

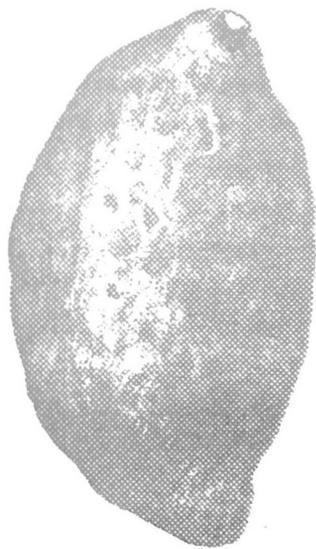


Quandong

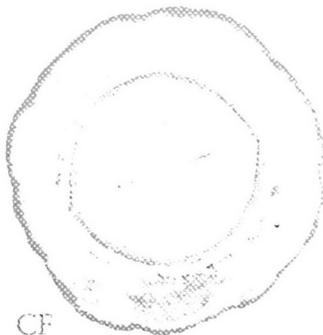
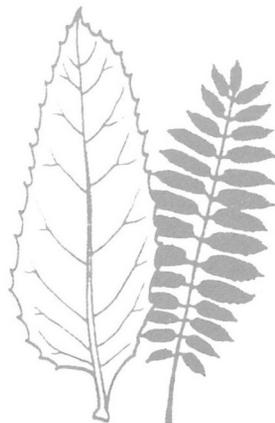
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The RED BOPPLE NUT (*Hicksbeachia pilosa*) (See: About the Cover, p. 2)

Quandong • Second Quarter 1995 • Vol 21 No 2

NEXT MEETING

Wednesday May 17: 7.30 pm sharp

The topic at the next meeting is:

Arid-Country Tree Crops

This is a major event for WANATCA, with the combined talents of Professor Josef Mizrahi, Professor of Desert Agriculture at the University of the Negev in Israel, and our own Julie Firth from Geraldton. Julie is herself a specialist in arid-land tree crops and in a permacultural approach to tree crops.

NEW VENUE. WANATCA meetings for 1995 will be 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.

WANATCA Field Day • Sunday May 28 • Gingin area

Our next Field Day will be a valuable opportunity to see both the Machlin Property with pecans, macadamias, and avocados (see writeup on page 7 — this property is to be sold), and Bob Nederpelt's property nearby, where he is growing Red Pitayas and many other new crops. This is

the property on which a plot has been offered to WANATCA for trial purposes.

Meet at 10.30 am at the Machlin property, end of Lennards Road (off Cockram Rd). Full details on the attached leaflet.

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

BRING & BUY MEETING • Sunday June 18 • 10am-1pm

This meeting will be held outside the Tree Crops Centre in the Claremont Showgrounds.

It will be a unique opportunity to buy all sorts of useful plants, many never available from commercial sources, plus nut and fruit seedlings at low prices. Bring along whatever you have of interest, and pick up some bargains.

Admission is free, all welcome. Sellers are asked for an optional donation of 10% of sales to help defray the Association's expenses.

Granny Smith's bookshop will be open — a rare occasion on which the bookshop stock can be viewed at the weekend.

Full details on the attached leaflet.

No charge to attend. Visitors Welcome. Sellers please contact the Tree Crops Centre on 385 3400 so that space can be guaranteed.

About the Cover

The cover illustration, from *Fruits of the Rain Forest*, shows the Northern Red Bauple Nut from Queensland (see review page 21).

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

[Countryman Horticulture / 1995 April]

Muffin market prefers fresh blueberries

A Perth businessman's decision to sample a different lifestyle has paid dividends for the WA horticultural scene.

When the managing director of a big Perth oil and gas company was looking for a project to help him forget the pressures of work, little did he know he would be helping introduce fresh produce into a prominent bakery outlet.

Croissant Express now uses WA fresh blueberries in its popular muffins. The company had previously used frozen produce from New Zealand, Europe and Britain.

And although the season for fresh blueberries in WA is short, Croissant Express says that its sales increase at least 20 per cent when it uses fresh blueberries grown at Stoneville.

Jenny and Robert Parnell, who grow the blueberries on their Stoneville property, said the arrangement with Croissant Express started by accident but suited their management of the crop perfectly. "About half our crop goes to Croissant Express and it is good knowing at the beginning of the season that we have a guaranteed buyer and at what return," Mr Parnell said.

Although the couple employ pickers and contracted an expert to do the pruning for them, they both oversee the entire operation. "I get the pickers working early in the morning, and Jen sees them off before she heads to work at 8am," Mr Parnell said.

And dispelling the common belief of blueberries being exceptionally labour intensive, Mr Parnell said that provided you set the operation up correctly in the first place, it was a manageable proposition for someone working off-farm. "I initially worried about the intensity of the venture — to a degree — when buying the property. but the people who



Robert Parnell says blueberries are labour intensive only if it has not been set up properly. (photo: Kim Leonhardt)

set it up did so very well," he said. "The previous owner was a civil engineer who spent a lot of time setting it up in a very orderly fashion."

Mr Parnell estimated that the time he spent with the blueberries was equal to one full day a week, every week of the year. He said that the setting up of the venture was the key to success. It had not been so orderly, someone like him, with no horticultural experience, would not have been able to make a success of it.

"I am the managing director of an oil and gas company and know about that specific area — about all the farming experience I have is memories of the wheat and sheep farm

my family had in the eastern States when I was growing up," Mr Parnell said.

"But part of the reason I took the blueberry venture on was for a bit of a lifestyle change. Because of the genuine industry pressures, this appealed to me as an alternative."

With wife Jenny, he manages about 1500 blueberry bushes and although the couple readily admitted to always be seeking more information on the crop, they believed they had the basics under control.

Perhaps the most important part of ensuring a quality crop was maintaining a good water supply, Mr Parnell said. Blueberries were very high water users and the couple estimated that during the summer period the blueberries used 12,000 litres a day on the crop.

