



PARTNER COUNTRY: Cambodia PROJECT: Improvement of vegetable production and postharvest management systems in Cambodia and Australia (HORT/2003/045)
DESCRIPTION: Researchers are looking to improve Cambodian tomato and chilli production performance throughout the supply chain
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Home-grown crop diversity

Cambodian government agricultural agencies are collaborating with Australian partners in an ACIAR project to improve tomato and chilli production as part of a broader diversification of agricultural production into vegetable crops

BY CHRIS GREENWOOD

Traditionally, rice has been Cambodia's main agricultural crop, but since achieving rice self-sufficiency in the late 1990s the focus has moved towards crop diversification into vegetable production, which has the potential to provide farmers and their families with higher returns.

At present, vegetable production is low due to an unreliable supply of seeds, high input costs and lack of knowledge of postharvest handling.

An ACIAR project has set out to develop sustainable 'systems' improvements across the transport, storage, processing and export sectors, which can be readily adapted to a range of commodities. On the way, it hopes to improve the capacity of Cambodian staff in the management of postharvest crop techniques and agribusiness supply chains.

Project partners

include the Cambodian Agricultural Research and Development Institute (CARDI), the Department of Agronomy and Agricultural Land Improvement (DAALI), the Asian Vegetable Research and Development Center (AVRDC) Taiwan and the NSW Department of Primary Industries (DPI) in Australia.

Heng Chhun Hy, vice-chief of DAALI's Plant Protection and Phytosanitary Inspection office, is one of the local managers of the project. "The project is important to Cambodia because 85% of our population live on the land and the majority grow rice," he explains. "There is growing demand for vegetables, but local farmers cannot meet this demand, so much of what is needed is imported. We hope we can replace some of these imports."

The first year of the project has involved a number of tomato trials at the CARDI and DAALI research stations in Cambodia and in Australia.

"We are testing a number of hybrid seeds from the AVRDC – World Vegetable Center as well as some varieties popular in Vietnam," Mr Chhun Hy says. "In all, we are field-testing 12 foreign tomato varieties and one local variety."

Now in the second year of the project, the selection has been narrowed down to five varieties, from which

CARDI plant breeder Charya Nin and CARDI's deputy head of agricultural engineering Som Bunna





Som Bunna, deputy head of agricultural engineering, inspects tomato plants at the CARDI research site at Prateah Lang Commune, Dangkor, Phnom Penh.
PHOTOS: CHRIS GREENWOOD

Heng Chhun Hy,
DAALI's vice-chief
of Plant Protection
and Phytosanitary
Inspection office.

PHOTOS: CHRIS GREENWOOD



will be selected the best varieties to introduce to farmers in 2008.

DAALI works with about 40 farmers along the Mekong River in Kampong Cham and Kandal provinces.

"We are working with farmers who are already growing vegetables and have the desire to improve their business but lack the knowledge to do so," Mr Chhun Hy says. "The distribution channels already exist, but farmers suffer up to 30% product loss from farm to market, as well as losses in overall quality, which see their market price even further reduced.

"Not only are we looking to improve our farmers' choice of varieties, but we want to develop postharvest storage and transport systems that enhance the quality of Cambodian tomatoes and allow them to compete better on the market."

Another part of the project is determining optimum nitrogen applications and developing drip irrigation techniques for reduced water use and improved time management.

The success of such a multifaceted and 'whole of chain' approach depends on partner organisations providing their skills to the project.

CARDI's Som Bunna says three divisions of his organisation are involved with the project: Plant

Breeding in the field-testing; Socioeconomics in supply-chain and marketing surveys; and Agricultural Engineering in focusing on improving postharvest management of the crop.

"Initial trials have focused on the evaluation of the postharvest performance of the 13 tomato varieties," he says. "We are analysing tomatoes for quality attributes (sugar, acidity) and shelf life (how long they can be stored at 20° C or under ambient conditions and still be acceptable in the marketplace).

