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

CIPHET E – Newsletter for August 2006
Vol. I No. 2

Dr. Nawab Ali, Deputy Director General (Engg) (ICAR) Visits CIPHET, Ludhiana.

Dr. Nawab Ali, Deputy Director General (Engg), Indian Council of Agricultural Research, New Delhi and Professor Gajendra Singh, Vice-Chancellor, Doon University, Dehradun visited the Institute facilities & laboratories and addressed the Scientists and other staff of the Institute. Dr. Ali informed that Planning Commission of India has identified three areas namely food processing, biofuel from agricultural waste and by-products and water use efficient crops for XI Plan. He further added that Indo-US knowledge initiative has also included food processing and value addition as one of the important area and National Agricultural Innovation Project (World Bank Funded) has also given much emphases to food processing. He said that scientists should grasp this opportunity and form specialized groups to work upon. He emphassed the need to transfer technologies developed at the Institute and promote Institute – Industry relationship.

Prof. Singh, in his remark appreciated the research output of CIPHET and said that scientists should form e-mail discussion group on the Internet so that they will be aware of latest happening around the globe. He further said that scientists should accept the challenge and develop value added products to compete with world market.

Dr. R.T. Patil, Director, CIPHET, highlighted the activities of the Institute and assured that whatever technologies Institute develop, will reach to the entrepreneurs. He advocated the concept of Entrepreneurship Development so that rural youth could establish a food processing industry after having hands on practice on the facilities available at the institute. He assured the dignitaries that CIPHET is ready to accept the challenge of providing value addition and post harvest management technologies to the crops diversifications efforts initiated in Punjab.

Dr. R.K. Goyal, Senior Scientist conducted the programme and Dr. V.K. Bhargava, Scientist proposed vote of thank**.**

Dr. Nawab Ali and Dr. Gajendra Singh watching the mobile cool chamber and transport at CIPHET

Tree Plantation at CIPHET by Prof Gajendra Singh, VC, Doon University

Tree Plantation at CIPHET by Dr. Nawab Ali, DDG (Engg) ICAR

Participation in Workshop on IPR

Dr. R. K. Goyal, Sr. Scientist participated in program on intellectual properties rights and WTO related issue at ASCI, Hydra bad during July 31st to August 4, 2006. The workshop included topics as Intellectual Property Rights and Indian Agriculture, Dispute settlement in the WTO-US Indian TRIPS Case, Indian Patent Regime, Intellectual Property Valuation and Pricing, Technical and Legal Aspects of Patents, Patents Search and Analysis, Patent Drafting, Patents and the Pharmaceutical Industry, Intellectual Property Protection through Geographical Indications, Protection of Traditional Knowledge in Current IPR Regime, Intellectual Property Right in Bio-Technology and Basics of copy Right Law and Policy.

Independence Day Celebrated

Institute celebrated 60th Independence Day on 15 August and organized games for children and the staff. Dr. R.T. Patil, Director hoisted the National Flag and addressed the staff on the occasion. He stressed the importance of value addition and post harvest management of the various crops grown in the country and how CIPHET has to play a major role in meeting the challenges of developing viable technologies for processing such a diversified crop base. The institute has many challenges as well as opportunities and the country has very high expectations from CIPHET and to meet them CIPHET employees need put in their best efforts jointly.

Flag hoisting at CIPHET on Independence Day

Children enjoying the Independence Day sports events at CIPHET

Dr. R.T. Patil visits Food Processing Industry in New Delhi

Dr. R.T. Patil visited Food Processing Industry in New Delhi on 19.08.2006. The Extrusion Cooker manufacturing facility of M/s G.L. Sharma and Associate's at was visited to see the various types of extruders manufactured for producing ready to eat snacks. The extrusion cookers are used to produce texturized vegetable proteins (soy nuggets), ready to eat expanded snacks from cereals and blends with legumes. The cost of about 500kg/hr extruder along with 75 hp motor works out to about 7.5 lakhs. This extrusion cooker is also used for pretreatment to soy and other oil seed grits so that oil expression efficiency can be improved without loss in the quality of cake. The extrusion-expelling unit can produce edible quality medium fat soy flour and natural soy oil. The SPU centre at CIAE Bhopal has further developed this concept and integral extrusion expelling unit at laboratory level using 250-kg/h capacity dry extruder was developed. The possibility of scaling up this technology to 500 kg/hr with collaboration of extruder manufacturer was discussed with this manufacturer.

