



Postharvest Newsletter

A publication of the Australian Centre for International Agricultural Research Postharvest Technology Program

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Food from thought: "Linking Farmers with Markets"

ACIAR has devoted a newsletter to development assistance and the postharvest sector of agriculture since 1984.

Under the editorship of Ed Highley, the stewardship of the Postharvest Technology Program Managers, Bruce Champ and Greg Johnson, and efforts from project personnel and other contributors, particularly Mary Webb of Clarus Design in recent years, the newsletter has grown along with ACIAR. It now provides quarterly news and views to people on a mailing list of nearly 2000 addresses. Also, back issues can be read on the web at <www.aciar.gov.au>.

Since ACIAR's establishment in 1982, new drivers have emerged in the postharvest sector. The management of postharvest losses has become enmeshed with issues and developments such as market-driven production, quality assurance, supply-chain management, ecological sustainability, food safety, globalisation, the World Trade Organization, Sanitary and Phytosanitary (SPS) measures and, of course, the astonishing improvements in communication brought about by the Internet.

The world has shrunk, while the complexities and challenges for the postharvest sector have expanded. Economics, marketing and postharvest science and technology have become more closely entwined. In 2002, ACIAR recognised the increasing interdependence of "product, place and profit", by making "Linking Farmers to Markets" one of four broad themes for its research and development agenda in agriculture in the coming decade.

In the "Linking Farmers to Markets" theme, ACIAR recognises that, in the face of globalisation, the progress and resilience of communities depends on

an understanding of and access to markets, flexibility and strength in financial management, and effective governance and institutional frameworks. These requirements are in addition to the need for quality, efficiency, and versatility of the production, processing, and marketing systems. All are issues that underpin the chance of success in:

- matching products to markets
- maintaining product quality after harvest
- value adding
- reducing processing waste
- strengthening biosecurity provisions through technical and policy interventions
- enhancing incomes and income distribution through institutional and agricultural policy reform.

A new, electronic newsletter

As part of the strategy to foster broader multidisciplinary approaches to development within this theme, the *ACIAR Postharvest Newsletter* is also changing. A new, electronic newsletter — *Linking Farmers with Markets* — will in future provide broader coverage of agricultural systems economics, development policy, and postharvest technology for development. This new change reflects the evolution towards the multidisciplinary focus on supply-chain improvement that is becoming predominant in agribusiness as developing countries increasingly become part of the global community. During the second half of 2003, we will contact our readership base with advice about how to register to receive the regular e-newsletters.

GIJ

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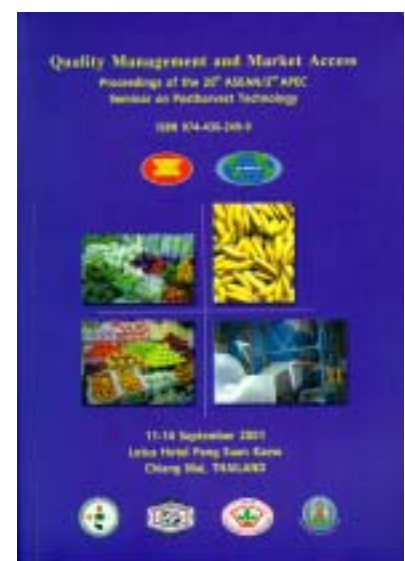
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Contributors to this issue:
Ed Highley, Greg Johnson, Tim O'Hare, George Szrednicki, Mary Webb



**ASEAN/APEC SEMINAR
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Global Post-Harvest Systems Initiative for the 21st Century

A workshop to further the development of a "Global Post-Harvest Systems Initiative for the 21st Century: Linking Farmers to Markets" will be held at FAO headquarters in Rome on 7–9 October 2003.

The workshop will review a draft strategic plan for a global postharvest program developed on the basis of three important postharvest initiatives:

- the Global Initiative on Post-harvest (GIPh) of FAO/the Global Fund for Agricultural Research (GFAR)
- the Linking Farmers to Markets (LFM) initiative of the PhAction network
- Small and Medium Enterprises (SMEs) and Markets initiative of GFAR.

