

Produce

Process

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ICAR-CIPHET-NEWS

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सीफेट समाचार

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FROM THEDIRECTOR'S DESK



Welcome to the 2nd issue of quarterly newsletter of ICAR-CIPHET for the year 2016. It is a matter of great honour and pride that AICRP on PHE&T of Institute has received the prestigious Chaudhary Devi Lal Outstanding All India Coordinated Research Project (AICRP) Award for its outstanding performance in terms of linkages, research outputs and its impact in the area of Post-Harvest Technology. In this quarter, efforts made in the area of post-harvest research led to the development of fan with fogger having mechanism for chilled water circulation for cooling animals during summer and designing of a hand operated wadi forming system. Among the new process, products developed are nutritious muffins, functional bread incorporating microcapsules having flaxseed-garlic oil and value added products from pear. Beside this, a number of activities and programmes were also organized. A 21 days ICAR sponsored Summer School entitled "Engineering and Technology Innovations in Developing Health Foods" was organized during June 08-28, 2016 with the objective of bringing together multi-disciplinary researchers/scientists working in food sector and to apprise them of the recent developments in the field of health foods. A fourteen day's training programme on 'Handling and operations of instruments related to food testing' was organized for technical staff of College of Agricultural Engineering & Post-Harvest Technology, Gangtok, Sikkim. Agri Business Incubation (ABI) Centre at ICAR-CIPHET Ludhiana has organized a launch workshop and a Students Crazy Business Ideas for trainee students during June 29, 2016, and a sensitization workshop on Entrepreneurship Development for Students of North Indian Universities on July 5, 2016 in collaboration with ICAR-NAARM, Hyderabad. To refine and discuss necessary corrections/ modifications required in Data Entry Software, AICRP on PHET organized technical session on ICAR-FCI project entitled "Study on determining storage losses in food grains in FCI and CWC warehouses and to recommend norms for storage losses in efficient warehouse management" at IASRI, New Delhi on April 22, 2016. Beside this more than twenty five B.Tech. students from various institutions had undergone one month training programme at both the campuses of ICAR-CIPHET.

25th Institute Research Council Meeting was also organized in this quarter on May 17-19, 2016 at Ludhiana Campus. Dr S M Ilyas, Former Director, ICAR-NAARM Hyderabad, Prof. B S Khatkar, Dean & Chairperson, Deptt. of Food Technology, Guru Jambheshwar University, Hissar and Dr W S Dhillon, Former Director, PHPTC, PAU, Ludhiana were the invited experts. Twenty new project proposals targeting various post-harvest processing problems and by-product utilization from different food processing were presented. Six newly recruited ARS Scientist had joined our institute in this quarter. I congratulate and welcome them to ICAR-CIPHET family.


(R. K. Gupta)

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| ❖ From the Director's Desk | ❖ Books/Popular Articles/ Bulletins | ❖ Exhibitions |
| ❖ Sectoral News | ❖ Consultancy/ Licensing of Technology | ❖ Visits |
| ❖ Institute News | ❖ Programmes Organized | ❖ Linkages Developed |
| ❖ Research Highlights | ❖ Trainings | ❖ Awards/ Joining/ Additional charge |
| ❖ Papers Published/ Presented | ❖ Programmes Participated | ❖ Promotions |

SECTORAL NEWS

MoFPI integrating farmers & food processing industry for RTE, RTC products

Ministry of food processing industries (MoFPI) is now working to support farmers and food processing industry in integrating, to maximize the domestic demand for value-added ready-to-eat and ready-to-cook products among others. In this regard, the MoFPI is now giving boost to support infrastructure and easy access to credit. This includes the setting up of agro processing clusters which are miniaturized versions of the mega food park. For small-sized food processing units, the government is finalizing the rules to provide Rs. 5 crore subsidy which is 35 per cent of the project cost. This would bolster the small companies to storm into the food processing sector. For agro processing clusters, the government will provide Rs 10 crore subsidy with no restriction on minimum area of land but mandates that at least five food processing companies should come under this with each of the units committing an investment of Rs 25 crore. FDI is expected to spur the front-end operations with supply chain inputs. In the food retail sector, the government is ensuring that 40 per cent of the products could be sourced locally and this was an opportunity for our large, medium and small players to provide the required value-addition.

