



FROM THE DIRECTOR'S DESK



Welcome to the 3rd issue of quarterly newsletter of ICAR-CIPHET for the year 2015. It's a matter of great honour and pride that the Institute has been authorized for testing of all types of Post-Harvest Equipment and Machinery by Mechanization & Technology Division, Department of Agriculture & Cooperation, Ministry of Agriculture, Govt. of India to ensure supply of quality post-harvest equipment & machinery by manufactures. Two mega Consortium Research Projects on Secondary Agriculture and Health Foods have also been approved by ICAR at ICAR-CIPHET, Ludhiana during this quarter. With these additional assignments, we feel a great sense of responsibility to achieve our set goals.

During this quarter ICAR-CIPHET has developed Pneumatic Assisted Coring Device for oblong fruits: *ber* and fresh date palm. ICAR-CIPHET and AICRP on PHET work towards different aspects of agro-processing in the country. In this direction, AICRP on PHET has established four new Agro-processing centres (APCs) at Turvihai village (Raichur), Manthal village (Bidar), Chawar Dhabka (Bidar) and Raichur (Raichur). I would also like to share that, AICRP on PET organized XI Biennial Workshop at SKUAST-K Srinagar during September 10-12, 2015. Three days farmers training on "Use of Plastics in Horticulture and Post-Harvest Management" at AICRP on PET Centre, HCP Division, ICAR-CIPHET, Abohar was also organized.

Further, the institute has organized two ICAR sponsored summer schools on "Advances in processing, value addition and by-product utilization of livestock and fish produce" and "Novel approaches and technologies for processing and value addition of agricultural produce". The institute has also celebrated 69th Independence Day at both the campuses i.e. Ludhiana and Abohar with enthusiasm and great patriotism. Hindi *pakhwada* was celebrated during September 14-28 and different programmes were conducted to promote use of *Hindi* among the staff. I hope that our endeavour to serve science and society will continue and we will be able to do so in much better ways in coming days.

IN THIS ISSUE

- From the Director's Desk
- Sectoral News
- Institute /Divisional News
 - Research Highlights
 - Papers Published/Presented
 - Books/Popular Articles
 - Technical Bulletins/Success Stories
- Programmes Organized
- Trainings
- Programmes Attended
- Exhibitions
- Visits
- Linkages Developed
- Awards
- Joining/ Promotions
- Transfers


(R. K. Gupta)

SECTORAL NEWS

New Food Parks Inaugurated in Bihar and Andhra Pradesh

Two new Mega Food Park have been inaugurated in Bihar and Andhra Pradesh. Pristine Mega Food Park was inaugurated by Hon'ble Union Minister for Food Processing Industries, Mrs. Harsimrat Kaur Badal at MANSA, Khagaria in Bihar, on August 6, 2015. Whereas, Andhra Pradesh Chief Minister, N. Chandrababu Naidu has laid the foundation of a mega food park in Kurnool district of Andhra Pradesh on August 18, 2015. These food parks are expected to boost agro-processing in the respective state and prevention of wastage of farm produce, encouragement of agro-entrepreneurship, dismantling of multi-layered middlemen agencies in the existing supply chain as well as encouragement of public-private partnership in agro-industry. Besides, food processing, these Food Parks will also consist manufacturing components such as micro-irrigation systems, PVC and PE pipes and tissue culture.

Indian Functional Food Market

Functional food is one of the fastest growing segments among the different food sectors. Germany, France, UK and Italy are the major markets in the European Union for nutraceuticals. Whereas, Japan (14%) is the major consumer of nutraceuticals in Asia-Pacific, followed by China (10%). The Indian nutraceuticals food market is at nascent stage but fast emerging and accounts for around 1.5% of the global market. According to a joint study by ASSOCHAM and RNCOS on "Indian Nutraceuticals, Herbs, and Functional Foods Industry: Emerging on Global Map", global nutraceuticals market is expected to cross US\$262.9 billion by 2020 from the current level of US\$182.6 billion with the compound annual growth rate of about 8%. Study revealed that due to rising awareness about health and fitness and changing lifestyle, India's nutraceuticals market is growing and likely to cross US\$6.1 billion by 2020 from the current level of US\$2.8 billion with CAGR of about 17%. Nutraceuticals, herbs and functional foods in India are covered under the definition of food as per Section 22 of Food Safety & Standards Act, 2006 and categorised as non-standardised/special food products. These products are regulated under the guidelines of FSSAI, 2006, amended in 2011 for registration, licensing, approval, labelling & packaging, import, marketing & distribution, and laboratory testing like conventional food products.

At present, India does not have any kind of regulatory guidelines for the approval or monitoring of the products under the functional food segment. In the absence of regulations, the products take much longer time to reach the market. In urban India, penetration of such kind of foods is expected to be around 22% whereas in rural it is 6%. For industry growth, it is utmost necessary to give faster approvals for eligible functional/nutraceutical foods. Therefore, FSSAI should come up with properly framed guidelines related to manufacturing, storage, packaging & labelling, distribution, sales, claims and imports of such kind of food items. This will bring clarity to the industry stakeholders so that they can invest with no fear of counterfeiting.

To promote the functional food market in India, ICAR has approved a Consortium Research Project on "Health Foods" at ICAR-CIPHET, Ludhiana, which is expected to deliver different functional and nutraceutical food for various segments of the population.

INSTITUTE NEWS

RESEARCH HIGHLIGHTS

Pneumatic assisted coring device for oblong fruits: *Ber* and fresh Date Palm

A pneumatic assisted coring device was developed for removal of central core/stone from oblong fruits like *Ber* and Date Palm. The cored fruits can be further utilized for canning, drying and other food processing operations. The prototype (Fig. 1) operates with five pneumatic air cylinders

having maximum working pressure of 10 bar each. It comprises of a hopper with vibrating feeding mechanism, movable wooden roller, extended fruit dropper, four wooden frames (470×50 mm, with 6 openings of 25.4 mm diameter each), fruit coring tools (6 No.), core outlet and cored fruit outlet. The wooden frames are mounted on individual mild steel sheets at equidistance on a circular movable unit which rotates in clockwise direction. The whole unit is assembled

on a supporting mild steel frame work (1020×1020 mm). The fruits are loaded on the hopper having vibrating mechanism and then they move to the roller. The roller carries six fruits at a time and drops them longitudinally on to the wooden frame having fruit openings. The loaded frame move clockwise direction for coring. Coring of fruit takes place in third frame via coring panel from which the stone is separated through an outlet. Further, the cored fruit are collected in fourth base via opening of wooden base through plunger.

To complete single coring round (6×4 frames=24 fruits), approx. 1.30 min is sufficient. The coring capacity of the developed prototype for *ber* (cv. *Umran*) fruits is 28 kg/h, and for date palm (cv. *Hillawi*) 16 kg/h. Coring efficiency of the pneumatic assisted device is 78% and 65% for *ber* (cv.

