



Central Institute of Post Harvest Engineering & Technology Ludhiana

Our Slogan: Produce, Process and Prosper

**CIPHET E - Newsletter for March 2011
Vol. 6 No. 3**

Director's Column



Dear All

An interactive session was organized between Canadian and Indian manufacturers to find out partnership with local industry and agriculture institutions for agricultural equipment in general and grain storage in particular. The foreign delegates were appraised about prevailing Scenario of grain storage in the country. In another visit, a seven member delegation of Afghan students visited CIPHET to explore latest trends in food processing sector. The visit was sponsored by the USAID Project.

A special Institute Research Council Meeting was held to review the research load of scientists and to streamline the project timings. The Institute Management Committee (IMC) meeting was also held at the institute during this month and the activities being carried out at the institute were discussed.

Two days Exposure Programme on Cottage level manufacturing of value added products from Fruits and Vegetables for Rural Women was organized at CIPHET, Abohar. The institute also conducted its third training programme for the women jail inmates with objective to provide respectable livelihood opportunities for the inmates of after they get released from the prison. The complete process of making jam and jellies from guava was demonstrated.

To take a significant step ahead to promote entrepreneurship in post harvest sector, the institute has established a state of the art Agro-Processing Complex at University of Agricultural Sciences (UAS), Bangalore which was formally inaugurated by Hon. DDG (Engg) and Vice Chancellor of the university.

CIPHET signed a memorandum of understanding to transfer technology of Evaporative Cooled (EC) room & structure with an entrepreneur.

With best regards

**R.T. Patil
Director**

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Visit of Canadian Delegation

To check heavy losses incurred during conventional storage of grains in India, on March 9, 2011 Central Institute of Post Harvest Engineering and Technology (CIPHET) organized an interactive session between Canadian and Indian manufacturers to find best solutions available for the local conditions. On the occasion, the Canadian counterparts gave a presentation on smart bins, portable temporary grain storage, wherein grains could be stored in bulk without use of gunny bags. The storage is especially useful to counter the excessive production and is easy to install anywhere. These were made of using different materials including plywood, tarpaulins and steel. The five member Canadian delegation included representatives from A N Scholz and Associates Inc., AG Growth, Agriculture and Agri Food Canada, Willwood Industries, Universities of Saskatchewan etc. Er. Baldev Singh, President Agricultural Machinery Manufacturers' Association, was heading the Indian delegation. Speaking on the occasion, CIPHET Director Dr R.T Patil appraised the foreign delegates about prevailing scenario of grain storage in the country. Showing concern over heavy losses occurring due to inappropriate storage, he said that we need solutions which suit our local conditions. Rob Ziola, Senior Director, Trade Development Saskatchewan Trade and Export Partnership (STEP), said that many modern storage solutions used at global level could help India also. He also told that they are looking for partnership with local industry and agriculture institutions. An interactive session was held between Canadian, Indian industry representatives and CIPHET Scientists mainly heads of divisions and project coordinators. Dr Deepak Raj Rai, Head TOT and Dr Devinder Dhingra, Sr.Scientist coordinated the meeting.

Visit of Afghan Students to Explore Possibilities in Postharvest

A seven member delegation of Afghan students visited CIPHET on 16th March 2011 to explore latest trends in food processing sector. The visit was sponsored by the USAID Project. The Afghan students, presently studying M.Sc (Horticulture) at University of Agricultural Sciences (Bangalore), are visiting different institutes of Indian Council of Agricultural Research Institutes (ICAR) and State Agricultural University (SAU's) to update with recent development in the different areas of agriculture and forestry. On visiting CIPHET, the delegation was taken to different research facilities and afghan students were made aware about achievements of the institute. They were also shown a film on the mandate and research initiatives carried out by the CIPHET. Terming the visit quite useful, S. Guruswamy, Associate Foreign Students Advisor of University of Agricultural Sciences, said that the students were quite impressed with progress made by the CIPHET in the area of post harvest. He said that they have already taken students to many of ICAR institutes in northern and southern region of the country and this could eventually benefit their native country Afghanistan.

