Internship on Research and development in spices for four B.Tech. (Horticulture) students from HC & RI, TNAU, Coimbatore, 20 October to 17 November 2017.

## **NEWS AND EVENTS**

### **XXVIII Workshop of AICRP on Spices at Dr. Y.S.R Horticultural University, Lam, Guntur, Andhra Pradesh**

The 28<sup>th</sup> Workshop of ICAR-All India Coordinated Research Project on Spices was conducted during 10-12 October 2017 at Horticultural Research Station, Dr. Y.S.R Horticultural University, Lam, Guntur, Andhra Pradesh. The workshop was inaugurated by Sri. Chiranjiv Choudhary IFS, Hon'ble Vice-Chancellor, Dr. Y.S.R HU, Andhra Pradesh on 10 October 2017 who opined that efforts should be channelized to evolve climate resilient varieties in the regime of global climate change. Dr. T. Janakiram, Assistant Director General (Horticulture Science II), Indian Council of Agricultural Research (ICAR), New Delhi was the Chief Guest during the occasion and appraised the relevance of value chain in assuring farmer's income through interventions at various phases of production chain including quality planting material, protected cultivation and value addition. "Best AICRPS Centre Award 2016-17" was presented to three AICRPS centres viz., Rajendra Prasad Central Agricultural University, Dholi and Dr. Y.S.R.

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Horticultural University Centres at Guntur and Chintapalle. Ten booklets/pamphlets and one DVD on spice production technologies in English and local languages from different AICRPS centres were released during the occasion.

The workshop was organized in six Technical Sessions – Genetic Resources and Crop Improvement, Crop Management, Crop Protection, Variety Release, Technology Transfer and Plenary, besides a “Brain Storming Session on Turmeric” in which varietal wealth, marketing, value chain development, crop production and protection technologies in turmeric were discussed. During the workshop, six varieties (2 turmeric, 2 coriander, 1 cassia and 1 fenugreek) were recommended for release. Six location specific technologies for various states were recommended during the transfer of

technology session. The plenary session was chaired by Dr. T. Janakiram, ADG (HS-II), Dr. Gopal Lal, Director, ICAR-NRC on Seed Spices and Dr. J. Dilip Babu, Director of Research, Dr. Y.S.R. HU. Project Coordinator presented the Action Taken Report of 27<sup>th</sup> workshop and the research highlights and it was approved by the workshop. In the plenary session, recommendations of all the technical sessions were presented and approved. Dr. T. Janakiram, ADG (HS-II) in his remarks congratulated the Best AICRPS centres and the scientists involved in developing new varieties and technologies which were approved in the workshop.



Inauguration of the workshop



Scientists from Rajendra Prasad Central Agricultural University, Dholi receiving Best AICRPS centre Award



Scientists from Guntur and Chintapalle centres of Dr. Y.S.R HU receiving Best AICRPS centre Award



Release of publication during the inaugural session

### ICAR- IISR celebrates Agricultural Education Day



Shri. Snehil Kumar Singh IAS inaugurating the programme

ICAR- Indian Institute of Spices Research, Kozhikode celebrated Agricultural Education Day on 4 December 2017 to commemorate the birthday of the first Indian union agriculture



A glimpse of prize distribution

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minister and the first president of independent India, Bharat Ratna Dr. Rajendra Prasad with the involvement of post graduation students of various colleges of Kozhikode. This initiative of Indian Council of Agricultural Research aims to develop interest in agriculture and allied sciences among the school and college students and to choose 'agriculture' as their professional and research career or engage themselves in farming as agri entrepreneurs. About 50 students of various colleges attended the function conducted at ICAR-IISR, Kozhikode. The gathering was welcomed by Dr. John Zachariah, Principal Scientist & Convenor of the programme and presided by Dr. K. Nirmal Babu, Director, ICAR- IISR, Shri. Snehil Kumar Singh IAS was the chief guest on the occasion.

### Vigilance Awareness Week – 2017

Vigilance Awareness Week – 2017 observed at Regional Station, Appangala started with pledge administered by Dr. M. Balaji Rajkumar on 30 October 2017. As a part of the programme slogan and essay writing competitions were held on the topic "Corruption free India". Dr. S. J. Ankegowda, Head presided over the programme during valedictory function and addressed the staff.



Administration of pledge



Talk on Corruption Free India

## WORLD SOIL DAY

ICAR-IISR Regional Station, Appangala observed world soil day on 05 December 2017 at Government Model Primary School, Bettageri. 72 students and 6 teachers attended the programme. Dr. M. Alagupalamuthirsolai and Mrs. H. J. Akshitha delivered lectures and educational videos about soil were screened during the occasion. This was followed by demonstration of soil sampling and soil pH determination by Dr. Mohammed Faisal and

Dr. Balaji Rajkumar. On the occasion, ceremonial planting of citrus saplings was done in the school premises.



Demonstrating soil pH testing



Planting citrus sapling in the school premises

### Consultancy Processing Cell

#### Biju C N

As a member of Joint inspection team for selection of black pepper plots for collecting planting materials, visited black pepper plantations of Kozhikode with the officials of Department of Agriculture, Kerala, 18 December 2017.

