



**Central Institute of Post Harvest Engineering and Technology,
Ludhiana
Our Slogan: Produce, Process and Prosper**

**CIPHET E – Newsletter for June, 2008
Vol. 3 No. 6**

Director's Column



Dear All,

Indian agriculture has again shown its strength by bumper food grain production at 230.67 million tonnes in 2007-08. As per the fourth Advance Estimates of Govt. of India for Crop Production for 2007-08, there is an absolute increase of 13.39 million tonnes in food production at 230.67 million tonnes as compared to 217.28 million tonnes for 2006-07. The individual grain production is estimated at rice 96.43 million tonnes, wheat 78.40 million tonnes, coarse cereals 40.73 million tonnes, maize 19.31 million tonnes, pulses 15.11 million tonnes, and oilseeds 28.82 million tonnes. However this gives us greater challenge in post harvest handling of this precious wealth generated by farming community. The modern storage and handling and increased efficient value addition activity is a key to reduction of losses. If this activity is encouraged at production catchment it will also ensure better return to the farmers and providing valuable by products for better use rather than treating them as bio waste.

The novel processing techniques and diversified uses of the crops is another solution to get better price for produce. The sunflower is conventionally used only for oil expression and meal is under utilized due to high fiber content. However if the dehulled kernel is used for oil expression the deoiled meal can be put even to the food uses. Similarly sunflower kernel as a snack need to be popularized along with other value added products like sunflower kernel caramel, Sunflower kernel confection using as well as baked product utilising sunflower meal based technologies developed at CIPHET Ludhiana.

The research efforts in processing should be aimed at developing the products even from the non processable varieties so that they could fetch better price. The perlette variety of grapes is an example. It is sour grape but that can only be grown in and around CIPHET Abohar. The value added products from this cultivar has given hope to use them alternatively. The CIPHET has developed processing technology for raisin like product, juice, jam, jelly and squash and a hands on training was imparted to upcoming entrepreneurs during this month.

This month I got an opportunity to visit the farm at village Chhangla, Dist Hoshiarpur. The farm belongs to the son of great Indian Horticulturist Late Dr. GS Cheema, DSC and Indian Agricultural Service Officer and great scientists who developed many grape, pomegranate and guava varieties which have transformed the life of farmers in Maharashtra. Through this newsletter we the staff of CIPHET engaged in the cause of post harvest technology of horticultural crops pay tribute to this legendary soul for his unforgettable contribution to Indian horticulture.

With best regards

**R.T. Patil,
Director**

In this issue

[Entrepreneurship Development Programme on “Processing and Utilization of Sunflower Seeds and Its Products”](#)

[Agricultural Officers of Punjab visit CIPHET](#)

[CIPHET QRT meeting](#)

[CIPHET scientist delivers a lecture in NAAS](#)

[CIPHET scientists attend interaction meeting at GNDU Amritsar](#)

[Director CIPHET visits late Dr. Cheema’s farm at Chhangla, Dist.](#)

[Hoshiarpur, Punjab](#)

[Council for Citrus and Agri Juicing in Punjab](#)

[CIPHET gets a NAIP project on meat technology](#)

[B Tech engineers get training at CIPHET](#)

[Job Opportunities](#)

[Publications of the month](#)

Entrepreneurship Development Programme on “Processing and Utilization of Sunflower Seeds and Its Products”

An entrepreneurship development program on "**Processing and utilization of Sunflower seeds and its Products**" was organized by Food Grains & Oilseeds Processing Division, at Central Institute of Post Harvest Engineering and Technology (CIPHET) Ludhiana during **11-17 June 2008**. The programme was inaugurated by Dr. R.T. Patil Director, CIPHET. The main aim this EDP was to develop possible entrepreneurs for processing of sunflower and to prepare and market value added products from dehulled sunflower kernels. The topics covered in the programme include properties, chemical composition and nutritive value, dehulling method and machines, oil extraction, product development from dehulled sunflower kernels and marketing aspects of the products. Apart from attending lectures, the participants were trained on oil expelling of sunflower, dehulling of sunflower using the dehuller of CIPHET, and preparation of value added products including caramel, sweetmeat, roasted kernels etc from dehulled sunflower. The EDP was guided by Dr. K.K.Singh, Head FGOP and co-ordinated by Er. R. K. Vishwakarma, Scientist (SS) and Dr. D. Mridula, Senior Scientist.



