

LOCAL VEGETABLES TO BOOST CAMBODIAN DIETS

Rowena McNaughton reports on efforts to replace Cambodia's imported vegetables with local produce

On any given day, Lonh Peauline may go to the market and buy vegetables for her three children, husband, grandmother, two uncles and cousin who share her Phnom Penh apartment. After smelling and prodding the vegetables, Lonh carefully peels two 500 riel notes (US\$25c) from a large wad of cash containing her husband's monthly salary. Grumbling to the vegetable seller about the price, she purchases a kilo of tomatoes.

Although they are large and glistening, Peauline says the taste will not be good. But as on many other days, she must buy imported Vietnamese tomatoes rather than the small but flavoursome Cambodian variety she prefers but can rarely find.

Peauline's inability to find Cambodian produce is a common story. Enter any Cambodian market and it is likely the vegetables you purchase will not be Cambodian. In fact, despite unreliable sales statistics, Cambodian Agricultural Research and Development Institute (CARDI) scientists estimate that at least 40 per cent of the vegetables sold in Cambodia are imported.

Compounding this statistic for Cambodia's vegetable industry is that vegetable consumption in Cambodia is among the lowest in Asia. Rice comprises more than 75 per cent of an average Cambodian's daily calorie intake, according to CARDI research.

A recent statement made on World Food Day by the Cambodian spokesman of the United Nations World Food Program raised alarm over the fact that 64 per cent of children under five years of age, and 59 per cent of Khmer women, reportedly suffer from iron deficiency or anemia, "which drains them of energy and makes them more susceptible to disease".

In a bid to strengthen the Cambodian vegetable industry, improve household nutritional levels and replace imports with local produce, ACIAR has recently supported a three-year project on improvement of vegetable production and postharvest management systems.

Since implementation in October, scientists from the NSW Department of Primary Industries (NSW DPI), CARDI, the Department of Agronomy and Agricultural Land Improvement (DAALI), the Asian Vegetable Research and Development Center (AVRDC) and the Cambodian Department of Planning, Statistics and International Cooperation (DPSI) have been methodically tracking the Cambodian vegetable industry from seed to market.

"Such a project could only have been implemented in recent years," says Sakhan Sophany, one of the project leaders and head of plant breeding at CARDI. "Since attaining a rice surplus in 1999, Cambodia has only just reached a position where development efforts can move away from food security to nutritional security. The focus is now on crop diversification, as while Cambodian stomachs are full with rice, insufficient vegetable consumption means that many lack necessary vitamins and minerals that rice simply cannot substitute."

The success of this project, which also has an Australian component, relies heavily on achieving improved farmer access to reliable vegetable seeds of suitable varieties, and improving post-harvest storage and quality. "Rice production has benefited significantly from research, but now we must concentrate on improving non-rice crops," says Ms Sophany. "This will enable farmers to improve cash incomes, to improve competitiveness with imported produce and inevitably diversify the Khmer diet."

"Cambodia's vegetable industry is erratic and characterised by seasonal gluts. Frequent supply shortages are compensated for with cheap products from neighbouring countries, predominantly Vietnam. Unsuitable imported seed with unreadable foreign instructions creates a further problem. Seeds, generally from Thailand, Vietnam and Taiwan, are expensive. We need to develop hybrid Cambodian vegetable seeds that are more pest and heat resistant, to compete against the imported seed."

For the project to succeed, Ms Sophany says, "inadequate production technologies, supply reliability and quality management must be addressed. We were able to improve rice production rates by developing better rice varieties and training farmers on better farming practices. This can be replicated in the vegetable industry."

With a project of this size, post-harvest physiologist Dr Suzie Newman, from the NSW DPI, says sharing expertise among the collaborating institutes is vital. "Cambodian scientists will be working together with their Australian counterparts to improve production and postharvest management of vegetable crops. While both Cambodian institutions will be involved in variety evaluation, DAALI scientists and extension staff will focus on improving production practices while CARDI scientists will be looking at improving the postharvest management."

In a recent visit to Dumkor Market, one of Phnom Penh's typical 'wet' markets where produce is sold to retailers and consumers alike, the project team witnessed vegetables arrive in an array of packaging, delivered by truck, bus, motorbike, bicycle and cyclo (a three-wheeled passenger bicycle). While there is very little storage of vegetables, and no refrigeration, with more than 80 per cent being transported by motos (motorbikes), Dr Newman is positive that simple changes will have significant results.