Fortunately, the property had a dam on it, and Mrs Parnell said it was usual for them to keep irrigating the crop until the summer rains broke. The heavy use of fertiliser was also advocated by the Parnells who recommended fowl manure as the best option available. This ensured that the crop was almost organically grown.

But organically grown or not, the blueberries are a winner with Croissant Express customers. "Each time we offer muffins made with fresh WA blueberries the sales increase dramatically," Croissant Express director Maurice O'Connor said.

"The taste with fresh blueberries is superior and obviously our customers think so, too." Croissant Express offered blueberry muffins all year round but only during the four months of the Stoneville blueberry season could it use fresh berries.

It was only with fresh blueberries that the fruit in the muffin retained its shape and produced a superior taste.

— Valma Ozich

NEW NEEM MAGAZINE, ASSOCIATION

Getting a new tree-based industry underway is a slow process, but persistence pays off. Growing of neem in Australia is finally coming of age.

The remarkable neem tree and its products offer a safe, effective method of insect control, a powerful revegetation tool in hot, dry regions, a host of medicinal products, and a lot more.

According to the first issue of Australian Neem Newsletter (May 1995), neem has been successfully planted over big areas of Queensland, the Northern Territory, WA as far south as Carnarvon, and northern NSW.

Commercial success in southern Australia is inhibited by the poor cold-resistance of available neem varieties. This situation may change if cold-climate varieties are selected, perhaps from mountain stands in Asia, or by crossing with its cold-resistant close relative Melia azedarach (Cape Lilac or White Cedar).

The new magazine is edited by Joe Friend of Neem Peace (PO Box 362, Edge Hill, Qld 4870 — phone 070-53 5614, fax 53 6754). It is produced for the new Australian Neem Association Inc (PO Box 322, Casino, NSW 2470 — Jason Chandler).

The next World Neem Conference is at Gatton, west of Brisbane, in February 1996.

Y

Hazelnut Varieties

Hazelbrook Nut Farm, Balingup WA

(Members of WANATCA)

PO Box 15, Subiaco WA 6008

Phone 09-388 1121 (after hours).

[West Australian / 1995 March 13]

Australians discover prehistoric olive oil factory

Strong evidence that urban civilisation began up to 1000 years earlier than previously believed has been discovered by an Australian-led archaeology team digging in the Middle East.

The University of Sydney team has unearthed cultic objects, wall paintings and evidence of big olive processing works dating from about 3600 BC at the Jordanian site of Teleilat Ghassul, north-east of the Dead Sea.

Many scholars say urban civilisation did not begin until the Early Bronze Age but these finds belong to the previous era, the Chalcolithic, pushing back the birth of urban life by up to 1000 years.

"Early urban society was presumed to begin with the EBA," expedition director Stephen Bourke said. "I think it's becoming increasingly harder to argue that the Chalcolithic wasn't as complex as the EBA. "The Chalcolithic is a complex period, it's highly civilised, it's not a little village economy."

The argument that the Teleilat Ghassul finds are evidence of urban life is based on finding extensive olive processing works together with cultic remains similar to those at En Gedi, 70km away on the western shores of the Dead Sea.

Similarities between the sacred areas at En Gedi, in Israel, and Teleilat Ghassul indicate a widespread religious cult rather than a localised village religion.

Dr Bourke said evidence that the two sites had things in common led him to have his

team dig an area of Teleilat Ghassul where he expected to find an altar.

Excavation revealed a five metre wide semi-circular paved area containing cultic furniture including a central altar stone a cornet-shaped pottery cup and a chalice-like object.

"I'm very pleased about the cultic installation ... we always knew it was something important," Dr Bourke said.

The cornet cup and the ritual vessel, both made of a fine red-slipped pottery, were found next to the altar stone and date from about 3600 BC in the Chalcolithic era, when people started using copper as well as stone tools.

The altar installation area is connected by a stone path to a nearby sanctuary building, one of two discovered in the late 1970s. "There is no doubt that it's a cultic installation associated with the sanctuary," Dr Bourke said.

Y

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[Subiaco Post / 1995 March 21]

Germinating Brazil nuts the sweet way

90-year old retired farmer Charles Felton has made an agricultural discovery that could be important.

It began with a box of chocolates he was given at Christmas.

"Because my teeth are more bridge than teeth these days, I put the chocolates to one side and then a couple of weeks after Christmas I enjoyed the first one or two.

Then he got to the brazil nuts.

"My old teeth couldn't handle them," he said. "So I got the chocolate off and slipped the nuts into a convenient drawer here because I was enjoying a talking book I had borrowed from the Blind Association.

"A few days later I had another chocolate with a brazil nut and that nut went in the drawer too."

A few weeks later, when Mr Felton, who farmed at Mount Barker, opened the drawer last week he was amazed. "There were two very healthy little seedlings," he said.

"Brazil nut trees. Can you imagine. The chocolates were by Cadburys in New Zealand, according to the box.

I guess the nuts were treated and roasted and dipped in hot chocolate and now they've sprouted. "I just hope the trees produce chocolate-coated nuts! ", he said.

Ed: Quandong contacted Mr Felton over this interesting event. He thinks the circumstances must have been just right — fresh nuts, sold quickly, and warm humid conditions in the drawer during summer.

Mr Felton has obtained more information on the nuts — they are now officially called "Amazonia Nuts" (many actually come from Bolivia or Peru rather than Brazil).



Charles Felton with the Brazil Nut seedlings

The seedlings have been passed on to a Perth couple, Carol and David Smith, who expressed an interest in raising them (not impossible, a tree was raised in England, at Kew Gardens!).

Quandong has been in touch with the couple, who have promised to let us know of their experiences. In the Amazon, nut cases sometimes disappear underground in the mud, and nut collectors wear crash helmets!

Historic Machlin Property to be offered for sale

The pioneering property of Amos Machlin, at Gingin some 70 km north of Perth, is to be offered for sale. This property can be seen on the May 28 WANATCA Field Day.