These developments and initiatives are driven by emerging global trends such as urbanisation, changing consumer demands, developments in information technologies, globalisation, food safety and quality concerns of consumers, and new players in the marketplace. They present opportunities and challenges

for both the traditional and the small-scale commercial food sectors in developing countries.

Many developing countries are unable to competitively market fresh produce and/or value-added agricultural products. Reasons for this include inability to compete in terms of cost, quality, safety, volume and timeliness of delivery. It will therefore be necessary for governments and support institutions to make changes in policies, strategies, human-resource skills, and organisational linkages in order to capitalise on the opportunities presented by emerging global trends, and to likewise meet the challenges which they present for the agricultural sector.

An action plan that can make the postharvest subsector contribute more to agricultural growth and to the economic and social development of populations in developing countries is therefore required.

This workshop will involve key stakeholders. It will seek consensus on major issues and to refine elements of the strategic plan within the context of its implementation as a Global Partnership Programme. ■

ASEAN/APEC Postharvest Seminar in Bali, Indonesia

The theme of the 21st ASEAN/3rd APEC Seminar on Postharvest Technology, to be held at Nusa Dua, Bali, Indonesia on 23–26 August 2003, is "Food safety, quality assurance and environmental sustainability, emerging challenges confronting the postharvest sector".

Major current issues to be discussed during the seminar include: Postharvest management of perishables, fisheries and grains; Food safety of agricultural products; Quality standard implementation, consumer perceptions and expectations; Environmental management considerations; Market access and marketing strategies; Supply-chain management; and Value-addition to agricultural products.

The seminar will coincide with the Seventh Annual Nusa Dua Festival, one of Indonesia's largest and most successful cultural events. The organising committee together with Nusa Dua Tourists Resort have drawn up a program of field visits to maximise the interactions between researchers and practitioners from the food industry, and to taste and enjoy and Bali's world-famous culture and art.

The program will include invited speakers and contributed papers and posters, an industry day, a field trip, and a conference dinner.

For full details of the seminar go to <www.phts2003.web.id> or contact: PHTS 2003 Secretariat M. S. Mahendra or I W. Arthana PMIL-UNUD, Gedung Pascasarjana Jalan P. B. Sudirman Denpasar 80232, Indonesia. ■

Australasian Postharvest Horticulture Conference 2003

Healthy food, supply chains, science — these are essential ingredients of postharvest horticulture, whose activities span production of quality products on the farm through to their consumption in the home.

The Australasian Postharvest Horticulture Conference to be held in Brisbane from 1–4 October 2003 is set to attract specialists from industry and research in Australia, New Zealand, the USA, and elsewhere with interests in the latest developments in the science of postharvest horticulture.

"Quality" will be a unifying theme in the conference as researchers explain their studies on quality improvement for our fresh and processed fruits and vegetables to support a healthy lifestyle. A visit to the supermarket will make you aware of the expanding range of minimally processed products like salad mixes and peeled and diced vegetables. These products require much investment in science and technology.

Fresh and processed products must be maintained free of pests and diseases when transported across Australia and to other countries. Discussion of the roles of quarantine inspection and new methods for postharvest pest and disease treatment is on the conference agenda.

Among the keynote speakers at the conference will be New Zealand's Dr Nigel Banks, who is well known as researcher and teacher of apple and kiwifruit storage technologies. He will speak on organising an effective quality supply chain. US expert Dr Stanley Kays from the University of Georgia, will also speak on the achievement of postharvest quality.

The conference, which is being organised by the Queensland Department of Primary Industries, is open to all with an interest in harvested horticultural products. Industry growers and processors are especially encouraged to attend. Full details on cost, accommodation and the post-conference tour to Tropical Fruit World on the south coast, are available online at: <<http://www.aphc2003.org>>.

T.O'H.

Training for in-store drying of grain in China

Grain at harvest must be dried to a safe moisture content if it is to be stored for any length of time.

