



Produce

Process

Prosper

CIPHET NEWS

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FROM THE DIRECTOR'S DESK

CIPHET organised a *Rashtriya Sangoshthi* on “*Khadya Prasanskaran Evam Prabandhan: Udyamiyon Ke Liye Swarojgar Ki Sambhavanayen*” during January 28-29, 2014 in collaboration with Indian Society of Agricultural Engineers (Punjab Chapter), PAU, Ludhiana. Coordination Committee Meeting (CCM) of AICRP on Post Harvest Technology was jointly organized by CIPHET and PAU Ludhiana on March 7-9, 2014. Dr Ajit Kumar, Hon'ble Vice Chancellor, NIFTEM was the Chief Guest and Dr. R.P. Kachru, Ex-ADG(PE), ICAR, was the Guest of Honour in the Inaugural session. In its efforts to promote Hindi language, a *Hindi Karyashala* was organized at CIPHET, Ludhiana. Technology of “Minimal processing of vegetables” was licensed to an entrepreneur from Uttar Pradesh. Two radio talks based on various postharvest technologies were aired under All India Radio, Jalandhar's programme 'Do Dooni Chaar'. At the end, I congratulate Dr. S K Nanda and his team for receiving Team Award during 48th Annual Convention of ISAE and Symposium on Engineering Intervention in Conservation Agriculture during February 21-23, 2014 and CPCRI, Kasargod, one of the centres of AICRP on PHT for getting a national award 2012. I also congratulate Dr. Sangeeta Bansal and Dr. Manju Bala for bagging the young scientist and best poster paper award, respectively for their research work. Sh. Krishan Jangra from Haryana, one of the farmer-entrepreneur nominated by CIPHET got ICAR Innovative Farmer Award 2014 for the development of carrot washer in Pusa Krishi Vigyan Mela organized by Indian Agricultural Research Institute, New Delhi during February 26-28, 2014.




(R. K. Gupta)

SECTORAL NEWS

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300+ Indian firms participated in world's biggest food meet at Dubai

Over 300 Indian companies, showcasing the country's excellence in food and beverage industry, participated in one of the world's biggest exhibition in the food and hospitality sector, which was organised at Dubai. Sh. Anurag Bhushan, Consulate General of India in Dubai inaugurated the Indian pavilion at Gulfood. The pavilion was coordinated by Agricultural and Processed Food Products Export Development Authority and the Ministry of Food Processing Industries (MOFPI), India. Spanning an area of 1500 sq m, it was one of the biggest pavilions in the exhibition. The Indian pavilion promoted rice (basmati and non-basmati), herbs, spices, processed food products, poultry, meat, dairy products, confectionery, juices, chocolates, and ready to eat foodstuff. The meet was attended by nearly 60 exporters and prominent importers. India's total exports of agricultural products to the UAE stood at USD 2 billion for the year 2012-13 while the total exports stood at USD 37.2 billion in the same period.

INSTITUTE NEWS

RESEARCH HIGHLIGHTS

Development of hybrid cold storage structure for onion and tomato

The use of desiccant cooling and evaporative cooling alone or in conjunction with refrigeration air conditioning may prove as less energy intensive method. Reduction in sensible heat load by the evaporative cooling and latent heat load by removal of water vapour (desiccation) may reduce the energy costs than cooling the same air with a refrigeration system alone. A model of desiccant wheel containing pre-packed desiccant material was prepared and tested for its efficacy.

Wheat straw was taken as base material for preparation of desiccant material. The wheat straw was pulverized into powder using hammer mill. The pulverized material was passed through 0.5 mm round opening screen and material passed through the screen was used for preparation of desiccant balls. Solution of 1% guar gum powder was prepared and mixed with the straw powder (0.4% w/w dry basis). The guar gum was expected to act as binder as well as water vapours. The entire mass was mixed and water was added. Then the balls of about 30-40 mm diameter were prepared. The balls were dried at 100°C till the moisture content of balls



Model of desiccant wheel

was reduced to 5% (d.b.). These balls were used as desiccant material.

Two models of open ended desiccant wheels were prepared. It comprises of a hollow cylinder of 450 mm diameter, which is expected to rotate at 20 rpm. Length of desiccant wheels was kept at 200 mm and 100 mm. The wheel is further divided into five sections. Separators contain slotted opening for uniform air distribution. The desiccant material was filled in the hollow space.

