



Quandong

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West Australian Nut & Tree Crop Association (Inc)

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The MURORO (*Annona senegalensis*) (See: About the Cover, p. 2)

***** Next Meeting *****

Wednesday August 18: 7.30 pm

The Meeting will include a talk by **Bill Scott** on:

What is the Pressure in a Dinosaur's Foot?

and the showing of two videos on Pecans —

The Stahmann Farms Pecan Operation at Moree

Pecan Harvesting in WA

This meeting will be at our new venue, the Greening Western Australia office at 1118 Hay Street, West Perth. **Full details on the attached leaflet.**

No charge to attend. Visitors Welcome. Queries to Tree Crops Centre on 385 3400.

About the Cover

Our cover illustration shows the Muroro or African Custard Apple, described as "one of the pleasantest wild fruits of Africa" in the book **Food Plants of Zimbabwe**, reviewed on page 18.

This *Annona* species is crying out for development — it ranges over a huge area of Africa, including drier areas, and some provenances will contain valuable genetic material for *Annona* growing in WA.

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[WA Horticulture! June 1993]

Native plant foods: untapped resource

WA has an abundance of untapped resources in native fruits and vegetables, according to noted anthropologist Peter Bindon.

Mr Bindon is a great advocate of "promote Australia" and believes there is a world-wide export market hungry for Australian native plant foods.

As head of the anthropology department at the WA Museum he has many years experience of Aboriginal uses of native food plants.

He has finished the draft of a book on the subject and has been involved in the teaching of bush survival courses.

Mr Bindon believes successful ventures like the Bush Tucker Restaurant in Sydney are setting a good example but says the potential to expand on the concept is very big.

He said the most popular offering on the Bush Tucker Restaurant's menu was a jelly made from lilly pillies, or Chinese apples.

"The best thing is that we have the technology for genetic manipulation so we don't have to wait for fertilisation and pollination when looking at a potential marketing crop," Mr Bindon said. "We have more native food resources than most countries yet aren't using them to their full potential."

He gave the example of France, where a native plum was used to produce the popular liquor, Prunelle.

Farmers, he said, had a major resource on their property, particularly on uncleared land. Native cherries and plums offered the best opportunity.

"The Australian macadamia nut was a

native nut and just look how successful it has been on the international scene," said Mr Bindon.



Peter Bindon with native Brown Plum Pine fruit

He said it was important to remember that most common fruit and vegetables on the market were bred from native varieties.

— Valma Ozich

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WA Bush Foods meeting a great success

Stalking the wild WA Asparagus: Native Plant Foods of WA was the topic at our 19 May 1993 meeting, presented by Peter Bindon, Head of the Anthropology Department at the WA Museum.

Peter opened his talk by saying that this is an interminable topic, and there are hundreds of plants that the Aborigines used for food. For the purpose of this talk he mainly chose plants that grow in SW Australia, plus a few other interesting ones.

Canthium latifolium, the "Native Currant Bush", has great quantities of small black fruit which are beaten off the bush with a stick and gathered from the ground. Eating a large quantity of them might make your mouth sore.

There are many species of fig; there is a different fig for every ecological niche and almost all have evergreen foliage. In the north, trees can be very large. Most of them have simple, lanceolate leaves and it is difficult to work out the correct names. *Ficus macrophylla* is very common in Perth. The fruit has good flavour and possibly extra protein, from the native fruit fly in them. The tree drops its leaves during drought. *Ficus racemosa* bears its fruit in clusters. There is a specimen in Kings Park near the glasshouses.

There are many species of Podocarpus, all with edible fruit. *Podocarpus elatus*, "Brown pine", is fruiting now. There is a specimen in the Zoo outside the walk-in bird aviary, and another in Russell Park, N. Perth. You are supposed to break off and discard the seed protruding from the end, and eat the fruit, which is really a thickened stem and has a resinous grape flavour. Its timber is considered good. *Podocarpus drouynianus* is a waist-high bush with piny foliage used by



The Quandong fruit, nut, kernel, and leaves in the WANATCA logo

florists. It prefers to grow in the Jarrah forest. There is one in Kings Park.

Planchonia careya, called "wild quince", or "cocky apple", has large, attractive flowers with long white and pink stamens, resembling the crest of a Major Mitchell cockatoo. The apricot-sized fruit is eaten when soft: the leathery skin is pierced and the sweet pulp is squeezed out. (It is typical of Australian bush fruit that they don't change colour when ripe, but simply soften, and the skin is usually unpleasant to the palate.) Planchonias usually have a nest of green ants in their foliage. A pleasant, lemony drink can be made by plunging the nest (quickly) into a billy of water.

Quandong (*Santalum acuminatum*) has an edible kernel and pectin in its flesh. *Santalum lanceolatum* has the best tasting flesh in the Santalum family, but the kernel is not edible. The fruit is the size of the end of a thumb, and it grows from Geraldton northwards. *Santalum murrayanum* tastes terrible.

The Solanum family, native tomatoes, is very large and varied. About half of them

are poisonous. It is very important to have correct identification and to know what parts are safe to eat. They have a typical pentagonal flower, like a potato, with yellow stamens and a spiky calyx. *Solanum nigrum* has the structure of a tomato inside, with black seeds. Only the white parts inside can be eaten; the pulp and black seeds must be squeezed out. In southern Russia it used to be processed into steroids and hormones. The first estrogen pills were made from it. The dried fruit of *Solanum centrale* is called "bush raisins". They can be left on the bush to dry, collected and pounded into a paste and reconstituted with water. The Aborigines shaped the paste into large balls, impaled them on a branch of a tree and left them in storage for months. The flavour is good and vaguely curry-like.

Thysanotus patersonii, "fringed lily", is the yam of the Nullabor mentioned in Daisy Bates' notes about Aboriginal food. The top dies back, and the tubers are located by scraping away the leaf mould to find a little thread which is followed into the soil. The tubers are usually not deep, are the diameter of a finger and about 30 cm long. They are sweet and watery and can be eaten raw or baked.

Exocarpos is another family that fills many niches and that has a true fruit with seed on a fleshy stalk. The seed is discarded and the stalk eaten. They fruit in winter (many winter fruits are high in vitamin C.). Most have piny foliage. *Exocarpos latifolius* has fruit the size of a fingernail. *E. cupressiformis* and *E. strictus* are some other edible ones. There is one that grows on the beaches at Swanbourne.

Terminalia is a family of large trees. Some of them have good fruit, such as *Terminalia ferdinandiana*.. *T. petiolaris* fruit

have the highest vitamin C of any known fruit. Other Terminalias have only a leathery covering over the edible kernel, and are called "bush peanuts". A lot of research and plant breeding is being done, particularly in Israel, to improve the fruit and nuts of *Terminalia sp.*

Peter calls *Stylobasium spathulatum* the best nut in the world. It is small, about the size of a fingernail, and grows on a low bush. The nuts are gathered from the ground. Special stones with a particular sized dimple have been found in Aboriginal camps, for the purpose of cracking these nuts. They are tasty and nutritious - a good survival food.

Vigna lanceolata, "pencil yam", has a typical bean plant appearance with trifoliate leaves. The tubers are dug when the foliage dies back, and have a potato taste. There are a number of native beans, but as with the *Solanum* family, exact identification is important, as many of them are poisonous.

