

Native food industry set to expand

While Australia's Aboriginal population has been feasting on native foods for centuries, 'bush tucker', as it is colloquially known, is now establishing itself as a gourmet food worldwide. This article outlines the emergence of a cohesive Australian native foods industry and the steps needed to make it successful.

by **Sally Holt,**
for CSIRO LAND AND WATER

According to recent CSIRO research, native food crops could be developed into a significant industry, if market and production issues are addressed properly.

Until the past decade or two, there had been little awareness or appreciation of the development of an industry based on Australia's indigenous edible plants.

But the recent formation of a new peak industry body could ensure more indigenous Australian foods are incorporated into worldwide cuisines and more opportunities are offered for sustainable, profitable commercial enterprise.

Currently, the fledgling native food industry is worth an estimated \$14 million annually but CSIRO scientists believe the true export potential for these crops is yet to be realised.

On-line native foods directory

During September 2004, an on-line information directory was jointly launched by the CSIRO and the Rural Industries Research and Development Corporation (RIRDC) providing comprehensive information about the plants, enterprises, people and groups responsible for the native food industry.

CSIRO researchers have also carried out an extensive study on the cultivation of native food plants.

At a glance

- A peak body for the rapidly-expanding Australian native foods industry will be established by mid-2005.
- CSIRO has launched a comprehensive on-line information service on the native foods industry.
- Extensive native food trials have provided valuable information on what to plant and where.
- With unique and diverse flavours, Australian native foods are 'clean and green' and their production incorporates indigenous knowledge and involvement.



The export potential for Australian native food crops such as muntries (pictured) is yet to be realised because, to date, it has not been possible to guarantee regular supplies of high-quality produce. CSIRO has been working with Aboriginal communities and industry to learn more about native foods in a bid to boost product quantity and quality. A web site launched recently by CSIRO will help to promote the native foods industry with updates on industry developments, crop profiles and links to further information, associations and processors across Australia. Inset: CSIRO scientist Dr Maarten Ryder inspects newly planted hybrid native citrus in Moonta, South Australia.

Working with Aboriginal communities and various Australian native produce industries, the project had four main objectives: to encourage a shift from wild harvest to cultivation to improve sustainability, production and genetic diversity; to help Australia maintain international competitiveness; to assist Aboriginal communities gain economic independence; and finally, to promote horticultural and farm diversification.

The study found that while there were hundreds of growers of native foods around

Australia, few were producing substantial amounts of product.

Even more significantly, the researchers discovered a 'dearth of basic knowledge about the cultivation of most of the species currently considered as high priority for commercial development'.

Macadamia model

While the Australian native food industry is in its infancy — and subject to the challenges of education, production and marketing issues — it is worth looking at the success



CSIRO researchers Dr Maarten Ryder and Yvonne Latham are trialling native food plants to establish the best ways to produce native foods on a sustainable basis.



Desert limes (pictured) are used to impart a distinctive citrus flavour in sweet and savoury foods.

of the Macadamia industry as a possible future indicator.

Now with a mature horticultural industry worth \$85–\$120 million annually, Australia is the world's largest producer of Macadamia. But 50 years ago, the industry barely existed.

The turnaround came only after Macadamia cultivation took off in the United States.

CSIRO researchers Dr Maarten Ryder and Yvonne Latham believe there is an opportunity to develop similar industries based on other native Australian plants while maintaining a competitive position internationally.

The development of the native food industry is also environmentally significant.

Crops produced using less water — and other energy-rich resources — could minimise the detrimental impact of some farming practices.

But the CSIRO report advised that until production systems and markets were more fully developed, this only could be considered as a long-term goal.



Anthony Hele, SENRCC

Native foods or 'bush tucker' such as the quandong are in growing demand and the fledgling industry is worth an estimated \$14 million annually.

Plant diversity

Working with a variety of industry and grower partners, researchers on the native foods project established a series of native foods trials across a range of environments in south-eastern Australia.

