



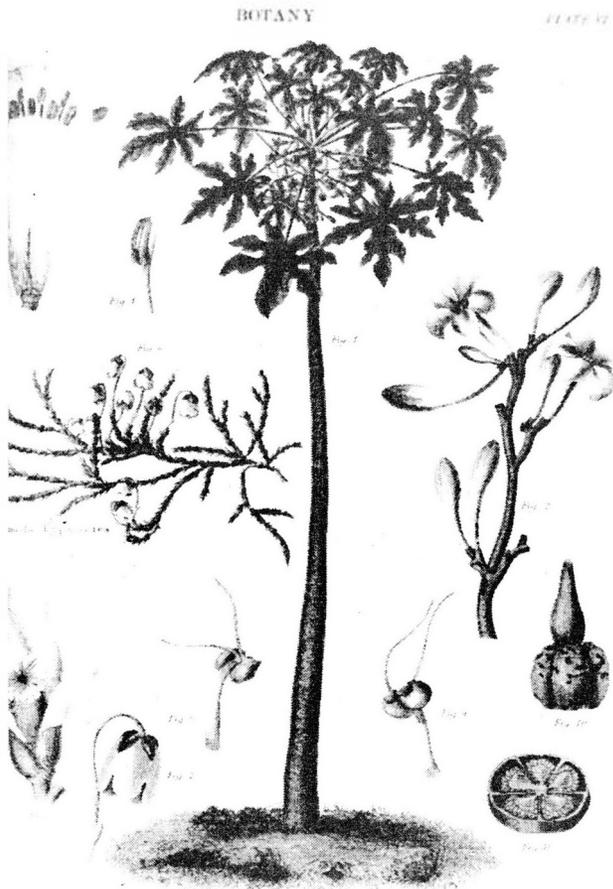
Quandong

magazine of the
West Australian Nut & Tree Crop Association (Inc)
www.AOI.com.au/wanatca

Second Quarter 2002 • Vol 28 No 2

ISSN 0312-8989 • \$4.00

Quandong • Second Quarter 2002 • Vol 28 No 2



The Papaya (*Carica papaya*) (See: About the Cover, p. 2)

NEXT MEETING: Tuesday February 26, 2002: 7.30 pm

Our guest at the next WANATCA meeting will be **Steven David**. Steven heads Organic Farming Systems, and is a nationally recognized adviser on sustainable farming.

Steven will be talking with us on:

Raising Fruit and Nut Trees Organically

Organic approaches to raising fruits, nuts, and other tree crops are attaining increasing importance (as can be seen from some of the articles in this issue) for economic and efficiency reasons, as well as their sustainability and health aspects. Once established, an organic orchard can be a money maker, but is best designed and built up from scratch with its future form keep in mind at all stages.

Full details on attached leaflet.

Visitors welcome. Queries to Tree Crops Centre, 9388 1965.

[Steven David may be contacted at www.organicfarming.com.au or 08-9384 3789]

In This Issue

Niche berry market exploits coast climate .. 3	genetically identical? 19
Alpacas thrive on mulberries. 4	Boab on bush tucker menu 20
Sorting out Fig chaos with DNA research... 5	Cinnamon — lethal weapon against E. coli 21
Figs, pigs, and vines in WA history 8	The Great Nambling Salt Flat Wheel
Honey takes sting out of staph 10	Barrow Muster 21
<i>Staphylea</i> : bladder nuts 10	Mangos and citrus: Westralian Fruits a
Making music with quandongs 12	sweet success story 22
Pistachio nursery, orchards move ahead ... 15	New Zealand salutes figs 23
Pawpaws: <i>Asimina</i> (not <i>Papaya</i>)	Prospectuses — good information sources 25
fruiting in Germany 14	China Berry (<i>Melia azedarach</i>) 26
Soil management the key to organic	Sandalwood Markets 27
avocados, olives 16	Dragonfruit, limes — potential for exotics 28
Groups bolster organic peak body push 18	The Inchi Tree — Edible oil source 29
Are Mangosteen trees in Australia	Rival opinions on organics 30

About the Cover

The cover drawing shows an engraving of the Papaya, *Carica papaya*, from the 1876 edition of the Encyclopaedia Britannica. Papaya is one of the most important tropical fruits. See also the article on page 14.

Material appearing in Quandong is the views of the authors. It is offered in good faith, but neither WANATCA nor Quandong take any responsibility for any use of this material.

[Countryman Horticulture / 2002 Feb 7]

Niche berry market exploits rare coast climate

For many growers on WA's south coast, growing is easy, it's getting produce to market that's the hard part. Freight costs, when combined with crate hire and market agent's commission, can chew into more than half of the expected return from a crop.

For some growers on the Rainbow Coast between Denmark and Albany the way around the transport problem is finding a small niche market and exploiting the unique climate of the region to produce a product with a value high enough to make freight costs affordable.

The Lillywhites' berry orchard in the Kangaroo Valley behind Denmark is one such

enterprise. Marilyn and Jim Lillywhite grow an astonishing range of berries in their hilly 2 ha orchard off Scotsdale Road.

The cool valley climate is cold enough in winter to allow the berries the chill factor and dormant period they require for fruiting, the berries can sell for up to \$5 a 200 g punnet, and they yield between two to three tonnes a

hectare.

During the five years that the Lillywhites have been growing berries in their valley they have discovered that not only do raspberries and blackberries grow well, but also a range of exotic berries that most people have never heard of, let alone tasted.

They grow



Denmark berry growers Marilyn and Jim Lillywhite have found their property ideal for exotic berries

Quandong Links to ATCROS

Many of the articles, advertisements, and news items in Quandong refer to organizations and people who are listed in the Directory section of the ATCROS Web Site, which is at:

<http://www.AOI.com.au/atcros>

In this issue, items underlined in the text have Atcros reference numbers listed at the end of an article or elsewhere close by. This is so that readers can get more contact details.

ATCROS usually lists name, address, and phone numbers, also fax, e-mail, and web page details where available.

Quandong: Atcros ref. <A1466>.

loganberries, boysenberries, silvan berries, tayberries, keri berries, marion berries, gooseberries and redcurrants.

The Lillywhites have sold some of their diverse range of berries through an agent at the Canning Vale Markets, but in the past 12 months they have mainly sold their fruit to the growing number of tourists that have visited the property since they opened it up to visitors a year ago.

Mr Lillywhite said visitors loved having the opportunity to taste berries they had never tasted before and the experience was an excellent way to educate people about berries.

“The market for unusual berries was very small, but because people have tasted the berries here, they often have a favourite and they want to buy it again,” Mrs Lillywhite said.

Visitors to the berry orchard can choose between buying a kilogram tub of berries for \$15 or a mixed tray of raspberries, boysenberries and blackberries in a 200 g punnet for \$3.80.

The Lillywhites already make some of

their berries into preserves and plan to establish a commercial kitchen and begin making a range of berry icecream for sale in the next 12 months.

They also intend to capitalise on their valley views and popularity with tourists by opening tearooms sometime in the future.

The biggest problem in the berry patch is a form of dieback that entered Australia five years ago and has since become endemic.

The Lillywhites unwittingly bought canes infected with the dieback, *Phytophthora fragariae carrubi*, when they started their enterprise.

There is no cure for the disease, so the Lillywhites have had to learn to live with the disease and to manage it through trellising and mounding. Their orchard management practices appear to be preventing the spread of the disease.

Scientists are working on developing berry varieties resistant to the disease and nurseries have moved into tissue-culture to avoid passing on the disease.

¥

[Countryman / 2002 Apr 18]

Alpacas thrive on mulberries

Hobson's Choice Alpacas specialises in black huayaca and coloured suri alpacas.

The owners, Anne and Brian Smith, started the stud 10 years ago on a 48-hectare Margaret River property.

It was a radical departure from their former careers in teaching and engineering but they are now operating the business full-time.

Anne said the stud had 31 animals and hoped to build to 300.

The Smiths have planted thousands of fodder shrubs and trees on their property, which was previously used to run sheep. Tagasaste and *Acacia saligna* are the main plantings, as well as 180 mulberry trees which Anne says the alpacas really love.

“Alpacas are browsers, rather than grazers,” she said. “They pick leaves and leave the trees intact.”

The Smiths are encouraging other alpaca owners to plant fodder trees because the practice allows animals to be kept on a smaller area compared with pasture.

¥

[Tree Crops Centre News Release]

Sorting out Fig chaos with DNA research

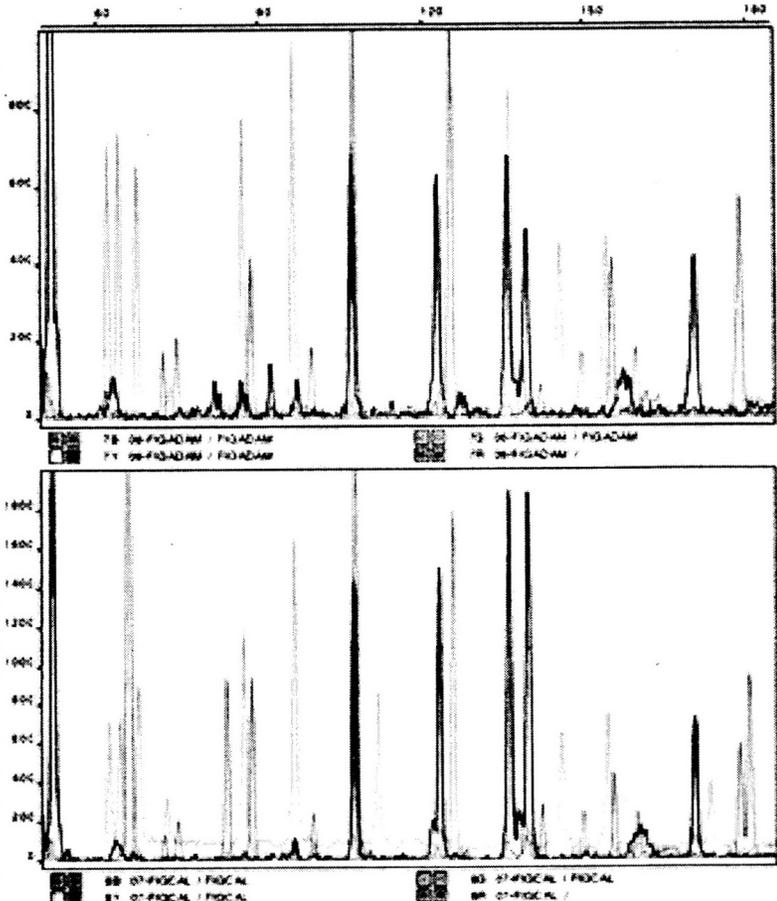
Figs are one of the most prized fruits of today's civilization, with a usage history, according to the Bible, dating back to Adam and Eve. But students of fig varieties are faced with chaos.

