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Spices News



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

Vol. 27 (4) Quarterly
October - December 2016

From the Director's Desk



The year 2016 is coming to an end. When we look back at the achievements, for Indian Institute of Spices Research, I would say that the year 2016 was fruitful. The most significant achievement during the year was the development and release of turmeric variety IISR Pragati, a short duration, high curcumin and high yielding variety during the AICRP on Spices workshop held at ICAR-NRCSS, Ajmer during 24-26 October 2016. This variety paves way for curcumin upgradation in most important turmeric growing states of Telangana, Tamil Nadu and Andhra Pradesh. This will also provide increased returns.

I am happy that our varieties are performing very well and there is a great demand for our varieties. During 2016, we have licensed our black pepper varieties IISR Thevam, and IISR Girimunda to Mr Girish Hegde from Karnataka, IISR Thevam to Mr Martin Manual from Kerala, turmeric variety IISR Alleppey Supreme and ginger variety IISR Varada to Centre for Overall Development, Thamarassery, Kerala. Another important achievement is the signing of MoU for our biocapsule technology with M/S Codagu Agritech Pvt Ltd. It is a unique technology which delivers biocontrol agents in capsules, thus making its handling and application very easy. Its subsequent launch at our Regional Station Appangala (Madikeri) by Hon'ble MP Mr Pratap Simha created lot of interest and enthusiasm among black pepper growers. Our micronutrient mixtures is a great success and the demand is very huge. IISR BPD unit is functioning very well and is attracting many customers for licensing.

The most memorable event during the year was the visit of Hon'ble Union Minister of Agriculture and Farmers Welfare Shri Radha Mohan Singh and Ministers of State for Agriculture Shri Sudarshan Bhagat and Shri Parshottam Rupala to ICAR-IISR. Their blessings and suggestions will go a long way in shaping our future programmes.

Our Tribal sub plan programme is reaching out to farmers in Wayanad, Palakkad and north eastern states. During the year we have conducted training programmes on black pepper, ginger and turmeric cultivation exclusively for tribal farmers. We have also demonstrated our improved nursery practices and improved cultivation practices to them. Similarly we also conducted training programmes on black pepper, ginger and turmeric cultivation for Agriculture Department Officials and farmers from north eastern states.

Still we have to go a long way in addressing the issues faced by spice growers. Sustainable cultivation of

spices under climate adversity with very low rainfall and associated high temperature and high light is a major challenge. We have provided advisories to farmers for mitigation of drought both in electronic and print media. Biotic stresses are also a major threat to spices cultivation. We have developed a good lead in control of rhizome rot disease of ginger and we plan to demonstrate this technology in Kerala, Karnataka, Orissa and West Bengal in the next planting season. There is a great scope for mechanization and value addition in spices. Research programmes need to be fine tuned to address the specific issues faced by the growers and the industry. It is essential that entire spice community join hands to achieve the common goal of maintaining sustainability in production and quality with value addition.

I wish all the readers a very happy, prosperous and successful New Year 2017.

(Nirmal Babu)

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Research Update

IISR Pragati – A new short duration high yielding turmeric variety developed by ICAR-IISR

The ICAR-Indian Institute of Spices Research, Kozhikode has developed a high yielding, short duration turmeric variety for the benefit of farmers. The variety, IISR PRAGATI, is a clonal selection from the vast repository of turmeric germplasm maintained at the institute. This variety was identified for release during the XXVII All India Coordinated Research Project on Spices (AICRPS) Group Meeting held at ICAR-NRC Seed Spices (Ajmer, Rajasthan) during 24-26 October 2016.

Significant features of IISR Pragati :

- Short duration (180 days).
- Suitable for turmeric growing areas with serious irrigation problems.
- High yield (average yield of 38 t/ha fresh rhizomes). The yield can go up to 52 t/ha under favourable conditions.



IISR Pragati in field



Pragati rhizomes

- Stable and high curcumin content (5.02%) across locations.
- Moderately resistant to root knot nematode infestation.
- Suitable for cultivation in Kerala, Tamil Nadu, Andhra Pradesh, Telangana, Karnataka and Chhattisgarh states.

