PhAction annual meeting 2001
Linking Farmers to Markets : Developing a Global Post-Harvest Initiative
Montpellier, France 11-14 June 2001
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Concept note 3

Developing and disseminating postharvest technology for rural industries

Summary

Projects within this theme will define and overcome constraints to the dissemination and profitable use of postharvest technologies for agri-produce. The projects will also promote wider use of technology exchange initiatives that involve research and industry personnel and private sector partners within and between developing countries.

Goal

To improve food security and strengthen the competitiveness of small and medium enterprises by improving the development and uptake of innovative postharvest technologies and techniques for smallholder rural produce.

Objective 1.	To undertake information and technology needs assessments which will enable the better use of technologies for reducing postharvest losses and improving the marketability of smallholder rural produce.
Objective 2.	To develop, and foster adoption of, postharvest technologies that enable smallholders to capitalise on market opportunities, improve competitiveness and adhere to food quality and safety standards[1] through new and existing collaborative partnerships.
Objective 3.	To improve adapt and improve use of information[2] and decision support tools[3] for introducing or improving postharvest techniques and technologies, and train end-users in the application and improvement of these tools

Rationale

In meeting the challenges and opportunities of the globalisation of agri-industries, farmers, processors and traders need reliable access to appropriate techniques and technologies that will:

- improve quality, throughput, labour and time efficiencies,
- add value and enhance competitiveness for fresh and processed produce and their by-products,
- enable wider access to new and existing markets and
- reduce postharvest wastage and by-product contamination of air and water,
- under-pin the long-term sustainability of small and remote communities by improving rural enterprises,

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[1] This objective is addressing technology constraints to achieving objectives of themes 1, 2 and 4.
[2] Including the FAO Information Network for Postharvest Operations (INPhO) and
[3] including CD-ROM based train the trainer modules and 'self help' through email discussion groups (e.g. NZ and Purdue mail groups).

- make rural living a more attractive option[4] for young people.

However, the successful introduction of postharvest technologies will depend upon
- the efficient application of appropriateness of the technology for the commodity, the local farm practices and the agri-ecological conditions,
- the availability of local training, manufacturing, repair and maintenance materials and expertise,
- access to necessary infrastructure and utilities[5] (including fuel and waste disposal systems),
- on-going support for education and community development and
- compliance with market requirements.

While many loss-reducing or value-adding innovations exist, access to, and use of appropriate innovations by rural industries in developing countries is inadequate. This can be due to lack of
- appropriate information or know-how,
- local manufacturing capacity or equipment sales or
- adequate infrastructure to operate the technology or make use of its outputs.

Needs identification. New mechanisms for technology access and information exchange need to be developed to successfully link manufacturers or users of innovative technologies, with (often remote) rural enterprises that are seeking new or improved markets. The first step however is to make an assessment of gaps in technology, infrastructure or information access that impede industry development. Systematic assessment of technology needs will be undertaken in parallel with assessments of economic and social factors and marketing, policy and infrastructure requirements for industry improvement (these have been described under earlier themes).

Technology innovation. Once appropriate technological improvements have been devised, options can include:
- the local design and manufacture of the technology
- the introduction of technology or technical skills through links to other developing countries where appropriate expertise or technology is being used..

With either option, attention to suitability for local farm practices and climate as well as the quality of materials and maintenance will be critical to success.

Adaptation or fine-tuning, which involves local manufacturers and maintenance personnel, is often a prerequisite for the long-term sustainability and affordability of the innovations. But produce treated by local technology must reliably comply with required quality standards and the technology must be efficient in throughput and energy, labour and maintenance requirements.

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[4] Than moving to the city.

[5] This may mean a more explicit commitment by donors to services that support rural industry development.

Technology dissemination and use. When technology or processing techniques are being introduced, strategies for retention and wider use of the technology and know-how need to be considered. Construction designs, computer models for design variation, product quality standards and assessment protocols, and equipment maintenance schedules are a few of the R & D outputs that need to be used and adapted by the enterprise. Such outputs can be incorporated into an information system that can be used by local research, extension and industry technical staff as core materials for ongoing education of farmers, processors and traders.

