



# Quandong

magazine of the  
West Australian Nut & Tree Crop Association (Inc)

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**MURTILLA or Chilean Guava (*Ugni molinae*)** (See: About the Cover, p. 2)

## NEXT MEETING

**Wednesday Aug 16: 7.30 pm sharp**

The topic at the next meeting is:

**Bee Pollination & Yields of Nuts & Fruits**

Our guests at this meeting will be John Silcock and Peter Detschon, both of whom are commercial beekeepers who are involved in pioneering the use of bee pollination to improve crop yields in WA. Traditionally, the main activity of beekeepers here was to harvest honey from eucalypts and other native plants.

*VENUE.* WANATCA meetings for 1995 will be at the Naturalists Hall, 63 Merriwa Street, Nedlands. Full details on the attached leaflet.

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

**HAMEL PROJECT SITE VISIT**

**Sunday August 27 • Hamel/Waroonaa**

Our next visit will be a Barbecue and Site Inspection at the 'Hamel' precinct at Waroonaa, about 95 km south of Perth. This precinct contains the land parcel offered to WANATCA for a Horticultural Gene Bank Repository, the Greening Australia Nursery (which will be open for plant sales), and the old Forests Department arboretum and test planting sites.

This is a joint visit with Men of The Trees, who are expected to become involved with use and development of the precinct.

Meet at 12 noon to enjoy a barbecue or have your lunch there, or come at 2.00 pm for the start of the tour. Full details on the attached leaflet.

*No charge to attend. Visitors Welcome.*

*Queries to Alex Hart on 490 1324, or to the Tree Crops Centre on 385 3400.*

*About the Cover*

The cover illustration shows the Murtilla or Chilean Guava, a hardy fruit plant from South America with commercial potential for southern WA. For more details see the article on page 8.

**Vetiver Grass  
for Sale**

Starter pots with 2-3 plants  
\$1 each (minimum 50)  
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PO Box 56, Morley 6062

[Countryman Horticulture / 1995 May

## Grower sees big role for Capulin Cherry

Hills small landholder Bill Napier believes in the potential of a tree which produces excellent timber and a sweet tasting fruit, the capulin cherry.

Bill, the Vice-President of the WA Nut and Tree Crop Association, said the only factor standing in the way of success was research — and lots of it.

He said that in South America the capulin cherry was a very popular fruit and sold alongside the standard or common cherry, as known to Australians. And although it was not as high returning as the standard cherry, Bill said that if marketed properly, it could provide an excellent option to cherry plums.

Capulin cherries grew in bunches a bit like grapes and were sold by the bunch. "They taste like a cherry and would easily compete alongside cherries," Bill said. "And chances are they would be a lot easier to grow, as the Capulin cherry does not need a chilling factor." But he admitted that there was a lot of research which needed to be done before confident predictions could be made. Also, a lot of selection trials needed to be carried out.

Regardless, there were some facts which gave good reason for optimism among horticulturists looking for a different crop. Unlike most fruit trees, Capulin cherries fruited very early in their life. All the ones he has tested had fruited before three years — some as early as 18 months. They were also an excellent agri-forestry tree or dry land tree. "The Capulin cherry tree will grow flat out in winter and then conserve itself in summer," he said. "And being deep rooted, it will not interfere with the growing of other trees." The timber had been used in South America for quality guitars and Bill said this would also be an option to Australian horticulturists. The height of the adult tree in trials was about 10 m.

"What I am trying to do is find one that is going to be suitable as a good forestry tree and



*WA Nut and Tree Crop Association vice-president Bill Napier with one of the Capulin cherry trees grown on his property*

another that is suitable as a variety—and then graft them on to rootstock," Bill said.

He first heard about the Capulin cherry tree when WANATCA president David Noel wrote about it in the association's quarterly newsletter. Bill was immediately interested and his fascination with the tree has led to him sourcing seed from all over the world.

There was no-one growing the trees commercially in WA, and consequently Bill was watching very carefully the research being done in New Zealand on the Capulin cherry's application as an agri-forestry tree.

[Acotanc Bulletin / 1995 1st Half]

## Israeli fruit expert slates R & D approach

The current government and organizational approach to funding research into fruit and nut crops is all wrong, according to an Israeli expert visiting Australia.

Prof. Yosef Mizrahi, Professor of Desert Agriculture at the University of the Negev in Beersheva, Israel, explained his views at a recent meeting of the West Australian Nut & Tree Crop Association in Perth.

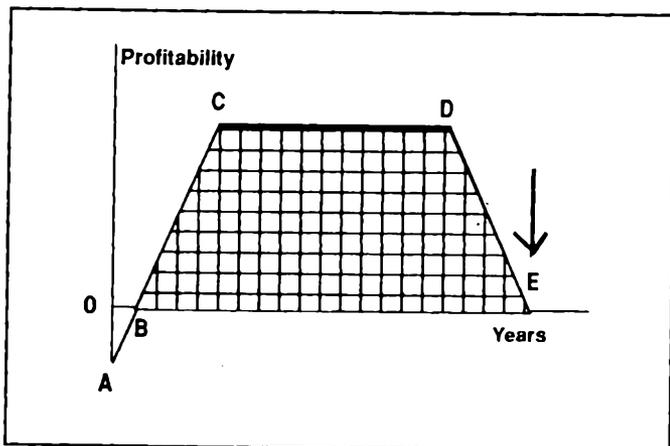
"Fruit producers in Israel are not poor farm workers, instead they are upper middle-class businessmen", he said. "To attain these incomes, they have had to be innovative and progressive in the introduction and culture of fruits not previously grown in the area".

Prof. Mizrahi explained that the process of introduction and commercialization of a fruit followed a certain cycle. "The producer starts off with a period (A-B on the chart), before the plants start bearing, when they are not making any money," he said.

"As expertise in varieties and culture is built up, and the plants start fruiting, income increases (B-C). Eventually the producer attains high efficiency, market acceptability and export channels are worked out, and the produce gets good consumer interest and good prices (C)."

Then follows a period of good profitability (C-D) when R & D work is refined and prices remain good. This period starts to come to an end (at D) when increasing competition sets in, with growers in other countries using the methods and varieties developed.

"This competition drives down the price obtainable for the produce," Prof. Mizrahi said. "Eventually a point is reached (E) at which Israeli growers can no longer compete



against low labour-cost countries such as Morocco".

It was at this point, when relative profitability had sunk to zero, that the fruit or nut crop was regarded by official organizations as an 'established crop'.

As an established crop, it became eligible to attract official research funding, usually denied to new crops regarded as 'unproven'.

"The end result is, that official support for R & D work starts to become available just at the point where the crop is no longer profitable," Prof. Mizrahi said. "If official research money was available at the beginning of the cycle, rather than at the end, this would be of much greater benefit for the country concerned".

## TIME FOR BUSY BEES!

*In contrast to other parts of the world, WA fruit growers have little experience of the great benefits in yields obtainable from careful attention to pollination, and the routine use of commercial bee-pollination services is only in its infancy here. When you think that much greater returns can be obtained from the same labour and materials, purely through hiring a few hives, the benefits are obvious.*

*This issue of Quandong gives details of our next meeting, devoted to this topic, and gives news of some local work, plus an item from WANATCA member Joe Traynor of California — Joe is an expert in this area.*

[WA Dept Agriculture News Release /1995 July]

### Prepare for bee pollination now

**Beekeepers should prepare hives now for the spring pollination of orchards in the Southwest.**

Senior Apiculturist with the Department of Agriculture, Lee Allan, says it's also time for growers to make arrangements with beekeepers to pollinate crops.

Mr Allan says managed bees have been used successfully for many years in the Ord River irrigation area, mainly for rockmelons and sunflowers. But the planned pollination service industry is in its infancy in the southwest, where growers are only now recognising the benefits of using managed bees.

"There are not enough feral bees to do an adequate job, leading to poorer quality fruit. The result is often deformed and poor sized fruit. Beekeepers move their hives north where it's warmer and there's more nectar. They build up their bees during the winter/spring months, moving them south in prime condition for pollination."

Mr Allan says growers using managed bees can get an improvement in fruit set, harvest efficiency and crop quality. They can

also get a more marketable fruit of an even size, and obtain a better price for their product.

"It's important growers contact beekeepers through the Pollination Association of Western Australia now to arrange to pollinate their crops as beekeepers need to prepare their hives specifically for pollination rather than honey production."

Mr Allan says association members abide by a code of practice assuring growers of a professional service.

He says it's essential beekeepers prepare hives now, and that producers arrange to order hives for pollination as soon as possible.

"Hives should have six frames of brood and a young queen. Bees should cover at least eight frames, expanding into the top box," Mr Allan said

### BEE POLLINATION SERVICES

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Growers can contact beekeepers through the Pollination Association of Western Australia by phoning the President, Colin Fleay on (09) 574 2857 or the Secretary John Smith on (09) 450 2912.

Mr Allan says a one-day seminar on pollination will be held for growers and beekeepers at Donnybrook on 23 September. The Pollination Association can be contacted for further information.