Activity of secondary metabolites of actinomycetes against plant pathogens

The secondary metabolites of the three actinomycetes viz. IISRB Act 1, Act 25, Act 42 were extracted in three different solvent systems and activity profile of each one was determined by agar well diffusion method. The ethyl acetate extract of IISRB Act 1 showed highest activity against *P. capsici* (73.1% inhibition) suggesting that the compound responsible for anti oomycetal activity was a polar compound. The butanol extracts of IISRB Act 25 showed highest activity against *C. gloeosporioides* (77.5% inhibition) and *S. rolfsii* (74.2% inhibition).

Personalia

Awards / Honours / Recognitions

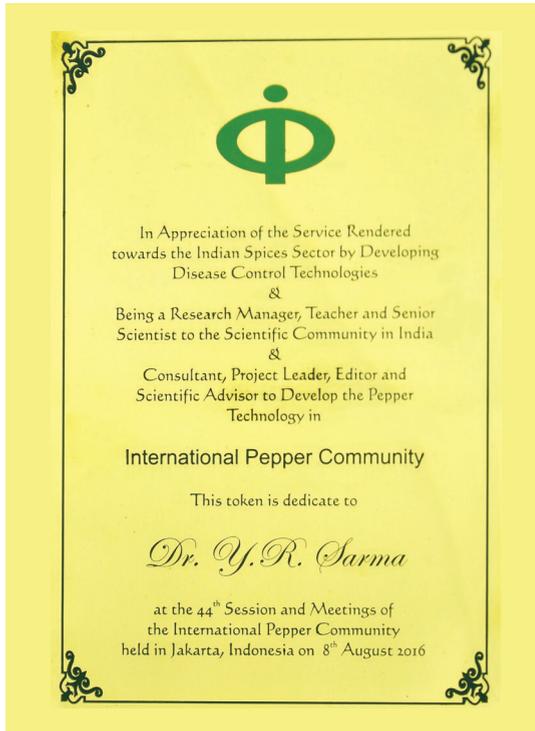
International pepper Community appreciates the services of Late Dr Y.R. Sarma, former Director of ICAR-IISR

International Pepper Community, Jakarta, Indonesia appreciated the services of late Dr Y.R. Sarma towards Indian Spices Sector in developing disease control technologies and also in developing pepper technologies as a scientific advisor to the International Pepper Community.

Fellow of Indian Virological Society awarded to Dr. A Ishwara Bhat.

Ishwara Bhat A, Principal Scientist, Plant Pathology received the Fellow of Indian Virological Society award on 8 December 2016 during the inaugural session of VIRO-CON 2016 International Conference on Global perspectives in virus disease management, held at ICAR-IIHR, Bengaluru during 8-10 December 2016.





Rajbhasha Shield Award 2016 & Best Official Language Magazine Award (First)

Institute bagged Rajbhasha Shield Award 2016 for the **OL implementation and Best Official Language Magazine Award (First)** for the institute's **OL Magazine Masaloon Ki Mehak** among the 76 Central Govt. organizations of Kozhikode.



Dr. Rashid Pervez receiving the memento and certificate in TOLIC annual meeting held at Kozhikode

Best Poster Award in VII Horticulture Congress 2016

Umadevi P, Johnson K George, Anandaraj M, Soumya Madhavan & Santhosh J Eapen received best poster award for the paper entitled 'Proteomics assisted discovery of antimicrobial peptides from black pepper (*Piper*

nigrum L.) upon *Phytophthora* infection' in VII Horticulture Congress 2016: An international meet on doubling farmers income through horticulture held at IARI, New Delhi during 15-17 November 2016.

Dr. G.S. Venkateswaran Award for the best original Research paper

Jayashree E, Suseela Bhai R, John Zachariah T & Ravindra Naik received Dr. G.S. Venkateswaran Award for the best original research paper entitled 'Development of mechanical unit for production of white pepper' displayed as poster in the Technical session on Post Harvest Technology at the National Symposium on Plantation Crops (PLACROSYM XXII) organized at ICAR-CPCRI, Kasaragod during 15-17 December 2016.

II Prize in Exhibition Category

ICAR-IISR stall was awarded second prize in exhibition category in Kisan Mela Cum Centenary Expo-2016 held at ICAR-CPCRI, Kasaragod, Kerala during 10-13 December 2016.