Special IRC Meeting

A special Institute Research Council Meeting was organized on 30th March, 2011. The meeting was held to review the research load of scientists and to streamline the project timings based on the instruction of DDG (Engg) ICAR, New Delhi. Dr Patil explained the importance of monthly, quarterly and six monthly progress reports. He advised the scientists to follow the system in letter and spirit.

Institute Management Committee Meeting

The Institute Management Committee (IMC) meeting was held at the institute on 25th March, 2011. The activities being carried out at the institute were discussed in the meeting.

Interaction Meet on Agricultural Engineering Technologies

Dr. R.T. Patil attended one day Interaction Meet on “Agriculture Engineering Technologies” with farmers, manufactures of farm equipments & scientists on 12th March, 2011 at GKVK, Bangalore. The function was inaugurated by Dy. Director General (Engg), ICAR. Dr. Patil presented a lead paper on “Technology development and challenges in PHT and processing”.

The programme included presentations on the following topics -

- Farm mechanization and its impact on agricultural productivity.
- Farm mechanization in Karnataka.
- Recent development in power weeders.
- Credit supply for mechanization.
- Status of post harvest technology & processing in Karnataka.
- Watershed development practices in Karnataka.
- Drip irrigation technology for horticultural crops.

National Symposium on Alliums

Dr. R.T. Patil attended National Symposium on “Alliums: current scenario and emerging trends” at Vaikunth Mehta National Institute of Cooperative Management, Pune during 13-14

March, 2011. He presented an invited lead paper on Onion & Garlic, Value Addition Innovative Ways and also co-chaired the technical session on Post Harvest Management & Value Addition. In this session three lead and two oral presentations were presented.

Dr. K.E. Lawande, Director, DOGR presented a lead paper entitled, Post Harvest Handling and storage of Onion and garlic-Success stories. He stressed that onion crop is difficult to handle in terms of breeding, handling, storage, machinery and export. He narrated the importance of onion storage and why it is necessary to control the storage losses including post harvest loss and the factors underlying which contribute to the storage losses. He discussed about the success stories of DOGR in collaboration with farmers to increase the shelf life. Mr. A. K. Haral, Project Coordinator, NHM summarized the role and background for the setting up of NHM. He outlined the factors responsible for gaps in onion and the interventions being developed by the NHM. He discussed about the progress made by NHM by adopting interventions in terms of seed production, seed infrastructure, creation of water resources, pollination support through beekeeping, IPM, IDM and INM technologies. He also explained about the subsidies being given to the public, private sector and the farmers for growing and storing onions. He also gave a sneak peek about the farmer Field school (FFS) being organized to give farmers all the support for growing good onion and garlic.

The major recommendations emerged from the session were:

- Storage structures developed by DOGR need revalidation in terms of engineering point of view for further improvisation.
- There is need for small scale processing machinery for cottage level processing industries.
- A brainstorming session on post harvest losses in onion and garlic needs to be organized.
- Artificial curing facilities developed at AICRP (PHT), Bangalore and also at NHRDF, Karnal need to be validated at DOGR, Rajgurunagar.
- Storage structures for small household farmers needs to be developed.

Meeting of Saskatoon Ag-Bio Cluster Exploration

Director, CIPHET attended a meeting of “Saskatoon Ag-Bio Cluster Exploration” at NASC, New Delhi on March 15, 2011, under the chairmanship of Hon’ble Secretary, DARE & Director General ICAR, Dr S. Ayyappan. On my return from Pune on March 14, 2011, I attended a meeting of “Saskatoon Ag-Bio Cluster Exploration” at NASC, New Delhi on March 15, 2011, under the chairmanship of Hon’ble Secretary, DARE & Director General ICAR, Dr S. Ayyappan.

