



Quandong

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

Fourth Quarter 2003 • Vol 29 No 4

ISSN 0312-8989 • \$5.00



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***DON'T MISS THE NEXT WANATCA GENERAL MEETING:
7.30 pm, Tuesday November 18, 2003.***

For our next event we have as our guest **Alison Lawrie** from EcœEchidna, who will talk about:

Ecological tools for sustainable plant-raising.

The last issue of *Quandong* (3rd Quarter 2003) had a write-up on Alison's service to supply beneficial insects, organic fertilizers, and every sort of aid to sustainable plant raising. *This meeting is at the Men of the Trees site in Hazelmere, near Midland.* Full details on accompanying leaflet. Enquiries to 9250 1888 please.

Just 2 days before this is our Field Day in the Mandurah area, when on **November 16 (Sunday)** we will visit **Custom Composts** and **Matt Fowler's Garden**. Meet at 10 am at Custom Composts, Nambeelup Road, Nambeelup near North Dandalup. A flyer about this event can be downloaded from:

www.AOI.com.au/wanatca/events/Q03-3-fieldday.pdf.

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About the Cover

The cover drawing s from Ira J Condit's 1947 book, *The Fig*. It is based on a scene in the Beni-Hassan graves in Egypt, dated to the 12th Dynasty, 2500-2400 BC. See also the story on page 4.

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[West Australian / 2003 Sep 6]

Collie's cold coddles oodles of olives

A secret about growing the State's best olives has remained unrecognised for nearly 40 years, according to Collie resident Brian Fearn.

He believes Collie's good soil and chilly winter nights puts it ahead of anywhere else in WA.

A former owner of his property on the South-West town's outskirts planted 100 olive trees. After years of allowing local Italians to help themselves to the fruit, Mr Fearn and his wife Wendy decided to prune the unruly legacy.

"In 1997 we got stuck into them with a chainsaw," he said. "They have personalities like people and they sulked for a year, then

they took off."

Since then, a bag of chook manure each year and the regular attention of a travelling fertiliser spreader — a horse — have been the only treatment apart from pruning and picking.

They average 120 kg a tree and one tree produced 305 kg last crop, which Mr Fearn said was well above the average yield in other parts of the State.

But the rich flavour of the fruit and quantity of oil is what convinces Mr Fearn that Collie

is the premium spot for olives.

The retired coal mine union shop steward did not even like olives a few years ago and had no use for olive oil.

Now he embraces the whole olive story. "Some people think dealing with olives should be like sex, five



Cold comfort: Wendy and Brian Fearn taste some of their olive oil at their farm on the outskirts of Collie. They pruned the trees six years ago and have found Collie ideal for growing olives. Picture: Lee Griffith

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>.

minutes and it's all over," he said. "But there's nothing fast about olives. They're slow to grow, slow to pick, and you enjoy them slowly."

Last year, the Fearn's River Valley Olives extra virgin olive oil won a bronze medal at the Perth Royal Show.

They made 400 litres of oil on their own account and sold 5.6 tonnes of fruit to processor

Olio Bello which made 1.2 tonnes of oil.

Olea Australis of Perth won two silver and one bronze at the Sydney Royal Show competition judged this week.

Other WA winners were Cotton Farms of Brookton, Frankland River Olive Oil Company of Fremantle, and Olio Bello of Cowaramup, which each won bronze medals.

— Peter Trott

Fig DNA project to go ahead after RIRDC funding fails

The WANATCA project to apply DNA fingerprinting techniques to figs is to go ahead, after some private funding has been located.

Called FigCert, the project aims to sort out the general world-wide confusion about fig varieties and implement an assured variety certification program.

Because figs propagate easily from cuttings (clonally) and from seed (sexually), there is quite a lot of uncertainty about the 'true' variety names of productive fig trees found around the world.

Fig seedlings are a genetic mix from their parents, and although some seedlings may produce good fruit, closely resemble one of the parents, and be very productive, their differing underlying genetics mean that in some circumstances trees will behave differently to trees of the assumed (parent) variety.

Figs grown from cuttings are normally genetically identical to the parent from which the cutting was taken, however mistakes may be made in labelling and in identification of the parent variety. Also, a mutation may occur at one point on a fig branch (a 'bud sport'), and if this mutation gives fruit which is better in some way, it will be more likely to be used in

propagation, often without realizing that a mutation occurred.

Some useful work on identifying fig varieties from leaf and fruit characteristics has been done, in particular that by Alex Hart, WANATCA's Fig Action Group leader. Unfortunately, this still cannot give a certain result, because leaf and fruit character may be closely similar in genetically-different varieties. In the normal usage, a 'variety' or 'cultivar' is genetically distinct in some way from all other varieties.

Not knowing for certain that two fig trees are indeed of the same variety can invalidate variety trials and make application of cultural techniques more chancy.

DNA Fingerprinting techniques produce distinctive band patterns for individual varieties, as the bands are derived from the underlying genes which define the varieties, and so the techniques can bring certainty to fig variety identification.

The story so far

The project and its background were

described in the 2002, Second Quarter, *Quandong*, when it was stated that funding was being sought to fingerprint a base range of perhaps 30 well-known fig varieties, against which other samples could be compared to ascertain whether they were new varieties or the same as ones already known.

The project was to be carried out by Dr Siegy Krauss of Kings Park, a leading worker in plant DNA fingerprinting, with fig samples to be selected by Alex Hart, and project organization by David Noel of the Tree Crops Centre.

We asked the RIRDC, the Federal Government's Rural Industries Research & Development Corporation, for funding, submitting a Preliminary Application in early 2002. This was approved, as noted in the 2003, First Quarter, *Quandong*, with the RIRDC indicating that they would put in \$15,000, and asking for a Full Application.

RIRDC "falls down"

In May this year, David Noel was disappointed and surprised to hear from the RIRDC that the Full Application had been



David Noel

refused. "Normally, if a Preliminary Application is approved and all RIRDC's conditions are complied with, the final project will be approved", he said. "I therefore wrote to Simon Hearn, Managing



Fig variety 'Brown Turkey'

Director of RIRDC, saying that I felt aggrieved at the decision and asking for a review, but got no joy".

"The RIRDC's preliminary-application response had said that the 'New Plant Products program is prepared to contribute up to \$15,000 for one year to show likelihood of a fig industry', whereas their final-application refusal had 'We would prefer to see a proposal that dealt with the possibility of growing a fig industry for Australia', in their reply", Mr Noel said. "In my view, the RIRDC have fallen down in this matter".

"The RIRDC are perfectly entitled to accept or refuse any application, and to encourage grant applications in any area", Mr Noel said. "But it is quite wrong to accept a preliminary application, and then refuse the final one on the grounds that they would have

liked a different project altogether carried out. These grant applications are very time-consuming and onerous to prepare, and the outcome here is that everyone's time has been wasted."

Mr Noel admits to an increasing cynicism about government funding-body applications. "Time and again, I have noticed that a nebulous project with results too fuzzy to criticise will win out ahead of a specific project which will either succeed or fail", he said. "Here we have a specific, immediately useful project which has been turned down in favour of a 'show likelihood' one. In another application, a project to trial pistachio species in severe saltland conditions was turned down while a census of 'farmer attitudes' was approved."

Future progress with FigCert

Alex Hart has commenced selecting fig samples from WANATCA's fig gene bank at Hillside Farm and elsewhere in WA, and will consider offers from elsewhere in Australia and overseas for contributions to the Base Range. These samples, which must be from trees in the ground at specified locations, will

become Type Specimens for which variety names will be registered and certified.

Once the Base Range is established, new samples from anyone will be accepted for fingerprinting on a commercial basis, charging a fee of perhaps US \$120 for each analysis. A new sample submitted will either match up with an existing Type, so that it will have that Type's certified variety name, or it will be genetically new. In the latter case, the submitter can choose a new, certified variety name for that fig, subject to certain conditions.

FigCert will become the official variety certification service for fig varieties worldwide. It is expected that the service will become financially viable from the fees charged, which will be kept low.

The FigCert data should be very valuable for fig research in the future, as variety characteristics such as disease and drought resistance, fruitfulness, and fruit keeping qualities are often reflected in the gene bands.

Further information: E-mail David Noel on davidn@AOI.com.au.

"Phenomenal" fertilizer for pitayas

In an excellent new book on Pitayas or Dragonfruit, the fruits from a family of scrambling cacti, Paul Thomson mentions an interesting new fertilizer — cricket manure. Here is what he says.

During the year 2000, I was introduced to a new organic fertilizer — cricket. There is a cricket farm nearby that raises millions of crickets for zoos, aviaries, etc. The crickets eat newspapers, egg cartons and cardboard and produce a white or beige powder as a by-product. I give all my newspapers to them and they, in turn, give me bags of cricket, a mutually beneficial arrangement.