Details of the property are in the accompanying advertisement.

This property was the first truly commercial specialist nut farm to be developed in WA. Older properties, such as the Fontanini planting of chestnuts and walnuts at Manjimup, or the Woodward plantings of pecans at Sawyers Valley, were parts of more general plantings.

Amos Machlin bought and developed the property as a nut farm, with his characteristic thoroughness and attention to detail, while he

held the position of City Engineer for the City of Perth local authority.

He brought the farm to the state where he was a major producer of pecans, and a significant grower of macadamias and avocados, by the time of his retirement a few years ago.

The farm has an enviable assembly of harvesting and processing machinery, including conveyor systems and crackers.

It is understood that ill-health in the family has led to this sale being considered.

For Sale

The Machlin Nut Orchard in Gingin, WA

This mature well-established orchard, comprising pecan, macadamia, pistachio, and avocado trees plus assorted fruit trees and vines in the picturesque district of Gingin, is for sale.

This fully operational 19.7 Ha farm, with frontage to Lennards Brook, will be offered on a walk-in, walk-out basis.

This unique development has many opportunities for further development and also as a tourist attraction.

A marketing agent is to be selected to promote the advertising and sale of the property by private treaty, and this is an advance notice to potential purchasers.

In the interim, the owner, Amos Machlin, can be contacted at 27 Carnarvon Crescent, Mount Lawley, WA 6050, or on 09-444 2064 (phone and fax) for information.

[Rainforest Seed Collective Newsletter / Vol 3, 1992]

RAINFOREST SEED COLLECTORS - BEWARE!

As a rainforest enthusiast, I feel seed collecting is a rewarding, relaxing, peaceful, and above all, healthy exercise.

Now, to write an article about the above would merely seem to be stating the obvious so I'd like to tell you about the other side of the coin, the aspect of seed collection that gets the adrenalin pumping and makes sports such as bungee jumping and formula one racing car driving look positively tame. Read on, but first a warning, don't tell your insurance company what you're considering doing, that is, collecting rainforest seed in north Queensland.

At this point the uninitiated will be wondering what sort of crazed fool wrote this article; after all what's the difference where you collect. Fruit still grows on the trees doesn't it? Of course it does, but a few experiences in northern Australia have convinced me that north Queensland seed gathering will become the action sport of the 21st century. Let me share some of these with you.

Ever heard of *Semecarpus australiensis* or native cashew? No? A beautiful tree widely distributed in lowland rainforest north of Cairns. The first time I collected this species we were unsure where the large woody follicles all over the forest floor were coming from, but, being of enquiring minds, we gathered some, took them back to camp and decided to force one open with a bush knife. Logical thinking telling us that the seed would be on the inside. What is on the inside is a burning acid that sprays up to half a metre with unerring accuracy all over the chests and

arms of the two silly buggers that tried to prise the nut open. The blisters and pain begin to subside after about four days, so take heart if you're stung. It doesn't last forever, unless you happen to be the unfortunate bush knife which was composted soon after, having lost most of its edge along with a significant piece of the blade. Just careless eh? Couldn't happen to me. Try this one.

Acmena graveolens or cassowary satinash is a large leaved lilly pilly with limpid pink new growth and fruits the size of golf balls. A friend told me of a tree fruiting heavily on private property and so, first obtaining permission from the landholder to collect the fruit, I set out for a short stroll through some delightful lowland forest early in the morning. Bower birds were courting, fruit pigeons were cooing, the world seemed at peace and soon I found my tree. As all collectors know there's a deeply satisfying feeling to be gathering fresh fruit from beneath an aged forest giant and as I peacefully picked up the large fruits, carefully peeling the flesh, I became blissfully oblivious to everything around me. Until I heard the first, deep-throated grunt.

My first thought was, wild pig (about

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which more later), but upon turning around I met a very large and rather angry looking cassowary. How dare I intrude upon his feeding ground. Cassowaries are of course birds of very little brain and this one's very little brain appeared to be teeming with very much aggressive intent. Standard responses such as 'Cassy want a cracker', or, 'nice birdie', seemed totally inappropriate as I backed swiftly away from the aggrieved bird, which by then was advancing in my direction booming and grunting like an out of control steam engine.

Common sense said drop the bag and bolt, collector's instinct said drop half the bag and bolt. I opted for the latter, the diversion worked. The landholder sniggered heartily and told me how old 'Charlie' could be fed on bananas and thus had no fear of humankind. Memo: Take a bag of bananas next time collecting *Acmena graveolens*.

Feral pigs are another story that can strike fear into the bravest collector's heart. More than once I've ended up sitting in a tree watching a monstrously tusked old boar eating all the rare seed I've just spent an hour collecting and naturally dropped in my mad scramble up the nearest black bean or strangler fig.

My collecting colleague was less fortunate in his dash up a tree to avoid a pig. Deciding that the greatest height represented the greatest security he soon found himself amongst the northern elkhorns festooning the lower branches of his refuge. Just as he was congratulating himself on not dropping the bag of seed, one of the elks above him gave way at his grasp. The elk tumbled harmlessly down to be devoured by the waiting pig but the five metre scrub python that had been napping within the elk landed squarely on my

friend's head and shoulders. Pythons are gentle and placid creatures, but sudden shocks affect their bowels in a most unfortunate manner. My friend has subsequently taken up wrestling, claiming that the pigs are safer to deal with than the uncertainty of what may rest in the trees.

Few people believe this story but every detail is absolutely true. I was within a few feet of him when it happened and, nearly an hour later when we descended the tree, wished I could get a few kilometres away from him. Snake faeces has an odour all its own, none too easily washed off. The last story is a hard one to follow, so I shall close now and merely warn you that it is much safer to just visit your local rainforest nursery.

— Adrian Walker, North Queensland

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[The Australian / 1995 April 15]

It's not God who's nuts

Did God get it wrong? Is the Bible nutritionally incorrect? The American Heart Association would have us believe so.