Participation in Training Programme

Dr. Rajbir Singh and Dr. M.S. Meena participated in training programme on management of medicinal and aromatic plants at TTI, Bhopal during August 13 to 16, 2006. It covered cash and energy aspect of post harvest management of these plants.

Dr. S.K. Nanda visits USA

Dr. S.K. Nanda, PC (PHT) participated in the Food and Agri Business Management Program during 10-18 August 2006 at the Cornell University, Ithaca, New York (USA). The Us Module of the programme consisted of course lectures; presentation and field visit to farms and processing industries in the region.

Dr. R.T. Patil, Dr. D.S. Uppal and Dr. K. Nara visit Jalandhar

Dr. R.T. Patil, Dr. D.S. Uppal and Dr. K. Narsaiah visited Sandlas Air-con System (P) Ltd., Jalandhar on 23.08.2006. They are the manufacturers of Indigenous Individual Quick freezing Plant for fruits and vegetables, freezer cold storages, which are required for cool chain for fruits and vegetables. The company indigenously manufactures the insulating panels for walls, refrigeration system. The company is setting up a big freezer cold store of 2500 ton capacity on its premises. The IQF developed by company is unique. They have also developed and installed a pea depodder, pod separator matching to the capacity of IQF in a separate building. From here the peas are pumped with water to another building where Quick freezing as well as storage of frozen peas is maintained. The pumped peas are separated from water and blanched in hot water at 98^0C for two minutes. There after they are conveyed though a trough holding chilled water to a perforated through where the water pods and peas are separated. The peas are then air-dried on perforated belt conveyor to remove surface water. The peas are then taken to elevated place by bucket elevator from where they are dropped on the conveyor belt in side the freezing cold room. They are conveyed from one end of the room to other end on a perforated belt conveyor. The cold air at -25^0C is blown from bottom of the conveyor which keeps the peas in fluidized condition. The length of conveying is approximate 40-50 ft. and travel time is 3 minutes. This conveyor serves as quick freezing section where temperature drops down to- 20^0C. The beans are then taken out by chute outside the cold store where workers collect the frozen peas in the bags of 30kg and then again immediately bags are transferred to freezing cold storage. For convenience of collecting the frozen peas at ambient condition without loosing the effect of freezing this operation is done close to door of cold store so that they can be immediately shifted to cold room after stitching. The owner of the faculty informed us that he has perfected the freezing of peas, french beans, cauliflower, snow pea, etc. The IQF to be economical, it should process about 10,000 ton of vegetables per year and cost of such facility comes to around Rs. 3 crores. They also manufacturer cold/freezers which are mounted on truck, mini trucks, jeep and even three-wheelers.

	
Green pea depodder	Pod separator

The team also visited CPRI research station at Jalandar to see various types of storage structures for short-term storage of potatoes

Evaporatively cooled storage structure of 20 tone capacity for short term storage of potatoes

Participation in NAIP Workshop

Dr. O.D. Wanjari, PC (APA) and Dr. R.K. Goyal, Sr. Scientist participated in NAIP workshop on 26.8.2006 held at NDRI Karnal. It was informed that 80% of the projects would be in competitive mode where as 20% would be sponsored under 2nd, 3rd & 4th components of the NAIP. It was emphasized that under component 2nd, agro processing and value addition have been given due consideration. It was further added that this time project would be invited in consortium mode hence it is the responsibility of all stakeholders to first make a consortium and identify Consortium Leader and Principal Investigator. It was said that 15-20 consortium would be supported under compound 2nd & 3rd of NAIP. It was informed that first call for inviting concept would be given in the second week of October and NAIP would require 6-8 months in issuing final sanction letter from the date of inviting concept note if proposal is approved.