The reasons are various. First, most figs strike easily from cuttings. A chance superior tree can be easily propagated from cuttings, giving a clonal plant genetically identical to the mother tree. This is in contrast to a fruit like the apple, where the fruiting-variety top needs to be grafted onto a rootstock. So if your cousin in the country has a good fig which was on the property when he bought it, it's easy to take a cutting and grow it on in Perth.

Second, figs grow easily from seed, and seeds are widely spread by the birds which enjoy the fruits. Each of the seedlings which come up may be a genetically new individual, and may be selected as a new variety if its fruit is good.

Third, the familiar fig from Mediterranean lands, botanically

Ficus carica, is just one species from a huge genus of some 750 species spread world-wide. Australia alone has some 35 native species, many with good edible fruits. Cross-pollination, whether natural or intentional, can add genes from these other species to give



AFLP-based DNA fingerprints for two fig varieties, Adam (top) and Calimyrna (below). Originals are in colour.

new hybridized varieties.

All this means that attaching a particular variety name to a particular fig tree is fraught with problems. There are hundreds of names of fig varieties, and it appears that the same name may be attached to different varieties, while a given variety may have different names in different places.

A labelling error in a nursery a hundred years ago may have spread the error around the world. Even if labelling is carried through faultlessly, a mutation at one point on a fig branch, called a bud sport, may mean that a cutting for propagation may not be true to the parent.

WANATCA work

Figs are one of the perennial-plant crops of interest to the West Australian Nut and Tree Crop Association, and WANATCA's Fig Action Group leader, Alex Hart, is one of those who have wrestled with fig identification in the past.

Earlier work on fig identification has been based on studying physical characteristics such as leaf shape and fruit colour, and Mr Hart has advanced the methods used in this process, giving a paper on the topic at the 9th

Australasian Conference on Tree and Nut Crops held in Perth in April 2001. But there are limits to physical methods.

"Leaf shapes are a useful indicator for fig varieties", Mr Hart said, "but they are influenced to some extent by local growing conditions, such as soils, climate, and seasonal factors, so a single fig tree may have leaves of different shapes. These variations can be countered by more sophisticated analysis, say by looking at the ratios of leaf dimensions across key points, but they always leave you with a less than 100 % certain variety identification".

Now there are prospects for an end to the confusion, using the latest DNA fingerprinting techniques. The story is taken up by David Noel, Director of the Tree Crops Centre, which acts as WANATCA's headquarters.

"I came across a report on a genetic fingerprinting technique called AFLP which was being used by Dr Siegy Krauss of Kings Park on olive varieties", said Mr Noel. "It appeared to be possible to use the same technique to attack the thorny fig identification problem."

"I knew that DNA analysis had recently proved two leading olive varieties to be identical, and that an analysis of world macadamia varieties reported by a team led by CSIRO researcher C Peace had divided the varieties into 7 genepools, each of which was derived from various mixtures of the two macadamia species, *M. integrifolia* and *M. tetraphylla*."

"But one real surprise from the analysis was that one particular variety, known as Fuji or HAES 791, contained 45% of a third, little-known species, *Macadamia ternifolia*, and that this species had contributed some desirable traits such as compactness and early-bearing to Fuji."

PECAN NUTS WANTED

**Good quality Pecan
Nuts required for
shelling**

Larger Quantities preferred
Contact BJ & CF Rochester

Mumballup Pecan Shelling

Ph. 08-97341309, -97322051

Fax 08-97343343 • <A3135>

90 Bucktin St, Collie 6225

Mr Noel and Mr Hart approached Dr Krauss, Head of the Genetics Laboratory at Kings Park, and he agreed to run trial AFLP analyses on two fig varieties from the WANATCA gene-bank planting at Hillside Farm, Gosnells, which holds a wide selection of figs.

"AFLP, which stands for Amplified Fragment Length Polymorphism, is a fingerprinting and mapping technique for genetic analysis", Dr Krauss said. "DNA material is extracted from, say, the dried leaf of a fig, and this is broken up using reagents to give a mixture of fragments of different lengths, maybe 50 to 300 bases long. The next process separates out the fragments according to their length and records the relative amounts of fragments at each length."

"The resulting DNA 'fingerprint', a bit like a bar code, is completely characteristic of the plant it was derived from, as it reflects the individual makeup of the plant's genes. We use equipment costing around half a million dollars and sophisticated 'GeneScan' software to derive these fingerprints."

Mr Noel said that even this preliminary trial had yielded some useful results. "Two varieties, 'Adam' and 'Calimyrna', from our genepool were used, and as expected gave distinctive patterns", he said. "The surprise was that Calimyrna contained almost all the same marker peaks as Adam, but in addition had a number of markers which Adam lacked. We don't know the reason for this yet, but it implies that Calimyrna has a more diverse bunch of genes than Adam. This might mean that Calimyrna is a polyploid, with double or treble the number of chromosomes in each cell compared with Adam".

Fig DNA Fingerprinting Service

The plan now is to seek funds to set up the WANATCA Fig DNA Fingerprinting Service, to be based in Perth but to offer a service

world-wide. "We need initial funds to establish a database of fingerprints for around 100 varieties". Mr Noel said. "We are currently applying to the RIRDC, the Federal Government's Rural Industries Research & Development Corporation, for this funding. Once we have this background data, we would offer the fingerprinting service at a fee per sample".

Mr Noel said that the database would establish WANATCA as the authority on fig variety names. A nursery sending in a leaf sample for fingerprinting would either have its identity confirmed as a known variety, or establish it as a new variety, with naming rights available to the client. WANATCA would record the exact location of each variety on a register, in case of any future uncertainty as to where the name belonged.

He also pointed out that there were research and development possibilities well beyond the matter of variety names. "Sometimes a DNA marker or group of markers will be found to be linked with a desirable characteristic, say drought resistance, or immunity to a particular plant disease", he said. "In this case a big number of different varieties can be rapidly screened from their fingerprints alone, without going to costly trials", he said.

WATER DIVINING

guaranteed results

No water, no fee



Contact David Kennett now

08-9448 0473

mobile 0427 600 024

e-mail: davidkennett@bigpond.com

Mr Noel also thought this work could have important commercial possibilities for Western Australia, as the State had big areas suited to fig production, while traditional fig-producing countries did not have much of a record of scientific input to upgrade fig quality, products, or cultural methods. "We have the opportunity here to turn figs from a minor import item into the basis of an extensive export industry and a centre of world excellence", he said.

Contact

Alex Hart, 9490 1324 (alexanderhart@hotmail.com); Dr Siegy Krauss, 9480 3673 (skrauss@kpbg.wa.gov.au); David Noel, 9388 1965 (davidn@AOL.com.au).

Figs, pigs, and vines in WA history

Figs were one of the earliest crops planted by the early WA settlers. The following extract from 'Settler's Guide and Farmer's Handbook', published in 1897, was found by Wayne Geddes in a copy of this book handed down within his family. It recommends figs as a wonderful food for bacon production!

The value of the limestone for the vine is exhibited on the property of Mr. W. D. Moore, on the Canning road about two miles out of Fremantle. The vineyard yields superb crops of grapes of the best wine and table varieties, and from a few acres the returns obtained would form a substantial income, if the proprietor were not a large merchant and a gentleman of affluent means, whose pleasure it is to have a rural home looking out upon one of the most flourishing gardens which skilled culture and a wise choice of site unite in forming.

It is Mr. Moore's recreation to demonstrate,

by the means of this plantation, that in the limestone having an easterly aspect the vine will do even better here than it will on the sunny slopes of France. Not only on Mr. Moore's estate, but also at Rockingham, where there is another splendid vineyard, as much as 12 tons of muscatels per acre have been picked and marketed.

The vines at the latter place were planted on the site of a limestone quarry. The stone was taken out for building purposes and the excavation having been filled in with the soil of the neighbourhood, the cuttings were put in by way of experiment many years ago, when the capabilities of Western Australia as a fruit producing country were not as well known as they are to-day.

The fig is also a greedy feeder on the limestone, and asks for no more care than the native eucalyptus. A cutting thrust in the sandy soil grows like a weed, until it attains an enormous size and as so heavily laden with fruit that it is profitable to use it for fattening pigs. Mr. William Paterson, manager of the Agricultural Bank, is planting 40 acres near Mandurah with figs, in order to turn the fruit into bacon.

At Lowlands, the estate of Mr. A. R. Richardson, 24 miles from Fremantle on the South-western railway, there are some fig-trees of great size, one of them measuring seven feet five inches in girth of trunk. Mandurah and Rockingham can show several nearly as large. Mr. Thos. Hardy, the well-known South Australian horticulturist, admired the fig plantations greatly when he visited the colony a few years ago. He said he had seen nothing nearly so fine of the kind anywhere else south of the line.

Mr. Paterson, who is the first to undertake the culture of the fig on a large scale, is

importing fourteen varieties. He estimates that in seven years time the yield will be of the value of £1 per tree; he is planting 2,000 trees. It is pointed out that such a plantation requires no grafting, pruning, or budding, and very little cultivation, while the cuttings are cheap and easily procured, and the trees, generally speaking, almost immune from disease.

In his opinion the fig has been too much neglected in the west; if it had not grown almost wild and had a smaller yield of fruit, the satiated appetite would not have looked askance upon what he regards as being one of the most wholesome and appetising of fruits. In a country like Western Australia, where bacon brings 1s. per lb., he knows of no better or more profitable purpose to which to devote his Mandurah estate than to raise figs upon a large scale there in the limestone country. The olive also does remarkably well on the coast, and fine specimens of these trees may be seen anywhere between Fremantle and the Vasse.