Cricket is very hot, much more so than

fresh chicken manure, and will burn the roots of plants if it comes directly in contact with them. The man in charge recommends wetting it down and letting it sit for a minimum of two weeks before using. I mix the cricket with a liberal amount of wood chips, wet it thoroughly, and let it sit for 3 weeks. I use about 50% of this cricket mix, 25% mushroom compost and 25% aged chicken manure as a potting mix. There is no soil in it.

The growth of the Hylcocereus plants in this mix is truly phenomenal. The width of a normal stem is usually 5-7 cm; in this mix the stems are very vigorous and 10 cm or more wide. I very highly recommend the use of this organic cricket as a fertilizer if it is available to you.

The only chemicals I have used are "Miracle Grow" with a formulation of 15-30-15 for small seedlings in containers and "Green Light" Super Bloom with a formulation of 12-55-6. This latter Super Bloom is applied at the rate of two tablespoons per gallon as a root drench once in late April. It does seem to help flowering.

Here are details of the book, from the website mentioned below:

The Pitahaya, Pitaya, or 'Dragon Fruit' is unknown to most gardening books. The newly revised "Pitahaya - A Promising New Fruit Crop For Southern California" may be the only book on Dragon Fruit written in English. This 46-page book is printed on quality paper. Paul Thomson, experimenter and grower near San Diego, California, passes on insider information about culture, species descriptions, fruit quality, and his hybrids.

For more information on this book, contact Leo Manuel at <http://www.rarefruit.com>.

[Post / 2003 Sep 27]

Shenton palm to take root in Swan Valley

A date palm planted in a Shenton Park garden in the 1970s has been sold to developers of a housing estate at Ellenbrook in the Swan Valley.

In persistent rain on Monday, 11 men worked from 6.30 am to about 4 pm to remove the tree from its Onslow Road garden.

The road was closed for most of the day, neighbours and shoppers at nearby Shenton Village looked on, and the tree's former owners filmed its removal.

One worker said the date palm was probably worth \$30,000 and there was a big market for them as entry statements. He said larger ones sold for up to \$100,000.

But the man selling the tree told the POST that, after removal costs, he



Up, up and away — a palm leaves Shenton Park

wouldn't make much money out of the operation.

He and his wife wanted to let more light into their home and more room in their garden for other plants.

He said the date palm had been planted almost 40 years ago by the man living next door.

David Noel comment: I live in Shenton Park and saw this palm being carried off. Most of the 'date palms' grown in Perth are actually Canary Islands Date Palms, Phoenix canariensis, rather than the dates of commerce, Phoenix dactylifera.

However the Canary palms do produce edible fruit, quite similar in taste and appearance to Dactylifera, though smaller. An interesting point is that the Canary species seem to be self-fertile, as I have noticed isolated specimens fruiting well, while Dactyls usually have male and female trees separate.

This is what might be expected, as it is common for members of a genus growing in

arid conditions to show self-sterility or dioecious behaviour, compared to related species from more humid conditions, as happens in almonds and peaches.

There is the implication that self-fertile Dactylifera dates might be bred by crossing with Canariensis ones, which would eliminate the troublesome hand pollination needed in date plantations.

The interesting newsletter of the WA Palm & Cycad Society has had detailed reports of where specimens of various palm species are to be found in Perth. Apparently many of the new suburban shopping centres have been landscaped with true date palms, dug up and brought down from WA's Northwest, where they were sown near cattle station waterways by cattle and camel herders in early days.

As seedlings, fruits from these true dates tend to be smaller and less succulent than the commercial named-variety fruits imported here from California. It would be interesting to know of any of these shopping-centre Dactyls fruiting here.

Wanna buy a tree-crop bookshop?

The Granny Smith bookshop which provides such a useful service to our industry has moved. It is also up for sale.

When he tried to retire at the end of 2002, David Noel sold the bookshop business to Ingrid Sims, who was running The Craft House next door, and Ingrid ran both businesses together.

Recently Ingrid re-located both businesses to new premises at 156 Onslow Road, Shenton Park, but is finding it hard to devote enough time to do both businesses justice, and so

would be interested in selling off the bookshop side.

This could be a good opportunity for a semi-retired person who has a spare room at home which could be open to callers, as well as to handle the substantial mail-order side of the business. Of course it would be good if the buyer was a WANATCA member or someone with existing interests in nuts, fruits, and other tree crops.

The Granny Smith website is still at www.AOI.com.au/granny, but Ingrid has a new phone number and e-mail address, grannysmith@iinet.net.au and 08-9381 2880.

[Earth Garden / 2003 Sep-Nov]

Muscadines and Scuppernongs — Disease-free grapes

Most Australians are familiar with bunch grapes *Vitis vinifera*. But few have any inkling that besides the 'stale old varieties' of *vinifera* grapes there are many other more exciting species of grapes: there are literally thousands of varieties as yet unknown in Australia.

Muscadines and scuppernongs are *Vitis rotundifolia*, an American species. Just as Australians are only just becoming aware, for example, that kiwifruit come in various shapes, sizes, colours and tastes, the same applies to grapes.

'Scupps' grow in huge, loose clusters that do not ripen all at once. There are both male and female plants, and grape size may be up to a whopping 50 mm. The Australian wine industry has been so busy 'protecting' itself from diseases like phylloxera that it has denied itself some spectacularly wonderful new varieties and may well risk becoming an isolated backwater, locked into irrelevant varieties. *V. rotundifolia* are almost totally disease resistant and are incredibly vigorous vines with an amazing range of table and wine varieties.

Colourful

The colours these grapes come in are amazing: bronze, white, blue, black, red, purple, yellow and so on. They also have loose skins and a uniquely different taste. Some are more like pineapple, others aromatic or musky, some taste like jaboticaba or may be exceptionally sweet. They're used to make



Muscadines are almost totally disease resistant and incredibly vigorous vines with an amazing range of table and wine varieties

delicious pies, jams, jellies, and juices, eaten fresh or made into some of the very best wines, as a browse on the internet will quickly reveal.

Muscadines and scuppernongs can be seedless or seeded, male or female or self-fertile. Plants are easily raised from seed, however the popular varieties in the United States such as: Sugargate, Fry, Jumbo, Sugar Pop, Pineapple, Dixieland, Ison and so on, are probably best purchased as live plants.

This is the hard part: no one to my knowledge sells muscadines and scuppernongs in Australia, although

occasionally the original wild (non-improved) types are sold. Seed must therefore be purchased from overseas. It is still possible to purchase live plants ex USA, however to do this you would first need to talk to AQIS (Australian Quarantine & Inspection Service).

It is a long, tedious and drawn out process, requiring international phytosanitary certificates, import permits, pre entry, on entry and post entry fumigation, certification and observation and so on. *In short, you need to hire a bureaucrat to watch your plants for two years in a government quarantine facility!* The costs are therefore prohibitive for most people, and explains why Australia is relatively free of exotic fruits!

It would be only fair to expect then, that any government imposing such tight import controls owes the public a government program to introduce missing and wanted

plant varieties, at the very least in order to prevent the disease threats posed by illegal importation.

Ordering overseas seed

The easiest solution is to order some seed and try your luck. Should you decide to raise plants from seed, which is a supremely rewarding experience, you may well produce vines as good as or perhaps even better than some of the named cultivars. At the worst you'll have plenty of rootstock upon which to graft some of the better plants raised.

It is pioneering stuff, since Australia is light years behind the rest of the world when it comes to availability of quality cultivars. No surprise when you consider that for a country of only 19 million we manage to churn out legislation in excess of other countries with closer to 300 million people. Australia must surely rank as one of the world's greatest producers of red tape! If anyone has a named muscadine or scuppernong variety of note, they should have few difficulties finding plant propagators interested in talking to them. In any case if your seed raising adventures do produce a vine with notably good fruit, your plant could be worth a small fortune.

Health benefits

Scientists have succeeded in crossing the disease resistant American muscadine with European vinifera grapes, producing a vigorous and extremely disease resistant vine. Muscadines contain significant quantities of resveratrol, a compound that is thought to be helpful in reducing serum lipids and thus may have favourable cardiovascular implications. Other studies indicate that the rich concentrations of powerful antioxidants in muscadines may also help prevent cancer.

Muscadines are very long lived and there is reputedly a vine in the USA which, several hundred years ago, covered an oak tree that

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has long since died, yet the vine remains like the framework of some giant geodesic dome and covering a half acre. The vines grow as vigorously as watermelons.

These are very hardy and disease resistant grapes and unless you live in a very cold region these are generally better suited to our Australian climate than are most of the European vinifera grape varieties.

Other interesting grape species

Fox grape, *Vitis labrusca*

Spanish grape, *V. herlandieri*

California grape, *V. californica*

Mustang grape, *V. candicans*

Sweet mountain grape, *V. monticola*

Sugar grape, *V. rupestris*

Currant grape, *V. simpsonii*

Cape wild grape, *Rhoicissus capensis*.

