



# Central Institute of Post Harvest Engineering & Technology Ludhiana

**OUR SLOGAN: PRODUCE, PROCESS AND PROSPER**

**CIPHET E – Newsletter for October, 2009  
Vol. 4 No. 10**

## Director's Column



Dear All,

The most important event this month in the history of CIPHET was visit of Hon. Secretary DARE and DG ICAR Dr. Mangala Rai ji to inaugurate the newly constructed laboratory building and bless and encourage the staff of CIPHET to meet the expectations of the nation for developing indigenous technology for post harvest management and value addition of our crop wealth.

The brain storming session on Post Harvest Technology of Sugarcane including Jaggery and Khandsari under AICRP on PHT at Indian Institute of Sugarcane Research, Luknow brought out many important issues to improve the research agenda and overall status jaggery and khandsari industry.

India has always fascinated western world due to its rich culture and heritage. Now the interest has even spread to the success of women entrepreneurs due to their efforts through self help groups. An interactive meet was arranged at the CIPHET between the delegates of US based Women's Earth Alliance (WEA) and local women entrepreneurs for exchanging information and knowledge. Around 15 foreign delegates from WEA participated in the meet. The delegates from WEA, an organization engaged in developing entrepreneurship and protecting environment got information regarding women entrepreneurship in Punjab. The women entrepreneurs trained by CIPHET and Punjab Agricultural University shared their experiences about how they are running business by forming self help groups and individually.

We wish to specially acknowledge the interest of the state of Uttarakhand in training all their Horticultural officers (so far 42 officials) of the Directorate of Horticulture and Food Processing on Post Harvest Management of Fruits and Vegetables at CIPHET Abohar. This will definitely help in upgrading the functioning of rural food processing centres and motivate the rural entrepreneurs to take up agro enterprises with the infrastructure and training help from these centres.

This month CIPHET has shown leadership in live stock produce processing also by organizing first of its kind winter school on post harvest processing and value addition of livestock produce. The information disseminated during this winter school will help in upgrading the hygienic standards in the existing meat and fish processing & handling practices through concerted efforts of Human Resource from across the country who participated in this winter school.

CIPHET scientists participated in second banana conference and exhibited the banana comb/hand cutter technology, which was highly appreciated due to changing packaging requirements of banana in the form of hands rather than whole bunch. We tried to motivate the entrepreneurs in this area to take up banana processing in the form of Jam due to year round availability of this fruit at a very low cost.

The groundnut milk and curd technology developed at CIPHET is getting popular and we have started transferring this technology at nominal fee of Rs. 11000. The perfection of protocol for making paneer from groundnut milk has made the whole process economically viable as paneer made from groundnut is highly acceptable in taste with health benefits of rare phyto-chemicals.

With best regards

**R.T. Patil**  
**Director**

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## **Hon. Secretary, DARE and Director General (ICAR), Dr. Mangala Rai visits CIPHET**

Hon. Secretary, DARE and Director General (Indian Council of Agricultural Research), Dr. Mangala Rai visited CIPHET, Ludhiana on Oct. 30, 2009 for inauguration of Laboratory Building. He was accompanied by Deputy Director General (Engg.) Dr M.M Pandey, and Assistant Director General (Engg.) Dr S.K Tandon. While addressing the staff of CIPHET Dr. Mangala Rai said that share of Agriculture in GDP has reduced to less than 18 percent in the country and situation could only be improved through value addition by processed food. Dr Mangala Rai showed his concern over decline of profitability in agricultural sector of the country. "52 percent people in the country are engaged in agriculture but having just 18 percent share of country's income. Even person engaged as a laborer in agricultural activity earns one sixth than a laborer engaged in industrial production," he said, adding food processing was the only hope for such a large proportion of population.

“The area of processed food is going to grow exponentially in coming years and countries like China, Malaysia and Philippines are already processing five times more food than us. Saying that products should be developed only seeing clientage, Dr Mangala Rai emphasized that for developing products linkages of scientists with entrepreneurs was must. “There should be continuous interaction and dialogue.”

On this occasion, Dr R.T Patil, Director CIPHET presented various technologies developed by CIPHET in areas of food processing, packaging and storage of food. He informed Director General that they were aggressively engaged in development of technologies that will help small farmers and entrepreneurs so that they could improve their income. He listed basket centrifuge, banana comb cutter, pomegranate aril extractor, tomato grader as some of recently developed technologies by CIPHET. Dr M.M Pandey gave his opening remarks. Dr S.K Tandon presented the vote of thanks. Hon. Director General planted a sapling in CIPHET premises.