Time to digitize the supply chain

Agriculture is a major sector which provides a good amount of foreign exchange to the government. The sector will be boosted further if commercial support and identity is provided to it. In India farmers get only 35% returns on their produce. If warehouses and cold chain facilities are available, the value can be 50%. Presently only 10% of the total cold chain facility is contributed by organized players and about 65% of the total cold storage capacity of India is concentrated in Uttar Pradesh and West Bengal. Due to poor storage of agricultural produce about 70% of the losses take place. There is also poor transport infrastructure, and 30% of the expenses are for fuel cost. Currently, it is a long and fragmented supply chain. During the Agri Supply Chain Conference-2016 held in Mumbai, Anil K Chaudhary, founder managing director and chief executive officer, National Bulk Handling Corporation (NBHC) also said, "The country has huge potential in the agricultural sector. It can be an agricultural hub of the world with so many investment plans made available to the sector by various banks and government and private institutions. Many banks are at the forefront in lending investment in this sector. Farmers and entrepreneurs can approach banks, which can give the sector a commercial objective as well as a social one. The disbursal of the warehousing industry is estimated to be approximately Rs 43,000 crore and is growing at 35-40 per cent annually. Though there is more scope for development, the need of the hour is to make proper infrastructural changes and digitize the supply chain, besides ensuring proper pricing and total transparency.

Digitization can make the warehousing and supply chain more efficient. To digitize, the foremost thing to be done is to standardize the product, make it more mechanical and streamlining of the mortgage, stock procurement, warehousing receipt, etc. This will not only bring efficiency in the sector, but also give easy access to the farmers for loans against warehousing and products. Nowadays, there are e-mandis (e-markets) too. This makes it easy for farmers. It is time to open our minds and broaden our horizons. It is the need of the hour that farmers and entrepreneurs opt for commodity banking like sugar. Supply chain and procurement should support the commodity finance and not isolate it. This will boost the agricultural economy.

Centre allows 100 per cent Foreign Direct Investment (FDI) in the food processing sector

The Centre's decision to allow 100 per cent Foreign Direct Investment (FDI) in the food processing sector is likely to boost agro-industrial investments in Maharashtra. The state government also believes that the decision would help them override the agrarian crisis in the state. The Union Ministry of Food Processing has listed Maharashtra among the four states with potential to derive maximum benefits from policy reforms in food processing. The other states are Punjab, Haryana, and Andhra Pradesh. Maharashtra also leads in horticulture produce in the country, with 40 per cent of total horticultural produced. According to NABARD status report for year 2015-16: "The food processing units would help Maharashtra to process 40 per cent vegetables and 30 per cent fruits, which are wasted due to lack of infrastructure. The inadequate food processing sector also is a primary reason for poor remunerations farmers get. They cannot bargain in absence of robust market linkages."

INSTITUTE NEWS

RESEARCH HIGHLIGHTS

Pear toffee from pear pomace

Restructured fruit such as fruit toffee can be a useful substitute for natural fruit as well as its by-product obtained after juice processing. A tasty and soft pear toffee could be prepared by mixing 30% sugar, 0.25 % pectin and 1000 ppm potassium metabisulphite with smoothly blended pear pomace. The process comprised of boiling the pear pomace at low flame till its volume reduced to half and weighed quantity of sugar was added by continuous stirring and then weighed quantity of pectin was added to the mixture of pulp with small quantity of sugar for uniform distribution of pectin in the pulp mixture. The ready to dry mixture was then poured into aluminum trays smeared with glycerol. The product was



Pear toffee from pear pomace

kept in mechanical dehydrator and dried at 60°C for 8 hours. A tray load of 8 mm initial thickness was found best for production of good quality pear pomace bar. The dried mass was then rolled back manually to form round balls of 1.5-2.0 mm diameter. Prepared toffee can be successfully stored for more than six months in aluminium laminate under ambient condition.

Design and development of hand operated wadi forming system

Wadi is valuable ethnic unfermented/fermented solid foods of Indian origin, highly nutritive product which is liked all over India and still made un-hygienically at cottage level.