User-appropriate training. Consideration also needs to be given to how the information needs to be presented to encourage easy access, clarity and application! The outputs of this activity will be user-friendly Decision support tools.

Private sector linkages. In both the development of suitable products and technologies, and well as in the development of information and training packages, the development of public-private partnerships will be a key element. The private sector links both in technology manufacture and in processing will strengthen market opportunities and encourage wider uptake. It may also improve technology and information exchange within and between developing countries.

Projects will enable small and medium-scale operators to
- access technology information quickly,
- check feasibility of use in local climate and crop and
- reliably upgrade technologies within a realistic budget

Projects will build upon existing work of PhAction members and other agencies.

Partners
- Micro level: individual farmers, processors, traders, manufacturers
- Meso level: farmer groups, associations of processors, traders and manufacturers, support institutions (both GO and NGO)
- Macro level: Government – trade, market access, quality standards, occupational health and safety, environmental impacts.

Commodities
The methods used for user needs assessments would be suitable for both durable and perishable commodities. Technologies are usually fairly commodity specific – and in the case of technologies for market disinfestation treatments required by quarantine and export authorities, additional precision and date collection, as well as =on-site verification by quarantine personnel is often mandatory.

Key elements
- Technology needs assessment of rural industries and postharvest enterprises in selected key commodities/areas

- Inventory of innovative postharvest processes, technologies, processing products and techniques and manufacturers as well as infrastructure requirements and constraints
- Participatory development, verification and adaptation of innovative technologies
- Development of training materials, facilitation of training and fostering of new networks for technology and information exchange
- Information system design and decision support tool development
- Training of trainers and end-users in the use of technology information systems

Outputs
Rural industry benefits
- Loss reduction, food security enhancement, system efficiency improvement, market access

Developmental
- … networks and public/private partnerships established
- … information systems and decision support tools developed
- … persons trained

Research/International Public Goods
- Technology needs assessment studies in different areas published
- Options/Lessons learnt for organizations to develop effective linkages for PH Technology exchange
- Information systems and decision support tools developed and disseminated to a wider audience

Areas of innovation
A key element of innovation will be attention to ensuring that technology is appropriate for partner communities and that it can be produced and/or maintained with local materials and expertise.

An additional element of the initiative will be to encourage wider use of appropriate technologies within and between developing countries that 'transcend geographical proximity' e.g. links between Vietnam and East Africa.

Other key elements include:
- Incorporates - systems approach, participatory, responding toWTO requirements, community based, appropriate,
- Improving effectiveness of exchange mechanisms for technologies, techniques, information
- Boosting sustainability of effective public-private partnerships in developing countries
- Assessment of how South-South exchange of postharvest technologies can help small and medium processors in become more profitable/competitive

- Integration of activities of various PhAction members throughout the world

Key area 1 S and SE Asia: Vietnam, Bangladesh, Thailand, Nepal (IRRI, ACIAR.)
Innovative technologies for drying and storage of rice, wheat and maize

Key area 2: SubSaharan Africa: Benin, Ghana, Guinea Conakry, Uganda (CIRAD, IITA)
Food processing technologies for yam, cassava, and maize

Key area 3: Global: Colombia, Peru, Venezuela, Tanzania, Malawi, Nigeria, Kenya, Vietnam, and Thailand (CIAT, CIP, IITA)
Production and processing of cassava, sweet potato, soybean and maize, for protein and energy for animal feeding.

Key area 4. Tropical regions: (ACIAR, NRI, CIAT)
Under-utilised commodities and by-products (fruit, vegetables and cereals) - income diversification and value adding; market access/quarantine treatment; better use of by producer reducing contaminants; documentation of traditional practices for storage and processing.

Resources committed by partners
Produce supply chains
Research and industry personnel with expertise in:
Quarantine links

Resources required from donors
Computer simulations
Process control technologies
Technology development research infrastructure

Financial resources
Funding and other resources to be requested from donors, will be based on the activities to be undertaken, the duration of the project, the institutions and people involved.