**Planting of sapling in CIPHET campus by Hon. Secretary DARE & DG (ICAR)**





**Hon. Secretary DARE & DG (ICAR) addressing CIPHET staff**





**Inauguration of Laboratory Building**

## **Brain Storming on Post Harvest Technology of Sugarcane including Jaggery and Khandsari**

Present scenario of sugarcane-based industry indicates that about 70% of cane is utilized for sugar making, 20% for jaggery and khandsari and remaining is for seed, feed and chewing purpose. The projected demand for sweeteners by 2020 will be 49 Mt out of which 30 Mt will be met by sugar and rest by jaggery and khandsari. Sugar making is already a world-class technology in which all the byproducts of sugarcane like bagasse, press mud, molasses etc. are effectively utilized. However, emphasis is needed to improve the jaggery processing which is highly relevant technology for India providing employment to millions of people in rural sector and acting as buffer to avoid distress sale. However there is a need to solve the storage problem of jaggery, especially during rainy season. The AICRP on PHT component on jaggery and khandsari has developed many technologies such as double and triple pan furnace, drying-cum-storage bin, standardization of shape and size, production of jaggery chocolate, energy efficient pan, liquid & granular jaggery and many other technologies at different centres.

To discuss the present status and identify critical issues for accelerating the research and development of jaggery and khandsari a Brain Storming session on Post Harvest



Technology of Sugarcane including Jaggery and Khandsari was held at Indian Institute of Sugarcane Research, Luknow on October 24, 2009. The session was chaired by Dr RL Yadava, Director, IISR and co-chaired by Dr SK Nanda, Project Coordinator, AICRP on PHT with Prof. BPN Singh (Rtd.) as the Guest of Honour.

During the course of deliberations following aspects emerged:

- Awareness be created amongst masses that jaggery has so much medicinal value. Old jaggery is rather more beneficial.
- Jaggery manufacturers give more weightage to production rather than the quality. The focus now should shift to quality.
- Gur itself is a raw material for many gur based products in villages. Gur is used for wine making purpose in most of the states. It is also being used across the border for fermented products.
- Sugarcane varieties Co 92005 and CoS 96275 should be popularized as these have very clear juice and are good for jaggery making (Kolhapur region and Uttar Pradesh).
- Work on identification of factors/constituents related to storability should be taken care of by the biochemists.
- Application of turmeric, ginger and antibiotics in gur may be investigated for improving its shelf life.
- Hygroscopic properties of gur should be studied with good packaging techniques.
- Drying-cum-storage bin for jaggery is reported to be very successful in Pantnagar region.
- Automation of jaggery production should be taken up by centres of AICRP (Lucknow, Pantnagar and Kolhapur).
- KVKs of different state agricultural universities should also be involved for effective transfer of proven technologies concerning gur.
- Reduced storage losses during rainy season should be a research priority.



**Brain Storming session on Post Harvest Technology of Sugarcane including Jaggery and Khandsari at Indian Institute of Sugarcane Research, Luknow on October 24, 2009.**

## **Foreign delegates exchange views with local women entrepreneurs at CIPHET**

An interactive meet was organized at the CIPHET between the delegates of US based Women's Earth Alliance (WEA) and local women entrepreneurs for exchanging information and knowledge. Around 15 foreign delegates from WEA participated in the meet. The delegates from WEA, an organization engaged in developing entrepreneurship and protecting environment got information regarding women entrepreneurship in Punjab. The women entrepreneurs trained by CIPHET and Punjab Agricultural University are in the manufacturing and sale of processed foods like squashes and fruit juices, jams, jellies, pickles, soya milk, honey etc and making of chemical free detergents, soft toys, candles, herbal medicines etc. They exchanged their views with foreign delegation on difficulties and challenges faced by them. They also shared their experiences about how they are running business by forming self-help groups and individually. It was stated that a large number of women from different parts of world including India were working with WEA for enhancing the income of women for their empowerment through sustainable agricultural practices. The protection of natural resources and environment was the biggest challenge in the world and women can do a lot in saving the environment and creating a better world. During direct interaction between foreign delegates, local women entrepreneurs asked for help in exporting products and management of domestic waste with technology available in foreign countries. They also told them about hardship faced in getting finance and maintaining coordination in self-help groups. The foreign delegates showed keen interest in the various products displayed by the women entrepreneurs.