*Ag. Dept contact: Rob Manning, Department of Agriculture Research Officer, Phone 09-368 3567.*

## Rent honeybees to improve olive set

According to University of California research, pollination and fruit set in olives can be improved by bringing in bees. This can boost production in an "off" year, or when poor weather hits during blooming.

The following table is from U.C. Bulletin No. 869, *Olive Pollination in California*, 1975 (Griggs, et al).

**Comparison of percentage olive fruit set for caged (no bees) and open (+ bees), Mission and Oblanga varieties**

Treatment	Mission	Oblanga
Caged	4.0	9.4
Open (+ bees)	7.4	18.8

The authors concluded, "Evidently the honeybees effectively aided in cross-pollinating the olives and were responsible for the increased set."

Honeybees do work olive trees, if hives

are present. The authors of Bulletin 869 stated that "these trees [near bees] experienced constant bee visitation" and that during calm periods "bees constantly visited the exposed olive flowers to gather pollen."

Although olives are considered to be wind pollinated, the authors of Bull. 869 indicated that too much wind is detrimental.

"The heavy fruit sets experienced in this [another] test may have been due to the wind protection afforded by the netting.... It was noted at the time the mosquito netting was removed that leaves and branches that had been enclosed were covered with pollen, whereas exposed branches were cleaned of pollen by the wind."

Don't subject your crop to the whims of wind. Rent honeybees to insure a good set. If applying pollen, use honeybees to distribute the pollen from the petals to the flower stigma. Pollen application will be much more effective when bees are present.

— *Joe Traynor*, PO Box 2144, Bakersfield, CA 93303

## PECAN NUTS WANTED

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 Fax 097-343343  
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[WA Dept Agric News Release / 1995 July]

## Success for WA initiative on beekeeping industry

A two year survey of beekeepers' apiary sites in Western Australia has been recognised nationally as a way to value the beekeeping industry and identify geographically the native and exotic plant resources beekeepers rely upon for their business.

The survey was conducted by the Western Australian Department of Agriculture, and is now being used as a 'template' for similar projects in New South Wales, South Australia, Queensland, and Victoria. Apiculture Research officer, Rob Manning, began the West Australian survey after attending a national workshop funded by the Honeybee Research and Development Council in 1989.

The results were summarised and

published in the Western Australian Journal of Agriculture Vol. 34, No. 3 - *Honey production in WA*. - last year, and are now providing the guidelines for similar interstate projects funded by the Honeybee Research and Development council.

The West Australian survey described the potential value and production of honey, pollen and queen bees from 3475 apiary sites in the south-west. Mr Manning said the data bases could help better focus the debate about honeybees in the Australian environment, and help beekeepers protect important areas of production.

He said the data bases also would give beekeepers, land managers, state planners and scientists access to information to help resolve possible conflicts of land use.

"It's important to maintain a viable beekeeping industry to service the lucrative Australian export package-bee market and the growing industry of crop and orchard pollination."

[West Australian / 1995 July 17]

## Prehistoric Scots thrived on hazelnuts

The remains of Britain's earliest recorded vegetarian community have been discovered at an ancient settlement on a small island off the west coast of Scotland.

Archaeologists on the isle of Colonsay, in the Hebrides, have found a shallow pit containing the remains of thousands of burned hazelnut shells from the Mesolithic period,

dating back 8000 years.

The pit lay beside another circular hollow which is believed to be one of the earliest examples of a house ever found in Scotland.

No traces of animal bones or shells from the abundant fish around the island have been uncovered — giving rise to the conclusion these early islanders lived on what they gleaned from the local vegetation.

Archaeologists believe the nut pit may have been where the nuts were roasted and shelled, or where they were stored for later use.



## The Chilean Guava (*Ugni molinae*)

The *Ugni molinae*, a long overlooked member of the myrtle family, was first described by Molina, an Italian Jesuit priest living in Chile.

Appearing in his book *Natural History of Chile* published in 1810, the plant description generated interest in the Chilean guava at the English firm of Veitch. They saw the plant as having potential as a hardy fruit for growing in England and sent plant hunter William Lobb to Chile to investigate the possibility. Lobb returned to England with the plant and cultivation began in 1851.

Though it was unable to survive the harsh

**For illustration see  
front cover**

### CHILEAN GUAVA

*Ugni molinae*

Evergreen shrub

To 7 to 8 feet in height

Fast grower and spreader

Propagate from cuttings

Sun or light shade

Will not stand frost

Berries eaten

Flowers in summer

Harvest in fall

White flowers, red berries

winter in some parts of the country, it was grown in the milder areas. Its success is verified by a record of it being a class of fruit at a Grand Autumn Fruit Show sponsored by the Horticultural Society of London.

The berries of the Chilean guava or *Murtilla* or *Uñi*, as the Chileans call the plant, are the size of a garden pea. Brilliant red in colour, they turn gradually darker as they ripen. Though commonly seen in the markets of Chile, their presence is rare in other parts of the world. In its native country, pies and jellies from this fruit are widely enjoyed. It is also recorded that Chilean guava jam was a favourite of Queen Victoria.

Semi-ripe wood cuttings taken in late summer and placed in a cold frame will root

in a matter of weeks. One part each soil, sand and peat moss or leaf mould is best. If no cold frame is available, a tent of polyethylene, a foot high for ample ventilation and a foot square, can house 20 to 25 cuttings. Once they root, transplant to separate four-inch pots for growing fuller roots and subsequent planting out in permanent locations.

Although the bright red berries of the Chilean guava somewhat resemble currants, their distinctive flavour is closer to that of strawberries. The berries are ripe when they easily separate from the bush; remove stem ends and wash. They may be eaten raw to add flavour and variety to mixed fruit salads and desserts, though the tiny seeds of this fruit may prove objectionable to some. Y

[Extract from *The Edible Ornamental Garden* by John E Bryan & Coralie Castle (Penguin Australia, 1975) ]

*QEd: Dob-in tip: WANATCA member Brian Money has some of these plants...*

## WANATCA at Dowerin

**Aug 30-31, Wed-Thur**

Following last year's popular attendance of WANATCA at Dowerin, we will again be sharing the stand kindly provided by Men of The Trees.

Running of the stand will again be under the control of Exec Member Bob Cook, but this year Bob is making a plea for help with the stand, even if only for an hour or two.

*Please contact him on 09-574 7103 (evening) if you may be able to help.*

## WA COASTAL PLAIN RIPE FOR HORTICULTURE

A report recently released from the Northern Agricultural Region office of the WA Department of Agriculture has highlighted some of the horticultural potential of the WA coastal plain in the area stretching from Geraldton south towards Perth.

Rob Delane, Acting Regional Manager of the Department's office in Geraldton, has supplied WANATCA with a 4-page summary report, entitled *Horticulture in the Mid-West Region*, and the full report of about 100 pages, *Mid West Horticulture Strategy Study*. (The full report costs \$35).

Of the report's recommendations, perhaps the one most of interest is No. 11: "The Department of Agriculture, Department of Conservation & Land Management, and the West Australian Nut & Tree Crop Association seek funding to undertake research and field trials to examine the commercial prospects of growing perennial fruit, nut and tree crops in the study area."

After discussion with the WANATCA Executive, I have responded to Mr Delane's request for comment on the report, and made the following points:

*In my view, the study area involved is one of the most prospective for advanced horticultural use in the whole of Australia, and could become a major producer of nuts and subtropical fruits. However, for such a development to proceed successfully, there is a task ahead in re-orientating traditional land users towards more specific tree-crop usage.*

*The point is, that in the design of a modern tree crop production operation, the level of investment and attention per unit area of land and per individual plant is quite different to that of traditional usage. This means that such matters as natural soil fertility and rainfall, major*

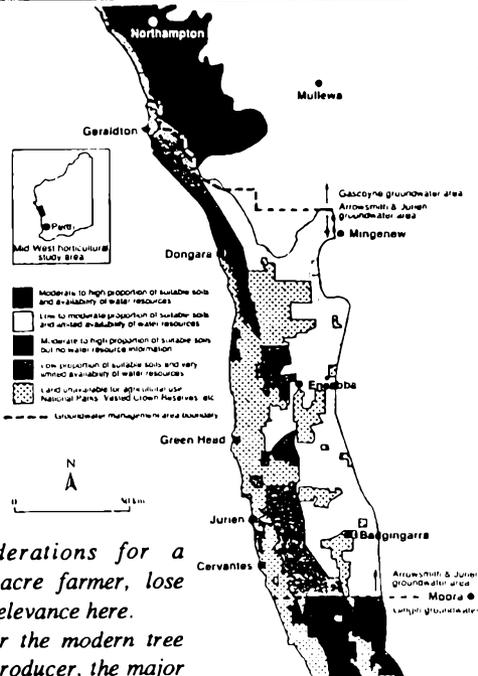
*considerations for a broad-acre farmer, lose their relevance here.*

*For the modern tree crop producer, the major considerations are light incidence, availability of underground water at only medium or low demand levels, winter cold patterns, and location vis-a-vis markets. In all these matters, the Mid-West Region has favourable characteristics which place it at an advantage. All other considerations, such as plant nutrition, and intelligent approach to the particular characteristics of a given site, are accommodated naturally when planning the planting.*

*I see a major macadamia nut industry emerging in your area. Other related industries with good potential are for those producing pecan nuts, almonds, custard apples, and black persimmon group fruits.*

*Some of these products have the potential to become significant at a world level, with an output measured not in millions, but in billions of dollars. As a comparison, the latter is the level at which the California almond industry operates, under conditions not too different to those in your Region.*

—David Noel



[North Coaster /1995 Jan 13]

## Exotic fruits on display at TFW

In a favoured spot on the far north New South Wales coast, just south of the Queensland border, lies perhaps the richest exotic fruit display centre in Australia.