Umran) and date palm (cv. *Hillawi*), respectively. The coring device would be instrumental for removal of stone/core from the fruits which is a prerequisite for canning and drying of destoned fruits.

Detection of Aflatoxin M1 in milk using FTIR

The potential of Fourier transform-infrared (FTIR) spectroscopy together with chemometrics was investigated for detection of aflatoxin M1 in milk. Spectra of milk spiked with known concentration of aflatoxin M1 (20, 40, 60, 80, 100 ppt) were acquired using FTIR equipped with attenuated total reflectance in wave number range of 500-4000 cm⁻¹. Analysis of spectra revealed distinct zones with clear differences in the absorbance values of milk supplemented with different levels of aflatoxin M1. Principal component analysis (PCA) showed clear clustering of samples based on level of toxin, at 5% significance level in the wavelength range of 1800-650 cm⁻¹. Results indicated that FTIR spectroscopy has potential in dairy industry as a rapid method for detection and quantification of aflatoxin M1 in milk.



Fig 1- Pneumatic assisted coring device



Fig 2- Cored *Ber* (cv. *Umran*) fruits

Fig 3- Cored Date palm (cv. *Hillawi*)

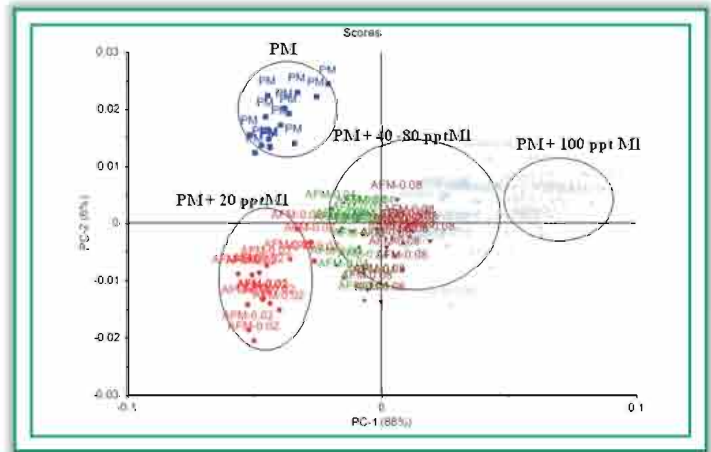


Fig 4- Principal component scores plot depicting clusters of milk and AFM1 spiked milk in the wavenumber range of 1800-650 cm⁻¹.

Automatic mango grader based on machine vision technology (AICRP on PHET, Coimbatore centre)

An automatic mango grader (capacity: 620 to 650 fruits/h or 200-300 kg/h) is developed at AICRP on PHET, Coimbatore centre. The machine has five sections viz. feeding, conveying, imaging, fruit separating and process

controlling section (Fig 5). The feeding section is the simplest section where the mango fruits are fed one by one manually. The conveying section is the main mechanical part of the whole machine which conveys the fruit from the feeding section to separating section via imaging section. All the mechanical parts namely conveyor belt, power transmitting pulleys, idler pulleys, shafts, power drive unit and bearings to support shafts are designed. Imaging section consists of shade free imaging chamber, imaging device and fruit detecting sensor. Imaging chamber is developed using circular lamp with the inner reflecting surface. The fruit detecting sensor is fixed perpendicular to the conveyor axis on the side wall of the imaging chamber at 15mm height from the surface of conveyor belt.

In the fruit separating section, five numbers of outlets are given for five grades. Each outlet is fabricated with pushing hands along with the outlet chute. Out of five outlets, four are fixed in the side of the conveyor and the fifth outlet is fixed at the end of the conveyor. The width of each outlet chute is 30cm and clearance between each chute is fixed at 10cm. The total length of the separating section is 150cm. The pushing hands are made with pneumatic piston with the pushing plate. The curved pushing plate with the dimension of 20 X 8 cm is made with 50cm radius of curvature. Proper cushioning is provided on the pushing plate and outlet chutes in order to avoid the damage on the fruits while separating.

Process control section consists of a computer with data I/O card (Arduino Mega 2560, Italy), 5V-four channel relay, PLC, rotary shaft incremental encoder and a fruit tracking sensor. Fig.1 shows the components of process control

section. The camera is connected to the computer with the GIGE Ethernet port. The data I/O card is attached with computer via USB port. The fruit detecting sensor is attached with Arduino board. The PLC is connected to Arduino *via* 5V relay. Rotary encoder, fruit tracking sensor and the solenoid valves of separating section are attached directly to the PLC.

The feeding of the fruit is manually done one by one with desired gap. When the fruits crossed over the detecting sensor, the computer receives signal from the detecting sensor, then it triggered the camera to get an image with the resolution of 1280X1080. The image is processed immediately with the developed algorithm for prediction of grade. Based on the grade, signal is given to PLC *via* relay. When the fruit cross over the fruit tracking sensor, the PLC read the value from the rotary encoder and it gives the signal to the appropriate solenoid valve at appropriate time.

The machine was evaluated by grading three varieties of mangoes. Higher effectiveness of 98.6 per cent was observed in Alphonso, followed by 96.0 per cent for Banganapalli and 93.3 per cent for Neelam. The developed machine would be more suitable for online grading of mangoes based on external as well as internal quality. The operating cost of machine is about Rs. 0.60 per kg of fruits.