**Women's Earth Alliance (WEA), USA and Local women entrepreneurs Punjab exchanging information and knowledge**



**Delegates of US based Women's Earth Alliance (WEA) and Local women entrepreneurs at CIPHET Ludhiana**

### **Special Training Programme on Post Harvest Management of Fruits and Vegetables for officials of the Directorate of Horticulture and Food Processing, Ranikhet, Uttarakhand**

Special Training Programme on Post Harvest Management of Fruits and Vegetables for officials of the Directorate of Horticulture and Food Processing, Ranikhet, Uttarakhand was organized during October 05-14, 2009 at CIPHET, Abohar. 11 Horticulture Officials from various Districts of Uttarakhand (Government of Uttarakhand) participated in the training programme. The training included various lectures including Post harvest management of fruits and vegetables and their by products, Microbial spoilage of fruits and vegetables causing food poisoning, Drying and Dehydration of fruits and vegetables for value added products, Post harvest losses and its control in fruits and vegetables, Processing and value added product development of aonla, Minimal processing and packaging of leafy vegetables, EC concept and its benefit for enhancing shelf life of fruits and vegetables, Processing of onion, ginger, garlic and concept of Agro-Processing Centre, Post harvest diseases and disorders of fruits and its control, Some novel product development form guava and other fruits, Minimal processing including arils extraction of pomegranate and extension of storage life, Commercial cultivation and post harvest management of cut flowers, Essential oil and other ingredient extraction technology for aromatic plant and fruits waste, Scope of shrink packaging of fruits and vegetables, Processing and value addition of Vegetables, Loss reduction in vegetables adopting appropriate Post Harvest Management practices, etc. The training also included the practical classes on novel products preparation from guava and pomegranate. The participants were also exposed to different laboratories at CIPHET, Abohar as well as Ludhiana. Further, participants also visited Punjab Agro Juices Limited, Abohar, PAU Fruits Research Station, Abohar, Hi-tech Nursery, Mauzgarh and scientifically



managed farmer's orchards. The training was conducted by Dr. R. K. Gupta, HOD, HCP as Course Coordinator and Er.R.K.Viswakarma, Scientist(SS) as Co-Coordinator.



**Participants of Special Training Programme on Post Harvest Management of Fruits and Vegetables at CIPHET Abohar**

### **MIMIT Faculty visited CIPHET, Abohar**

Twenty Engineering faculty members from Malout Institute of Management and Information Technology, Malout visited CIPHET, Abohar on 28<sup>th</sup> October 2009 under NITCON Faculty Development Programme. Dr. R.K. Gupta, Head, HCP explained the activities of CIPHET to the visiting faculty.



**Faculty from MIMIT visiting Kinnow Waxing and Grading Plant at CIPHET, Abohar**

## **PRC Meeting for the project entitled ‘Efficient expelling and extraction of oil from seeds and utilization of deoiled cake’**

The PRC meeting of the DST project was held on 08.10.2009 at CIPHET, Ludhiana. Prof. D.V. Singh, Ex. Director, IIT Roorkee chaired the meeting and he was accompanied with Dr. G.J. Samathanan, Advisor & Head (TDT), DST, New Delhi. At the outset, Dr. K.K. Singh, PI & Head, FG&OP Division welcomed Prof. Singh and Dr. Samathanan. Dr. Singh presented brief information about CIPHET and Food Grains & Oilseeds Processing Division. Thereafter, he presented progress of work done against the set targets of the project. The data on physico-mechanical properties of eleven varieties of flaxseed and their proximate composition was presented before the PRC. The results of flaxseed dehulling, oil expelling and flaxseed based energy bar were also presented and discussed in the meeting.



## **Consortium Advisory Committee (CAC) meeting of the NAIP sub projects**

The CAC meeting of the above NAIP sub-projects ‘Studies on Cryogenic grinding for retention of flavour and medicinal properties of some Important Indian Spices’ and ‘High Pressure Processing of Perishables’ was held at CIPHET, Ludhiana on October 10, 2009. The meeting was attended by Prof. Sunil.K.Sarangi, Director-NIT Rourkela, Prof. Manoj Kulshrestha, Dr. A.S. Bawa, Director, DFRL, Mysore, Prof. P.K. Srivastava, Dean, College of Agricultural Engineering and Post Harvest Technology, Gangtok, Prof. GBPUA&T, Professor, GBPUA&T, Pantnagar, Dr. R. Bandopadhyay, National Coordinator, NAIP (Component-4), ICAR, New Delhi, and consortium partners (Dr. K. K. Singh, Dr. T.K. Goswami, Dr. T. K. Gopal, Dr. P.S. Rao, Dr. T. J. Zachariah, Dr. S.N. Saxena, Ms. Bindu, Dr. D.M. Kadam and, Dr. P. Barnwal) from different centres.