The first dietary law in Genesis (1:29) states: "And God said behold I have given you ... every tree, in which the fruit of a tree yielding seed — to you it shall be for food." In other words, tree crops, from olives to peaches. And nuts.

Yet the AHA's nutrition pyramid lists nuts — along with fats, oils and sweets — as the things you should eat the very least of, less even than meat or dairy products. (Here, the National Heart Foundation's pyramid rates nuts and seeds in its "eat moderately" category, along with meat, poultry, eggs, milk and cheese.)

So how come nuts have been banished to nutritional Siberia? Apparently it's their high fat content. However, as we come to grips with the complexities of lipid chemistry, it's increasingly looking as if God was right—and the mere mortals in the AHA were wrong.

The more we learn about the different types of fats and how they behave in our bodies, it has become clear that the fats found in nuts—as in olives—are the "good" oils, the mono-unsaturated and polyunsaturated fatty acids (or MUFAs and PUFAs for short).

Nuts have been an important human staple down the millennia. Now it's even claimed that they played a pivotal role in human settlement, turning humans from wandering bands of huntergatherers into domesticated groups, sacrificing mobility for this predictable source of food.

Recent archaeological research has

uncovered a 10,000-year-old village in what is now Turkey, built near groves of nut trees: wild almonds, pistachios and possibly early hazelnuts.

These villagers ate nuts and legumes and most importantly raised pigs; the significance of this is that it shaves 500 years off the earliest recorded domestication of sheep and goats.

That nuts were an important food and flavour source down the centuries is nowhere more evident than in a fascinating new book, *The Original Mediterranean Cuisine*, by



Barbara Santich (Wakefield Press). It's nothing like the Mediterranean diet of today, the book looks at what was eaten in Europe in pre-Columbian times—before the arrival of tomatoes, capsicum, maize, potatoes, zucchinis and most beans (other than broad beans).

As much a historical text as a cookbook, it demonstrates what a significant part of the diet nuts used to be. In its first 100 pages more than half the recipes call for nuts—to thicken sauces or as a cooking medium (chick peas cooked in almond milk, for example). There are sauces of almond and ginger or pomegranate juice, squid cooked with almonds, pine nuts and currants, or walnuts and hazelnuts in a sauce for *escabeche*, or toasted ground almonds in a sauce—for peacock!

So how come such a natural plant food has become nutritionally unfashionable? It appears that we've got stuck on their fat content, and are not looking beyond that.

“Nuts certainly contain fat but it’s ‘good’ fat,” asserts nutritionist Rosemary Stanton. “We certainly know that the fats in nuts are not a reason not to eat them. This is ‘good’ fat—in combination with a variety of antioxidants.” The oil found in macadamia nuts, for example, is proportionately more mono-unsaturated than even olive oil.

We already know that nuts contain a potpourri of vitamins and minerals like magnesium, as well as dietary fibre. Walnuts contain mostly PUFAs, and significantly those wonderful Omega-3 fatty acids (also found in fish); hazelnuts contain vitamins E and B6, almonds contain vitamin E; and macadamias contain a cocktail of vitamins B and C as well as calcium and iron.

However, there is a much more interesting story emerging: their antioxidant content. Here researchers are looking for the so-called “non-nutrient” antioxidants, like polyphenols. It seems nuts are chock full of them too.

“You could almost describe nuts as a ‘soup’ of antioxidants,” says Stanton. “The ones that the researchers are concentrating on at the moment are the polyphenols because they seem to be quite potent. Nuts seem to be quite rich sources of the polyphenols, but also some of the other antioxidants. “There are probably a couple of thousand antioxidants, and there’s at least 600 of them that have a potent action within the body. Not only that, but they interact, and some of them act in a synergistic way, adding to the effects of others.”

This may go some way to explaining the findings of two significant studies in the United States — with sample groups of as many as 30,000 people each, over six years, which showed that eating even small amounts of nuts a couple of times a week reduced the risk of heart disease. “Two independent studies showed the same results,” says cardiologist David Colquhoun, professor of

medicine at Queensland University. “Those who had a handful of nuts twice a week had 20 per cent less heart disease, while those who ate nuts five times a week, had a 50 per cent reduction.” This makes it even more paradoxical that something apparently so beneficial should have been relegated to the sin bin.

These days we’re most likely to encounter nuts as a snack food or a confectionery additive. We currently eat nuts in the worst possible way, loaded up with salt or sugar and extra (usually saturated) fat, in candy bars surrounded by chocolate, or in so called “healthy” muesli bars, often also containing saturated fat.

But now nuts are being taken out of confectionery too; a major US candy bar maker has just removed almonds from its product on the grounds of increasing consumer concern about their high fat content — pretty bizarre given what else goes into confectionery!

It is also paradoxical that with the fashion for *cucina povera* (peasant cooking, from polenta to pulses and lentils) having been so wholeheartedly embraced by the middle classes, certainly in the US, that to date nuts have not also undergone a personality transplant as the latest “hot” nutrition item, particularly as we increasingly understand the importance of micro-nutrients. However, in the Mediterranean diet nutrition pyramid — put out by Oldways Preservation and Exchange Trust, the Harvard School of Public Health and the World Health Organisation — nuts are nutritionally fashionable again, down there with things to “eat daily”: fruits, vegetables, beans and other legumes.

It seems that gradually science is coming round to agree with a Higher Authority after all.

— *Cherry Ripe*

[West Australian / 1995 February 13]

Farmers find trees are right up their alley

Esperance farmers Garry and Jan English are among a group of agricultural trailblazers who have successfully tested a novel farming system aimed at getting ecological and economic results.

A decade ago, their wheat and sheep farm at Gibson, 45km north of the coastal town, was sandblasted constantly by the strong westerly or easterly winds.

After two devastating blow-outs which ruined their chances of a successful crop, they decided in 1984 to grow pine trees as windbreaks.