If the moisture content is very high, excess moisture can be blown off using heated air in, for example, a flash dryer or a fluidised-bed dryer. This is an energy-intensive procedure. Grain with a moisture content that is lower but still too high for long-term storage can be dried in-store, using air with properties near ambient. Such slow, in-store drying has been found to be economic and to preserve the quality of the stored commodity. Researchers in ACIAR project PHT/1994/037 are seeking to bring these benefits to the grain industry in China.

The project team has researched the use of in-store drying of grain crops of economic significance grown in regions where ineffective drying is a major cause of high postharvest losses. These crops include maize in the northeast of the country and paddy in southern China. Very large amounts of grain are involved. The

annual production of paddy rice in China, for example, is over 150 million tonnes.

Research so far has involved laboratory studies and several seasons of field trials in various locations. Thermophysical data for the main varieties of rice and maize have been determined. Weather data for the key regions for which in-store drying has been proposed and tested have been obtained either from existing databases or have been collected by the project teams.

Computer simulations that enable users to learn, design or optimise the use of in-store dryers have been developed and translated into Chinese. Automatic control systems for operation of in-store dryers have been devised and tested at several experimental sites in northeastern, eastern and southern China. This work stimulated strong interest in in-store drying among Chinese grain scientists, grain-handling authorities, and private companies involved in grain processing and manufacturing or commercialising grain-handling equipment.

In order to disseminate information about grain drying in general and in-store drying in particular, two training courses were run in China during 2002–2003.

Some 40 participants from provinces of northeastern and eastern China attended a training course at the Northeast Agricultural University in Harbin (Heilongjiang province) during 2–4 July 2002. The bulk of participants came from grain administration authorities (45%) and companies involved in grain storage, handling or manufacturing of equipment (40%). The remainder were from research organisations and universities. Mr Li Fujun, deputy director, Division of Storage and Transportation of China's State Administration of Grain opened the training, which covered the following topics:

- Fundamentals of grain drying
- Introduction to computer modelling
- Drying simulation
- Practical applications of drying simulation
- Process control in in-store drying
- Presentation of results of field tests in northeastern China
- Practical applications of process control in in-store drying (conducted at an experimental site in Sifang).

The training was conducted entirely in the Chinese language with participation of Chinese and Australian project staff, and Chinese researchers expert in the science of drying. Professor Cao Chongwen from China Agricultural University — the author of several books on drying — made an outstanding contribution to the training. Among ACIAR project staff involved in teaching were Dr Niu Xinghe, the scientific adviser of the project in China, Mr Ju Jin Feng, the former director of the Grain and Oil Institute of Heilongjiang Province, and M. Liu Fang Jiu, president of Zhongliang Storage Technology Ltd.

Lectures were followed by a hands-on training in the computer laboratory. The participants were issued with the Chinese version of the drying simulation program on CD-ROM. It is expected that the drying simulation will be used for self-teaching as well as a teaching aid for those involved in staff training in their organisations. The training was followed by a field trip to Sifang grain depot where in-store drying experiments have been conducted over the past four years.



Mr Li Fujun (right), Deputy Director, Division of Storage and Transportation of the State Administration of Grain, opening the training course on in-store drying in Harbin



Mr Guo Cheng (centre), Director of the Chengdu Grain Storage Research Institute, opened the training course in Chengdu



Dr Niu Xinghe, the scientific adviser for grain drying training in China, guides a participant through a computer simulation



Professor Cao Chongwen (left), who made an outstanding contribution to the training, in discussion with Mr Liu Fang Jiu, president of Zhongliang Storage Technology Ltd.

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CPHP takes “coalitions approach” to postharvest R&D*

The Crop Post-harvest Programme (CPHP) is one of ten centrally managed natural resources research programs of the United Kingdom’s Department for International Development.

CPHP began as a fairly conventional research initiative that commissioned mainly technology develop-

ment projects relying on disciplinary research related to storage, processing, physiology and marketing systems economics. However, an “output to purpose” review in 1997 revealed that, while many of the projects were achieving their technological objectives, few were making an appreciable impact on the broader development goals that they purported to address. It is highly likely that reviews of equivalent agencies around the world would have drawn similar conclusions.