The desiccant material was filled into the desiccant wheel and both ends were covered using wire mesh. This wheel was fitted on the front side of an evaporative cooler.

Operation of the desiccant wheel having 200 mm length showed a drop in relative humidity of dry air, however the pressure drop was very high and air flow was almost restricted. Then the desiccant wheel having 100 mm length was evaluated. The process air generated by the cooler has

temperature of 20°C and 90% RH. The dry air coming out of the desiccant wheel had temperature of 20.5°C and 78% RH initially. After 15 min of operation, the relative humidity of dry air started increasing and reached to 84% after 30 min of operation. The RH of air reached to 89% after 75 min of operation. It indicated that the desiccant material had the capacity to absorb the water vapour from air having 90% RH up to 15 min only and thereafter the water vapour absorption capacity reduces.



Desiccant wheel fitted on the evaporative cooler

Design and development of bael pulper machine

Bael (*Aegle marmelos correa*), an indigenous fruit of India, belongs to family Rutaceae. The various processed products have been developed from the bael fruit such as preserves, pulp, nectar, squash, slab, toffee and powder. The fruit has tremendous medicinal value as a laxative and tonic, etc. Despite this great potential, because of its hard shell, mucilaginous texture and numerous seeds, it is not popular as a dessert fruit. Extraction of pulp from ripe bael fruit is the main hindrance to processing.

At present, the food industry involved in bael processing faces the problem in extraction of pulp from whole fruit. The pulp extraction is carried out by cutting hard pericarp (skull) in two halves and then scooping out the pulp with knife. The process is tedious and time consuming because of mucilage surrounding the seed and sticky pulp. The manual handling of the pulp also leads to the potential microbial contamination leading to unhygienic product quality and consequent reduced shelf life. The pharma industry generally outsources the pulp from various vendors who in turn procure it from the unorganized non commercial tribal's or organized commercial bael farmers. Keeping in view the above facts in account, CIPHET scientist took the task of designing and developing bael pulping machine.



An integrated machine for breaking of bael/wood apple

fruits and extraction of pulp along with separation of broken shell, seeds and fiber thereof is designed and subsequently fabricated with stainless steel. The machine has three mechanisms namely screw conveying mechanism, fruit breaking mechanism and pulp extraction mechanism. The capacity of the machine is 120 Kg/hr and pulp recovery is about 95-97%.

Development of ber grading machine

A compact ber fruit grader has been developed. The machine consists of a horizontal rotating disc which is covered with a thick rubber sheet for creating tapered surface (1-20° from horizontal). At the periphery of disc, three grading boards are placed with a provision to adjust the clearance between disc and bottom of grading boards. The disc can rotate at 10-50 RPM. Feeding mechanism is the main feature of the grader. A guide plate of elliptical shape is placed for guiding fruits towards grading boards and aligning the fruits by their distal and proximal ends horizontally. This allows the grading of fruits by diameter of fruits. Four outlets are made to collect the fruits. The final grades of ber (*Umeran* variety) were less than 30 mm, 30-40 mm, 40-50 mm and more than 50 mm of radial diameter. Overall grading efficiency of the machine was 91% at 20 RPM and less than 0.1% damage. The capacity of machine was 300 kg/h at 20 RPM for ber. The machine has been found suitable for grading of aonla also. Overall grading efficiency for aonla was 96% at 25 RPM with less than 0.3% damage. Capacity of the machine at 25 RPM was 400 kg/h for aonla. It is operated by 1 hp electric motor. The machine costs about Rs. 50,000. This fruit grader is suitable for both at farm level as well as commercial level operations.



Dehulling of oat

The sunflower dehuller (impact type) was adopted for dehulling of oats and its performance was evaluated. The dehulling efficiency was found higher (67.76%) at 8.12% mc than at 13.33% mc (37.94%). Relevant physical properties of oats (variety 'Kent') have been determined to help in designing dehuller.

PAPERS PUBLISHED/PRESENTED

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and glucosinolate content in intact seeds of rapeseed-mustard. Paper presented in International Conference on Emerging food safety risks: challenges for developing countries and Workshop on Food safety and quality organized by NIFTEM, Kundli during January 9-11, 2014.