Wadi/Wari/ Wadi (plural: warian) is a hollow brittle cake of 2–30 cm² spread and 1–30 g in weight, consists of pulse (black, gram/ green gram) dough. It has lot of variations in composition, nutrient status and manufacturing procedure differing from area to area and from processor to processor. *Wadis* are generally prepared by hand and one skilled person can make at the most 30 kg of wet *wadi* per day. So by this way manufacturing of *wadis* involve lot of time, labour and human drudgery. The hand operated *wadi* dropping machine provides a simple way of producing even sized *wadis* from green gram and black gram at village/cottage level. The hand operated *wadi* dropping machine has been developed which consists of a hopper and frame. The overall dimension of the machine is 540x260x340 mm. Hopper dimension is 310x70x129 mm and the hopper angle has been kept at 25 degree which leads to easy discharge of *wadi* batter. There are two grooved rollers present inside the hopper, connected to round bars. The bar assembly are connected to each other by a set of spur gears (having 12 nos. tooth) mounted on the frame. Another end of a bar is connected to a handle. The bars are rotated by the help of handle through ball and bearing system, due to which one gear drives another one and the two grooved rollers rotate simultaneously in opposite direction to push the pulse batter through the openings of specific shape and size to discharge the *wadi* through the holes present below the hopper. There are 7 round holes of diameter 15mm designed below the hopper through which *wadi* batter passes. As soon as the batter passes through the holes a cut is given by a



scraper/cutter/blades of stainless steel operated manually through a handle leading to 7 droppings per cut. The handle has to be operated back and forth for giving the required cut when the rollers are rotated by the handle. The capacity of the machine has been estimated to be 15 to 18 kg of *wadi* per hour. There is also option for making different shapes of *wadi* by changing the shape of the holes. This is a handy and compact machine which is suitable for small scale industries. Also it reduces drudgery and it is very easy to operate. The development of this hand operated *wadi* dropping machine will contribute towards food safety and hence increase the value of the product.

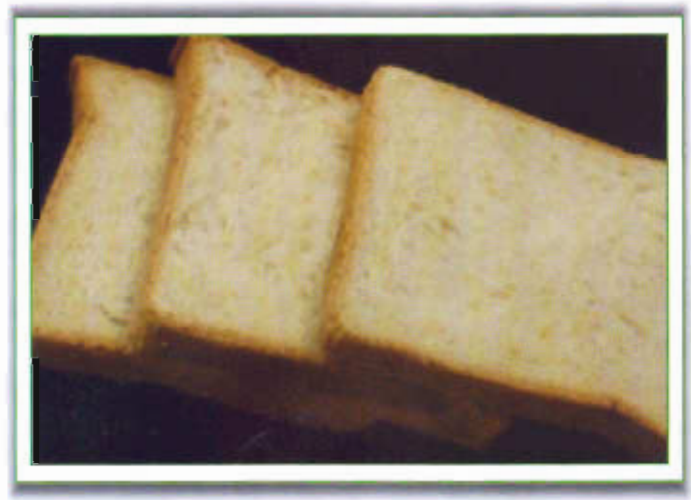
Nutritious muffins utilizing sunflower meal

Optimization of the level of food materials (viz. sunflower meal and refined wheat flour) was carried out for development of nutritious protein rich muffins using response surface methodology. Box-benken design of experiments was used to design different experimental combinations considering 10, 25, 40 g sunflower meal 60, 75 and 90 g refined wheat flour. Quality attributes such as specific gravity of batter, texture, colour, baking height, weight loss, protein content, fat, total minerals, iron, calcium, and sensory characteristics were the dependent variables for the study. The level of different studied food materials i.e. refined wheat flour and sunflower meal influenced the colour quality, nutritional quality and textural properties but sensory characteristics were statistically similar. Optimized level of food materials for nutritious muffins consisted of 40 g sunflower meal and 70.21 g refined wheat flour. This muffin sample showed 1.07

specific gravity, 38.92 mm height. Weight loss after baking was 12.04% with overall desirability of 0.83. The hardness, springiness, total protein, total minerals, calcium, and iron content in this muffin sample were 24.53N, 0.719 mm, 11.68%, 2.25%, 142.58 mg/100 g and 4.57 mg/100 g respectively with overall sensory acceptability as 7.72. This study indicated that sunflower meal could certainly increase the protein content in muffins to fulfill the demand of nutritious muffins by health conscious consumers.