In a corner of their 6500ha property, they planted eight rows of *pinus radiata* 200m apart and cultivated conventional crops, like wheat, lupins and oats, in the spaces between the rows.

Mr English said the system, known as alley farming, turned his unviable sandplains into a very stable farming system.

The trees—now about 20m high— have proved to be effective windbreaks and have helped counter rising water tables.

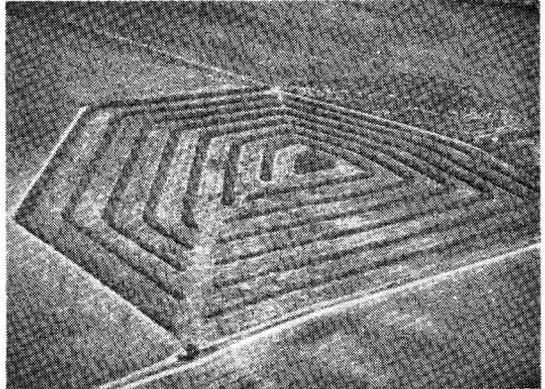
In 1988, the water table had been approaching a dangerous level at 2m from the surface but had since dropped to about 6m, Mr English said. They had also planted continuous crops in that section and these had produced exceptional yields.

Their sheep had also benefited from the new farm layout. Mr English estimated that the protection provided by the trees had saved hundreds of vulnerable sheep during the

lambing and shearing seasons.

Eucalyptus trees scattered in rows throughout the rest of their farming land had also added to productivity.

Mr English said it had been a bit of a culture shock to change the farming system but he had come to grips with abandoning the open paddock and taking the risks associated



Tagasaste, a big fodder shrub that grows well on poor sandplains, has been used to halt wind erosion on John Thomas's farm in Dowerin.

with planting trees.

He would advise anyone with fragile country or rising water tables to take the gamble.

"I believe you can't lose with a system like this," he said. "I have made the land stable and increased our yield."

He said it was also planned to harvest the trees for extra income.

Many WA farmers have evolved similar agroforestry systems that adapt alley farming to their own particular needs.

Agriculture Department research scientist Ted Lefroy, who with colleague Phil Scott has done research into alley farming, said it tried to overcome the environmental side effects of agriculture by mimicking the

original structure of woodlands, forest and heath ecosystems.

The system originated in the tropics as a method of reducing erosion on sloping land and preventing a decline in soil fertility.

In WA, it also tackles salinity and waterlogging and operates on a bigger scale, leaving wider alleys to accommodate machinery.

Mr Lefroy estimated that about 10,000 to 15,000ha had been converted to alley farming in WA in six years.

“But when you consider that there are about 15 million hectares of cleared land, you realise we still have a long way to go,” he said.

The department has divided up alley farming into four main groups:

- Timberbelt alley farming occurs in areas of high rainfall where trees can be grown as crops. By growing the trees in rows, rather than blocks, the land in between can still be used to produce conventional crops and pastures. This allows for diversity and income between the plantations.

- Sandplain alley farming occurs on the poorest soils in the Wheatbelt and coastal sandplains to prevent erosion and improve fertility. The exotic shrub tagasaste is often planted to enrich the soil and it is used for grazing stock.

- Saline alley farming in the Wheatbelt uses trees as water pumps to lower water tables. The challenge is to find salt-tolerant trees.

- Mallee alley farming is part of an experiment in the Wheatbelt to produce eucalyptus oil as a new source of income for the region.

— *Stephanie Pegler*

Tree Crops Centre now on Internet

Internet users anywhere in the world can now contact David Noël, the Tree Crops Centre, *Quandong*, *WANATCA Yearbook*, and *Granny Smith's Bookshop*. The Internet address is:

noels@perth.dialix.oz.au

Readers are encouraged to send Letters to the Editor and short submissions for *Quandong* via this route if they can — text can be used directly without re-typing!

2 out of 3 not bad

Last issue's non-deliberate mistake

The last issue of *Quandong* (Vol 21 No 1) was wrongly printed 'First Quarter 1994' instead of 'First Quarter 1995' on the running banner at the top of each page.

In other places the citation was either correct, or nobody noticed. Did you?

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[Small Tree Farm News / 1995]

Be “Care-Full” with Paulownia

Careful is one of the keywords with Paulownia according to Andrew Thamo of Small Tree Farm.

“One needs to be careful before making a big investment in these trees because they demand plenty of care.”

They are not like a Blue Gum plantation which you can more or less plant and forget about for a few years.

Paulownias are a high input tree that need plenty of room, fertiliser and water. But more than that they need plenty of shelter from wind.



Heavy and colourful, flowering with Paulownia's foxglove-like flowers is a feature of the spring.

Andrew received an unexpected bonus when invited by the Beijing Forestry University on a two week study tour of White Poplars in China a couple of years ago - the itinerary took the small party to the heart of the Paulownia growing areas.

The reason for this is that there are about ten times more White Poplar trees than

Paulownia trees in the system. The Poplars provide the wind shelter.

Andrew visited a formerly bare district of China which is now covered with White Poplar windbreaks and Paulownia agroforestry. There is now a thriving timber industry whilst agricultural productivity has risen simultaneously.

The Paulownias or Powtons as the Chinese call them are grown at a very wide spacings with irrigated cereal cropping or vegetable growing taking place in between the trees. Paulownia densities may be as low as 25 to the hectare.

Under these conditions the trees grow exceptionally fast and can produce good saw logs in 8 years. The starting price at the mill door to the farmer was \$135/m³ Australian (in a straight conversion — but the local buying power of that money was possibly three times that.)

Prices like this are unheard in Western Australia at present. It is perhaps a sign that farmers who are planting trees for sawn timber now, might get more than they bargained for on a rising export market.

However potential Paulownia growers may get a lot less than they bargained for if they take the growth rates of the Chinese agroforestry trees and multiply them by Blue Gum densities per hectare and multiply that number by the very high price paid in a particular small Japanese niche market for slow grown Paulownia.