Valedictory function of the Entrepreneurship Development Programme on July 17, 2008

Agricultural Officers of Punjab visit CIPHET

Agricultural Extension officers of Agril. Dept., (Punjab Govt) from different districts of Punjab visited CIPHET on 12.06.2008 through PAMETI. The visitors were given exposure of various machines as well as technologies developed by CIPHET for effective post- harvest management and value addition.



CIPHET QRT meeting

The fourth meeting of Institute Quinquennial Review Team (QRT) to review the work done by CIPHET, for the period of 2002-2007 held at CIPHET, Ludhiana during June 18-21, 2008. Team visited Punjab Biotechnology Incubator, Mohali on June 18, 2008 where they interacted with Dr. S.S. Marwaha, Chief Executive Officer. Dr. Marwaha showed the facilities available with the center and also suggested some areas for mutual collaboration with CIPHET such as laboratory facilities for all kind of analysis of sample and providing training to laboratory staff.

The QRT team also interacted with the scientists and faculty of Food Science and Technology at GNDU, Amritsar and had discussion with Dr. S.S. Sogi, Head of the Department. QRT members emphasized for possible collaboration between the two institutes working in the field of post harvest engineering and technology.

An interaction meeting of all the staff members of CIPHET with QRT Team was also organized on 20-06-2008 to discuss the problems of the Institute like lack of administrative, technical and sporting staff, vehicle for school going children and community center for campus staff etc.



Members of QRT interacting with the staff of the CIPHET

CIPHET scientist delivers a lecture in NAAS

Dr. K. K. Singh, Head, Food Grains & Oilseeds Processing Division received Fellowship of the National Academy of Agricultural Sciences (NAAS) in the 15th General Body Meeting and the Foundation Day Programme of the Academy held during June 4-5, 2008 at the NASC Complex, New Delhi. On the occasion, Dr. Singh also delivered an invited lecture entitled ‘Cryogenic Technology for Food Processing’.



Dr. KK Singh, Head, FGOP CIPHET receiving the NAAS Fellowship

CIPHET scientists attend interaction meeting at GNDU Amritsar

Dr. R.K. Gupta, Head Horticultural Crop Processing Division and A.K. Thakur, Sr. Scientist of CIPHET had participated in one day seminar and interactive session organized by Department of

Food Science and Technology, GNDU, Amritsar on June, 16 2008. A team of scientists from PAU, Ludhiana, SLIET, Longowal, and GNDU attended the interactive session held under the Chairmanship of Director of Research, GNDU, Amritsar.

After discussion the following collaborative research areas were identified;

1. Utilization of Kinnow fruits(The research proposal on Kinnow fruit utilization including physical de-bittering of juice will be formulated by GNDU and CIPHET, SLIET and PAU will be research partners)
2. Utilization of oat (The research proposal will be formulated by PAU and CIPHET, SLIET and GNDU will be research partners)
3. Extrusion cooking of food products including fruit pulp as one of the extrudates (The research proposal will be developed by SLIET and PAU, GNDU and CIPHET will be research partners)

These proposals will be submitted for external funding and all four organizations as stated above will work together in all projects which to be developed in consultation with all research partners.

CIC meeting of NAIP Project held at CIPHET, Ludhiana

The Second CIC meeting of NAIP sub-project on “Development of Non-destructive System for Evaluation of Microbial and Physico-chemical Quality Parameters of Mango” under component-4 was called on 27 June, 2008 at 2:30 PM in conference room of CIPHET, Ludhiana, and was chaired by Director, CIPHET, Ludhiana. The CCPI’s from all cooperating centres and Administrative Officer and Assistant Finance & Accounts Officer, CIPHET, Ludhiana attended the meeting

Dr. S. N. Jha, Consortium PI presented the action taken report of the last CIC and CAC meeting and technical progress of lead centre, CIPHET, Ludhiana. The major achievements were; standardization of sampling technique and finalization of sampling plan approaches to be followed by each centre and their responsibility in consortium mode. Design of sample holders and their fabrication is almost in final stage for the first trial. Sampling from Andhra Pradesh and Punjab (Dusheri and Banganapally) have been done twice and physico-chemical quality parameters and , presence of microbes have been determined. Spectral curves using three reference standard were obtained and teflon ball was selected as a reference for future experimentation.