## HINDI NEWS

### Hindi Workshop

A Hindi workshop was organized at ICAR-IISR, Kozhikode on 6 December 2017. Dr. Herman, P. J., Assistant Professor, Department of Hindi, Calicut University delivered lecture on official language policy and Hindi noting and drafting.

### OLIC meeting

The Official Language Implementation Committee meeting was held under the chairmanship of Dr. K. Nirmal Babu, Director on 11 December 2017.

### TOLIC Meetings

Dr. K. Nirmal Babu, Director and Mrs. N. Prasannakumari, Sr. Technical Officer attended the Half Yearly meeting and Prize Distribution function of Town Official Language Implementation Committee, Kozhikode at Hotel Malabar Palace on 14 November 2017.

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### Hindi Film Show

A Hindi Film show was arranged for popularizing Hindi among staff members on 16 December 2017.

## KRISHI VIGYAN KENDRA

### Training Programmes

A total of 28 on-campus and 13 off-campus training programmes were conducted during October-December 2017, in which 1756 farmers benefitted.

### Other Extension activities

Study tour to Aqua green organo farm (Cage culture and Aquaponics unit), Olavanna, 05 October 2017.

Study tour to the Apiary maintained by Francis Kaithakkulam, Mullankunnu, 20 October 2017.

Study tour to Progressive broiler goat farmers' field, Meppayur, 16 November 2017.

Agricultural education day celebrated at KVK on 04 December 2017.



AUPS, Koothali students visiting KVK on Open Day



St. Meras School students visiting AquaPonics Unit at KVK

### Participation in Exhibitions

Malsyolsavam, Kozhikode, 19-21 November 2017.

ATMA Exhibition, Koduvally, 19-20 December 2017.

World fisheries day celebrated with Fisheries Department on 21 November 2017.

World Soil day celebration on 5 December 2017 was inaugurated by MLA of Balussery and valedictory programme by President Perambra Block Panchayat.



MLA distributing Soil Health Card



Block Panchayat President distributing Soil Health Card

### Lectures Delivered

#### Ankegowda S J

Recent advances in black pepper cultivation in Krishimela 2017 at R & E Unit, UAHS, Bhravar, 14 October 2017.

Advanced cultivation practices in black pepper in 138<sup>th</sup> AGB meeting of Codagu Planters Association, 16 October 2017.

Diseases, pest and nutrient deficiency management in black pepper in KPA-UPASI Coffee Conference technical session, 26 October 2017.

Scientific cultivation practices in small cardamom in Quality improvement programme in cardamom jointly organized by Spices Board, Madikeri and ICAR-IISR RS, Appangala, 29 December 2017.

#### Biju C N

Crop management in black pepper in Crop health management training programme organized by Krishi Bhavan at Padinjara, Wayanad, 24 October 2017.

Production management in black pepper in Training programme organized by ICAR-IISR, Kozhikode in collaboration with MSSRF, Wayanad at Athikolly, Vellamunda, Wayanad, 25 October 2017.

Integrated disease management in spices and banana in Training programme for the staff of Livolink Foundation,

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Bhuvaneshwar, Odisha  
at ICAR-IISR, Kozhikode,  
07 December 2017.

### Ishwara Bhat A

Molecular methods for detection of plant pathogens in ICAR sponsored short course on Breeding for resistance to pest and diseases in plantation crops at ICAR-CPCRI RS, Kayamkulam, 25 November 2017.

### Jayashree E

Techno incubation facility at ICAR-IISR in International workshop on Agro processing and value addition (VAIGA -2017) held at KAU, Thrissur, 30 December 2017.

### Manoj P S

Advances in production technology of banana for 67 farmers at Chorode, 21 October 2017.

### Mariya Dainy M S

Method of soil sample collection and nutrient management in coconut for 41 farmers, 21 October 2017.

### Pradeep B

Intensive fish culture systems at Malsyolsavam, Kozhikode, 20 November 2017.

### Praveena R

Pest and disease management in spices for farmers from Andhra Pradesh at ICAR-IISR, Kozhikode, 13 December 2017.

### Santhosh J Eapen

Know your enemy: Application of molecular tools for studying plant pathogens in the Special lecture series on Recent trends in botanical sciences at Department of Applied Botany, Mangalore University, 28 October 2017.

### Shanmugavel S

Broiler goat rearing for farmers of Kakkur, Krishi Bhavan under Paramparagat.

### Senthil Kumar CM

Insect – pathogen interactions: An ecological perspective in DST-SERB School in Insect Biology 2017, St. Joseph's College, Devagiri, Kozhikode, 3 November 2017.

### Training Attended

#### Alagupalamuthirsolai M

Recent developments in statistical modeling and forecasting in agriculture, ICAR-IASRI, New Delhi, 28 December to 17 January 2018.

## PUBLICATIONS

### Research papers

Bhai R S, Eapen S J, Kumar A, Aravind R, Pervez R, Varghese E M, Krishna P B & Sreeja K 2017 Mitigating

*Phytophthora* foot rot and slow decline diseases of black pepper through the deployment of bacterial antagonists. *Journal of Spices and Aromatic Crops* 26: 69-82.