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- Jaipaul, Dixit AK, Sharma AK and Kumar V (2014). Nutrient recycling and its relationship with biofertility indicators of soil health and nutrient uptake in a rice (*Oryza sativa L.*)-wheat (*Triticum aestivum L.* emed. Fiori & Paol) cropping sequence. Agroecology and Sustainable Food System, 38 (4): 445-459, DOI: 10.1080/21683565.2013.870628.
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- Mann S (2014). Scope & challenges of machine vision system in detection of cereal grain quality. Paper presented in International Conference on Emerging food safety risks: challenges for developing countries and workshop on Food safety & quality organized by NIFTEM, Kundli during January 9-11, 2014.
- Mridula D, Mishra A, Goswami D and Gupta RK (2014). Development of calcium fortified soft rice using spraying. Paper presented in 48th Annual convention of ISAE and Symposium on Engineering interventions in conservation agriculture, organized by Maharana Pratap University of Agriculture and Technology, Udaipur during February 21-23, 2014.
- Mridula D, Chatterjee S and Sharma M (2014). Development of multigrain based functional pasta. Paper presented in in 48th Annual Convention of ISAE and Symposium on Engineering interventions in conservation agriculture, organized by Maharana Pratap University of Agriculture and Technology, Udaipur during February 21-23, 2014.
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- Singh J, Singh M, Jain A, Bhardwaj S, Singh A, Singh DK, Bhushan B and Dubey SK (2014). An introduction of plant nutrients and foliar fertilization: a review in precision farming: a new approach. Daya Publishing House, New Delhi. pp.258-320.

CONSULTANCY/LICENSING OF TECHNOLOGY

- Technology for “Minimal processing of vegetables” was licensed to Sh. Abhinav Soni, from Meerut, UP on March 3, 2014.
- Five pieces of banana comb cutter were sent to Krishi Vigyan Kendra, Thirunelveli, Tamil Nadu.



PROGRAMMES ORGANIZED

- Business Planning and Development (BPD) Unit, CIPHET in collaboration with PAU *kisan* club organised interaction meeting on January 2, 2014 during PAU *kisan* club meeting. During this meeting Mr. Ajay Aggrawal, Business Manager, BPD gave the presentation on CIPHET developed technologies and created awareness among the Punjab farmers about

post-harvest engineering and technology, food and agro-processing and machine manufacturing. About 250 farmers attended this event.

- Four demonstrations and training of Makhana Popping machine were held in Darbhanga, Madhubani, Katihar district of Bihar during January 2014.
- A training on 'Handling and processing of turmeric' was conducted for 30 farmers from Maharashtra during January 13-16, 2014. This programme was sponsored by Agriculture Technology Management Agency (ATMA), Wadgaon, Chandrapur, Maharashtra. The training was coordinated by Dr. Armaan U. Muzaddadi, Sr. Scientist, TOT division.
- Dr DN Yadav, Sr. Scientist, FG&OP Division demonstrated cryogenic grinding of citrus rind and green pepper for Koncor Ingredients Pvt. Ltd., Kerala during January 20-23, 2014 and preparation of groundnut milk and its products to PTC News Channel on January 27, 2014.
- The 65th Republic day was celebrated at CIPHET Ludhiana and Abohar with enthusiasm and great patriotism on January 26, 2014. All CIPHET staff, contractual workers and families of the staff took part in this celebration.
- Business Planning and Development (BPD) Unit, an NAIP initiative was inaugurated at CIPHET, Ludhiana on January 28, 2014 during two days National Hindi Seminar on Food processing and management: opportunities of self-employment for entrepreneurs. On this occasion BPD brochure and incubation facilities were launched. Chief guest, Dr. Bangali Baboo, Former National Director NAIP, Dr. K. K. Singh, ADG (PE),

ICAR and Dr. W. S. Dhillon, Director, Punjab Horticultural Post-Harvest Technology Center (PHPTC), Ludhiana were present during the inauguration function.