Although *labrusca*, *rupestris* and *simpsonii* hybrids with vinifera do occur in Australia, it is doubtful one can obtain the genuine article, let alone the others listed above. Most nursery staff haven't even heard

of them. Although again, seed may possibly be ordered locally or from overseas.

Having tasted good scuppernong and muscadine varieties I'm hooked. Although I still occasionally enjoy bunch grapes, I prefer scupps any day. They're much bigger, like golf balls, also pleasantly delicious, different, and impressive. The huge clusters of oversized grapes are amazingly hardy and easy to grow.

The look on the faces of your amazed visitors when they notice your vines heavily laden with fruit will make for pleasant memories.

— *Josef A Tamaliunas*, Bakers Hill, Western Australia.

[Q Ed: This approach is very important for Perth home gardeners. European grape varieties are grown commercially in Australia under relatively dry conditions. In Perth home gardens, especially with automatic irrigation, the damp conditions created to suit most garden plants are too wet for conventional grapes, which become liable to fungal disease problems].

WANATCA in new White Pages

The recently-issued edition of the Perth White Pages telephone directory has our new phone number at Men Of The Trees listed correctly, alphabetically under 'WANATCA'. The number is 08-9250 1888.

If you use the Electronic White Pages, at <http://www.whitepages.com.au/wp>, you can search under 'WANATCA' or under one or more parts of the full name. West Australian Nut & Tree Crop Association.

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[West Australian: Habitat / 2003 Sep 5]

Fruits for a hotter Perth

Although not native to Australia, there are several heat-loving fruit varieties that thrive in our hot, dry climate.

Apple growers are having trouble with the weather this year. It just hasn't been cold enough to put roses into the cheeks of Pink Lady Apples. Green Lady Apples just doesn't sound the same, does it?

Apples are among many fruits we grow which can be adversely affected by seasonal variations.

There are some fruits, however, that have been well and truly tested over the years and found to be very reliable in our climate. Trouble is, most of them are not considered very desirable by the average consumer. It needs an educated palate or an acquired taste to appreciate them.

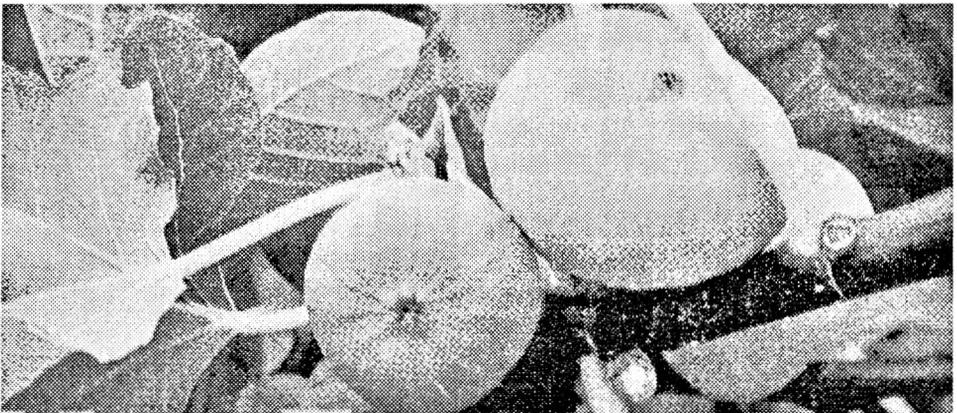
Pomegranates have been cultivated for thousands of years. Their origins lie in the Middle East but they are now grown in most countries that have a hot, dry climate. They are thought to be among the first fruits to be brought into Australia, probably via South Africa.

The pomegranate is a small tree to 5 m high and often nearly as much across. There are usually several slender trunks and masses of thin, sometimes thorny, branches with a weeping habit. The leaves are long, narrow and dark green.

Many people grow the tree for its flowers, which hang down from the tips of the growth like bright red, crumpled pieces of cloth over most of spring and summer. The big, orange-red fruits that follow in autumn and winter are very decorative too.

Once established, it is very tough, with few pests and diseases and almost no special needs, apart from plenty of sunshine and a little general-purpose fertiliser in spring. There are no special rules about pruning. Basically do what you want, when you want, as long as you are aware that cutting branches back will often mean a loss of crop for 12 months.

We know that another heat-lover, the fig, was brought in with the First Fleet. It is very much at home in WA's climate and loves the alkaline soils. Figs have been in cultivation for hundreds of years, during which many



White Adriatic fig is a vigorous and productive variety



Pomegranate fruit are highly decorative both on and off the tree

cultivars have been selected with new varieties still offered for sale occasionally.

Again, it is a very tough tree that loves the heat but it won't crop well without an ample supply of water. Figs appreciate a good mulch around them, but not touching the trunk, and a regular supply of fertiliser.

Left unpruned, edible fig trees can grow to 6 m high and 4 m across. This is too big for most home gardens, but that's not a difficulty because most of the figs that we grow produce fruit on new growth and need regular pruning to provide this. Those with plenty of time on their hands can even prune and train fig trees into unusual shapes.

Figs are tough but not trouble-free. Only a few minor pests attack the leaves but the fruit is susceptible to fruit fly.

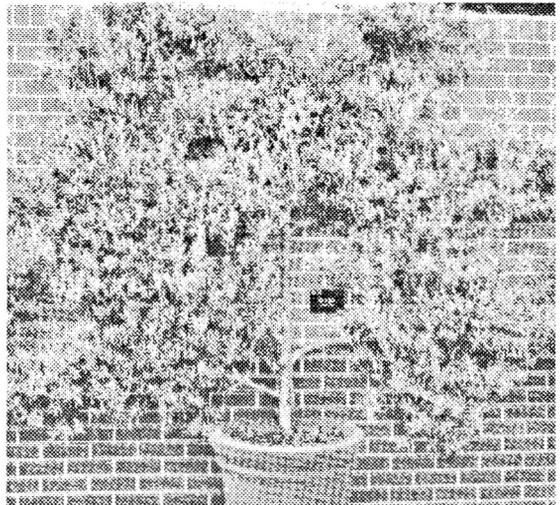
Third contender in the heats for heat-lovers is the olive. Frequently mentioned in the Bible, it has been in cultivation for at least 5000 years. Some trees are known to be at least a thousand years old. The earliest Australian plantings at Parramatta are mere youths by comparison at 198 years old this month and WA's oldest tree, in Government House gardens, is a babe at 174.

There have been several waves of

interest in olives in WA since early settlement. For various reasons most of them failed. The latest wave, though, is proving successful. The olive is now the most planted tree in Australia.

The olive is only recently enjoying popularity with the home gardener. Not too much for the fruit which is seen as a bonus, but for its toughness, elegant but adaptable shape and silver-green foliage. Many gardeners are now choosing to plant the new dwarf, non-fruiting forms.

— *John Colwill*



Olives can be planted in a pot against a wall

[www.icserv.com/hnnga]

Dream Tree: The Heartnut (*Juglans cordiformis*)

Heartnut, in my opinion, is the nut of the future.

Japanese walnut is a related nut, known as 'Siebold', that was introduced into California in the 1800's. Japanese walnuts never took off in the market due to their thick shells and difficulty in extracting the kernel. Because of heartnuts having a similar appearance to the Japanese walnut, their market value was hurt.

Heartnuts are a variety of the Japanese walnut [*Juglans sieboldiana*] with very similar characteristics. Leaves are almost indistinguishable. In Japanese walnut the bark has more of a whitish bark, similar to a persian, and it produces a more round nut. Since there is more interest in heartnuts, future data will be on heartnuts.

Growth Characteristics

Heartnut is considered an easy tree to grow. Most heartnut trees are a flat spreading tree that layers its branches. It grows vigorously, when young, in a variety of soil types. As the tree gets older the growth slows by two-thirds. If planted in very sandy soils, heavy mulching is recommended due to many of the feeder roots being near the surface.

Under these conditions a graft on black walnut would be desirable. With large compound leaves, they have a tropical appearance. The large leaves could be a problem in very high wind areas. Genetic improvements would be desirable, as on most cultivars, the lower leaves often turn yellow and drop off during the summer and fall. An exception to this seems to be the 'CW3', that stays green the entire season.

Early leafing at 10-16 degrees C could set

the tree up for a May [Northern hemisphere] frost for which there may be no recovery. Branches are very strong and flexible as limb breakage is rare; branches can be full of nuts and hang to the ground and not break. Schubert is one of the few heartnuts that, when hybridized with a persian walnut, usually retains the Schubert kernel shape.