Paulownias can be rewarding in WA if you give them what they need but you need to be care-full.

(Small Tree Farm have recently issued a new newsletter and price list — they can be contacted at PO Box 21, Balingup, WA 6253 - Phonelfax 097-64 1113)

[AgTernatives Expo Handbook / 1995]

Pistachios at a glance

Pistachios originated in the Middle East where the nut is regarded as a delicacy.

They are used in confectionery and delicatessen lines. The Middle East has a climate of hot dry summers and cold winters, very similar to the climatic conditions of many parts of the eastern wheatbelt.

- ***Highly suited to the wheatbelt.***
- ***The only edible variety is *Pistachio vera*.***
- ***Pistachios may require supplementary water for best yields.***

Pistachios grow naturally in areas receiving 200-400 mm of rain. Supplementary irrigation, particularly through the critical development period, will increase yields. Frosts during flowering time have the potential to dramatically reduce yields. Pistachios will not tolerate waterlogged soils. They also prefer more alkaline soils.

Pistachios have male and female trees.

One male tree is sufficient to pollinate eight females trees. Planting patterns should reflect this 1:8 ratio as well as consider wind patterns during pollination times.

The only edible pistachio is *Pistachio vera*. This variety has a poor root stock which limits production. It is recommended that this variety be grafted to an improved root stock such as *P. terebinthus*.

Pistachio nuts must be picked, graded, dried and salted or roasted. Moisture content needs to be less than 12% to prevent fungus growth during storage and less than 7% for long term storage.

Marketing requires a good product in plentiful supply. Therefore co-operation between farmers will be essential if an industry is to develop.

Farming Pistachios

Mike and Janette Buegge (WANATCA members) from Bruce Rock established their pistachio trees in 1990 as an alternative tree crop. They chose pistachios because of their drought tolerance. The trees were watered for the first two years and are just starting to bear fruit now, two years after the root stock was grafted. Their 2000 trees cover 30 acres.

A more extensive publication titled *Pecan Production and Processing USA: An Australian Study Tour* will be produced by the Tree Crops Centre later in 1995.

PECAN TOUR REPORT AVAILABLE

The first publication resulting from the Rochesters' WANATCA-sponsored tour of the US pecan industry is now available.

The nine-page *Report on a USA Pecan Industry Tour* was produced for the Horticultural Research & Development Corporation, who helped finance the tour. It contains general overviews of the industry and the tour, and a useful list of contacts. Copies are available from Granny Smith's Bookshop (Reference 849R) for \$5.00.

For Sale

- **Carob seedlings - \$1.00 each**

Grown in 200 mm paper pots

- **Cork oak acorns - \$30.00/kg**

New Seasons crop

Tony Murphy

73 Wasley St, North Perth 6006

09-328 5317

[The Tree Cropper (NZTCA) / 1994 December]

BIGGER BETTER FEIJOAS

So you want to grow large, nice-tasting good-looking feijoas! Well, if you haven't already got one, go and buy an Apollo variety.

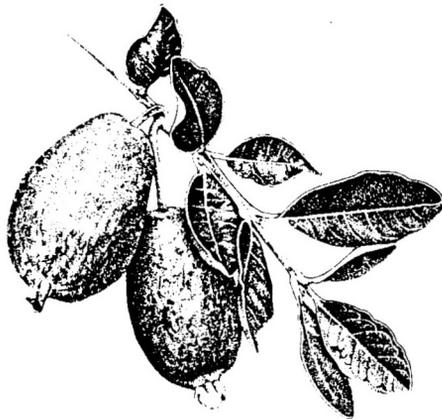
They produce large fruit and in most people's view are the best-tasting (the variety Wiki Tu produces even larger fruit but its flavour is fairly ordinary).

You will also need another variety to go with it to allow the best pollination (a few varieties, e.g. Unique, do not significantly improve fruit size or quality with cross pollination). And you will need large birds such as blackbirds or mynahs, as they do the pollinating when they eat the flower petals. Good pollination produces many seeds which in turn lead to larger and better-shaped fruit and a higher proportion of pulp.

Tree vigour. Once the trees are established there are two things that greatly influence fruit size. One is tree vigour and the other is fruit thinning. If the tree is not vigorous there will probably be hundreds of flowers and possibly just about as many fruit - in fact, too many for best sizing. Trees may lack vigour for a variety of reasons. They may be in wet situations, have inadequate drainage (soils insufficiently porous), have inadequate root aeration (from compacted soils) or be lacking in nitrogen. If you have a tree of low vigour, try forking around it to let the air in and the water out, but don't damage too many roots.

While a tree with low vigour produces lots of small fruit, a tree with high vigour produces fewer fruit but not necessarily large ones. Apollo is naturally a vigorous variety and in rich porous soils usually produces a lot of leaf and few fruit unless the vigour can be reduced.

Fruit thinning. In February, when the fruit is approaching the size of a blackbird's egg, thin heavily. 100 to 120 fruit on a tree 1.8 m high is sufficient. You may have to remove 80% of the fruit. Take off the misshapen and damaged ones, then reduce the fruit to 2 or 3 per cluster and remove any that will later hang down and rub against a branch. Ideally, fruit should not touch or rub against branches in the breeze.



The Feijoa, from Tropical Fruit, an Australian Guide (Glen Tankard)

Water. Adequate water is necessary during the period of rapid fruit development (two months before harvest). Some soils have adequate water in the driest of seasons, e.g. river flats, but in other soils, if fruit is to reach its potential size, trees may need around 200 litres every 4 - 5 days.

Pruning. An open tree, either central-leader or basket-shaped, is desirable. It gives birds ready access to pollinate, lets light penetrate the tree so that leaves operate more

efficiently, reduces hiding places for bugs and allows harvesting with a minimum of damage to fruit. In the winter, preferably as soon as possible after fruiting, thin out foliage and smaller branches.

