

# Central Institute of Post Harvest Engineering and Technology,

Ludhiana

Our Slogan: Produce, Process and Prosper



**CIPHET E – Newsletter for June, 2007**  
**Vol. 2 No. 6**

## Director's Column



Dear All,

I am very glad to present before you the 12<sup>th</sup> issue of CIPHET E-newsletter. We had started this effort last year in July one month after my taking over as Director of CIPHET. It is therefore a time to take a stock of what we have done during the last year and how we fared and how much we need to do to meet the expectation of the community. At CIPHET our efforts have been to develop the technologies to process crops at production catchments in such a way that they can compete with the corporate world as well as imports from the neighboring countries. During this period institute purchased 42 new instruments and equipments for advanced research costing Rs. 1.74 crores. Unique among them are mini modern rice mill, portable digital vibration meter, automatic weather station, NIR whole grain quality analyzer, haze meter, RVA, fluidized bed dryer, kjeltec, soxtec, fibertec, gas permeability and poly packaging thickness tester etc. Our scientists concluded 11 projects and have taken up 29 new activities for research. We believe in inter institutional collaboration to improve utility and quality of research and for this we have collaborated with 8 ICAR institutes/universities. Important achievement in equipment development are basket centrifuge for minimal processing, lotus and castor seed decorticators, Banana comb cutter and working models of Kinnow washing and waxing machine. Among the product development institute developed multi grain nutritious biscuits, novel process for dehulling of guar gum and coarse cereals as well as millets, protocol for soybean milk powder, pomegranate value added products and management technique to reduce cracking in pomegranate, ber products etc. In the area of transfer of technology CIPHET signed letters of intent with M/s Chaudhary Agro Biotech, Jaipur and M/s Agro Industries Ltd for Anola products and Anola processing machinery. One of our practical achievements is Entrepreneurship Development Programmes based on CIPHET research and for that we have received great response and appreciation. We have listed 20 such programmes, which can be used to set up food industries in production catchments out of which 6 were executed. We trained about 80 B. Tech students during this year. The mission of going to one village each month to motivate rural youth in food processing was partially achieved but in coming year we can try to better. Our scientists during the year have published 106 papers in refereed journal, 24 technical articles, many bulletins and gave 51 presentations. During this period two of our scientists visited USA on prestigious Norman Borlog fellowship and I had visited Serbia on GOI team for cooperation in horticulture and post harvest technology, one of our scientist rendered the service as International consultant to Srilanka. We had visitors from Ohio State University, University of Saskatchewan and McGill University, Canada to see the institute activities.

During the year your feedback has been our constant source of encouragement and we hope to receive the same in future

With best regards

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

## **Strengthening of agricultural marketing, infrastructure, grading and standardization**

There are many entrepreneur friendly policies, schemes and subsidy plans of Government of India for strengthening the infrastructure for better marketing so that the producer and consumer can be benefited. To sensitize the extension officials and also entrepreneurs about them a one day programme was organized by Directorate of Marketing and Inspection, (Ministry of Agriculture, GOI), Abohar in collaboration with CIPHET on 8<sup>th</sup> June, 2007 at CIPHET, Abohar. Director, CIPHET was the chief guest of the programme and Dr. Tek Chand, Dy. Director Horticulture was the guest of honour. Dr. Patil emphasized on the need of strengthening post harvest infrastructure so that the huge losses occurred during handling of perishables can be avoided. He urged the participants to create awareness among the farmers, entrepreneurs and extension personnel about appropriate storage technology for reduction of post harvest losses of horticultural produce. Dr. R. K. Gupta, Head, Horticultural Crops Processing elaborated the purpose of this programme and emphasized that such programmes are quite useful for creating awareness among farmers and upcoming entrepreneurs. He further stated that infrastructure development for post harvest handling is need of the time, which not only reduce the post harvest losses but also create employment opportunities. About 50 participants from different organizations like state agriculture and horticulture department, IFFCO, KRIBHCO, MARKFED and other cooperative societies, banks etc participated in the programme. Sh. C. M. Girdhar, Senior Marketing Officer (DMI) discussed in detail about different policies, schemes and subsidy plans for strengthening the infrastructure for better marketing so that the producer and consumer can be benefited. The various topics covered were: On-farm handling of horticultural produce, Schemes for development and strengthening of agriculture, Preparation of project report, Effective packaging of agri-produce, Shrink wrapping and quality management of horti-produce and Schemes offered by National Horticulture Mission.



