



Volume 34, No.3

www.iihr.ernet.in

JULY-SEPTEMBER, 2013

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From Director's Desk

In the recent times, pomegranate has become popular and commercially viable fruit crop of India. Hostile agro climate of arid ecosystem makes fruit culture a difficult enterprise, but even under such environment, pomegranate crop has proved to be successful. The built in capacity to withstand heat, drought and salinity, besides high benefit: cost ratio has made its cultivation increasingly attractive. The fruit has wide consumer preference for its attractive, juicy, sweet-acidic and refreshing arils and there is a growing demand for good quality fruits both for fresh use and processing into juice, syrup and wine along with its health promoting characteristics. Compounds found only in pomegranates viz. punicalagins are the major component responsible for pomegranate's antioxidant and health benefits. They not only lower cholesterol, but also lower blood pressure and increase the speed at which heart blockages (atherosclerosis) melt away. Pomegranate have been shown to inhibit breast cancer, prostate cancer, colon cancer, leukemia and to prevent vascular changes that promote tumour growth. Because of the health benefits of this fruit, pomegranate today is one of the important fruits exported from India.



In the recent years pomegranate has been facing many production problems because of 'Bacterial blight', one of the most devastating diseases occurring in major pomegranate growing states of India. Bacterial blight has been observed damaging the pomegranate crop in moderate to severe proportion resulting in enormous losses in the states of Maharashtra, Karnataka and Andhra Pradesh. Bacterial blight has attained such serious proportion in the recent times that no control measure is working to control this. All the important varieties cultivated in tropics are prone to bacterial blight. In order to overcome this problem research program to develop a variety resistant to bacterial blight was initiated at IIHR, Bengaluru. In the breeding programme, it was observed high level of susceptibility (>4.25 mean disease score) in the progenies of several crosses, back crosses, multiple crosses involving tropical types and Russian temperate types which suggested the lack of resistant genes, and a need for isolation of resistant source. In the sub-temperate regions of India (Himalayas), seedling trees of a variety by name, 'Daru' come up naturally in abundance. These hardy deciduous seedling trees growing since long time possess better climatic adaptability and tolerance to pests and diseases owing to natural selection. Screening of over 5000 seedlings of 'Daru' to identify source of resistance by challenge inoculation along several approaches including mutation and polyploidy breeding to tackle this problem is underway in the Division of Fruit Crop at the Institute.

(Amrik Singh Sidhu)

EVENTS

Inauguration of NAIP-IIHR Business Planning and Development Unit

Indian Institute of Horticultural Research (IIHR), Bengaluru launched the NAIP- Horticultural Technology Management Business Planning and Development Unit (NAIP-IIHR-BPD) on July 05, 2013. Dr. S. Ayyappan, Secretary, DARE and Director General, ICAR inaugurated the Business Planning and Development Unit at its campus. Dr Rama Rao, National Director, NAIP, Dr A. S. Sidhu, Director, IIHR, Bengaluru, entrepreneurs, private sector companies, representatives from financial organizations, public sector organisations like NRDC, scientists from other sister ICAR institutes and staff members of IIHR, Bengaluru were present on the occasion.. A Stakeholder workshop and an exhibition and demonstration of some of the potential technologies developed by IIHR, Bengaluru and ready for incubation and commercial production were organised on the occasion.



Dr. S. Ayyappan inaugurating BPD unit

IIHR Celebrates Institute Foundation Day

The Institute celebrated the 'IIHR Foundation Day' on September 05, 2013. Celebrations associated with the 'Foundation Day' were spread over three days involving all the IIHR staff members. A Panel discussion on 'Cool with the Rule' on September 03, 2013 and a Sports carnival on September 04, 2013 were organized for the benefit of IIHR Staff. The main function was organised on September 05, 2013 chaired by Dr. Amrik Singh Sidhu, Director of the Institute. The Institute has the tradition of felicitating the retired staff members from all service categories for their contribution towards the development of the Institute. This year, Dr. Lalita Ananad, from scientific category, Smt. S. Jagadmbal from administrative category, Shri. Narasimhan, S.R., Shri Raj Kumar, T. and Shri Nagaraju, G, Shri Srinivasan, H.N. from technical category, and Shri V. Venkanna and Shri Muniappa, H.M. from supporting category were felicitated on the occasion. Dr. Abraham Vergeese, Director, NBAII, a special guest on the occasion was also felicitated on the occasion. Every year, the institute makes an effort to identify the best workers in various categories of the Institute and present them Award of Excellence. The award carries cash



Director, IIHR with the Guests on the dais

prize and a citation. Dr. P. Chowdappa, Principal Scientist, Div. of Plant Pathology, Mr. Kotra Basappa, Technical Officer (T-5), Div. of Fruit Crops, Mr. Shaik Kareemullah, T-3 Driver, and Mr. T.V. Laxmaiah, Mali, Farm Management were awarded the Award of Excellence this year. The Institute also awarded Best Farmer award to Mr. S. K. Chaluvarej, Seethakempanahalli, Bengaluru North, Mr. Ravikumar, Kereguddadahalli, Hesarghatta Hobli, Bengaluru and Mr. D. K Chandrappa, Chikkaballapura for adopting and popularising IIHR technologies in the field. The Director also distributed prizes to the winners of various sports events conducted. A common lunch was arranged to all the staff members including the Director and the guests, followed by light entertainment by the staff members of the Institute.

Annual Review Workshop of NAIP Subproject Mobilizing Mass Media Support for Sharing Agro Information

The Annual Review Workshop of NAIP Sub Project "Mobilizing Mass Media Support for Sharing Agro Information" was organized at Central Horticultural Experimental Station, Chettalli, Kodagu Karnataka during July 26-27, 2013. The activities and achievements of all the 10 consortium partners of NAIP sub project were reviewed during the workshop. Dr. P. S. Pandey, National Coordinator, Component - 1, NAIP Chaired the review workshop. Dr. Jagadeep Saxena, Editor and Shri Anil Kumar Sharma, Public Relations Officer, DKMA and Co-PIs, CCPIs and Co-CCPIs viz., Dr. Nita Khandekar, Dr. B. Balakrishna, and Sri P. B. Gaddagimath from IIHR, Bengaluru, Dr. T. John Zachariah and Dr. T.K. Jacob from IISR, Calicut, Dr. S. Ashaletha, CIFT, Kochi, Dr. N. Anandraja, TNAU, Coimbatore, Dr. S. K. Shukla, CISH, Lucknow, Dr. Y. P. S. Dabas and Dr. Naresh Kumar from G. B. Pant University of Agriculture and & Technology, Pantnagar, Dr. Neeraj Singh, IIVR, Varanasi, Dr. Rajesh Kumar, ICAR Research Complex NEH region, Dr. R. Nagaraja Reddy, DMAPR, Anand and Dr. Indu Karki, CIPHET, Ludhiana participated in the meeting. Dr. P.C. Tripathi, Head, CHES, Chettalli presented activities and achievements of the station. The CC-PI's from the consortium partner institutions presented the progress of their respective centres. Appreciating the progress made by all the consortium partners of the project, Dr. Pandey requested all the Co-PI's and CC-



A coffee table book "Know Your Mushroom" being released

PI's to strengthen the activities and achieve the targets well within the time frame. A coffee table book "Know Your Mushroom" published by IIHR, Bengaluru was released on the occasion.

Brain Storming Session on GM Crops: Issues & Challenges

The IIHR, Bengaluru in association with UHS, Bagalkot organized a Brain Storming Session on GM Crops: Issues & Challenges at its campus on August 06, 2013 under the Chairmanship of Prof. G. Padmanabhan, Former Director, IISc, Bengaluru. The objective of the Brain Storming session was to discuss about the overall development of GM crops, controversies and with special reference to the memorandum given to Honorable Chief Minister, Govt of Karnataka by Mr. Radhakrishnan, Convener, coalition for GM free India. Dr. Dandin, Vice Chancellor, UHS, Bagalkot, Dr. Amrik Singh Sidhu, Director, IIHR, Bengaluru, Dr. Manjunath, Former Director, MONSANTO, Bengaluru, Dr. Narayanan, Metahelix, Bengaluru, Dr. Chennarayappa, MSSRF (Head, Biotek), Chennai, Dr. Ravi, MAHYCO, Bengaluru, Dr. Ashok, Head, Biotek, UAS, Bengaluru, Dr. Jagadish Mittur, Member, IT-BT Dept., Govt. of Karnataka and the scientists of Division of Biotechnology, IIHR, Bengaluru participated in the deliberations. The questions raised by the convener was discussed with support of reference papers published in peer reviewed journals.

Various points / recommendations emerged out of the Brain Storming session were conveyed to the Govt. of Karnataka.



Prof. G. Padmanabhan, presiding over the session.

Review of Research Projects of CHES, Bhubaneswar

Dr A. S. Sidhu, Director, IIHR reviewed the on research projects of CHES, Bhubaneswar on September 20, 2013. Dr. M. R Hegde, Chairman, RMCU coordinated the meeting. Dr B. N. S. Murthy, Principal Scientist and Chairman, PME/HYPM, Dr. V. V. Sulladmath, Principal Scientist from IIHR, Bengaluru, Dr. H. S. Singh, Head, CHES, Bhubaneswar and scientists of the Station participated in the meeting. The research and development activities, multiplication of planting material, and farm and infrastructure development were reviewed in the meeting. Suggestions were made to streamline the research activities of the station for the development of need-based technologies for the region and strengthen the multiplication of planting materials to meet the ever growing demand from the farmers of the region. The newly joined senior scientists; Dr. Kundan Kishore and Dr. G. Sangeetha were introduced to the house during the meeting.

Institute Joint Staff Committee (IJSC) Meeting

The Institute organised the 81st IJSC meeting at CHES, Bhubaneswar on September 21, 2013 under the Chairmanship of Dr. A. S. Sidhu, Director, IIHR, Bengaluru. Secretary, IJSC, Shri S. G. Kalashetty, Members of IJSC, Shri Mukrum, Shri A. N. Lokesh, Shri Shivarudrappa, Shri. D. Krishnappa, Shri. N. Hanumanthappa, Member Secretary, IJSC, Shri. Tittu Kumar, Shri. Charles Ekka, SAO, Shri. A. Srinivas Murthy, FAO and Shri. R N Pandey, T-9 participated in the meeting. Dr. H. S. Singh, Head CHES, Bhubaneswar, hosted the meeting. Various administrative and financial matters related to the welfare of the IIHR staff were discussed. The Chairman assured amicable solutions for the genuine issues of the staff members.