Called Tropical Fruit World, the centre was developed from an earlier more specialist venture named Avocadoland. The new name reflects its present wider scope.

Imagine working with more than 300 varieties of tropical fruits and discovering ways to grow them in the Australian climate and soil — that is the job of Tropical Fruit World's horticulturist, Brian Munro. And Brian says he can't wait to get to work each day.

His pet project at the moment is the naranjilla from Ecuador. The orange coloured fruit with green flesh had proved the most difficult of all of the tropical fruits to grow until a recent breakthrough.

"We got some seeds through a rare seed merchant and when they were first put in the seedlings started growing well," he said. "However they then just died."

It was then that Brian decided to graft young plants on to different rootstocks to overcome the fungal disease which had killed the first group of seedlings. More seeds were obtained and the experiments began.

"The ones that are doing the best have been grafted onto a weed called Devil's Fig," he said. "It looks like it will be a heavy cropping fruit."

Visitors to Tropical Fruit World may be able to purchase food or drinks made from naranjilla in about six months' time. Naranjilla, which is related to the tomato, tastes a bit like a cross between a kiwifruit and a tomato.

The fruit is made into a drink known as "the nectar of the gods" and it is hoped the drink can be replicated at Avocadoland.



*Brian Munro checks out the babaco at Avocadoland. Brian believes the plant has a big future in Australian markets because it is an excellent drink base. Brian has grafted babaco onto standard paw-paw rootstock to prevent rotting or attack by fungus, which leads to loss of plants*

Brian said an American drink-maker had been using the naranjilla for fruit juices and it had out-sold apple juice. He said naranjilla and orange juice had proved more popular than straight orange juice. go because there was not the supply to keep up with the demand.

"There have been problems with growing it even in its native Ecuador," he said. "In the past five years demand has sky-rocketed with prices increasing by 1000 per cent. Now Avocadoland has worked out how to grow them we will be putting in around 500,

starting in the next couple of months.”

Brian said in recent months there had been a lot of new plants coming out of Africa. “A lot of native Australian food trees have been sent to aid workers in Africa,” he said. “In return there have been seeds coming out of Africa. It is now a matter of trial and error to get them growing and sort out any problems”.

*QEd: Tropical Fruit World, who have recently become members of WANATCA, have now produced a useful 45-page catalogue of all the hundreds of different fruit and nut species they are growing at the Avocadoland site. This is available at \$7.95 from Granny Smith (see advert p. 31).*

*Readers intending to go to the Lismore ACOTANC conference in September may wish to come in through Coolangatta airport on the Gold Coast and visit TFW, only a few kilometres away, at the same time.*



## WANATCA at the 1995 Royal Show

As usual, your Association will be active in the Royal Show, to be held at the Claremont Showgrounds, Sep 30 to Oct 7. Our display will be at WANATCA's headquarters in the Tree Crops Centre.

This is our principal window to the general public, and we do need help from members able to offer a half-day. No special experience is needed, past helpers have found the task interesting and useful.

Alex Hart has again kindly agreed to coordinate the roster. Please contact him in 09-490 1324 if you may be able to help a little.

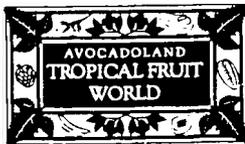
## Germinating Mongongo

The Mongongo Nut (*Ricinodendron rautenii*) is a staple food of the Kalahari Desert of southern Africa, and deserves wider exploitation. But it has proved very difficult to germinate.

At the last WANATCA meeting, Prof. Yossie Mizrahi mentioned that a way had been found. Here are the details:

*“Seed germination can be obtained by ethylene treatment. Either expose the seed to ethylene gas in a chamber or flow system, or dip in 1000 ppm ethrel solution for one minute. This will germinate over 90% of the seeds, germination otherwise is 0 percent”.*

This could be the key to a whole new industry for arid WA — and could be a technique applicable to other nuts, such as our own native Quandong.



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## BOOK REVIEWS

by David Noël

### *Timber needs, rainforest trees, and native forests: a solution to suit all?*

An Australian development which may give a 'soft' solution to a problem causing great concern, even antagonism, in today's world has slowly emerged in the last few years.

The problem is in the harvesting and use of rainforest and native timber trees, especially by clearfelling. This has caused massive erosion and soil loss, both in tropical and warm temperate climates, and in some cases, social disasters through huge floods and landslips wiping out people and crops.

The need today for timber and wood products, such as paper, is unceasing. This is being met to some extent by plantation timbers, especially Radiata Pine, and now big plantings of Tasmanian Bluegum (*Eucalyptus globulus*) are taking place in WA to provide paper pulpwood.

However, many of the finest timbers and forest products have had native forests as their only source. Natural regeneration and even re-planting of these species has often proved technically unsuccessful and economically unviable, especially in the shorter-term.

The possible Australian Solution has emerged from the realization that single-species tree plantations, themselves a form of monoculture, may not be the most productive, nor the most ecologically acceptable, methods of timber production. The new

approach is based on 'mimicking' certain facets of the rainforest itself, to produce a species-rich, fast-growing 'synthetic ecology', growing desirable rainforest or native species under simulated 'release-phase' conditions.

The 'release phase' is the most productive part of the forest growth cycle. It occurs when a great forest tree comes to the end of its life and crashes down, leaving a huge gap in the forest canopy and vegetation. The resulting great influx of light stimulates the rapid growth of hundreds of seedlings which have been waiting almost in suspended animation for such an event. They streak towards the light, in fervent competition with each other, putting on a tremendous growth spurt.

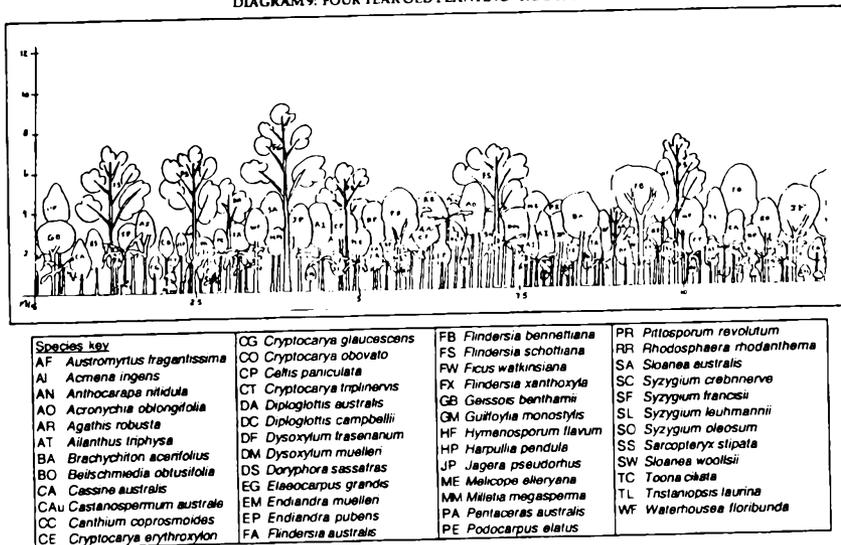
Two recent publications originating from the northern New South Wales/ southern Queensland area describe the new methods; the books are reviewed below. Although they have the label 'rainforest' in their titles, the methods involved can, in fact, be used anywhere — closed-canopy forests do not need anything like the rainfall that might be expected, because they re-circulate much of their moisture and biomass.

Anywhere which has been used for pasture, or even better rangeland, can be forested if the right conditions are applied at the start. These publications give the practice, and some of the theory, of the Australian Solution to the rainforest timber problem.

1. *Farm Forestry Seminar & Design Workshop: Papers & Proceedings. Information for farmers and landholders on the growing of cabinet timber woodlots.* Edited by Martin Novak & Lea Bracker. Dorrroughby Field Studies Centre, NSW, 1994. 86 pages, paperback. \$24.95\*.

2. An Introduction to the *Successful*

DIAGRAM 9: FOUR YEAR OLD PLANTING - KOOYMAN II



**Growing of Rainforest & Harvestable Timbers: The Mitchell Low Maintenance Method.** Jack Mitchell. The Author, 1993. 16pages, paper. \$5.95\*.