- Dr. Jitendra Singh, Sr. Scientist, HCP Division organized a farmer field day on mushroom cultivation under polyhouse on January 31, 2014 at CIPHET Abohar Campus.
- A training program on 'Soybean processing for milk and tofu' was conducted during February 3-5, 2014 for two participants from Ludhiana and Sangrur, Punjab. Dr. Tanbir Ahmad, Scientist, TOT division conducted this training.
- A training program on 'Post -Harvest Management' was conducted for 21 Agricultural Marketing Officers from Maharashtra during February 17-21, 2014. The training was sponsored by MACP, Maharashtra and coordinated by Dr. Armaan U. Muzaddadi and Dr. Tanbir Ahmad.
- Four day training on "Post-harvest technologies for rural catchment" was organized for 26 farmers from Gondia (Maharashtra) during February 24-27, 2014. The programme was sponsored by ATMA, Gondia and coordinated by Dr. Armaan U. Muzaddadi.



RASHTRIYA SANGOSHTHI

CIPHET organised a *Rashtriya Sangoshthi* on "Khadya Prasanskaran Evam Prabandhan: Udyamiyon Ke Liye Swarojgar Ki Sambhavanayen" during January 28-29, 2014 in collaboration with Indian Society of Agricultural Engineers (Punjab Chapters), PAU, Ludhiana. Dr KK Singh, Additional Director General (Process Engineering) graced the occasion as Chief Guest. He emphasized the development of need based technologies for loss reduction of agricultural produce and economic upliftment of the farmers and entrepreneurs. Dr Bangali Baboo, Former National Director (NAIP) and the Guest of Honour stressed upon the need for technology dissemination to the end users. Dr R K Gupta, PC (PHT) and convener of seminar said that adaptation of improved food processing package of practices would be profitable to the growers, processors and marketers. Dr S.N. Jha, the then Acting Director, CIPHET said that food processing sector has huge potential to create the rural industries. Seventy one participants from different organizations presented their papers. The entrepreneurs also shared their views regarding their venture and desired for the collaborative work with CIPHET.



- Three day training on “Post-harvest technologies for rural catchment” was organized for 30 farmers from Nagpur (Maharashtra) during February 27-March 01, 2014. The training was sponsored by ATMA, Nagpur.

- Coordination Committee Meeting (CCM) of AICRP on Post-Harvest Technology was jointly organized by CIPHET and PAU Ludhiana on March 7-9, 2014. Dr Ajit



Kumar, Hon'ble Vice Chancellor, NIFTEM was the Chief Guest and Dr. R.P. Kachru, the Ex-ADG(PE), ICAR, was the Guest of Honour in Inaugural session. Dr R K Gupta welcomed the dignitaries and participants and briefed about CCM and CIPHET research activities. Dr Ajit Kumar, VC, NIFTEM and Chief Guest, emphasized on futuristic research with problem solving approach. Dr RP Kachru made a presentation on technology needed for business and entrepreneurship development. Dr. KK Singh urged the RE/PIs of the centres to prepare good project proposals with strong scientific base.

- One day training programme on processing of fruit and vegetables was organized at CIPHET Abohar on March 12, 2014.

- सीफेट, लुधियाना में 15 मार्च 2014 को हिन्दी कार्यशाला का आयोजन किया गया। इस कार्यशाला में श्रीमती किरण साहनी, सहायक निदेशक (राजभाषा) एवं सदस्य सचिव (न.रा.का.स.), लुधियाना ने 'टिप्पणियां एवं मसौदा लेखन' पर मुख्य प्रस्तुति देकर संस्थान के सभी अधिकारियों एवं कर्मचारियों को लाभान्वित किया।



- CIPHET imparted training to tribal farmers of Nagaon district, Assam on “Post-Harvest Management of Fish” under TSP programme in collaboration with



College of Fisheries, Raha, Nagaon, Assam (Assam Agricultural University, Assam) during March 26-28, 2014. From CIPHET, Dr. Armaan and Dr. Tanbir organized this program.

- Two Radio talks for AIR Jalandhar program 'Do Dooni Chaar' were broadcast and aired. The topics were 'Environmentally Controlled Room' and 'Agro Processing'.