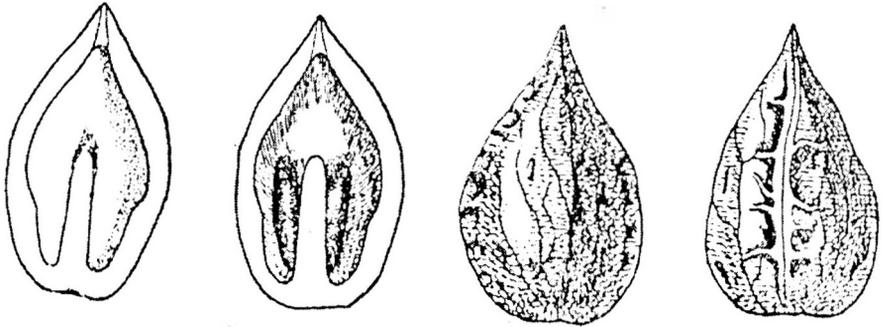
Climate

Late frost results in inconsistent yearly crops. However, Schubert has grown there as a seedling and as a grafted tree. Temperature requirements are similar to the hybrid hazels, which makes it more suitable for northerly climates. Drought prone sites will cause nuts to shrivel and abort.

Organic mulch under the limbs will result in the nut size to almost double. In locations where -32 degrees C is frequent, it will cause a winter shock resulting in some tip and catkin injury. I have had them survive with very little tip damage at -34 degrees C in 1993-94.

Disease and Pest Resistance

The good news is that walnut blight does not affect heartnuts even though it devastates neighbouring persians. Butternut curculio is a big problem tunnelling new growth, aborting flower stalks, and invading maturing nuts. This doesn't seem to be a problem where isolated trees are planted, especially in city locations. Some heartnuts canker like the butternut, but most do not. Again, genetic improvements would be a desirable welcome. It has been known that some Etter trees in Pennsylvania have had 'Bunch' disease, but



this is not considered serious.

Flowering and Yield Characteristics

Heartnuts are tip bearing, but some will bear from side buds if forced by early frost injury to terminals. These clusters can vary from 4 - 20 in a cluster. Like in most things, the fewer the nuts in a cluster, the larger each nut will be.

If the frost is light on green foliage, the flowering bud will often survive as it is tucked between the extending leaves. One of the latest to expose its flower is the CW3, making it a good choice in marginal and frost prone locations. Until the heartnut tree attains some age, there is too much stem growth and limb spread to yield many nuts in accordance to the size of the tree.

One characteristic that stands out the most is that the kernel must fall free of the shell upon splitting the shell into halves. Some of the cultivars that are noted for a free falling kernel are the CW series, 'Imshu', 'Pyke', 'Fodermaier', 'Brock', 'CIE', 'Foust', 'Rhodes', and others that are not so common to me. It is my understanding that in a drought year, the 'Bates', 'Wright', and 'Canoka' kernel gets pinched resulting in reduced free-fall. Here too, genetic improvements are desirable.

Heartnuts run from 125 to 275 nuts per kg and crack out to a quarter to a third in kernel

weight. A desirable nut would be 40 percent kernel. Heartnuts should be of a flat valentine shape, but should be thick enough to build kernel weight. Very flat nuts have the thinnest shells, but usually have the lightest kernel. On the other hand, round nuts usually have thick shells which pinch the kernel, especially in a drought year.

The heartnut flavour is very mild with no bitter after taste, as with some of the other walnuts. A number of taste testers have told me that the first year they taste a lot like the butternut and, as they age, the flavour turns to that of a brazil nut.

Nut oils of a heartnut do not degrade and become strong as with persians, pecans and filberts. It takes many years for this to take place.

— *Malcolm E. Olson*

Malcolm Olson has extensive plantings of chestnuts, hazelnuts, walnuts, heartnuts, hicans and hickories in New York State and manages a woodlot for timber production. He can be reached at 5531 Niemeyer Road, Erie, PA 16509, e-mail: malcolm.olson@gte.net.

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Pinus resources in WA

At the last WANATCA general meeting, Liz Barbour gave an interesting talk on *The Science of Pine Seed Production*, and fielded many questions, especially on nut pines.

Liz is compiling a list of the genetic resources of *Pinus* species in WA, and kindly offered to keep an eye out for information on species of interest to WANATCA, if we indicated what they were. Following is the list which was compiled.

Thanks for your offer to follow up existing genetic resources in WA of large-seeded Pinus species which are regarded as sources of pine nuts. The two I am most interested in are:

Pinus maximartinezii from Mexico.

The largest seed of any pine, ca 30 x 10 mm. I have been lent a very small (10 cm high) plant in a pot to try and graft the tip onto a Pinus pinea. Dr Grant Wardell-Johnson, who when I last heard was at Griffiths University in Brisbane, was formerly at 2 Nanhob St,

Bayswater, and at one time had 2 trees of Pinus maximartinezii at Bridgetown and one at Bayswater.

Pinus gerardiana from Afghanistan. Seeds slightly larger than normal pine nuts, but in a paper-like shell which can be opened with the fingers. A mature stand once existed in South Australia (Forest Dept). I have one tree, approximately 30 years old and 1 metre tall, at Dwellingup—obviously nowhere near fruiting.

Other Pinus species with fewer than about 5000 seeds/kg and regarded as nut pines include:

Pinus ayacahuite (3400 seeds/kg)

Pinus cembra (4000)

Pinus cembroides (2500)

Pinus coulteri (3000)

Pinus edulis (4000)

Pinus koraensis (2000)

Pinus lambertiana (5000)

Pinus monophylla (2600)

Pinus quadrifolia (4000)

Pinus sabiniana (1600)

Pinus sibirica (3000)

Pinus torreyana (1200)

I'd be interested to know of any specimens of these in WA, especially if they are fruiting. Also, I have stories about, but never confirmed, a variety of Pinus pinea (var 'fragilis') with easily-opened shells, and I'd like to locate any P. pinea with fewer than 1000 seeds/kg (standard 1400) or other useful traits.

— David Noel

[Liz Barbour can be contacted at <lizb@fpc.wa.gov.au>]

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[Countryman Horticulture / 2003 Sep 4]

Cool chain cherry ripe plan

The Australian cherry industry could become a premium supplier to new overseas markets, according to Parliamentary Secretary for Agriculture, Senator Judith Troeth.

Senator Troeth said the introduction of a new and innovative packaging technology by South Australia's biggest cherry and nashi pear producer, Torrens Valley Orchards (TVO), would make distances from export markets increasingly irrelevant.

Torrens Valley Orchards, based in the Adelaide Hills, was able to build a temperature-controlled packing room, complete with a modified atmospheric punnetting machine with the help of a \$525,000 grant from the Australian Government's Agriculture Advancing Australia Farm Innovation Program.

The goal of the trials was to discover the best way to export five kilogram boxes of cherries by sea and still have them in top

condition when they arrived at their destination.

Senator Troeth said that research had shown that cherries handled through an integrated cool chain handling system, and stored under optimum modified atmospheric conditions, could result in a significant increase in the fruit's shelf life.

"Australian exporters have not used the technology before. Implementation of this innovation will position the Australian cherry industry as a premium supplier to new overseas markets in Asia and Europe," she said.

Tim Birmingham, from the WA Cherry Grower's Association, said that the more the eastern State cherry producers could export utilising the technology, the better it would be for the WA producers.

"A problem we have encountered in the past is that any substandard cherries grown in the east that cannot be sold for export are shipped over to this State. If eastern States producers can export more cherries there should be a lot less coming through to WA," he said.



Tim Birmingham, of Dwellingup, is hopeful that increased exports of eastern States cherries will mean less sub-standard cherries are sent to WA

WA Cherry
Grower's Association:
A2827.

[<http://farrer.csu.edu.au/ASGAP/APOL31/sep03-14.html#item4>]

Bush Tucker — The Burdekin Plum

Greg Calvert has described a native fruit which may become more common in jams and other produce in the future.

Burdekin plum (*Pleioygnium timorense*) can be a large and shapely tree to 20 metres or more under good conditions, or a stunted, almost bonsai shrub under harsher conditions.

Formerly known as *Pleioygnium solanderi*, the Burdekin plum has a dark grey trunk and often glossy, compound leaves. This tree can be found in vine thickets, gallery rainforest and along creek lines in tropical Queensland and Papua New Guinea.

Even within a small area, Burdekin plum can be extremely variable in appearance and the fruit vary considerably in size, colour and taste. In the wild, fruiting occurs in the winter months and seeds are apparently dispersed by flying foxes and wallabies. As with its close

relative, the Mango, the flowers are small and insignificant.