(\*prices from Granny Smith, see advert p.31)

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"There is a growing and enthusiastic interest in farm forestry generally and in ecologically sound forestry in particular. Landholders are recognising the broad range of values that can be attained by a well thought out integration of forestry into existing rural land use systems"

So starts the Introduction to the Seminar Papers, a thought-provoking collection of 10 papers on a new approach to timber production. This approach is given a powerful visual impact by illustrations such as Diagram 9 from Robert Kooyman's paper *Community Forestry - Perspectives & Potential*, shown above.

This diagram shows so much. It shows a mix of 40 different species of timber trees,

some reaching a height of 10 metres after only four years. It shows a very high-density planting, as many as 4000 trees to the hectare — that is an average spacing of only about 1.5 metres. Not shown, but implied, is the lack of maintenance needed once the tree tops close together and shade out weeds, in as little as two years.

Together these papers provide a range of views on the practice and theory of the new approach. Both private and community plantings are considered, both specific timber plantings and plantings of timber as part of farm operation, and as a common theme throughout is the emphasis on ecological benefits such as catchment management and land improvement.

The main papers are supplemented by tables of species. These are all drawn from native Australian 'rainforest' species, but this should not be taken as implying they are only suited to warm, wet situations. For each species, drought and frost tolerance estimates

are given, which itself implies they have a much wider range of use.

In addition, in WA and other parts of the world, a similar approach can be taken using local species, species from other parts such as these NSW/Queensland natives, and exotic species from similar climates elsewhere. All that is needed is to slot such candidate species into the groups of fast-, moderate-, and slow-growing, and make up a mix to suit. In WA, the lists might include some of the local wattles, the capuli cherry and the andean walnut from South America, and the kaffir plum from South Africa. Mix and match!

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The author of the second publication reviewed also took part in the Seminar and his paper there could be viewed as a summary of his booklet, a specific, maximized recommendation for quick results. Instead of describing the contents of Mitchell's booklet, an extract below on agroforestry will give a good feel for its contents.

### Agro-Forestry

The planting of harvestable timbers is a profitable investment and a valuable asset, especially our special soft wood species. We have a large range of valuable softwood and hardwood species, many of which have never been grown in harvestable plantings.

Having worked and studied the growing of these trees for many years, I feel that perhaps now at last we can conclude that it is viable to grow many of our beautiful timbers.

Especially now with the locking up of vast areas of rainforest, the availability of these timbers has put them in a very scarce category. In a way this proves a point that many of us have been trying to get over for many years with little success. It must now be obvious that we should have been planting our native harvestable timbers years ago.

Unfortunately practically no research has been done in this field, especially with our native

softwoods. I have been advocating this for many years. These can only be grown by companion planting. The idea of companion planting is new in so much as there has been very little research done into this important aspect of successful growing of our softwood timbers. I have spent many years in the study of growth habits of various species to come up with some practical recommendations for successful plantings.

There has to be a good mix of selected species. The most important of all trees to promote trunk height is the Blue Quandong, being the fastest growing and fastest maturing of all our timber trees. Its upright growth makes it the key to our planting. No other timber tree has the characteristic to do this trunk height promotion.

Faster maturing trees are quandong, white cedar, silky oak. The first thinnings of quandong are millable in 10 to 15 years. This tree produces a high quality timber, light weight, silver white in colour and of extremely high strength.

Well I offer no prize for guessing my favourite tree but there are a range of compatible timber trees which I will list.

Blue Quandong	( <i>Elaeocarpus grandis</i> )
White Cedar	( <i>Melia azedarach</i> )
Silky Oak	( <i>Grevillea robusta</i> )
Queensland Maple	( <i>Flindersia brayleyana</i> )
Red Bean	( <i>Dysoxylum refum</i> )
White Beech	( <i>Gmelina leichhardtii</i> )
Silver Ash	( <i>Flindersia schottiana</i> )
Crows Ash	( <i>Flindersia australis</i> )

Those are trees I have used in plantings. There are others but with this list I have placed them in their order of maturity. One of the others is the red cedar (*Toona australis*). This tree will have a lot of potential once we have solved the problem of the biological control of the tip moth. It is one of our faster growers, but can only be planted as a secondary planting at present, when there is sufficient cover to host predators to the tip moth.

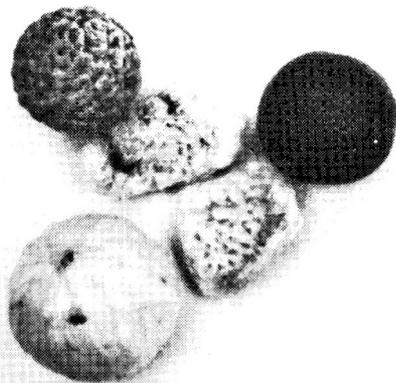
A companion planted harvestable planting is a permanent forest selectively harvested as trees mature and will regenerate from self seeding. Besides you have a valuable bird food source as well as providing a renewable timber resource.

## Golden Quandong discovered in Perth

A gold-skinned variant of WA's own native nut and fruit tree, the Quandong, has been discovered in an outer Perth suburb.

The fruits and nuts were brought into the offices of Kings Park and Botanic Gardens in October 1994 and shown to Horticulturist Bob Dixon by a local resident. The specimens were said to have been collected at that time in the outer Perth beach-side suburb of Ocean Reef.

The fruits (shown right) were of a good size, had an attractive gold colour quite different to the usual brilliant red, and seemed to have a good amount of fruit flesh. This variant may be of interest in future commercialization of the quandong. Unfortunately, its exact location of



*The Golden Quandong discovered in Perth (left, fruit, nut, and fruit flesh; normal red quandong on right). Photo: Bob Dixon*

occurrence is not known — readers in the Ocean Beach area are asked to watch out for gold-coloured quandongs in their area in September/October, and tell us if found.

## Farewell to Russ, Jim

I was saddened to hear of the recent deaths of two long-time WANATCA members, both from overseas.

I first met **Russ Yoder** in 1979, when my wife and I attended the Northern Nut Growers Annual Meeting in Wooster, Ohio. Russ and his wife Ida-Mae, stalwarts of the Ohio Nut Growers Association, were involved in the symposium organization and met us and put us up on arrival. Russ subsequently supplied an audio-visual presentation on Nuts & Fruits of the Brazilian Cerrado (where they owned a property) for Acotanc-82 in Perth. Russ had a wonderful personality and his loss will be felt by his numerous friends all over the world. Profound sympathies to Ida-Mae.

The main business of **Jim Jacobsen** was

running his bakery in Lae, Papua New Guinea, but Jim and his wife Glen had a keen interest in tropical fruits, spices, and other tropical plants and ran a plantation on which these were grown.

Jim was a keen member of WANATCA who kept up with the latest developments. He was a kind person and was very helpful in arranging a translation of a book on Cloves which is to be published soon by Cornucopia Press.

Jim's wife Glen is courageously carrying on the plantation by herself, and will remain a member of WANATCA, but is finding it a bit lonely and isolated. Our best wishes to Glen, and hopes for a successful resolution of the difficulties involved in these sad circumstances.

— *David Noël*

*[The Bakersfield Californian / 1995 May 26]*

## Californian processor announces \$15 million pistachio processing expansion

**Paramount Farms, the world's largest pistachio processor, has announced a US \$15 million expansion at its nut processing plant in Bakersfield, California.**

New state-of-the-art equipment will position the company to maintain its leadership position as it moves into the 21st century, explained Dave Szefflin, vice president of operations.

Paramount, also the world's No. 2 almond processor behind Blue Diamond, branched into pistachio processing when it bought West Hills Almond Co-op in 1989.

"We're experiencing an amazing growth. I don't know of any industry growing as fast," Szefflin said.

The expansion, which has already begun and will continue through August 1996, is an attempt to organize and consolidate that growth. The plant is being designed to move pistachios through more efficiently.

The pistachio and almond processing plant is surrounded by thousands of acres of almond trees 60 miles northwest of Bakersfield.

Paramount Farms bought 60 acres to the south to increase the truck yard and water plant, and is adding a mile-long pipeline to draw water directly from the California Aqueduct as backup, two roasters that will double capacity, more machines to sort pistachios by colour and package them, and a 15,000 square-foot building to artificially open those pesky closed pistachios. Twenty percent of pistachios are harvested closed and must be artificially opened. The past three years, they were sent to China where women used hand-crackers to pry the shells open, Szefflin said. "We're going to get out of that

entirely," Szefflin said, adding that the technological move will put thousands of Chinese out of work.

The expansion will increase pistachio processing capacity by one third and hulling capacity by 25 percent, enabling the company to serve more growers and turn trucks around more quickly.

"Our capacity to turn trucks around more quickly is especially critical because we have doubled Cal Pure grower partner tonnage annually for the past three years," Szefflin said. "We're adding more sophisticated sorting equipment allowing more uniform colour and size and zero foreign material in our nuts. We're going to turn this into a showcase as far as a food plant is concerned. We are setting the benchmark."

The firm has 650 employees year-round; 1,000 during harvesting in September. Although the plant is expanding, automation will keep the number of employees at the current level, Szefflin said.

The United States has grown from the No. 5 pistachio producing country in the world

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with 15 million pounds in 1976, when pistachios first were grown here commercially, to neck-and-neck with Iran, each producing about 130 million of the world's 380 million pounds.