Following topics were discussed in the meeting:

- Ag-Bio Cluster - overview
- Agricultural genomics: Indo-Saskatchewan Opportunities for genomic partnerships
- AAFC Research initiatives: potential collaborations with India; abiotic stress in Brassica species
- Crop Genomics-applying Genomics to Canada’s crops
- VIDO attributes expertise and services in vaccines and animal health. Emerging diseases of humans and animals – opportunities for collaboration
- SRC in the context of the Saskatoon Agri-Biocluster.
- Canadian Light Source in the context of the SK Ag cluster: initiatives, services and the opportunities

- University of Saskatchewan activity in agriculture and the biotech sector, and the SK industry development centre
- India Agriculture-overview and bilateral opportunities

Meeting of Directors and RAC Chairmen

Dr. R.T. Patil attended a meeting of Directors and RAC chairmen of Engineering SMD under the chairmanship of Hon'ble Director General, ICAR on 28th March, 2011. He presented the brief achievements and future thrust of CIPHET along with the contribution of RAC members and chairman and QRT members in shaping the direction for Research & Development of CIPHET. After the presentation of all Directors of Engineering SMD namely, Dr. Pitam Chandra, CIAE; Dr. V.K. Bhatia, IASRI; Dr. K.K. Satapathy, NIRJAFT; Dr. A.J. Shaikh, CIRCOT; Dr. R. Ramani, IINRG, there was very lively discussion about the role and effectiveness of RAC in monitoring and streamlining research agenda of institutes.

Participation in National Exhibition

On March 9, 2011 institute displayed its technologies including Evaporative Cooled Room, cocoa based jaggery products, Pomegranate Aril Extractor, Banana Comb Cutter etc. at the National Exhibition on Plant Machinery for Horticulture Crops at PAU campus. Mr. O.P Moondan, Technical Officer said that they got lot many inquiries for the training programmes to be conducted by the institute. Farmers and entrepreneurs are now especially inclined towards food processing sector and are looking at possible alternatives for increasing their stagnant income.

Participation in PAU Kisan Mela

The technologies including maize cob Sheller and Evaporative Cooled room attracted a heavy crowd at the PAU Kisan Mela on 18th March, 2011. Mr. O.P Moondan, Technical Officer with CIPHET, said farmers of Punjab were showing keen interest in maize cob Sheller. He added that as maize is grown in large parts of the Punjab, farmers were interested to get this to save time and effort. They also informed farmers about various training programmes organized at the CIPHET.



Training programme on Value Addition of Fruits and Vegetables

Two days Exposure Programme on Cottage level manufacturing of value added products from Fruits and Vegetables for Rural Women (Under MAI-BHAGO Women Empowerment Scheme of Cooperative Dept., Govt. of Punjab) jointly organized by CIPHET and The Kerakhera Multipurpose Cooperative Society Ltd., during 21-22 March 2011. Around 25-30 women of nearby this village participated in the programme. The training included lectures, practical and field visits. The hands on training was given to prepare value added products such as mixed fruit jam of apple, mango and papaya, lemon squash, lemon pickles, etc. Besides, the group also visited



the various value added products and their marketing opportunities.

Grain Processing Plant, Small millet Plant and Kinnow grading and Waxing unit and other laboratories and field of the institute.

Training Programme for Women Jail Inmates

On 25th March 2011, Women Central Jail's inmates learned art of making jam & jelly from guava under training programme on developing entrepreneurship by CIPHET. The institute conducted its third training programme for the women jail inmates with objective to provide respectable livelihood opportunities for the inmates of after they get released from the prison. Senior Scientist from CIPHET Dr Ramesh Jhangra demonstrated the complete process of making



jam and jellies from guava. He said that starting small scale industry for production of jam and jellies was very easy. "Even with investment of Rs 20 to 25 thousand, one could start its business. Women inmates practically learnt the technique and raised queries regarding its feasibility to adopt as business. Dr Sangeeta Chopra, Senior Scientist at CIPHET, told the inmates that anyone interested in starting their own business in food processing sector could contact CIPHET. Dr Nilesh Gaikwad, a Scientist, said that there were lots many schemes of government of India available to provide financial assistance to small scale entrepreneurs and they could take benefit. While Deputy Jail Superintendent Snehjot Dhawan termed the training quite informative and Jail Superintendent Sukhwinder Singh assured all support from their staff. Dr R.T Patil, CIPHET Director, and Dr Deepak Raj Rai, Head Transfer of Technology Division, said that they were ready to provide comprehensive training programme in food processing to interested inmates after their release.