The CPHP has since examined how this situation could be improved to make better use of funds and, more importantly, to better meet the aims of the program — to reduce poverty. Two case studies in postharvest innovation undertaken in India — one which was a total failure and the

other a great success — were analysed. The two projects were completely different in the way they were implemented. The first took a more “traditional” route, while the second used an “innovation systems approach”.

Case study 1: quality management systems for mango exports

The aim of this project was to develop controlled atmosphere, sea-shipment protocols to allow exports of mangoes to the European market. This required significant adaptive research to develop the gas and temperature regimes for shipment specific to the characteristics of Indian mangoes. The protocol also included improved pre- and postharvest practices at the farm and packing-house level. The Agricultural Processed Products Export Development Authority assisted Vijaya, a fruit growers’ association, to run the project.

Continued on page 7.

* Summary of paper: Hall, A and Sulaiman, R.V. 2003. Postharvest innovation systems in South Asia: research as capacity development and its prospects for impact. In: Mori, Y., Hayashi, T. and Highley, E., ed., Value-addition to agricultural products. Towards increase of farmers’ income and vitalization of rural economy, Proceedings of the 9th JIRCAS International Symposium 2002, 53–61. Available online at: < <http://ss.jircas.affrc.go.jp/kanko/sympo.htm> >.

Training for in-store drying of grain in China ... from page 1

A second training course, organised by the Chengdu Grain Storage Research Institute, was held in Chengdu, Sichuan province during 9–11 April 2003. There were some 82 participants in the course, which

was opened by Mr Guo Cheng, director of the institute.

This course was also conducted entirely in Chinese with participation of the Chinese and Australian project staff. Among project staff involved in teaching were Dr Niu Xinghe, Mr Wang Shuanglin, project scientist from Chengdu Grain Storage Re-

search Institute, and Mr Liu Fang Jiu, president of Zhongliang Storage Technology Ltd.

The program was similar to that in Harbin, using the results of field trials were obtained in experiments conducted in eastern, southern, and southeastern China. The lectures were followed by a practical session in a computer laboratory where the participants had the opportunity to practice the drying simulations that had been distributed to them on CDs. As in the first training, a guided tour through the program was provided by the Australian and Chinese training team before the trainees started using the program. The field trip was conducted to the city grain depot in De Yang where a control system was installed for in-store drying of paddy.

Participants were drawn from grain administration authorities (21%), from companies involved in grain storage, handling or manufacturing of equipment (56%), and from research organisations and universities (23%).

Although the two training sessions exposed only a tiny fraction of the Chinese grain industry to the concept of in-store drying, it is expected that the trainees will become trainers in their home organisations, and that training materials given to the participants will be useful in these follow-on training activities.

G.S.



Group discussion of the results of a computer simulation during the Harbin training course



Miss Li Chen from Kunming and a colleague setting up a drying scenario during the Chengdu training course



Preparing the control equipment in De Yang, Chengdu for demonstration during the training course field trip



Field trip to the Sifang Grain Depot near Harbin

Maximising the impact of postharvest sector R&D

A recent paper* by Geoffrey Mrema and Rosa Rolle of FAO puts a strong case for the big role that the postharvest sector can play in the agricultural development and economic growth of developing countries. But the opportunities offered by global trends must be seized and the challenges they present met.

The three segments of the postharvest sector

The postharvest sector can be divided into three segments. First, the **traditional-technology** segment consists mainly of subsistence farmers in low-income countries who use rudimentary technology, which is often labour-intensive and inefficient. Most produce is used by the household, with any surplus sold through local markets only. **Intermediate-level** technologies are predominant in low and middle-income countries. These are applied by small-scale farmers who often have access to somewhat more sophisticated equipment and practices, such as packing houses, refrigeration and storage facilities. The produce at this level is targeted at both the local market and increasingly the export market. Access to **high-level** technologies, such as packing-house equipment and cold chains is generally restricted to the medium- and large-scale farmers of middle- and high-income countries.