Paramount Farms processed 50 million pounds last year, will process 80 million this year and plans to process 100 million next year. That equates to more than 20 % of the world market; 60 % of US production.

Kern County had a lot of pistachio acreage planted before the drought that is just coming into production, according to Brian Ezell, a 29-year-old Bakersfield native who was just promoted to pistachio plant manager. But the main reason for the expansion is "we're getting a better share of the market. We pay our growers more than anyone in the industry and we have less stain and insect damage because we process pistachios very fast, in four weeks. We've outgrown existing facilities."

Paramount Farms exports about 40 percent of its pistachios and is constantly working for a bigger market share. "We're

basically trying to take over the world by the year 2000," Szefflin said, only half joking.

Paramount Farms also processes 35 million pounds of almonds annually, more than 8 percent of the world's supplies. The firm has been very successful in the value-added market — sliced, diced and slivered almonds used in M&Ms, candy bars, cereals and for baking.

That may be the future for pistachios, if a few bugs can be worked out. Pistachios go soft faster than almonds and historically had problems reducing foreign matter. Advances in technology quickly are solving those issues Szefflin said.

Look for pistachios in ice cream, not the almond bits passing for pistachios, and, maybe someday, pistachios in M&Ms, Szefflin said. "Pistachio has a stronger flavour than almonds so you can use less."

"Our focus next year is to achieve the same success with pistachios in the ingredient business that almonds has established," Ezell said.

— Jim Carnal

## WANATCA at Karragullen

Following last year's popular WANATCA representation at the Karragullen Horticulture Field Day in the Perth hills, we again intend to be represented this year at the event on Friday September 15.

Bill Napier (399 6683) will be coordinating the display, but will need help, even if only for an hour or so, from anyone who expects to attend and can help out. *Please contact Bill as above.*

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[Rare Fruit Council of Australia Newsletter / 1993 November]

## The Wampee

The Wampee (*Clausena lansium* (Lour.) Skeels) was introduced relatively recently to Florida, and therefore is not well known here. It is a small tree with dark green, glossy leaves and clusters of yellow spherical to oval fruits.

Propagation is easy and may be done by seed, cuttings, air layers or grafting. Superior selections have been made in the Orient but have not been introduced to Florida because of restrictions on importation of vegetative material of citrus and citrus relatives. Several selections of superior types have been made in Florida, mainly based on productivity of the tree and sweetness of the fruit.

The wampee is well adapted to the climate of southern Florida, and grows particularly well in the calcareous soils of the south-eastern coastal region. It deserves to be more widely grown for its useful fruit and for its excellent qualities as an ornamental plant.

The genus *Clausena* contains some 30 species and many botanical varieties distributed through the Old World Tropics (6). Of these, the wampee has the largest and most desirable fruit for human consumption. The wampee is a relative newcomer to Florida, having been introduced from China as an undetermined species in 1908 (1). It is native to southern China and Indochina. The fruit is well known and highly esteemed in the Orient, but is little known in the American Tropics, notwithstanding the efforts of horticulturists such as David Fairchild (2). This is unfortunate because the wampee grows well in southern Florida, yields a useful fruit, and is a beautiful ornamental tree.

### DESCRIPTION

The plant is a large shrub or small tree reaching a height of about 20 ft (6 m) at maturity. Usually it branches near the ground and makes a multiple trunk unless



*The Wampee, Clausenia lansium. From 'Medicinal Plants of China (James Duke)*

specifically trained otherwise. The canopy is rounded and dense.

The leaves are pinnately compound, with 5-12 irregularly alternate leaflets 2-4 in (5-10 cm) in length. The leaflets are dark green and shiny with an undulate margin. Young branches and leaves are coarsely pubescent, becoming relatively smooth at maturity.

The greenish-white, perfect flowers are borne in large terminal panicles and the tree is self fruitful, at least in most cases. There is one crop of fruit a year in Florida. Bloom occurs from December to April, and the fruit

matures from June to August. The fruit is ovoid to globose in shape and is borne in clusters which may contain 40 or more fruits (2). Fruits are 1 in (25 mm) or less in diameter and have 1-5 seeds about 0.5 in ( 12 mm ) in length .

### VARIETY IMPROVEMENT

Seedling wampees vary in growth habit, productivity and fruit quality. Some selections have been recognized as superior to others in Florida and propagated to a limited extent. Descriptions of the great variability of wampee selections in the Orient (6) make it evident that the variability of the plants in Florida is quite limited, no doubt because they have developed from a small number of original introductions. The many superior selections of the Orient have not been brought to Florida because of quarantines against importation of vegetative propagating material of citrus species and relatives. The dangers of inadvertent spread of diseases and pests of citrus certainly justify such a quarantine. However, it is permissible to import seeds of wampee, and under the circumstances this is the best way to broaden the genetic base of the wampee population in Florida and eventually obtain selections of better quality than those we have at present.

### PROPAGATION

The wampee can be grown easily from seed and this is the most common method of propagation. The seeds are similar to citrus seeds in that they remain viable for several weeks if they are stored in a cool place and not subjected to excessive drying. Seedling plants are relatively slow growing, but respond well to good care. They will bear fruit in 5 to 8 years usually, although under poor conditions they may take considerably longer ( 2 ) .

Vegetative propagation is easily done also. Softwood cuttings can be rooted under mist. Air layers root readily during the warm months of the year. Scions of desirable selections can be grafted or budded on wampee seedlings at any time of the year. Grafting can also be done on rootstocks of some citrus species (4,6). Experiments at the University of Florida Agricultural Research and Education Center, Homestead (Campbell, C.W., Progress Reports for 1962 and 1963, Project 280, Sub-Tropical Crops of Minor Economic Importance) demonstrated that veneer grafting was much more successful than shield budding or chip budding. Grafts on rootstocks of Cleopatra mandarin (*Citrus reticulata*), rough lemon (*C. jambhiri*) and Citron (*C. medica*) were incompatible and died within a year after grafting. Wampee scions grafted on rootstocks of shekwasha (*Citrus depressa*) lived for 10 years or more; however, the scions were extremely dwarfed and had other characteristics of incompatibility such as very early flowering, excessive callusing and gumming at the graft union.

Although dwarfing could be desirable, the degree of incompatibility in the wampee/citrus combinations used up to now does not

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show promise for the practicality of grafting wampee on citrus rootstocks. The ease with which wampee seedlings can be grown and grafted and the good compatibility with wampee scions makes wampee clearly the best choice of a rootstock at this time.

### CULTURAL REQUIREMENTS

The wampee grows well in a variety of soils provided they are well drained. It grows well in limestone soils, a feature which makes it particularly desirable in southern Dade County where such soils predominate.

Wampee trees have approximately the same cultural requirements as citrus trees and can be cared for in the same way. No disease problems have been recognized up to now, but it is possible that some could arise if large numbers of plants were grown in close proximity.

The main danger to wampee trees in Florida is cold damage. Reports of cold injury at various locations in the past make some generalizations possible (3,5). Both young and mature plants can survive air temperatures of 28-30°F without significant damage. Young plants sustain leaf and twig injury at temperatures of 26-27°F, but mature trees are usually uninjured. Large trees have extensive leaf and twig injury at 24-25°F. Trees of all ages are killed at temperatures of 20°F or below.

There are records of young plants being killed in a freeze in 1934 at the Agricultural Research and Education Center, Homestead,

so it is possible to have injury to wampee plants anywhere on the Florida mainland. Such freezes occur so rarely, however, that it can be considered safe to grow the wampee anywhere in the southern coastal region of Florida. In the interior of the state it can be grown in warm sites if it can be protected from the occasional severe freezes which occur.

### USES OF THE WAMPEE

The fruit is most often used for fresh consumption. It has a pleasant flavour to which many people become accustomed easily. It can be used for making jellies and beverages also. Large trees will produce as much as 100 lb of fruit in a favourable year. It is not likely that commercial production of wampee will ever develop in Florida, but an enterprising grower could sell some fruit to people of Oriental origin, who know and like the fruit well enough to buy it.

The ease with which the wampee can be grown and its beauty make it a good subject for landscape use. The plant can be used very effectively as a hedge or screen, where its dense growth is particularly useful. The symmetry of the tree canopy and the colour and unique texture of the foliage make it a good subject for use as a specimen plant also.

In these days of increasing emphasis on gardening and beautification of the environment, the wampee is a plant that well deserves to be more widely known and planted in the areas of Florida where it is adapted.

— *Carl W Campbell* (IFAS Agricultural Research and Education Center, Homestead)

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## Hazelnut Varieties

Hazelbrook Nut Farm, Balingup WA

(Members of WANATCA)

PO Box 15, Subiaco WA 6008

Phone 09-388 1121 (after hours).