Institute got outside funded project

Dr. H.S. Oberoi, Sr. Scientist of the institute received a grant of Rs. 24.62 lakhs from NAIBM for project on "Utilization of Paddy Straw and Kinnow Waste for Bioethanol Production"

Progressive farmer and entrepreneur shows interest in CIPHET technology

Mr. Kailash Choudhary, entrepreneur and owner of M/s Choudhary Agro Biotech, Kiratpura, Jaipur visited the institute on 07.08.2006 and gave letter of interest to buy technology for aonla processing developed at the institute.

Technology of the month-Guava bar

Guava is an important commercial fruit crop of India. It ranks fourth in area and production after mango, banana and citrus. But its fruit are perishable in nature and cannot be stored for more than two days during peak season. This causes glut in the market resulting in waste and poor returns to the farmers. Hence, it becomes essential to utilize this fruit for making different quality products, which can be stored for longer period. Guava can be processed into a number of products but the development of a better and cheaper product is of paramount importance in the present market scenario.

A number of products are being prepared from guava but the gritty texture of the fruit is the main hindrance in its processing into more diversified product like fruit bar. To counter this challenge, the fruits, which are rich in nutrients but are not accepted due to high acidity or poor taste and flavour was blended to improve its acceptability and make use of available nutrients. Processing of this fruit into blended fruit bar or fruit leather added value to this fruit by 3 – 4 times. The texture and overall acceptability of blended guava bar were highly proffered than its plain guava bar. Though blending of other fruits slightly masked the flavour of guava bar but all the blends were quite acceptable even after 6 month of storage. In general, light yellow and bright red colour were better appreciated when compared to their pleasant colour obtained by mixing of mango or papaya pulp with that of guava pulp. Development of such product will not only offer variety to the consumers but also add value to less appreciated fruits like papaya and well-established fruits like mango. The compositional details of guava bar are: Moisture: 15%, Vitamin C: 120 mg/100g, Acidity: 1.08%, Reducing sugar: 14%, Non-reducing sugar: 46%, Total sugar: 60%, Weight of each bar: 5-10 gm, Preservative: KSM (Potassium Meta bisulphide: 0.2%)

The guava bar is a unique preparation of CIPHET and it is not commercially done so far. Next step in this research is scaling up to pilot scale. The bar is not gritty like original fruit. Per kg of guava 250 to 300 gm bar can be prepared.

Guava bars with various flavours

Project Profile of the Month -Milling of Pulse

Process outline:

Milling of pulses means removal of the outer husk and splitting the grain into two equal halves. The kernel of some pulses tightly holds the husk. Therefore, de-husking of these pulses poses a problem. To loosen the husk, pre-treatment with oil and conditioning of grains by alternate drying / wetting is done. It facilitates de-husking and splitting of pulses. A large amount of abrasive force is applied to the conditioned pulses for de-husking of the grains. It results in high losses in the form of broken and powder. Consequently, the yield of split pulses in traditional mills is only 65 to 70 per cent in comparison to 82 to 85 per cent potential yield.