Mrema and Rolle emphasise that the traditional-technology segment must not be overlooked, as it is vital to feeding the rural poor. Interventions in this segment should target upgrading the handling, processing and storage infrastructure of subsistence farmers and their communities, so as to minimise their postharvest losses, improve their food security and strive to make their postharvest and processing practices less time-

consuming. Appropriate training and technology transfer is vital, and enabling policies need to be encouraged. While a continued focus on the traditional segment is necessary, Mrema and Rolle feel that the greatest opportunities for agricultural and economic growth lie with the intermediate-technology segment.

Current trends that impact the sector

The following trends are important for the postharvest sector, but demand significant inputs and restructuring if any benefit is to be derived from them or any damage minimised, and each aspect needs careful consideration and planning.

Contraction in the agricultural sector. Alternative sources of income through off-farm employment need to be generated, particularly through value-adding activities.

Urbanisation and changing consumer demands. As the shift towards urban dwelling continues, urban-rural linkages need to be improved through investment in roads, transportation and marketing infrastructure. Ensuring adequate food supplies for the increasing urban population requires increased efficiency within the postharvest and marketing systems. As urbanisation increases, dietary habits change, mainly in the demand for easy-to-prepare and attractively packaged foods. However, the need to supply foods at an affordable price for low-income consumers also needs to be remembered.

Globalisation. While opening up opportunities for increased agricultural exports for developing countries, globalisation also increases the vulnerability of internal markets to competition from inexpensive (or subsidised) imports of ostensibly higher quality than can be produced in their local markets. Staying ahead of this competition will necessitate greater consideration for quality assurance throughout the postharvest chain.

Food safety and quality issues. Sanitary and phytosanitary regulations frequently cause problems, particularly for exports of fresh foods from developing countries, with many consignments rejected because they fail to meet basic food hygienic requirements. In order to guarantee

the quality and safety of their produce, developing countries need to use preventive methods such as good agricultural practices (GAPs), good manufacturing practices (GMPs) and hazard analysis and critical control point (HACCP) procedures. Traceability — the ability to track food items from production to consumption — is more frequently requested, and underlines the need for vertical integration of commodity chains.

New players within the marketplace. Supermarkets and other large buyers are becoming increasingly dominant in the marketplace and demand steady volumes of high-quality product. The only way that the small farmer can “get a slice of the action” in this environment is to cooperate with other small farmers at the community level, or act as a supplier (contract farmer) to a buyer acting as intermediary for the supermarket. In either case, the ability to supply consistent quantities of quality-assured product is paramount and requires more integration of postharvest activities, and the establishment of appropriate infrastructure and logistical arrangements that allow for economies of scale in both production and processing.

Biotechnology. As there has been a mixed reaction to the application of biotechnology, Mrema and Rolle do not go into much detail in this area, but they do flag the need to stay abreast of biotechnological developments so as not to miss out on any potential opportunities that they may offer.

Niche market opportunities. Increasing emphasis is being placed on the role of products to supply niche markets in increasing export opportunities for developing countries. These include low-volume, high-value products, such as spices, ornamentals and mushrooms, and specialised products such as organic produce. Issues of food safety and quality are often less clear in such products that have not been tested to the same degree as “standard” commodities.

Information technology. As huge amounts of information are now available on markets, technologies, standards and regulations, developing countries need to increase their access to this information, e.g. through use of the Internet, to boost performance in the postharvest sector.

Concluded at foot of page 6.

* Mrema, G.C. and Rolle, R.S. 2003. Status of the postharvest sector and its contribution to agricultural development and economic growth. In: Mori, Y., Hayashi, T. and Highley, E., ed., Value-addition to agricultural products. Towards increase of farmers' income and vitalization of rural economy. Proceedings of the 9th JIRCAS International Symposium 2002, 13–20. Available online at: <<http://ss.jircas.affrc.go.jp/kanko/sympo.htm>>.

Innovation in adoption of drying technology in China

Researchers in the ACIAR project “In-store drying of grain in China” (PHT/1994/037) have been testing the technology in different parts of China for the past six years. The in-store drying system has been adapted to suit the various types of stores common in grain depots around the country.

In field trials in the northern province of Heilongjiang, in-store drying was applied to brick silos of 220 tonnes capacity holding maize at depths of up to 4.8 m.