Cycads (macrozamia), are found all over Australia. They date from the Cretaceous period of the Earth's history. They are a fire-climax plant that cover entire hillsides, and were managed by the burning programs of the Aborigines. The Aborigines used various

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parts of different species; fruit flesh, fruit kernel and the tuber. All parts contain the powerful toxin macrozamin, and must be processed to make them safe. The toxin can be removed by leaching with water, fermentation or high temperature.

On the west coast, Aborigines buried the fruits for fermentation, and ate the outside which then resembled dates. Shipwrecked sailors at Exmouth reported being given "dates". In the east, the nuts were cracked, then placed in mesh bags in running water for ten days. Then they were dried, ground into meal and made into damper.

How did they work out what they had to do? Peter's own personal belief is that the very earliest people learned how to deal with cycads from the time they began to spread out from their origin in the Rift Valley of Africa. It must have been by trial and error. If not processed properly, this is a "food" you can eat - once - and then you can't tell anyone about it. The early explorers like Cook and Freycinet found evidence in Aboriginal camps that the people were eating *Zamia*, and took some back to their ships to try out on their crews, with most unpleasant results.

Rhizomes from bracken fern (*Pteridium esculentum*) are reputedly edible and it is known that Maoris ate them from cultivated plots. The suggested preparation is to boil the rhizomes in two changes of water. There is some evidence that the hairy parts of the bracken fiddleheads might be toxic.

Responses to Questions

Some of the answers given to audience questions, were:-

Q. Can you describe the "Taste Test" for sampling unknown foods?

A. 1. The first step is to examine the food

carefully, decide what parts might be edible - fruit, vegetable? If it looks like it might be acceptable,

2. Smell it. Try to identify if there is bitterness, a smell of cyanide or oxalic acid or other unpleasant smell. If it passes the smell test, then

3. If you think it might be a vegetable, cook it - bake it, boil it, etc. If you boil it, discard the first water. Then, or if you think it is fruity,

4. Rub some of it on a soft part of your skin. Does it sting, make blisters or in any way irritate? If not,

5. Put a small piece in the corner of your mouth. Wait awhile. Does it burn or make blisters? If not,

6. Put a small piece in your mouth and roll it around various parts of your tongue (different taste buds in different parts of your mouth). If it seems OK,

7. Swallow the piece and wait 4 hours. Only test one food at a time. You don't want to see that particular piece of food again in any form. If you still feel OK,

8. Try a larger portion.

In experimenting with unknown foods, do not consider birds as good indicators; they can eat things that are poisonous to people. Bush rats like the *zamia* fruits. Avoid plants that have trumpet-shaped flowers, prickly seed pods, red seeds, milky sap, pea-shaped flowers and pods (wattles are not included - they don't have pea-shaped flowers).

Unknown fungi are the most dangerous of all, as the toxic reaction can be delayed by days. If you must try unknown fungi, pick two, eat one and leave a note with the other to tell the world what you did.

The information might be useful to your

survivors.

Q. What scope is there for individual growers for plant breeding?

A. There is a big scope for supplying Bush Tucker Restaurants. People gather and prepare bush food on contract.

Q. Can you suggest plants that have potential for improvement by breeding?

A. Santalums, Podocarpus, Terminalia.

Q. Are there native Canariums?

A. Yes. Lists published by Darwin organisations.

Peter concluded by repeating that he had touched only very lightly on a few edible plants, mainly tree fruits and a few vines because time did not allow a coverage of all the herbs, roots, nectar flowers, etc. In thanking him, it was recognized that he had dished up to everyone present, a satisfying dinner of information and humour selected from the vast range of menus in this gastronomically fascinating topic.

— Pat Scott

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PEBBLE NUT: A new Australian Winner?

At the last WANATCA meeting, speaker Peter Bindon described the Pebble Nut, *Stylobasium spathulatum*, as "the best nut in the World".

To assist in the development of this Australian nut with possible commercial potential, the Tree Crops Centre has obtained a quantity of Pebble Nuts for a Seed Offer (see box, this page).

The seed nuts obtained are roughly pea-size. From local experience with quandongs, it seems likely that this size could be doubled fairly easily, through selection and cultivation methods, to bring them up to typical macadamia size. But first we need to develop expertise in propagation.

According to the invaluable *Census of Australian Vascular Plants*, the Pebble Nut genus contains only two species, one restricted to southern WA, the other mostly in arid central WA but extending across Central Australia to central western Queensland.

This is tough country, so the plants evolved here have some valuable genes. Real possibilities here for another arid-land crop?

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[Countryman/ May 20, 1993]

Exotic feast on suburban 'quarter acre'

A taste for growing the unusual prompted Viv Irvine to convert his suburban block into a year-round feast of exotic fruits, nuts and useful plants.

At last count, Mr Irvine had established 138 different types of tree on his Cloverdale "quarter acre". Added to that are the countless number of shrubs, ground covers, creepers and herbs he has established on the former poultry farm site over the past 15 years. All have a use and a story behind them.

Mr Irvine's backyard was the subject of a recent field day organised by the WA Nut and Tree Crop Association.

Quince, loquat, pomegranate, apple, old varieties of stone fruit and a citrus range which includes several types of lime, are among the more traditional fruits represented. At the other end of the range are many exotic plants such as the Mombolo plum from the east coast of Africa. Elephants are said to have become drunk after eating its fermenting fruit.

The thorny kei apple is another African plant. Mr Irvine said kei apple, producing an edible fruit, was often planted around stock yards where its thorns were thought to provide stock with some protection from lions.

Then there is the vinelike cactus *Pereskia aculeata*, also known as the Barbados gooseberry. It produces edible yellow fruit which hang in bunches, like grapes.

The Queensland pigeon berry is among the lesser known Australian native "bush tucker" plants in the collection. Mr Irvine said this shallow-rooted, slow-growing ground cover was easy to control, and described the flavour of its small, autumn berries as like "custard with nutmeg".



This climbing cactus, which produces yellow fruit in bunches like grapes, is just one of Viv Irvine's unusual plants.

Wattles, quandongs, an emu bush, Queensland rainforest timber species, a native tamarind and the Burdekin River plum (also from Queensland) add to the local flavour.

So does a heavy cropping macadamia, and a vigorously growing young Bunya pine which has yet to produce cones containing the big, edible nuts for which this pine is famous.

Three types of pecan, a pistachio, a pine nut, sweet chestnut and candle nut tree (the

nuts contain an edible oil used in Asian cooking and as a light fuel) are also among the nut collection.

Mr Irvine has also had success with a Capulin cherry, a tree many consider a better alternative to the traditional cherry in warmer areas as it does not require winter chilling. Mr Irvine said his 4½ year-old tree this season produced about 30 fruit from late December through to February.

He is also growing mangos, bananas, white sapote, black sapote (or chocolate pudding tree), custard apples, feijoa,

avocados, and has a coffee tree now starting to produce its first crop of beans and a carambola which has produced a crop of star fruit for the past three seasons.

Mr Irvine believes the sheltered suburban environment is a plus when growing some of the more cold-sensitive tropical plants. And unlike most backyard growers today who opt for automatic watering systems, he prefers to hand water so he can keep track of the progress being made by each plant in his unusual collection.

— Cheryl Rogers

[Countryman/1993 May 20]

Cold comfort

Establishing exotic fruit trees can be a challenge in our climate.