**From L to R, Dr. RK Gupta, Mr. Giridhar, DR. RT Patil, DR. Tek Chand, Dr. RS Brar**

## **Application of High Pressure in Food Processing**

High pressure processing is a novel non thermal technique for pasteurization/sterilization of foods. Since the temperature is not raised beyond the permissible limits, this technique has great promise to preserve the heat sensitive high value processed products for long time and therefore facilitating the export. This technology has very high potential for commercialization of processing of rare fruit juices like, Leh berry, Anola, Kokum and the extracts and pastes of herbal, medicinal and aromatic plants. To start the research on this cutting age technology in India, the CIPHET organized a National Workshop on “Application of High Pressure in Food Processing” under Indo US Agricultural Knowledge Initiative at CIPHET, Abohar on 21.06.2007. This seminar was organized on the occasion of visit of Dr. V.M. Balasubramaniam, Associate Professor from the Ohio State University, USA, who has been working on High Pressure Technology since last several years. This seminar has been a milestone in introducing High Pressure Processing research in the country. With this seminar CIPHET has launched High Pressure processing research in the country. In the inaugural session, Dr Patil was Chief Guest and Dr. Balasubramaniam and Dr. P.S. Aulakh, Director, PAU Regional Research Station, Abohar were the Guests of Honour. The delegates from Himachal Pradesh, Haryana, Uttar Pradesh, Maharashtra, Kerala, and Delhi along with some industry representatives attended this seminar. The technical presentations and deliberations were on following aspects:

- Scope of application of high pressure processing towards food safety and security. - Dr. R. T. Patil, Director, CIPHET.
- Introduction to High Pressure Processing. Importance and Future Prospects – Dr. V.M. Balasubramaniam.
- Present scenario of processing of fruits and vegetables – Dr. R. K. Gupta, HOD, HCP Division, CIPHET, Abohar.
- Suitable Indian crop products for high pressure processing – Dr. D.B. Singh, Senior Scientist, CIPHET, Abohar.
- Principles, Protocols, High Pressure Processing Equipments and their design – Dr. V.M. Balasubramaniam..
- High Pressure Processing of Dairy and Marine Products: Effect of HPP on microbial inactivation and food constituents - Dr. V.M. Balasubramaniam (Bala).

This was followed by a panel discussion to finalize researchable issues on High Pressure Processing Research in the country. The outcome of the seminar was a willingness of the industry called M/s. Chambal Fertilizers, Sri Ganganagar for partnership in developing indigenous High Pressure Processing apparatus. It was decided that development of High Pressure Processing apparatus suitable for laboratory/ pilot scale operation may be designed and fabricated as a joint project by CIPHET, Ohio State University, M/s. Chambal Fertilizers, Sri Ganganagar and High Pressure Processing Equipment Manufacturer. The researchable areas were preservation of ready to serve button mushroom, Preservation of oysters, Preservation of kokam juice, preservation aloe vera gel and senna extract, preservation of meat products and kinnow juice as well kinnow kali especially for export. The registered participants included Scientists from various ICAR institutes, SAU's, Lecturers from colleges, teachers and students from schools and progressive farmers from Abohar.



**From L to R, From L to R, Dr. RK Gupta, Dr. Bala, Dr. RT Patil, Dr. P.S. Aulakh, Dr. DB Singh**

### **CIPHET Management Committee Meeting**

The meeting of the IMC of this Institute was held on 23.06.2007 under the Chairmanship of Dr. R.T. Patil, Director, CIPHET, Ludhiana. At the outset, the Director & Chairman warmly welcomed the members in his chamber and from there took them to the Institute facilities.

#### **Presentation by the Director**

The Director & Chairman, IMC before presentation introduced all PCs and HODs recently joined this Institute to the members of the IMC. The Director & Chairman, IMC presented the progress of activities undertaken during the last financial year 2006-2007 and apprised the members about on-going projects and the salient achievements made by the institute at CIPHET, Ludhiana & Abohar. The Director informed the IMC members that the Institute has FG&OP, AS&EC and TOT Divisions at Ludhiana. The Director has also informed the IMC members regarding MOU signed with different SAUs and Research Institutes in the Country. He also presented the topics of the on going projects - 2006-2007 achievements such as low cast extruder, lotus seed decorticator developed at CIPHET, Abohar, low cost seed spices crop dryer, single feed multi abrasion dhal mill, 30 ltrs. fermentation, Pilot Plant at CIPHET, Ludhiana, Modern rice mill, banana comb cutter, awarded model of kinnow processing, anola beverage toffee multi grain biscuits, Novel technology for refined sorghum, dehulling guar gum seeds, dehulling of millets & coarse grains, value added products from green chili, soybean milk powder, pomegranate value added products, solution to pomegranate cracking is –semi-arid regions and ber value added products. He further informed regarding letter of intents, awareness camp conducted by CIPHET and cyber connectivity promotion details. He also presented the information on budget utilization, trainings undertaken as well as imparted by institute staff, participation in different meetings and publications. Members appreciated the efforts made and actions undertaken by the institute.