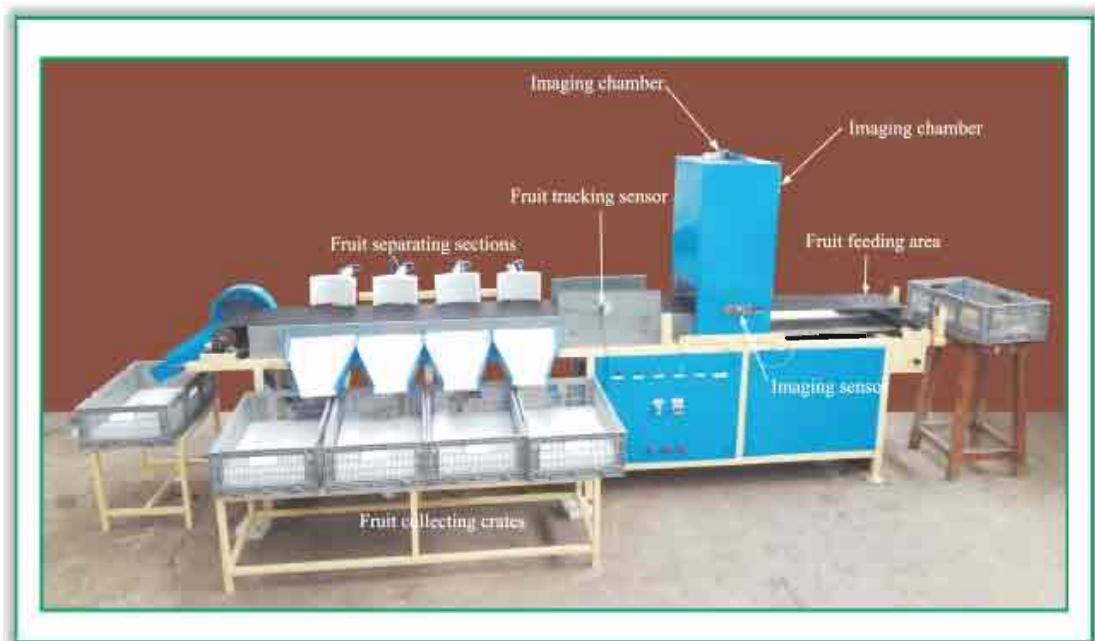


Fig 5- Automatic mango grader

Detection of food borne pathogens by LAMP (Loop Mediate Isothermal Amplification) Technology (AICRP on PHET, Mumbai centre)

A total of 185 samples (103 chicken, 37 beef, 12 chevon and 33 pork) were collected from the local market. Till date 75 *E.coli* isolates were recovered from 20 buffalo, 40 chicken, 8 pork and 7 chevon samples; 48 *S. aureus* isolated from 22 chicken, 10 buffalo, 7 chevon and 9 pork samples and 51 *Salmonella* isolates were obtained from 32 chicken, 10 buffalo samples, 7 pork and 3 chevon.

The conventional PCR for *Staphylococcus aureus* and *Salmonella* has been standardized. Further, Loop Mediated Isothermal Amplification (LAMP) assay is standardized for *arcC* gene of *S. aureus*. The LAMP assay for detection of *arcC* gene was performed using a set of primers FIP, BIP and B3, F3 and the reaction was carried out using the genomic DNA extracted from *S. aureus* as a template to determine the optimal temperature and time of reaction. The LAMP reaction was carried out using the reaction mixture of LAMP reagent for *S. aureus* consisting of 10X Isothermal buffer- 1.5 µl, Mg₂SO₄ (100mM)- 1.5 µl, dNTP (10 mM)- 3.50 µl, Primer

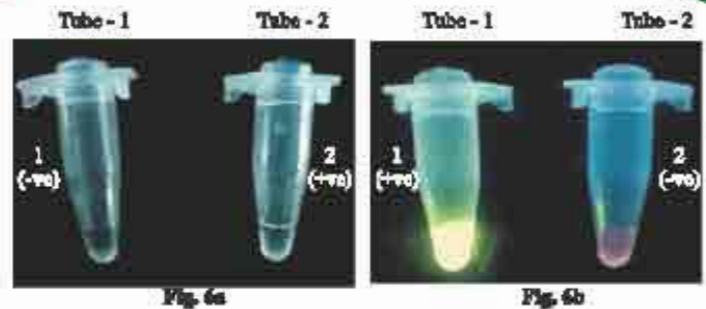


Fig. 6a: Tube 1 – No turbidity; Tube 2 – Turbidity
Fig.6b: Tube 1 – SYBR green fluorescence indicating DNA amplification;
 Tube 2 – No fluorescence indicating no DNA amplification

arcC FIP- 4.00 µl, Primer *arcC* BIP- 4.00 µl, Primer *arcC* F3 - 0.50 µl, Primer *arcC* B3 - 0.50 µl, *Bst* DNA polymerase - 1.00 µl, DNA template - 2.00 µl and Nuclease free water - 5.50 µl. The LAMP products were formed at 58, 60, 62, 63, 65 and 66°C at different time periods i.e. at 50 min, 60 min and 70 min, respectively. However, 65°C for 60 min was determined as the optimal temperature because of the presence of significant visual turbidity and fluorescence on addition of SYBR green dye (Fig. 6a & 6b). The LAMP reaction mixture was incubated at 65°C for 60 min and further heated to 80°C for 2 min to terminate the reaction. After completion of LAMP reaction, amplified DNA were analyzed on 2% of agarose gel by electrophoresis at 90V for 45 min. A 100bp DNA ladder was also loaded along with LAMP products and subsequently observed under U.V. Transilluminator of gel documentation system which exhibited specific ladder like pattern in case of DNA amplification (Fig 6c).

PAPERS PUBLISHED/PRESENTED

- Babu R, Marri R, Narsaiah K, Anurag RK and Kaur JS (2015). Influence of type and thickness of packaging film on quality attributes of 1-MCP treated tomato (*Solanum lycopersicum* L.) during cold storage. In 3rd ISHS Southeast Asia Symposium on Quality Management in Postharvest Systems (SEAsia2015) held on August 13-15, 2015 at Siem Reap, Cambodia.
- Babu R, Narsaiah K, Marri R, Kaur JS, Anurag RK, Singh DK and Shaik MA (2015). Storage behaviour of tomato (*Solanum lycopersicum* L.) in response to aqueous 1-Methiocyclopropene treatment and modified atmosphere packaging In 3rd ISHS Southeast Asia

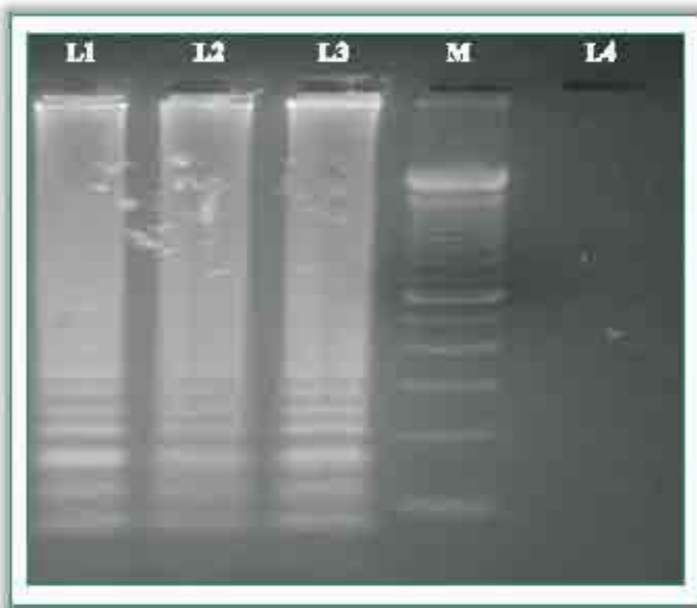


Fig. 6c : Ladder like pattern of LAMP products on 2% Agarose gel
 Lane 1-3: Ladder like pattern of LAMP products of *S. aureus*;
 Lane 4: Negative control (without DNA);
 Lane M: Truclit™ 100bp DNA Ladder

Symposium on Quality Management in Postharvest Systems (SEAsia2015) held on August 13-15, 2015 at Siem Reap, Cambodia.