Students and Staff Visited CIPHET, Abohar

The students of M.Sc. Biotechnology of DAV college Abohar visited CIPHET, Abohar on 4th March, 2011. During the visit, they were shown various laboratory facilities, pilot plants and field experiments. The hands on training for preparation of value added products such as Aonla cheese and Ber candy was imparted to the students besides, techniques for quality evaluation of processed products such as texture analysis and Sensory quality evaluation was also explained.

Participation in Various Workshops/Meetings

Dr. S. Balasubramanian, Sr. Scientist delivered an inaugural lecture on 'Primary processing of pearl millet' and also displayed different products made through NAIP project 'composite dairy foods' during the 46th Annual workshop of AICRP on pearl millet improvement held at HAU, Hisar on 12-14, March 2011.



Dr. S. Balasubramanian, Sr. Scientist presented the research progress of NAIP (Cryogenic grinding) in the Annual workshop of NAIP (Component-4), held at IIHR, Bangalore during 7-8 March 2011. He presented the technical financial matter for the year 2010-11. His presentation covered the date base on the physical, mechanical, thermal, medicinal and flavor profile of selected Indian spices, its relations,

grinding kinetics (ambient/cryogenic) of spices, design and cooling load calculations for pre cooler etc.

The 5th CIC and 4th CAC meeting of NAIP –sub project entitled ‘Studies on Cryogenic Grinding for Retention of Flavour and Medicinal Properties of Some Important Indian Spices’ was held on 27.03.2011 at IASRI, New Delhi. Dr. R.T. Patil (CIC) and Dr. S. Sarangi (CAC) chaired the meeting, respectively. Also, Dr. N.J. Rathore (CAC member) and Dr. K. K. Singh ADG (PE) was attended this meeting as expert. The grinding characteristics of coriander, black pepper, fenugreek, turmeric and cinnamon under ambient and cryogenic grinding were discussed in detail. The preliminary design considering the mechanical and thermal properties of the selected spices and construction materials were discussed. The attempts of spice tablets were shown and discussed. A video clipping on spice grinding and its packaging was displayed. Dr. Goswami presented the research progress of IIT Khargapur. He presented the grinding kinetics and progress towards mathematical modeling of cryogenic grinder. Dr. T. John Zachariah highlighted the flavour and medicinal profile of black pepper, turmeric and cinnamon with multi location and varietal variations, storage of black pepper powder at high temperature affect the quality and its profile. He stated that there is no variation in total phenol, medicinal property up to six months storage time. Dr. Rathore presented the flavour and medicinal properties of coriander and fenugreek.

Dr. D. M. Kadam Senior scientist attended the Network of Indian Agri-Business Incubators (NIABI) 2011-An Initiative of ICAR-NAIP Global Agri-Business Incubation Conference at ICRISAT, Hyderabad from 8-10, March 2011. The objectives of the conferences were to create awareness, building a brand, platform for outlining the process and sharing the experience, promoting agripreneurs, innovations, incubators and develop a road map to promote the agribusiness incubation globally through partnerships. The conference was inaugurated by Honorable DG of ICAR Dr. S Ayyappan along with Honorable DG of ICRISAT Dr William D Dar. About 100-120 persons attended the conference.

Dr. D. M. Kadam Senior Scientist and Er. Pratibha Kaushik attended the ICAR Zonal Technology Management and Business Planning and Development Meeting cum Workshop at IARI, New Delhi from 17-18th, March 2011. The objective of meeting cum workshop was to sensitize all the ITMU/ Institutes regarding the protection of technologies/ process developed in terms of filling patents, registration, copyright or trade mark. Technology may be transferred to end-user as early as possible without waiting for patent grant that may take years. Recently published Booklet on CIPHET developed post-harvest technologies Vol-I was also appreciated.