While winter chilling is necessary for many traditional crops to set fruit, winter frost can take its toll on tender young trees that are native to more tropical climates.

Pictured right is the style of tree guard which Viv Irvine uses to establish frost-tender young trees on his block, described above.

The buildings and other trees on his suburban block help create a more protected microclimate than would be possible on an open site.

Mr Irvine supplements this by surrounding each of his young trees with a wire mesh frame, covered by plastic. The shelter helps create a more humid environment around each tree while providing protection from frosts in winter and drying winds in summer.

Mr Irvine said in the urban environment the guards also helped protect young trees from cats intent on scratching the bark.



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Laying it on a bit thick

David Brown's review of my talk about Rock Dust use at Dowerin, reported in the last *Quandong* [Ed: see "The Brown Soapbox" — commenting on the last WANATCA General Meeting] deserves a thanks — and a few explanatory comments.

Yes, it is true we have been laying it on thick when it comes to field trials with rock dust. But that's because we are at the beginning of things. No one really knows how, or why rock dust works. As a result we have to set the parameters.

One theory holds that rock dust is indeed the inorganic substance of soil. If that is so, 70 tonnes per hectare would still only work out at a covering of half a centimetre. Now, that's hardly enough to plant a tree in but better than nothing, and generously allowing that there is something like soil there to start with. (Looking at some of our wheatbelt, one wonders). If we go back to the Ice Age theory — that grinding glaciers laid down about 3m depth of rock dust for the new interglacial period to have an orgy with — then we would be looking at a 'top dressing' of 42,000 tonnes per hectare!

On the other end of the scale there are those who deal in truly homeopathic dressings. The biodynamic farmers realise the potential of the tiny dose — usually a 'dab of poison' which in the minute amount actually used works as a stimulant beyond any possibility of quantitative reason.

What may at first appear to be excessive and expensive may not be so if one carries through the theory to its logical conclusion. Soils laid down 5,000 to 8,000 years ago are still performing well. Rock dust dressings do not have to be considered with the 'one crop' mentality. A good heavy application might

last twenty years — who knows?

Since the March meeting of WANATCA, Men of The Trees have been joined by Prof. Bob Gilkes of the University of Western Australia and Mike Bolland and Mike Baker of the WA Dept of Agriculture in furthering these trials at Amery Acres. This is marvellous news. And those who think in 'superphosphate quantities' will be pleased to note that the field trials are working with 2 and 20 tonnes per hectare rock dust, comparable with average dressing levels of NPK fertilisers.

Heading the research is visiting fellow, Dr Philippe Hinsinger of the Institut National de la Recherche Agronomique, Montpellier, France. Dr Hinsinger's discipline is the study of the rhizosphere with particular attention to the mechanism of nutrient uptake from siliceous minerals — as close to 'rock dust' as one could wish!

David mentioned 'economics'. We are casting a long shot, looking at the 'economics of survival' and who's to say what that is worth? Unless we find better ways of looking after our soil, some commentators consider Australia could become a net importer of food in the not too distant future. If so, where will we import food from? The true work of the farmer is to care for the land as a good husbandman. It is only in recent times that we have abbreviated the role of farming to the growing of crops and it is a sad reflection on our society and its economic system that the harvest is all we are prepared to pay for.

With Men of The Trees we are concerned to explore the whole remineralisation theory whilst the dust is still reasonably freely available and before the quarries realise that their major future market lies east of the Darling scarp. We were always opportunists!

— *Barrie Oldfield*

Letter from Monica Durcan

Many thanks for now sending a copy of Quandong to us at the [Men of The Trees] Nursery. It is great to have the resource available to us.

I'm sorry to start with a complaint, but I found David Brown's reports on the speakers of the February meeting very disturbing.

His uninformed criticism of the Department of Agriculture is potentially dangerous, leading others to think he knows what he is talking about and they do not. The Dept. of Ag. ARE doing everything they can to 'right the wrongs'. Maybe you should meet some of the progressive young Project Officers and Land Conservation Officers now in the Department and find out some of the work that is going on.

I quote too: "Our cereal cropping probably has a negative efficiency rate". Has

he inquired or researched the issue? 'Probably' implies that he has not and is just being negative through his own assumptions. The Department IS always looking at crops and varieties. The Department does NOT "fail to see the obvious" either. David has obviously NO concept of farming systems or how farmers are faring at the moment.

Secondly, MOTT has leased a 23 ha (not 98 ha) farm from the Shire [of Dowerin, for the Amery Acres project], and whether Barrie's methods worry David or not should not concern the reader of his article.

Would it not be more positive to have objective summaries on talks given at WANATCA meetings rather than personal misconceptions being aired to your membership?

Apart from David Brown's negative and inaccurate comments, I enjoyed reading Quandong very much. But please get accurate reports on talks given at your meetings or those who do not attend will be glad that they didn't.

— Monica Durcan

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[Countryman/ May 13 1993]

Fancier seeks fig types

Fig fancier Alex Hart would like to hear from anyone who has a known cultivar of a productive, good eating fig on their block.

Cultivars of the varieties Adam, Italian Honey, White Genoa, Black Genoa, Turkish Brown and other types with big fruit of good eating quality are among the lines he is seeking.

Mr Hart, one of the guest speakers at a recent Men of the Trees field day at Hazelmere, hopes to use the information to compile a field guide to figs which he says are not the easiest plants in the world to accurately identify.

"The potential to improve the quality of the backyard fig tree is high," he said.

"But first we need to pin down and identify the various cultivars that are available."

Mr Hart said figs grew easily from cuttings, which were best taken in early spring when wood was still dormant.

They grew best in well drained, alkaline soils. A standard fertiliser recommendation was to apply 170g of basic slag and 43g sulphate of potash/square metre each autumn, and 225g of ground chalk every other year.

Keeping a fig tree too well supplied with nitrogen carried with it the risk of promoting leaf and woody growth at the expense of fruit production, he said.

Mr Hart can be contacted through the WA Nut and Tree Crop Association, PO Box 565, Subiaco, 6008, or by phone on (09) 490 1324.



Alex Hart inspects a Turkish Brown fig tree on a block outside Gosnells

WANATCA at the 1993 Royal Show

WANATCA will again be represented at this year's Royal Show at the Claremont Showgrounds.

This year the Show runs from Saturday October 2 to Saturday October 9, inclusive. As usual, we will operate from our headquarters in the Tree Crops Centre, WA Gardener Building.

We are appealing for volunteers, if even only for a few hours, to help. Volunteers get free entry into the Show, the work is not difficult, and there is plenty of spare time to see the rest of the Show.

Contact Alex Hart, our Coordinator, now on 490 1324 to discuss possible help.

THE FIG..... what is it and how are the varieties distinguished?

Historical Background

The common garden fig belongs to the Moraceae family and is known as *Ficus carica*, a deciduous tree, attaining heights of up to 5-10 metres and found as a tree or shrub.

Early history of the fig (E. Farah) reveals that the fig was regarded as sacred by the ancient Egyptians, Romans and Greeks (Condit 1949). It is recorded that the fig appears to have evolved in the Cretaceous period, i.e. more than sixty million years ago.

Paintings of figs have been found on the wall of a grave of Beni-Hassen. Aristotle is also reported to have told about a creature "psen" which pierced unripe figs allowing them to stay on trees until mature.