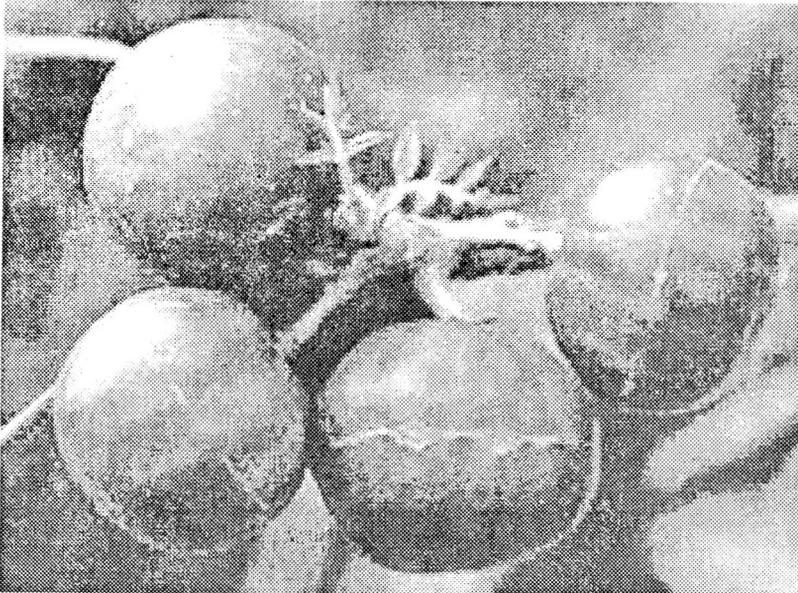
Seeds germinate readily if they have been soaked in a bucket of water for 24 hours prior to planting. Burdekin plum can be a little slow in the first couple of years, but soon puts on some fairly rapid growth. Eight years seems to be the minimum age for fruiting. However, grafting may produce some interesting effects. Burdekin plums are widely grown in Townsville gardens and revegetation projects.

The fruit were popular with Aborigines, explorers and settlers, but seem to have fallen into disuse sometime after World War II. They are fortunately experiencing a revival.

The large, black, globular or pumpkin-

shaped fruit vary in taste.

Those that have red-purple flesh are quite tart, those with a pale greenish-white flesh are milder but less tasty. Some fruit are half red, half white, and these are delicious! This variety occurs naturally around Townsville.



Pleioygnium timorense (fruit). Photo: Eric Anderson

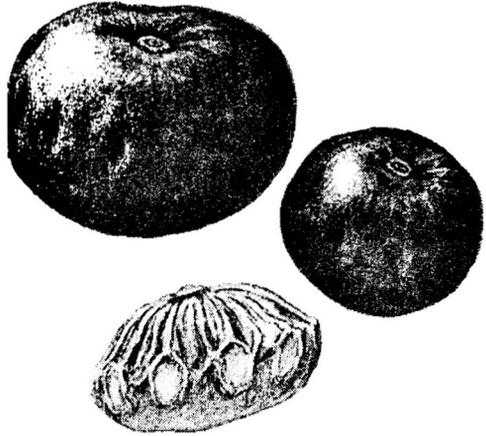
The ripener

the fruit, the less unpleasant the drying effect of eating the fruit. In the centre is a large pitted stone which usually fills 70-80% of the total fruit. They do not ripen on the tree, but must be stored, either buried in sand or kept in paper bags in a dark spot for a few days.

They can either be eaten raw, cooked into jam or jelly, used to flavour meat, or to make wine. A ripe fruit is mostly water (73%), but has moderate levels of energy, fat, vitamin C and is high in fibre and most minerals. Analysis has shown that, like tree shape and fruit colour, the nutritional content is extremely variable between trees.

Experimental plantations are being established and there seems to be enormous potential for selecting superior varieties and grafting. The timber is regarded as one of the best native timbers by wood turners, who prefer to salvage fallen trees rather than cut down such a useful tree!

Look for the old seeds underneath the tree. They look like little UFOs with portholes in



The fruits and very distinctive seed of Burdekin Plum. From 'Fruits of the Rain Forest', by Wendy Cooper

the side.

Burdekin Plum is in the family Anacardiaceae, along with mangoes and cashew nuts.

(Reprinted from "The Native Gardener", SGAP Townsville Newsletter, August 1997).

Encouraging bird-scaring hawks with guinea pigs

At the last General Meeting, two interesting suggestions were made. The first concerned predatory birds (raptors).

Most nut and fruit producers in Australia have at least some problem with bird attack on their crops. These problems can often be greatly reduced if arrangements can be made for predatory birds, such as eagles and hawks, to regularly patrol overhead.

But how do you encourage these wild birds to hang around? Apparently, if you maintain an enclosure containing juicy guinea pigs, with some of these forced to stay in the

open within the enclosure, these little sacrifices will keep the raptors' interest alive (if not the unfortunate guinea pigs).

Of course you need to shield the stalking-pigs from other predators, such as foxes, else there won't be enough GPs to go round.

The second suggestion concerned regeneration of sandalwood. Apparently, if populations of woylies, a local marsupial, can be maintained in a sandalwood area, natural regeneration is greatly enhanced.

Presumably the woylies either bury fruits or void them in their droppings.

[West Australian / 2003 Sep 19]

Electricity from macadamia nuts

Ergon Energy, Queensland's biggest electricity retailer, has commissioned the world's first power plant fuelled by waste macadamia nut shells.

The \$3 million plant, built at Gympie-based Suncoast Gold Macadamias, will provide enough power to run more than 1200 homes a year by processing 1680 kg of waste shell an hour.

Under Australian laws, generators of so-called green electricity can boost revenue by selling renewable energy certificates, in addition to selling the power from biomass or agricultural waste and other projects.

Ergon, which has more than 560,000 customers, this month signed a 10-year deal to buy electricity from a \$100 million waste sugarcane fibre plant to be built at Townsville by CSR.

Australia is expected to produce almost 40

per cent of the world's 2003 production of macadamia nuts, which are used in snacks and confectionery. The shells from the nuts are crushed and burned to produce steam, which drives a turbine to generate electricity.

The macadamia nut power process could be used by peanut, wheat, and grain processing industries. The United States, Britain, Africa and Asia have already expressed interest in the waste-to-energy plant.

Ergon's macadamia nut shell power plant includes a 400-tonne capacity silo, a 6-MW high-pressure boiler and a 1.5-MW steam turbine. It will initially process 5000 tonnes of shells in its first year.

This will rise to about 10,000 tonnes, the volume of about five Olympic-size swimming pools, by 2005 when growers throughout Queensland and northern NSW are expected to supply shells. Both parties would profit, with the help of the renewable energy certificates, Ergon spokesman James Woods said.

The Federal Government introduced legislation in 2001 requiring an extra 9500 gigawatt-hours, or 2 per cent, of electricity to be generated from renewable sources by 2010, on top of existing renewable energy such as hydro power.

The plant is expected to generate about 9.5 gigawatt-hours a year of electricity, of which Suncoast Gold Macadamias will use up to 1.4 gigawatt-hours, with the rest going to the national grid.

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[Countryman Horticulture / 2003 Oct 2]

Australian growers urged to watch trends

Australian Fruit growers must learn from the past and keep up with trends or lose markets to overseas competitors, according to Glynn Ward, of the Department of Agriculture.

Mr Ward was speaking at the Karragullen Field Day to a room full of growers and potential growers looking for ways to get an edge in the competitive fruit industry.

He said Australian growers were among the best in the world and should identify and focus on what they do best and improve upon it.

"We must adapt and improve all the time or be left behind. The fruit business is a complex system needing a combination of factors to

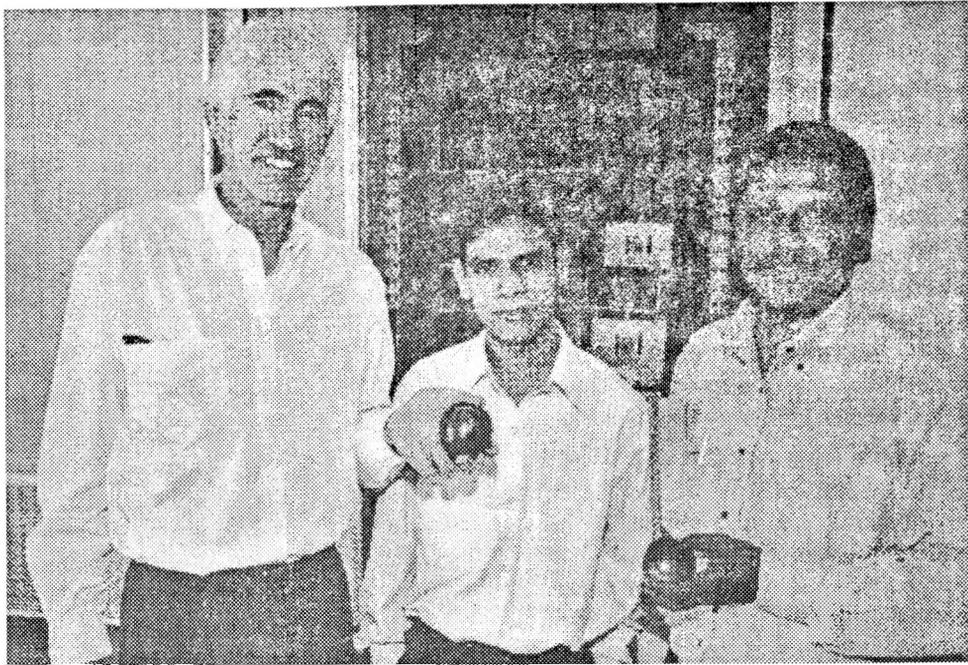
supply a solution," he said.