Setting Up of Agro-Processing Complex at UAS, Bangalore

Taking a significant step ahead to promote entrepreneurship in post harvest sector, Central Institute of Post Harvest Engineering and Technology (CIPHET) has established a state-of –the-art Agro-Processing Complex at University of Agricultural Sciences (UAS), Bangalore.

Deputy Director General, ICAR, Dr M.M Pandey inaugurated the agro processing complex on March



12, 2011. Notably, CIPHET has provided Rs 1 crore of grants for establishing this complex. “The idea of establishing such a processing complex was to provide incubation facility for farmers and entrepreneurs. Before establishing their own processing units, they could develop their products and take them to market for testing,” he said, adding that idea is to develop confidence and reduce their risk.

Dr Patil said that establishing of processing complex at UAS, Bangalore was just a beginning. “Looking to the success of this joint activity to promote agro processing and value addition, many more such centers in different universities could come up,” he said, adding that CIPHET was providing such facilities to farmers/entrepreneurs from quite some time at its own campus at Ludhiana as well as at Abohar. He hoped that facility at UAS, Bangalore would help the local farmers. The complex established by the CIPHET has both wet and dry processing facility for various food crops and a research wing. After initial investment of Rs 1 crore by CIPHET, the centre has got grants to tune of Rs 3.5 from crore from other funding sources looking at its high potential for farming community.

CIPHET Transfers Technologies to Entrepreneurs

Central Institute of Post Harvest Engineering and Technology (CIPHET) signed a memorandum of understanding to transfer technology of Evaporative Cooled (EC) room & structure to a Gurdaspur based entrepreneur. The institute’s innovative technologies provide low cost and effective storage to farmers and entrepreneurs.



After getting technology, Dr Jatinder Singh, General Manager, Krishan Food& Seed Processing, said that they were growing mushroom at very large scale. “Recently, we have started constructing green house in the area of nine thousand square yard for growing vegetables and flowers. EC Room & structure would help to increase shelf life of fruits and flowers and also we will use them as growing chamber for mushroom cultivation during off season,” he added. EC room developed at cost of around Rs 70 thousand could store fruits and vegetables upto 2 tonnes. Dr Sangeeta Chopra, Senior Scientist, who has developed this room, said that it could maintain humidity as high as 85 percent and temperature remains 12 to 15 degree Celsius lower than the outside. “Thus increasing shelf life of fruits and vegetables and saving the farmers from distress selling.”

DPR on Turmeric Processing and Technology

Turmeric (*Curcuma longa*) is a rhizomatous herbaceous perennial plant of the ginger family, Zingiberaceae. The whole plant is removed from the ground. Care needs to be taken to prevent the rhizomes being cut or bruised. The leaves are cut off and the roots washed carefully in water. The lateral branches of the rhizomes are cut off from the central "bulb" covered in leaves to sweat for a day. The rhizomes are boiled or steamed to remove the raw odor, reduce the drying time, gelatinize the starch and produce a more uniformly colored product. The rhizomes are removed and dried in the sun. The final moisture content should be between 8 and 10%. The dried rhizomes are polished to remove the rough surface. The final product is packed and stored till further use. A DPR of Turmeric processing and Technology was transferred to Mr. Sukhwinder Singh Grewal, Vill. Kotli, Payal Distt. Ludhiana on 29th March, 2011.

Summer School on Bio-processing/Bioengineering Techniques

A summer school on “Advances in Bio-processing/Bioengineering and Quality Assessment Techniques” will be held from 1-21st June, 2011 at CIPHET, Ludhiana. The interested candidates may contact Dr. S. Balasubramanian, Sr. Scientist for further details and also visit our website www.ciphet.in