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(Reprinted from Volume 87 of the Proceedings of the Florida State Horticultural Society, Miami, November 5-7, 1974)

## Conference on Quandong

*The Australian Quandong Industry Association is holding its 1995 Conference in the arid lands of South Australia, at Port Augusta and Quorn.*

*This will be a weekend meeting, on September 23-24. The Conference will include field trips, including visits to Brian Powell's quandong orchard, a quandong topworking demonstration, and the Arid land Botanic Park at Port Augusta. Speakers will include Peter Taverna and Murray Hird.*

*Contact the AQIA Conference Convenor at PO Box 393, Port Augusta SA 5700, phone 086-347077.*

## Pebble nuts growing well in South-West

WANATCA members Peter & Olwyn Shannon have had good growth from their planting of Pebble Nut (*Stylobasium spathulatum*) on their Bridgetown farm.

Their bushes were up to a metre tall at one year from planting (see photo). They have had some trickle irrigation once a month during the dry season.



This WA native nut plant is being investigated for its horticultural needs and as a potential crop. So far, no particular difficulties have been noted. Large-fruited varieties are being sought, keep your eyes open!

## "Cornucopia" now available for PC

**CORNUCOPIA: ELECTRONIC Version of 'Source Book of Edible Plants'.** Computer version for IBM/Windows. By *Stephen Facciola*. Kampong Publications, Vista, California, 1994. 5 x 1.4 Mb discs. \$125.00\*.

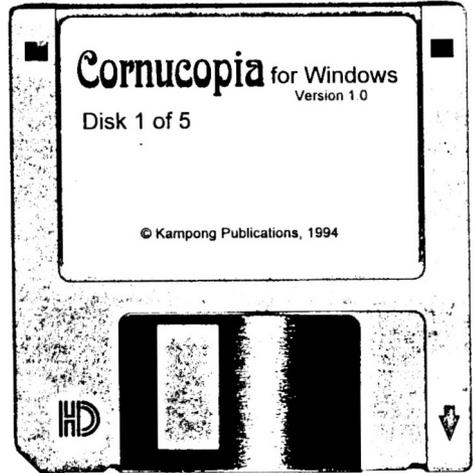
Back in 1992 we reviewed the book version of 'Cornucopia', some extracts from which are given below.

The book version has turned out to be extremely valuable and popular, and many copies have been sold. Now available is a version of the book for mounting on an IBM-style PC, under Windows.

This computer version offers great convenience. Although the original book version was intricately indexed, it did take some time to locate a particular fruit, its varieties, its uses, literature references to it, and suppliers of plants and seeds throughout the world, as many of these attributes were listed by codes. This did take quite a time to look up and work out. The effort was worth it.

Now all the effort has been taken out! The database, supplied on five 1.4Mb (3.5 inch) floppy discs takes about 30 minutes to install, using an automatic script which prompts to read each disc as required. Thereafter, it is only a matter of clicking on the appropriate Windows icons, buttons and menu bars to bring up data quickly and easily. All the above attributes of a particular plant can be brought up on the screen simultaneously, as all the lists have been interconnected in the database.

After installation, the database occupies about 7 Mb on your hard disc. Any serious user of useful exotic food plants who has



access to an IBM PC or clone will find this electronic version of the book invaluable. There are no special requirements known, although a colour display is nice to have for best presentation!

**CORNUCOPIA: A Source Book of Edible Plants.** By *Stephen Facciola*. Kampong Publications, Vista, California, 1990. 678p. Paperback. \$62.45\*.

"In your hands is one of the most remarkable efforts to come out of the struggle to preserve the genetic diversity of our

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planet". Thus begins Noel Vietmeyer's preface to Steve Facciola's stupendous and unique compendium of plant sources. It is a truly awesome work.

No doubt in 10 years' time, people will wonder however growers of edible plants managed before *Cornucopia* was available. Anybody coming across this book for the first time would guess that it was the product of a large team of workers, labouring on for some years. The thought that it could be produced by one man is quite hard to accept. I know now why Facciola, a former WANATCA member, dropped out of sight some years back — he must have given almost everything else up besides the compilation of this book.

Resembling a hefty telephone directory in size, *Cornucopia* is divided into three main sections. The first is an alphabetical listing of less well-known edible plants, under family. For each species named, a short description of the species, its characteristics, and uses is given, together with references to further information and, most valuable of all, suggested sources of supply. With species which have named varieties, each of these is described, again with suggested sources of supply.

Taking as an example the Capulin Cherry, *Prunus salicifolia*, Facciola notes in 7 lines the characteristics of the fruit, its uses, such as for filling special tamales in Mexico, its low chilling requirement, adapted to warm-winter areas where true cherries are unable to produce, and its natural range, from Mexico to Peru. Four literature references are given, plus, in coded form, 5 suppliers of plants or seeds. The general entry is followed by descriptions of 6 cultivars, each given around 5 lines, again with supplier codes.

This first part contains descriptions and sources for around 3000 species. This

number is to be compared with the 150 or so species actually grown commercially around the world, and the 20 or so species which provide the vast bulk of humanity's food supply. Hence the comment about the need to preserve biodiversity — most of what we eat comes from a tiny 1% of the range.

The second part of the book is a detailed cultivar listing for more than 110 of the major crops. For example, characteristics of around 400 varieties of apple (with references and sources) are given, though Facciola notes that some 8000 apple varieties have been described.

These two sections take around 500 pages of the book. The last 140 pages are devoted to source lists, indexes, and appendixes of every sort — for example, keys to 60 different usage types (barks, gums, piths, tea substitutes ...). Everything is accurately cross-referenced, carefully keyed to provide utility with the minimum of space needed.

Addresses and phone numbers of around 1350 source organizations are given, including 150 commercial sources outside North America and 150 non-commercial organizations which can be approached for rarer seeds or plants.

For anyone involved with growing food plants outside the tight commercial range, this book is an absolute must.

## ***Bring & Buy Meeting a success***

*WANATCA's Bring & Buy Meeting on Sunday June 18 turned out to be a popular event. The general comment was "It's good this year, next year's should be better still!". So the Exec has decided to repeat the exercise, hopefully bigger and better, in 1996 .....*

## Neem trial offer to WANATCA

Joe Friend of Neem Peace is looking for volunteers to carry out trials with neem oil preparations on crops. Australian work with edible crops has been held back by delays in registration — we have been 2-3 years behind the USA in this, there its use on food crops has been approved by all 50 states.

In Australia the major use has been on cotton, which does not require the same certification. If you would like to try Neem preparations for insect control, contact Joe at Neem Peace, PO Box 362, Edge Hill Qld 4870, phone/fax 070-536754.

We have also received an information sheet on Neem and a seed offer from the Shivalik Seeds Corporation of India (47 Panditwari, PO Premnagar, Dehra Dun 248007, UP, India; phone +91-135-683 348, fax +91-135-683 776). This company has supplied seed to WANATCA in the past and has been helpful and efficient. Their information is reproduced below.

### **AZADIRACHTA INDICA A. Juss.**

*Family: Meliaceae*

*Common name: Neem, Margosa Tree*

*Trade Name: Neem*

**Description:** *Azadirachta indica* is a moderately large, evergreen tree, growing up to a height of 12-15 m (rarely up to 25 m) with a short and stout bole between 3-7.5 m in height and 1-8.2 m in girth. The tree generally branches early, forming a broad round crown of bright green foliage. Leaves compound and flowers white in panicle. Fruit a drupe, 1-2 seeded,. Flowers from March to May and fruits from June to August.

**Seed Harvesting:** July - August.

**Distribution:** In India, Neem occurs in tropical dry deciduous and thorn forests and in the drier localities up to the elevation of 1500 m. It is found virtually in all states of the country except the Himalayan region.

**Silviculture:** The tree is undemanding and grows on almost all kinds of soils, including clayey, saline and alkali soils but does exceptionally well in black cotton soil. It can thrive better than most of the species on dry, stony, clayey and shallow soils where nothing else would grow. The optimum pH requirement is 6.2 or above.

**Plantation:** Neem can be easily raised through direct sowing, entire polypot seedlings or root-shoot cuttings. For degraded areas, direct sowing is more successful and economical provided adequate protection is accorded during early stages.

**Technical Information for Planting:** Depulped, dried seeds are sown in nursery raised beds/polypots. Germination starts in about a week and continues for 3 weeks. Plantable sized seedlings, 7 to 10 cm tall are produced in 2-3 months. More details are given below:

1. No.of seeds per kg. : 3300
2. Seed storage temperature : Room temperature
3. Seed viability : One month, goes on decreasing up to 7th month

4. Sowing season : July ( In India)
5. Germination % : 70% - 80 %
6. Normal germination period in nursery days :21 days
7. Method of planting : a. Direct sowing; b. Seedling planting; c. Root suckers; d. Stump planting.
8. Planting season : July ( In India )
9. Optimum spacing in nursery : 15 x 15 cm
10. Age of normal planting stocks : 12 months
11. Uses : Bark,leaf and seeds medicinal, insecticidal, fertilizer, fodder & timber.

**Utilization:** *Azadirachta indica* (Neem/ Margosa tree) is one of the most valuable trees with almost every part of it useful. Its wood is durable and used in building constructions, furniture, agricultural implements, etc. It is a good fuel-wood, leaves make a very good fodder. Margosa oil obtained from its seeds and is used for skin diseases, in medicated soap, hair lotion, face cream, toothpaste, disinfectants, insecticides, pesticides.