PROGRAMMES ATTENDED

- Dr Sandeep Mann attended national seminar on “Reorientation of Agricultural Research to Ensure National Food Security” and delivered a lecture on “Role of agro-processing in income & employment generation” at CCS HAU Hisar during January 06-07, 2014.
- Dr PC Sharma attended a programme organized by NITCON on January 8, 2014 and delivered a lecture on establishment of fruits and vegetables processing unit to the trainees/ unemployed youth of Malout region of Punjab.
- Dr Ramesh Kumar attended one day International workshop on Food safety and quality organized by NIFTEM, Kundli during January 9-11, 2014.
- Dr P R Bhatnagar, Project Coordinator of AICRP on APA, attended annual conference of VCs and Directors at Baramati, Pune during January 18-22, 2014.
- Dr PC Sharma attended an Entrepreneurship Awareness Programme on Rural Godowns organized by NABARD, Directorate of Marketing and Inspection and NITCON at CIPHET Abohar and delivered a lecture on Prospects of Horticulture Crop Processing on January 22, 2014.
- CIPHET scientists made scientific presentations in *Rashtriya Sangoshthi on Khadya Prasanskarana Evam Prabandhan: Udyamiyon Ke Liye Swarojgar Ki Sambhavanayen* organized by CIPHET, Ludhiana and Punjab Chapter of IASE, Ludhiana, Punjab during January 28-29, 2014.
- Dr Ramesh Kumar attended 2nd International Conference on Agriculture & Horticultural Science at Hyderabad during February 3-5, 2014.
- Dr S K Devatkal attended a conference IAVPH on “Applications of high pressure (HPP) in meat processing and food safety” during February 4-5, 2014 at Assam Agricultural University.
- Dr Anil K Dixit and Dr Sandeep Mann participated in 6th Refresher Course on Agricultural Research Management at NAARM, Hyderabad during February 3-15, 2014.

- CIPHET participated in National Agriculture Fair Cum Exhibition Krishi Vasant 2014 for showcasing its post-harvest technologies during February 9–13, 2014 at Central Institute of Cotton Research, Nagpur.
 
- Business Planning and Development (BPD) Unit of CIPHET, Ludhiana participated in 12th Rural Technology and Crafts Exhibition organized by the National Institute of Rural Development (NIRD) at Hyderabad during February 14-19, 2014.
- CIPHET coordinated and participated for making ICAR pavilion for display of technologies from CIPHET, CIRB, Hissar, CSSRI, Karnal and NDRI, Karnal at Progressive Punjab Agricultural Summit organized at Chapparchiri, Mohali, Chandigarh during February 16-19, 2014.
 
- Director CIPHET participated in the Progressive Punjab Agricultural Summit held at Mohali, Chandigarh on Feb 16, 2014 and Feb 18, 2014.
- Director CIPHET attended inaugural ceremony of International Conference on “Advancements in Engineering and technology” held on Feb 21, 2014 at Bhai Gurdas Institute of Engineering & Technology, Punjab.
- Dr PR Bhatnagar, Project Coordinator of AICRP on APA, Dr PC Sharma and Dr Mridula D attended 48th Annual Convention of ISAE and Symposium on Engineering interventions in conservation agriculture during February 21-23, 2014 at College of Technology and Engineering, MPUAT, Udaipur.
 
- CIPHET participated in Pusa Krishi Vigyan Mela, IARI, New Delhi during February 26-28, 2014. Dr. S.K. Nanda, and Dr. Indu Rawat representd CIPHET. One of the farmers nominated by CIPHET was selected for ICAR innovative award 2014 at this occasion.

- Ms Leena Kumari attended one day sensitization workshop on IPv6 (internet protocol), on February 27, 2014, at NASC Complex, New Delhi.
- CIPHET showcased its technologies in two days Training cum Exhibition on food processing held at Katihar, Bihar during March 3-4, 2014.
 
- CIPHET participated and displayed its technologies in PAU Kisan Mela held during March 14-15, 2014.
 
- Director CIPHET attended 17th meeting of the Board of Management of NIFTEM held on March 25, 2014 at NIFTEM Campus, Kundali, Sonipat.
- Director CIPHET attended as chairman of sixth meeting of Ready-to-eat Foods and Specialized Products Sectional Committee, FAD 24 of BIS on March 26, 2014 at New Delhi.
- Director CIPHET participated in the meeting of Working Group on Post-Harvest Technology and Value Addition for Haryana at Ayog Office, Panchkula held during April 21-23, 2014.