The following members of IMC participated in the meeting:-

- |    |   |   |          |
|----|---|---|----------|
| 1. | Dr. R. T. Patil, Director, CIPHET, Ludhiana | - | Chairman |
| 2. | Dr. Pitam Chandra, ADG(PE)                  | - | Member   |
| 3. | Dr. D. V. K. Samuel, Head & Professor       | - | Member   |



- |    |   |   |                  |
|----|---|---|------------------|
| 3. | Dr. D. Nag, Principal Scientist                       | - | Member           |
| 5. | Dr. B. S. Modi, Principal Scientist (AS&PE)           | - | Member           |
| 6. | Sh. Tej Ram, Administrative Officer, CIPHET, Ludhiana | - | Member Secretary |

**Special Invitees:**

1. Dr. S. K. Nanda, PC (PHT), CIPHET, Ludhiana
2. Dr. R. K. Gupta, Head, HCP, CIPHET, Abohar.
3. Dr. O.D. Wanjari, Head, AS&EC, CIPHET, Ludhiana
4. Dr. K. K. Singh, Head, FG&OP, CIPHET, Ludhiana
5. Dr. Matthew Prasad, Head, TOT, CIPHET, Ludhiana
6. Dr. P. R. Bhatnagar, PC(APA), CIPHET, Ludhiana
7. Sh. Vijay Kumar, AF&AO, CIPHET, Ludhiana

The review of ongoing activities including R&D of CIPHET was conducted in this meeting along with important decisions related to infrastructure and facilities development at the institute as felt fit collectively by the honorable members of the management committee.

**One month Summer Practical Training imparted to B.Tech. (Agri. Engg.) Students**

Institute organized one month summer practical training of sixty B. Tech students at CIPHET, Ludhiana and Abohar during 1<sup>st</sup> to 30<sup>th</sup> June, 2007. The training was imparted on various aspects of Post Harvest Engineering and Technology including microbiology, biochemistry. After successful completion of training, students were awarded certificates on submission of training reports.



**Students working on onion dehydration project**

**Visit To Villages**

Under the programme of visit to villages by CIPHET Director and scientists, Dr. Patil visited the village Deh Kalan, Distt. Sangrur to meet two progressive farmers namely Mr. Bachitter Singh Garcha and Mr. Inderjit Singh Sekhon on 10<sup>th</sup> June 2007. Mr. Bachitter Singh Garcha who was trained on soy processing by Dr. Patil at SPU Centre, CIAE, Bhopal is successfully producing various soya products from his processing plant installed at his farmhouse. The operation of Soya Milk plant by Mr. Garcha and his employees was inspected. Mr. Garcha is being encouraged by CIPHET to improve upon his existing operation. He is going to install autoclave and bottling plant for packaging of soya milk instead of the pouches. He is also planning to use OKARA into health foods along with his existing salty products. Mr. Garcha is having 3 milk booths, one at PAU Campus, Ludhiana and he operates two

mobile booths in Dhuri and Sangrur towns. The hard work, sincerity and entrepreneurship skills of Mr. Garcha have made this activity profitable and sustainable to support his income in addition his other farm activities. Mr. Garcha is also having hybrid cows giving about 20 liters milk per day. Mr. Garcha is a progressive devoted farmer and has received many awards from state govt. and central govt. and also awards from universities like PAU, Ludhiana and CCSHAU, Hisar. Mr. Garcha is a role model and inspiration to other farmers and entrepreneurs in the vicinity and far off locations in the country.



**Mr. Garcha operating soy milk plant**

Another visit was to the farm of Mr. Inderjit Singh Sekhon from the same locality. The CIPHET is planning to collaborate with him effective in storage of the seed grade wheat on his farm using eco-friendly techniques. Mr. Sekhon cultivates variety of crops on his farmland and uses modern agriculture machinery for farming as well as for post harvest operations. The seed grade wheat is thoroughly cleaned, graded and then stored in airtight metallic bin of one tonne capacity each. He produces about 70 tonnes of wheat seed per year.



**L to R Dr. RT Patil, Mr. Inderjit Singh Sekhon, Mr. BS Garcha**

### **Modern Seed Processing**

The seed is the most important ingredient of Agriculture Production System. Good seed can solve the 50% of the agriculture production worries. However in our country the seed rotation is very poor (around 5-7%) which directly affects the productivity and farmer's income. Even farmers' own grain, which is used for seed, is not properly processed and stored. It is not even tested for its viability

and germination percentage. This act has direct bearing on farmers' income and his frustration. Hence there is a need to popularize proper seed processing activities in rural catchments. There is a need to develop proper manufacturing facilities for these equipments. The mobile food processing unit developed by CIPHET can be effectively used as mobile seed processing unit by installing minimum but important equipment and make it available to the farmers to process their seed along with the advise to properly store it. In this connection Dr. Patil visited seed processing facility at IARI Regional Station, Karnal on 14<sup>th</sup> June 2007, which is the one of the best seed processing and storage facility donated by Govt. of Japan. The equipment and facility has great scope for its replication and adoption by upcoming entrepreneurs who will be interested in seed processing business.