- Bhushan B, Pal A and Jain V (2015). Improved enzyme catalytic characteristics upon glutaraldehyde cross-linking of alginate entrapped xylanase isolated from *Aspergillus flavus* MTCC 9390. Enzyme Research. Article ID 210784. [http:// dx.doi.org/ 10.1155/ 2015/ 210784](http://dx.doi.org/10.1155/2015/210784).
- Bhushan B, Pal A, Narwal R, Meena VS, Sharma PC and Singh J (2015). Combinatorial approaches for controlling pericarp browning in *Litchi (Litchi chinensis)* fruit. Journal of Food Science and Technology, 52: 5418-5426.
- Jaiswal A, Yadav DK, Patki PE and Gupta RK (2015). Supplementing wheat protein to improve and complement its nutritional quality. Research & Reviews: Journal of Food Science and Technology, 4(2):13-20.
- Mridula D, Kaur H, Goswami D, Gupta RK, Sushma Gurumayum and Tyagi SK (2015). Development of quick cooking rice: application of salts and enzyme pre treatments. Proceedings of National Academy of Sciences India Section B: Biological Sciences, DOI 10.1007/s40011-015-0625-7.
- Nangare DD, Singh J, Meena VS, Bhushan B and Bhatnagar PR (2015). Effect of green shade nets on yield and quality of tomato (*Lycopersicon esculentum* Mill) in semi-arid region of Punjab. Asian Journal of Advances in Basic and Applied Science, 1(1): 1-8.
- Narwal RK, Bhushan B, Pal A, Panwar A and Malhotra S (2016). Purification, physico-chemico-kinetic characterization and thermal inactivation thermodynamics of milk clotting enzyme from *Bacillus subtilis* MTCC 10422. *Lebensmittel Wissenschaft Technologie. LWT Food Science and Technology*, 65: 652-660.
- Parmar A, Jaiswal A, Rinku, Bajaj RK and Mann B (2015). Effect of single and sequential treatment of alcalase and flavourzyme on antioxidant activity of buffalo casein hydrolysates. Indian Journal of Dairy Science, 68(6).
- Ranjit B and Muzaddadi AU (2015). Indigenous technical knowledge associated with disaster management and fisheries related activities in the highest flood affected district (Dhemaji) Assam, India, Indian

Journal of Traditional Knowledge, 14(3):407-415.

- Sharma P, Bala M, Meena PD and Singh D (2015). Screening of *Brassica* isolates for *Sclerotinia sclerotiorum* based on oxalic acid production. Indian Journal of Agricultural Biochemistry, 28: 98-99.

BOOKS/ POPULAR ARTICLES/ TECHNICAL BULLETINS/ SUCCESS STORIES

- Arun Kumar TV, Jaiswal AK, Jha SK, Mridula D and Bala M (2015). Extrusion Technology for Expanded Snack Foods. Novel Approaches and Technologies for Processing and Value Addition of Agricultural produce (Eds. Tyagi SK, Bala M, and Tushir S), ICAR-CIPHET, Ludhiana, pp 148-155.
- Bala M, Tushir S, Arun Kumar TV and Goswami D (2015). Extraction of Bioactive Compounds: Recent techniques. In: Novel Approaches and Technologies for Processing and Value Addition of Agricultural produce (Eds. Tyagi SK, Bala M and Tushir S), ICAR-CIPHET, Ludhiana, pp 217-225.
- Bala M, Tushir S, Sharma A (2015). Biochemical components of meat and fish: Changes during processing and preservation. In: "Advances in Processing, Value Addition and By-product Utilization of Livestock and Fish produce" (Eds. Muzaddadi AU, Kumar Y and Yadav DN) ICAR-CIPHET, Ludhiana, pp 37-48.
- Bala M, Tushir S, Solanki C, Sharma A and Tyagi SK (2015). Technologies for Oil seed Processing. In: Novel Approaches and Technologies for Processing and Value Addition of Agricultural produce (Eds. Tyagi SK, Bala M and Tushir S), ICAR-CIPHET, Ludhiana, pp 49-59.
- Bansal S (2015). Probiotics: a healthy route towards value addition and processing. In: "Novel Approaches and Technologies for Processing and Value Addition of Agricultural produce" (Eds. Tyagi SK, Bala M and Tushir S), ICAR-CIPHET, Ludhiana, pp 250-257.
- Bansal S and Kumar Y (2015). Meat/Fish Species Identification from the Product: Recent Advances. In: "Advances in Processing, Value Addition and By-product Utilization of Livestock and Fish produce" (Eds. Muzaddadi AU, Kumar Y, and Yadav DN), ICAR-CIPHET, Ludhiana, pp 85-92.
- Goswami D, Mridula D and Tushir S (2015). Baking and extrusion technologies for value addition of millets. In:

- Novel Approaches and Technologies for Processing and Value Addition of Agricultural produce (Eds. Tyagi SK, Bala M, and Tushir S), ICAR-CIPHET, Ludhiana, pp 240-249.
- Kumar S (2015). “Enzymatic perspective of processing and value addition of fruits and vegetables”. Novel approaches and technologies for processing and value addition of agricultural produce (Eds. Tyagi SK, Bala M and Tushir S), ICAR-CIPHET Ludhiana, pp 290-298.
 - Meena VS, Singh J, Poonam and Bhushan B (2015). Comparative study on pomegranate (*Punica granatum* L. cv. Mridula) under colour shade-nets, evaporative cooling and foliar spray of kaolin and borax application in semi-arid region of Punjab. *Bhartiya Krishi Anusandhan Patrika*, 30(1): 18-22.
 - Meena VS, Singh J, Poonam, and Bhusan B(2015). *Punjab ke ard susk kshetraon mai anar ka vibhinaya chayamay jaal (shadenet), vaspikaran thandak, avam, kaolin, borax ke pardiya chidkav ke anuprayog ka tulnatamak adhayan. Bhartiya Krishi Anusandhan Patrika*, 30(1): 18-22.
 - Monika K and Muzaddadi AU (2015). Fish freshness assessment based on electric properties In: ICAR Summer School- Advances in processing, value addition and by-product utilization of livestock and fish produce (Eds. Muzaddadi AU, Kumar Y and Yadav DN), ICAR-CIPHET, Ludhiana, pp 127-134.
 - Monika Sharma and Yadav DN (2015). Starch Modification and Applications in food processing. In: Novel Approaches and Technologies for Processing and Value Addition of Agricultural produce (Eds. Tyagi SK, Bala M, and Tushir S), ICAR-CIPHET, Ludhiana, pp 99-107.
 - Mridula D (2015). Rice Fortification with Micronutrients. In: Novel Approaches and Technologies for Processing and Value Addition of Agricultural produce (Eds. Tyagi SK, Bala M and Tushir S), ICAR-CIPHET, Ludhiana, pp 40-48.
 - Muzaddadi AU (2015). An overview of fish processing in India, In: ICAR Summer School- Advances in processing, value addition and by-product utilization of livestock and fish produce (Eds. Muzaddadi AU, Kumar Y and Yadav DN), ICAR-CIPHET, Ludhiana, pp 11-20.
 - Muzaddadi AU (2015). Fermentation and enzyme technology in fish product development, In: ICAR Summer School- Advances in processing, value addition and by-product utilization of livestock and fish produce (Eds. Muzaddadi AU, Kumar Y and Yadav DN), ICAR-CIPHET, Ludhiana, pp 199-222.
 - Muzaddadi AU (2015). Novel approaches and technologies for processing and value addition of fishery byproducts In: Novel approaches and technologies for processing and value addition of agricultural produce (Eds. Tyagi SK, Bala M and Tushir S), ICAR-CIPHET, Ludhiana, pp 321-333.
 - Muzaddadi AU (2015). Surimi and surimi based products, In: ICAR Summer School- Advances in processing, value addition and by-product utilization of livestock and fish produce (Eds. Muzaddadi AU, Kumar Y and Yadav DN), ICAR-CIPHET, Ludhiana, pp 135-144.
 - Muzaddadi AU, and Jaiswal A (2015). Fishery by-product utilization In: ICAR Summer School- Advances in processing, value addition and by-product utilization of livestock and fish produce (Eds. Muzaddadi AU, Kumar Y and Yadav DN), ICAR-CIPHET, Ludhiana, pp 247-258.
 - Muzaddadi AU, Jaiswal A. & Yogesh K (2015). Canning technology for meat & fish products In: ICAR Summer School- Advances in processing, value addition and by-product utilization of livestock and fish produce (Eds. Muzaddadi AU, Kumar Y and Yadav DN), ICAR-CIPHET, Ludhiana, pp 159-166.
 - Nath P, Kale SJ, Chauhan OP (2015). Coriander- A potential medicinal herb”. *Indian Food Industry*. pp 29-35.
 - Saha D (2015). Spray drying: A novel technology for the food industry. In: Novel Approaches and Technologies for Processing and Value Addition of Agricultural produce (Eds. Tyagi SK, Bala M and Tushir S), ICAR-CIPHET, Ludhiana, pp 175-181.
 - Saha D (2015). Spray drying: Milk. In: Advances in Processing, Value Addition and By-products Utilization of Livestock and Fish produce, ICAR-CIPHET, Ludhiana, pp 259-262.
 - Sharma PC and Jalgaonkar KR (2015). “Processing of Horticultural Produce”. Novel approaches and technologies for processing and value addition of

- agricultural produce (Eds. Tyagi SK, Bala M and Tushir S), ICAR-CIPHET Ludhiana, pp 307-320.
- Tushir S, Bala M, and Tyagi SK (2015). Mycotoxins in Grains and Food Safety. In: Novel Approaches and Technologies for Processing and Value Addition of Agricultural produce (Eds. Tyagi SK, Bala M and Tushir S), ICAR-CIPHET, Ludhiana, pp 166-174.
 - Tushir S, Bala M, Mridula D and Tyagi SK (2015). Advances in detection of food borne pathogens. In: Novel Approaches and Technologies for Processing and Value Addition of Agricultural produce (Eds. Tyagi SK, Bala M and Tushir S), ICAR-CIPHET, Ludhiana, pp 118-125.
 - Tyagi SK, Tushir S and Bala M (2015). Extraction of high-value compounds from fish and livestock processing waste. In: “Advances in Processing, Value Addition and By-product Utilization of Livestock and Fish produce” (Eds. Muzaddadi AU, Kumar Y and Yadav DN), ICAR-CIPHET, Ludhiana, pp29-36.
 - Tyagi SK, Tushir S and Bala M (2015). Development of Bleaching material from by- product of rice milling industry In: Novel Approaches and Technologies for Processing and Value Addition of Agricultural produce (Eds. Tyagi SK, Bala M and Tushir S), ICAR-CIPHET, Ludhiana, pp 60-65.
 - Tyagi SK, Tushir S and Bala M (2015). Utilization of by products and value addition of mustard. In: Novel Approaches and Technologies for Processing and Value Addition of Agricultural produce (Eds. Tyagi SK, Bala M and Tushir S), ICAR-CIPHET, Ludhiana, pp 21-27.
 - Yadav DN (2015). Processing of groundnut and soybean for production of dairy analogues. In: Novel Approaches and Technologies for Processing and Value Addition of Agricultural produce (Eds. Tyagi SK, Bala M, and Tushir S), ICAR-CIPHET, Ludhiana, pp 204-210.
 - Yadav DN and Yogesh K (2015). Supercritical Extraction Technology: Application in Meat/Fish Science. In: ICAR Summer School- Advances in processing, value addition and by-product utilization of livestock and fish produce (Eds. Muzaddadi AU, Kumar Y and Yadav DN), ICAR-CIPHET, Ludhiana, pp 235-246.
 - Yadav DN, Jaiswal AK and Yogesh K (2015). Extrusion Technology in Fish and Meat Processing Industry. In: ICAR Summer School- Advances in processing, value addition and by-product utilization of livestock and fish produce (Eds. Muzaddadi AU, Kumar Y and Yadav DN), ICAR-CIPHET, Ludhiana, pp 223-234.
 - Yogesh K, Muzaddadi AU and Tyagi SK (2015). Pulsed electric field processing of livestock, poultry and fish produce In: ICAR Summer School- Advances in processing, value addition and by-product utilization of livestock and fish produce (Eds. Muzaddadi AU, Kumar Y and Yadav DN), ICAR-CIPHET, Ludhiana, pp 175-188.
 - Muzaddadi AU, Yogesh K and Yadav DN (2015). ICAR Summer School- Advances in processing, value addition and by-product utilization of livestock and fish produce. (July 8-28, 2015) ICAR-CIPHET, Ludhiana, 300p.
 - Tyagi SK, Bala M and Tushir S (2015). ICAR Summer School-Novel Approaches and Technologies for Processing and Value Addition of Agricultural produce. (August 04-24, 2015) ICAR-CIPHET, Ludhiana, 333p.
 - Narayan Mukund, Nanda SK and Bhatnagar PR (2015). “Compendium of Technologies: AICRP on Plasticulture Engineering and Technology” published by Project Coordinator, AICRP on PET, CIPHET, Ludhiana. It's released in the XI Biennial workshop of AICRP on PET at SKUAST-K Srinagar, J&K, during September 10-12, 2015.
 - Gupta RK, Nanda SK, Yadav DN, Bansal S, Sharma M, Jaiswal AK (2015) ICAR-CIPHET News (Apr-Jun 2015). pp. 1-8.
 - Gupta RK, Nanda SK, Yadav DN, Sharma M (2015). ICAR-CIPHET AT A GLANCE.