Trials in Changning City near Ybin, Sichuan province, southern China, were in a small, horizontal godown holding up to 28 tonnes of paddy. The grain pile in this godown was up to 2 m high.

A horizontal warehouse of 100 tonnes capacity of paddy and a bed

depth of 2 m was used in field experiments in Dongsha Town, Zhangjiagang City, Jiangsu Province in eastern China. Horizontal stores of this type can accommodate bed depths of up to 4 metres.

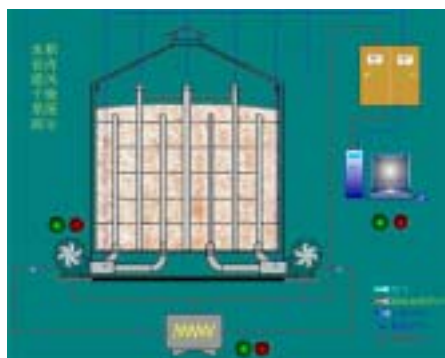


Inspection of the vertical air-distribution system in one of the newly constructed silos in Mishan Grain Depot in Heilongjiang province. From left to right: Mr Chen Shu Ren, Mr Liu Fang Jiu, Ms Zhong Li Xin (Zhongliang Storage Technology Ltd) and Dr George Szrednicki (University of New South Wales)

In Heilongjiang, the drying of maize and paddy is carried out in the cool season when there is limited microbial activity. There is thus a relatively low risk of spoilage of the top layers of grain. Nevertheless, in order to accelerate the process of drying of the upper layers of grain, the team of engineers at Zhongliang Storage Technology Ltd in Harbin proposed inserting a series of vertical air distribution ducts into the mass of grain.

The system has been tested and is currently being implemented in Mishan City depot, which is one of the largest grain depots in Heilongjiang province. The total storage capacity of the Mishan City depot is 340,000 tonnes, most of it occupied by paddy. Concrete silos make up some 150,000 tonnes of the storage capacity, and mat silos the rest. Two of the concrete silos with 1500 tonnes capacity of paddy and a bed height of 12 m of grain have been fitted with the vertical aeration ducts developed by Zhongliang Storage Technology Ltd.

In contrast, the depth of the grain bed for in-store drying of paddy in southern China may be limited by microbial activity in the top layers under the climatic conditions prevailing during drying. In order to reduce the risk of fungal infection in the top layers, an electric ozoniser has been developed by the team at Chengdu Qinpeng Green Storage Ltd. This is the company commercialising designs developed by the Chengdu Grain Storage Research Institute.



Principle of vertical air distribution ductings for in-store drying of grain in a vertical grain silo with an automatic control system



Filling the silo with rice during testing of the vertical air distribution system in the Mishan Grain Depot



Ozone fumigation of the top layers of grain

The ozoniser has been designed primarily for control of insects in stacks of dry grain and has been tested for that purpose in the laboratory and at an industrial grain depot. The test results showed the ozoniser to be successful. Field experiments are currently being carried out in paddy and maize in Ziyang Grain State Depot in Sichuan province in order to determine if the ozoniser can control moulds. Also being studied are the effects of ozone, a strong oxidising agent, on grain quality.

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Making the most of the trends

In order to maximise the opportunities afforded by these trends to boost economic growth and agricultural development, the intermediate-technology segment of the postharvest sector needs to be appropriately equipped and managed and this remains a major challenge.

In summary, the key factors identified by Mrema and Rolle as critical to the postharvest sector delivering its full potential contribution are:

- updating infrastructure — both standard (e.g. access to water, power, road facilities, ports etc.) and that specific to postharvest requirements (e.g. refrigerated facilities, packaging units, storage facilities etc.)
- improving quality assurance, vertical integration of the commodity chain and traceability
- strengthening and expanding markets
- advancing appropriate research, development and extension
- introducing enabling policies that support and stimulate growth.