Dr. Nachiket Kotwaliwale presented the technical progress of CIAE, Bhopal. The major achievements of the centre were: appointment of contractual, sampling of Alphonso mango from Ratnagiri area and determination of their physico-chemical properties and radiograph for the first time to find out the internal disorder.

Dr. Abhijeet Kar, presented the progress of IARI, New Delhi centre. The major achievements were: analyses of sample received from Punjab and Andhra Pradesh in respect of biochemical composition. He has recorded the colour values of two varieties of mangoes in different stages of ripening to correlate with the physicochemical parameters. The CIC suggested that he should

also take images in these stages for developing machine vision system as major objective of the centre.

Collaborative training on Food Processing at CIPHET Abohar

Collaborative Entrepreneurship Development Programme in the area of Food Processing Industries was organized during 31st May to 30th June at Abohar by Regional Centre for Entrepreneurship Development, Chandigarh in collaboration with CIPHET, Abohar. During EDP Scientists of CIPHET shared their experience and knowledge with the participants in various aspects of Processing and value addition of pomegranate, aonla guava and grapes. Mrs. Veena Sethi, Programme In charge RCED, Chandigarh and Dr. R.K. Gupta, Head, Horticultural Crop Processing, CIPHET, Abohar coordinated the EDP.



Director CIPHET visits late Dr. Cheema's farm at Chhangla, Dist. Hoshiarpur, Punjab



**Dr. GS Cheema
1984-1972**

Late Dr. Ganda Singh Cheema (Aug 2, 1894-Jan 1, 1972) D.Sc. C.I.E.(Companion of Indian Empire) the first Indian in the imperial Agriculture Service (IAS) known as Father of Indian Horticulture. King George V of England had written a personal congratulatory letter to Dr. Cheema for sending him a well-preserved parcel of delicious golden mangoes. Horticulture was both a profession and hobby for Dr. Cheema. With the earnestness of a first rate scientist, he combined a romantic love for plants, flowers and fruits. Sometimes he grew roses in small coffee cans, sometimes, dressed cactus in fragrant gardens and sometimes he grafted champa on the twigs of Gulmohar. His "Indira Chafa" changed colours at the touch of his fingers. Of the 19 flowers on its branch, five were white, five pinks and nine pinkish white. The flower had varied shades of rose, crimson and gold. Dr. Cheema started his career as a horticulturist in Bombay state. After two decades, he was appointed Principal of the Agricultural College, Poona. Finally he rose to be the Director, Agriculture, Bombay State.

Dr. Cheema also served as Fruit Adviser to the Government of India. He organized and successfully conducted the army Vegetable Scheme during World War-II. His research on



various aspects of fruit preservation ranging from sun drying of figs to cold storage of mango, orange and other tropical fruits and vegetables can be considered as first systematic value addition work on horticultural crops.

Dr. Cheema believed that horticulture was no less important than agriculture. It could earn foreign exchange and generate employment for rural based youth. He argued that like France and West Germany's export of roses, India could produce a variety of flowers for export. His philosophy is true even

today and the country is emphasising on these points which were considered by Dr. Cheema 50 years ago. Due to his efforts, today due to cultivation of Cheema Sahebi grapes and Ganesh pomegranate and Sardar guava the lives of farmers of Maharashtra have been transformed and they are living happier life. Director, CIPHET was invited by the family members of Dr. Cheema to visit their farm on June 26, 2008 and refresh the memories of unforgettable work done by their father and suggest some value addition activities they can adopt at their village. We, the staff of CIPHET feel proud that we are working on the topic initiated by the great soul like Dr. Cheema and through this newsletter pay tribute to him for his unforgettable contribution to Indian horticulture.

Council for Citrus and Agri Juicing in Punjab

Director CIPHET and Dr. AS Bindra Ex Director of Research, PAU visited the citrus nursery of Council for Citrus and Agri Juicing in Punjab on June 26, 2008. This facility is playing a key role in encouraging farmers to shift from traditional wheat-paddy cycle to more paying citrus farming.