Radio talk

Deepthi A

Scope of agro processing and value addition, AIR, Kozhikode, 18 October 2016

Pradeep B

Interview on organic fish farming, certification and agencies promoting fish farming, AIR, Kozhikode, 09 December 2016.

Interview on up keeping and maintenance of aquarium, AIR, Kozhikode, 09 December 2016.

John Zachariah T

Processing and value addition in spices, Radio Mattoli, Wayanad, 18 October 2016.

Spices in our food and beverage industry (Why it is used). AIR, Kozhikode, 21 October 2016.

Sasikumar B

The science of increasing crop yield, AIR, Kozhikode, 01 November 2016.

Extension activities

Faisal Peeran M

Surveyed Sirsi (Uttara Kannada) area for vanilla stem and root rot disease caused by *Fusarium oxysporum f.sp. vanilla* and *Colletotrichum gloeosporioides*.

Suseela Bhai R

As member of the expert committee along with MDDT visited yellowing affected black pepper plots at Thirunelli on 02 December 2016.



News and Events

Swachhta Pakhwada at ICAR-IISR

Swachhta Pakhwada was celebrated at the institute during 17-31 October, 2016. At ICAR-IISR headquarters, the cleanliness fortnight celebration was inaugurated by Dr. K. Nirmal Babu, Director, during which, the Swachhta pledge was administered to all staff. At ICAR-IISR Experimental Farm, Krishi Vigyan Kendra, Peruvannamuzhi and ICAR-IISR Regional Station, Appangala respective administrative heads administered Swachhta pledge to the staff. After short-listing factors leading to creation of waste materials, various awareness programmes and cleanliness drives were organized. The waste materials collected were segregated into degradable and non-degradable and the degradable waste was used for composting.

Various programmes like yoga training, seminars on ill effects of non judicious use of plastics, methods of waste disposal, and training sessions to supporting staff on waste disposal and competitive programmes on the role of youth in environmental cleanliness to staff and school children were conducted. The village cleanliness campaign at headquarters was inaugurated by Smt. Salini, Councillor of Kozhikode Corporation. Volunteers of the institute performed a cleaning programme at Government Mental Health Centre, Kuthiravattam and planted banana suckers during which, an in situ compost pit was also prepared. Various housekeeping activities were organized to maintain cleanliness in the office buildings, rooms, laboratories, canteen, campus and residential area in which all the staff members actively participated. During valedictory function certificates were distributed to prize winners.



Swachhta Pakhwada programmes conducted at various centres of ICAR-IISR

XXVII Workshop of ICAR- All India Coordinated Research Project on Spices

The XXVII Workshop of ICAR-All India Coordinated Research Project on Spices was conducted during 24-

26 October 2016 at ICAR-National Research Centre on Seed Spices (NRCSS), Ajmer, Rajasthan. Workshop was inaugurated by Dr. T. Janakiram, ADG (HS II), ICAR, New Delhi and he emphasized the importance of co-ordinated programmes in the varietal evaluation and





*Jobner team receiving the award from
ADG (HS II) Dr T. Janakiram*



Release of publications of AICRPS centres

technology development. He urged the researchers to work on water saving techniques for obtaining more crop per drop so that we can save this precious natural resource for the future generation. Dr. Gopal Lal, Director, ICAR-NRCSS, Ajmer delivered presidential address. Dr. Homey Cheriyan, Director, Directorate of Arecanut and Spices Development (DASD), Kozhikode, Dr. P. N. Jagadev, Director of Research, OUAT, Bhubaneswar and Dr. S. R. Maloo, Former Director of Research, MPUAT, Udaipur were the Guest of Honour and expressed their views on coordinated research in evolving new technologies and varieties for farmers. During the inaugural session the “Best AICRPS Centre Award 2015-16” was presented to SKNAU, Jobner, Rajasthan and 15 booklets/pamphlets on AICRP technologies in English and local languages from different AICRPS centres were released during the occasion.