Technology of the Month

Quick method to process onion for powder and juice

Onion (*Allium cepa*) is commercially by far the most important crop as compared to other spice bulb crops. Besides having medicinal properties, onion is considered as a flavouring spice particularly to hide certain repulsive odour especially in non-vegetarian dishes. Dehydrated onion is increasingly becoming popular as a flavour ingredient in many food preparations, particularly meat curries, sauces, soups, sausages, salads, pickles, ketchups, mayonnaise, instant food preparations, fast food chains, dog food, medicines and so on. It is easy to pack, quality controlled and transported easily for global destinations. The dehydrated onion can be further value added by producing onion powder. Onion juice is also gaining popularity for identical purposes as mentioned above. Hot air-drying is the most commonly employed commercial technique for drying of onion into different forms. In this technique onions are thoroughly washed, peeled, sliced and dried in hot air tunnels on stainless steel conveyors. However this method demands longer drying time thus resulting in high expense of energy and product quality degradation. To counter these disadvantages, some other drying methods experimented recently are infrared drying, alone or as multimode combination and vacuum drying. But these drying methods are not commercially established till date due to application difficulties. To solve this bottle neck in value addition of onion CIPHET has developed a quick method to process onion for powder and juice.

The process consists of washing of onions thoroughly before and after peeling. For partial mechanical dewatering peeled and washed onions were cut into slices and juice was expressed with the help of juicer. Both crushed pulp and juice were pre-treated for stabilisation of quality during further processing. The dewatered pulp was dried in tray dryer. The onions were dried till the ratio of raw material to dried product is about 9:1 that is moisture content about 4% - 5%. However at moisture content of 7%, the temperature of dryer was lowered to reduce energy consumption and prevent discoloration of the end product. Onion powder was prepared by grinding the dehydrated onion slices and pulp in laboratory grinder. Hot air drying preceded by partial mechanical dewatering of onion resulted in 60% less energy consumption besides more retention of pyruvic acid (measure of pungency) and ascorbic acid content than conventional slice drying. Dewatering also did not result in any undesirable colour degradation. Also onion juice obtained during dewatering is a good co-product when concentrated and stabilised. The crushed onion paste, powder and juice can be used for many health benefits such as lowering blood lipids and prevent hardening of arteries, onion flavonoids have antidiabetic, antiaging, and bacterial-inhibition effects, antiseptic, external applications in case of insect bites, useful in flatulence and dysentery and due to high amounts of sulphur they are effective in regenerating hair follicles and stimulating hair regrowth. The process protocol is being patented by CIPHET.

Promotion/ Transfer

- Dr. M.R. Manikantan has been promoted from Scientist (SS) to the post of Sr. Scientist w.e.f. 10th March, 2011.
- Sh. Mohan Lal has been promoted from UDC to the post of Assistant w.e.f. 4th March, 2011.
- Sh. Tarsem Singh has been promoted from UDC to the post of Assistant w.e.f. 4th March, 2011.
- Sh. Harbhupinder Singh has been promoted from LDC to the post of UDC w.e.f. 4th March, 2011.
- Sh. Iqbal Singh has been promoted from LDC to the post of UDC w.e.f. 4th March, 2011.
- Sh. Tej Ram has been transferred from CIPHET, Ludhiana to IGFRI, Jhansi w.e.f. 18th March, 2011.

Job Opportunities

WALK IN INTERVIEW

Applications are invited for making the panel for the appointment to the posts of one Research Associate (RA) 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.

Name of the sub-project	Development of Nondestructive Systems for Evaluation of Microbial and Physico-chemical Quality Parameters of Mango	
Date of Completion of the project	31/03/2012	
Name of Post: Research Associate		
i)	Number of Post	One
ii)	Qualification for one post	a) Essential
		Ph.D. in Post– Harvest Engineering & Technology / Agricultural Process Engineering / Dairy & Food Engineering / Food Processing/ Technology/ Biochemistry/ Microbiology and relevant subjects Or M. Tech./M. Sc. in any subject mentioned above with 60 % marks or 1 st division or equivalent OGPA with two years experience in research/teaching/food industries
		b) Desirable
		Exposure to multivariate statistical analysis software packages for chemometrics.
iii)	Remuneration	Rs. 24000/-+ HRA (Rs. 23000/- + HRA for Masters degree holders) per month consolidated

iv)	Age limit	40 years (with relaxation in case of SC/ST/OBC/ and woman as per existing rules)
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2. Date and place of interview: 28/04/2011, 11.00 AM.
Central Institute of Post-harvest Engineering and Technology, PO: PAU, Ludhiana. 141 004,