AWARDS/HONOURS

- CPCRI, Kasargod, one of the centres of AICRP on PHT received the National award 2012 of Coconut Development Board for best research work (Machinery/equipment development). The award was presented by Sh. Sharad Pawar, Hon'ble Agri. Minister on February 11, 2014 at New Delhi.
- Dr Manju Bala, Sr. Scientist got best poster award for the poster entitled 'Biochemical marker for salinity in rapeseed-mustard' by Bhogal NS, Kumar S and Meena HP in 2nd National Brassica Conference on 'Brassicas for addressing edible oil and nutritional security' held at PAU, Ludhiana during February 14-16, 2014.
- Dr Sangita Bansal, Senior Scientist received Young Scientist Award (Biotechnology) 2013, conferred by the executive committee of Society for Plant
 

Research (Regd. No. IB 14052-88 established in 1988), on the occasion of National Conference on Perspectives and trends in plant sciences and biotechnology at Punjab University, Chandigarh during February 21-23, 2014 for her contribution in the field of Plant Biotechnology.

- A Team Award was bagged by the team comprising Dr SK Nanda, Dr R K Vishvakarma, Dr Anil Rai, Dr HVL Bathla, Dr. VK Sehgal, Dr P C Sharma, Dr Robinson J Abraham and Dr Pitam Chandra for their work on 'Assessment of harvest and post-harvest losses of major crops and livestock produce in India' during 48th Annual Convention of ISAE and Symposium on Engineering Intervention in Conservation Agriculture during February 21-23, 2014.



- CIPHET nominated farmer got Innovative Farmer Award in Pusa Krishi Vigyan Mela organized by Indian Agricultural Research Institute, New Delhi during February 26-28,



2014 on the theme 'Climate Resilient Technologies for Sustainable Agriculture'. Sh. Krishan Jangra from Haryana, one of the farmer-entrepreneur nominated by CIPHET was selected for ICAR innovative farmer award 2014 at this occasion. Sh. Krishan Jangra developed a small capacity carrot washer first in 2000 for use in and around Bahabalpur, Hissar where carrot is one of the major crops. Through continuous innovations, he has developed upto 16 feet long continuous carrot washing machine. During the last financial year Sh. Jangra marketed 42 number of units.

JOINING/PROMOTION/TRANSFER

- Dr R K Gupta has joined as Director CIPHET on February 14, 2014.
- Dr Sanjeev Kumar Tyagi has joined FG&OP Division, CIPHET, Ludhiana as Pr. Scientist (Chemical Engg.) on February 25, 2014.
- Dr K. Narsaiah got promoted to Principal Scientist (AS&PE) w.e.f. July 28, 2012.
- Sh. O. P. Moondan, T-5 retired from the ICAR services on December 31, 2013.
- Smt. D.B. Chadha, T-4 (Sr. Technical Officer) retired from ICAR services on March 31, 2014.

SPORTS

- CIPHET actively participated in ICAR Zonal Tournament (North Zone) held at IIPR Kanpur during March 20-23, 2014.

Dr. R.K. Gupta joins as Director CIPHET

Dr. R.K. Gupta has obtained his bachelor degree in Agricultural Engineering from Allahabad University and M. Tech. Degree in Post Harvest Engineering from Indian Institute of Technology, Kharagpur. Further, Dr. Gupta had obtained PG Diploma in Food Processing Management from International Institute of Management, Masstricht, The Netherlands and Ph.D. from IIT Kharagpur in the area of Agricultural and Food Engineering. More than 28 years, he is engaged in research and development and training in the area of post-harvest technology and engineering of food crops. His areas of expertise are horticultural crop processing, oilseeds processing, minor millets processing and value addition, and novel products development. Dr. Gupta is having proven record of scientific contribution with sufficient published work in his credit. He is also one of the authors of five books and had authored many research bulletins, technical reports and extension leaflets. He is also life member of various professional societies like ISAE, AFST (I), Bioved Research Society, Oilseeds Research Society and Research Association of Gender in Agriculture. He is also a Fellow of Institutions of Engineers (India) and having other awards of professional societies. He had opportunity to chair sessions as Chairman/Co-chairman of many national as well as International Conferences. He has visited Netherlands and England to enrich his knowledge in the area of post-harvest technology and management. He was also member of Indian delegation of Subcommittee on FST to ASEAN Country and visited Thailand and Singapore for developing Research Proposals on Food Science and Technology.



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