Functional bread with flaxseed and garlic oil in microcapsules

Microencapsulation is a process of building a functional barrier between the core and wall material. To avoid chemical and physical reactions and to maintain the biological, functional, and physicochemical properties of flaxseed and garlic oil, microcapsules were prepared and added in the bread. These microcapsules were added at the rate of 5 g/100 g of dough during bread preparation that contains 2.5g of individual oil, for development of functional bread. Level of flaxseed oil, garlic oil and flaxseed-garlic oil microcapsules was based on their RDA. There was no significant difference in sensory profiles for all the samples when compared individually during 7 days of storage. Overall acceptability (7.21 ± 1.39 to 7.02 ± 1.26) for flaxseed oil microcapsules incorporated bread was comparatively similar to the control bread (7.79 ± 0.86 to 7.92 ± 0.55) whereas the combination bread (flaxseed-garlic oil) scored slight less (6.98 ± 1.37 to 6.33 ± 1.46) during storage.



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PROGRAMMES ORGANIZED

21 days ICAR sponsored summer school

- ICAR-Central Institute of Post-Harvest Engineering and Technology, Ludhiana organized a 21 days ICAR sponsored Summer School on “Engineering and Technology Innovations in Developing Health Foods” from June 08-28, 2016. Dr RK Gupta was the Course Director and Dr Sangita Bansal and Er Dhritiman Saha were the Co-Course Directors of the summer school. The course was designed to give participants a complete exposure to the different technologies and engineering interventions required for processing of health foods. In addition to lectures and practical sessions by experienced scientists from ICAR-CIPHET as well as other renowned institutions across the country, this summer school also included various institution/ industry visits like CSIR-IHBT, Palampur; PBTL, Mohali; Verka Milk Plant, Ludhiana and Cremica Food

Industry Pvt. Ltd, Phillaur. The main objective for organizing this summer school was to bring together multi-disciplinary researchers/scientists working in food sector and to apprise them of the recent developments in the field of health foods. Twenty Five participants from thirteen states and from different disciplines attended the summer school. This course provided an opportunity to the participants to interact with subject-experts and fellow workers from different parts of the country and to update themselves with the latest information in the field.

25th Institute Research Council (IRC) Meeting held

- The 25th Institute Research Council Meeting was held during May 17-19, 2016 at ICAR-CIPHET, Ludhiana under the Chairmanship of Dr RK Gupta, Director, ICAR-CIPHET, Ludhiana. Dr SM Ilyas, Former Director, ICAR-NAARM Hyderabad, Prof BS Khatkar, Dean & Chairperson, Deptt. of Food Technology, Guru Jambheshwar University, Hissar and Dr WS Dhillon, Former Director, PHPTC, PAU, Ludhiana were the invited experts for the meeting. Dr Sangita Bansal, OIC, PME Cell & Member Secretary, IRC formally welcomed the experts, Director, Project Co-ordinators, Head of Divisions and scientists to the IRC meeting. Dr RK Gupta, Director ICAR-CIPHET welcomed the experts and all scientists in the meeting. He informed the



house that the new project concepts were presented in the RAC Meeting held during March 21-22, 2016 and further refined as per the suggestions given by the RAC Chairman and Members. Dr SM Ilyas, expressed his happiness towards the progress of the Institute and said that the Institute has grown enough to take up challenging research in the country. He said that it's high time to put concerted efforts for establishment of ICAR-CIPHET as a brand nationally as well as internationally. Prof BS Khatkar appreciated the work done by ICAR-CIPHET in the past and emphasized that researches should be led by institute rather than individual scientists. Dr WS Dhillon, Former Director, PHPTC, PAU, Ludhiana said there are huge post-harvest losses

in fruits and vegetables and ICAR-CIPHET could contribute significantly in reduction of these losses. Dr Sangita Bansal, Member Secretary, IRC presented the Action Taken Report (ATR) on suggestion/recommendation of the last IRC held during June 06-07, 2015. After thorough deliberations and some modifications, ATR was accepted. Salient achievements of each divisions were thereafter presented by the respective Head of Divisions, followed by presentations of new project proposals (RPP-I), ongoing projects (RPP-II) and completed projects (RPP-III).