Dr. A. S. Sidhu presiding over IJSC meeting

Hindi Week Celebrations

The Indian Institute of Horticultural Research, Bengaluru observed Hindi Saptah during September, 16-23, 2013. Various competitions viz., Hindi Recitation, Hindi Reading, Hindi Terminology and Noting, Handwriting, Khel-Khel Mein Hindi, Hindi Conservation, Hindi Song and Pre-written Hindi

Essay were organized for the benefit of the staff members of the Institute. Shri Rajeshwar Singh, Retd. General Manager, HMT, Bengaluru inaugurated the Hindi Saptah on September 16, 2013. The Hindi Saptah was concluded on September 23, 2013 with Dr. V. Thilagam, Hindi Officer, IISc., Bengaluru as the Chief Guest who distributed prizes to winners of various competitions organised.

Central Horticultural Experiment Station, Bhubaneswar celebrated Hindi Week during September 16-23, 2013. Various programmes viz. *Shruti lekhan aur Shabdarth pratiyogita*, *Nibandh pratiyogita*, *Vaad – Vivaad pratiyogita*, *Kavita paath*, *Hindi Geet* and *Vichaarmanch* were organized to promote use of Hindi language among the officers and staff of the station in their day to day official functioning. The Hindi Week celebration was inaugurated on September 16, 2013 graced by Dr. Archana Mukharjee, Principal Scientist, CTCRI, and Smt. Shail Singh (Poet). Dr. A. S. Sidhu, Director, IIHR, Bengaluru also graced the celebrations during the week and presented the prizes to the winners of the competitions on *Shruti lekhan aur Shabdarth pratiyogita* and *Vaad – Vivaad pratiyogita*. The valedictory function of Hindi Week was held on September 23, 2013 during which Dr. H.S. Singh, Head, CHES, Bhubaneswar distributed the prizes to the winners of various competitions.

The Central Horticultural Experiment Station, Chettalli celebrated Hindi Week during September 16-23, 2013. Dr. P. C. Tripathi, Principal Scientist and Head inaugurated the program. During Hindi week Various competitions viz., dictation in Hindi, assigning equivalent meaning of Hindi



Dr. P. C. Tripathi addressing the staff

terms for chosen words in English, identification of things with Hindi terminologies, copy writing, word building game with given alphabets in Hindi, and composition and poem recitation were organized for the benefit of the staff members. The valedictory function was held on September 23, 2013. Dr. B. S. Talwar, Associate Prof., Department of Hindi, Field Marshal K.M. Cariappa College, Madikeri, was the Chief Guest. Shri. Manoj, Hindi Teacher, High School, Chettalli, was the judge for various competitions. The chief guest and other speakers emphasized on the importance of Hindi week celebration and role of Hindi in official communications. Prizes were distributed to the successful participants by the chief guest.

Hindi Table Workshop

The Official Language Implementation Committee of the Institute organised a Table Workshop on "How to Work in Hindi on Computer" on September 27, 2013 for the benefit of the staff members. Thirteen staff members of the Institute participated in the workshop. Through this workshop the administrative staff members were trained in Hindi noting and typing in Hindi using computer.

Forty Fifth Scientific Advisory Committee (SAC) Meeting of KVK

Krishi Vigyan Kendra, Gonikoppal conducted 45th SAC meeting on July 31, 2013 under the Chairmanship of Dr. Amrik Singh Sidhu, Director, IIHR, Bengaluru. Dr. P C Tripathi, Programme Coordinator and Head (A), KVK presented the achievements of last year and the program for the current year. KVK publications viz., Package of Practices for Kodagu (2nd Edition), Newsletter for the quarter April – June 2013 (English and Kannada) and Extension folder on Back yard poultry farming were released on the occasion. Officials from the different line departments, NGOs, NABARD, and progressive farmers who also participated in the meeting offered their suggestions for effective implementations of various programmes during the ensuing season.

Interface Programme on Utilization of Paddy Fallows in Kodagu

The KVK, Gonikoppal organised an interface program on 'Strategies for effective utilization of paddy fallows in Kodagu' on September 25, 2013 under the Chairmanship of Dr. R. Chithiraichelvan, Director (A), IIHR, Bengaluru. The objective of the program was to bring awareness among the farming community to preserve the traditional paddy fields and improving its productivity by adopting available eco-friendly, technically feasible and cost effective alternate technologies. Dr. P. C. Tripathi, Programme coordinator and Head (A), KVK, presented the status report on 'Utility of wetlands for different purposes and scope for new interventions in the district of Kodagu'. Various interventions for paddy fallows were presented by resource persons from research institutes and universities. Various issues like retaining of paddy fields, feasibility of alternative crops for the paddy fallows as well as for the summer fallows, avoiding conversion of agriculture land for non-agricultural and commercial purposes, encouragement of paddy cultivation in malnad regions including Kodagu etc. were discussed in the meeting.

Seminar on Black Pepper Disease Management

Krishi Vigyan Kendra, Gonikoppal and Balale sports Club jointly organized a Seminar on Black Pepper Disease management at Kodava Samaja Hall, Balale on September 11, 2013. Mr. Veerendra Kumar K.V, Mr. K.A. Devaiah, Mr. B. Prabhakar, and Mr. C. K. Vasanthkumar from KVK were the resource persons. More than 75 farmers and farm women participated in the programme.

Interface Programme on Pepper Grafts

Krishi Vigyan Kendra, Gonikoppal, Sri Khsethra Dharmasthala Rural Development Project (NGO) and Triveni Mahila Seva Sangha jointly organized a Scientist – Farmers interface programme on Black Pepper grafts production and their performance in Kodagu at Hudikeri village on July 22, 2013. Dr. N Yadukumar, Retd. Scientist, Directorate of Cashew Research, Puttur demonstrated the grafting method, hardening, selection of area and fields for planting and their performance on withstanding quick wilt incidence in the fields. More than 70 farmers and farm women participated in the programme.

RESEARCH

Varieties/Technologies Identified

The Variety and Technology identification Committee of the Institute has identified the following technologies/varieties for release at the Institute level.

Arka Neelachal Kesri - an early maturing mango variety:

Arka Neelachal Kesri, a clonal selection of Gulabkhas, is an extra early. Starts flowering in November and fruit ripening starts in mid-March (ripens in March-April). It is a coloured variety with 70-110 kg/tree yield potential. Free from fruit fly and anthracnose under coastal region of Odisha. Medium size fruits are attractive in appearance and better in quality in terms of TSS (18-22 °Brix) and acidity. It has good market potential owing to its extra early nature, colour and fruit quality. The variety has been identified by CHES, Bhubaneswar.



Malabar Tamarind or Kodumpuli (*Garcinia gummigatta*):



Fig 3: Fruits of *Garcinia gummigatta* GG-V-1

One promising line (GG-V-1) of Malabar tamarind with higher fruit weight has been identified from the seedling population collected from Karnataka at CHES, Chettalli.

The tree has upright growth and medium sized. The fruits ripe in the month of July. The fruit weight ranges between 75 - 85g. Fruits are dull yellow in colour, 6-7 seeds/fruit, yellow

rind, white flesh, 8 segments, juicy and acidic, TTS 9.5° Brix, and seeds attached to flesh. The rind recovery is 62 per cent. The average yield of a 12 year tree is 400-700 fruits per tree.

First Report of Flowering in Meetha Pan

Meetha pan is a preferred commercial cultivar of betel vine due to its distinct sweetness in the leaves traditionally grown in closed (Baroj) cultivation in Midnapur district of West Bengal. Till now flowering is not reported and sex of this clone is unknown. Meetha pan in farmer's field in Kammardi (Chikmagalur) and Ripponpet (Shimoga) in Karnataka has put forth luxuriant growth but plagiotropic shoots and flowering is absent. However, flowering was observed in Meetha pan in the garden of Sri Devaraj of Lakkavalli village, Chickmagalur district. Meetha Pan grown in areca nut garden as an intercrop has produced female inflorescence. This is the first-report of occurrence of flowering and classifying the clone as female. The planting material from the flowering vines of Meetha pan has been collected and being propagated for further utilization in breeding programme.



Meetha pan under areca nut support



Female inflorescence of Meetha pan in Lakkavalli village

Wild Orchids of Coorg

The CHES, Chettalli in collaboration with NRC Orchids, Sikkim and Division of Ornamental Crops, IIHR, Bengaluru surveyed Kodagu region and collected 45 species of wild orchids. The important ones includes *Dendrobium crepidatum*, *Vanda tessellate*, *Liparis viridiflora*, *Rhynchostylis retusa*, *Phoidata pallid*, *Dendrobium aqueum*, *Cymbidium bicolor*, *Aerides ringens* etc. Some of these orchids have potential for potted orchids. These collections have been maintained at CHES, Chettalli.



Fig.4. *Rhynchostylis retusa* in flowering

Corky Tissue disorder in Sapota Unravellled

One of the major constraints of commercially important sapota variety Cricket Ball is the physiological disorder or internal

breakdown known as 'Corky tissue' with the incidence ranging from 20 to 70%, especially during the summer months. Although, Corky tissue in sapota was described many years ago, the mechanism by which the disorder develops has not been determined due to which the quality of sapota fruits is severely affected. This has led to losses in production and reduced income to farmers.

Investigations conducted in the Division of Plant Physiology and Biochemistry of the Institute over the last three years have established that a reduction or complete loss of seed viability during the early stage of fruit development is the primary cause for the development of the disorder. Studies



Fig. Picture showing (a) healthy and (b) Corky tissue affected sapota fruits. The white arrow indicates the presence of a hard lump of corky tissue deep inside the pulp close to the skin.

have also shown that under water limiting conditions, the phenomenon of "Reverse flow" of water and nutrients from the fruits to newly emerging shoots accelerates the process of corky tissue development. The loss of water and minerals from the fruits due to competition for resources with the rest of the tree leads to the formation of corky tissue in the fruit pulp, the intensity of which increases with time after harvest. The present discovery is the first report on the mechanism of corky tissue formation in sapota which is of great value in evolving appropriate strategies for the management of the disorder in fruit orchards by the growers. Field studies using sprays of seaweed extracts on developing fruits have given promising results in completely overcoming the disorder.

Extension of Storage life of French Beans by CFB Box-Shrink Wrapping

Beans lose water very rapidly after harvest and the water loss causes shrivelling, drying, fibrous appearance and become unmarketable. This water loss will continue even under low temperature conditions, though at lesser rates. To reduce the moisture loss and maintain harvest freshness, French Beans cv. Arka Anup were packed in 2 kg CFB boxes and over wrapped by shrink wrapping technology using semipermeable films. The beans packed in this way could be stored for three weeks at 7°C and two weeks at 10°C with a weight loss of only 5.66 and 5.59% respectively and with maintenance of harvest freshness, firmness and protein content. The non-wrapped beans had a weight loss of 15.98 and 9.35 % at 7°C and 10°C for the respective storage periods.