During the workshop seven varieties; one in black pepper – Panniyur 9 with high yield potential; two in ginger - GCP-49 (UBKV AADA 1) and V1S1-2 (Sourabh) with high yield potential; two in turmeric - NDH-98 with high yield potential across the locations and IISR Pragati with high yield potential and short duration, moderate resistance to root-knot nematodes and 5% curcumin content ; one in coriander - RD 385 with high yield potential and one in fenugreek - HM 444 with high yield potential and unique green seed colour were identified for release. Six location specific technologies for various states were also recommended.

Vigilance Awareness Week 2016

Vigilance Awareness Week was observed from 31 October 2016 to 5 November 2016 in all the three campuses of ICAR-IISR namely, IISR head quarters at Chelavoor, Kozhikode; Regional station at Appangala and Experimental Farm at Peruvannamuzhi, besides Krishi Vigyan Kendra, Peruvannamuzhi. The week started with

a pledge taken at 11.00 am on 31st October, in all the stations. Various programmes were organized to bring in awareness of the harmful effects of corruption and the need for having a vigilant society to prevent corruption based on the theme “Public participation in promoting integrity and eradicating corruption” for this year.

Slogan writing competition both in Malayalam and English, Poster making, Essay writing competition in English, Malayalam and Kannada and Quiz competition for staff were conducted. Two elocution competitions for school children, one each in English and Malayalam were conducted for the students of various schools in Kozhikode. A Quiz programme in Malayalam was also conducted for the public. At Appangala, a slogan writing completion in English was held for the staff members.

The Valedictory Function of the VAW- 2016 was held on 5 November 2016 at 11 am in the institute. Dr. J. Rema, Vigilance Officer of the institute welcomed the gathering. Dr. K. Nirmal Babu, Director of the institute delivered the presidential address. Mr. M. Johnson Joseph, Superintendent of Police, Vigilance & Anti-Corruption Bureau, Northern Range, Kozhikode was the Chief Guest. At Appangala, Head of Station, Dr. S. J. Ankegowda presided over the function and Deputy Superintendent of Police Shri. Somalingappa B Chabbi, DSP, Madikeri Sub Division graced the occasion as chief guest for the function. Prizes were distributed to the winners during the Valedictory function.

Institute Research Committee meeting

The Mid-term Institute Research Council (MIRC) meeting of IISR was held during 05-06 December 2016, Dr. K. Nirmal Babu, Director of the institute chaired the overall review meeting. The session on





Vigilance awareness week celebrations at ICAR-IISR

Crop Improvement and Biotechnology was chaired by Dr. B. Sasikumar, HD (Crop Improvement and Biotechnology). The session on Crop Production and Post Harvest Technology was chaired by Dr. T. John Zachariah, HD (Crop Production & PHT) and the session on Crop Protection was chaired by Dr. Santhosh J. Eapen, HD (Crop Protection). The session on Social Sciences was chaired by Dr. B. Sasikumar, HD i/c (Social Sciences). During these two days, the progress made in each of the projects was presented and discussed.

Consultancy Processing Cell

Kandiannan K

Consultancy on black pepper yield assessment at Harrison's Malayalam Ltd., Touramala Estate, Wayanad and Mayfield Estate, The Nilgiris, Tamil Nadu during 1 & 19 December 2016.

News from Library

During the period, the library supplied 35 full text articles to various libraries against requests under

CeRA consortium. Three issues of 'AGRI tit bits' were published. Order placed for Web-scale discovery services. Forty five free publications including annual reports were added. Library services were utilized by 87 internal and two external users.

Hindi News

Hindi Workshop

A Hindi workshop was conducted at ICAR-IISR, Kozhikode, to popularize official language on 1 December 2016. Dr. O. Vasavan, Assistant Director (OL), All India Radio, Kozhikode delivered a lecture on Hindi Noting and Drafting.

OLIC/TOLIC Meeting

Quarterly meeting of Official Language Implementation Committee was held on 17 December 2016 under the Chairmanship of Dr. K. Nirmal Babu, Director. Dr. Rashid Pervez and Mrs. N. Prasannakumari attended Half yearly meeting and Valedictory function of TOLIC on 15 December 2016 at Hotel Malabar Palace, Kozhikode.