The nursery at Jallowal is one of largest citrus nursery having mandate to supply authentic, quality, disease-free, high-yielding varieties of plants to the farm. The council is offering two models to the farmers willing to opt for citrus cultivation. In the first option, for the first six years the council pays sustenance-based on soil quality with guaranteed enhancement at the rate of 2 per cent, while in the remaining six years net profit from the sale of fruits would be shared equally. In the second option, the council pays sustenance-based on the soil quality with guaranteed enhancement of the rent at the rate of 20 per cent after every three years. The developed orchard is handed back to the farmer after 12 years, giving him a high-value revenue resource for a lifetime. The farmers are required to provide reservoir and canal water. The council thus is helping the farmers to establish healthy and economically viable orchards in the state.



Visit to Jallowal citrus nursery of Council for Citrus and Agri Juicing in Punjab

CIPHET gets a NAIP project on meat technology

The NAIP project titled “Value Chain on Novelty Pork Products Under Organized Pig Farming System” with AAU, Guwahati as the lead Consortium institution was approved by RPC in the 15th meeting of RPC on 16-06-2008 with few suggested revisions. The CIPHET, Ludhiana is one of the consortium partners in the above project. Dr.K.Narsaiah, Senior Scientist is the cooperating centre PI and Dr. D.M. Kadam, Scientist as Co-PI at CPHET, Ludhiana. CIPHET will be designing and developing equipment for processing of novelty pork products in this project. The approximate budget for CIPHET center is Rs. 30.50 Lakhs.

संस्थान में हिन्दी की मासिक कार्यशाला एवं संगोष्ठी

हिन्दी की मासिक कार्यशाला एवं संगोष्ठी के अंतर्गत दिनांक 24.06.2008 को संस्थान के सभा कक्ष में डॉ. दत्तात्रेय म. कदम वैज्ञानिक द्वारा “कुछ घरेलू खानपान तैयारी की विधियाँ” विषय पर प्रस्तुतीकरण किया गया, जिसमें संस्थान के निदेशक, परियोजना समन्वयक, प्रभागाध्यक्ष, प्रभारी अनुभाग, प्रशासनिक, तकनीकी एवं सहायक अधिकारी व कर्मचारी सभी उपस्थित थे।

वृक्षारोपण कार्यक्रम:

कर्मचारी मनोरंजन क्लब द्वारा दिनांक 28.06.2008 को “वृक्षारोपण कार्यक्रम” का आयोजन किया गया। इस कार्यक्रम में “निष्काम सेवा आश्रम, लुधियाना” के सौजन्य से प्राप्त हुए फलों के पौधों का रोपण किया गया। क्लब के संरक्षक एवं निदेशक , डॉ. आर. टी. पाटिल ने वृक्षों की जरूरत पर जोर देते हुए आम का पौधा लगाकर कार्यक्रम का शुभारम्भ किया। क्लब के अध्यक्ष एवं परियोजना समन्वयक (परिकटन प्रौद्योगिकी), डॉ. एस. के. नन्दा ने इस कार्यक्रम की सराहना करते हुए आम का पौधा रोपित कर कार्यक्रम को आगे बढ़ाया। तदुपरान्त क्लब के सभी उपस्थित सदस्यों ने पौधरोपण किया। संस्थान के परिसर को हरा भरा रखने में इस कार्यक्रम से काफी मदद मिलेगी।



Vanmahotsav at CIPHET and tree plantations on the occasion

B Tech Engineers get training at CIPHET

CIPHET offers short term training programme to Bachelor, Master & doctoral level students in various disciplines of post harvest Engg. & Tech. In the month of June 2008, 50 students have taken hand-on training at CIPHET.