Agri Business Incubation (ABI) Centre Launch Workshop

- Dr Nawab Ali, Former DDG (Engg), ICAR, New Delhi



inaugurated Agri Business Incubation (ABI) Centre launch workshop at ICAR-CIPHET on June 28, 2016. Dr RK Gupta, Director, ICAR-CIPHET welcomed the chief guest of the occasion. Project proposal entitled “Agri-Business Incubation (ABI)” is approved for ICAR-CIPHET, Ludhiana under NAIF of ICAR, New Delhi. Agri Business Incubation (ABI) Centre team Dr DM Kadam, Pr. Scientist (APE) & PI, Dr Ranjeet Singh, Senior Scientist (APE) & Co-PI, Mrs Surya Tushir, Scientist (Agril. Microbiology) & Co-PI, Er Indore Navnath Sakharam, Scientist (ASEM) & Co-PI organized the launch workshop. 50 participants attended the workshop. ABI unit of ICAR-CIPHET will serve the budding entrepreneurs so that they could get management and marketing support along with scientific inputs and incubation facilities. Institute has provision to provide its pilot plant facilities to the entrepreneurs as incubates which will help to protect newcomers for high investment risk at initial stages. Once incubate is confident then we insist him/her to start his/her own factory/industry and all possible help will be extended to them.



Technical session organized by AICRP-PHET

- To refine and discuss necessary corrections/modifications required in data entry software, AICRP on PHET organized one technical session on “Study on determining storage losses in food grains in FCI and



CWC warehouses and to recommend norms for storage losses in efficient warehouse management” under ICAR-FCI project at IASRI, New Delhi on April 22, 2016.

Workshop on Crazy Business Ideas for B.Tech Students

- Agri Business Incubation (ABI) Centre at ICAR-CIPHET, Ludhiana organized one day workshop on “Students Crazy Business Ideas for trainee students” on June 29, 2016. Dr Ashok Kumar, ADR, PAU, Ludhiana was the Chief Guest of the programme. Around 30 participants attended this programme. About 10 trainee students presented their crazy business ideas and best three were awarded.

हिन्दी कार्यशाला

- सीफेट, लुधियाना में 25 जून 2016 को हिंदी कार्यशाला का आयोजन किया गया। इस कार्यशाला में डॉ. अनिल कुमार गुप्ता, सहायक प्रबंधक



(राजभाष), न्यू इंडिया इश्योरेंस कंपनी लिमिटेड मंडल कार्यालय-1, जालंधर, पंजाब ने 'सूचना प्रौद्योगिकी में हिंदी' और 'साधारण टिप्पणियां एवं वाक्यांश' विषयों पर अपनी प्रस्तुति देकर सभी को लाभान्वित किया।

TRAININGS ORGANIZED

- A training on 'Handling and Operations of Instruments Related to Food Testing' was organized for technical staff and M.Tech students from College of Agricultural Engineering & Post- Harvest Technology, Ranipool, Gangtok, Sikkim during June 04-18, 2016. It was sponsored by Central Agricultural University, Imphal. The training consisted of lectures involving the explanation of the principles of food testing and basic as well as some advanced instrumentation involving, Gas Chromatography, HPLC, Differential Scanning Calorimetry and Atomic absorption Spectrophotometer. The practical's involved hands on these advance equipment's and carrying out analysis. An exposure visit to the Punjab Biotechnology Incubator-Agri & Food Testing Laboratory was also made to show the functioning of a national level food testing laboratory. The training was coordinated by Dr Armaan U Muzaddadi, Sr. Scientist, and Dr Rahul Kumar Anurag, Scientist. Experts involving ICAR-CIPHET scientists delivered lectures and trained the participants on various equipment's involved in food testing.

Farmers training

- As per the continual efforts by ICAR-CIPHET in



providing the farmers training needs, two progressive farmers namely Shri. Dhunda Singh & Smt. Bachno Devi from District Kathua, J.K were provided three days training on 'Handling and processing of turmeric' during June 2-4, 2016. Farmers were trained on basics and various operations involved in turmeric processing, handling, cleaning and processing of raw turmeric, estimation of moisture level in raw turmeric, drying of turmeric and packaging techniques for turmeric powder.

Students training

- 25 B. Tech. (Agri. Engg.) students from various institutes (CAE, JNKVV, Jabalpur-8, CAE&T, PDKV, Akola-5, CAET, Junagarh-5, CT&E, MPUAT, Udaipur-





5, UAS, Raichur-1, MCM, Chandigarh-1) trained for one month summer training during June 01-30, 2016 at ICAR-CIPHET Abohar.

- An orientation programme for B.Tech student trained at ICAR-CIPHET was organized to give an overview of

institute, facilities of the workshop, pilot plants, agro-processing center, various laboratories of the divisions and research work carried out by scientists of the institute.