The limestone country, which we have been inspecting before going into the clay districts further inland, grows several other crops that are valuable, although it is not recommended for general farming purposes. Lucerne, a fodder plant that is extensively cultivated in the eastern colonies, is in a congenial place among the limestone. Patches

of it have been put in for test purposes, with most gratifying results. The roots go down to a great depth, and all through the summer it can be repeatedly cut after it has had twelve months to establish itself. The value of lucerne, and the important part it should take in the feeding of stock during the dry season, may be emphasised, for probably there is no part of the world where summer fodder is more required than in the neighbourhood of Fremantle and Perth.

PART I.

The West Australian

Settler's Guide

AND

Farmer's Handbook.

Descriptive Notes on the Agricultural Areas and Crown Lands
open for Selection.
An enumeration of the productive possibilities of the Golden
West.

Issued by direction of
the Bureau of
Agriculture.



Edited by
L. LINDLEY-COWEN,
Secretary.

1907.
E. S. WIGG & SON, PRINTERS, PERTH.

[Countryman Horticulture / 2002 Mar 7]

Honey takes sting out of staph

Honey from one of WA's endemic forest species has naturally high antibacterial activity that strongly inhibits the bacteria *Staphylococcus aureus*, otherwise known as Golden Staph.

The WA Beekeepers Association and the Department of Agriculture's laboratory in Bunbury made the discovery after a year working on the honey from the South-West's jarrah forests.

Department research officer Robert Manning said the honey could be helpful in controlling Golden Staph, a bacterial disease in people that has become resistant to antibiotic treatments.

"The antibacterial activity of the honey primarily comes from hydrogen peroxide, which is derived via an enzyme in the honey called glucose oxidase," Mr Manning said.

"This becomes active when honey is diluted and its acidity neutralised. The enzyme is sensitive to light and heat."

Mr Manning said the jarrah honey had significantly higher activity levels than manuka honey from New Zealand, which was also strongly antibacterial.

He said the active factor in manuka had not been identified and was known as UMF (unique manuka factor).

"While the jarrah honey doesn't contain UMF, its activity due to hydrogen peroxide can be nearly twice as high, but on average it is about 50 per cent higher than manuka," he said.

"The potency of jarrah forest honey varied with the location of where beehives were found in the forest and some honeys surveyed showed no activity towards inhibiting bacteria."

Further research into the honey's potential and surveys of where it is found are continuing.

¥

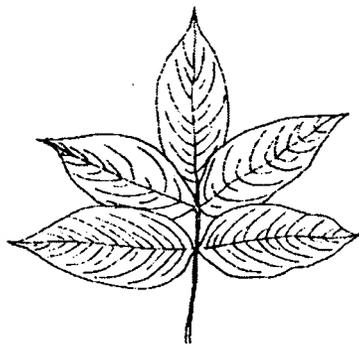
[Agroforestry News (Agroforestry Research Trust) / 2002 Feb]

Staphylea: bladder nuts

The bladder nuts are a group of deciduous shrubs and small trees which get their name from the fruits, which are inflated capsules containing a few seeds. They originate from northern temperate regions, and are generally found growing in woodlands in moist soil. The two species described here have edible seeds.

Description

Staphylea pinnata (Bladder Nut, False Pistachio, from Southern and Central Europe — France to Ukraine — and Asia minor — to Syria) and *S. trifolia* (American bladder nut, from Eastern North America — Quebec to Georgia, west to Kansas and Nebraska) are shrubs growing to some 5 m high and wide. They are fairly vigorous plants, growing some 50 cm per year. The branches have smooth striped bark. Leaves are opposite with 3-7 leaflets.



Leaf of *Staphylea pinnata*

S. pinnata is upright and vigorous; leaves are pinnate with 3-7 (usually 5) leaflets, each 5-10 cm long, bright green above and bluish green below. Bell-shaped flowers are whitish-green tinged pink, fragrant, about 1 cm across in narrow drooping panicles up to 12 cm long, borne in May and June. Pollination is via flies. Fruits are nearly round, greenish-white inflated bladder-like capsules, to 3-4 cm long, ripening from September to November. They contain 2-3 light brown roundish seeds, each to 12 mm. Hardy to about -18 °C. It is naturalised in Britain.

S. trifolia is upright and moderately vigorous, with shiny shoots; pinnate leaves have 3 leaflets each 3.5-8 cm long, dark green above, downy beneath. Bell-shaped flowers are dull white, 8 mm across, in drooping panicles to 5 cm long, borne in May and June. Pollination is via flies. Fruits are 3-4 cm long, usually 3-lobed, light brown when ripe from September to November. They contain 2-3 light brown roundish seeds, each about 5 mm across. Hardy to about -20 °C.

Flowers are borne in terminal panicles, ie from the tips of the shoots.

Uses

The seeds of both species are edible raw or roasted, with a pleasant pistachio flavour. The

shell is not edible.

A sweet edible oil is obtained from the seeds of *S. trifolia*, used for cooking. *S. trifolia* has been used medicinally by the native Iroquois in North America. An infusion of plants is taken for rheumatism, and a bark infusion is used as a dermatological aid. The seeds were used in rattles

Plants have dense underground root systems and can be used for erosion control.

Cultivation

The bladdernuts have a robust constitution and grow well in most fertile soils in sun or semishade — good in forest and woodland gardens. They like a moist (but not waterlogged) soil and are not tolerant of drought. They are very resistant to honey fungus (*Armillaria* spp.)

Flowers appear in great profusion in the spring following a long hot summer. Seeds ripen from September to November — it is easy to learn to judge ripeness from the condition of the fruit 'bladder'.

Pruning isn't essential. To restrict size and shape, prune after flowering. Plants can also be cut back hard in winter and will respond with vigorous growth.

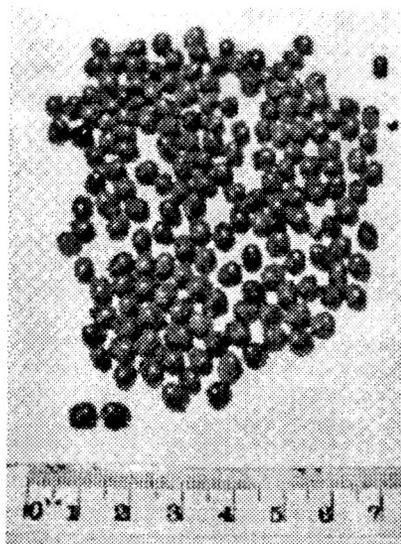
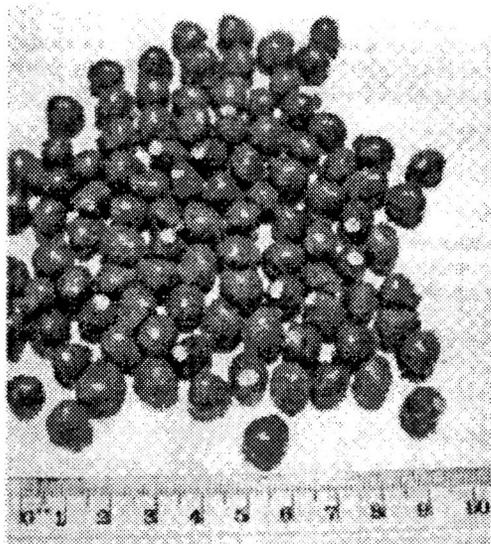
Propagation

Plants are often grown from seed. Seed should either be sown in the autumn or stratified before sowing in the spring. Both the species above require 13-22 weeks of warm stratification followed by 13 weeks of cold stratification, prior to sowing in spring.

Cuttings can also be taken; softwood and greenwood (semi-ripe) cuttings can be taken in summer and rooted in a moist atmosphere with gentle bottom heat. Root cuttings also work. Division works well after plants have suckered. Branches



Staphylea trifolia fruit capsule and flowers



S. pinnata (left) and *S. trifolia* (right) seeds. Scale in cm.

can be layered in July-August. Remove rooted layers 15 months later in winter.

Seeds and sometimes plants of both these species are available from the [Agroforestry Research Trust](#).

— *Martin Crawford*

References

[Agroforestry Research Trust](#): Useful Plants Database. ART, 2001.

Bean, W J: Trees and Shrubs Hardy in the British Isles. John Murray, 1978.

Dirr, M & Heuser, C: The Reference Manual of Woody Plant Propagation. Varsity Press, 1987.

Huxley, A: The New RHS Dictionary of Gardening. Macmillan Reference, 1999.

Krussmann, G: Manual of Cultivated Broad-Leaved Trees & Shrubs. Batsford, 1985.

Moerman, D: Native American Ethnobotany. Timber Press, 1998.

[Agroforestry News](#): A2768.

[Agroforestry Research Trust](#): A2769.



Making music with quandongs

Western Australia's native quandong, *Santalum acuminatum*, is renowned for its wide range of uses. Not only is the fruit and the kernel in the nut edible, the nuts have been used for chinese checkers and necklaces, and parts of the plant contain medicinal and veterinary substances.

Now another new use. In April, Leith Krakouer spotted our display of nuts at the Tree Crops Centre and told us that the quandong nuts are ideal for machine heads on guitars.

We were able to find him 6 matched nuts for this purpose. Leith promised to let us know how they performed. Anyone interested in this use can contact Leith on 9389 6080.



[Countryman / 2002 Apr 11]

Pistachio nursery and orchards move ahead

People interested in pistachio trees were able to find out more about producing the nuts at the recent Gingin Expo.

Bert Hayes, of WA Pistachios, discussed growing pistachios in an effort to pass on information he has gained from his own experience over several years, along with studies carried out in Australia and overseas.

Bert and Angie Hayes have established a tree nursery on their property near Northam. The nursery is being run in conjunction with their 2500-tree pistachio orchard.



Bert and Angie Hayes inspect pistachios from this year's harvest

The pistachio is a fruit-bearing tree with the same climatic requirements as those which exist in much of the Wheatbelt.

The deciduous pistachio tree is native to Iran and requires hot summers and cold winters. It is being grown successfully in the Avon Valley and other parts of WA.

It is drought resistant but will need to be irrigated and fertilised to produce the maximum quantity of good quality nuts, starting six to seven years after planting.

Mr Hayes said a well-managed tree would produce about 10 kg of nuts at 10 years of age, an amount which would increase as the tree got older.

Pollination is carried out by the wind and it is necessary to have male trees which are usually planted at a rate of one to nine females.

The fruit, which grows in bunches similar to grapes, can be eaten fresh or roasted and salted.