Dr. Singh, PI & Head FG&OP Division presented the progress of the project at CIPHET Ludhiana. He highlighted the work on thermal and physical properties of black pepper, coriander and fenugreek. Dr. T.K. Goswami CCPI - IIT Kharagpur presented the studies conducted on grinding kinetics of black pepper. Dr. T. John Zachariah, CCPI - IISR Calicut presented the chemical quality profile of black pepper and medicinal property in relation to powdered turmeric. Dr. S. N Saxena, CCPI - NRCSS Ajmer presented the chemical quality of coriander and fenugreek germplasm accessions. The CAC reviewed the progress of work in the project and made several suggestions/recommendations for efficient working of the investigators and better outcome.

The CAC meeting of NAIP sub-projects at CIPHET, Ludhiana on October 10, 2009.



**Consortium Advisory Committee (CAC) meeting of the NAIP sub projects**

### **Winter School on “Recent developments in post harvest processing and value addition to livestock produce”**

Winter School on “Recent developments in post harvest processing and value addition to livestock produce” was organized during Oct 22<sup>nd</sup> to Nov 11 2009. This school was inaugurated by eminent agriculture economist and former Vice Chancellor of Punjab Agricultural University Dr. S.S.Johl. He stressed upon the need for upgrading the hygienic standards in the existing meat and fish processing handling practices. While addressing the gathering Dr. R.T.Patil, Director, CIPHET said “Indian models need to develop for processing of different livestock products” and emphasized the need for low cost processing technologies. As many as 21 participants from different parts of the country converged for taking part in this training. The Winter School aimed at bringing about the qualitative improvement and to update researchers, teachers, and extension specialists on the recent developments and technologies in the field of livestock products processing and quality evaluation. The participants were exposed to various advanced post harvest processing technologies. It provided an opportunity for the scientists to interact and exchange experiences to make research and education more relevant to the current needs.



**Inauguration and release of compendium by Chief Guest Dr. S.S.Johl**



## Second National Conference on Banana

Banana has seen an unprecedented growth in production during the last two decades due to the technological adoption, which has created a great impact across the banana industry, since it was beneficial to both the farmers as well as consumers. With an agenda to address the new emerging issues with regard to production of healthy planting material for enhancing the production and productivity of banana, the Association for the Improvement in Production and Utilization of Banana (AIPUB) jointly with National Research Centre for Banana (NRCB), Trichy, organized a National Conference on Banana at Jain Hills hosted by M/s. Jain Irrigation Systems Limited, Jalgaon, Maharashtra during Oct 4-6, 2009.

The conference was held in seven technical sessions. The Technical session- VII on Bunch and Post Harvest Management was chaired by Dr R T Patil, Director CIPHET, Ludhiana. In this session Dr. Kadam, Senior Scientist from CIPHET presented the paper on “Mechanisation in Banana with Special Reference to Bunch Management”. Dr. Patil in his Chairman’s remark expressed surprise for lack of processing of bananas in banana growing hub of the state like Maharashtra, though banana is such a good fruit for jam and fortunately available through out the year in this region. He cited the example of Pachranga Achar at Panipat where they have many factories of **Pacharanga Achar** and any one crossing that town almost takes one or two bottles with him. If similar revolution takes place in banana growing region to make Jam, the banana farmers will greatly benefit as well as lot of employment and revenue will be generated in the region. For this CIPHET offered to standardize the banana jam process and offered customized training for the upcoming entrepreneurs in banana growing region so that this valuable raw material is utilized properly.