Australian growers were small producers on a global scale and as such they must do things more efficiently than their global counterparts to retain hard-won markets, he said.

Growers did not receive subsidies as they did in the US and because of this they must use their imaginations and cooperate with one another in order to gain an edge.

He said Australian apples were now being exported to the Indian subcontinent in volume and pointed out that there was no foreign fruit allowed into India right up until 1999.

"India has a growing middle class of 250 million people who can afford to eat our



Department of Agriculture officer, Glynn Ward, and Indian Importers Kuber Nath Chourasla and Nagaraj Thouta with WA apples similar to those they hope to import

apples. This is a huge market opportunity for Australian growers," he said.

He said the peak demand for apples on the sub-continent was during the WA growing season and that India's relative proximity to WA was another factor that helped build existing apple markets in that country.

Increasing and improving fruit varieties, prioritising efficient growing systems, high density plantings and orchard management for fruit quality were identified as some of the issues that could be improved on in order to keep a competitive edge.

"Integrated pest management, nutrition, irrigation, packaging, branding, market

promotion and listening to what our consumers want in their fruit are other things we should be building on," he said.

Mr Ward said WA had a competitive advantage over the eastern States and overseas countries because it produced consistently high quality fruit, was a modern and progressive industry and was relatively free of pests and diseases which went hand in hand with a low rate of chemical use.

"We must push the fact that our fruit is the healthiest and least chemically dependent product. We know it and the rest of the world should too," he said.

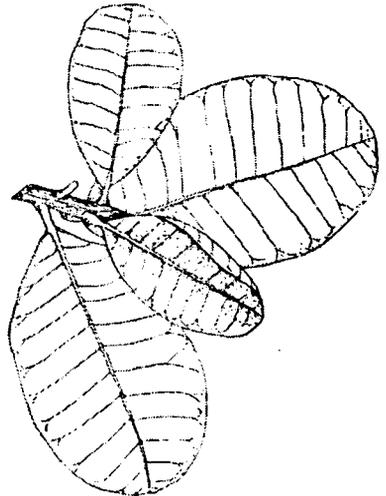
[Sub-Tropical Fruit Club of Queensland: Newsletter / 2003 Oct-Nov]

The Cashew (*Anacardium occidentale*, family *Anacardiaceae*), a native of Brazil

The Cashew is in the same family as the Mango, Pistachio, Spondias and Burdekin Plum, to name a few. Reading about Cashew brought memories flooding back to my childhood in Indonesia.

We had an enormous tree in our backyard. It was constantly in fruit with scented flowers and both young and ripe fruit on the same panicle. The natives call them *Jambu minté* or *Jambu inonyet* (Monkey Apple). *Jambu* is pronounced as Jumboo.

Our tree was about 12 m high with a wide canopy. It had red fruit, but my father had other types planted further from our house; yellow elongated, yellow roundish and several red types. They were intended as a commercial crop but it never eventuated because of the very labour intensive nature of processing, so we just used them ourselves.



Cashew leaves. All cashew drawings from Frans Geilfus' book 'El Arbol al Servicio del Agricultor'

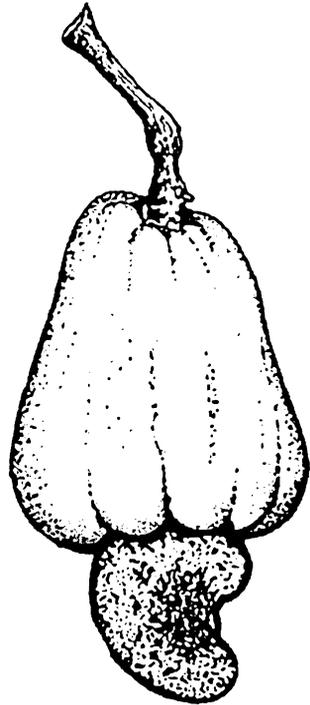
The "fruit" is in fact really a swollen peduncle (flower stem), but the true fruit is the small grey kidney-shaped nut on the end.

After school we use to climb the tree with a sliver of bamboo skin clenched between our teeth to use as a knife. We had been taught not to bite into the apple but first to cut a piece off the backside (the side of the stalk) and discard that part because of the acrid sap concentrated in that part. We would then cut pieces with our bamboo "knife" and enjoy it.

We collected the fruit for my father and were allowed to screw the nut off the apple but were not to handle them after that. The cashew apple is not crispy but extremely juicy and almost spongy. Trying to bite a piece off meant getting juice all over your clothes and what a stain it left!!! The fruit has to be fully ripe otherwise it will cause an annoying itch in the throat of sensitive eaters. The closer you come to the nut, the sweeter the fruit.

My father had made a contraption from a block of timber and shaped a niche in it to fit a nut. He positioned a slicing device in a slit in the block and sliced the nuts lengthwise in half, carefully avoiding the acrid brown sticky liquid contained in the shell. It has the capacity to blister your skin badly! You can't wash the liquid off with soap and the longer it stays on your skin, the nastier the blister gets! You have to use ether or alcohol to dissolve the resin as it is insoluble in water.

The big commercial growers collect the shells to extract the acrid resin to produce a kind of lacquer for the furniture industry and for many other uses, eg medicinal. We used to keep the shells to throw in the fire because of the pleasant smell it produces, but don't do this indoors as the smoke is toxic. The natives use another method of avoiding the nasty substance. They burn the nutshells off in hot



Cashew false fruit ('cashew apple') and true fruit (cashew nut)

ashes first. Accidental smudges of sticky stuff were quickly rubbed off with fine sand or ashes.

The excess fruit was used to make — among other things — a nice brown thick syrup or spread. To extract the juice (sap), take the "fruit" minus the nut in the palm of your hand (after having cut a piece off the tail end) and squeeEEEEEEEEze!!! The beauty of it is that you get straight away a clean (slightly cloudy) liquid. The leftover pulp is the spongy lump left in your hand.

Boil the juice continuously until thickened to the right consistency. Mum used to make cakes with it or prepare our school sandwiches with the brown spread. Its taste resembles that

of the Dutch "Appel-Stroop" which is of course made from our normal apples.

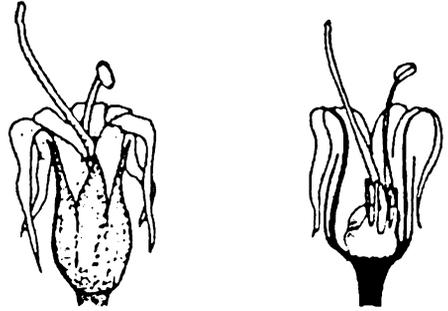
My father had other ideas: he made wine out of the sap but we children were not to touch the brew! He considered it superior to his Mulberry, Cassava, Guava and Java Plum wine that he also made. Dried or candied cashew apple is a reasonably tasty treat but tough as leather. Young cashew leaves are nice eating too and taste like young mango leaves and they can be eaten raw or cooked but it's a "no-no" for those with sensitive throats when eaten raw! Deep fried nuts (after thoroughly drying) can be finely ground and added to peanut sauce for satay or gado-gado (a vegetable mix) to make a delicious meal.

I read somewhere of plans to establish a cashew plantation in the northern tip of Cape York but never saw it mentioned on my favourite TV program "Landline". There is an extensive plantation of cashews in Bamaga on Torres Strait planted by the missionaries late in the last century.

Although it is a native of Brazil it is now planted all over the tropical regions of the



Cashew inflorescences



Cashew flower and cross-section

world. Cornucopia II, a book about edible plants, mentions an *Anacardium giganteum* from the northern part of South America. It says, "the receptacles are eaten green, cooked and roasted or made into alcoholic beverages. They have a very pleasant sub-acid flavour reminiscent of strawberries. Cashew-like nuts are roasted and eaten".

I don't know this type at all. Kaspar Schnyder, our knowledgeable popular nurseryman, had a healthy fruiting cashew tree in his garden. I often looked at it because of the nostalgic value for me. One day the tree had been reduced to a stump but I can't remember the reason why. Just ask Kaspar and he will tell you about it with a sense of humour typical of him.

In the seventies my brother was sent by the FAO (Food and Agriculture Organisation) to Nigeria (or was it Liberia?) to oversee the commercial Cashew plantations. He proudly sent us pictures of "his" enormously successful trees laden with bunches of superb fruit with oversized nuts. I have never quite forgiven him for that; he made our beautiful old tree look like a poor specimen!

— Willie Bollerman

How not to process cashews!