The fig is believed to be a native of Western Asia, with reputedly 700-800 varieties of the species. Because it was proven to be a valuable food source it was used widely in the Old World, mainly as fresh fruit or dried, in like fashion to dates. (See analysis Table 2).

The fig is now produced in commercial quantities in Madagascar, South Africa, and Australia and grown in other places e.g. New Zealand, England. By far the greatest number of figs are produced in the Mediterranean areas, which have the largest export trade.

California has very active fig associations which have active breeding programmes which are adding to the large number of varieties. In the USA, most commercial types of figs belong to the 'Calimyrna' type (derived from California and Smyrna).

The Fruit Of Figs

The fruit of figs is hollow globular or pear shaped fleshy receptacle, having at

the tip an orifice closed by small scales. These receptacles are of varying size, depending on variety, which house small flowers which develop in darkness. This structure is called a 'synconium'.

Fruits are borne singly or in pairs in the leaf axils. Typically, there are two crops per year, the first known as the "BREBA" crop, which is usually of small quantity and quality. A second crop follows known as the second crop or "HIGO" in some literature.

Fruits are classified by the colour of the skin, which is white, purple, black, or red. (See Table 1). Within this classification, varieties are recognized by the shape of the leaves and fig size as well.

It is in this area of identification that much confusion is found with regard to the various types of fig. This article may help to sort some of these problems out for those interested in

Table 2. Comparative nutritive value of figs
(As % of wt of the fruit).

Fruit	Total Solids	Ash	Prot-ein	Sugar	Crude Fibre
1. Currants	15.23	0.72	0.51	6.38	4.57
2. Dates	66.86	1.20	1.48	56.59	3.80
3. Figs	20.13	0.57	1.34	15.51	1.55 *
4. Grapes	21.83	0.53	0.59	17.11	3.60
5. Oranges (Navel)	13.87	0.43	0.48	15.91	N/av
6. Peaches	10.60	0.40	0.70	5.90	3.60
7. Pears	16.97	0.31	0.36	8.26	4.30
8. Persimmons	35.17	0.78	0.88	31.74	1.43
9. Plums	15.14	0.61	0.40	3.56	4.34

Extract from Farmers Bulletin 685 (USDA) in "Tree Crops" (J. Russell Smith).

* Average figure from "The Fig" by Condit.

the subject.

Only Smyrna type figs require fertilisation of the fruit to produce fruit of special flavour and quality. The story of fertilisation is enthralling in itself, since it involves a wasp (*Blastophaga psenes*) or fig wasp. This wasp is present in Australia but not New Zealand. It has been recorded from the Fremantle area but just how far afield it has gone from there is not known. It is possible that other insects are doing the job as well.

How to separate fig varieties

This aspect is currently largely by description of the fruits (ref A. Reynolds N.Z.) into three major groups thus:-

a) **Adriatic or Common** type figs (*Calimyrnas*) not requiring fig wasp fertilisation.

b) **Smyrna/ Capri** types which require fig wasp fertilisation.

c) **San Pedro** types. These types are generally grown for the dried fruit trade. They are regarded as an intermediate type fig which sets the first crop without pollination but DOES require pollination for the second crop. To this extent it would appear to be a hybrid fig between the first two or a sport of one or the other.

Table 1 sets out some of the features of each of these types, and some of the varieties in each type. As a further aid to identification of these types, Table 1 includes recorded features such as leaf shape, fruit colour, size and pulp colours.

Climate and cultural requirements

As the areas of production above suggest, the main climatic requirements are warm to hot dry summers and wet mild winters. These conditions are those met with in 'Mediterranean' areas of the world.

The fig seems able to grow successfully on a wide range of soils, but usually does best on deep well drained soil with neutral to

alkaline pH. Even poorer sandy type soils do not seem to be a bother for figs providing there is sufficient moisture. Excellent development of figs has been seen on poor sandy laterite type soils in the lower South West of WA. A protected spot is recommended for plantings and if possible, root growth should be restricted. This is believed to enhance the fruit crop in general.

Soil fertilisation

Soils should not be rich in nitrogen, however, trees require yearly dressings of basic slag (170gm) and sulphate of potash (43gm) per square metre per year at autumn. Every other year, 225gm of ground limestone should be applied. When fruit are forming, liquid manure is also beneficial.

Also recommended for young trees is the application of two handfuls of complete NPK fertilizer per square metre every six weeks, except in the winter months and when watering.

For adult trees, 2kg of complete NPK per year at budburst in August is beneficial. Too much fertilizer results in heavy growth and not much fruit.

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Table 1. Characteristics of Some Fig Varieties

Variety	Pulp Color	Sizes Etc	Skin Color	Use, Comments
1. Cape White (Syn. 'Blanche')	Cream	Early Maturer	?	Good Jam
2. Preston Prolific	Amber	Hard To Pick	?	High Quality, Late Maturer (Gosford NSW)
3. White Genoa	Amber/Pink	Medium Size	?	Sweet Good Eating
4. Black Genoa (Syn. 'San Pedro')	Red	Medium Size	?	Sweet Rich Flavour
5. Brown Turkey (Syn. 'Ever Bearing')	Pink/Brown	Medium/Late Bearing. 2nd Crop Main Crop	?	Jam, Table, Eating
6. White Adriatic	Pink To Red	Medium	?	Excellent Flavour, Suitable Fresh Fruit
7. 'Excel'	Pink Red	Early Maturing	?	Developed At Narara, NSW
8. 'Flanders'	Pink Red	Medium	?	" " "
9. 'Panache' (Calmyrna Fig)	Red	Variogated (Leaves?)	Green Yellow	Ornamental
10. 'Dianna'	Flattish, colourless, almost seedless	Large, Mid Season	Pale Yellow, Cream	Excellent Jam & Table Fruit
11. 'Spanish Delight'	Red, Seedy Medium	Large/Medium	Pink	No Comment

Notes About Other Varieties

1. Brown Turkey. Also known as Common Purple, Brown Naples, Blue Burgundy, Lee's perpetual. These names apply in England only, I gather.
2. Calmyrna 'Tena'. Thick yellow/white skin, dark red flesh - 'Col Di Signora Bianca'.
3. Celeste (S.W. America). Violet black skin, juicy and sweet
4. White Adriatic. Used exclusively in U.S. in past
5. White Marseilles. Also known as: Cape White, Figue Blanche, Ford's Seedling, White Genoa & White Naples, with amber pink flesh and sweet.
6. Black Mission (California). Used as paste and juice concentrate or whole dried & fresh fruit.
7. Magnolia Fig. (Hardest in U.S.A.) Straw colored skin, large fruits
8. Kadota. Green to yellowish green, amber flesh, dried fruit.
9. Conadria 'Archipal' large fruit, light strawberry flesh, green with purplish tint of skin used as dried fruit.
10. Diredo. No details available.

There is obviously duplication of names in different places and work is needed to sort out the taxonomy of figs in general.

Propagation of figs and establishment

Figs are usually started from cuttings about 125-130cm long and about 15mm in diameter, preferably from two year old wood. Layering can also be used as well as the use of seed.

In the latter case, time to fruit bearing is lengthened considerably, and is more tedious. Cuttings should be taken when the trees are in dormancy with buds cut to 60-80cm, with later pruning directed at shaping the tree for best fruit carrying potential.