**Visit to seed processing plant at Karnal**

### **Consolidation Of Food Security Through Post Harvest Management And Value Addition**

TNAU, McGill University, Canada and Canadian International Development Agency (CIDA) jointly organized a two days interactive meet on Food Processing and Post Harvest Technology at Tamil Nadu Agricultural University (TNAU), Coimbatore during June 25-26, 2007. Dr. Patil, Director, CIPHET and Dr. SK Nanda, PC(PHT) attended this meeting. The theme of this meeting was "Consolidation of Food Security in South India." Under this project a Food Processing Business Incubator has been established at TNAU for promoting entrepreneurial skill development in food processing and post harvest operations. Under this project three universities in India, namely-University of Agricultural Sciences, Bangalore, University of Agricultural Sciences, Dharwad and Tamil Nadu Agricultural University (TNAU), Coimbatore have benefited in terms of training and higher education in Canada for more than 70 faculty members, frequent exchange of Canadian scientists and professors to India for interaction and development of agro processing centers in the rural areas involving Universities, NGOs, Self-help Groups and farmer cooperatives for betterment of farming community. All three-university representatives made the presentations. McGill University representative and Prof. Raghavan himself presented the impact of this project in developing food processing and post harvest research and entrepreneurship in India. In the session on interaction with other delegates for discussing the future programme of the project, Dr. Nawab Ali, DDG (Engg), ICAR was the Chief Guest and Dr. A. Sampathrajan, Dean, TNAU was Chairman of the function. Dr. Kulkarni, Vice Chancellor of UAS, Dhanvad was Guest of Honour. In this session the advice of Chief Guest and Guest of Honour as well as experiences of others were shared and important areas were identified for further work in this project. The post harvest infrastructure development such as Cold Chain, Human Resources Development,

parallel research on cutting edge technologies and empowerment of rural women through food processing were the areas identified.

### **Market Led Extension**

Forty-six participants attending workshop on “Market Led Extension” at PAMETI, PAU, Ludhiana visited CIPHET on 27<sup>th</sup> June 2006. The participants took been interest in equipment for processing of grains, fruits and vegetables and evaporatively cooled storage structures. The division of Transfer of Technology interacted with the participants.



**PAMETI trainees visiting CIPHET 2T zero energy cool structure**



## Technology of the month

### Process Technology for making Aonla Beverage (*under patent*)

Aonla is one of the important indigenous fruits of Indian subcontinent. Aonla fruit is highly nutritive with a great medicinal use and the richest source of vitamin C. The raw fruit, due to its high acidic nature and astringent taste, is unacceptable to consumers. Lot of products from aonla fruits is prepared for direct consumption as well as medicinal purposes. A novel **process technology** was developed to prepare **aonla beverage** in the form of juice with attractive colour, appealing flavour and smell. The composition of **aonla juice (20 %)**, **sugar syrup (70 % - 25 °B)**, **other fruit juices (guava, pineapple juice, etc) (10 %)** were found best in terms of acceptability. Black salt, white salt, black pepper, *amchur* powder and dhania were the other ingredients used for making the beverage. The final mixture is bottled and sterilized in hot water before storage.



**Aonla Beverage**

## Dr. Pratap Ray Bhatnagar Joins as Project Coordinator, AICRP on Application of Plastics in Agriculture



Dr. PR Bhatnagar joined CIPHET as PC (APA) on 14<sup>th</sup> July 2006. Dr. Bhatnagar has done his B.E. (Ag) from MLS University, Udaipur in 1985, M.Tech. (Water Resources Development and Management) from IIT, Kharagpur in 1986, and Ph.D. (Irrigation and Drainage Engg.) from GBPUA&T, Pantnagar in 1996. He started his career as Scientist (SWCE) at VPKAS, Almora. He worked as senior scientist (SWCE) at ICAR RCER, Patna for more than 9 years (1998-2007) and developed technologies for rainwater harvesting, multiple uses of water in plateau area and waterlogged areas of eastern region. He also contributed as Project coordinator Incharge of AICRP on "Optimisation of Ground water Utilisation through wells and pumps for 5 year and six months (May 1998-Oct 2003). Dr. Bhatnagar's joining this project will give new direction to the research in use of plastics in post harvest applications to meet the requirement of packaging and handling for domestic as well as export market.

## CIPHET Publications during the month



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