Seed cake makes good manure. Bark yields fibre and even contraceptive. It contains 12-14 % tannin. Leaves are of medicinal value.

Cost of Seed:

1. US\$ 7 per kg F.O.B. New Delhi up to 100 kg
2. US\$ 6 per kg F.O.B. New Delhi 101 kg up to 500 kg
3. US\$ 5 per kg F.O.B. New Delhi above 500 kg

## ACOTANC- ANY QUESTIONS?

David Noël will be attending ACOTANC-95 in Lismore in September and will be representing WANATCA, as a full ACOTANC Participant, at that meeting. He will also be presenting a paper.

Any WANATCA member who would like matters raised at Acotanc which concern the Association is asked to contact David for this purpose.

Some points already recorded are:

1. Liaison and cooperation with gene bank management (as with our Hamel Project);
2. **Quarantine** matters affecting us (as with cultivation of *Prosopis* species)
3. **Funding** ACOTANC Bulletin (the main information medium for ACOTANC)

### First Time Offered in Australia **TOCTE TREES**

(*Juglans neotropica* —  
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These fast-growing, almost evergreen true walnuts produce excellent timber, good edible nuts, and may also be used as rootstock for other walnut species.

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# Macadamias around the world

## Macadamia Association forming in Florida

**An association devoted to macadamia growing is being formed in Florida.**

The lack of such an organization previously is in some ways a surprise, as macadamias are, in the wild, an eastern seaboard plant, evolved to live with wet summers. The coastal regions of Florida and states further north should be well suited to macadamias, but have seen little involvement with this nut.

The address of the Florida Macadamia Society is c/o George W Anderson, 102 Wall St, Redington Shores, Florida 33708.

## Big macadamia planting in South Africa

[CalMac News / 1995 Summer]

At the 1995 Annual Meeting, Dr Nigel Grech, Post Doctoral Program, UCR [University of California: Riverside], joined us to provide an update on the problems, challenges, and development of macadamia plantings from his native country of South Africa.

It was interesting hearing about the difficulties with diseases, and variety selection taking place in that part of the world. At this point in time over 10,000 hectares have been planted, with a great deal of the finished product being shipped into the European markets.

Many of their latest plantings have been high density, 1000 to 1500 trees per hectare, using a hedgerow system. The trees, all rooted cuttings, must be properly trained and

groomed at the nurseries, and after planting regular trimming must be continued as the trees mature.

Dr Grech indicated that production per tree usually averages around 11 kg for mature trees. He also indicated that the growers were reaching payback period within three years with this method. He told of their problems induced by the fact that their rainy season is in full swing right when the trees are in blossom, causing a flower fungus condition with many of their plantings.

Dieback was extensive throughout South Africa, much more extensive than anything we have experienced here in California, and he made several suggestions on control of this problem.

— Joe Harvey

## Australia

[Tropical Fruit Research Station, Alstonville: Research Report / 1992-94]

### Macadamia variety assessment, selection and breeding

#### *Variety assessment at Clunes*

Forty varieties including Hawaiian and Australian cultivars and current industry standards 246, 344 and 660 were planted in a replicated trial at Clunes in 1984.

This site is one of six trial sites planted from Lismore to Rockhampton and coordinated by the Queensland Department of Primary Industries.

The aim is to determine the suitability of newer varieties selected in the early 1980s to different geographic areas on the east coast.

The cumulative yield of the top 20

varieties for the six bearing years from 1988-93 based on production of A grade kernel per tree, and A grade kernel per sq m canopy basal area is shown in Table 1. Commercial variety 660 is performing well along with 849, Own Venture, 816, 772 and Australian varieties A4, A 16 and X8. However, further testing is required as many varieties have some limitation of tree structure or bearing habit.

Most of the varieties are also duplicated in an accession block at TFRS.

### *Selection and breeding*

800 open-pollinated seedlings from eleven 'elite' Australian selections known to produce high quality progeny were planted at the Tropical Fruit Research Station in 1989.

Trees commenced bearing at three years. Approximately 100 bearing trees were assessed in 1993 and 1994. A number of selections have been made based on high kernel recovery and suitable nut characteristics. Seedlings of A4 and A199 look most promising. Further screening of these selections will also consider tree size, structure and canopy density with a view to high yield of A grade kernel per unit of canopy area at the least possible cost to the grower in terms of tree management and pest and disease control.

Two selections have also been made from a planting of the Hawaiian variety HAES 778 used as a buffer in the rootstock variety trial.

The progeny from a cross-breeding program initiated in 1989 using 791 and A4, and a number of other combinations including 344, 804 and 816 were planted out in 1991-92. The first bearing of some trees has commenced.

Table 1. Total yield 1988-93 (6 years).

Ranking	A grade kernel/tree		A grade kernel /canopy m <sup>2</sup>	
	Variety	Yield (kg)	Variety	Yield (kg)
1	849	29.0	660*	2.24
2	Own Venture	27.0	A4	2.17
3	246*	26.1	849	2.17
4	781	25.7	X8	2.14
5	794	23.8	Own Venture	2.05
6	660*	23.6	A16	2.04
7	816	23.0	791	1.91
8	772	22.2	772	1.88
9	Daddow	22.0	816	1.87
10	X18	20.5	344*	1.82
11	814	20.3	246*	1.80
12	A4	19.8	NRG43	1.78
13	344*	19.4	814	1.70
14	804	19.1	Daddow	1.66
15	X13	18.2	741	1.62
16	705	17.9	705	1.61
17	842	17.2	842	1.44
18	741	16.4	781	1.37
19	294	15.8	783	1.37
20	783	15.8	294	1.11

\* Current industry standards.

— D J Firth & B Burnham

## Welcome to Trevor Best

*The WANATCA Executive are pleased that Trevor Best has agreed to join them. Trevor has been coopted to fill the remainder of Neville Passmore's term.*

*Trevor and Pat Best currently live in Claremont, but have a 'lifestyle block' in Roleystone currently under development.*

[West Australian / 1995 July 10]

## Pepsi picks berry with a kick

It makes coffee seem wimpy. It's got Amazon chic. Some even swear it adds pizzazz to your love life. It's guarana, and — in one of the more piquant signs of Brazil's emergence in global markets — Pepsi wants to make it into a new soft drink.

For decades, guarana, a reddish berry found almost exclusively in Brazil's Amazon, has been esteemed by Brazilians and in-the-know tourists. You can drink it in sodas made by the giant beverage firms, Antarctica and Brahma, or (for the hard core) buy the powder or tablets.

"Old people take it believing it's an aphrodisiac," said Antonio Fernandes, head of Makrofarma, a small Rio firm that manufactures guarana products. "Young people buy it because they want to do better in sports, or stay up all night at a party."

Makrofarma sells its tablets labelled with a picture of a burly half-nude indigenous man kneeling by a river, under; the motto: "Energetic. Aphrodisiac."

Other firms here tout their guarana as a "cardiac tonic" or "intestinal disinfectant" or even as a tropical smart-drug: aiding concentration and memory and warding off senility.

Asked how Pepsi might market the drink, which it is still testing among US east coast consumers, spokesman Brad Shaw limited himself to praising guarana's 'mystique', which he said "has to do with all the things that are thought and said about guarana".

Prompted to be more specific, he ventured: "It's exotic and invigorating."

Guarana is up to seven times more "invigorating" than its cousin, the coffee bean, because it contains that much more caffeine.

This worries some experts, who note that overdosing on caffeine can stress the heart and cause panic attacks. Such risks are far more likely for those who take guarana in tablet or powder form because the carbonated soft drinks contain much lower doses of the drug.

"I call it soft cocaine," said Mr Fernandes, 57, who pops as many as four guarana pills a day, which he said improve his speed on his mountain-bike excursions. "It doesn't have the harmful effects of cocaine and it lasts longer."

Even Mr Fernandes, however, gave less than a wholehearted endorsement of guarana's reputed aphrodisiac power.

"Look, if you're not already an athlete, it's not going to turn you into one," he said. "It doesn't work miracles. If it did, I'd be a millionaire."

Guarana's exotic cachet is easier to pin down.

Scholars of the berry (from tropical shrub *Paullinia cupana*) cite the legend of how it came to Brazil, attributing it to Amazon Indians, who for generations have eaten guarana as a paste, made resinous with their saliva.

Mr Shaw said Pepsi's drink wouldn't be generally available for at least another six months, assuming the tests are successful. For now, the carbonated beverage is being called Josta, which Mr Shaw said is a "made-up name that we think has a lot of movement and impact and edginess".

— *Katherine Ellison*

## ANIC convention due in August

The Australian Nut Industry Council is holding its Fifth Annual Convention from August 18 to 20 at the Orange Ex-Services Club in the New South Wales inland town of Orange.

The ANIC represents a group of temperate nut producer organizations, including chestnut, hazelnut, walnut, and pistachio growers, plus the South Australian Nut & Tree Crops Association. The first three groups were formed from a re-working of the former Victorian Nut Growers Association.