The dry milling of pulses is explained in the following flow diagram:

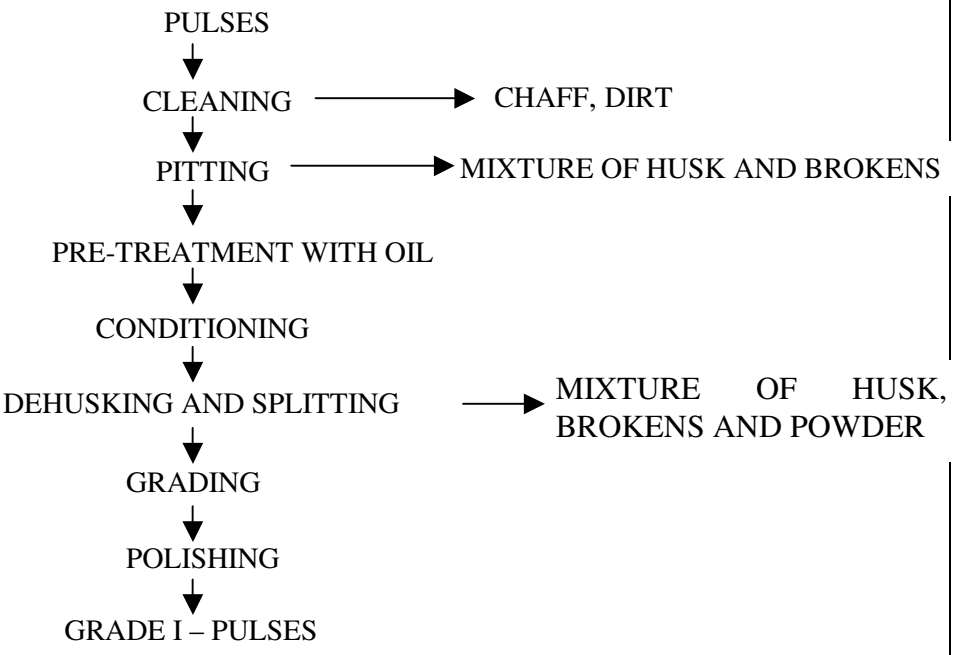

Fig 1. Flow diagram of dry milling of pulses

BENEFIT-COST ANALYSIS

Assumptions

The assumptions for calculations are as under:

- Capacity of dal mill unit: 10 tonnes/month (25 days/ month)

(75 % of the rated capacity; 13.5 tonnes/month)

- Recovery: 70 %
- Monthly repair and maintenance charges: 1 % of the cost of machines.

- Depreciation on machines and equipment: 10 % p.a.
- Depreciation on furniture and tools: 20 % p.a.
- Rate of interest: 11% p.a.
- No. of working days in a month: 25
- Total number of working days in year: 300
- Working hours per day: 8
- Capacity utilization:1st year 50%; 2nd year 60%; 3rd year 70%; 4th year 80%; 5th & subsequent years 90%.

Total Capital Investment

Fixed Capital	Rs. 3,05,000-00
Working capital for 1.5 months	Rs 2,80,650-00
Total	**Rs. 5,85,650-00**
Annual Cost per year including total working capital, depreciation on machines, depreciation on furniture and interest on Total capital Investment@11%	**Total Rs. 23,23,122-00**
Total Sales (per annum) of Dhal, 84 tonnes @ Rs. 27,000/tonne and Chunni and Husk etc. 30 tonnes @ Rs. 8000/tonne	**Total Rs. 25,08,000-00**

Profitability

Return on capital investment = 31.57 %

Break-Even Point

Break Even Point = 1,19,202 / (1,19,202+1,84,878) x 100= 39.20 %
Pay-back period = Total cost of project / profit = 305000 / 184878 = 1.65 years

LIST OF MACHINERY MANUFACTURERS/ SUPPLIERS

1. Shriram Associates, J-27, Phase III, M.I.D.C., Akola – 444 104
2. Nalanda Agro Works, Nalanda Nagar, Kurji, Patna – 800 010.
3. S.K. Engineering and Allied Works, Sheonagar, Behraiah – 271 801.
4. S.A.K. Industries, 33 Technocrats Industrial Estate, Balanagar, Hyderabad – 37.
5. Servotech Engineers Pvt. Ltd. B-21/27 Commerce Center, Tardeo Road, Mumbai – 34.
6. G.G. Dandekar Machine Works Ltd., Bhiwandi,– 421 302, Dist. Thane, Maharashtra.
7. Ashok Emery Works, 12 Lower Chinna Thambi Mudali Street, 2nd Lane, Madras-21.
8. Hardcase Engineering Works, Lalji Mighji Compound, Secunderabad – 500 003.
9. Swathi Industries, 262 Maruthamalai Road, P.D. Pudur, Coimbatore – 641 014.
10. C.S. Industries, 520 Sathy Road Ganapathy, Coimbatore – 641 006.
11. Gurunanak Engineering Works, 2-3/79-17 Golnaka Amberpet, Hyderabad.
12. General Engineering Company, 47 Kundaswada, 5th Lane, Mumbai.