Box shrink wrapped French Beans stored at 7°C and 10°C

At room temperature (28.4-35°C and 28-64% RH) the Box-shrink wrapped beans could be stored for three days with a weight loss of only 5.92 % as compared to 13.41 % weight loss in non-wrapped beans.

HUMAN RESOURCE DEVELOPMENT

Post Graduate Research and Education

Recognition as a Centre of Post Graduate Research and Education:

Two more universities viz., Sher-e-Kashmir University of Agricultural Science & Technology-Jammu Jammu, J&K and University of Agricultural & Horticultural Sciences, Shimoga, Karnataka have recognised IIHR, Bengaluru and signed a MOU during July-Sept. 2013. With this the total number of universities recognizing IIHR, Bengaluru as a Centre of Post Graduate Research and Education has risen to 15.

Peer Review Team Visits: A Peer Review Team constituted by ICAR, New Delhi visited the Institute during September 02-03, 2013 to assess the suitability for offering post graduate degree Programs (MSc. And Ph. D) in Horticulture Sciences as an Outreach Program of IARI, New Delhi. The team under the Chairmanship of Dr. S. D. Shikhamany, former Vice Chancellor, Andhra Pradesh Horticultural University, Dr. B. L. Jalali, Former Director - Research, CCSHAU, Hisar, Dr. Ranvir Singh, Former Dean (Agri.), GBPUAT, Pantnagar, Dr. N. Kumar Dean, TANU, Coimbatore and Dr. Suresh S. Honnappagol, ADG (EQR), ICAR (Member Secretary) had a detailed discussion with the Director, Heads of the Divisions and Chairman of various committees.

Completion of PG Degree Program: Mr. Rama Krishna, K. (ID. NO. UHS11PGM177), PG Centre, UHS Campus, Bengaluru has successfully completed his Master Degree in Horticulture on 31/8/2013 under the guidance and supervision of Dr. Sudhakar Rao, D. V. Principal Scientist, Division of PHT for the thesis entitled 'Effect of chitosan coating on the storage life and quality of guava (*Psidium guajava* L.) cv. Allahabad Safeda at different storage temperatures'.

PG Examiners: To conduct the final viva-voce examination of Ph.D students, Dr. Venugopalan, R. acted as an external examiner of Biostatistics at NIMHANS (Deemed University), Bengaluru on August 27, 2013 and Dr. Reddy, Y. T. N. and Dr. Murthy, B. N. S. acted as an external examiners of Fruit Science of Mahatma Phule Krishi Vidyapeeth, Rahuri on September 27, 2013

Training and Deputation Abroad

Deputation Abroad

- Dr. Mandal, S. was deputed to USA on Fulbright-Nehru Postdoctoral Research Fellowship at University of Nebraska Lincoln, USA and successfully completed his fellowship program (24.08.2012-23.08.2013).
- Dr. Bharathi, L. K has been deputed to USA for training in the area of "Marker assisted selection (Horticulture)" at West Virginia, State University, USA during September 15 – December 15, 2013
- Dr. Kamala Jayanthi, P. D. participated in the International Chemical Ecology Conference-2013 held at Melbourne, Australia, August 19-23, 2013.

Training of IIHR Staff

- Dr. Gopalakrishna Pillai, K. underwent six days training on 'Post entry quarantine inspection for inspection authorities' at NIPHM, Hyderabad, July 22-27, 2013.
- Dr. Suresh, S. C. underwent ten days training on 'Recent advances in conservation of animal genetic resources and IPR issues' at NDRI, Bengaluru, August 18-27, 2013.
- Ms. Jayanthimala, B. R. was deputed for training on detection and measurement of insecticide resistance including molecular aspects, NBAII, Bengaluru, September 02-14, 2013.
- Dr. Achala Paripurna, K. attended the winter school on 'Molecular identification of invasive and emerging phytophthora diseases of horticultural crops' sponsored by ICAR, New Delhi, at IIHR, Bengaluru, September 02-23, 2013.
- Dr. Vageeshbabu S. Hanur underwent training on "Knowledge management & knowledge sharing in organizations for scientists and technologists", sponsored by the Department of Science and Technology, Government of India at Indian Institute of Public Administration, New Delhi, September 09-13, 2013.

Participation in Seminar / Symposium / Conference / Meetings etc.

The following scientists were deputed to participate in various national and international conference /seminar/symposium/ workshop/ meeting etc.

- Dr. Doreyappa Gowda, I. N. - Meeting organized by Department of Agriculture, Govt. of Karnataka to discuss about the programme of National Mission on Food Processing, July 02, 2013.
- Dr. Suryanarayana, M. A. - Interaction meeting at DDH office, Tumkur regarding alternate horticultural crops for drought hit coconut plantations in Tumkur, July 03, 2013.
- Dr. Narayana, C. K. - Interaction meeting on providing financial incentives / assistance to projects of agri -

infrastructure and agro based industries in Karnataka organized by KAPPEC, at Bengaluru, July 06, 2013.

- Dr. Tripathi, P. C. and Dr. Karunakaran, G. - Jack Fruit Seminar & Exhibition at Adyanadka, Puttur organised by Varanasi Foundation and Horticulture Dept., Karnataka, July 07, 2013.
- Drs. Sadashiva, A. T., Prabhakar, M., Shankar Hebbar and Vasantha Kumar, T. - Consultative interaction meeting to develop sustainable horticulture based alternative crop plans & strategies for enhancing growth of horticulture in Karnataka, organized by Deptt of Horticulture, GOK, July 11, 2013.
- Drs. Dinesh, M. R., Sampath Kumar, P. and Sreenivasa Murthy, D. - One Day Workshop to train the key scientists involved in NAIP project on 'Emerging farmers, enriching knowledge: agropedia Phase-II', IASRI, New Delhi, July 15, 2013.
- Dr. Sidhu, A. S. - 85th Foundation Day of ICAR & also Interaction meeting with Secretary, DARE & Director General, ICAR, New Delhi, July 15-16, 2013.
- Dr. Sidhu, A. S. and Dr. Chithirachelvan, R. - National Horticulture Conference organized by National Horticulture Mission (NHM), Constitution Club, New Delhi, July 17, 2013.
- Dr. Sudha, M. - Agri-Tech Investors Meet, NAIP/ICAR, New Delhi, July 18-19, 2013.
- Dr. Aswath, C. - Seminar on 'Microbes in human welfare' organised by NABS, Chennai and Bharatidasan University, Trichy, July 20-21, 2013.
- Dr. Chithiraichelvan, R. - 26th Institute Research Committee (IRC) meeting of Directorate of Cashew Research, Puttur, Karnataka, July 23-24, 2013.
- Dr. Dinesh, M. R. and Dr. Gajanana, T. M. - Meeting between NPMU, IIHR, Bengaluru and DHAN foundation to develop work Plan and implementation of UNEP-GEF TFT project activities, NBAII, Bengaluru, July 26, 2013.
- Dr. Nita Khandekar, Shri P. B. Gaddagimath, Drs. Tripathi, P. C., Sankar, V., Karunakaran, G. and Reddy, T. M. - Annual review workshop of NAIP Sub Project 'Mobilizing Mass Media Support for Sharing Agro Information', CHES, Chettalli, Kodagu, Karnataka, July 26-27, 2013.
- Ms. Jayanthimala, B. R. - One day workshop and brain storming session on agriculturally important fruit flies, NBAII, Bengaluru, July 27, 2013.
- Dr. Chithiraichelvan, R. and Dr. Reddy, Y. T. N. - Meeting to discuss issues in terms of mitigating the aftermath of the cloud burst in Uttarakah and about the disaster seed kits to be distributed to the rain affected areas in Uttarakhad, CSWCR & TI, Dehradun August 01, 2013.
- Dr. Murthy, B. N. S. - 33rd Meeting of the Institute Management Committee of NRC, Grapes, Pune, August 05, 2013.

- Dr. Sidhu, A. S. - ICAR – Bioversity Work plan (2012-2016) Signing Ceremony, NAAS Committee Room, New Delhi, August 12, 2013.
- Shri. Veerendra Kumar, K. V., Prabhakara, B. and Devaiah, K. A. – Seminar on production technology of horticultural crops organised by College of Forestry, Ponnampet, at Kanoor, Balyamandoor, Hudikeri and Arvathoklu Villages, August 13, 22, 26 and 27, 2013.
- Dr. Dinesh, M. R. - Divisional meeting for monitoring and reviewing the progress of foreign aided projects, New Delhi, August 14, 2013.
- Dr. Aswath, C. - South Asian biosafety conference organised by BCIL and CERA, New Delhi, August 19-20, 2013.
- Dr. Gajanana, T. M. - 60th meeting of state committee for Karnataka to approve Letter of Intent (LOI) and subsidy proposals for projects costing up to Rs. 50 lakhs, NHB, Bengaluru, August 23, 2013.
- Dr. Narayana, C. K. - Meeting to organizing a Workshop on post-harvest losses of perishable horticultural crops under the Chairmanship of Dr. Krishna Kumar, N. K. DDG (Hort.), KAB-II, ICAR, New Delhi August 23-24, 2013.
- Dr. Venugopalan, R. - One day workshop on ORP on sucking pests, IIHR, Bengaluru, August 24, 2013.
- Dr. Balakrishna, B. - IMPC meeting of Doordarshan Kendra, Bengaluru, Conference Hall, NABARD Towers, Bengaluru, August 28, 2013.
- Dr. Tripathi, P. C. - Review workshop of ongoing NHM projects, CHES, Chettalli, August 28, 2013.
- Drs. Sidhu, A. S., Reddy, Y. T. N., Dinesh, M. R., Murthy, B. N. S., Sadashiva, A. T., Gajanana, T. M., Venugopalan, R. and Narayana, C. K. - National workshop on repeat study on assessment of post-harvest losses of major horticultural crops, animal and fishery products in India, NASC, New Delhi, August 29, 2013.
- Dr. Vasantha Kumar, T. - 6th Steering Committee meeting of National Medicinal Plants Mission under the chair of Additional Chief Secretary and Development Commissioner, Vidhana Soudha, August 31, 2013.
- Veerendra Kumar, K. V., Prabhakar, B. and Suresh, S. C. - Bhoochetana meeting at office of the Joint Director, Department of Agriculture, Madikeri, September 03, 2013.
- Drs. Narayana, C. K., Doreyappa Gowda, I. N., Tiwari, R. B., Shamina Azeed, Ranjitha, Mrs. Sarojini Jalali, Mr. Nagappa, & Mr. Reddeppa, K. - National workshop on emerging technologies in food processing organized by All India Food Processors Association, New Delhi, KTPO Complex, White Field, Bengaluru, September 07, 2013.
- Dr. Soudamini Mohapatra - 2nd National conclave for laboratories organized by National Accreditation Board

for Testing and Calibration Laboratories (NABL) and Confederation of Indian Industry (CII), Bengaluru, September 16-17, 2013.