The species tested were quandong, *Acacia victoriae*, citrus, mountain pepper, lemon myrtle, lemon aspen, riberry, munthari (muntries) and bush tomato.

Bush tomatoes are a small, raisin-like fruit with a pungent, tomato flavour popularly

Low-energy food production could help oil crisis

Farm information	
	Farmer Aaron Edmonds
	Location Calingiri, Western Australia
	Property size 1700ha
	Enterprise Grain cropping
	Annual rainfall 400mm
	Soil type Sands through to clays
	Soil pH Mainly acidic

because of the vast amounts of energy required for production. Essentially, he is referring to the energy required to produce nitrogenous fertilisers.

Commenting that 'food essentially flows from an oil spigot', Aaron calculates the energy required to produce one kilogram of urea (nitrogen fertiliser) is equivalent to one litre of oil. Put that into a broader Australian context and he said it took 50L of oil to produce one tonne of wheat.

His primary concern was that farming systems have evolved under the assumption that oil always would be cheap and this, he said, exposed three major agricultural areas to the risk of rising oil prices: fertilisers, herbicides and pesticides; and fuel.

Managing the challenges

But Stuart believes some native food crops present a way of managing these challenges while also creating new opportunities for industry development.

During 2000, Aaron dedicated 30 hectares of the family's Calingiri property to developing a dryland tree crop in Australian sandalwood. This area is currently growing at about 10ha each year.

Perfectly adapted to Australian conditions, this native species produces nuts that are high in oil and protein. Requiring no nitrogen fertiliser, Aaron believes sandalwood could become a significant and valuable oilseed.



Megan Hele, Kondinin Group

Aaron Edmonds, Calingiri, Western Australia, believes native food crops such as Sandalwood (producing oil-rich nuts) offer sustainable solutions to some of the challenges facing agriculture.

With a lifespan of at least one century, the trees have been planted at a density of 300/ha, and with 350–400mm of annual rainfall, are expected to have an annual yield of 600kg/ha.

While patience is required for profits (it can take up to five years before harvest) Aaron's focus is on the future.

With rising oil prices, he said food production systems needed to address the issue of energy use — otherwise both producers and consumers face 'tough times ahead'.



used in chutney, relish and as a spice. While the fruit of the lemon aspen is used similarly, it has the ability to enhance both sweet and savoury menus with citrus, spicy flavours.

Also aromatically spicy is the small pear-shaped riberry, a versatile fruit that can be just as easily whipped into ice-cream or chocolate as it can be into a savoury sauce or relish.

High in vitamin C, the quandong is a small native peach that can be used in jams, preserves and liqueurs while its kernel can be eaten either raw or processed, while Munthari (muntries) are a berry-like fruit providing a spicy-apple flavour to many sweet and savoury dishes.

CSIRO trials

According to CSIRO trials, the top survivors across a range of environments have proven to be *Acacia victoriae*, citrus and lemon aspen, while plants with an intermediate range include lemon myrtle, riberry, munthari, quandong and bush tomato.

While the bush tomato has a restricted range if grown as a perennial (because it requires warmer, well-drained soil conditions), it survives well across a wider range of environments if grown as an annual. The only other plant with a restricted range



Riberries are strongly flavoured, small fruits tasting of cloves and spice. Whole riberries can be blended for use in ice-cream, chocolates and sauces for meat dishes.

is the shrubby mountain pepper which requires moist soil.

The researchers concluded that although many of the species have survived and grown well, it is still too early to determine whether yields of a reasonable quality can be produced.

More research is needed into plant improvement, horticultural production, pest and disease control along with harvest methods.



Bush tomatoes, also called desert raisins or desert tomatoes, have an intense earthy tomato flavour and can be used as dried spice, in dipping sauces, chutneys and relishes and seasoning for red and white meats.

For more information contact Maarten Ryder on maarten.ryder@csiro.au, phone (08) 8303 8534 or fax (08) 8303 8550 or visit the web site at www.csiro.au/nativefoods.



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