Transfer of Technology

Technology inputs and advisory services from ATIC

Advisory services were offered to more than 600 stakeholders. The information centre facilitated the visits of more than 700 stakeholders during the period. Apart

from this the visits of several dignitaries and officials were also coordinated. The use of electronic payment facilities were encouraged actively to enable routine transactions for enhancing quality of the services. The revenue generation from the sale of technology and information products was Rs. 619545 during October to December, 2016.





The water distribution tap installed in Kuzhimukk tribal colony

Training and exposure visits under PMKSY

The institute hosted a group of farmers from Ariyallur in Tamil Nadu for exposure visit under the Prime Ministers Krishi Sinchai Yojana (PMKSY) on 14 October, 2016. Special lectures on water management in spice crops and the role of water saving technologies in spices cultivation were explained to the visiting farmer group.

Training programme and asset creation for tribal farmers of Wayanad

A training programme on homestead vegetable cultivation was conducted at the kuzhimukk tribal hamlet in Wayanad district of Kerala on 19 October 2016. The tribal households of the hamlet were sensitized on the role of vegetables in balanced nutrition and assessed the progress of adoption of vegetable cultivation in the hamlet. The households were earlier provided with vegetable seed kit for starting vegetable gardens. As part of the efforts to ease the difficulties in accessing clean drinking water in the tribal hamlet, an overhead water tank and community water tap was installed in the colony.

IISR Exhibition stall wins accolades

The technology dissemination potential of mass contact programmes were fully leveraged by installation of the institute exhibition pavilions at key agricultural exhibitions organized by various institutions. The IISR exhibition stall at “Kisan Mela 2016” organized at ICAR Central Tuber

Crop Research Institute, Trivandrum as a part of National conference on tropical tuber crops (NCTT) won the first Prize in its category. The stall was also visited by dignitaries like Shri V S Sunil Kumar, Minister for Agriculture Development and Farmers Welfare, Government of Kerala and Dr. T Mohapatra, Secretary DARE and Director General, ICAR.

The institute also took an active part in the Idukki Agri Tech 2016 organized by ATMA Idukki at



Dr. T Mohapatra, Director General, ICAR visiting ICAR IISR exhibition stall during NCTT

Thodupuzha in Idukki district during 4-5 November, 2016. During the event, a special presentation on the institute technologies was made for the farmers and department officials. The International Workshop on Agro Processing & Value Addition organized by SAMETI and Department of Agriculture Development and Farmers Welfare, Government of Kerala during 01-05 December, 2016 offered a strategic platform for showcasing the technologies before a global audience. An exhibition titled Value Addition for Income Generation in Agriculture -2016 (VAIGA 2016) was also organized on the sidelines. The ICAR IISR Exhibition stall also won the second prize in the CPCRI Centenary Expo and Kisan Mela held at ICAR CPCRI, Kasargod during 10-13 December, 2016.



ICAR IISR Sales stall at VAIGA 2016



Interstate training programme organized

A customized Interstate training programme on Technologies for enhancing farm productivity of spices was organized for 10 farmers and one official from Tiruchirappalli during 01-03 Nov, 2016.

Training Programmes in NEH States

In tune with its focus on areas with special attention, the institute organized two programmes in Arunachal Pradesh and Nagaland during November 2016. A workshop titled “Production management and on- farm processing technology in spices- Prospects in Arunachal Pradesh” was held during 17-19 November at Nam-sai in Arunachal Pradesh in collaboration with Spices Board. The workshop, attended by farmers and officials from various development agencies and line departments of the state government, involved lectures, practical sessions and field visits. Another workshop on “Prospects and promotion of spices in Nagaland” was conducted during 21-22 November, 2016 at AICRPS centre, Nagaland University, Dimapur. Both the workshops stressed on the need to adopt technologies suited to maintain the organic production practices in vogue



Visit to a technology demonstration plot in Arunachal Pradesh during the workshop

in these states. The institutional stakeholders in these states have pledged to popularize the technologies of ICAR IISR among the spice farmers.

Activities of ITM-BPD Unit

Technology commercialization

A non-exclusive license agreement was signed with Mr. Girish N. Hegde, Sahyadri Nursery & Farm, Hulkodu village, Edagigalemane Post, Sagar Taluk, Shivamogga, Karnataka on 14 October 2016 for two black pepper varieties IISR Thevam and IISR Girimunda.