Institute Management Committee Meeting

The meeting of Institute Management Committee of CIPHET was successfully held on August 05, 2006 at CIPHET, Ludhiana under the Chairmanship of Dr. R.T. Patil, Director, CIPHET. The following member of the IMC namely Dr. Pitam Chardra ADG (PE), ICAR, New Delhi, Dr. D.V.K. Samuel, Principal Scientist, IARI, New Delhi, Dr. B.S. Modi, Principal Scientist (AS&PE), IARI, Karnal, Sh Shanti Lal, Administrative Officer, CIPHET and Member Secretary. Dr. S. K. Nanada, PC (PHT), Dr. D. S. Uppal, Head (AS & EC and TOT), Dr. R. K. Gupta, Sr. Scientist, CIPHET, Ludhiana, Dr. Rajbir Singh, Sr. Scientist, CIPHET, Abohar and Sh. Vijay Kumar, AF&AO, CIPHET, Ludhiana also participated as special invitees.

After warm welcome by the Chairman, a visit to Institute facilities was arranged for the present member of IMC. The Director presented in detail about the progress in research and development and other activities of the institute for the intervening period and apprised the member about the salient achievement and on going project and activities in different field. The entire members expressed their satisfaction on progress made by the institute and assure their all-possible help for timely disposal of the cases pertaining the institute.

Dr. R. P. Kachru, Ex. ADG (Engg) visits CIPHET

Dr. R. P. Kachru visited CIPHET on 5.8.2006. He was shown the latest addition of pilot plants at CIPHET and the prototype of sunflower decorticating mill, which was under fabrication. Dr. Kachru gave valuable suggestions in the fabrication to make the unit more efficient for separation of decorticated components.

Tree Plantation at CIPHET by Dr. R. P. Kachru, Ex ADG (PE) ICAR New Delhi

Director's Column

Dear All,

I am highly thankful to you for giving valuable suggestions and appreciation to CIPHET E-newsletter. We have tried to develop the content of this newsletter based on those inputs. From this newsletter onwards we will be presenting to you each month a project profile of agro processing enterprise and this time it is on pulse milling. Hope, you will appreciate it and make use of it and give it a wider publicity. Institute would be happy to provide detailed project profile on this topic at nominal charge of Rs. 500/-.

This is a season of guava and hence the technology of the month is for guava bar. The guava gives about 100 mg/100g of vitamin C however many do not like its gritty taste. In the season there is a glut in the market and hence the novel guava bar technology offers viable alternative to raw consumption thus helping both processor and farmers. This product we had presented during annual AGM of ICAR and was appreciated by all.

The institute is also trying to collaborate with various processing machinery manufacturers and the visit to indigenous extruder manufacturer and IQF manufacturer was undertaken with this purpose. To increase the processing and value addition activity in the country it is essential that the necessary modern equipment should be manufactured indigenously to make the technology adoption affordable and economically viable.

The XI plan preparation of the Institute is in the process and your valuable inputs would be highly appreciated to formulate the Institutes activities for next 5 years. Recently, Institute submitted its perspective plan (Vision 2025) to the Council for its approval. In the first week of September, Institute is going to celebrate Nutrition Week in which students of various schools would be invited and they would be made aware of importance of nutrition in their food for healthy living.

With best regards.

R.T. Patil
Director

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