- Dr. Dinesh, M. R. - Workshop organized by Ministry of Environment and Forests, Govt. of India for the preparation of 'Biology documents as a resource for environmental risk assessment of genetically engineering plants' under UNEP/GEF TFT project, New Delhi September 19, 2013.
- Drs. Vasantha Kumar, T., Hima Bindu, K. and Suryanarayana, M. A. - XXIth Group Meeting of AICRP MAP&BV, TNAU, Coimbatore, September 23-26, 2013.
- Dr. Narayana, C. K. - Biennial workshop of AICRP on PHT, Maharana Pratap University of Agriculture and Technology, Udaipur, Rajasthan, September 23-26, 2013.
- Drs. Tripathi, P. C., Sankar, V., Karunakaran, G. and Sulladmath, V. V. - Interface meeting of paddy fallow land, KVK, Gonikoppal, September 25, 2013.
- Ms. Souravi - Proteomics and genomics meeting 2013, Sheraton Bengaluru, September 27-28, 2013.
- Veerendra Kumar, K. V. - Sensitization workshop on Protection of Plant Varieties and Farmers Right Act at ZPD, Bengaluru, September 30, 2013.

Lectures /Talks

The following scientists delivered Special/Invited/Guest lectures on various subjects as below:

- Dr. Doreyappa Gowda, I. N - Processing of vegetables at the Management Development Program for Horticulture Department' organized by Administrative Training Institute, Mysore, July 12, 2013.
- Dr. Srinivas, P. -Vermicomposting during training programme conducted by PPL, Bhubaneswar, July 23, 2013.
- Dr. Sadashiva, A. T. - Rootstock breeding for disease resistance in vegetable crops, at the Short Course on 'Rootstocks in resilient horticulture production system' organized at IIHR, Bengaluru, August 20, 2013.
- Dr. Singh, H. S. - Mango cultivation in Workshop-cum-Awareness campaign among the litchi, mango and orange fruits farmers of Debagara district, August 22, 2013.
- Dr. Kundan Kishore - Potential of citrus cultivation in Odisha in the Workshop-cum-Awareness campaign among the litchi, mango and orange fruits farmers of Debagara district, August 22, 2013.
- Dr. Deepa Saman - Vermicomposting at the training programme conducted by PPL, Bhubaneswar, September 02, 2013
- Dr. Debi Sharma - Techniques for measurement and detection of pesticide residues at the ICAR sponsored

short course on 'Detection and measurement of insecticide resistance including molecular aspects in insect pests', NBAIL, Bengaluru, September 06, 2013.

- Dr. Balakrishna, B. - System approach for effective technology dissemination in horticulture based dairy extension programs, NDRI, Bengaluru and MANGE, Hyderabad, September 17, 2013.

Guest Lecture: The Post Graduate Education and Training Cell of the Institute organised a guest lecture on 'Impact of climate changes - adaptation and mitigation' by Dr. S. Aavudai Anandhi, Asst. Prof., Dept. of Agronomy, Kansas State University, USA for the benefit of the staff members of the Institute, 22.07.2013 entitled .

TRANSFER OF TECHNOLOGY

Training

At Hesaraghatta, Bengaluru

The Division of Extension and Training of the Institute organised the following trainings.

Sl. No.	Name of the programme	Date	No. of participants
1	Dry flower technology for the farmers and officers of Sikkim, sponsored by the Govt. of Sikkim. (Course Coordinator- Dr. Nita Khandekar)	July 02-06, 2013	19
2	Mushroom cultivation for economic and nutritional upliftment for rural women under DBT project- three programs (Course Coordinator- Dr. Nita Khandekar)	August 07-08, 21, 28 and 29, 2013	134
3.	Vegetable seed production for Punjab farmers. (Course Coordinators - Dr. S. D. Doijode and Dr. Saju George)	August 21-22, 2013	12
4.	Mushroom cultivation for economic and nutritional upliftment for rural women under DBT project- two programs. (Course Coordinator- Dr. Nita Khandekar)	September 25-26, 2013	48
5.	Improved nutrient and crop management in grapes for grape growers from Chikkaballapura and Bengaluru districts in association with E.I. DuPont India Ltd.(Course Coordinator- Dr. B. Balakrishna)	September 25, 2013	115

Training of Farmers/ Interaction Programs

The project team of Climate Change conducted the following farmers' training and interaction programs on the following CRT's in Hirenallur and Giriyapura; the adopted villages of Kadur taluk under the project.

Programme	Date	No
1 Interaction meet with the farmers on CRTs in onion cultivation and use of IIHR vegetable special.	July 05, 2013	10
2 Interaction meet with the farmers on CRTs in onion cultivation.	Aug. 05, 2013	20
3 Interaction meet with the farmers on CRTs in watermelon cultivation.	Aug. 08, 2013	50

Training under CHD

Under the CHD programme of the Department of Horticulture, Govt. of Karnataka, Dr. D. V. Sudhakar Rao conducted training on PHM of banana, papaya, onion, beans and cole crops to

AHO's, SMS and FFs at Chikkaballapur on September 27, 2013.

At CHES, Chettalli

Six Months Gardeners Training

A six month gardeners' training for rural men and women has been started at CHES Chettalli, under the National Horticultural Mission. The objective of the training is to train rural youth in different techniques of plant propagation, maintenance of nursery, management of orchard, make them self-employed and increase trained man power in horticulture in Kodagu to produce sufficient quality planting material of horticultural crops. Twenty five rural youth have been enrolled for this training.

At CHES, Bhubaneswar

The CHES, Bhubaneswar organised a seven days training programme on 'Skill up-gradation in management of horticultural crop orchards' during July 8-17 and August 24-31, 2013 respectively. Thirty two trainees from School of Horticulture, Kordha participated in the program.

At KVK, Hirehalli

The KVK, Hirehalli organized the following on campus and off campus trainings.

On Campus Training

Sl. No.	Title	Date	No. of participants						
			General		SC/ST		Total		
			M	F	M	F	M	F	Total
1.	Improved soil & water management	6.7.2013	22	2	3	1	25	3	28
2.	Modern cultivation practices in horticultural crops	10.7.2013	63		13		76		76
3.	Modern cultivation practices in horticultural crops	17.7.2013	25		16		41		41
4.	Integrated farming system & group approach	30.7.2013	13		7		20		20
5.	ICT, modern cultivation practices in horticultural crops	13.8.2103	36		2		38		38
6.	IFS & soil health	14.8.2103	6	5	8		14	5	19
7.	Dry land horticulture and integrated farming system	14.8.2103	21	25	1	11	22	36	58
8.	Group approach and integrated farming system	16.8.2103	25		3		28		28
9.	Role of KVK in farmer sustainable agriculture development towards IFS	23.8.2103	27				27		27
10.	Climate change NICRA	24.8.2103	11		3		14		14
11.	ICT and potential varieties of IIHR in horticultural crops	24.8.2103	16		2		18		18
12.	Use of ICT and value addition in horticultural crops	28.8.2103	28		2		30		30
13.	Processing and value addition to ragi	7.9.2103	4	13	1	6	5	19	24
14.	Mushroom cultivation , <i>Amla</i> processing & value addition	12.9.2103	6	34		4	6	38	44
15.	Use of Arka Microbial Consortium for sustainable agriculture production	17.9.2103		40		6		46	46
16.	Group dynamics and information communication technology for agri. entrepreneurs of Assam state	24.9.2103	10		8		18		18
Total			313	119	69	28	382	147	529

On Farm Testing (OFT): The KVK organised On Farm Testing (OFT) of the following technologies different villages.

1. Assessment of groundnut varieties
2. Assessment of areca nut -French bean intercrop for high soil fertility and higher income
3. Assessment of red gram : green gram (1:4) as a intercrop in mango orchard for climate resilient agriculture

Off Campus Training

Sl No.	Title	Place	No. of participants						
			General		SC/ST		Total		
			M	F	M	F	M	F	Total
1.	Medicinal plants cultivation	Govt. High School, Nijagalu	54	8	2		56	8	64
2.	Water management & dry land horticulture	Koratagere	38	4	10	1	48	5	53
3.	Fruit crop production technology	KSDA	28	12	4		40	4	44
	Total		120	24	16	1	144	17	161

Vocational Trainings

Sl No.	Title	Place	Date	No. of participants						
				General		SC/ST		Total		
				M	F	M	F	M	F	Total
1.	Coconut palm climber & plant protection	KVK, Hirehalli	31.7.2013 - 5.8.2103	18		2		20		20

At KVK, Gonikoppal

The KVK organised 22 training programs in different disciplines benefiting 616 farmers including 261 farm women.

Discipline	No. of trainings	No. of participants		Total
		Male	Female	
Horticulture	06	60	85	145
Home science	04	00	108	108
Livestock	02	30	08	38
Plant protection	10	265	60	325
Total	22	355	261	616

Farmers Field School

The KVK, Gonikoppal organised a Farmer's Field School on integrated pest management (IPM) in paddy at Hebbale village of Somwarpet Taluk. A series of activities have been conducted right from sowing to harvest of the crop viz., soil testing, seed treatment, identification of beneficial and harmful insects, installation of pheromone traps *etc.*, to the selected group of 30 farmers.

Media Events

Media Visit to Mushroom Laboratory

The Institute organized a Media Visit to Mushroom Laboratory under the NAIP Sub project 'Mobilizing Mass Media Support for Sharing Agro Information' on August 06, 2013. Seventeen media persons representing print and electronic media visited the Mushroom Laboratory. Media persons witnessed the facilities, machineries used in

mushroom cultivation, spawn production and the research work being carried out by the Institute. Media persons also visited mushroom growing women's residences around the institute.



Media persons during their visit to Mushroom Laboratory

Dr. Meera Pandey, Principal Scientist, Division of Plant Pathology (Mushrooms) and Dr. Senthil Kumaran, G, Senior Scientist, Section of Agricultural Engineering addressed the media persons and explained the importance of mushroom, the activities and progress of mushroom research at the Institute. The media meet was facilitated by Dr. Nita Khandekar and Shri P. B. Gaddagimath under the leadership of Dr. Amrik Singh Sidhu, Director, IIHR, Bengaluru.