Mr. Girish N Hegde with license agreement for IISR Thevam and IISR Girimunda

A license agreement for the utilization of Spice processing facility at Peruvannamuzhi was executed with Mr. Suhaib, M/s Mannil Spices, Meppayur, Kozhikode on 15 October 2016.

Exhibitions and conferences attended

ITMU participated in VAIGA 2016 (Value Addition for Income Generation in Agriculture)- An International Workshop on Agro Processing & Value Addition, Organized by the Department of Agriculture Development & Farmers’ Welfare, Government of Kerala at Kanakakunnu Palace, Trivandrum during 1-5 December 2016 and conducted exhibition cum sales of incubatee products and technologies developed by ICAR-IISR.

ITMU participated and conducted exhibition and sales of incubatee products and technologies developed by ICAR-IISR in Kisan Mela Cum Centenary Expo-2016 during 10-13 December 2016 held at ICAR-CPCRI, Kasaragod, Kerala. ICAR-IISR stall was awarded second prize in exhibition category.

It also participated in PLACROSYM 22-“Leveraging Innovation system in Plantation sector through value addition” during 15-17 December 2016 at ICAR-CPCRI, Kasaragod and conducted sales of incubatee products and technologies developed by ICAR-IISR.



License agreement with M/s Mannil Spices



Krishi Vigyan Kendra

On Farm Testing

During the period, the following seven OFTs consisting of forty trails in farmer's fields were conducted.

- 1 Performance evaluation of grafted black pepper (continuing - third year).
- 2 Assessment of production performance of different breeds of poultry under homesteads.
- 3 Scientific farming of milkfish (*Chanos chanos*) in brackish water ponds.
- 4 Assessing the performance of yard long bean varieties Lola, Vellayani Jyothika and Githika in Kozhikode district.
- 5 Assessment of comparative performance of tissue culture plants and suckers of Nendran banana under high density planting.
- 6 Assessment of organic management practices against Sigatoka leaf spot in banana.
- 7 Evaluation of different techniques for the production of dehydrated banana.

Front Line Demonstration

Following FLDs were conducted during the period.

- 1 Performance evaluation of rooted top shoots of high yielding varieties of black pepper.
- 2 Demonstration of Java long pepper (*Piper chaba*) as a mixed crop in arecanut /coconut gardens.
- 3 Demonstration on integrated management of Tanjore wilt of coconut (continuing).
- 4 Demonstration on feeding anionic mixture to prevent milk fever in cows.
- 5 Culture of fishes using formulated floating feed.
- 6 Demonstration of soil application of banana micro-nutrient mixture viz. AYAR in Nendran banana for higher yield.
- 7 Demonstration of hydroponics method of fodder production for dairy.
- 8 Management of pseudo stem weevil in banana using the entomopathogenic fungus *Beauveria bassiana*.

Training Programmes

A total of 27 training programmes were organized for farmers, rural youth including women and 1125 persons attended in these programmes. It included three On Job trainings for vocational school students; a weeklong training on soil testing to college students and three trainings to Tamil Nadu farmers. Training on bee keeping, ornamental fish culture, propagation of spices, vegetables, mushroom cultivation, poultry rearing and jack fruit processing were the other important training programmes organized by KVK during the period.

Other programmes conducted by KVK

Farmers fair on Prime Minister Fasal Bhima Yojna

Awareness programme on Prime Minister Fasal Bhima Yojna was inaugurated by Hon'ble Member of Parliament (Lok Sabha), Kozhikode Shri M.K. Raghavan at KVK, Peruvannamuzhi. A special session with detailed presentation on Prime Minister Fasal Bhima Yojna was delivered by C.V. Vimal, Officer, Agriculture Insurance Company of India, Trivandrum. A lecture on "Good Agricultural Practices" was also delivered by Dr. R. Praveena, Scientist, IISR, Kozhikode. The programme was participated by about 400 persons from all the twelve blocks of Kozhikode district.