Keep for fruiting those branches and twigs which are up to 20 to 30 degrees to the horizontal. These branches need a vertical separation of at least 30 cm between them. And of course, if you have a basket-shaped tree, you will need a few much steeper branches so that the tree can grow higher. When pruning, don't be afraid to remove half the foliage. In fact, some say if the tree looks

terrible when you have finished then you have probably done a good job.

— **Bob Kirk**

Since retiring from teaching, Bob Kirk and his wife Helen have been growing feijoas on their property at Kaukapakapa, north of Auckland. He is a member of the Tree Crops Association and is currently also Chairnran of the NZ Feijoa Growers Association.

Details of the Feijoa Growers Association can be obtained from their Secretary, Graham Main, PO Box 55, Maungatapere, North Auckland.

[Shelterbelter Macadamia Newsletter / 1995 April]

Macadamias not so water-thirsty

After a long dry summer we have discovered that Macadamias are capable of surviving and thriving with much less water than we thought. Some examples:

1. A two year old plantation in Gidgegannup gravel receives only one good soaking per fortnight and is doing well.

2. Near Burekup in the Southwest a plantation of 200 trees of 741, A4, A16, 344 are growing well on a weekly watering. Half of the plantation is in clay and half in sand. There have been no losses over the two years they have been in.

3. A similar aged plantation on a gravel hill has had NO WATER this summer. Half of it was making new growth when I visited it a few weeks ago and the other half was surviving.

My interpretation of these three examples and other observations is that the Macadamia is more likely to die from over-watering than

under-watering. Mulch in the summer by all means but keep it away from the stem. Water heavily by all means but not too often. If the soil is moist three inches down, don't water.

In fact the Macadamia has been found to be 2.5 times more drought tolerant than Citrus (Lloyd 1991).

— **John Cory**

Available through Perth Exotics:

RARE FRUIT TREES

Asimina triloba (American custard apple); Coffee; Barbados Cherry (Malpighia); Chocolate Pudding Fruit (Diospyros digyna); Ice Cream Bean (Inga); Mangos; Miracle Fruit (Synsepalum); Grumichama (Eugenia dombeyi); Cork Oak.

Trees imported to order from Eastern States

BULK NUT TREES

(eg pecans, macadamias)

Special deals on imports from the Eastern States

Perth Exotics

Lot 101, Kiernan Rd, Mundijong 6202
Phone 09-525 5977 • Fax 09-525 5017

More on Whittington land treatment

Judging from the report of the WANATCA meeting of August 17, there is some misunderstanding of how Harry Whittington's 'Interceptor Banks' work.

The published WISALTS literature makes no claims about the effect of salinity or waterlogging on plants.

The effect on plants reported by WISALTS refers rather to their having been cleared by man, and the land cultivated and further compacted by vehicles and overstocking. The effect of salt and waterlogging that concerns Harry and the rest of WISALTS is their effect, not on plants, but on soil structure.

They state quite clearly and unambiguously that the problem is one where sodium ions released by the salt displace calcium ions to cause a rapid disassociation of the soil's crumb structure, such that the clay is deflocculated to produce by migration a hydrophobic cement layer in the subsoil known as the "B" horizon. The problem of surface waterlogging, then, is caused not by a rising water table as we have experienced it in western Victoria, but by the resulting perched table, over that "B" horizon, of water which has come down off the slope.

• The consequent subsidence through loss

of air space in the collapsed soil can be as much as a metre or more, and such saline and waterlogged discharge areas can be seen in places actually marching up the slope as the process of collapse spreads.

Interceptor Banks are built by first removing the topsoil to form a bank along the contour on the immediate downward slope, then ripping through the "B" horizon to break it up, and finally to seal the upward face of the bank with material from the "C" horizon. The ends of the bank spill into storage and/or naturally occurring streams in order to take any excess right away from the discharge area altogether.

Trees are planted along the bank both to stabilise it, and to send new roots down so as to begin the process of restructuring the soil profile and to enable the soil biology to return to a healthy state. It is the return of all those organisms to a deep well-structured and productive soil with a high field capacity that Harry will go on to discuss at quite some length.

— *Gil Harwick*, RSM 89, Vasse Hwy, Yoongarillup WA 6280 - phone 097-53 3270

Ed: Quandong has been in touch with Harry Whittington, and supplied a copy of Gil's letter (condensed above). Harry has been kind enough to supply us with a copy of a 2-page condensed report of a trial on Interceptor Banks near Bodallin (photocopies available from the Tree Crops Centre for \$2.00).

For Sale

Pecan Seedlings

Well grown in tall bags

\$4-5 each

Contact:

Alex Hart on 09-490 1324

71 Terence Street Gosnells 6110

Donations to Research Fund

Many thanks to the following, for recent donations to the WANATCA Research Fund: Trevor Best (\$20); Ann-Marie Lee (\$40); Jeff Dodd, Stahmann Farms (\$10). All such donations really do help our research efforts.

[Rainforest Seed Collective Newsletter / Vol. 6, 1994?]

Fertilizer requirements of major rainforest families

- *Sapindaceae* family (eg *Jagera pseudorhus*, *Cupaniopsis anacardioides*, *Diploglottis australis*, *Arytera divaricata* and *Elattostachys nervosa*) have a tendency to be long and lanky when young, and will respond dramatically to applications of fertiliser.

- Fertilisers and mulches are generally beneficial to the *Elaeocarpaceae* family (eg *Elaeocarpus*, *Sloanea*).

- Species from the legume families such as *Acacia* spp., *Albizia* spp., *Archidendron* spp., *Castanospermum australe* and *Pararchidendron pruinosum* are generally easy to grow because of their own ability to fix nitrogen. Mulching and light fertiliser applications are beneficial.

- The species of *Lauraceae* show a need for well-drained soils and grow quite well on infertile soils including shallow clay loams. Examples include *Cinnamotnum oliveri*, *Cryptocarya* spp., *Endiandra* spp., *Litsea* spp. and *Neolitsea* spp..