ANIC produce the magazine *Australian Nutgrower*. Those interested in the above Convention can contact ANIC at PO Box 394, Yarra Glen, Vic 3775.

Among the interesting papers listed for the Convention is a study on walnut trees, for which the abstract is given here.

### Soil and water management for walnut trees

Walnuts (*Juglans regia* L.) were planted in a sandy loam at Tatura (average annual rainfall 450 mm), in 1993 in a 6 x 3 m hedgerow. The surface soil was 150 mm deep and the subsoil 150 - 650 mm deep.

The soil in a two metre wide strip on the treeline was modified so that the chemical, physical and biological properties met specific design limits. To increase the depth of the topsoil and reduce the risk of water logging, the soil in the orchard was hilled into a treeline bank, 500 mm high.

Clay dispersion was controlled by adding gypsum ( $\text{CaSO}_4$ ). The subsoil was tilled to a depth of 650 mm with a rigid tine fitted with

a wing 600 mm wide, angled at 35 degrees to the horizontal. We aimed to produce 80% of aggregates in the range of 0.5-20 mm in diameter.

Ryegrass (*Lolium perenne* L.) was sown to stabilise the soil and to improve porosity. Herbicides were used to control weeds on the treeline. A mulch of straw added organic matter, reduced evaporation, suppressed weeds and protected the soil surface from raindrop impact.

Microjet sprinklers wet the soil slowly (5 mm/hr) to minimise slaking. We aimed to keep the soil wetted to a metric potential of between -10 and -30 kPa, penetrometer resistance (2 mm diameter, 60 degree cone tip) less than 1 MPa, and air-filled porosity at 15-20%.

Trees produced up to 2 m of shoot growth and 100 mm in trunk circumference 12 months after planting.

— *Harold H Adem and Colin D Aumann*, Institute of Sustainable Agriculture, Tatura, Victoria

## Sandalwood seedlings available

**Large quantities available  
at \$3.10 to \$4.60 each,  
depending on quantity**

**Available with host plants**

**Contact Colin Dear,  
Bush Berry Farm  
17 Baillie Ave, East Victoria Park  
Phone/fax 09-361 1331**

[West Australian Gardener/1995 Winter]

## Exotic seeds: can you import them? — Yes, given a few basic rules

Dedicated gardeners who travel abroad often identify plant species they would love to import as seeds. Others stay at home and devour seed catalogues from abroad.

But many do not follow up, because they fear the expense and red tape of Australia's Customs and quarantine regulations.

In general, there are no problems in procuring seeds, within Australia or abroad, and this holds true for the exotic species. But consider first these facts:

Australia has a number of seed merchants who offer seeds of many endemic plants, and also various seeds from many parts of the world.

For private gardeners wanting to do it their way, the rules are not prohibitive, but you must be aware of those which apply to seeds where a permit is required.

Before ordering seeds from any overseas source, one needs to check with the WA Department of Agriculture Quarantine Inspection Service (WAQIS), PO Box 1410, Canning Vale, WA 6970 (Phone 09-311 5333; Fax 09-455 3052).

Seed material that requires a permit must indicate name of supplier, name of seed material, and quantity. The permit holder will be requested to pay \$43 for the issue of permit, inspection of seeds on arrival, and fumigation if seed found to be infested with insects.

For seeds requiring a permit one should

apply for more than one packet of seeds otherwise \$43.00 + \$2.00 + post \$1.00 = one packet of seeds at \$46.00, with no guarantee of 100% germination. Should seed have sprouted during country to country transit, and if the sprout is more than 25 mm long, that means in-house quarantine for four months, at a further cost to the importer.

Coniferous seeds must either be heat extracted to an approved schedule and be accompanied by an endorsed official Phytosanitary Certificate, or treated on arrival with 1% Sodium Hypochlorite solution for ten minutes before release.

To reduce delays of small seed consignments sent by mail, place under your name and address as importer:

C/o Plant Quarantine, Customs Section,  
Perth Mail Exchange, WA 6000, Australia.

As an alternative to seeds, plants tissue cultures are a relatively safe way to introducing plants into Australia. Such cultures are prepared under sterile laboratory conditions and this reduces the risk of pest and disease. Most species of ornamental plants

### Tree Protection Tip

*Bob Boehm has come up with a simple and cheap way of making tree protectors from readily available or by-product materials.*

*He cuts the bottom off a fertilizer bag or similar, then cuts a length from a roll of chicken wire, using its natural curl to hold the bag taut.*

*A couple of wooden stakes at either side of the wire, and he has a tough protector which forms a favoured microclimate round his trees.*

are permitted entry under permit as tissue cultures with the knowledge of accredited sources.

Fees are charged for all permits and inspection of flasks on arrival. So please make your overseas supplier aware of our import requirements.

Those interested in tissue culture material may wish to contact Roger Broinowski at PRO-AM Nursery, Rivervale (Phone/ Fax (09)470 2345), regarding a private laboratory in Perth which offers a pathology and identification service for flasks material, at a cost as low as \$1.00 per plant in small batches and less in larger quantities. There is a \$30 administration fee plus courier costs.

Of course, germinating your seeds in your own environment is another matter.

Usually they need to be put into beds which will offer them both warmth and water, with the warmth supplied by anything from an old electric blanket to sophisticated thermostatic plant-raising panels.

— Terry Jenkin

(For advice on all imported seeds write to Terry at Cactus Jim Nuanuanua, PO Box 332, Cottesloe, WA 6011.)

## SEEDS

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### HIGHLIGHTS FROM OUR 'NEWLY-ARRIVED TITLES' LIST

861B • **The BAMBOOS.** McClure (US, 1993). 345p. Pb. The legendary classic on bamboo culture, botany, propagation, again available. Highly recommended. \$47.95

X04C • **CORNUCOPIA: ELECTRONIC** Version of 'Source Book of Edible Plants'. For IBM/Windows (US, 1994). 5 x 1.4 Mb discs. Absolutely invaluable, all the Cornucopia information available at a keystroke. \$125.00

836I • **FARM FORESTRY Seminar & Design Workshop:** papers & proceedings. Novak (Aus, 1994). 86p. Pb. Information for farmers on the growing of cabinet timber woodlots'. Excellent collection, tables of species, drought & frost tolerance, bush tucker. Highly recom. \$24.95

322M • **MULTIPURPOSE Australian Trees & Shrubs:** lesser-known species for fuelwood & agroforestry. Turnbull (Aus, 1986). 316p. Pb. Again available, the tremendous ACIAR compilation, mini-encyclopedia of species, exc tables of soils, rainfall, frosts, uses for timber, fodder, shade etc. Highly recommended \$71.95

852S • **Introduction to SUCCESSFUL Growing of Rainforest & Harvestable TIMBERS.** Mitchell (Aus, 1993). 16p. Pb. The 'Mitchell Low Maintenance Method', a real eye-opener to rapid, efficient timber production using native species. \$5.95

860T • **TROPICAL FRUIT WORLD:** Catalogue. Munro (Aus, 1995). 45p. Pb. Valuable listing of huge range of exotic & Aust bush tucker fruits at 'Magic Garden Research Centre' on NSW/Qld border. Recommended reference. \$7.95

**Mail: PO Box 27 Subiaco 6008**  
*Phone 09-385 3400; Fax 09-385 1612*  
 Office: WA Gardener Building,  
 Showgrounds, Claremont  
 e-mail: noels@perth.dialix.oz.au



**Branny Smith's Bookshop**

# West Australian Nut & Tree Crop Association (Inc)

PO Box 565 Subiaco WA 6008 Australia

## EXECUTIVE COMMITTEE 1995

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Bill Napier (Vice-President)		399 6683/h	Ian Fox	310 8972/h
Lorna Budd (Secretary-Treasurer)		458 5918		015-384820/mob
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**CHERRY:** Neville Shorter, 450 5606 (2/9 Clydesdale St, Como 6152)

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**POMEGRANATE:** Marius Loeffler, 097-33 5220 (P.O. Box 22, Yarloop 6218)

**DICE Group:** PO Box 27, Subiaco WA 6008

## CALENDAR OF FORTHCOMING EVENTS

*Deadline for next issue: Oct 20*

1995

- Aug 16 Wed \*General Meeting (Silcock & Detschon - *Bee Pollination & Yields of Nuts & Fruits*)
- Aug 18-20 § Australian Nut Industry Council Convention, Orange NSW
- Aug 27 Sun • Hamel Project Site Visit (with Men of the Trees)
- Aug 30-31 • Dowerin Field Days
- Sep 11-15 § ACOTANC-95, Lismore, New South Wales
- Sep 15 Fri • Karragullen Horticultural Field Day
- Sep 23-25 § Australian Quandong Industry Conference, Quorn SA
- Sep 30-Oct 7 • Perth Royal Show
- Nov 15 Wed \*Annual General Meeting (? Julie Firth - *Arid Country Food & Essential Oil Plants?*)

\*General Meetings are held starting at 7.30pm. *Venue: Naturalists Hall, 63 Merriwa St, Nedlands.* 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.*

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