PROGRAMMES ORGANIZED

- ICAR-CIPHET organized ICAR Summer School on “Advances in processing, value addition and by product utilization of livestock and fish produce” during July 8-28, 2015. The ICAR Summer School was inaugurated on July 10, 2015 by Dr K Alagusundaram, DDG (Agril. Engg.) ICAR, in the presence of Dr RK Gupta, Director, ICAR-CIPHET, and all eminent scientists, delegates and staff of the Institute. A compilation of all lectures of the Summer School was published and released in the inaugural function. A team of scientists from ICAR-



Presided over the Session, Dr Kanchan K Singh, ADG (FE/PE) and Dr RK Gupta, Director ICAR-CIPHET were the Co-chairmen of the session. Dr SK Nanda, I/c PC (PET) presented the progress report of the scheme during inaugural session. An Industry session was also organized after the Inaugural Session. Dr K Yella Reddy, Director (A&R), WALAMTARI, Hyderabad and Dr Nazir Ganai, ADR, SKUAST-K, Srinagar were the experts. In the workshop, results and achievements of all 13 cooperating centres during the last two years were discussed and

CIPHET, Ludhiana with Dr Armaan U Muzaddadi (Sr. Scientist), as Course Director, Dr DN Yadav (Sr. Scientist) & Dr Yogesh Kumar (Scientist) as Co-Course Directors coordinated and organized the programme. There were 25 participants from different corners of the country. The programme continued for 21 days with 30 lectures and 27 hands-on practical which were conducted in well-equipped laboratories of ICAR-CIPHET, College of Fisheries (GADVASU), College of Veterinary Science (GADVASU) and College of Agriculture (PAU), Ludhiana. Experts from different prestigious institutes such as Central Institute of Fisheries Education, Mumbai; Madras Veterinary College, Chennai; ICAR Head Quarter, New Delhi; Bureau of Indian Standards, New Delhi; Crescent Marine Foods & Additives, Mumbai and retired Professors from SAUs and CAUs also delivered lectures to the participants. Dr SN Jha, Director (In-Charge), ICAR-CIPHET distributed the certificates amongst the participants in the valedictory function on July 28, 2015. The participants extended overwhelming applauds to the organizers in the form of feedback.

- The XI Biennial Workshop of AICRP on PET was organised at SKUAST-K Srinagar during September 10-12, 2015. Dr K Alagusundram, DDG (Engg.) was the chief guest of Inaugural Session, Dr Tej Pratap, Hon'ble Vice Chancellor, SKUAST-K, Srinagar



technical programme for next two years was finalized. Research Scientists from all the centres, farmers, Govt. officers and others participated in the Workshop. Three Industry representatives Mr Anand Zambre, Vice President – Agri Business, M/s ESSEN Multipack Ltd, Rajkot, Gujarat; Mr Vijay Bansal M/s Reliance Industry Ltd., Chandigadh and Mr Parminder Singh, M/s Blue Stallion Equipments (Pvt.) Limited, Ludhiana, Punjab also shared their views on importance of plastics in agriculture and briefly presented their company profile. On this occasion, two technical bulletins and a folder were also released.

- ICAR sponsored 21 days Summer school on “Novel Approaches and Technologies for Processing and Value Addition of Agricultural produce” was organized during August 04-24, 2015 at ICAR-CIPHET Ludhiana. Dr SK Tyagi, Dr Manju Bala and Ms Surya Tushir were the Course-Director and Co-Course-Director respectively. Dr VN Sharda, Member ASRB, New Delhi inaugurated



the summer school and released the compendium on the occasion. During his stay he interacted with scientists and visited section/ division/ lab facilities of the institute. A total of 31 participants in the rank of Assistant/Associate professor from different SAUs across the country attended the summer school. Summer school was a blend of lectures, practical's, hands on experience, discussions and visits etc. Dr SM Illyas, Ex. Project Director (Distance Education Cell) & Head (CPGS), NIRD, (Ministry of Rural Development, GoI), Rajendranagar, Hyderabad distributed the certificate to the trainees. Dr RK Gupta, Director, ICAR-CIPHET encouraged participants for collaborative work in future.

- संस्थान में दिनांक 14 से 28 सितम्बर 2015 तक हिन्दी पखवाड़ा मनाया गया । समारोह का उदघाटन मुख्य अतिथि आदरणीय डा. अनवार आलम, पूर्व कुलपति शेरे-ए-कश्मीर कृषि विज्ञान एवं प्रौद्योगिकी विश्वविद्यालय के कर कमलों द्वारा किया गया । समारोह के अन्तर्गत विभिन्न संयोजकों के सहयोग से विभिन्न प्रतियोगिताएँ आयोजित की गईं । दिनांक 28.09.2015 को हिन्दी पखवाड़ा का समापन समारोह आयोजित किया गया । इसमें मुख्य अतिथि निदेशक महोदय डा. आर. के. गुप्ता, सीफेट, लुधियाना द्वारा विजेताओं को पुरस्कार वितरित किए गए । हिन्दी पखवाड़ा के अन्तर्गत आयोजित सभी प्रतियोगिताओं में संस्थान के सभी अधिकारियों एवं कर्मचारियों ने बढ-चढकर हिस्सा लिया व समारोह में सुचारु रूप से ग्यारह प्रतियोगिताएँ जैसे हिन्दी कम्प्यूटर टंकण प्रतियोगिता, प्रार्थना पत्र प्रतियोगिता, हिन्दी अनुवाद प्रतियोगिता, वाद विवाद, कविता प्रतियोगिता, एक दिवसीय





(हस्तलिखित) पोस्टर पत्र प्रतियोगिता, मुहावरे युक्त तत्काल भाषण प्रतियोगिता, विज्ञान संबंधित संगोष्ठी प्रतियोगिता, प्रश्नोत्तरी प्रतियोगिता, लघु गीत प्रतियोगिता आयोजित की गई।

- भा.कृ.अनु.प-सीफेट, लुधियाना द्वारा दिनांक 19 सितम्बर, 2015 को हिन्दी कार्यशाला का आयोजन किया गया जिसमें



श्री अनिल कुमार गुप्ता, सहायक प्रबंधक (राजभाषा) ने पारिभाषिक शब्दावली एवं प्रयोजन मूलक हिन्दी विषय जानकारी दी।

Independence Day Celebration

69th Independence Day was celebrated at both the campuses of ICAR-CIPHET i.e. Ludhiana and Abohar with enthusiasm and great patriotism. All CIPHET staff,



contractual workers and families of the staff took part in this celebration. Dr. Gajendra Singh, former DDG (Engg.), ICAR was the chief guest for the occasion. Dr. Gajendra Singh and Dr. R.K. Gupta hoisted the National flag at ICAR-CIPHET, Ludhiana, while at Abohar campus, Dr PC Sharma Head HCP and I/c CIPHET Abohar hoisted the National Flag. Various cultural, literary and sports events were also organized by Staff recreation club.