Field Days

Vegetable Field Day

The Division of Vegetable Crops, IIHR, Bengaluru organised a field day on 'Improved vegetable varieties / F₁ hybrids and production technology' on September 07, 2013 in the demonstration block of the Institute. Shri M. K. Shankarlinge Gowda, Principal Secretary, Horticulture, Govt. of Karnataka, was the Chief Guest. Dr. D. L. Maheshwar, Director, Deptt. of Horticulture, GOK, Dr. Premnath, Chairman, PNASF, Shri Bose Mandanna Vice-president (Coffee Board), retired scientists & technicians of the Division of Vegetable Crops, Additional Directors, Joint Directors and Deputy Directors of Horticulture and district level officers of Department of Horticulture, GOK participated in the field day. More than 300 farmers from in and around Bengaluru, Mysore, Chikballapur, Doddaballapur, Tumkur, Chikkamagaluru and other parts of the state participated in the programme. A field visit to the demonstration block was organised in the forenoon. The most important varieties/F₁ hybrids developed by the Institute in vegetable crops were raised in the vegetable demonstration block for the benefit of the farmers and other visitors. High-yielding triple disease resistant tomato hybrids, (Arka Rakshak and Arka Samrat), high-yielding disease resistant chilli hybrids (Arka Khyati, Arka Meghana & Arka Harita), bacterial wilt resistant brinjal hybrid, Arka Anand, YVMV resistant okra, Arka Anamika, onion varieties (Arka Vishwas & Arka Ujjwal), hybrids (Arka Lalima & Arka Kirthiman) and synthetic onion Arka Bheem, French bean varieties (Arka Suvidha, Arka Anoop & Arka Sharath), Dolichos varieties (Arka Amogh & Arka Soumya), Pea varieties (Arka Sampoorana, Arka Priya & Arka Pramod), leafy vegetables viz., Amaranthus varieties (Arka Suguna & Arka Samraksha), Palak variety Arka Anupama, Coriander variety Arka Isha, Pumpkins (Arka



Dr. A. T. Sadashiva explaining the IIHR vegetable hybrids / varieties to the guests

Suryamukhi & Arka Chandan) and Bush Squash variety (Patty Pan) showcased in the demonstration block caught the attention of the farmers and also the media representatives.

The field visit was followed by the main function in the auditorium of the institute. Expressing his happiness over the performance of IIHR vegetable varieties, Shri M.K. Shankarlinge Gowda informed that the Horticulture Department is all set to launch a project aimed at promoting kitchen gardens at the household levels, on the premises of schools, anganwadis, and community gardens with a focus on vegetable cultivation. The main intention of the proposed project is to ensure availability of the required nutrition to people, especially children and women on a daily basis in the districts of Bidar, Gulbarga, Koppal, Yadgiri, Raichur and Bellary and in this context the Kitchen Garden Vegetable Kit comprising of seeds of 10 important vegetables of IIHR, Bengaluru would be of great value to promote vegetable cultivation to mitigate nutritional insecurity.



Dignitaries on the dias during the field day function

Dr. Premnath, Dr. D. L. Maheshwar and Mr. Bose Mandanna spoke on the occasion presided over by Dr. A. S. Sidhu. On this occasion, the Director, IIHR, Bengaluru felicitated Dr. Premnath, Mr. M. K. Shankarlinge Gowda, Dr. D. L. Maheshwar and Shri Bose Mandanna. A Scientists –Farmers' interactive meeting was organized followed by the main function.

Field Day on Coriander

A field day on the newly released coriander var. Arka Isha was organised in field of Shri Mallikarjuna, Seethakempanhalli village, Bengaluru north on July 26, 2013. About fifty vegetable farmers from in and around the village participated in the event. First the farmers and scientists visited the coriander and discussed about the crop. Dr. B. Varalakshmi who has developed this variety, spoke about the special attributes of Arka Isha and informed that it is a multi-cut variety (three cuttings can be taken) with improved yield and good aroma. The leaves are rich in vitamins A, C and minerals. Shri Mallikarjuna, who had cultivated this variety, informed that he has cultivated the variety under organic farming and hence there is good demand for this crop from organic shops in Bengaluru city and getting better price than what he was getting normally in market. The Director, Head, Division of



A field view of IIHR coriander Arka Isha

Vegetable Crops, the scientists from Divisions of Vegetable Crops, Soil Science and Extension and Training participated in the field day and farmers interaction session and answered the farmers queries.

Field Day on French bean – Arka Sharath

The Division of Vegetable Crops, IIHR, Bengaluru in collaboration with KVK, Navile, UAHS, Shimoga organized a Field Day on IIHR newly released French bean var. Arka Sharath in Aladahalli village of Shimoga on August 14, 2013. About 100 vegetable farmers in and around the village participated in the event. Dr. T. S. Aghora, Principal Scientist, IIHR, Dr. T. H. Gowda, Associate Director of Extension, Dr. B. C. Hanumantha Swamy, Project Co-Ordinator, KVK, Navile, Dr. Nagarajappa Adivappanvar, SMS, KVK, Navile along with the farmers visited the French bean field of Shri Maheshappa (2.0 acre) and Shri Sridhara (1.0 acre) and discussed about good agricultural practices (GAP) for French bean. Addressing the farmers, Dr. T. S. Aghora explained about the improved cultivation aspects and special attributes of Arka Sharath. Shri Maheshappa, a progressive farmer expressed that Arka Sharath is very vigorous and high yielding, the variety is a ring bean type and fetches better price in the market than the Local variety. A scientists-farmers interaction was organized on the occasion in which the scientists from UAHS, Shimoga and KVK Navile participated and answered the farmer's queries.



Onion Field Day and Training Programme on Climate Resilient Technologies

The Institute organised Onion Field Day and Training Programme on Climate Resilient Technologies (CRT) under NICRA project in the farmers' field at Hirenallur and Giriypura villages of Kadur Taluk, Chikkamagalur district on September 06, 2013. The package of technologies developed by the Institute were demonstrated in a cluster of villages viz., Hirenelluru, Giriypura, Malenahalli, Koratakere, Basur, Chennapura, Narsipura etc. of Kadur and Tharikere taluks which falls under rain shadow areas of Chikkamangalore district. Director, CRIDA, Hyderabad, Director and scientists from IIHR, Bengaluru, officials from NABARD, Department of Horticulture, local representatives from different villages and representatives from many MNC and Indian private companies participated in the programme. More than 200 farmers who participated in the program were benefitted. The technological interventions showcased during the field day viz., raised bed cultivation, use of tractor driven and bullock drawn onion drum seeder, improved varieties/ hybrids and their production technology, foliar nutrition, IPM/IDM practices etc. were integrated and demonstrated in more than 50 acres area. In a function organised in the village on the occasion, the farmers, dignitaries, village leaders, officials of DOH and NABARD and other participants appreciated the efforts of IIHR team in creating awareness about and helping the risk prone area farmers to use CRT's on large scale due to which the farmers were able to get 30 to 35% more yield along with increased quality of produce resulting in increase of income by 2 to 2 ½ times more compared to last year.



Director, CRIDA, Hyderabad inaugurating the field day

Awareness Programme on Women Empowerment

The Institute organised an awareness programme on Empowerment of Women under the project "Gender Mainstreaming in Horticulture" on September 27, 2013. About 150 farm women from Bengaluru north participated in the programme. The programme was facilitated by Smasta Micro Finance, Bengaluru. Dr. R. Chithirai Chelvan, Director I/c of the Institute, the Chief Guest on the occasion addressing the participants, emphasized the importance of the role of women in horticulture and also their role in providing nutritional security to the families.

Dr. S. D. Doijode, Head, Division of Extension & Training made a brief presentation the technologies developed and various facilities at the Institute and emphasizing on horticultural enterprises as a source of additional income. Dr. I. N. Doreyappa Gowda, Principal Scientist, Division of Post-Harvest Technology made presentation on value addition of horticultural produce and its importance. Later Dr. Meera Pandey, Principal Scientist, Division of Plant Pathology made a presentation on mushroom production and its value addition and scope of mushroom cultivation as small scale industry in rural areas. The programme was co-ordinated by Dr. Nita Khandekar, Principal Scientist, Division of Extension and Training, Shri P. B. Gaddagimath, Information and Publication Officer moderated the proceedings. The participants were taken to the Mushroom Laboratory, Division of post-Harvest Technology and Nutrition Garden of the Institute for an exposure visit.



Shri P. B. Gaddagimath addressing the gathering

Animal Vaccination Awareness Campaign

The KVK, Gonikoppal, Department of Animal Husbandry and Veterinary services, Virajpet, Taluk Panchayath, Virajpet and Zilla Panchayath, Madikeri jointly organised an awareness campaign on 'Importance of animal vaccination to prevent and protect the animals from contagious diseases' viz. Foot and Mouth Disease(FMD), Hemorrhagic Septicaemia, Black quarter, PPR, ET, Anthrax, Brucellosis, Rabies etc. on September 17, 2013. Dr. P. C. Tripathi, Programme Coordinator & Head, KVK explained the importance of prevention of animal disease outbreak in production of healthy animal products like milk, meat and egg. A one day training programme on 'Important animal diseases, their outbreak, prevention by vaccination and dairy management practices' was also organized on the occasion.

Front Line Demonstration (FLDs)

The KVK, Hirehalli organised the following FLDs

1. Combating drought vulnerability by Aerobic paddy (MAS-26) cultivation
2. Addressing drought vulnerability by drought tolerant ragi (ML -365)

3. Enhancement of red gram yield through demonstration of HYV BRG-1
4. High yielding variety Arka Prabhath in papaya
5. Maximization of yield through high density planting of banana (G-9)
6. Dry land horticulture crop - Jamoon for drought prone areas
7. Management of mango stem borer by Sealer cum Healer, use of Pheromone Trap for control of fruit fly in mango
8. Seedpro - A microbial plant growth promoter against soil borne pathogens in solanaceous vegetable crops
9. Eco-friendly management of brinjal shoot and fruit borer
10. Triple disease resistant tomato F1 hybrid - Arka Rakshak
11. Seed production of French bean var. Arka Suvidha for sustainable income
12. Water saving and weed control through poly mulching technology in tomato production
13. Cost effective Arka Microbial consortium for tomato production
14. Bacterial wilt resistant brinjal F1 hybrid - Arka Anand
15. Mango harvester, low cost ripening chamber and packing for reducing post-harvest losses
16. Nut splitting in arecanut
17. Value addition, labelling & branding of ragi products
18. Amla :value addition, branding and market linkage
19. Management of basal stem rot (Ganoderma wilt) in coconut

The KVK, Gonikoppal organised FLDs of the following proven technologies in the different villages of the district.