Californian experience has shown that spacing of the trees is important when using an orchard layout. Typical spacings there are now 20 x 20 feet or 22 x 22 feet or a triangular planting of 23 feet between trees. This gives 90 to 108 trees per acre. This applies to *Calimyma* figs. Hedgerow type plantings have been tried, spacing trees at 30 x 15 feet between rows for greater yields in the early life of the orchard but are not always successful.

In Spain, figs have been planted 40 feet apart in rows with a regular rotation of wheat, clovers and chickpeas beneath or between them. This would appear to be an early attempt at agroforestry, where the trees are reserved for the owner, and the land rented out for the annual crops.

Uses of figs

Figs have many uses. Fruit salads can include figs; stuffed figs with cheese and with or without wine are notable uses, as well as

dried or made into jams, pastes or deep frozen, as well as fresh fruit.

Fermented drinks have also been developed e.g. the Germans have a fig brandy, North Africans have a fig brandy called 'Boukha' or 'Mahia' which is used as an aperitif or with coffee as a liqueur. A fig wine can be made from dried figs soon after preparation. Nutritionally, figs are next to dates in terms of protein content (See Table 2, analysis).

Statistical information

Some details of the size of the fig trade on the international market as they apply to Australia are shown in Table 3. This reveals that the trade is currently worth, in 1991/92, about \$2.6 million dollars, but increasing.

What are the pests and diseases?

Fruit fly is probably the most prevalent pest that has to be dealt with. These require regular baiting and spraying to minimise losses. Fly traps are also very effective, particularly at fruit maturing time.

It is reported that a dried fig beetle can invade figs but these can be checked with sprays of Carbaryl.

Fungal diseases include Brown Leaf Spot (*Phyllostica* spp) which cause large dark brown leaf spots and defoliation.

Rust (*Cerotelium fici*) causes small raised spots with a powdery mass of spores and can lead to defoliation and loss of crop. Both these can be controlled with Zineb, Thiram or Mancozeb.

Other fungi and yeast can occur but are associated with dried fruit beetle inside ripening fruit.

Birds are a pest, particularly the smaller types, Honeyeaters and Tits of various kinds. The only sure way of dealing with these is by enclosing the orchard under netting.

Conclusions

1. Uncertainty in the classification of figs

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at present hinders effective widescale improvement of figs for commercial purposes, in WA at least.

2. There are gaps in the information in this article which will no doubt be filled in time.

3. It seems not unlikely that improvement in fig culture in South Australia is related to the soil types prevalent in areas of potential there, e.g. 'terra rossa' type soils derived from limestone parent rock, which is similar to that of the Mediterranean area and parts of California where alkaline type silts and loams can be found.

4. The crop in WA would be at a disadvantage since raking of fallen figs would require heavy cleaning and in sandy soils may be impracticable. Labour costs of hand picking may preclude all but hobby/cottage type usage. However, the high protein content cannot be overlooked and it may be that figs could rival dates as a source of protein in dried easy transportable form.

5. Pests could be a problem of insurmountable odds except where netting is used or fruit crops handled early to avoid loss.

6. The potential to improve the backyard fig is considerable seeing that improved cultivars are now in WA, and also the Fig Wasp or an alternative is available here.

7. There would seem to be scope for experimentation with figs in the broad acre scene whereby trees are leased for fig production within a cereal crop regime as is done in Spain. This may only be possible where sufficient moisture is available of the right quality.

— A. J. Hart

Table 3. Statistics on Figs

1. Production By States Of Australia

State	Producers	Prodctn (kg)	Av Prodn /producer	Av. trees
NSW	7	20805	3000	400
Vic	4	33650	840	100
Qld	5	9550	1910	70
SA	4	77500	19500	3500
WA	5	1199	240	40

2. Age Of Trees (W.A.)

	No Trees	No Producers
Under 6 Years	238	5
Over 6 Years	66	4

3. Production Within W.A.(Areas)

	Prodctn (kg)	No Producers
Swan	35	1
Armadale	4	1
Bridgetown/ Greenbushes	530	1
Manjimup	500	1
Mt Barker	130	1

4. Imports Into Australia By Country Of Origin

Country	Qty (kg)	Value (\$'000)	\$Unit Val
China 91/92	995	14	13.92
90/91	1945	13	6.70
(N.S.W. Highest Importer)			
Greece 91/92	382503	1214	3.18
90/91	343989	868	2.52
Turkey 91/92	493210	1324	2.69
90/91	466897	1121	2.40
USA 91/92	10002	42	4.24
90/91	25309	112	4.43

Note: Other countries supplying the Australian markets are Hong Kong, Italy, Lebanon, Malaysia, Singapore and Papua New Guinea, but only in small quantities. Total trade in 1991/92 was 906,207 Kg valued at \$2,612,000 (A\$2.88/Kg).

(Information from Australian Bureau of Statistics).

BOOK REVIEWS

by David Noël

* **THREE UNIQUE WILD-FOOD SOURCEBOOKS ***

Wild Fruits and Vegetables in Sarawak.
Department of Agriculture, Sarawak,
1992. 114 pages. Paperback. *\$39.95

There is a story in itself on how this unique and valuable sourcebook on the fruits and vegetables of Sarawak came to be offered. WANATCA member K.Y. Ong kindly supplied me with a copy of the original edition, in Malaysian, and then a copy of the present edition, which is in English.

Right from the start I knew that this was an item which had to be made available more widely if it could possibly be managed. I tried contacting the Sarawak government department to obtain copies by all means — faxes, letters, and several phone calls — all to no avail. Fortunately, I have a friend who travels frequently to Sarawak, and he made enquiries on my behalf.

On the first visit he was unable to find anyone in the department who would admit that the publication even existed. On his next trip up, some months later, he was equipped with a photocopy of the first few pages, with dates of publication and everything. He had a contact within the department, and finally struck gold.

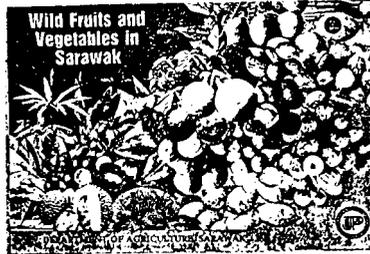
The problem was that only a very small number of books had been printed of the English edition, and it was not on public sale — local workers would have used the Malaysian edition anyway. Finally he got a small allocation of the books, after a warning that there would be no more, and brought them back to Perth in his hand luggage.

Why is this particular book worth so much

trouble? It is because it forms a real treasurehouse of food species which are currently unknown or unexploited outside their native area — and Sarawak falls inside an immensely rich floral zone.

Over 100 fruits, nuts, and vegetables are covered, most including a description, colour photograph, notes on current exploitation (many species are now grown in villages locally), and even nutritional composition analyses. All this is unique data.

As an example, no less than five local species of mago are described (*Mangifera caesia*, *grafithii*, *pajang*, *quadrifida*, *torquenda*), none of which I had even heard of. There is a good description of the Engkala, *Litsea garciae*, an avocado-like fruit which may have huge potential in Australia, grafted on native Australian *Litsea* rootstocks.



Food Plants of Zimbabwe. Margaret H. Treadgold. Mambo Press, Gweru, Zimbabwe, 1990. 153 pages, Paperback. *\$29.95.

Here is another very valuable sourcebook, this time to the edible plant resources of a region of southern Africa which is comparable in climate to much of subtropical Australia.