We assessed the alternative heat treatments for the removal of the nuts, very conscious of the toxic resin warnings and decided to heat our entire crop of 26 nuts in a very slightly greased wok over the gas stove in the kitchen, which was our first big mistake.

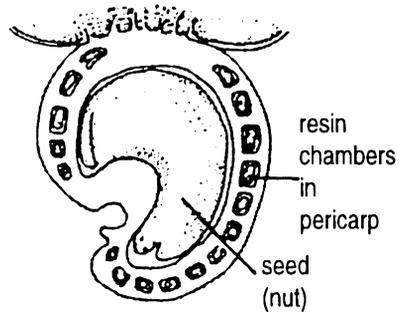
The smoke emitted ensured that every window and door in the house was open providing a through draught and the extractor fan directly above the wok was also on high. It was impossible to escape the smoke and the fumes and it was only a matter of minutes before we were both gasping for air and suffering from a dry and burning throat.

It can only be assumed that the fumes are also toxic and that this exercise should not be undertaken in a closed or confined area.

The nuts began to bubble at the centre of the curve of the kidney shape and we thought we were making some progress. The outside of the shells started to blacken and every now and again one nut would go off with a spit and a puff.

They then started to exude black oil which was sticking to the wooden spoon with which we were constantly moving the nuts. We put one nut on a white plate and took it outside for an individual and closer inspection. It had the appearance of a burnt cashew shell in rich chocolate sauce.

We opted for the assistance of "steaming" mentioned in the internet article and poured a little water into the wok. While it may not have assisted the splitting process of the nut, it certainly cut down considerably the smoke and fumes and that was a huge bonus. We found we could now watch and breathe at the same time.



Cross-section of cashew true fruit

Our 26 nuts continued to "steam" but the liquid soon resembled a disgusting dark muddy, and, we believed, toxic water. "Let's take the wok outside and hose the nuts and start off again with clear 'steaming' water".

A second attempt was no more successful; the sticky dark brown, we presumed toxic resin, coated all the nuts, the wok and the wooden spoon. We tipped the nuts out onto newspaper to allow them to dry and to reassess the progress.

After half an hour there was an unanimous decision that they should go in the bin and that \$16 plus was a cheap price to pay for a kilo of cashews at the supermarket.

(Edited by Sheryl Backhouse from an excerpt in Orchard Talk, the newsletter of the Wide Bay Branch of RFCA, May 2003. Originally taken from Daley's website from a letter received by them from Tony & Gordon).

[Q Ed: Because of the acrid oil in the shells, cashew nuts are hard to process on a small scale. One method which has been used, in the open, is to heat up a pan full of sand with the nuts scattered in the sand, which absorbs most of the oil.]

[Countryman Horticulture / 2003 Sep 4]

New macadamia sorter an industry advance

The macadamia nut industry in WA, though relatively small, is growing at an ever increasing rate, according to John Cory, of Shelterbelter Macadamias.

He said that as plantings increased and more trees started to bear nuts, more of the macadamias seen in shops and restaurants would be WA grown.

"Growing and managing a macadamia orchard is not dissimilar to many other tree crops, except that it is much less labour intensive," he said. "Many of the jobs are carried out mechanically, which makes it an attractive option for a superannuation or retirement investment."

Mr Corey said there was a piece of equipment for almost every aspect of the macadamia operation from pruning and harvesting through to cracking the nuts.

"On the big plantations in New South Wales and Queensland, one worker can look after up to 10,000 trees," he said.

An exciting new product is a recently released air sorter which determines which nuts are good and which are not.

The sorter is so new there have been no pictures released to the media and Mr Corey expects it to feature well at the Karragullen Field Day.

"After the nuts are dehusked, they pass at a controlled speed over an air curtain," he said. "This is where the nuts that have a full kernel proceed to the drying silo and those that have an immature or depleted kernel are rejected.

"This is a quick, efficient way to control quality and is based on the weight per volume of the nut." He said most on farm sorting was now done with a water sorter in which the viable nuts sink and the rejects float.

"Using this method assumes that the moisture and oil levels are in a ratio which allows the nut to sink. This is often not the case and the result is that many good nuts are rejected."

[For anyone considering investing in macadamias, information can be obtained and site visits arranged by contacting John Cory at Shelterbelter Macadamias on 08-9574 6163.]

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Acotanc-2004 Website now open

The website for the next Australasian Conference on Tree and Nut Crops, to be held at Gatton, Queensland, on September 20-24, 2004 can be accessed at:

www.newcrops.uq.edu.au/nc2004

The conference is to be a joint event with the Second Australian Conference on New Crops

[From a consultancy report]

Figs in WA — towards a major local industry

The fig industry is still relatively young and undeveloped in WA, although in my opinion it has possibilities for becoming really significant in the future.

Like olives, figs are relatively tough and easy to grow. If a successful fig industry is built here, a number of industry decisions will need to be formulated and appropriate approaches and expertise developed.

There is, currently, a small market for fresh figs in WA, sold through fruit markets. However, because figs do not have a good shelf life, and suffer handling damage with indifferent packing, I can't foresee any big expansion of this usage. There may be a possibility for 'superfigs', individually boxed and kept under refrigeration from picking to retail sale, but whether ordinary fruit traders would go for this is uncertain.

There is more possibility with dried figs, but the product would always be competing against figs from low-cost labour countries such as Turkey. Nevertheless, various innovations could possibly do more value-adding in this area to give a product which had a quality edge.

Fig jam is always a popular product which in WA has scarcely moved out of the cottage-industry scale. A new approach here, growing fig varieties specifically for jam production on a commercial scale, could succeed.

Finally, use of figs as fruit leather offers potential for value-adding to a producer willing to put in the necessary technical work. Routine fig-leather production does not present any special difficulties, but selling 'fig hearts', controlled-thickness slices of fig leather cut into heart shapes and sold in attractive snack packs, could merit more market and technical evaluation.

— David Noel

[Rare Fruit Society of South Australia:
Newsletter / 2003 Sep]

Almond growers near Renmark lead productivity stakes

Local almond growers produce the majority of the Australian crop in an astonishingly efficient and effective manner.

Visiting Americans, pleased with their production of one ton per acre, were unbelieving of the two and almost three tons produced locally.

The answer lies in very sophisticated electronic sensors for root activity and water uptake monitoring, combined with equally sophisticated irrigation controls.

Variety improvement is achieved in partnership with the larger but alternative-season Spanish industry, with whom we do not compete and therefore benefit from available variety developments

— Tony Stevens

Rare Fruit Society of South Australia: A1474.

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Arid land comes to life

On a remote station 350 km north-east of Kalgoorlie, an olive trial has been under way for three years. It is a task being promoted by Curtin University's Centre for the Management of Arid Environments.

Gary Price decided to make it his pet project during a trip to Italy when he noticed rows of olive trees flourishing in the hot, dry climate. He thought he knew just the right place in WA to give it a go — Mt Weld station, about 40 minutes outside Laverton.

Mr Price, who is using the project as part of his master's degree at Curtin University, wanted to assess whether European olives could be grown commercially in an arid climate and to assess its productivity.

He has had one good crop so far. According to Centre director Ben Norton, olives mature three to four months earlier in arid climates and that would allow growers to get into the Perth market ahead of everyone else.

Other work the centre is involved in includes a fodder trial in the Nullarbor and the Ecosystem Management Unit project, which is being funded by a Commonwealth grant.

Mr Norton said the EMU project was developed initially in the Gascoyne-Murchison area. Curtin University was awarded the next phase about a month ago and will work in partnership with AgWest and the Department of Conservation and Land Management.

"A landscape ecology specialist will sit down with a pastoralist and his wife around the kitchen table with a map of the property," Mr Norton said.



Ben Norton

"The map shows the land systems — the kinds of soil and vegetation and where they occur — fence lines and water points. The specialist then talks with the pastoralist, his family or manager and through a process of dialogue they extract lots of information about the property.

"Things that may emerge are — they may discover they have a water point in the wrong place that's causing erosion. This gives them a visual picture of how better to manage a property."

[Rare Fruit Society of South Australia: Newsletter / 2003 Sep]

Growing avocados from seed

Having eaten an avocado, many people have the urge to plant its seed. To enable the seed to sprout quickly, it must be planted immediately.

An interesting and entertaining planting method is to poke three toothpicks into the side of the seed so that it can perch, halfway immersed in water, on the rim of a drinking glass.

The seed can also be planted in potting soil, but this misses some of the fun of watching the roots and the shoots grow.

Avocado roots, like those of most other plants, need oxygen, so the seedlings would actually grow better in soil than in water. When growing a seedling in water, the water should be changed weekly, before it gets dirty and depleted of oxygen.

One of the best ways to speed germination in soil is to remove the parchment like seed coat and slice a thin layer from both the top and the bottom of the seed before planting. In water or in soil, set the seed with its wider end at the bottom.

— *John Poole*

Rare Fruit Society of South Australia: A1474.