Shri M.K. Raghavan, MP inaugurating the awareness programme on Fasal Bhima Yojana



World Soil Day and Rabi awareness programme

Celebration of World Soil Day and Rabi awareness programme on “Organic Vegetable Cultivation” was organised on 5 December 2016. A special training on “Enrichment of FYM and vermi-compost by using bio-control agents” was conducted by P. Raji, Professor, KAU, Pattambi. In addition lectures on Good Agricultural Practices and organic vegetable cultivation, Vegetable and Spices cultivation, Eco-friendly biocontrol

measures and organic inputs in agriculture, Importance of soil health, awareness class on Rabi cultivation and Prime Minister Fasal Bhima Yojna (PMFBY) were also held. Soil health cards and cabbage, cauliflower seedlings were distributed to farmers on the occasion. About 250 persons including farmers, scientists and extension functionaries participated in the programmes. Exhibitions by KVK, ICAR-IISR and Self Help Groups displayed the recent agriculture technologies and distributed organic inputs to the farmers.



Prof. P. Raji addressing the gathering

Agriculture Education Day celebrated

The Kendra observed Agriculture Education Day as Open day for school students of Kozhikode district on 3 December 2016. A total of about 60 persons including students from five schools visited KVK. Practical classes on different plant propagation methods and Oyster mushroom production, visit to different KVK demonstration units and interaction with management the scientists on biocontrol methods of pest and disease and soil testing were held. A quiz programme for students was also organized.

mobile sales unit visit to Naduvannur block as a part of celebration of Jai Kisan Jai Vigyan week. One day training on “advances in spices propagation and integrated management of spices” was organized for the field and extension staff of ATMA, Kozhikode at Government Higher Secondary School, Naduvannur. On that day, KVK mobile sales unit made door step delivery of inputs to 75 farmers. In addition, training on “Mushroom cultivation” for students and farmers, quiz programme for school children; training on “Organic vegetable farming” for farmers and training on “Recent advances in fruits and vegetable production” to field staff of Vegetable and Fruits Promotion Council of Kerala (VFPCCK), Kozhikode were also conducted during the week.

Jai Kisan Jai Vigyan Week celebration

KVK organized four training programmes and one day



Smt A.C. Sathi, President, Perambra block distributing inputs to farmers



Vice-President, Mr P. Achuthan Naduvannur grama panchayath inaugurating the training programme for the ATMA staff





Publications

Research papers

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Book chapters

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Extension pamphlet

Jayashree E, Sheeja T E, Santhosh J Eapen, Dennis Abraham George & Saneera E K 2016 Sugandha Vijnana Samskarana Kendram (Malayalam), ICAR-Indian Institute of Spices Research, Kozhikode, Kerala

Ratha Krishnan P 2016 Aware about PMFBY – Pradhan Manthri Fasal Bhima Yojna, ICAR- KVK, Kozhikode, November 2016, 4p.

Popular articles

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Jayashree E 2016 Turmeric curing using concentrated Solar Thermal Technology. Spice India 29(10): 28-30.

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Sharon Aravind, Ankegowda S J, Praveena H D, Narendra Choudhary, Mohammed Faisal Peeran & Alagupalomuthirsolai M 2016 Savayava tyajjyadinda samrudha gobbara. Spice India (Kannada) 29(10): 4-12.

Papers presented in symposia/ seminars/ workshops /conferences

During the period, 13 research papers were presented by the scientists and research scholars of the institute in various international and national seminars/symposia.

PhD Awarded			
Name	Title of the thesis	University	Guide
D. Sruthi	Chemoprofiling and antioxidant potential of selected <i>Piper</i> species	University of Calicut	Dr. T. John Zachariah

New Appointments		
Name	Post	Date of joining
Ms. Ann Jasmine Jose	SRE, HVC	06.10.2016
Ms. Abhilash Mehra	JRF, Bioinformatics	17.10.2016

Promotion		
Name	Promoted to the post of	w.e.f
Mr. C.K. Jayakumar	Programme Assistant (T-4)	01-02-2015
Mr. K.P. Premachandran	Sr. Technical Assistant (T-4)	25-04-2015

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



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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

Publisher

Nirmal Babu K
Director, ICAR-IISR
Kozhikode

Editors

Krishnamurthy K S
Senthil Kumar C M
Rajeev P

Cover design and Photo credit

Sudhakaran A

Typesetting and Layout

Deepthi P

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