Almost 200 food plants are covered. The book has the sub-title 'With old and new ways of preparation', and a great deal of relevant information is given on food preparation and on medicinal uses of the various plant parts.

Sections for each plant include: Description, Location, Dates edible, Preparation, Medicinal uses, and General interest. All the text is well-written, concise, and informative. Line drawings of most of the plants are included, and there are a few plates of colour sketches.

As an example, for the Baobab, *Adansonia digitata* (closely related to the

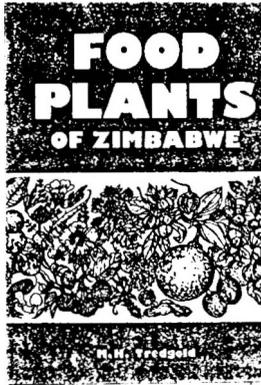
Australian Boab Tree), the tree, bark, wood, and leaf characteristics are given, the flowering sequence and method of pollination (flies and bluebottles attracted by the rotting meat smell), and the form of the large hard-shelled fruits, the pithy pulp, and the seeds.

Baobab grows in hot dry areas at low altitudes. It is noted that leaves are edible in October and November, fruits in April to June. The pith contains cream of tartar and is used to make refreshing drinks and as a baking powder. Young leaves are eaten as spinach. Seeds are pounded and with honey added are used as a drink, roasted seeds are used as a coffee substitute, ground seeds are formed into food cakes and dried. Germinating seed shoots are used as aspaaragus. Young baobab roots are eaten raw, and the bulbs which form on root ends are ground for porridge. Finally, the large caterpillars found feeding on the leaves are prepared as a relish!

The pith is very high in Vitamin C and has medicinal uses, and the seeds contain 11-13% oil. Water may be extracted from the boles.

Wild Fruits of the Sub-Himalayan Region. Chiranjit Parmar and Mitlesh Kumar Kaushal. Kalyani Publishers, New Delhi, India. 136 pages, Hardback. *\$24.95.

The Himalayas are believed to have been formed from the collision of parts of the two great supercontinents which once covered the



Earth, Gondwanaland and Laurasia, so it is understandable that this region, too, is one rich in plant resources.

Where the region differs from those of Zimbabwe and Sarawak is in the fact that it has been part of some very ancient civilizations, and has already been worked over as a source of cultivated fruits and nuts. Almond, apricot, pistachio, walnut, and pomegranate are among the ones with ancestors or close relatives in the area.

This excellent book, written by two staff members of the Himachal Pradesh Agricultural University, covers 26 species which have not yet been exploited outside the region, including some (eg wild pomegranate) which co-exist with more cultivated forms. These include some surprises, such as horsechestnut, not generally regarded as having any food value. Wild pears, raspberries, grapes, and jujubes figure, as well as species without commercial relatives, such as *Carissa*, *Aegle*, *Myrica*, and *Murraya*.

For each species good descriptions are given of plant form, flowering and fruiting, yield, fruit composition, medicinal properties, eating value, and plant uses. Quite a number of photographs are reproduced, in black and white only and rather poorly.

All the above are highly recommended for their valuable content and reasonable price.

*Prices noted are for copies available from *Granny Smith's Bookshop*, PO Box 27, Subiaco, WA 6008.



Thousand-dollar research fund underway

The WANATCA Research Fund has been formally established with an initial allocation of one thousand dollars.

This sum is made up from specific contributions of members in the past, topped up from general Association revenue. The funding intention is directed towards 'grants-in-aid', that is, smaller sums to encourage less formal work on research and development of tree crops, rather than major professional projects (which typically require many thousands of dollars each).

Essentially the grants-in-aid are intended to defray costs of such things as seed procurement, supply of information, help with writing-up results, and provision of materials, chemicals etc. The Association does not expect any financial return from these grants, only information on the results — even negative results.

There are no iron-bound restrictions on the amount applied for, who may apply, or where in the world they are working. Nor do applicants have to be WANATCA members.

However, applications are particularly sought from:

1. Members interested in a particular species or technique, and wishing to further that interest;

2. Students in schools, colleges, and universities, who have to carry out an unspecified assignment or prepare a thesis, and will be encouraged to pick a topic in the tree crops area through availability of a grant-in-aid.

Information-gathering exercises, such as mapping locations of bunya trees in the Perth area, recording ripening seasons of local mulberries, or compiling descriptions of better-fruited feijoa seedlings, will certainly be considered.

Applications should be directed to the WANATCA Research Fund Coordinator, Alex Hart, at 71 Terence Street, Gosnells, WA 6110. Alex's phone number is 490 1324.

[Countryman/ July 1, 1993]

Trials for oil plant

A pilot plant for eucalyptus oil production will be established in Merredin with funding from the Department of Commerce and Trade.

Four Merredin men have formed the Merredin Essential Oils Co, which they hope will prove the commercial viability of a distillation plant in or near Merredin.

The plant will be used to research the most appropriate species of eucalypt for oil production in local conditions.

A spokesman for the group, David Gebert, believes the long term viability of the project

will depend on the level of support received from growers.

With farmers planting tens of thousands of trees in the region a year, Mr Gebert said his group hoped to identify the species which would supply the most and the best oil and then encourage farmers to use those species in their land care programs.

"It makes sense to think with all those trees being planted for land care, there could be a direct profit as well if they could be harvested" Mr Gebert said.

The grant received by the group represents about 40 per cent of the cost of the pilot plant.

— *Judy Rutherford*

WANATCA journal library now loaning

To improve the use made of the large number of magazines and periodicals which WANATCA receives through exchange or subscription, arrangements have been made so that members can borrow these.

A full library service is complex and expensive to run, and is beyond our resources at present. WANATCA already has running its Video Hire Service, by which items from the Association's small video collection can be borrowed for a few days at a cost of \$2. The new move is to extend the borrowing facility to current journals.

There will be no charge to borrow journals, either at a WANATCA meeting or from the Association's headquarters at the Tree Crops Centre. However, members wishing to borrow journals for home use must pay a deposit of \$25 for a Borrower Pocket, as in some older public library systems. After selecting a journal, the borrower will need to fill in a loan ticket with details of the item borrowed, and hand it over with their Borrower Pocket in place of the journal.

When the loan item is returned, the Borrower Pocket will be handed back and can be used to borrow another item. There will be

no specific loan period, so an item can be borrowed at one meeting and returned at the next, although we reserve the right to 'recall' an item from loan if necessary.

At meetings, journal loans will be handled by our Secretary, Lorna Budd, at other times the pockets in use will be held at the Tree Crops Centre. Members can have more than one pocket if they wish, with a deposit of \$25 on each. If members decide they no longer wish to use the loan facility, pockets can be traded back in for \$20.

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[Acotanc Bulletin/ Mid 1993]

Australian Macadamia Industry Focus

The Australian macadamia industry appears poised for a major further expansion with prospects for a prosperous future.

In 1991 Australian macadamia production amounted to approximately 9000 tonnes nut-in-shell, with an on-farm value around A\$27 million (about US\$18m). Production was divided almost evenly between Queensland and New South Wales, currently the only significant producers.

Australia is the world's second largest macadamia producer, after Hawaii, and is expected to become world leader by 1995. Other significant producers are Kenya, Malawi, Zimbabwe, South Africa, and Central American countries, while test planting has occurred in Brazil.