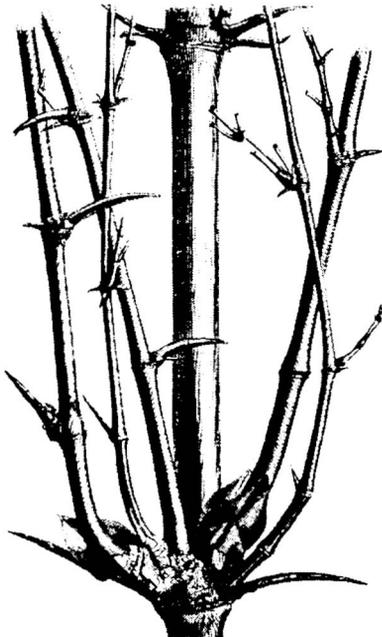
[ICASALS Newsletter (International Center for Arid and Semiarid Land Studies) / 2003 Spr-Sum]

Bamboo in semi-arid climates can have rural economic benefits

Researchers are exploring the possibility that bamboo, a plant primarily grown adjacent to wetlands, can thrive and provide economic benefits in a semiarid climate.

Texas Tech University and TreeGrace Farms, located in Lubbock, Texas, have combined resources to analyze the success of bamboo plants growing on the Texas Southern High Plains. Their work has the possibility to provide significant economic benefits for those living in rural areas who desperately need assistance in retaining residents for the survival of their communities.

Nick Parker, who recently retired from the



Giant Thorny Bamboo, Bambusa arundinacea. Illustrations from 'The Book of Bamboos', by David Farrelly

US Geological Survey as Director of the Fish and Wildlife Research Unit at Texas Tech University, is conducting experiments with bamboo to test its effectiveness in semiarid environments, possibly helping those living in rural communities develop a new economic resource.

"Rural America is losing jobs," Parker said. "Young people are leaving and are forced to go to cities to find employment. However, as the cities grow they become much less attractive. People are spending time in traffic snarls, parked on freeways, and caught in gridlock.

"To improve the quality of life, people need to get back in rural areas," he continued. "The only way to do that is to provide jobs. Jobs can be developed in small communities that are agriculturally based. By building a diversity of jobs in an integrated system, you increase the economic stability and improve the quality of life."

Parker said that growing bamboo, as well as several other niche market plants, could be economically beneficial for individuals living in rural areas. He added there are more than 1200 species and subspecies of bamboo and 32 are now being grown in Lubbock.

"There is a market for bamboo," Parker said. "People will buy them year after year. We can produce them in greenhouses in conjunction with production operations such as feedlots and dairies. Bamboo has value as an ornamental plant, so people appreciate bamboo in gardens, small pots and can even use them as windbreaks. Bamboo also might be harvested and used in feed for cattle.

"Even we can eat bamboo shoots, which sell for \$8 per pound and more," he said. "Individual bamboo plants can sell for anywhere between \$30 to \$100 for a one gallon pot. The culms are quite desirable in arts and crafts and architectural accents in this country. In other countries, bamboo is used as a primary building structure."

Parker said that bamboo plants can also improve environmental sustainability by recovering nutrients, thus improving the quality of groundwater.

"My vision is that we use bamboo at different dairies to strip the nitrogen from the effluent and that we put a different species of bamboo at each dairy to keep them separated," he said. "Then if we worked with the Texas Bamboo Society or the American Bamboo Society, we could let them harvest the bamboo and manage it. Then they could market and

sell it, with a portion of the sales going back to the producer."

Parker said that farmers could make a profit with the bamboo, while at the same time treating wastewater before it passes through to the groundwater and possibly causing a serious environmental problem that has plagued some dairies and has even forced some out of business.

To combat this problem the Texas Commission of Environmental Quality requires farmers to have a manure management plan in place as part of their permit on treating wastewater.

"The new regulations state that if you own the cow, the pig or chicken, you own the manure from the cradle to the grave," he said. "Farmers can't put it on land and just forget about it. Now if they do and it winds up in surface water or contaminates groundwater, the individual who owns the animal is still responsible."

Parker said they are trying to find farmers willing to plant bamboo on their facilities.

"We also have been meeting with rural economic development officers in communities to make them aware of the opportunities of modular agriculture production units," he added. "These modular units can be integrated with other agriculture operations to produce a diverse line of products of which bamboo is just one."

He said that researchers are studying bamboo to see how well they adapt to the West Texas climate.

"We want to see what will happen during the winter months and how bamboo tolerates colder climates," he said. "We are also looking at how well they will do in windy conditions."

He said that the bamboo sleeps the first year, meaning that there is little growth. The



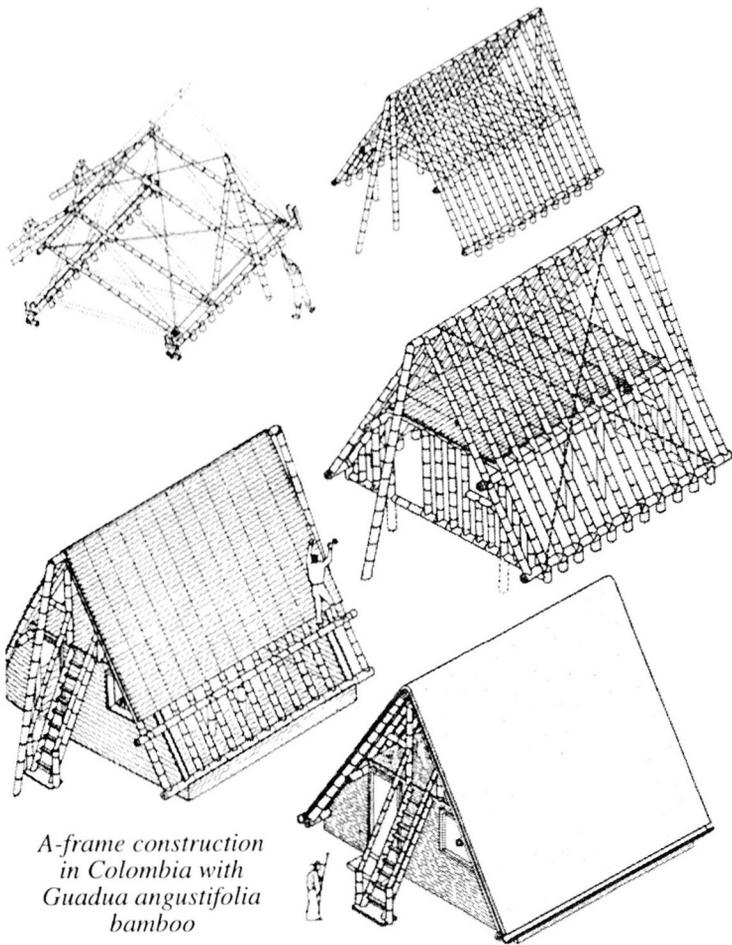
Gigantochloa bamboo two years after propagation from a culm segment

second year it creeps, or grows slowly. The third year it leaps and grows quickly. Therefore scientists are waiting until the third year of the project to evaluate how well the plant will thrive in semiarid and arid climates and environments.

Other plants, and even aquatic animals (fish), being grown in integrated systems include water lilies, Louisiana irises, papyrus, duckweed, and a variety of hydroponically grown vegetables, herbs, and flowers.

These plants all have value as ornamentals, as marketable produce, or as industrial stocks for extraction of high value biochemicals such as pharmaceuticals, nutraceuticals, organic colouring agents, or other fine chemicals.

Integrated production systems such as these provide sustainable and economic benefits by extracting nutrients from waste streams, recycling water and increasing the diversity of products and jobs in arid and semiarid regions of the world.



A-frame construction in Colombia with Guadua angustifolia bamboo

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CALENDAR OF FORTHCOMING EVENTS

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

Deadline for next issue: Jan 20, 2004

2003

- Sep 29-Oct 4 § 2nd International Macadamia Symposium, NSW.
Oct 28 Tue Wanatca Executive Committee Meeting
Nov 16 Sun * Wanatca Field Day, Mandurah area -Custom Composts plus Matt Fowler Garden.
Nov 18 Tue * Wanatca General Meeting: Alison Lawrie - "Ecological tools for sustainable plant-raising". (St Barbe Grove, Hazelmere)

2004

- Jun 14-18 § 6th International Congress on Hazelnut, Tarragona, Spain.
Sep 20-24 § Acotanc-2004, Gatton, Queensland
(www.newcrops.uq.edu.au/nc2004)

*General Meetings are held starting at 7.30pm. *Venue: As noted in each case.*

These meetings usually include a display of current world tree-crop magazines for sale.

• Event with WANATCA participation; § Refer to news item in this issue of *Quandong*.

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. Phone: 08-9381 7341. This issue edited by David Noel. WANATCA contacts: Phone 08-9250 1888.

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Quandong Advertising Rates: Whole page, \$100; Half page, \$60;

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