- Blast disease management in paddy in four ha area at Hebbale village of Somwarpet taluk.
- Enhancement of bunch size in banana var. G-9 in 1.0 ha area at Thorenur and Hebbale village of Somwarpet taluk.
- Rejuvenation of Coorg Mandarin in existing garden at Maldare, Hosur and K Badaga village of Virajpet taluk.
- Assessment of performance of paired row system of planting in banana, variety G-9 in five farmers' fields at Hebbale village of Somwarpet taluk.
- Assessment of white stem borer control through healer cum sealer and wrapping of polypropylene strips in coffee at Bilugunda village of Somwarpet taluk.

Animal Health Campaign

The KVK, Gonikoppal organised five awareness cum health campaigns at different places on the theme of Foot and Mouth Disease in pet animals.

Date	Place	No. of peoples	No. of Animals			
			Cow	Buffalos	Pigs	Goats
22.08.2013	Hudikeri	27	104	35	00	00
27.08.2013	Chottapare	22	62	42	19	00
11.09.2013	Kakoor	23	61	52	08	00
13.09.2013	Birunani	21	67	70	00	29

Demonstrations

The Institute organised demonstrations of the following technologies developed by the Institute.

Sl. No.	Title of Demonstrations	Locations	No. of Demonstrations
1.	Onion cultivation using tractor drawn onion drum seeder in the farmers' fields on performance of onion	Hirenallur and Giriyapura villages of Kadur	18 18
2.	Improved varieties (Arka Niketan and Arka Kalyan) and hybrids (Arka Lalima, Arka Kirthiman) of onion	Eight villages of Kadur and Tharikere taluks	30
3.	CRTs in onion cultivation (raised bed cultivation, drip irrigation, improved varieties, IPM and IDM)	Eight villages of Kadur and Tharikere taluks	32
4.	UsIIHR tomato hybrid Arka Rakshak and CRT's in tomato cultivation	14 locations in Kolar, Chikkaballapura and Bengalure districts	14
5.	Polyhouse cultivation of colored capsicum using bag culture / soilless culture	Bengaluru and Hosur taluks	04
6.	Improved production technology in banana and papaya	Bengalure Mysore, Mandya, Kolar and Anathpura districts	13
7.	Precision farming practices in watermelon, muskmelon and field beans	Bengalure, Mysore, Chikkaballapura, Anathapura and Kolar districts	18
8.	Arka Microbial Consortium	Four locations in Bengaluru rural and Coorg districts	4
9.	IPM in vegetable crops	Bengaluru rural	6
10.	Stem borer management in mango through Sealer cum Healer	Sikal village	2

Technology Demonstration

Low cost ripening technology for banana fruits using ethylene gas released from liquid ethrel developed by the Division of Post-Harvest Technology was demonstrated by Dr. D.V. Sudhakar Rao, during the Field Day on Production and PHM of Banana at Gummanahalli, Siligrama Hobli, KR Nagar Taluk, Mysore on July 19, 2013 organized by Deptt. Of Horticulture, KR Nagar, Mysore.

Commercialization of Technologies and Consultancy Services

A total of twelve technologies developed by the Institute were commercialized during the quarter by licencing the technologies with 12 private companies/entrepreneurs generating IP revenue of Rs. 19, 35,176/-. During the same period an amount of Rs. 3, 33, 009/- was generated through consultancy services offered by the Institute to various clients.

Radio/TV Programs

The following radio programs were given by KVK, Gonikoppal on AIR, Kodagu.

Topic	Date	Resource person
1. Quick wilt disease management in black pepper	20.08.2013	Veerendra Kumar, K. V
2. Bonsai preparation	22.08.2013	Prabhakar, B.
3. Scientific production technology of black pepper	23.08.2013	Devaiah, K. A.
4. Oyster mushroom cultivation	26.08.2013	Prabhakar, B.
5. Amla value addition	29.08.2013	Padmavathy, M. K.
6. Pest and disease management in paddy	25.09.2013	Veerendra Kumar, K. V

The following TV programs were telecasted during the period.

- Discussion on vegetables as intercrops by Dr. B. Narayanaswamy, at DDK Bengaluru, July 03, 2013
- Discussion on Duroc piggy rearing by Dr. Suresh, S. C. was telecasted on Doordarshan, August 02, 2013.
- Discussion on importance of horticulture crops against field crops by Dr. B. Narayanaswamy, at DDK Bengaluru, on August 21, 2013.
- Short story in Hindi on tomato hybrid Arka Rakshak & pea's variety Arka Apoorva was telecasted by NDTV, September 20, 2013.

Exhibition

The KVK, Hirehalli participated in the following exhibitions.

Sl. No.	Event	Place and date
1.	AGRI INTEX – 2013	Coimbatore 11-12.07.2013
2.	Pomegranate Exhibition cum Mela organised by Dept. of Hort. and Karnataka State Agril. Marketing Board, Govt. of Karnataka. Lalbagh, Bengaluru	28-30.09.2013



A view of KVK stall at AGRI INTEX - 2013

Surveys/Field Visits

1. Dr. P. C. Tripathi, Dr. V. Sankar and Dr. G. Karunakaran, CHES, Chettalli visited Laxmi estate, Heroor, Thambu estate, Senticoppa and Subramanya estate, Senticoppa for surveyed and collection of underutilized fruits and wild orchids on July 06, 2013.
2. Dr. T. Sakthivel visited Central Institute of Arid Horticulture, Godhra for collection of jamun germplasm during July 08-10, 2013.
3. Dr. P. C. Tripathi, Dr. V. Sankar, Dr. G. Karunakaran, Dr. T.M.Reddy, CHES, Chettalli visited Ponnappa estate, Heroor, Thambu Estate and Subramanya Estate, Senticoppa for surveyed and collection of underutilized fruits and wild orchids on July 10, 2013.
4. Dr. N. K. Krishna Kumar, DDG (Hort.), ICAR, New Delhi, Dr. A. S. Sidhu, Director, IIHR, Bengaluru, Dr. A. T. Sadashiva, Dr. Shankar Hebbar and Mr. B. L. Kashinath visited Arka Rakshak plot at Nellakunte village on July 11, 2013.



Dr. N. K. Krishna Kumar in the Arka Rakshak tomato field

5. Dr. P. C. Tripathi and Dr. V. Sankar, visited college of Forestry and farmers fields near Gonikoppal for survey and collection of underutilized fruits and wild orchids on July 12, 2013.
6. Dr. V. Sankar, Dr. G. Karunakaran, visited Rama Estate, Siddapura for survey and collection of underutilized fruits and wild orchids on July 20, 2013.

7. Dr. V. Sankar and Dr. G. Karunakaran, Dr. T. M. Reddy, visited Evergreen Estate, Naakoor, Kushal Nagar for survey and collection of underutilized fruits and wild orchids on July 26, 2013.
8. Dr. B. Balakrishna and Dr. H. S. Hebbar visited to M/s Saveer Biotech Ltd., Greater Noida, Uttar Pradesh and Raipur to study the success of grafting in vegetables by nurserymen practicing commercial grafting in cucurbits and brinjal, during August 06-09, 2013.
9. Dr. R. Chithiraichelvan visited the *aonla* orchards of Virinjipuram, Tamil Nadu and suggested remedial measures in cultivation of *aonla* on August 08, 2013.
10. Dr Meera Pandey visited KVK Senapati during August 12-13, 2013 to establish linkage and give guidance as resource person for the establishment of spawn production and ready to fruit bag production unit to popularize and scale up mushroom production and consumption in North East
11. Dr. P. C. Tripathi and Dr. G. Karunakaran visited Dakshin Kannada, Kannur, Calicut, Thrissur districts for survey and collection of underutilized fruits during August, 22-24, 2013.
12. Dr. R. Chithiraichelvan and Dr. T. Sakthivel visited custard apple cv. Arka Sahan orchard at Srinivasapur, Kolar District and demonstrated pollination technique to Shri Krishnamurthy, a progressive custard apple grower on September 02, 2013.
13. Dr. V. Sankar and Ms. Shilpashree, CHES, Chettalli visited Subramnya Estate Sunticoppa for vegetable trials on September, 06 and September 26, 2013.
14. Dr. P. C. Tripathi and Dr. G. Karunakaran surveyed Gonikoppal, Mayamudi areas for collection of underutilized fruits on September 18, 2013.
15. Dr. M. A. Suryanarayana and Dr. K. Hima Bindu visited betel vine fields in Shimoga and Chickmagalur districts of Karnataka and Erode, Namakkal and Trichy districts of Tamil Nadu during August 27-29 and September 27-28, 2013 respectively.

Sale of IIHR Technological Products through ATIC

The technological products of IIHR viz., Banana Special Mango Special, Vegetable Special, Citrus Special, Trichorich-N, *Pseudomonas fluorescens*, *Paecilomyces lilacinus*, Microbial Consortium, Pongamia Soap, Neem Soap, Sealer cum Healer, Vegetable fruit fly traps and lures, Institute Publications, VCDs and DVDs, Vegetable Seeds Kit & Sample Packets, PHT products, Sapota, Mango and Lime Harvesters etc. were sold through the ATIC sales counter to the visiting farmers and general public. A revenue of Rs. 7, 67,896-00 has been generated. Apart from this Rs. 3, 67, 805. 00 has been generated by the Mushroom laboratory by way of sale of mushroom spawn, ready to fruit (RTF) bags and trainings.

General Visitors

- A total of 872 farmers, 189 students and 22 others/officers visited the institute. The visitors were taken round the institute farm and laboratories and the activities and achievements of the institute were explained to them by the staff of Division of Extension and training.
- A total of 475 farmers from 14 different places of Odisha and other states, sponsored by eight different organizations / agencies / NGO's visited CHES, Bhubaneswar for exposure in horticultural technologies and got benefited.

PUBLICATIONS

Research Papers

- Eugene Sebastian J. Nidiry. (2013). Tentative detection of some alkyl coumarates and alkyl ferulates in *Ipomoea carnea* subsp. *fistulosa* by HRESIMS and comparison of these compounds among convolvulaceae plants, *Pharmacognosy Communications*, **3**:12-15.
- Ragupathi, H. B. and Ganeshamurthy, A. N. (2013). Deterioration of irrigation water quality *Curr. Sci.* **105**: 6-764.
- Rajiv Kumar and Yadav, D. S. (2013). Evaluation of gerbera (*Gerbera jamesonii* Bolus ex. Hooker F.) genotypes for vegetative and flower quality under poly house. *Hort. Flora Res. Spectrum*. **2**: 244-246.
- Ravi, G. S., Venugopalan, R., Padmini, K. and Gowda, D. M. (2013). Nonparametric measures for assessing yield stability in cucumber. *Int'l. J. Agril. Statistical Sci.* **9**: 365-371.
- Shivashankar, S., Jaya Joshi and Sumathi, M. (2013). The role of seed viability in the development of corky tissue in sapota (*Manilkara achras*) fruit in India. *J. Hortl. Sci. Biotech.* **88**: 671-677.
- Shivashankara, K. S., Laxman, R. H., Geetha, G. A., Roy, T. K., Srinivasa Rao, N. K. and Patil, V. S. (2013). Volatile aroma and antioxidant quality of Shiraz grapes at different stages of ripening. *Int'l. J. Fruit. Sci.* **13**: 389-399.
- Vageeshbabu S. Hanur and Aswath, C. (2013). Towards nutritional security through horticultural biotechnology. *Curr. Sci.* **105**: 439-440.
- Vasugi, C., Sekar, K., Dinesh, M. R., and Venugopalan, R. (2013). Studies on genetic divergence in unique indigenous mango accessions of Western Ghats. *Int'l J. Curr. Res.* **5**: 2494-2499.
- Vijay, N., Venugopalan, R. and Srinivasaraghavan, A. (2013). Association among weather parameters and incidence of downy mildew in grapes. *BIOINFOLET – A Quarterly J. Life Sci.* **10**: 804- 807.
- Vijay, N., Venugopalan, R. and Srinivasaraghavan, A.