PROGRAMMES ATTENDED

- Dr SK Nanda, I/c PC, AICRP on PET visited the Almora centre and project sites (Bhagartola and Mukteshwar) during April 24-26, 2016.
- Dr Anil Kumar Dixit, Er Arun Kumar and Er Sukreeti Sharma participated in 3rd meeting of Indian Grain Storage Working Group (IGSWG) on Grain Storage & Preventing Post-Harvest loss held at Hotel The Ashok, New Delhi during April 22-23, 2016.
- Mr Vijay Singh Meena, Scientist (Horti. & FS) attended world day to combat desertification on June 17, 2016 at Maharishi DAV college, Abohar. Programme was organized by Department of Forest, Punjab.
- Sh Vishal Kumar, Sr Technical Assistant, attended training programme on "Implementation of NIC's e-Procurement Solution" during June 16-17, 2016 at IARI, New Delhi.
- Sh Pawan Kumar, AAO and Sh Sanjay Kumar Gaur, LDC, ICAR-CIPHET, Abohar attended a training programme on Knowledge Enhancement entitled "Payroll & HR Methods" organized by IASRI, New Delhi during April 18-19, 2016.

EXHIBITIONS & VISITS

- ICAR-CIPHET participated in Punjab Fish Festival-2016 during April 24-25, 2016 at PAU Ground. Fisheries related technologies developed by ICAR-CIPHET including Live Fish Carrier System, Fish Descaling Tools and Canning of Rohu were showcased and demonstrated. The fish farmers and entrepreneurs showed interests in such technologies. Simultaneously



scientist-farmer/entrepreneurs meet was held and Dr Armaan U Muzaddadi, Sr Scientist (Fish Processing Technology) delivered a lecture on "Fish handling and transportation" and owned award of honour in the meet. This meet was organized by Department of Fisheries, Govt. of Punjab and National Fisheries Development Board, Hyderabad during April 24-25, 2016 in PAU/GADVASU, Ludhiana.

Visits

- His Excellency Eng. Afonso Pedro Canga, Minister of Agriculture & Rural Development, Republic of Angola along with his team visited ICAR-CIPHET, Ludhiana on May 27, 2016. The video of ICAR-CIPHET was shown to all the delegates. A presentation on brief outline about achievements of ICAR-CIPHET was also made for the benefit of visitors of Angola. The Angolan team had discussion with the team of scientist of ICAR-CIPHET about possible adaptation of few ICAR-



CIPHET developed post-harvest technologies and possible area of research. Minister of Agriculture & Rural Development, Republic of Angola had expressed his happiness about research and development done by ICAR-CIPHET. The visiting dignitaries have expressed keen interest in extruded products preparation in laboratory, PHT equipment and machinery display hall and APC during their visit.

- Dr K Alagusundaram, DDG (Agri. Engi.), ICAR, New Delhi visited ICAR-CIPHET, Ludhiana on July 08, 2016. During his visit he interacted with scientists and reviewed the progress under various ongoing research projects. Dr Sandeep Mann, Pr Scientist demonstrated the hand operated *Wadi* forming system to DDG



Farmers visit

- A group of 14 farmers and 3 officer from Manipur state visited ICAR-CIPHET, Ludhiana under Farmers Inter-state training cum-exposure visit on April 2, 2016. Visit was sponsored by Department of Horticulture, Manipur. Dr Arvind Jaiswal, Scientist, demonstrated and explained various process, machinery developed at the Institute, pilot plants in Agro-Processing Centre.

Students visits

- 37 B.Tech Students (37) from Indian Institute of Crop Processing Technology, Tamil Nadu along with two



faculty members visited ICAR-CIPHET on April, 4, 2016. Various scientists of the institute demonstrated and explained process machinery, pilot plants and testing equipment's of ICAR-CIPHET laboratories.

- 38 Students and two faculty members from Kerala Agriculture University, Tavanur visited ICAR-CIPHET on April 21, 2016. They were shown institute laboratories and Agro-Processing Machinery of the Institute.
- 17 M.Sc Vegetable Science students from Punjab Agricultural University visited institute and were shown Non-Destructive Quality Evaluation Laboratory, Food Testing Laboratory and Agro-Processing Centre.