WA Pistachios: A3114.

AVOCADO TREES

Quality professionally grown trees
Heavy cropping scions on selected
rootstock

Large trees available, P.O.A.

Std. Size \$20 each, \$15 ea. for 10+

Contact Nola Washer Dip. Hort. <A1269>
for an order form

Avowest Nursery, Carabooda

Phone: 08-9407 5100 • Fax: 9407 5070

Pistachio Nut Trees

Big healthy trees in big 6-litre bags

Grafted trees or rootstock only

W.A. Pistachios, Northam

(Bert & Angie Hayes) • <A3114>

Phone/Fax 08-9622 9513

wapistachios@wn.com.au

PO Box 429, Northam WA 6401

Pawpaws: *Asimina* (not Papaya) fruiting in Germany

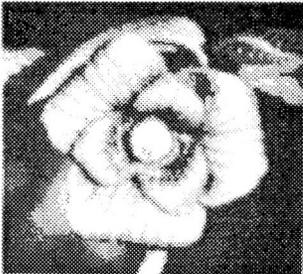
*Among our WANATCA members in overseas countries, we have always had a lively interest from Walter Griesmeir in Germany. He writes that he is always very pleased to receive issues of Quandong, and immediately reads all the articles, which he says includes contributions on matters never dealt with in Germany. He sends the news that *Asiminas* fruited well in Germany in the year 2000, although frost destroyed the flowers and crop in 2001. An article he has provided follows.*

The true pawpaw

Although a chemist by profession, I have over the past forty years developed an interest in unusual fruit trees, and in 1991 published my agroforestry system, in which I recommended the true pawpaw, *Asimina triloba*, for cultivation in temperate zones; this suggestion was met with considerable derision.

However, within the past ten years, the true pawpaw has become very popular in agroforestry and orchards, as well as being esteemed for its medicinal properties. The credit for this goes chiefly to the American Universities of Kentucky and Purdue.

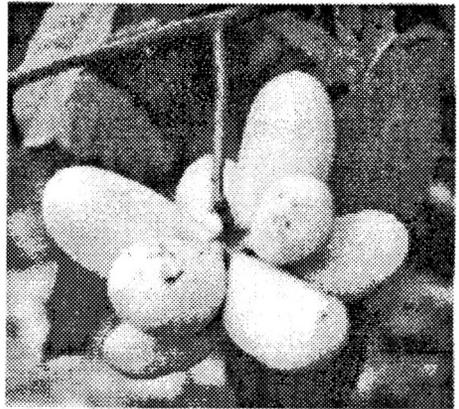
In Germany, meanwhile, I persuaded the chief of the "wild fruit" department, Klaus Korber of the Landesanstalt für Obst- u. Weinbau at Veitshochheim (near Würzburg), a governmental research institute, to study the pawpaw. Although the pH of the soil there lies on the upper limit for growing pawpaw (pH 7)



Asimina flowers, in brilliant carmine, are very attractive

success came in 2000, which was the hottest year there in the whole of the 20th century.

This encouraged me to publish



Bunch of Asimina fruit

a short paper on the pawpaw in a German gazette, *Grüner Anzeiger*; in it I accepted the commonly held opinion that the pawpaw is either self-sterile or so protogynous that self-pollination is impossible; this means that two different trees must always be planted nearby.

Some days after the publication of my pamphlet, two letters reached me informing me that some single trees also bear large quantities of fruit. One of these came from the Technical University of Munich - Weihenstephan, which recorded that a single pawpaw tree fruits heavily in the famous garden of Richard Blachian at Icking, about 25 miles south of Munich.

The other report came from the famous estate of Graf Bernadotte on the island of Mainau in Lake Constance (Bodensee), both

located in the south of Germany. Graf Bernadotte and Mainau are well known worldwide as the annual meeting place of the Nobel prizewinners.

I think this information is worth publishing as interest in the true pawpaw is growing so quickly that nurseries cannot satisfy present demand. To further future research into the planting of the pawpaw in the temperate zone it would be most helpful to hear the experiences of our members with the pawpaw in temperate zones worldwide.

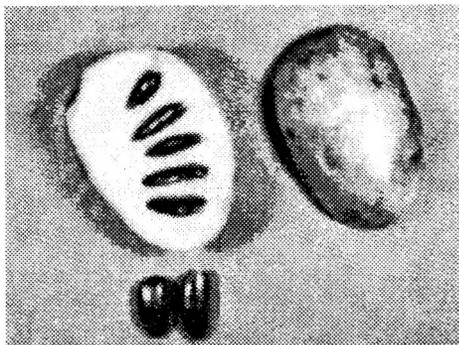
Incidentally, I take this opportunity to beg our members in Australia and New Zealand to discourage the commercial fruit industry there from using the false name 'Asimoya' for the fruit of *Asimina*. Neither *Asimina triloba* nor *Carica papaya* (Pawpaw) is native of Australia and New Zealand, and the misuse of names leads to confusion.

— Walter Griesmeir

Members who are interested in obtaining a copy of Mr Griesmeir's pamphlet should write to him at: Carron du Val Strasse 11, D-86161 Augsburg, Germany.

David Noel comments: the use of the name 'pawpaw' for two totally unrelated fruits, Carica papaya and Asimina triloba, undoubtedly leads to confusion. It seemed of interest to look up the name, or its alternative form 'papaw', in some old dictionaries, to see how they treated it. In all of these consulted, from 1862 on, the name was applied to Carica only, or to Carica first and then Asimina as a secondary use. Here are some examples:

[Royal Dictionary Encyclopedia, ca. 1862]: PAPAWE: A name .. applied to the *Carica papaya*, a tree native of both Indies and



Fruits and seeds of Asimina

the Guinea Coast... The pawpaw of North America belongs to the genus *Annona* or Custard-apple.

[Encyclopaedia Britannica, v.4, 1876]: PAPAWE: *Carica Papaya*.

[Lloyd's Encyclopaedic Dictionary, 1895]: PAPAWE (Malay papaya, Fr. papayer, papaye; Ital. papajo; Sp. papaya; Port. papaya, papayo): Bot: *Carica Papaya*. "The fair papaw/ Now but a seed, preventing Nature's law. [Waller: Battle of the Summer Islands, 52]. PAPAWE: - Papaw. PAPAWE (Mod. lat., from Malay papaya): - Papaw. Bot: The typical genus of the order Papayaceae. Now a synonym of *Carica*.

[Webster's International Dictionary, 1898]: PA-PAPAWE (Prob. from the native name in the West Indies): 1. A tree (*Carica Papaya*) of tropical America. 2. A tree of the genus *Asimina* (*A. triloba*) growing in the western and southern parts of the U.S.

[The Century Dictionary, 1899]: PAPAWE (Sp. Pg, NL papaya, a name of Malabar origin): 1. the tree *Carica Papaya*, or its fruit ... 2. the tree *Asimina triloba*, or its fruit PAPAWE (NL 1789, from papaiamaram, the native name in Malabar).

So there is no doubt that Papaw, or later Pawpaw, applies to *Carica* first, and is only a corruption of Papaya. Use of 'papaw' for *Asimina* appears to have occurred because the fruits of the latter resemble the former, just as people call *Syzygium* species 'Malay Apples' or 'Chinese Apples' because of their resemblance to (totally unrelated) true apples of the genus *Malus*.

What is also very interesting is the matter of the native distribution of *Carica*. This genus is nowadays usually assumed to be endemic in tropical America, and to have spread elsewhere in the world through the action of European seafarers. But notice in the dictionary entries above, in 1862 the plant is said to be 'a tree native of both Indies and the Guinea Coast', that is to India, the West Indies, and northern South America. Also notice that the name is said to originate from Malaya, the West Indies, or India, according to which authority you accept (the Malabar coast is in southern India).

There are parallels with the Coconut, *Cocos nucifera*, which according to the usual criteria (existence of old local names, adapted insect pests, etc) is native to Southeast Asia, and also native to the Pacific coast of northern South America. Both the Coconut and the Papaya appear to have been widely spread well back in prehistory, either by human efforts we know nothing about, or even earlier by movements in parts of the Earth.

The term 'Asimoyer' was invented by the New Zealanders, as a derivation from *Asimina* and *Cherimoyer*, because of confusion in the use of 'Pawpaw'. In the face of increased, rather than decreased, confusion, it seems sensible to drop the use of 'pawpaw' altogether, and refer to *Carica papaya* only as Papaya, and to *Asimina triloba* only as *Asimina*. We can hope.

— David Noel

Note: Photos are from Snake C. Jones' *Cooking with Pawpaws* (Granny Smith item 1060P, \$3.00). The cover drawing is from the 1897 *Encyclopaedia Britannica*.

[Countryman Horticulture / 2002 Apr 5]

Soil management the key to organic avocados, olives

Organic horticultural production is labour intensive and when you operate alone like Gillian Arthur, of Carabooda, it is particularly difficult.

As a result, her avocado orchard has taken more than a decade to get to its present state. She has planted 1000 trees which include Hass, Frontawa and Lamb Hass.

Ms Arthur recently planted olives after she saw the popularity of certified organic olive oil on both the domestic and export olive markets.

"From what I have seen, organic olive oil is becoming extremely popular. It also allows you to value-add on property, which cannot

be done with avocados.

"Olive production is a different ball game and compared with avocados they are a dream to look after, they really seem to love the soil and conditions here."

The lack of extensive research and support for organic production on the specific WA coastal sands has meant that Ms Arthur has had to find her own way through constant challenges.

The main handicap for organic growers is



Carabooda grower Gillian Arthur with some of the 11-year-old Hass avocado trees she is organically growing

that they do not have recourse to 'radical' solutions such as chemicals or synthetic nutrients to address the challenges that invariably arise.

This means a much longer-term approach designed to head off issues before they become a problem — a management practice that requires intimate knowledge of the relationship between soil, microclimate and plants.

"I am pretty much self taught but I access people in the organics office at the NSW Department of Agriculture," Ms Arthur said.

"I am a firm believer that the secret is in how you manage the soil. When we get the break this year we will sow more clover and the tree can take its nutrients when it needs them rather than being forced."

Ms Arthur delivers trace elements through applications of rock dust, mined gypsum and guano, while nutrition is delivered via a

combination of fish fertiliser, kelp and molybdenum.

Ms Arthur said this provided a level of interaction and the kelp was rich in minor trace elements that she felt were essential for plant health and production.