(2013). The influence and reliability of weather parameters on incidence of downy mildew in grapes. *BIOINFOLET – A Quarterly J. Life Sci.* **10**: 848-850.

- Yogeesha H. S., Vasugi, C., Somashekhar, Bhanuprakash, K. and Naik, L. B. (2013). Papaya (*Carica papaya*) seed quality as influenced by stage of fruit harvest, post-harvest ripening and seed extraction. **83**: 928-932.

Popular Articles

- Yogeesha H. S., Vasugi, C., Bhanuprakash, K. and Naik, L. B. (2013). Papaya seed germination and seedling production, *Vatika, from the Seed and Plant People*, Issue 1 pp 8-9.
- Shivashankar, S. (2013). Antioxidants for safe life. *Kerala Karshakan e-J. pp.* 26-29. August 2013.
- Deepa Samant, Suchtra Behera and Srinivas, P. (2013). Unnat Padhatti Re Sehjan Chaso (Oriya). *Krishak Bandhu, Annapurna*.
- Improved brinjal hybrid “Arka Anand” - Prajavani, P3. September 24, 2013.

The following newspaper reports on various technologies have appeared in national/local newspapers during the quarter

- New tomato variety that yields 19 kg a plant. *The Hindu*, P6, September 11, 2013.
- New hybrid tomato variety. *Biospectrum*, September 16, 2013.
- New tomato variety is boon to farmers. *The Hindu*, P8, September 18, 2013.

Proceedings / Abstracts/Souvenir of Conference/Symposium/Seminar

- Bhuvaneswari, C. and Narayana, C. K. (2013). Design and development of storage box for shelf life extension of leafy vegetables. *In: Souvenir, National Seminar on Revitalizing Indian Agriculture-Innovations in Agro Processing and Value Chain, NIFTEM, Sonapat, Haryana, August 23-24, 2013 pp59.*
- Sumangala, H. P., Manivannan, K., Sidhu, A. S. and Venugoplan, R. (2013). Demonstrating the potential of *Senecio* species as new ornamental annual. *In: Book of Abstract. Fourth International Conference on Landscape and Urban Horticulture, Science City, Kolkata, September 12-14, 2013.*
- Tripathi, P. C. and Karunakaran, G. (2013). Citrus industry of Coorg region. *In: Souvenir & Abstract, National Citrus Meet, NRC Citrus, August 12-13, 2013, pp 283-292.*
- Tripathi, P. C., Karunakaran, G. and Sakthivel, T. (2013). Evaluation of pummelo germplasm for higher yield and fruit quality. *In: Souvenir & Abstract, National Citrus Meet, NRC Citrus, August 12-13, p50.*

Technical/Extension Bulletins and Extension Folders

- Narayana, C. K., Pandey, B. K., Malhotra, S. K. and Vikramaditya Pandey. (2013). Post-harvest losses in selected fruits and vegetables in India (a compilation). Technical Bulletin No. 41.

Extension Folder

- Tripathi, P. C., Veerendra Kumar, K. V., Prabhakar, B., Suresh, S. C., Devaiah, K. A. and Vasantha Kumar, C. K. (2013) Package of Practices for Kodagu.
- Suresh, S. C. (2013) Back yard poultry rearing.
- Veerendra Kumar K. V, Prabhakar, B. (2013) Safe use of pesticides in agriculture.

PAPERS PRESENTED IN SEMINAR/ SYMPOSIUM/CONFERENCE ETC.

Meeting of National Horticulture Board, Constitution Club, New Delhi, July 17, 2013.

- Chithiraichelvan, R. - Technologies for high tech horticulture – issues and challenges

Colloquium Food Engineering - Present Status and Future Possibilities, CFTRI, Mysore, August 06, 2013.

- Tiwari, R. B. - Engineering design challenges for up-scaling of osmotic dehydration technology in fruits and vegetables.

1st Scientific Advisory Committee Meeting of KVK, College of Horticulture, University of Hort. Sciences, Kolar, August 07, 2013.

- Narayanaswamy, B. - Horticultural technologies which can be transferred to the farmers through FLDs, OFTs etc.

National Workshop on Water Quality Issues, Opportunities and Socio-Cultural Concerns of Wastewater use in Agriculture, DWM, Bhubaneswar, August 07-08, 2013

- Deepa Samant - Prospects of utilizing runoff water for sustaining perennial fruit crop plantation in rain fed areas of Odisha.

Seminar on Development Trends in Urban and Peri-urban Agriculture (UPA), Institute for Social and Economic Change (ISEC), Bengaluru, August 08, 2013.

- Gaddagimath, P. B. - Urban horticulture-civic and corporate social responsibility: a concept paper

National Citrus Meet, NRC for Citrus, Nagpur, August 12-13, 2013.

- Tripathi, P. C., Karunakaran, G. and Sakthivel, T. - Evaluation of Pummelo germplasm for higher yield and fruit quality.

- Tripathi, P. C. and Karunakaran, G. - Citrus industry of Coorg region.
- Singh, H. S. - Citrus industry in Odisha: prospectus of genetic improvement and area expansion.

Seminar on GMO Awareness organised by UAS, Bengaluru, August 23, 2013.

- Aswath, C. - Bio-regulations in research and adaption of transgenic.

National Workshop on Repeat Study on Assessment of Post-Harvest Losses of Major Horticultural Crops, Animal and Fishery Products in India, NASC, New Delhi, August 29, 2013.

- Gajanana, T. M. - Harvest and post-harvest losses in apple, cauliflower and pea.

Fourth International Conference on Landscape and Urban Horticulture, Science City, Kolkata, September 12-14, 2013.

- Sumangala, H. P., Manivannan, K., Sidhu, A. S. and Venugoplan, R. - Demonstrating the potential of *Senecio* species as new ornamental annual.

National Symposium on Automation and Robotics – Application in Agriculture and Allied Disciplines, Sri Venkateshwara College of Engineering, Bengaluru, September 20-21, 2013.

- Chandra Prakash, M. K. - Computer program for identifying prospective DNA repair locations in whole chromosome for candidate gene identification associated with abiotic stress tolerance.

AICRP Workshop, TNAU, Coimbatore, September 23, 2013.

- Hima Bindu, K. - Annual progress report of betelvine from IIHR Centre.

National Seminar on Tree Biotechnology 2013: Emerging Opportunities in Forestry and Tree Science, IFGTB, Coimbatore, September 23-24, 2013.

- Anuradha Sane, Prakash Patil, Ganeshan, S. and Neha Bhandarkar. - Genetic diversity analysis in *Artocarpus heterophyllus* and *Flacourtia montana* through molecular markers.

HONOURS/RECOGNITIONS/AWARDS

- The Institute was awarded Second Prize in the field of Official Language Implementation for the year 2012-13 by Town Official Language Implementation Committee, Bengaluru on 04.07.2013 in a function organized at National Aerospace Laboratories, Bengaluru. Shri Shyam Chetty, Director, NAL, Bengaluru and Chairman, TOLIC (O), Bengaluru gave away the award.



Mr. A. K. Jagadeesan receiving the award from Mr. Shyam Chetty

- Dr. R. Ashokan and Shri A. K. Jagadeesan were awarded First prize in the Hindi Technical Article Competition for the year 2012-13 for the article entitled 'DNA barcoding of insects' by Central Power Research Institute, Bengaluru. The award was presented on 25.09.2013 during Hindi Day Celebrations at CPRI, Bengaluru.
- Dr. R. Venugopalan, Shri S. Thippeswamy, Asst. Chief Technical Officer, and N. Kishore Kumar, Technical Officer have been awarded Third prize in the Hindi Technical Article Competition for the year 2012-13 for article entitled 'Non-linear statistical modeling for analysis of research data by using SAS' by Central Power Research Institute, Bengaluru. The award presented on 25.09.2013 during Hindi Day Celebrations at CPRI, Bengaluru.
- Dr. Aswath, C. Head, Division of Biotechnology has been conferred the NABS Fellow for outstanding work on Horticultural Biotechnology by National Academy of Biological Sciences, Chennai on July 21, 2013.



- Dr. Tripathi, P. C. acts as Judge for Poster session during National Citrus meet at NRC Citrus Nagpur, July 12-13, 2013.
- Dr. Sujatha A. Nair. Has been nominated as Editor in the Editorial Board of the 'Annals of Agriculture Research' a journal published by Indian Society of Agricultural Science, IARI, New Delhi, for the biennium 2013-14.

PERSONALIA

New Entrant

Scientific Staff

1. Dr. Sangeetha, G. Senior Scientist (Plant Pathology) joined CHES, Bhubaneswar, w. e. f. 10.09.2013.

Administrative Staff

1. Mr. Mallikarjuna Swamy, Skilled Support Staff, IIHR, Bengaluru w. e. f. 06.07.2013 (FN).
2. Mr. Alok Kumar, Administrative Officer, IIHR, Bengaluru w. e. f. 13.09.2013 (AN).

Promotion

Technical Staff

1. Mr. Gaddagimath, P. B. T (7-8) (IPO) promoted to T-9(TO) (IPO) 03.02.2000.
2. Mr. Thippesway, T-6 promoted to T (7-8) w. e. f. 03.11.2011.
3. Mr. Varadaraju, V. T-(7-8) (TO) promoted to T-9(TO) (Lib) w. e. f. 03.02.2012.
4. Mr. Biju, K. T-II-3 (Computer) promoted to T-4 (Computer) w. e. f. 12.04.2012.

Administrative Staff

1. Ms. Kalai Selvi, Assistant promoted to Asst. Administrative Officer, w. e. f. 03.07.2013(AN)

Superannuation

Technical Staff

1. Mr. Nair, S. K. T-5(TO) (Field), IIHR, Bengaluru, retired on superannuation from council's service w. e. f. 31.08.2013 (AN).
2. Mr. Chandrappa, C. B. T-5(TO) (F), CHES, Chettalli retired on superannuation from council service w. e. f. 30.09.2013.