There are between seven and eight hundred growers and twelve processors in Australia. Approximately 80% of the crop, with a value of \$50m, is exported, with over 90% going to the US. Other export markets include Japan, SE Asia, Canada, and Europe. Most exports are in bulk form.

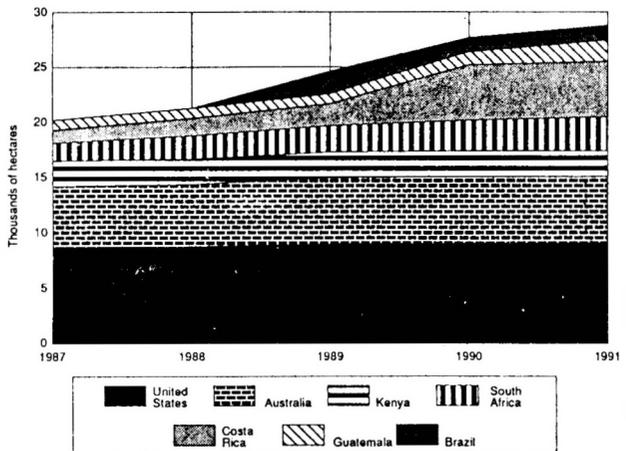
The industry has pulled through a period of uncertainty and a certain amount of gloom. It is believed that this dark time was, in fact, partly generated by the industry's own success. Over the 5 years before 1991, macadamia production more than quadrupled in value, from around A\$5 million to about \$22m. In effect, macadamia growers did not have the mechanisms in place to handle the tonnages produced, and were caught short by their own success. The general world recession was also a factor.

Now the mood is very

buoyant. Macadamia processors have complained that they "just cannot get enough nuts to meet the demand". Andy Stapleton, President of the Australian Macadamia Society, comments that "the most visible thing happening at the moment is the huge number of buyers waiting for the crop to fill. May they all continue to fall short of their needs for many years to come, and may we continue to make a profit at each level of the industry!".

The Australian Macadamia Society have been one of the most successful users of the statutory levy system, turning over sums of around a quarter of a million dollars each year for promotion and research, from a levy of 3 cents per kilogram. Of this 3-cent levy, 2 cents went to the Australian Horticultural Corporation for promotion work, and 1 cent to the Horticultural Research & Development Corporation for research. As from 1993, the AMS have resolved to raise this levy to 4

Figure 1-5
Macadamia nuts: Planted hectares, by major producers, 1987-91



Source: USITC Publication 2573

cents, split equally between the two purposes.

This increase in research money does make sense — promotion funds tend to pit one's product against other competing products from the same area, causing a perhaps temporary shift in a fixed market share. Research leading to greater production efficiency can create new and bigger markets.

The important event from overseas was the release of the United States International Trade Commission Report *Macadamia Nuts: Economic and Competitive Factors Affecting the U.S. Industry*. As the Australian industry is growing greatly in size and treading on the heels of the US producers, who are restricted on expansion in Hawaii by the lack of available land, it was feared that the investigation could lead to US "anti-dumping" tariffs.

In the event, the report has been received in Australia with some relief. The trend of the USITC report was along the lines that that there had been some technical dumping by Australian producers, that it was inadvertent, and that US producers had not been significantly damaged. No punitive tariff was recommended.

The American report (USITC Publication 2573) is a valuable document in its own right, containing a wealth of information on macadamia industry production and practices worldwide. Copies will be available from the Tree Crops Centre for those interested. ¶

Chinese Water Chestnuts

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Limited Supply

Kerry Ward

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PO Box 311, Harvey 6220

New Edition of ATCROS

Work has begun on a New Edition of ATCROS, the Australasian Tree Crops Sourcebook.

The First Edition of ATCROS was published by Cornucopia Press for WANATCA in 1991. The Second Edition of ATCROS will be sponsored by ACOTANC Inc, and as WANATCA is a Founder Participant in ACOTANC, all WANATCA members will receive a free copy of ATCROS as part of their subscription. The new edition is due out in 1994.

All WANATCA members associated with organizations offering services or supplies in the tree crop area are asked to contact the Tree Crops Centre to ensure that they are represented in the Directory section and claim a free bold-type entry. ¶

For Sale

Walnut Seedlings

English and Californian Black

Bulk supplies available of Juglans regia (standard walnut) and Juglans hindsii (black walnut, standard walnut rootstock in California, also for timber)
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Good healthy trees grown in the ground, supplied bare-root.

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Also available: *10 grafted pecans (Mahan), \$20 each;*

Pistacia atlantica rootstocks (recommended for light soils)

THE INDIAN FIG

The Indian Fig is not a new breed of fruit but has been used by man for thousands of years for food and medicine.

The fruit is considered a combination of flavours of fig, tamarillo, water melon, strawberry, peach and plum. Some people call it the fruit-salad fruit.

About ten years ago someone asked me if Indian Figs were available? At that stage I was just becoming aware of the variety and value of a large range of rare type fruits. Soon after, I read about the Indian Fig and acquired a plant. So let me share with you some of my experiences since then.

At first appearance the Indian Fig looks like a formidable prickly pear. However, the Indian Fig is not as ferocious as the prickly pear, as it bears few prickles.

Indian Fig (*Opuntia ficus-indica*) although related to Prickly Pear is not a banned noxious plant like the Prickly Pear, in fact it is a commercial crop in many parts of the world and is being developed in Australia.

The opuntias belong to a very large group of plants in the Cactaceae family. Many of these bear very thick sharp spines, absolutely magnificent flowers and are valued as popular pot plants or for landscaping effects.

Cacti have offered much for mankind in the form of food, medicine, fibre for rope, spines for fish hooks, and water for the desert traveller. Cactus plants are able to survive in extremes of heat and drought for long periods (in fact for many years) because the stems and leaves can store enormous volumes of water during times of rain.

The stems and body parts of the plant have a hard skin and wax coating which protect it

from evaporation of water. The roots are long and can reach down into the ground for moisture reserves.

The tough stems of *Cereus* or Night Blooming Cactus are valued for their vanilla-perfumed flowers and medicinal uses. Some in the *Cereus* family, like the Pitayas, are cultivated for their showy flowers and sweet fruit, eaten fresh, or in drinks, deserts and jams. *Opuntia cochinchinensis* and the cochineal insect go hand in hand to produce the red and pink colouring that makes cakes, ice cream and cosmetics so attractive to our eyes.

Cacti (the prickly pear - *Opuntia stricta* and *tomento* and *inermis*) were introduced into Australia during the days of convict settlement, mainly to provide food for the cochineal insect which was required for the dye of the soldiers' red coats. But by the 1920s the cactus had become a severe plant pest. The introduction of the cactoblastis moth, a natural predator, helped to bring it under control.

Some of these plants are still seen along the eastern parts of Australia and are sought after by people who enjoy the flavour of the fruit. Not all members of the the Cactus family (over 1000 species) produce fruit or leaves of edible use, in fact some, like the mescal button (*Lophophora williamsii*) contain a dangerous alkaloid.

But now let's have a closer look at the Indian Fig, as it can provide two sources of food on the one plant and it has been a survival source of moisture to quench the thirst of man and animal.

Plant description

Indian Figs are native to South and Central America, Mexico and the southwest of the United States. Indian Figs are sold in shops and markets in Mexico, where they are

known as tuna or nopal, and held in high esteem. The Spanish imported the Indian Fig from Mexico to Europe soon after the discovery of America, and it was taken to temperate warm regions of Europe and Africa and many other lands. It has become a commercial crop in South America, North America and southern Europe.