MW

GS

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The work was divided along disciplinary lines between three different research organisations, and technically robust quality management recommendations made. Vijaya integrated these into new protocols. However, trial shipments over three years showed persistent problems with the quality of their fruit — the endeavour failed, wasting enormous resources and missing an important market opportunity for Indian mango producers.

Why did the project fail? The major obstacle was that quality management measures were not devised and implemented as a package across the supply chain, but as isolated parts devised by scientists in different organisations with different missions, with little or no experience of working with farmers or in a commercial environment, and with little incentive to do so. Simply putting these pieces together, rather than looking at the system as a whole did not work. The reason for this related to the inability of the different elements of the innovation system to interact and respond to each other.

Case study 2: development and supply of packaging technology for tomatoes

The aim of this project was to improve packaging technology in the context of small-scale producers of vegetables supplying the Indian domestic market. This was a project of a non-government organisation, International Development Enterprises (IDE) India (IDEI), and used an approach it developed over the last decade involving identifying market demand for technology, identifying suitable technology and establishing networks to produce, supply and sell it to the poor. It combines both entrepreneurial and technology development, and requires locally specific technological and institutional innovation. IDEI realised at an early stage that, other than its expertise in identifying a technology niche using market analysis principles, it had no skills in postharvest issues. Hence, a decision was made to implement the initiative by “working through others”, with IDEI viewing its role as one of managing relationships with its partners and coordinating innovation.

To achieve this, IDEI first identified that environmental policy changes in

the location where it was working were making the wooden packaging used for tomatoes an obsolete technology. An alternative packaging technology — cardboard boxes — was deemed more appropriate, and IDEI then established a network of partners to develop and supply these. This actually involved identifying and accessing four existing informal networks — technology, local knowledge, market, and production and distribution, and establishing partnerships with them. This has proven to be very successful, and commercial production of boxes was set to start in 2002. Furthermore, this has been an intervention that has created a postharvest innovation that has poverty, gender and environmental sustainability relevance as well as significant economic importance in terms of the tomato subsector in the region.

How did CPHP respond?

Learning from case studies such as these, it became increasingly clear to CPHP that it was the institutional context of research and technology development that was affecting impact and effectiveness. This led to recognition that partnerships of various types were becoming important, particularly those involving partners who were not from public-sector research organisations. CPHP has now moved towards use of a postharvest innovation systems framework which it calls the “coalitions approach”. Under this new policy, instead of releasing a call for research proposals, the program’s in-country regional coordinators have become responsible for developing coalitions of actors around a limited number of technical or policy research themes. These nascent partnerships then form the basis for the negotiation of action research projects. The membership of the coalition and the role(s) of the actors are then determined by the nature of the theme and the wider institutional context in which the coalition is being developed.

Reaching the desired target group

Both the mango-export and tomato-packaging projects were aimed at benefiting poor farmers. Taking a holistic approach and making full use of local knowledge meant that this was achieved in the tomato-packaging project. However, it was discovered that, if it had succeeded, the mango-export project

would have benefited large growers rather than the small farmers. This was because the agendas of stakeholders were not sufficiently investigated in this case until much too late in the course of the research. Flowing from these experiences are several broad principles that seem to be relevant to postharvest research in developing countries, particularly where poverty reduction concerns are paramount.

- Coalitions need to be predominantly made up of local partners. Only in this way can projects understand and respond to local institutional contexts.
- Partnership groups need to be appropriate, but this can not necessarily be known at the project’s outset. For this reason, projects would benefit from an action research orientation. With this approach, the process and institutional lessons associated with technological success are valid project outputs in themselves and may subsequently be used successfully elsewhere.
- Where a poverty focus is paramount, stakeholder analysis is needed to ensure that this agenda is promoted within the coalition.
- Project monitoring may need review. Rather than worrying about concentrating purely on the inputs and outputs of research, it would be more useful to monitor process change, particularly the way relationships between actors are changing and leading to improved innovation performance.

Conclusion

Postharvest innovation is a critical area of international development that could support the poor in many ways — through production, employment, value-addition, and cheaper, safer food. However, this will happen only if postharvest innovation systems are improved. In part, this concerns strengthening linkages, connections and innovation processes, but it also concerns ensuring that the institutional context of these endeavours is managed in ways which ensure that innovations are pro-poor. These linked tasks are challenging but essential. The innovation systems framework adopted by the CPHP could be a useful starting point in this task.