"I suppose I view these trees as being similar to humans. I test the soil and leaf at least once a year and constantly monitor soil pH. It seems at the end of the day you tend to get better results this way," she said.

Organic growing was much more labour intensive than conventional production because weed control was effected through a combination of hand and steam weeding. There were no permitted chemical measures to control weed incursions.

"We do the majority of weeding by hand and we really only use the steam weeder, which is very slow, in winter because you can

get instantaneous results on frosty mornings," she said.

"With weeds, like doublegees, you really have to hand weed but we are finding that we are getting fewer every year," she said.

Management of the trees also gains added importance in order to prevent any disease or insect incursions Ms Arthur said.

The avocado canopy is kept open to allow effective light penetration and air circulation in an attempt to prevent the likelihood of devastating fungal diseases.

"We don't have the radical or drastic solutions open to conventional growers but I suppose with organic production the belief is very much that prevention is very much better than a cure," she said.

Ms Arthur said marketing had long been a core concern of the organic industry in Australia. The main issue that faced the Australian producer as opposed to those m

Europe or the US was market education.

Quality management was another element of developing a healthy industry. Organic produce had to be at least as consistent in quality and supply as the conventional product.

"I am very stringent on quality and any blemished and wind- or sun-affected fruit goes straight through to a seconds market. That commitment has really paid off because once you have established a reputation and a market domestically, you don't really have to worry about getting out there and marketing," she said.

[Countryman Horticulture / 2001 Apr 5]

Groups bolster organic peak body push

The push to develop a peak body for organics in WA has been given impetus by several local groups actively working towards creating a unified lobby group.

According to National Association for Sustainable Agriculture Australia WA (NASAAWA) secretary Kathe Purvis, the original push for such a body came from the members of both NASAAWA and Organic Growers Association WA (OGAWA).

"In the case of NASAAWA it was a directive from the members at the last annual general meeting," she said.

"The committees for OGAWA and NASAAWA have opened discussions on forming a peak body to embrace all organic groups now operating in WA."

Steve McCoy, of the Organic Farming Project (Agriculture WA), has also raised the issue with several industry people and is willing to assist the establishment of such a body. But he said it had to be industry driven

*New Australian & international services — see our website:
www.AOI.com.au/nutconsult*

Get your property assessed for

NUTS & TREE CROPS • \$410

- Examination of property
- Discussion of development aims
- Crop selection and culture
- Water use, windbreaks etc
- Written report, recommendations
- We go anywhere

Office Consultation, \$100

Nut & Tree Crop Consultants

<A1401> • (Principal: David Noël)

PO Box 27 Subiaco WA 6008

Ph. 08-9388 1965 • Fax 08-9388 1852

e-mail: nutconsult@AOI.com.au

Other Services • Free Leaflet available

if it was to succeed.

OGAWA president Annie Dunn has said that a peak body would need representatives from all aspects of the industry, including practitioners, wholesalers, teachers, and consultants, and all certifying bodies now operating in WA.

The aims of such a body would be to promote all aspects of organic agriculture, encourage training and networking opportunities, to consolidate links with national bodies, attract R&D investment and ensure the integrity of the industry was maintained.

On a national level the Rural Industries Research and Development Corporation (RIRDC) has recommended the establishment of a domestic standard for the organic industry.

The recommendation is one of 16 key recommendations contained in a new report comparing Australian standards with those of other countries.

MACADAMIA TREES

Grafted, top quality trees from the Eastern States. Health-inspected by two state Agriculture Departments. More than 20 varieties available including all the top performing and newer varieties such as 816, 842, 849, A4, A16, A38, 781, 783, and Daddow etc.

Competitive prices reducing with larger orders.

Pemberton Macadamias <A3260>
Iain Rankin, Ph/Fax 08-9776 1046 or
**Margaret River Tree Planting and
Landcare Services <A3259>**

David Rankin, Ph/Fax 08-9757 2547
PO Box 217 Margaret River 6285

[*Fruit Loops* / 2002 Feb-Mar]

Are Mangosteen trees in Australia genetically identical?

The popular tropical fruit species *Garcinia mangostana* L. (Mangosteen) has been cultivated for centuries, mainly in the tropical regions of South-East Asia, but during the past few centuries it has been grown in other tropical areas including Northern Australia. The species is primarily propagated by seed, which are said to produce true to type. As all Mangosteen trees in existence are thought to be female, no pollination occurs. Instead, seeds form asexually by a process called apomixis, which should produce seedlings identical to the mother tree. In fact, it has been suggested that all present day Mangosteen trees could be genetically identical, originating from a single clone.

However some variation is occasionally seen in orchards, which may be from underlying genetic differences. In order to develop strategies for crop improvement, it is necessary to have an understanding of the genetic diversity, or lack of it, within Mangosteen. We used a technique called RAF (randomly amplified DNA fingerprinting) to look for differences in the DNA of 37 Mangosteen trees growing in North Queensland. We discovered that there is indeed genetic diversity in Mangosteen, and we identified three distinct varieties. There are also some genetic differences within the most common variety grown.

— *Lillian Sando*, PhD candidate, Institute for Molecular Bioscience, University of Queensland, St Lucia, Qld 4072. Phone: 07-3365 7352, Fax: 07-3365 1990, Email: L.Sando@imb.uq.edu.au

Fruit Loops: A3413.

[Countryman Horticulture / 2002 Apr 4]

Boab on bush tucker menu

For thousands of years, the fruit of the spectacular gnarled Kimberley boab tree has been a key part of the diet of Kimberley Aborigines. Now, the fruit is ready to launch on the national market.

Kununurra businesswoman, Melissa Boot, has a close association with the boab nut.

Three years ago the innovative craftswoman perfected a technique of crafting the nutshell into an array of decorative tableware, such as candles and goblets. Her 'Kimberley Boab Kreations' took off as a must-have souvenir for tourists to Kununurra.

Mrs Boot obtained a licence to collect the seedpods from the bush. "Using the seedpod, I was getting a lot of fruit build up," Mrs Boot said. "I really wanted to utilise the whole fruit."

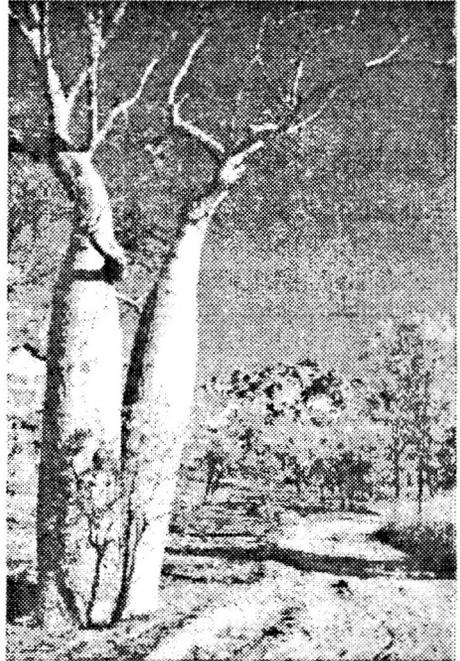
Knowing that the fruit was a popular bush tucker, Mrs Boot began to explore options for its use.

"Years ago in a local restaurant I had barramundi cooked in boab fruit with roasted boab seeds on top," she said. "I'll never forget it, it was delicious. Because it is so citrusy, I figured it needed to be sweetened."

By mixing the fruit with chocolate, Mrs Boot combined the sweetness of chocolate with the tang of the boab, and created the quintessential Kimberley chocolate taste sensation. It was an instant hit.

"I brought it out at an exhibition at the Diversion Gallery in Kununurra two years ago. I did platters in dark, milk and white chocolate. Everybody loved it. I had a lot of people asking me then if they could buy some."

With this new business idea in mind, Mrs Boot sought recognition of the fruit by the Australia New Zealand Food Authority.



Kimberley boab trees are being harvested for nuts by Melissa Boot, of Kununurra

"I knew if I didn't get recognition by the food authority I wouldn't be able to market it anywhere but the Kimberley," she said.

The ANZFA came through, recognising the boab fruit as a non-traditional food in February.

The fruit can now be marketed anywhere within Australia and New Zealand, with Melissa Boot's Boab Chocolate leading the charge. The handmade chocolates are produced in a commercial kitchen in Kununurra and can best be described as 'very decadent'.

The fruit itself has a high nutritional value, with CALM analysis [from the Conservation & Land Management Department] showing a vitamin C content ten times that of an orange, as well as being high in protein, calcium, potassium.

It also contains thiamine, riboflavin and iron, and is less than five per cent fat.

Mrs Boot will be visiting Perth from the Kimberley in early April, to launch the gourmet delicacy in a variety of markets. "I'd like to see it in health food shops, and chocolate sections of gourmet shops. I'd really like to see it in restaurants that sell different and unusual foods," Mrs Boot said.

Mrs Boot said she knew of adventurous cooks experimenting with seafood in boab batter, boab sauce and roasted boab seeds.

— *Tess Nekrasov*

[Institute Of Food Technologists / News Release]

Cinnamon found to be lethal weapon against E. coli O157:H7

When cinnamon is in, *Escherichia coli* O157:H7 is out. That's what researchers at Kansas State University discovered in laboratory tests with cinnamon and apple juice heavily tainted with the bacteria.

Presented at the Institute of Food Technologists' 1999 Annual Meeting in Chicago on July 27, the study findings revealed that cinnamon is a lethal weapon against E. coli O157:H7 and may be able to help control it in unpasteurized juices.

Lead researcher Erdogan Ceylan, M.S., reported that in apple juice samples inoculated with about one million E. coli O157:H7 bacteria, about one teaspoon (0.3 percent) of cinnamon killed 99.5 percent of the bacteria

The Great Nambling Salt Flat Wheel Barrow Muster

A Key Event for the Year of the Outback

Starting Saturday, June 01, 2002 to

Monday, June 03, 2002

The Nambling salt flat covers 11 hectares to the North side of the Goomalling / Dowerin Road. The land is largely scalded out and is totally 'unproductive'.

Its restoration to vegetation requires: micro drainage by way of creating a system of raised beds followed by a heavy mulching with chipped tree prunings in order to restore the soil life before trees can be planted.