TRAININGS

- Er Sakharam Jagan Kale, Scientist (ASEM) and Mr Vijay Singh Meena, Scientist (Horticulture) organized



three days farmers training on “Use of Plastics in Horticulture and Post-Harvest Management” at AICRP on PET Centre, HCP Division, ICAR-CIPHET, Abohar during September 22-24, 2015. Total 23 farmers from Abohar region participated in the training.

- Mr. Nichrous Mlalila, Research Scientist and Ph. D Scholar, from The Nelson Mandela African Institute of Science and Technology (NM-AIST) of Tanzania has undergone research training on “Development of Polymeric Nanoparticles for Controlled Release Antimicrobial Packaging Material” from April 21, 2015 to September 17, 2015 at ICAR-CIPHET, Ludhiana



under Research Training Fellowship for Developing Country Scientists (RTF-DCS) – Award of Fellowship for 2014-15 sponsored by NAM S&T Centre, New Delhi. Dr Dattatreya M Kadam, Senior Scientist was the Host Scientist for Mr. Nichrous Mlalila.

- Dr RK Gupta, Director, ICAR-CIPHET and Dr Monika Sharma, Scientist, FG&OP Division guided Ms Shameena Beegum, P P, Scientist, CPCRI, Kasargod for 3 months Professional Attachment Training on 'Development of coconut residues fortified food products: An approach for by-product utilization' from May 15, 2015 to August 14, 2015.
- One month training was organized for 5 B Tech (Food Technology) students of School of Agricultural Engineering & Technology, SHIATS, Allahabad during July 1-31, 2015.

- Two month training was organized for 4 B Sc (Home Science) students of College of Home Science, Central Agricultural University, Sangsanggre, Tura Dalu road, Tura (Meghalaya) during July 3-August 31, 2015.
- One month training was organized for 7 B Tech (Agril Engg) students of Agricultural Engg College & Research Institute, TNAU, Kumulur, Trichy, Tamil Nadu during August 5-September 4, 2015.
- 28 days training was organized for 3 M Tech (Agril Engg) students of Department of Agricultural Process and Food Engineering, College of Agricultural Engineering, Acharya N G Ranga Agricultural University, Bapatala during September 1-28, 2015.
- 50 days training was organized for 10 B Tech (Agril Engg) students of Agricultural Engineering College & Research Institute, TNAU, Kumulur, Trichy, Tamil Nadu during September 1-October 20, 2015.

Training and Demonstration by AICRP on PHET

- *The Almora centre of AICRP on PHET* demonstrated post-harvest technologies related to millet thresher cum pearler, millet dehuller, paddy thresher, dal mill, soya processing, etc. to about 1810 farmers/ extension personnel during different visits, trainings and extension programmes.
- Three days training programme was organized on “Post-Harvest Technologies in Millets” from September 21-23, 2015 for 20 farmers of Almora district by *Almora centre of AICRP on PHET*.
- *Srinagar centre of AICRP on PHET* organized a training programme on 'Processing and Value Addition of Vegetables' in Khiram area of district Anantnag. More than 100 women self-help groups participated. The technologies developed by AICRP on PHET on Processing and Value Addition of Vegetables were demonstrated in the programme.

Establishment of Agro-Processing Centres (AICRP on PHET)

- An entrepreneur in district Buldhan established a Mobile Agro Processing Centre at Ruikhed, on September 7, 2015 under the technical guidance provided by Akola Centre of AICRP on PHET.

- Raichur centre of AICRP on PHET established four new Agro-processing centres (mini dhal mills) at Turvihal village (Raichur), Manthal village (Bidar), Chawar Dhabka (Bidar) and Raichur (Raichur). These APCs are producing and marketing dhal from pigeon pea, green gram, black gram and chick pea.

PROGRAMMES ATTENDED

- Dr RK Gupta, Director, ICAR-CIPHET, Ludhiana attended Seminar on Post-Harvest Technologies and Food Processing in India and New Zealand: Opportunities of Collaborative Research on July 22, 2015 at NIFTEM, Kundli.
- Dr RK Gupta, Director, ICAR-CIPHET, Ludhiana attended meeting of examination of the subject "Minimizing Post-harvest Losses" at Parliament House, New Delhi on August 20, 2015.
- Dr RK Gupta, Director, ICAR-CIPHET attended 44th Meeting of the Research Council of CISR-CSIO held on September 6, 2015 at CSIR-CSIO, Chandigarh.
- Dr RK Gupta, Director, ICAR-CIPHET attended XI Workshop of AICRP on PET organized at SKUAST, Srinagar during September 10-12, 2015.
- Dr RK Gupta, Director, ICAR-CIPHET attended 87th ICAR Foundation Day and National Conference of KVKs at ICAR-RCER, Patna held on July 25, 2015
- Dr SK Nanda, I/c PC (PET) attended the Brain Storming Workshop on "Planning & Implementation of Farm Mechanization & Agro - processing in NEH Region" on August 7, 2015 at ICAR RC NEH Region, Umiam (Meghalaya).
- Dr SK Nanda, I/c PC (PET) and Dr Mukund Narayan, Technical Officer visited to ICAR-CIRG, Makhdoom, Mathura for reviewing the research progress of cooperating centre during August 17-20, 2015.
- Dr SK Nanda, I/c PC (PET), Er Indore Navnath Sakharam, Dr Mukund Narayan and Sh. Vishal Kumar visited to SKUAST-K, Srinagar for organising the XI Biennial Workshop of AICRP on PET during September 10-12, 2015.
- Dr Rahul K Anurag, Scientist participated in progress review meeting of MoFPI for Food Testing Laboratories at PHD Chambers of Commerce, August Kranti Marg on August 24, 2015.
- Dr Swati Sethi and Er Chandan Solanki attended the first workshop of Nodal Officers of KRISHI at NASC complex, New Delhi during August 4-5, 2015.
- Dr AU Muzaddadi attended project review meeting and orally presented the progress report of the project "Studies and refinement of live-fish carrier system for mass transportation of table fish, brooders, fingerlings and aquarium fishes" funded by NFDB, Hyderabad on September 30, 2015 at NFDB, Hyderabad.
- Dr AU Muzaddadi participated in International Conference on "Food Processing and Analysis" organized by Select Biosciences India Private Ltd. during August 20-21, 2015 in Hotel Shivalik view, Chandigarh, India and delivered an invited lecture on "Value added and functional food from fish and fishery products".
- Er Sakharam Jagan Kale Scientist (ASEM) attended and participated in Biannual Workshop of AICRP on PET held from September 10-12, 2015 at SKUAST, Srinagar.
- All staff members of Abohar campus of CIPHET attended meeting with Hon'ble DDG (Hort. Science), Dr NK Krishna Kumar, ADG (Hort. Science), Dr T Janakiram and Dr PK Pandey (Principal Scientist) on September 25, 2015 at ICAR-CIPHET Abohar campus.