Terms and Conditions:

- i) The above positions are purely on temporary basis and co-terminus with the project
- ii) No TA / DA will be paid for attending the interview
- iii) The applicants must bring with them original documents and a brief of research work carried out during postgraduation / Ph.D. along with one set of photocopy at the time of interview.
- iv) No objection certificate from the employer in case he / she is employed elsewhere.
- v) Experience certificate in original (if any)
- vi) Canvassing in any form will render the candidate disqualified for the post

Note : The applications with detailed bio-data in the following proforma (1) Name of the candidate (2) Father's Name (3) Date of birth (4) Present address (5) Permanent address (6) Qualifications (starting from 10th board) (7) Experience, if any (9) Publications etc. should be sent through registered post and email (snjha_ciphet@yahoo.co.in with a passport size photograph to Dr. S. N. Jha, Consortium Principal Investigator, (CPI), NAIP Sub - project, CIPHET, PO : PAU campus, Ludhiana – 141 004, Punjab and attend the walk-in-interview as per above schedule.

WALK IN INTERVIEW

Applications are invited for making the panel for the appointment to the posts of one Research Associate (RA) 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.

	Name of the sub-project	Studies on Cryogenic Grinding for retention of Flavour and Medicinal Properties of Some Important Indian Spices
	Date of Completion of the project	31/03/2012
1.	Name of Post:	Research Associate
i)	Number of Post	One
ii)	Qualification for one post	a) Essential
		Ph.D. in Agricultural Process Engineering/ Post– Harvest Engineering & Technology /Cryogenic Engineering/ Mechanical Engineering/ Food Science and technology/Dairy & Food Engineering/ Electrical and Electronics/ Chemical Engineering/ Physics/ Bio-Chemistry and relevant discipline. or Master degree in any of the above subjects with 1 st Division or 60% marks or equivalent OGPA/CGPA with at least 2

		years of research/ teaching/ industrial experience as evidenced from fellowship/ associate ship/ training/ other engagements.
		b) Desirable
		Published research papers, exposure to conducting basic studies and statistical analysis software packages.
iii)	Remuneration	Rs. 24000/-+ HRA (Rs. 23000/- + HRA for Masters degree holders) per month consolidated
iv)	Age limit	40 years (with relaxation in case of SC/ST/OBC/ and woman as per existing rules)

2. Date and place of interview: 09.05.2011, 11.00 AM.
Central Institute of Post-harvest Engineering and Technology, PO: PAU, Ludhiana – 141 004, Punjab.

Terms and Conditions:

- i) The above positions are purely on temporary basis and co-terminus with the project
- ii) No TA / DA will be paid for attending the interview
- iii) The applicants must bring with them original documents and a brief of research work carried out during postgraduation / Ph.D. along with one set of photocopy at the time of interview.
- iv) No objection certificate from the employer in case he / she is employed elsewhere.
- v) Experience certificate in original (if any)
- vi) Canvassing in any form will render the candidate disqualified for the post

Note: The applications with detailed bio-data in the following proforma (1) Name of the candidate (2) Father's Name (3) Date of birth (4) Present address (5) Permanent address (6) Qualifications (starting from 10th board) (7) Experience, if any (9) Publications etc. should be sent through registered post and email (balaciphet@gmail.com with a passport size photograph to Dr. S. Balasubramanian Consortium Principal Investigator, (CPI), NAIP Sub - project, CIPHET, PO : PAU campus, Ludhiana – 141 004, Punjab and attend the walk-in-interview as per above schedule.

For Further Details Contact:

Dr. R.T. Patil, Director or
Dr. Devinder Dhingra, Information Manager
Central Institute of Post Harvest Engineering & Technology,
Ludhiana, 141004 (Pb.)
Phone: 91-161-2308669 (O); 91-161-2305674 (Director) 9216338421
(Mobile)