MW

CURRENT AWARENESS

POSTHARVEST PUBLICATIONS

NEWS

ACIAR comes of age

The Australian Centre for International Agricultural Research turned 21 on 4 June 2003. ACIAR was established by an Act of the Australian Parliament on that day and month in 1982.

Supply chain website

The Agribusiness Association of Australia has set up a website that tells just about everything you might want to know about supply chains. That and other terms such as value chains, value nets, business ecosystems, competitive advantage, and interdependence are defined, and there are references to the wider literature on the topic. Hot topics covered are benchmarking, identity preservation, and quality systems. The website address is <<http://www.agrifood.info/ChainsNet/default.htm>>.

Australian agribusiness congress

The 2003 Agribusiness Congress & Forum to be held in Sydney on 27–28 August will pay special attention to trade, natural resource, and financial and economic issues. On the trade front, the focus will be on a changing, more volatile global trading environment, the stalling of the WTO process for agriculture, and the emergence of bilateral trade agreements such as the

Australia–US free trade pact currently being negotiated. Hot topics in natural resource management are water quality and availability, and soil quality and the impact of salinisation. As regards finance and economics the congress will discuss the factors that are likely to affect the agrifood and fibre sector over the next 2–5 years. There will also be an update on the economic prospects of key industries such as grains, dairy, and livestock. Special attention will also be given to agribusiness policy. For more information, go to <http://www.agrifood.info/info_2003.htm>.

Name change for chemicals registration authority

Australia's National Registration Authority (NRA) for Agricultural and Veterinary Chemicals has changed its name to the Australian Pesticides and Veterinary Chemicals Authority (APVMA). The Authority's website at <www.apvma.gov.au> gives comprehensive information on the status of chemicals and products, and news updates on topical issues. The registered products database (PUBCRIS), which is updated nightly, is a mine of information containing details of agricultural and veterinary chemical products that are registered for use in Australia. The data provided include the product name, registering company, active constituents, and product category.

Value-addition to agricultural products

Volume No. 11 in the JIRCAS International Symposium Series, entitled "Value-addition to agricultural products – towards increase of farmers' income and vitalization of rural economy", contains 19 papers presented at the 9th JIRCAS International Symposium in October 2002. In addition to two keynote papers, a report on one of which appears in this issue of the newsletter, contributions are grouped under three headings: Current status of rural economy and measures for increasing farmers' income and vitalization of rural economy; Systems for ensuring high quality and safety; and Research on value-addition and novel utilization. Also in this issue of the newsletter is a summary of a paper by Hall and Sulaiman on postharvest innovation systems in South Asia. The full proceedings of the symposium can be viewed online at <<http://ss.jircas.affrc.go.jp/kanko/sympo.htm>>.

ASEAN/APEC seminar proceedings

The organisers of the 20th ASEAN/2nd APEC Postharvest Technology Seminar, on the theme "Quality Management and Market Access", are pleased to announce publication of the proceedings volume. The seminar was held in Chiang Mai, Thailand on 11–14 September 2001.

Copies are available for purchase at THB400 per copy. For airmail postage to Asia and Australia, a further THB800 should be added; for postage to Europe and America, add THB1000.

Copies can be ordered from:

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New food journal

World Food RD Ltd and the International Society for Food, Agriculture and Environment (ISFAE) have launched the *Journal of Food, Agriculture & Environment* (JFAE). The journal is available in print and online versions.

More details can be obtained at <www.world-food.net/scientjourn.php>.

ACIAR Postharvest Newsletter

This newsletter is published quarterly in March, June, September, and December by the ACIAR Postharvest Technology Program.

The Australian Centre for International Agricultural Research was established in June 1982 by an Act of the Australian Parliament. The Centre encourages research aimed at identifying agricultural problems in developing countries and finding solutions to such problems. It is empowered both to commission research and to communicate the results of such research to interested persons and institutions.



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