Shaking more from bush trees

Australia's native peach, the quandong (*Santalum acuminatum*), could be the next 'bushfood' to whet international appetites. Producers and scientists believe the quandong could become as popular as the macadamia, and are keen to see Australia benefit first from its success.

Quandongs (pictured) grow on small trees which are root parasites. They have been harvested as a food for as long as people have lived in Australia. The flesh is rich in vitamin C – about twice as much as oranges – and the nut contains high levels of oil and protein. They show potential as an alternative crop for farmers in drier parts of Australia and the establishment of commercial orchards could help to protect the species from the threats of overgrazing by domestic and feral animals in the wild.

CSIRO's Division of Horticulture has studied the commercial potential of the quandong since 1973, establishing experimental orchards, selecting plants on performance, and studying their propagation. The enormous variation between wild trees has highlighted the need to select for high yields, large fruit, a high percentage of flesh, good fruit shape, rain tolerance and a pleasant taste. This work has been carried out at orchards in Victoria, New South Wales and South Australia.

Research has shown grafting to be the most reliable propagation technique and commercial nurseries are producing grafted quandongs, based on selections made from the CSIRO experimental orchards. Studies of quandong propagation have also investigated the role of the host plant. Quandongs can grow successfully without a host for the first year, but from then on a relationship with a host plant appears crucial. In the wild, host plants include *Eucalyptus, Acacia* and *Casuarina* species. Quandongs can also form a host–parasite relationship with any backyard fruit tree or shrub, perennial or annual grass.

When it comes in contact with the root of another plant, the quandong produces a pad-like growth which adheres to the root of the host, allowing root tissues to invade the host's roots. It is not fully understood what the quandong gets from the host, or whether some plants are better hosts than others. The roots of quandongs are particularly susceptible to fungal infections and the host may give the tree some protection.

Flinders University PhD student Beth Byrne is investigating the quandong–host relationship with the aim of finding a host which suits commercial quandong cultivation. Kikuyu grass has been used as a host for quandongs in the past, but it poses management problems for commercial orchardists, especially under irrigated conditions. One species showing promise in the Flinders University study is a native creeper called *Myoporum* which forms a dense ground cover and favours the same climatic conditions as the quandong.

Farming Australian native plants for food and oil is becoming an increasingly popular alternative to traditional enterprises as the market grows for native products for food, flavourings and medicinal and therapeutic purposes.

In a review of the bushfood industry commissioned by the Australian Native Bushfood Industry Committee in 1996, the industry was estimated to be worth $14 million. The committee has the goal of increasing the industry's value to $100 million in three years. For most bushfood crops, little research or genetic selection has taken place. As commercial production expands, more research will be needed on genetic improvement; production systems; optimum growing conditions; and processing and harvesting technologies.

Research is also needed to determine whether profitable native crops can also address land degradation. While some species, such as the native lime, are regarded as woody weeds by graziers in the rangelands, other deep-rooted perennials could have significant environmental benefits as well as commercial gain.

Deputy chief of CSIRO's Division of Soils, Dr John Williams, believes strongly that cultivating native fauna and flora for food production is a way of making our agriculture more sustainable. 'Research confirms that a concentration of native crops and animals reduces the damage to our soil and water resources', he says.

'By choosing the best mix of native and other crops for a particular environment, farmers are ensuring that plants make the best use of nutrient and water availability, and are in sympathy with seasonal patterns that are distinct for Australia.'

A feature on growing bushfoods appears in the Spring 1996 issue of CSIRO's Rural Research *magazine. The feature outlines the latest research and prospects for a range of bushfoods including quandongs, tea tree, native citrus, and lemon myrtle. Copies of* Rural Research *are available from CSIRO Publishing on 1800 626 420 (toll-free).*