"There are a number of varieties that may be popular with Cambodian farmers because they are high-yielding, but they have poor postharvest characteristics, such as short shelf life or splitting, so they must be rejected."

MARKET CHAIN ANALYSIS

The marketing and supply-chain analysis is under the supervision of CARDI's Lor Bunna, deputy head of CARDI's Socioeconomic division.

"We've been collecting market prices for more than a year to build up a picture of seasonal fluctuations," he says. "We have also surveyed growers, retailers and sellers to determine the dynamics of the market."

Mr Lor Bunna says that besides building a complete picture of the tomato and chilli supply and value chains

in Cambodia, he hopes this study will enable CARDI to contribute to government policy on the diversification of vegetable production.

“Cambodian farmers have good soils and a good climate, but lack infrastructure. If we are successful in this tomato and chilli project, we will move quickly to the extension components, providing seeds, training and information to farmers.

“Hopefully they can also extend this approach to other crops and begin to replace the mountain of vegetable imports from neighbouring countries such as Thailand and Vietnam, which both have more sophisticated and competitive agricultural sectors.”

CAPACITY BUILDING

The capacity-building aspects of this project are being delivered in several ways.

To coincide with harvest time, in February 2006 Dr Suzie Newman, of the NSW DPI, conducted training in Cambodia on setting up postharvest trials and quality and shelf-life assessment.

This was followed in March and April 2006 with a training visit by several Cambodian staff, including CARDI's Som Bunna, to Yanco Agricultural and Gosford Horticultural Institutes.

Along with other training activities in postharvest and field management, the visitors saw tomato and drip-irrigation trials, and surveyed Cambodian vegetable growers in western Sydney.

Thevy Hok



The farmer and the wholesaler

FARMER

Vegetable grower Pich Pho discovered the benefits of agricultural research in 1996 when he sought advice from the Cambodian Department of Agronomy and Agricultural Land Improvement (DAALI) to improve his onion and radish crop.

So began a 10-year relationship that has seen him replace his old crop with more profitable tomato, long bean and cucumber crops, and become the leading farmer in Kandal Loue village in Kandal province, 30 kilometres south of Phnom Penh.

“The DAALI advisers have given me information to manage and improve my crops,” he says. “I use the seed they produce because it is resistant to pests and better meets the needs of the market so I can get a better price.

“If I had not taken advantage of the advice they provided I would still be farming – I have no choice, it is all I know – but my income would be half what it is today.”

As a leading farmer in the area, he is no stranger to being asked for advice himself: “More than a thousand people came to visit me last year and ask me how to cultivate crops like tomato and long bean.”

In the rainy season, when no crops can be planted, Mr Pho can spend up to two hours a day talking to his visitors. Organisations also invite him to participate as a guest lecturer at agricultural field days around the region.

DAALI is taking advantage of Mr Pho's good standing within the farming community. He will be one of the first to participate in the roll-out of the new tomato varieties developed by the project, with a pilot trial plot earmarked for his farm in 2008.

WHOLESALER

Thevy Hok is the only wholesaler of Cambodian-grown tomatoes in the Chba Umpov market, which is one of only three wholesale vegetable markets in the country's capital, Phnom Penh.

Mrs Hok sells to all the retail markets and a number of food service-providers in the city. Depending on the day, she sells between one and three tonnes of tomatoes at an average price of about 900 riel per kilogram (around A\$0.28).

She has been selling tomatoes at this market for seven years and says her customers prefer Cambodian tomatoes, but it is often difficult to get enough to meet demand.

“Vietnamese tomatoes are often of a lower quality, yet they sell at a higher price because they offer constant and year-round supply,” she says. “I would sell many more kilos of locally grown tomatoes if they were available. The quality is OK, they keep longer and I can buy them at a good price.”

Mrs Hok says consistency of quality can be a problem with the local product, but she has few quality worries because she has a middleman who buys to order from the farmers in Kandal province. Although sold through the same channels, second-grade tomatoes often fetch 20–30% less than first-grade product; any lower quality than that and she instructs her buyer not to buy from the farmer in the first place.



Pich Pho