- Sh. Avtar Singh, Assistant, Sh. Ashwani Kumar, UDC and Sh. Rajinder Kumar Raheja, LDC attended training programme on “Knowledge for Enhancement Training Programme on HR and Payroll module” during September 01-04, 2015 at ICAR-IASRI, New Delhi.
- Sh. Tarsem Singh Purba, Assistant, Sh. Mohan Lal, Assistant and Sh. Gurdial Singh, UDC attended ICAR-ERP Training programme on 'HR and Payroll module' during September 22- 24, 2015 at ICAR-IASRI, New Delhi.

Minister of Agriculture, Shri Radha Mohan Singh, inaugurated the Agricultural Exhibition as Chief Guest. He also laid foundation stone of National Research Centre on Integrated Farming (ICAR-NRCIF). The mandate of the institute is to conduct research on the development of location specific integrated farming system models for diverse agro-ecological conditions specially flood and wetland situation with emphasis on rice, sugarcane and banana.

EXHIBITIONS

- ICAR-CIPHET showcased and demonstrated CIPHET



- ICAR-CIPHET showcased and demonstrated CIPHET developed technologies in Kisan Mela, Agro Industrial Exhibition at PAU, Ludhiana campus during September 25-26, 2015.

developed technologies in “Agricultural Exhibition 2015” at SSB Ground, Pipra Kothi, Motihari (East Champaran), Bihar during August 20-21, 2015. Union

VISITS

- **A delegation of thirty eight extension functionaries from Kenya, Liberia and Malawi visited ICAR-CIPHET, Ludhiana**
- A delegation of thirty eight extension functionaries from



Kenya, Liberia and Malawi attending US-INDIA-AFRICA Triangular International Training Programme on "New Dimensions in Agricultural Extension Management", at National Institute of Agricultural Extension Management (MANAGE), Hyderabad along with team leader Dr VP Sharma, Director-Information Technology, Documentation & Publications, MANAGE visited ICAR-CIPHET, Ludhiana on July 29, 2015. Dr SN Jha, I/c Director, ICAR-CIPHET, Ludhiana and PC (AICRP on PHET) gave an insight about the institute and AICRP on PHET. Dr SK Nanda, Head, FG&OP Division and I/c PC (AICRP on PET) told the delegates about processing and value addition to food grains, oilseeds and fish. He also informed them about the activities of AICRP on PET. A short video about research activities of ICAR-CIPHET was also shown to the delegates. The delegation interacted with the scientists of the institute and discussed about post-harvest processing and value addition to crops of their country and possibility of future collaborations in research, technology dissemination and entrepreneurship with the institute. Delegates have expressed keen interest in the activities of agro-processing centre of the institute. The visit was coordinated by Dr Sangita Bansal, OIC, PME Cell.

- Dr K Alagusundaram, DDG, Agricultural Engineering Division, ICAR visited ICAR-CIPHET, Ludhiana on 10th July and Abohar campus on 11th July, 2015 and interacted with the staff. He inaugurated the summer school on "Advances in processing, value addition and by product utilization of livestock and fish produce" (July 08-28, 2015) on 10th July 2015. On this occasion, institute publication "CIPHET at a Glance" and Compendium of Summer School were released. Inauguration was followed by interaction with the ICAR-CIPHET Scientists. Hon'ble Deputy Director General addressed the gathering with his thought-provoking speech and encouraged everybody to serve the society with full dedication. He also reviewed the performance of scientists individually and visited the laboratory of different Divisions, Units, APC and Workshop.
- Dr Harinder PS Makkar, Animal Production and Health Division, FAO, Viale delle Terme di Caracalla, Rome, Italy visited to ICAR-CIPHET Ludhiana on 11th August 2015. During his visit he discussed with the Director, ICAR-CIPHET and Dr SK Nanda, Head FG&OP, regarding research and activities in the area of post harvest losses and their management.



LINKAGES DEVELOPED

- An innovative Scheme “Mera Gaon Mera Gaurav” (My Village My Pride) of Hon'ble Prime Minister of India is also started in the Institute during this quarter. The objective of the scheme is to provide farmers with required information, knowledge and advisories on regular basis by adopting villages. Dr D N Yadav, Sr Scientist, TOT Division, is nominated as Nodal Officer for the Scheme at ICAR-CIPHET. Ten teams of scientists were constituted in this regard. The team of scientists visited the villages nearby Ludhiana and interacted with different village officials/ farmers and informed them about the Scheme. The ICAR-CIPHET has yet adopted 38 villages in Ludhiana district. The Scheme is suppose to promote the direct interface of scientists with the farmers to hasten the lab to land process especially in the area of Post-harvest sector.

AWARDS

- नगर राजभाषा कार्यान्वयन समिति, लुधियाना की बैठक में 2014-15 के दौरान भा.कृ.अनु.प-सीफेट, लुधियाना को राजभाषा में श्रेष्ठ कार्य निष्पादन के लिए दिनांक 26.08.2015 को पुरस्कार प्रदान किया गया।

JOINING/PROMOTIONS

- Dr. Sandeep Mann joined as Principal Scientist (Agricultural Structures & Environmental Control) at ICAR-CIPHET, Ludhiana on 07.09.2015.

- Dr. Dattatreya M. Kadam joined as Principal Scientist (Agricultural Process Engineering) at ICAR-CIPHET, Ludhiana on 24.09.2015.
- Sh Manoj Kumar, SSS has joined this Institute on 03.09.2015.

TRANSFERS

- Sh Shalik Gram Dweidi, SSS was transferred from ICAR-CIPHET, Ludhiana to ICAR-NBIAM, Mau on August 03, 2015.

EDITORIAL BOARD



Dr R K Gupta



Dr S K Nanda



Dr D N Yadav



Dr Sangita Bansal



Ms Monika Sharma



Dr A K Jaiswal

Published by : Dr R K Gupta, Director, ICAR-Central Institute of Post-Harvest Engineering and Technology, PO: PAU Campus, Ludhiana 141 004 (Punjab)
Ph: 0161-2308669, Fax: 0161-2308670, www.ciphnet.in, E-mail: director.ciphnet@icar.gov.in