Salt flats are marshes and so an army of people with wheelbarrows must do the work of spreading mulch. But it is not all hard-work! There's soup and sausages, chocolate cake and drinks, music and partying for all who can recognise that they are part of the solution to this Australia-wide problem of dry land salinity.

**Contact: Mr Barrie Oldfield, The Men of The Trees Inc. - WA Branch
Phone: 08 9291 6619. Fax: 08 9291 6027.
Email: treeswa@iinet.net.au**

in three days at room temperature (25 C). When the same amount of cinnamon was combined with either 0.1 percent sodium benzoate or potassium sorbate, preservatives approved by the Food and Drug Administration, the E. coli were knocked out to an undetectable level. The number of bacteria added to the test samples was 100 times the number typically found in contaminated food.

"This research indicates that the use of cinnamon alone and in combination with preservatives in apple juice, besides its flavouring effect, might reduce and control the number of *E. coli* O157:H7," concluded Ceylan, a Ph.D. graduate assistant at K-State. "Cinnamon may help protect consumers against foodborne bacteria that may be in unpasteurized juices and may partially or completely replace preservatives in foods to maintain their safety," he said.

"If cinnamon can knock out *E. coli* O157:H7, one of the most virulent foodborne microorganisms that exists today, it will certainly have antimicrobial effects on other common foodborne bacteria, such as *Salmonella* and *Campylobacter*," noted Daniel Y.C. Fung, Ph.D., professor of Food Science in the Department of Animal Sciences and Industry at K-State, who oversaw the research.

Last year, Fung and Ceylan researched the antimicrobial effects of various spices on *E. coli* O157:H7 in raw ground beef and sausage and found that cinnamon, clove, and garlic were the most powerful. This research led to their recent studies on cinnamon in apple

juice, which proved to be a more effective medium than meat for the spice to kill the bacteria.

"In liquid, the *E. coli* have nowhere to hide," Fung noted, "whereas in a solid structure, such as ground meat, the bacteria can get trapped in the fat or other cells and avoid contact with the cinnamon. But this cannot happen in a free-moving environment."

Regardless of the K-State findings, people who are at greater than normal risk for foodborne diseases — namely the elderly, young children, or immune-compromised — would be urged to avoid drinking unpasteurized juices or unthoroughly cooked hamburgers, which may contain harmful microorganisms.

For a copy of the study presented at IFT's Annual Meeting, contact Angela Dansby via e-mail at <mailto:aldansby@ift.org>.

[Q. Ed: Cinnamon, the bark of the tree *Cinnamomum zeylanicum* from the Laurel family, is readily available in stores. But for those who like to grow their own, the plant grows quite well in Perth].

[Countryman / 2002 Apr 4]

Mangos and citrus make Westralian Fruits a sweet success story

Citrus from the Gingin orchards of Westralian Fruits [about 80 km north of Perth] is fast gaining an international reputation for being the sweetest citrus available.

Singaporean businessmen have started to visit the Canning Vale Markets looking for trays of the fruit during business trips to Perth.

"They rip the end off the carton and bring that with them to Australia and then when they find boxes of Westralian Fruit citrus they buy 10 trays and give them as gifts to relatives and friends at home," said Gordon Berryman.

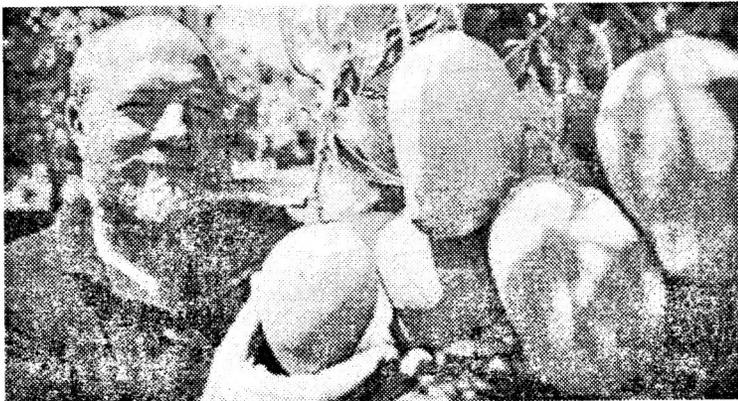
Mr Berryman is the citrus, mango and stone fruit sales manager for EPT fruit brokers at the Perth Markets and handles sales of fruit from Westralian Fruits.

The Gingin orchard is also building a reputation in the sub-continent. Oranges from Westralian Fruits are being air freighted weekly to India to supply a growing band of

wealthy Indians who can't get enough of the sweet oranges.

Mangoes are another Westralian Fruit crop finding an international niche.

Buyers with plenty of money, like those from Brunei, chase the mango trail south and at this time of the year the only fresh mangoes around are the ones grown in the Gingin region.



These Gingin-grown mangoes will replace Carnarvon mangoes in the market in coming weeks. Manager of Westralian Fruits, John Marten, pictured, said the small break in the market between the end of the Carnarvon season and the start of the Gingin one created a handy price peak for the company

Mangoes are harvested in Kununurra around October and November, Broome in November and December and Carnarvon in January and February.

By March mangoes from the north are drying up and prices start to peak. Customers in Brunei will pay big dollars to keep fresh mangoes on their shelves.

[The Orchardist (NZ) / 2001 May]

New Zealand salutes figs

When Eunice Smith could not buy figs to use in her Waihi restaurant she took the obvious step — she began planting them in her own backyard.

Now her 0.4-ha section has “a couple of hundred” fig trees flourishing, most of them cropping, even though they have all been planted since 1995.

Six years on she is a real fig enthusiast but her garden also contains many other species of fruit including pomegranates, olives, loquats, quinces, mulberries and cranberries, as well as more ordinary pip and stone fruit.

The New Zealand Tree Crops Association proved an invaluable contact as she searched for fig cultivars. In March she hosted a field day for tree croppers and members turned up from far and wide. They nibbled figs with

evocative names and varied shapes, sizes, colours and flavours. Figs with unknown origins have been given such names as Lower Hutt Medical Centre, Oakura or Kenken while growing close beside them are French Sugar, Brown Turkey and Adriatic Late, their names indicating their European origin.

Eunice preserves the figs in syrup for use in her restaurant. At the moment her favourite recipes are fig pizza and fig slice, but she also uses fresh figs as a garnish.

Figs are an important commercial crop overseas. Traditionally most came from Turkey, Greece, Italy and Algeria. Now

California, Madagascar, South Africa and Australia have entered the field, marketing both fresh and processed figs.

Only a few New Zealand growers commercialise their fig trees. Eunice said one sells fresh fruit on the undersupplied local market and, at a dollar a fruit, made \$2000 from his one tree this season .

Another, with 600 fig trees, profitably exports figs, cape gooseberries and black boy peaches to Japan. Figs have such a short shelf life that he transports them to the airport on the day he picks them so they reach Japan the following day.

Figs must be picked daily and only when they are fully ripe. They will continue to ripen for only eight hours. Eunice said many people are turned off figs because they have tried immature fruit and have therefore not enjoyed

the sweetness and flavour of a really ripe fig.

A fig tree loomed large in my childhood, on our front lawn. I could never eat the fruit, put off by its astringent taste. Now I know why. Walking round Eunice's garden she plied me with ripe figs, each more delicious than the last.

Birds begin eating the fruit three days before they are fully ripe and quickly devour every fruit as it approaches ripeness so the figs we children picked as we climbed over our huge old coppiced tree were at least three days from perfection.

Eunice and other enthusiasts cover their trees with netting as the first fruit swell towards ripeness. The other options are to net the whole area or bag individual fruit. Once protected from birds, their main enemy is rain which causes the fruit to split. Two heavy rain storms in March and April meant that Eunice had to throw away hundreds of fruit. While figs are very adaptable they do better in a climate drier than Waihi's.

Figs have a long history, going back as far as the Garden of Eden. They were taken north from the countries round the Mediterranean where they originated, and varieties were developed that suited colder climates. However, they do best in a warm situation, often growing against a north-facing wall. In New Zealand they grow as far south as Central Otago where the Cromwell Polytechnic is researching them.

"They say where grapes will grow, figs will also grow," said Eunice. "And Central Otago is proving it can grow good grapes for wine."

Strangely, the fig is not a true fruit but a carrier for the flowers which grow and mature away from daylight, completely enveloped by the fruit. Fruit of some varieties develop

IT'S MACADAMIA TIME ! !

TREES

Order Now. Proven yielding varieties, good sized healthy grafted trees.

MACHINERY

Dehuskers, Crackers, Harvesters
NEW RANGE Ideal for smaller
Orchards. Larger models also available.

CONSULTING

Advice on site suitability, preparation, orchard layout and management. Site inspection. 10 years of experience.

Contact . . .



Shelterbelter..
TREE PLANTING SYSTEMS
Australia

Phone: 08-9574 6163 • Fax: 08-9574 6031

Email: treebrick@bigpond.com.au

without pollination. Others require a small wasp to pollinate them. The pioneers brought fig trees to New Zealand. Many of these were the Smyrna type, commonly used for drying. These require pollinating by the wild Capri fig and a tiny wasp, *Blastophaga psenes* which lives and breeds inside the intricate flowers, transferring pollen from one to another. This wasp is not found in this country so Smyrna fig trees will not fruit here.

There are many other varieties of fig grown in New Zealand. Eunice has about 30 varieties but she thinks the same variety may carry different names in different regions. They are easily propagated from cuttings taken in August but a cutting from a Northland tree, for example, may look quite different when grown in a colder climate.

Some plants begin fruiting the year after they are planted as cuttings. Eunice keeps trees for about four years before she decides whether they are worthwhile. Waihi can be frosty in winter and wet all the year but some varieties that don't do well there may thrive under different conditions.

She says there is no need for fertiliser, which promotes rank growth. Even without it, the trees grow quickly. On some of her trees shoots almost a metre long were growing through the netting placed over the trees only two or three months ago. So pruning is essential, especially in a small home orchard. The problem is that the early varieties fruit on last year's wood so controlling growth removes fruit buds.

The early varieties fruit from the end of December through January and the late varieties follow on through the autumn, the latest varieties never ripening under Waihi conditions. Some, the San Pedro type, set a good early crop and also some late crop. They are Eunice's favourite.

Amongst the tree croppers there is a band of fig enthusiasts who all share their knowledge and their cuttings. Their association has printed a Fig Fact Sheet, and 'Figs in the Home Garden', by Ada Reynolds, is also available.