Krishnamurthy K S, Rema J & Anandaraj M 2017 Synchronous fruit splitting in nutmeg using plant growth regulators. *Journal of Plantation Crops* 45: 190-196.

Pervez R, Eapen S J & Rajkumar 2017 Screening native entomopathogenic nematodes against semi-looper (*Synegia sp.*) infesting black pepper (*Piper nigrum* L.). *Journal of Plantation Crops* 45: 180-189.

Senthil Kumar C M, Jacob T K & Devasahayam S 2017 Evaluation of insecticides and natural product for their efficacy against shoot borer (*Conogethes punctiferalis* Guen.) (Lepidoptera: Crambidae) infesting ginger (*Zingiber officinale* Rosc.). 26: 86-90.

Senthil Kumar R, Prasath D, Sharon Aravind, Leela N K, Venugopal M N, Ankegowda S J, Biju C N & Anandaraj M 2017 Evaluation of elite cardamom (*Elettaria cardamomum*) genotypes for yield, quality and resistance to Cardamom mosaic virus. *Journal of Plantation Crops* 45: 129-134.

Shimna K, Krishnamurthy K S & Shamina A 2017 Coumarin, essential oil and total phenol levels in bark and leaves of *Cinnamomum* species. *Journal of Plantation Crops* 45: 200-205.

Umadevi P & Anandaraj M 2017 Genotype specific host resistance for *Phytophthora* in black pepper (*Piper nigrum* L.). *Physiological and Molecular Plant Pathology* 100: 237-241.

### Book chapters

Bhat A I & Yogitha M 2017 Application of Immuno-diagnosis for plant viruses occurring in India. In: Mandal B, Rao G P, Baranwal V K & Jain R K (Eds.), *A Century of Plant Virology in India*. Springer Nature Singapore (P) Ltd.

Biju C N, Suseela Bhai R & Bhat A I 2017 Important diseases of major spice crops. In: Gautam H R & Gupta S K (Eds.), *Diseases of commercial crops in India*. Neoti Book Agency Pvt. Ltd., New Delhi, pp.207-235

### Popular articles

Mariya Dainy M S & Aiswariya K K 2017 Parambalil ninnoru vijayagaadha. *Krishiyankanam* 23(2): 40-41.

Mariya Dainy M S, Aiswarya, Sreenivas S & Rachana N P 2017 Sookshma moolakangalude praadhaanyam pazham pachakkari vilakalil. *Krishiyankanam* 23(2): 34-35.

Praveena R 2017 Atharak ke Praganth Janinth Rog. *Masalo ke Mehak*, pp.63-65.

Praveena R, Sasikumar B, Lijo Thomas & Srinivasan V 2017 Pravasiyudipitta Krishi. *Karshakan*, 11: 87-88.

Sasikumar B, Lijo Thomas, Praveena R & Srinivasan V 2017 Sahakarana Mangal Krishi. *Krishijagran* November 1(7): 38-39.

Srinivasan V, Bhat A I, Dinesh R, Gowda S J, Hamza S, Biju C N & Krishnamurthy K S 2017 Rejuvenation of virus affected black pepper plantations through soil and plant

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health management. Indian Journal of Arecanut, Spices & Medicinal Plants 19(3): 24-27.

Thankamani C K, Srinivasan V, Hamza S, Dinesh R & Praveena R 2017 Cultivation of organic turmeric. Indian Journal of Arecanut, Spices & Medicinal Plants 19(3): 10-15.

### Papers presented in symposia/seminars/workshops/conferences

Complete genome sequencing of *Banana bract mosaic virus* infecting cardamom revealed its closeness to banana

infecting isolate from India. Poster presented in 26<sup>th</sup> National conference of Indian Virological Society on Viruses to Viromes in Health and Diseases held at Nitte University, Mangaluru during 07-09 December 2017, p.109 (Bhat A I, Pamitha N S, Gopika A & Biju C N).

*Piper yellow mottle virus*: Characterization and Management. Lead paper presented in 26<sup>th</sup> National Conference of Indian Virological Society on Viruses to Viromes in Health and Diseases held at Nitte University, Mangaluru during 07-09 December 2017, p.85 (Bhat A I, Srinivasan V, Gowda S J, Krishnamurthy K S & Biju C N).

### Ph.D. Dissertations

Student	Topic	University	Guide
Ms. Shina Sasi	Elimination of <i>Piper yellow mottle virus</i> through somatic embryogenesis in black pepper ( <i>Piper nigrum</i> L.)	Mangalore University	A. I Bhat

### Retirement

Name	Post	Date
Mr. K. V. Pillai 	Administrative Officer	30.11.2017

### Externally aided projects

Title of project	Investigators	Funding agency	Period	Outlay (Rs. Lakhs)
Establishing a value chain incubation facility for processing of spices (ginger & nutmeg) through value addition for entrepreneurship development at IISR, Kozhikode	Jayashree E & John Zachariah T	Government of Kerala	2 years	99.00



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

Agr search with a human touch

## SPICES NEWS

A newsletter of ICAR-Indian Institute of Spices Research  
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#### Editors

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