Australian project leader Mark Hickey, also from the NSW DPI, agrees: "By tracking the supply chain we can identify where improvements can be made. For instance, simply reducing handling and strengthening the baskets used to transport with bamboo will greatly lower the amount of vegetables lost postharvest."

"We have estimated that at least 25 to 40 per cent of vegetables

PARTNER COUNTRY: Cambodia

PROJECT: Improvement of vegetable production and postharvest management (PHT/2003/045)

DESCRIPTION: There is much potential for Cambodian farmers to diversify into income generating vegetable crops

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Improved production systems for chilli will be studied later in the project. Sok Khim, from Prey Yeay in Kandal province, helps sort her family's latest crop.

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are damaged in Cambodia due to poor postharvesting techniques. In Australia, only 10 per cent loss is acceptable.”

While educating farmers on better postharvest techniques to extend shelf life is important, he insists that improved vegetable varieties are the integral part of developing a better vegetable industry.

A recent report by the AusAID-funded Agricultural Quality Improvement Project found that 10 to 40 per cent (depending on commodity) of all vegetables in Cambodia are ruined by poor seed and production technologies.

By targeting leading commercial farmers, the central aim of this project is to increase vegetable productivity rates, which will translate into significant economic gains for Cambodian farmers. The key component of this project is to establish a model of best practices for enhancing production rates, which can be replicated for different vegetables.

Mr Hickey explains that this is the key to the sustainability of the project. Tomatoes are the first crop to be investigated, due to their significant market potential for Cambodian vegetable farmers, and the recent involvement of AVRDC in selection of improved varieties for Cambodia.

“Tomato is an important food for Khmer people,” says Ms Sophany. “It is a staple part of everyone’s diet and is filled with nutrients. Many Khmers believe it is good for their skin. Following the completion of a model for improved production and performance for tomatoes, chilli and leafy vegetables will also be considered due to their importance in the Cambodian diet.”

Ultimately, ACIAR’s involvement in the vegetable project is about generating more income for Cambodian farmers and improving dietary intake of vegetables for Cambodians. Since little is known about the market supply chain for Cambodian vegetables, this project stands as the first of many steps. However, with the trial of several tomato varieties successfully under way at both CARDI and DAALI research sites, Cambodia is on the way to producing productive, disease-resistant tomato varieties and as a result, the resurrection of the troubled vegetable industry looks promising. ◀

SUPPORT FOR SMALL FARMERS TO GROW MORE VEGETABLES

BY ED HIGHLEY

Fruit and vegetables make up more than 20 per cent of developing country exports and can yield small farmers much higher incomes than graingrowing, said Dr Tom Lumpkin, director general of AVRDC – The World Vegetable Center, at a recent seminar at ACIAR.

Dr Lumpkin was visiting Australia to promote and seek support for the Global Horticultural Initiative, which AVRDC is leading in collaboration with the Science Council of the Consultative Group of International Agricultural Research, the International Society for Horticultural Science and France’s Agricultural Research Centre for International Development. The initiative will boost what Dr Lumpkin believes is currently a low investment in the horticulture sector by the international community.

For the bulk of small farmers in Asia, who have an average landholding of just half a hectare, horticulture offers a much more promising route out of poverty than growing grain, Dr Lumpkin noted. The initiative aims to raise the incomes of poor farmers to about \$1 to \$2 per day.

The challenges are great and include not just poverty itself, but also rapid population growth, land degradation and pesticide abuse. Malnutrition is another serious problem that increased vegetable production can help overcome. Levels of vegetable consumption in the less developed regions of Asia, Africa and Latin America are generally well below those recommended by world health authorities. A wide range of vegetables is being targeted, including tomatoes, capsicums and cucurbits (indigenous species whose potential remains largely untapped), and ‘nutriceutical’ species such as bitter gourds, which have indications for managing type II diabetes.

There is strong private-sector participation in the initiative, especially from seed companies, under the umbrella of the Asia and Pacific Seed Association. Members have so far donated more than five tonnes of seed of vegetable varieties adapted to areas affected by the Asian tsunami. Aside from that, the market for hybrid vegetable seeds in the region is estimated to be worth \$200 million. Even for small-scale farmers, the benefits of using hybrid seed would exceed the extra cost.

The initiative will also target post-production factors, aiming to reduce the huge postharvest losses that occur in traditional markets.