— *Rosalie Smith*

The Orchardist (NZ): A1759.

New Zealand Tree Crops Association: A1427.

Prospectuses may be good sources of information

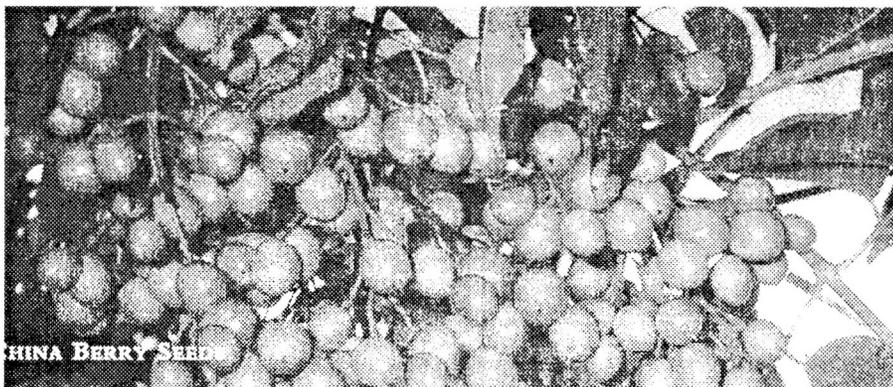
It is the policy of WANATCA and the Tree Crops Centre not to comment on the merits or otherwise of share prospectus offerings. Even so, these prospectuses can be valuable sources of information. In the past, some prospectuses contained exaggerated claims, but these have been much less in evidence in recent years because of stringent examination by regulatory bodies.

A recent prospectus which has much of interest has been produced by Exotic Timbers of Australia (ETO) and its associate Integrated Oil Extractions N.T. Ltd (IOE). It covers projected plantings at Batchelor, south of Darwin, in the Northern Territory.

Four crops are covered: Neem, Indian

Sandalwood, Chinaberry, and Central American Mahogany. The latter (*Swietenia macrophylla*) is intended for cabinet timber, but the other three are intended for extraction of products.

Chinaberry (*Melia azedarach*) is our familiar Cape Lilac or White Cedar, what is of



Fruits of Melia azerach (Chinaberry, Cape Lilac, White Cedar)

interest here is that it is being grown to extract veterinary chemicals — as far as I have noticed, this is the first commercial planting with this projected use. Its close relative Neem is well known for its medicinal and insecticidal properties and its safety towards mammals. Indian Sandalwood is the traditional source of sandalwood products.

Supercritical Fluid Extraction

Another point of great interest is the project's intention to use a relatively new and efficient process for extraction called Supercritical Fluid Extraction (SFE). SFE is essentially based on carbon dioxide.

Carbon dioxide, CO_2 , is of course a gas at ordinary temperatures, and many will be familiar with its solid form, dry ice. At ordinary air pressure (around 1 atmosphere), carbon dioxide has no liquid form, but under high pressure (say 80 atmospheres) it does.

Liquid CO_2 is an excellent solvent at ordinary temperatures, and this gives SFE several important advantages. The material from which extracts are to be made can be put under pressure with CO_2 , which dissolves the wanted oils or other materials at low temperature. Conventional extraction by steam distillation works at around 100 °C, and this

higher temperature can degrade some extracts.

After the SFE process, the liquid CO_2 containing the extracts can be drained off from the solid base material, and the pressure reduced down to normal. The CO_2 changes back to a gas, leaving the extracts behind, ready for use and uncontaminated by chemical solvents, thus avoiding a problem which can occur with these.

Two samples from the prospectus follow. It contains a number of independent reports from consultants, and the second sample is one of these.

— *David Noel*

China Berry (*Melia azedarach*)

China Berry is a fast growing tree belonging to the Meliaceae family of plants. It is native to the rainforest of Northern coastal New South Wales, subtropical and tropical Queensland, New Guinea and the Northern Territory as well as being planted as a street tree through the drier parts of Australia, which shows its adaptability.

Striking and colourful, it has been widely prized as an ornamental shade tree because of

its large compound leaves, its distinctive clusters of lilac-coloured flowers and its round yellow fruits.

It also has many of the biocidal properties that can be derived from Neem.

The biocidal property of meliaceous plants (China Berry and Neem are both of the meliaceous plant family) has been known for quite some time.

Testing by Supercrit for ETA has presented an opportunity to provide a premium grade oil for Australia and overseas.

The oil extracted from the China Berry will be used as a Veterinarian chemical. IOE intends this will be achieved in a joint venture with the Supercrit consortium based in Sydney and the price of the oil is expected to be approximately AUD\$50 per litre.

As with Neem and Sandalwood oils, there are no synthetics currently available.

Sandalwood Markets

The largest producer of Sandalwood oil is India, which produces approximately 80% of the world production. Indonesia produces approximately 15%, while Australia and others produce approximately 5%. The oil from India is mostly exported to different countries.

Present indicators show that there is a large shortfall of raw material. Due to the shortfall and irregular supply, prices have fluctuated from AUD \$25,000 to AUD \$38,000 per tonne of Indian Sandalwood. The illegal trade in Sandalwood also has isolated influence on local market prices. The quality of oil from Indian Sandalwood commands premium prices. Extraction methods, in most instances, in India use old equipment.

The advent of more critical and quality extraction methods will increase the

profitability of Indian Sandalwood. A Western Australian producer of Sandalwood oil from *Santalum Spicatum* species produces and supplies Sandalwood *Spicatum* oil at AUD \$540 per litre.

Santalum Album oil is approximately AUD \$1,000 per litre. A small steam distillation market exists with raw material being sourced of what remains in Fiji.

World Resources

World stocks of Indian Sandalwood are being depleted rapidly, due to the complexities in its propagation management, and the potential export bans by some countries. India may have to import Indian Sandalwood.

Accordingly the global outlook for Sandalwood and its by-products I view as having a growth future based on available data, production forecasts for the long term predict the demand for plantation Indian Sandalwood productivity.

Supercritical fluid extraction science

The commercial implementation of Critical Fluid Science will add a new dimension to the Sandalwood oil extraction process.

Oil quality is determined by its Santalol content. *Santalum album* contains 90% Santalol. *Santalum Spicatum*, the West Australian variety, contains approximately 15% (rest, trans-farnesol)

A technique in using supercritical fluid extraction is the use of carbon dioxide as a solvent, a high pressure (72.8 atm) and low temperature (31.1°C) for the extraction of oil is required. The advantage being a cleaner extract aroma, which allows for less thermal degradation of volatile components.

Compared to traditional methods of steam distillation and solvent-to-solvent extraction, super critical extraction allows for a major

reduction in time for the process (60 minutes compared to steam, which can take days).

ETA has implemented various trials with a pilot super critical extractor. ETA has research and development equipment on site.

Considerable data is available on the processing regime proposed. A number of oil derivative/compounds have been produced. Additional products have been developed with the assistance of third parties.

Indian sandalwood oil

Indian Sandalwood Oil has high levels of active fragrant compounds but also has high levels of anti-microbial and anti-inflammatory compounds. These properties make the oil a highly prized and valuable commodity for use in the manufacture of cosmetics and personal care products.

Results of studies suggest that Sandalwood Oil would be a beneficial added component to sunscreens and after-sun care products due to its postulated chemo preventative action on carcinogenesis, through blocking mechanism. Sandalwood Oil has also demonstrated good inhibitory effects against staphylococcus bacteria and candida albicans fungus.

Its properties as described in "Perfumer and Flavourist Vol 4", April/May 1979, render it ideal for use in cosmetics, deodorants, shampoos and bath oils.

IOE plan to produce and use these active ingredients in a whole range of cosmetics.

— *Kurt Neitzel*

Copies of the prospectus and further information on the project can be obtained from ETA at PO Box 39112, Winellie NT 0821, phone 08-8981 1337, fax 08-8981 1338, e-mail exotim@hotmail.net.au, website www.exotim.com.au. The prospectus was issued in 2001 on July 9 and is valid for 1 year.

[Countryman Horticulture / 2002 Mar 7]

Dragonfruit, limes — potential for exotics

Growers in Carnarvon have the potential to grow a glamorous line-up of exotically-named, high-priced, tropical and sub-tropical fruit.

Dragonfruit, kaffir limes and tahitian limes are just a few of the exotic fruit that sell for higher prices in Perth than at any other metropolitan market in Australia.

Darwin nurseryman and dragonfruit grower Chris Nathaneal believes Carnarvon would be the ideal area for growing the prized cactus fruit as well as many other unusual tropical or subtropical fruits. Not only would they grow well, he said, but growers would have the market to themselves.

"Dragonfruit [*Hylocereus undatus*] are grown in the NT but quarantine in WA is so strict most growers in NT do not bother with the WA market," Mr Nathaneal said. "The Perth market is starved for these products."

Dragonfruit, also known as the pitaya or pithaya, sells at 'dreamlike' prices - \$8.90 for a single fruit - but prices are expected to fall to a more realistic \$4 a kilo as supply increases in the next few years.

The cactus fruit could be harvested after just 12 months from planting, provided they were planted as established plants, with roots. Plants of this size would cost around \$4.50 to buy from nurseries, according to Mr Nathaneal, a supplier.

The fruit, a native of Mexico, had low water needs. A light overhead spray for five minutes three times a week would be ideal. The dragonfruit bear fruit in a continuous harvest from October to April in the Northern Territory.

President of the Carnarvon Growers' Association, Terry Muller, is interested in growing the dragonfruit on an area of his property as a commercial trial.

"The industry here has to diversify. Just a few years ago basil wasn't grown in the Gascoyne, now it is a valuable crop. And twenty years ago no-one here grew table grapes — they were worth \$5.5 million last year," Mr Muller said. He is also top-working 50 ruby grapefruit and kaffir and tahitian limes in another trial.

Mr Nathaneal believes Carnarvon growers have a golden opportunity to supply the Perth market with exotic produce.

Gascoyne growers could also investigate edible bamboo (*Bambusa oldhamii*, *Dendrocalamus asper*, *Dendrocalamus brandisii* or *Dendrocalamus latiflorus*), curry leaf (*Murraya koenigii*), lemonade (*Citrus limon x sinensis*) and taro (*Colocasia*).

