

BAMBOO

SUPPORT FOR A NEW BUILDING BUSINESS

Adrienne Jones looks at the prospects of a remarkable grass that offers commercial potential as a renewable building material – and food



PARTNER COUNTRY: Philippines

PROJECT: Improving and maintaining productivity of bamboo (FST/2000/127)

DESCRIPTION: Managing bamboo for timber and edible shoot production

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It is delicate to look at, bends in the wind and is botanically classified as a perennial grass. It is better known as bamboo, the preferred building material in the Philippines and most of the rest of South-east Asia. Commonly used in low-cost housing, as construction scaffolding on building sites, frameworks for fish pens and poultry farms and stakes and props in fruit and vegetable markets, it is largely taken for granted where it grows.

But plant scientists, commercial bamboo producers and entrepreneurial government agencies in the Philippines and Australia joined forces a few years ago to harness the unrealised potential of bamboo, and make this modest, homegrown perennial better understood in its own backyard.

Under the auspices of a \$550,000 ACIAR partnership led by the Primary Industries Research Centre at Central Queensland University (CQU), scientists in both countries are trialling and monitoring the intensive cultivation of bamboo as a hometown crop with global credentials – its dual-purpose potential as an agricultural crop, and its under-invested capacity to help redress social, economic and environmental problems.

CQU and its collaborating partners in the Philippines – the Philippine Council for Agriculture, Forestry and Natural Resources Research and Development, the Forest Product Research and Development Institute, the Ilocos Agricultural and Resources Research and Development Consortium at Mariano Marcos State University (MMSU), and the government agencies Ecosystems Research and Development Bureau, and the Department of Environment and Natural Resources – are investing in improving bamboo cultivation techniques developed in both countries for cooperative benefit.

They believe this fast-growing, underrated commodity has the potential to counter, to some extent, the destructive deforestation of the Philippines' native hardwood forests – and the consequent decrease in its wood products industry – by providing a renewable, alternative timber for use in construction and processed timber products.

Once a major exporter of wood products, the Philippines now imports what it used to export. The ACIAR partners believe that rejuvenating the country's rapidly depleting cultivated bamboo resources, and developing objective management practices to sustain increasing demand for bamboo products, could make a positive impact on this situation.

Properly-managed bamboo, according to the scientists, could sustain profitable domestic and export industries in Australia and the Philippines as a dual-purpose agricultural crop. It offers not only a renewable substitute for timber but also a valuable vegetable source in harvested bamboo shoots during the lean typhoon season in the Philippines. While it is commonly believed that attempting to harvest two different crops from one bamboo plant compromises culm (mature stem) production, Australian and Philippine research scientists hope to demonstrate through trials in both countries that most species can easily support both uses.

The trials provide reciprocal benefits for both countries, as research plantations in northern Australia currently grow bamboo primarily for its edible shoots, but have not yet succeeded in marketing it outside Australia, and Philippine growers are prohibited from harvesting the shoots for food, to protect the culms from sudden depletion.

CQU project leader Professor David Midmore says this is a crucial component of the collaboration. "The Philippines has a long history in the traditional uses of bamboo, and Australia has research experience in the production requirements of shoot production, so the idea is to swap and build on each other's advantages," he says.

In the Philippines, where vegetable consumption is still less than half the recommended World Health Organisation levels, the food crop proposition alone offers huge potential benefits – in new rural

employment and income-generating opportunities and better nutrition, apart from more ambitious export prospects.

In strategic plantings in Mindanao, using materials derived from an experimental plantation, bamboo is also demonstrating that it has another value – as a low-cost, home-grown solution to environmental degradation on slopes and riverbanks, another commonly acknowledged problem in the Philippines and beyond.

The primary emphasis of the ACIAR project, however, is in optimising cultivation and management strategies to produce more shoots and higher-quality poles, and to encourage more innovative approaches to value-adding uses of bamboo. The project scientists have spent the past four years working with local bamboo farmers rejuvenating old and abandoned Philippine plantations, and trialling an extensive range of growing, production and management techniques aimed at optimising maintenance and productivity.

In collaboration with the Cadagmayan Norte Bamboocraft Producers' Cooperative and other farmers' cooperatives, they are still trialling 12 irrigation, fertilisation and management strategies across a range of commonly cultivated bamboos, including *Bambusa blumeana* (locally known as kawayaan tinik) and *Dendrocalamus asper* (known as giant bamboo) on five experimental plantations in Mindanao, Luzon and Iloilo. The scientists are simultaneously monitoring equivalent trials on two commercially-grown bamboo species in Australia (*Dendrocalamus latiflorus* and *Bambusa oldhamii*), on two plantation sites, one near Darwin in the Northern Territory and the other at Eumundi, in Queensland.

The Philippine plantations include two institutional sites, the MMSU site in Luzon and the Panay State Polytechnical College

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Dumarao site in Iloilo, which will increasingly be used as demonstration and training sites for communicating management strategies to students and farmers.

Although ACIAR has recently extended the experiments to the end of 2006, and plantation treatments cannot be fully evaluated before then, results so far indicate that under the right conditions the yield and quality of bamboo culms and shoot harvests can be significantly improved. Project leaders say the trials will serve the common interests of both partner countries, but will also help define and promote optimum production systems for the wider South-east Asian region.

MMSU project leader Professor Stanley C. Malab says the project has also facilitated an income-generating business out of bamboo at the university, which is now selling its prototype bamboo tile-making machine and two new bamboo driers to a local furniture manufacturer, and exploring export markets for the tiles.

Professor Midmore says that four years on, the project has already realised many of its objectives, not least an explosion of bamboo networking events and innovative new uses for bamboo, especially in the Philippines – including a bamboo house and bamboo-floored condominiums, and even, in 'Villa Navarro' in the Province of La Union, a recently-opened all-bamboo tourist resort.

"We've raised awareness all the way from community level to government, state and national, and we've got bamboo on the R&D agenda in this country," he says. ◀