Visit of Participants from ICAR-ATARI, Ludhiana



- Dr. Pragya Bhadaria from ICAR-ATARI, Ludhiana along with four officers participating in Management development Programme being organized by ICAR-ATARI, Ludhiana visited ICAR-CIPHET on May 25, 2016. The visitors were shown institute developed technologies and technology transfer process was explained; along with demonstration of ICAR-CIPHET commercialized technologies.
- Er. Manoj Kumar Mahawar and Er. Bibwe Bhushan scientists visited Punjab Agro Juice Limited plant, Alamgarh” and addressed the problems occurred in the tunnel type dryer in the plant used for the drying of citrus peels.

AWARDS

- AICRP on PHET received the Chaudhary Devi Lal Outstanding All India Coordinated Research Project (AICRP) Award for outstanding performance in terms of linkages and research output and its impact. Award was presented by Hon. Agriculture Minister Sh Radha Mohan Singh in a ceremony function at Delhi held on July 16, 2016.



Dr SN Jha, ADG (PE) receiving Chaudhary Devi Lal Outstanding All India Coordinated Research Project (AICRP) Award

- Dr AU Muzaddadi, (Sr Scientist) Transfer of Technology Division, ICAR-CIPHET received Award of Honour in the Punjab Fish Festival-2016 held during



April 24-25, 2016 at College of Agriculture, PAU Ludhiana.

- Dr Manju Bala, Sr Scientist, received 'Young Scientist award' for her outstanding contribution in the field of Biochemistry from Society for Scientific and Development in Agriculture and technology, Meerut, UP India on June 19, 2016.

- Dr K Narsaiah was elected as Fellow of Institution of Engineers (India).
- Dr Devinna Vaidya, Dr Manisha Kaushal, Dr Anil K. Verma, Dr Anil Gupta and Dr Anil Dixit conferred with Dr Rajendra Prasad Puruskar for technical books in Hindi (Processing of Plum and Apricot) in Agricultural and Allied Sciences 2015.

NEW JOINING

- Dr Renu Balakrishnan, has joined ICAR-CIPHET, Ludhiana on April 11, 2016 as Scientist. Her ARS discipline is Agricultural Extension. She did her bachelor's degree in Agriculture from College of Horticulture, Kerala Agricultural University, Thrissur. She did her Masters and Ph.D. in Agricultural Extension from Indian Agricultural Research Institute, New Delhi.



- Dr Khwairakpam Bembem has joined as Scientist (Home Science) at ICAR-CIPHET, Ludhiana on April 11, 2016. She has Masters in Food & Nutrition from UAS, Bangalore and PhD degree in Food and Nutrition from Punjab Agriculture University, Ludhiana, Punjab.



- Er Kalnar Yogesh has joined as Scientist (Agricultural Process Engineering) at ICAR-CIPHET, Ludhiana on April 11, 2016. He has completed his Master of Technology in Processing and Food Engineering from CAET,



Junagadh Agricultural University, Junagadh, Gujarat.



- Sh. Vikas Kumar has joined as Scientist (Fish Process Technology) at ICAR-CIPHET, Ludhiana on April 11, 2016 after successful completion of 3

months FOCARS training at ICAR-NAARM, Hyderabad. He holds Master of Fisheries Science (M.F.Sc) degree in Fish Processing Technology from Tamilnadu Fisheries University, Nagapattinam.

- Dr Pankaj Kumar Kannaujia, joined as Scientist (Vegetable Science) at ICAR-CIPHET, Ludhiana on April 11, 2016. He has Masters and PhD degree in Post-Harvest Technology from IARI, New Delhi.



- Dr Narendra Negi, joined as Scientist (Fruit Science) at ICAR-CIPHET, Ludhiana on April 11, 2016. He has a master degree from Kerala Agricultural University, Kerala and Ph.D. degree from Dr. Y.S. Parmar University of Horticulture & Forestry, Solan, H.P.



PROMOTION

- Dr D. N. Yadav (Senior scientist), Dr Anil Kumar Dixit (Senior scientist) and Dr Pranita Jaiswal (Senior scientist) got promoted to next higher grade of Principal scientist under revised CAS in the pay scale of 37400-67000/- + RGP of Rs 10000/-.

TRANSFERS

- Sh Rajinder Kumar Raheja, LDC was transferred to ICAR- ATARI, PAU on deputation basis to the post of UDC for one year on May 31, 2016.

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