Entrepreneurship Development Programme on “Processing of Perlette Variety of Grape for Value added Products”

Grape (*vitis vinifera*) is a world wide appreciated fruit berries of which cultivation is considered as remunerative farm enterprise. India has the distinction of achieving the highest productivity in grapes in the world, with an average yield of 30 t/ha. Grape is grown under three distinct agro-climatic zones, namely, sub-tropical, hot tropical and mild tropical climatic regions in the country. The quality of grapes grown in subtropical region (in Delhi, Punjab, Haryana and west UP) is not upto the level of the quality achieved in grapes grown in hot and mild tropical region (in Maharastra, Karnataka, Andhra Pradesh and Tamilnadu). The north Indian grapes (mostly Perlette) are not suitable for processing into raisin because of the low sugar content. It is also not liked much for fresh consumption as the seeds remains in the berries at the time of harvesting. It is estimated that the post harvest losses in grapes is about 39 % of production and 30% of the value. In view to explore the potential of processing of north Indian grapes into value added products, the institute has experimented a lot on the low quality grape berries and come out with various promising and highly acceptable products.

To extend the processing technology of grapes in view to scale-up production and to develop entrepreneurship among the various section of society, an EDP on ‘Processing of grapes for value added products’ was organized at Horticultural Crop Processing Division, CIPHET, Abohar during June 4-10, 2008. The programme was coordinated by Dr. A. K. Thakur, Sr. Scientist and Mr. V. K. Saharan. Apart from the theoretical background of food processing, hands on practical training was given to participants for the production technology of value added products like raisin like pills (candy), jam, pure juice, cordial, squash and jellies. The procedure were explained and demonstrated to them that how clear juice extraction and pulp is prepared. The participants were sponsored by IFFCO foundation, and they are working for the foundation to help and train the various self-help groups running in the surrounding locality with the technical and financial support of the foundation. The certificates were given away to the participants by Dr. R. K. Gupta, Head of Horticultural Crop Processing Division.



Concluding session of EDP on “Processing of grapes for value added products” (left) and the participants are receiving practical experience of making the products from the grapes (right)

Technology of the month:

Processing of sunflower seeds for value added products

Sunflower seeds are the gift of the beautiful sunflower (*Helianthus annuus L*), a plant with rays of petals emanating from its bright yellow, seed-studded center. The sunflower produces grayish-green or black seeds encased in tear-dropped shaped gray or black shells that oftentimes feature black and white stripes. Geometrical dimensions of different variety of sunflower seed are different. Some are bold varieties and some variety is having thin seeds. The presence of a fairly high proportion of hull in the seed (varies between 20-30%, depending on the variety) not only causes rapid wear of the moving parts of the expeller but also reduces the total oil yield, transfers pigments from the hull to the extracted oil leads to high specific energy and yield cakes of lower value. Therefore, dehulling of seed is desirable to get good quality oil, edible grade meal and kernels for confectionery purpose.

A composite **Sunflower dehulling mill** consisting of feeding mechanism, centrifugal type dehuller, and aspirator for separation of hull from dehulled product and grading unit, which separates whole, broken and unhulled kernels, was developed. The prototype was tested for different cultivars of sunflower seed namely PSFH-118, SH-3322 and Morden variety of sunflower seed. Maximum dehulling efficiency of 93.28% was obtained for *Morden* variety of sunflower seed having 4.2% m.c.(db). The capacity of the machine was found as 350kg/h with 54.4% whole kernel recovery.



Sunflower dehulling mill

Further, the products like roasted sunflower snack foods, Sunflower kernel caramel, Sunflower kernel confection using sunflower kernels as well as baked product utilising sunflower meal have been also be developed.

Job Opportunities

Walk in Interview

Applications are invited for making the panels for the appointment to the posts of one Research Associates (RA) immediately and one Senior Research fellow (SRF) as and when vacancy arises in a sub – project of National Agricultural Innovation Project (NAIP) at Central Institute of Post-Harvest Engineering and Technology, Ludhiana, Punjab. The appointments will be purely temporary under contractual and co-terminus basis, following the prescribed procedure for six months or till the completion date of the project. The appointments may be terminated at any time without notice or assigning any reason thereof.

| | | |
|---|--|--|
| 1 | Name of the sub-project | Development of Nondestructive Systems for Evaluation of Microbial and Physico-chemical Quality Parameters of Mango. |
| 2 | Date of Completion of the project | 31/03/2012 |
| 3 | Date and place of interview | 20/08/2008, 10.00 AM. |
| 4 | Contact person | Dr S. N JHA Email: snjha_ciphet@yahoo.co.in , knarsan@yahoo.com |

Publications of the month



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