Bamboo is sold as a vegetable for its edible shoots, curry leaves are used for food



Carnarvon growers Neil Powell and Terry Muller with examples of young limes and dragonfruit

flavouring and are becoming more popular as celebrity chefs make use of them lemonade is a citrus with a unique non-acidic effervescent flavour.

— *Tami Maitre*

[Global Newsletter on Underutilized Crops (ICUC) / 2001 Jan]

The Inchi Tree — Edible oil source

A deciduous evergreen tree of Ecuador, the Inchi tree (*Caryodendron orinocense*) can reach a height of 15-30 metres. The female trees produce fruits from September onwards in a ripening process that can take three months.

The fruits have a hard kernel that is covered in a fleshy protein rich fruit wall. The kernels contain 3 seeds, nuts can be eaten raw and are used as a food and vegetable oil. Harvesting occurs from November to May and the average fruiting period per tree is five weeks.

In the lowlands of Sucumbios in Ecuador,

a project run by Programa Forestal Sucumbios (PROFORS), Gesellschaft fur Technische Zusammenarbeit (GTZ), and the local Forestry Authority (INEFAN), investigated the potential of the Inchi tree nut as a non-timber forest product .

Inchi Nuts have a fat content of 52% and also contain approximately 75% poly-unsaturated fatty acids. The oil produced from the nuts is a highly desired cooking oil and is also used in the cosmetic industry (GTZ is supporting the marketing of Inchi nut oil).

Source: Mathias Kircher 'Food Chain'. Intermediate Technology. March 2000.

Global Newsletter on Underutilized Crops (ICUC): A3415

[Countryman Horticulture / 2002 Feb 7]

Rival opinions on organics

Growers interested in boosting the price they get for fruit and veggies could do worse than think about going organic, according to organic market agents and retailers that are struggling to satisfy the demand for locally-grown organic produce.

Peter Cocks, an organic market agent at Canning Vale, said he had been unable to source any table grapes this season but if available he would have been able to sell them for 100 to 200 per cent more than conventionally-grown grapes.

"The conventional market is generally oversupplied with grapes, but the demand for organic produce is so high that we are never able to keep up with demand," he said.

"The last time we sold organic grapes, the grower got \$30 a box when conventional growers were lucky to get \$10 a box." He could sell a tonne of organic grapes a week.

He would also be happy to have serious full-time growers supplying organic Packham pears, stone fruit and tomatoes. "There are definitely fruit and vegetable lines that we are short of."

Mr Cocks' Biodynamic Wholefoods has been operating as a commission agent at Canning Vale for 10 years, and in that time demand has always outstripped supply.

"But the market is more fussy now. We only sell certified organic produce that is good quality," he said.



Owners of Denmark's certified organic fruit and vegetable shop, Gordon and Janice Tait, are among the retailers and wholesalers urging WA growers to fill the organic void created by an ever-growing organic market

He has around six fulltime growers selling through him and would like to add more to his list, particularly since inspection charges on imported eastern States produce had halted most of those imports. "I depend on very few growers and I don't have the diversity of produce I'd like," he said.

He sold at least half of the produce to conventional retailers, with the balance going to specialty organic retailers.

"Supermarkets are taking more organic produce and independent supermarkets and growers markets are steady buyers."

He said he always sold at the premium end of the market and his growers received an average 100 per cent more for their produce than non-organic growers.

"We pay growers \$1 a kilo for potatoes and carrots when conventional growers are struggling to get 500 and our growers never get less than \$20 a box for avocados and bananas."

Rival organic wholesaler, Daniel Skipper, of Western Bioorganics, is sceptical of the wisdom of selling organic produce at such a premium.

"In the eastern States organic produce sells for 20 per cent more than conventional produce and in Europe it is only 10 per cent more than nonorganic food. "If we continue to sell organic produce at 100 to 200 per cent more than the alternative we will only limit the market," he said. Mr Skipper said his main objective as an organic wholesaler was to establish a consistent supply of produce throughout the year.

Organic retailer, The Earth Market in Subiaco, also encourages more large-scale 'serious' growers to become certified as organic. Store manager Matt Materia said he found it difficult to source the variety of produce he would like to sell.

"I would like our buyers to be able to come in here and buy everything they need from us, but there are not many organic growers here and I can't find that produce."

Denmark fruit and vegetable retailers, Gordon and Janice Tait, have one of four certified organic outlets in WA.

They encourage growers in their region to embrace organic growing and to seek local markets to prevent the unnecessary trucking of food to Perth and back again. ¥

Hazelnut Varieties

Hazelbrook Nut Farm, Balingup WA
(Members of WANATCA)
PO Box 15, Subiaco WA 6008
Phone 08-9388 1121 (after hours).

BOOKS

on Useful Plants, Nuts, Exotic fruits,
Tree crops, Permaculture, Organic
growing, Farm trees, etc.

*Best selection in Australasia — drawn
from world-wide sources*

**** Efficient mail-order service ****

Contact us for free lists

HIGHLIGHTS FROM OUR 'NEWLY- ARRIVED TITLES' LIST

1459F * The FARMER's FOREST: Multipurpose Forestry for Australian Farmers. (Aus. 2001). 167p Pb. First-class publication. beautifully produced. sound advice. exc. value. Highly recommended. \$29.00

1452F * FIELD Guide to EUCALYPTS. Vol 2: South-western and southern Australia. 2 ed. Brooker (Aus. 2001). 428p. Hb. Complete. authoritative professional manual. exc. colour photos. distrib. maps. SA and southern WA. \$119.00

1451H * HERBAL. Secrets of the RAINFOREST: The Healing Power of Over 50 Medicinal Plants You Should Know About.. (USA. 1998). 313p. Pb. "Extraordinarily well researched. superbly written. and absolutely the best reference work on rainforest herbs" Highly recomm. \$62.00

1456R * ROOTS. SHOOTS. FRUITS and LOOT!: How to make a million dollars from horticulture in northern Australia without growing marijuana. Wood. (Aus. 2001). Pb. 79p. Racy. amusing. but highly useful intro to the realities of making horticulture pay. Recommended. \$24.00

14500 * The OLIVE in GREECE (Greece. 2001). 153p. Hb. Superb large-format photographic review of olive history, culture, and processing in Greece. Unique source of data - fossil leaves, mud grafting, ancient presses, more. \$140.00

L157T * TORREYA Species. (UK. 2001). 4p. Valuable leaflet on the Kaya Nut and the 7 nut-bearing species of this underexploited coniferous tree. Recommended. \$4.00

1449T * TREES. SHRUBS & Grasses for SALT-LANDS: An annotated bibliography. 316p. Pb. Well-indexed reference to everything written about plant use under saline conditions, also tables of salt-tolerant trees. approaches to saltland reclamation. \$37.50

Mail: PO Box 27 Subiaco 6008

Phone 08-9388 1965; Fax 08-9388 1852

Office: 208 Nicholson Rd Subiaco 6008

e-mail: granny@AOL.com.au

Web: www.AOL.com.au/granny/



- ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■
- *Granny must* ■
- *now charge* ■
- *10% GST in* ■
- *Australia* ■
- ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■

Granny Smith's Bookshop

West Australian Nut & Tree Crop Association (Inc)

PO Box 565 Subiaco WA 6008 Australia

EXECUTIVE COMMITTEE 2002

Stanley Parkinson (President)	9386 2518	Wayne Geddes	0412-075 043	9382 2437
John Foote (Vice-President)	9682 1060	Tony Marfleet		9384 0052
Trevor Best (Treasurer)	9397 5920	Bill Napier	0417-176 458	9397 6799
John Allert	9457 5297	David Noël (Publications)	9388 1965/w	9381 7341/h
George Ainsley	9390 5338	Charles Peaty		9335 1170
Bob Cook (Events)	9574 7103/h			

ACTION GROUP LEADERS

CHERRY: Neville Shorter, 9450 5606 (2/9 Clydesdale St Como 6152)

FIG: Alex Hart, 9490 1324 (71 Terence St Gosnells 6110)

JUJUBE: Phil Ciminata, 9328 5718 (36 View St North Perth 6006)

LYCHEEMANGO: Sujit Dey, 9386 7357 (8 Curlew Rd Dalkeith 6009)

MACADAMIA: John Cory, 9574 6163 (Toodyay Rd Gidgegannup 6089)

PECAN: Bernie Rochester, 9734 1309 (90 Bucktin St Collie 6225)

PISTACHIO: Bert Hayes, 9622 9513 (PO Box 429 Northam 6401)

PITAYA: Bob Nederpelt, 9375 9435 (PO Box 56 Morley 6943)

POMEGRANATE: Julie Firth, 99381628 (Lot 12 David Rd Waggrakine 6530)

WALNUT: Graham Fellows, 97731346 (PO Box 217 Manjimup WA 6258)

CALENDAR OF FORTHCOMING EVENTS

(See also www.AOI.com.au/wanatca/Events)

Deadline for next issue: Jul 20

2002

- May 14 Tue * WANATCA General Meeting (Steven David - Raising Fruit and Nut Trees Organically)
- Jul 2 Tue Wanatca Executive Committee Meeting
- Aug 13 Tue * WANATCA General Meeting
- Aug 27-29 (Dowerin Field Days, Wanatca participation possible)
- Sep ? Fri • Karragullen Horticultural Field day
- Oct 13 Sun • Agroforestry Expo, Mount Barker
- Nov 12 Tue * Annual General Meeting

2003

- Mar 7 Fri Wanatca Pistachio Seminar/ Workshop, Northam

*General Meetings are held starting at 7.30pm. *Venue: Theatre Room, Kings Park HQ, West Perth.* These meetings usually include a current magazine display.

• Event with WANATCA participation; § For contact details refer to the Tree Crops Centre.

Material originating in Quandong may be reprinted; acknowledgement of author and source requested.

Current Subscription Rate: \$60.00 per year

(includes all publications for four consecutive quarters). Student Rate: \$30.00

Quandong is produced by the Tree Crops Centre, PO Box 27, Subiaco, WA 6008.

This issue edited by David Noel. WANATCA and TCC contacts:

Phone: 08-9388 1965. Fax: 08-9388 1852. E-mail: <treecrop@AOI.com.au>. Websites:

<www.AOI.com.au>. Quandong Advertising Rates: Whole page, \$100; Half page, \$60;

Quarter page, \$35; Eighth page, \$20. 20% discount for 4 insertions.