## **Expert Group Meeting on Quality of Rice in Orissa, held at Central Rice Research Institute, Cuttack**

Rice is the major food crop in Orissa covering 4.4 Mha with an annual production of around 7 million metric tonnes. The uptake of paddy produced in the state is quite low due to their failure to meet the minimum procurement quality standards. Only 50 % of the production is procured and milled and the remaining is subjected to distress sale leading to loss or poor returns to the farmers. Though parboiling is generally prevalent in Orissa, millers are able to get only 66% out turn ratio (OTR), as against 68% expected by rice procuring agencies (66% as against 68%) leading to dissatisfaction among millers. These problems were brought to the attention of the Ministry of Agriculture, Govt of India. At the instance of the Hon'ble Union Minister of Agriculture, GOI and as advised by Secretary (DARE) & DG (ICAR) an expert group meeting was held at CRRI, Cuttack on October 9, 2009. The members of the committee were DDG (CS), DDG (Engg.), Dr. R. T. Patil, Director CIPHET, Ludhiana, Director CRRI Cuttack and Director DRD Patna, Scientists from CRRI, Cuttack and OUAT, Bhubaneshwar. Representatives from Orissa Rice Millers Association and FCI Representatives also attended the meeting. The committee reviewed the conditions causing poor procurement of rice in orissa, rice production scenario in Orissa including the Effect of Agro Climate on Quality of Rice and Quality Concerns Related to Milling of Rice Produced in Orissa. The committee also visited to a rice mill to had on the spot interaction with rice millers and saw status of the equipment being used in processing. It was observed that rice mills are modern and use proper equipment and process protocol to process the paddy. The committee has made suitable recommendations to improve the situation of quality of paddy and also remedies for non-procurement of the paddy by the millers.

### **Joining**



Er. Gaikwad Nilesh Nivrutti joined CIPHET on 31.10.2009. He did B. Tech (Agril. Engg.) from M.P.K.V., Rahuri and M.Sc. (Agril. Structures & Process Engg.) from IARI, New Delhi. He is pursuing Ph. D in (Agril. Structures & Process Engg.) at IARI, New Delhi. His Ph.D research is on development of electronic weight grading machine for oranges.

## Technology of the Month

### CIPHET Perfects protocol for paneer from peanut milk

Groundnut is the largest oilseed in India in terms of production. It accounted for 35.99 per cent of the oilseeds production of the country during 2007-08. Groundnut contains on an average 40.1 per cent of fat and 25.3 per cent of protein and is a rich source of calcium, iron and vitamin B complex like thiamine, riboflavin, niacin and vitamin A. It has a unique flavour and aroma upon being roasted. In order to utilize these qualities, peanuts have been widely used for snacks and luxury foods, such as roasted peanut, butter coated peanuts and peanut butter. However, only a few processed food products and food items made with peanuts are converted on a daily basis. Since, peanuts have also been revealed to contain oleic acid, which lowers blood cholesterol levels, vitamin E, which has antioxidant and anti-ageing properties and resveratrol, which is a polyphenol and possess a strong anti-oxidant activity. It is desirable that they should be utilized in home cooking and health foods. Peanut paneer containing high level of oleic acid and  $\beta$ -sistosterol, which lowers blood cholesterol levels, should be recognized as a food item with significant nutritional advantage.

Peanut paneer developed by CIPHET, Ludhiana, is tasty and very nutritious product made by coagulating hot peanut milk with food grade coagulants. It is a very versatile food and can be converted into variety of value-added products such as paneer pakoda, paneer tikki, kadhai paneer etc. Paneer can be eaten as salad item also. The paneer prepared from the whole kernel had moisture  $62.1\pm 0.8\%$ , Protein  $13.6\pm 0.5\%$ , Fat  $19.2\pm 1.5\%$ , ash,  $1.9\pm 0.2\%$  and carbohydrate  $3.2\pm 0.1\%$ . Low fat paneer from peanut milk can also be made with high nutritional and acceptability score. The technology of making full fat and low fat peanut paneer, developed by CIPHET is ready to commercialize and has already been transferred to upcoming entrepreneurs.



**Coagulated peanut milk**



**Peanut paneer**





**Technology transferred to M/s Geeta Industries, Junagarh, Gujrat**



**Technology transferred to M/s Krishna Oil and Dhal Mill, Dausa, Rajsthan**



## Publication of the Month

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| <p style="text-align: center;">Compendium<br/>Winter School<br/>On<br/>"Recent Developments in Post-harvest Processing and<br/>Value addition to Livestock Produce"<br/>(October 22 to Nov 11, 2009)</p> <p style="text-align: center;"><i>Compiled &amp; Edited by</i><br/><b>Suresh K Devatkal and K. Narsaiah</b></p> <p style="text-align: center;"><i>Sponsored by</i><br/><b>Indian Council of Agricultural Research, New Delhi</b></p> <div style="text-align: center;">  <p>भारतीय<br/>ICAR</p> </div> <p style="text-align: center;">Organized by<br/><b>Division of Agricultural Structures and Environmental Control<br/>Central Institute of Post-Harvest Engineering and Technology<br/>P.A.U.Campus, Ludhiana. 141004.</b></p> |  |
| <p style="text-align: center;"><b>Compendium of Winter School on Livestock<br/>Products processing</b></p>  | <p style="text-align: center;"><b>CIPHET News<br/>January to June 2009</b></p>      |

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