In appearance, the Indian Fig looks much like a prickly pear except there are few prickles, in fact, some varieties are almost spineless. The plant can grow 1-6 metres tall. The large flattened fleshy branches or pads may also be called leaves.

Inside the thick leaves the structure is a fibrous and mucilaginous juicy mass. The prickles or spines are small and can be easily removed with a brush. However, when picking the pads to use, it is advisable to wear gloves as the spines easily stick into the skin. Flowers can be shades from yellow to red in summer/autumn. The fruit is round to oblong to pear shaped, up to 100 cm long and yellow to red in colour and covered in fine spines.

How to grow

The plant is adaptable to most well-drained soils with preferably a sunny aspect. Severe frost is a problem with young plants but mature plants withstand it without difficulty. Popenoe says in *Manual of Tropical and Subtropical Fruits* that "the Indian Figs are capable of producing on lean, sandy or rocky soil, ill-suited for growing an ordinary crop, as much as 18,000 pounds of fruit to the acre. When it is considered that this is equal to 2500 pounds of sugar, as well as other valuable food constituents, it may be readily seen that the food value from the standpoint of nutrition is considerable".

Propagation is by seed or by leaf cuttings. With cuttings, the leaf pads are best exposed in half sunlight from 7-15 days to partially

wither, a practice considered to help rooting.

In the backyard they can be grown in any corner or spot unsuited to other plants or in a large pot in a very limited size garden. Commercial planting distances are usually at 2-3 metre spacings, in rows 3-5 metres apart. Plants usually start fruiting in 2-4 years and will continue bearing for many years. 1000 plants to a hectare may feasibly yield an income of \$10,000 a hectare.

Several small size crops have been recorded from Canberra to Southern Queensland. One commercial grower near Brisbane whom I contacted had his plantation bearing beautiful fruit (7 to a kg) only to find that the cactoblastus moth (still in the area from earlier introduction to Australia) would decimate his plants, so he gave it away as a losing battle.

Several years ago the price of Indian Figs reached \$16 for a 2.5 kg box at the Rocklea Brisbane Market.

Harvesting and uses

Both fruit and leaf pads need to be harvested with care due to the fine prickles (called glochids) which easily attach to the skin and can be difficult to dislodge. If you do get prickles in your fingers, try running the edge of a blade across the area in a shaving motion to extricate them. If prickles are deeply imbedded in flesh use tweezers. But gathering can be safe and easy if you use the proper equipment —tongs or long-handled fork, thick glove, a sharp knife, sack or container.

To pick a pear or leaf pad, jab below the leaf or pad with your fork or hold it with the tongs and cut off at the joint and let it drop into the container. Another method for picking is to have a long stick or handle with a tin can attached. The sharp edge of the can cuts the fruit from the plant and makes it fall inside the

can. Once picked, remove the prickles by scraping under running water, or I find brushing off with a brush works well. Another method to remove the spikes is to singe the prickles away over an open flame or a charcoal fire.

Fruit can then be cut lengthwise with a knife and the jelly-like pulp can be eaten with a spoon. Or if the top and bottom of the fruit is sliced off, then slit down the sides and the skin can be peeled off. The fine seeds can be eaten. Fruit can also be stewed, preserved, made into jams (use 0.75 kg sugar to 1 kg of fruit) syrups, jellies (thickened with gelatine or agar or tapioca or arrowroot), wines, dried, made into flour, added to fruit salads, meat and savoury dishes cakes and ice cream, omelets, puddings and pickles. I have a friend who makes pear and pad pickles using a pawpaw pickles recipe as a basis.

Leaf pads once de-thorned can be peeled, sliced into fillets or diced into cubes and can be used in many different ways. You can eat the leaf pulp raw or in a toss salad (tastes like a mild lemon) or add to stir-fry, soups, sauce, or added to omelets. Fillets (thin slices) of leaf pulp can be dipped in flour and egg, seasoned with salt, pepper and herbs as desired and rolled in bread crumbs and batter and fried, or try diced pads cooked with onions, tomatoes and herbs for a quick dish. Some folk just lightly steam the cubes, add salt and pepper and a dab of butter to serve. The cubes can also be crystalized like candied fruit or ginger.

Medicinal properties

The mucilaginous material has been used as an emollient, also as a diuretic, refrigerant and nerve. Leaves have been used for the treatment of joint pains and fevers, headache, earache, toothache, blood tonic, for gout and to benefit the heart and spleen, nausea,

digestive problems and constipation and diarrhoea. An ointment or salve was used by the American Indians for wounds, skin diseases and skin cancer. In Mexico, a liquid made from the leaves was also applied to the scalp to restore the natural colour of the hair. Leaves are also made into a soap to benefit the scalp and the hair. The leaves have also been dried and powdered and capsulated and used for hemorrhoids, and as a base material supplement in vitamin preparations.

I have been told by people how it has been used for asthma and diabetes; it is said to not only relieve the symptoms but to also lower the blood sugar level. A special friend shared with me how her father used Indian Fig extremely successfully to treat diabetes. The leaves were chopped into inch squares and covered with water in a stainless steel saucepan and boiled fairly vigorously for approximately 30 minutes. The decoction was then cooled, strained and refrigerated. A glass full was taken three times a day, mixed with 'happy-ade' cordial.

He was really not one to be interested in natural health (and despite diabetes still indulged in lamingtons and other sugar foods, etc), but he would take this Indian fig mix like a tonic because he maintained good health

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while he took it.

Professor S. Talala and Dr. A.S. Czechowicz, in *Herbal Remedies, Harmful and Beneficial Effects*, reported that "the flowers with mucilage constituent have been used medicinally for diarrhoea and benign prostate enlargement".

The leaves and flowers have been said to be a good source of Vitamin C and B, calcium and phosphorus.

— *Isabell Shipard*

References

Wild Food and Wild Medicine by A.B. and J.W. Cribb.

Herbal Remedies, Harmful and Beneficial Effects, by S. Talala and A.S. Czechowicz. Australia 1989.

Manual of Tropical and Sub-Tropical Fruits, by Wilson Popenoe.

Fruits of the Earth by F. Bianchini, E. Corbetta and M. Pistoia.

[*Editor: Isabell Shipard is a partner in Shipard's Nursery, PO Box 66, Nambour, Qld 4560. The Nursery has a big range of herbs and other useful fruits and plants, and offers an excellent free catalogue.*]

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1993

- Aug 15 Sun § Macadamia Seminar, El Caballo, Woolooloo
- Aug 18 Wed *General Meeting (Bill Scott — "What is the Pressure in a Dinosaur's Foot?")
- Sep 5 Sun WANATCA Budding & Grafting Workshop (Demonstrator — Lance Morgan)
- Oct 2-9 Perth Royal Show
- Oct 19 Tue Executive Committee Meeting
- Nov 5-7 § Horticultural Spectacular, Claremont
- Nov 17 Wed *Annual General Meeting (Neville Passmore - Tropical Fruits in Perth)

1995

- Sep §ACOTANC-95, Lismore, New South Wales

*General Meetings are held starting at 7.30pm. Venue: Greening WA, 1118 Hay Street, West Perth. These meetings usually include a current magazine display.

§ For contact details refer to the Tree Crops Centre.

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