Administrative Staff

3. Mr. Sudhakara, B. IIHR, Bengaluru, retired on superannuation from council's service w. e. f. 31.07.2013 (AN)
4. Ms. Vijaya, P. IIHR, Bengaluru, retired on superannuation from council's service w. e. f. 30.09.2013 (AN).
5. Mr. Chanappa, IIHR, Bengaluru retired on superannuation from council's service w. e. f. 30.09.2013.

Transfer

Scientific Staff

1. Dr. Kundan Kishore, Senior Scientist (Hort.) joined CHES, Bhubaneswar on his transfer from DRWA, Bhubaneswar w. e. f. 22.07.2013.

2. Dr. Satisha, G. C. Senior Scientist (Soil Science) has been transferred from CHES Chettalli to IIHR, Bengaluru w. e. f. 23.07.2013(AN).

3. Dr. Loganandhan, N. Scientist (Agril. Extn.) joined KVK, Hirehalli as Programme Coordinator on his transfer from RC, Bellary under CSWCR & TI, Dehradun w. e. f. 02.08.2013(FN).

4. Dr. Karibasappa, G. S. Principal Scientist has been transferred from NRC Grapes, Pune to CHES Hirehalli.

5. Dr. Saxena, A. K. Principal Scientist transferred from CHES, Chettalli to IIHR, Bengaluru w. e. f. 19.08.2013(FN).

6. Dr. Reju. M. Kurian, Principal Scientist transferred from CHES, Bhubaneswar to IIHR, w. e. f. 24.08.2013.

Technical Staff

1. Mr. Parashuram, H. B. transferred from IIHR, Bengaluru to KVK, Hirehalli, w. e. f. 25.07.2013.
2. Mr. Sannamanjunath, K. S. transferred from CHES, Chettalli to IIHR, Bengaluru.

Administrative Staff

1. Mr. Ramachandrappa, B. N. Asst. Finance and Accounts Officer, has been transferred from CHES, Chettalli to IIHR, Bengaluru, w. e. f. 29.07.2013.

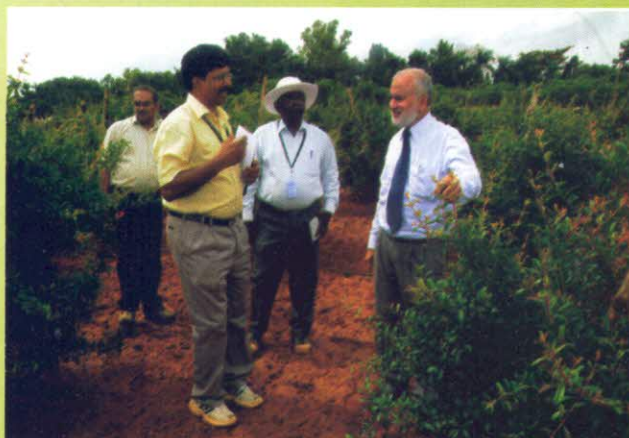
Obituary

The staffs of IIHR, Bengaluru mourns the sad demise of Mr. Hanumantharayappa, S. LDC, who passed away on August 22, 2013.

VISITORS

IIHR, Hesaraghatta, Bengaluru

- Mrs. Hilda Abraham, Principal Post Master General, Karnataka Circle (04.7.2013).
- Dr. Ayyappan, S. Secretary DARE and DG, ICAR, New Delhi (05.07.2013).



- Dr. D. Rama Rao, National Director, NAIP (05.07.2013).
- Dr. S. Aavudai Anandhi, Asst. Prof., Dept. of Agronomy, Kansas State University, USA (22.07.2013).
- Mr. Aravazhi Selvaraj, Chief Operating Officer, ICRISAT (05.08.2013).
- Prof. G. Padmanabhan, Former Director, IISc, Bengaluru (06.08.2013).
- Mr. Radhakrishnan, Convener, coalition for GM free India (06.08.2013).
- Dr. Dandin, Vice Chancellor, UHS, Bagalkot (06.08.2013).
- Dr. Manjunath, Former Director, MONSANTO, Bengaluru (06.08.2013).
- Dr. Narayanan, Metahelix, Bengaluru (06.08.2013).
- Dr. Chennarayappa, MSSRF (Head, Biotek), Chennai (06.08.2013).
- Dr. Ashok, Head, Biotek, UAS, Bengaluru (06.08.2013).
- Dr. Jagadish Mittur, Member, IT-BT Dept., Govt. of India (06.08.2013).
- Dr. Krishna Kumar, N. K. DDG (H), ICAR, New Delhi (24.08.2013).
- Dr. S. D. Shikhamany, Former Vice Chancellor, Andhra Pradesh Horticultural University (02-03.09.2013).
- Dr. B. L. Jalali, Former Director - Research, CCSHAU, Hisar (02-03.09.2013).
- Dr. Ranvir Singh, Former Dean (Agri.), GBPUAT, Pantnagar (02-03.09.2013).
- Dr. N. Kumar Dean, TANU, Coimbatore (02-03.09.2013).
- ADG (EQR), ICAR, New Delhi (02-03.09.2013).
- Dr. Prema Nath, Chairman, PNASF and former ADG, FAO of UN (07.09.2013).
- Mr. Sankaralinge Gowda, Principal Secretary (Hort.) GOK (07.09.2013).
- Dr. Maheshwar, D. L. Director, Dept. of Horticulture, GOK. (07.09.2013).
- Dr. Ramakrishnappa, Additional Director, Dept. of Horticulture, GOK, Bengaluru (07.09.2013).
- Dr. Jaya Prakash, Additional Director, Dept. of Horticulture, GOK, Bengaluru (07.09.2013).
- Mr. Bose Mandanna, Vice-president (Coffee Board). (07.09.2013).

- Shri Rajeshwar Singh, Retd. General Manager, HMT, Bengaluru (16.09.2013).
- Dr. V. Thilagam, Hindi Officer, IISc., Bengaluru (23.09.2013)
- Dr. Dutta, O. P. Retd. Head, Division of Vegetable Crops and Chairman DUS Monitoring team (24.09.2013).



CHES, Bhubaneswar

- Dr. Ghosh, S. N. Prof. BCKV, Nadia, West Bengal (20.08.2013).
- Dr. Krishna Kumar, N. K. DDG (Hort.), ICAR, New Delhi (28.08.2013).
- Dr. Sidhu, A. S. Director, IIHR, Bengaluru (20.09.2013).

CHES, Chettalli

- Dr. Pandey, P. S. National Coordinator, Component -1, NAIP, New Delhi (27-28.07.2013).
- Dr. Jagadeep Saxena, Editor, DKMA, ICAR, New Delhi (27-28.07.2013).
- Mr. Anil Kumar Sharma, P R O, DKMA, ICAR, New Delhi (27-28.07.2013).
- Dr. Dabas, Y.P.S. Director Extension, G B P UA&T, Pantnagar (27-28.07.2013).
- Mr. Naved Masood, IAS, Secretary, Ministry of Corporate Affairs (15.09.2013).

KVK, Gonikoppal

- Dr. Kandianan, Principal Scientist, IISR, Calicut
- Dr. Sujatha. Senior Scientist, CPCRI, Vittal
- Dr. Gangadhar, Senior Scientist, CIFA, Bengaluru
- Mr. Arun Bheemaiah, K. President, Taluk panchyath, Virajpet

KVK, Hirehalli

1. Mr. Sankaralinge Gowda, Principal Secretary (Horticulture) GOK, Bengaluru (17.8.2013).
2. Dr. Yaduraju, N. T. ICRISAT, Hyderabad, Andhra Pradesh.

IIHR TECHNOLOGICAL PRODUCTS AVAILABLE AT ATIC

IIHR TECHNOLOGICAL PRODUCTS	PRICE/KG (Rs)	POSTAGE/KG (Rs)
1. Banana Special -Nutrient Formulation for Foliar Spray for Banana	150.00	75.00
2. Mango Special -Nutrient Formulation for Foliar Spray for Mango	150.00	75.00
3. Citrus Special -Nutrient Formulation for Foliar Spray for Citrus*	150.00	75.00
4. Vegetable Special -Nutrient Formulation for Foliar Spray for vegetables	125.00	75.00
5. Trichorich – N: - An Organic Formulation for Fungal and Nematode Disease Complex in Horticultural Crops	100.00	75.00
6. Pongamia Soap – An Organic Formulation for Insect Pest Management in Horticultural Crops	125.00	75.00
7. Neem Soap (An Organic Formulation for Insect Pest Management in Horticultural Crops)	150.00	75.00
8. Microbial Consortium (Bacteria) Bio Fertilizer	75.00	75.00
9. <i>Pseudomonas fluorescens</i> – An Organic Formulation for Fungal and Nematode Disease Complex in Horticultural Crops	250.00	75.00
10. <i>Paecilomyces lilacinus</i> – An Organic Formulation for Nematode Problems of Horticultural Crops	150.00	75.00
11. <i>Pachonia chlamydosporia</i> – An Organic Formulation for Nematode Problems of Horticultural Crops	150.00	75.00
12. Mango Fruit Fly Trap	35.00	-
13. Mango Fruit Fly Lures	20.00	-
14. Vegetable Fruit Fly Trap	40.00	-
15. Vegetable Fruit Fly Lures	25.00	-
16. Mango Healer cum Sealer	100.00	75.00

*On demand only

- The items can be obtained by remitting the required amount to the office in the form of Cash or Bank Draft drawn in favor of Director, IIHR, Bengaluru.
- **Include postage charges (as mentioned in the list in case of more number of items kindly indicate the items so that the postage charges can be communicated)** along with the cost of item for receiving the product by post. Products can be booked through transport with the cost to be borne by the clientele and handling & local transportation charges are extra depending on the quantity intended.
- **Demand Drafts of Bank** should be drawn in favor of **DIRECTOR, IIHR, BENGALURU.**

The technologies of production of these products have been commercialized to various agencies. The name and address of the firm will be intimated on query. Interested may call the office through phone: 080-28446815, 28466420 Extn 422, 9448009684. Email: atic@iihr.ernet.in

For further details please contact:

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Published by : Director, IIHR, Hesaraghatta Lake Post, Bengaluru-560 089
E-mail : director@iihr.ernet.in
Phone : 080-28466420-423
Website : www.iihr.ernet.in
Production and Editing : Publication Committee, 2013-14
Printed at : Precision Fototype Services, Bengaluru-560 008, ©: 9845044311, precision_new@yahoo.co.in