- Members of the *Meliaceae* family (eg *Toona australis*, *Dysoxylum fraserianum* and *Melia azederach*) require unimpeded drainage and respond to light applications of fertiliser.

- Species of the family *Euphorbiaeae* are easy to grow and include *Omalanthus*, *Aleurites*, *Baloghia* and *Mallotus*. These species will grow in fairly adverse sites especially if given fertiliser.

- Most rainforest members of the *Proteaceae* family are easily grown, except

for *Oreocallis pinnata* and *Hicksbeachia pinnatifolia*.

Phosphorous toxicity is not a problem with this group of plants, as it is in *Proteaceae* from infertile soils in open positions, and they can be safely fed organic or inorganic fertilisers. Several light applications during the year ensure steady, strong growth.

A tendency when young towards chlorosis, or yellowing of the leaves, can be overcome with applications of iron chelates to the soil, together with added nitrogen.

Iron chelates are beneficial when trying to establish Red Bopple Nut (*Hicksbeachia*).

- It has been found that some plants from the *Myrtaceae* family (eg *Syzygium wilsonii*) require a supplement of dolomite. Fertiliser applications and mulching are suitable practices for this group.

— *Mark Baird and Johanna Treweeke*

(an extract from a longer article on fertilizing rainforest plants)

New Fruits on sale in Perth

During 1995, I have noted commercial sales of some rarer fruits in Perth for the first time.

These have included Sapodillas and Jujubes (at a fruit market), and Mangosteens (at Coles, a large chain store). The latter also have had a more consistent supply of Rambutans.

Also for the first time, supply of local Lychees (from John Verheyen's orchard at West Gingin) was seen in a chain store — demonstrating that this fruit is viable here.

— *David Noël*

BOOK REVIEWS

by David Noël

Pecans, A Grower's Perspective. G. Wesley Rice. Published by Pecan Quest, Oklahoma, 1994. 198 pages, Paperback. *\$69.95, Hardback edition *\$101.00.

Where there once was a dearth of information available on pecans, we have recently seen the appearance of more and more useful books, some of high quality. The present book falls into this latter category.

As the book states, it is written from the viewpoint of a grower, rather than a researcher or an extension officer. Like all current material, it does emanate from the United States, the home of the pecan.

This book has received good reviews in the USA. Tommy Thomson, of the USDA-ARS Pecan Breeding Program, writes that it is "A refreshingly written practical approach to profitable pecan production. This book will be enjoyable reading for anyone nuts about

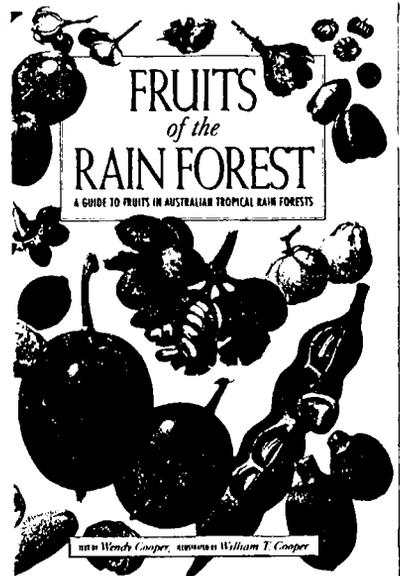
pecans; young or old; grower, sheller, or researcher".

A useful addition to the literature, and a good starting point for the would-be professional grower.

Fruits of the Rain Forest: a Guide to Fruits in Australian Tropical Rain Forests. Text by Wendy Cooper, illustrated by William T Cooper. Published by RD Press, NSW. 327 pages. Hard Cover. *\$70.00

This is a superb and unique new book put out by the local book publishing unit of Readers Digest.

Quality of reproduction of the beautiful and detailed colour paintings is first-class.



This enables them to be used with some confidence in identifying fruits picked up from the forest floor. However, the 'fruits' of the title is used in the botanical sense, rather than implying they are edible, and the author cautions against random sampling of

A Grower's Perspective

--PECANS--



POPULAR VARIETIES, PROPAGATION, CULTURE & MORE

By: G. Wesley Rice

attractive specimens without positive identification of its edibility.

This is a large-format book. In the main body, each right-hand page shows the colour paintings of the fruits alone. The left-hand page gives information on each species: botanical name, fruit description, season, tree habit, leaf type, distribution, uses and edibility if known, and species with which it might be confused. Also shown are line drawings of the leaves and leaflets.

Over 600 species are covered, including many I have never seen illustrated before, or even heard of. For example, shown on the cover of this issue of *Quandong* is a reproduction of *Hicksbeachia pilosa*, the Red Bauple Nut. I was familiar with *Hicksbeachia pinnatifolia*, also called Red Bauple or Bopple Nut or Rose Nut, a macadamia relative with an edible nut from northern NSW, but did not know of this more northern relative (also edible).

While all the species shown are native to northern Queensland, this does not mean that they are unsuited to other places. More than 100 of the species are found native further south, some as far as Victoria, and experiments have shown that many of these assumed "tropical" species will grow well outdoors in Perth if the right conditions are supplied.

This wonderful book is highly recommended.

Maxiculture: Beyond Agriculture. J.A. McNamara. Published by the author, Adelaide, 1991. 67 pages, Paperback, *\$12.95.

Here is a review which should probably have started off "And now for something

completely different". Certainly this modest little book is a total contrast to the book referred immediately previously. Rather than one containing facts and information, it is the result of deep thought and analysis of what underlies the science and practice of growing plants useful to man.

The flavour is given by the author's own blurb:

"The author suggests ways in which our understanding of how living things behave, might be applied in an approach to land use, for food production, that may be carried on in perpetuity; replacing agriculture, by minimising our intervention, while maximising the use of our best understanding of evolution and ecology — and calls it maxiculture."

Here is a nice example of McNamara's quiet style:

Native vegetation is worthy of study. In 1979 I drove from Adelaide to Perth and travelled along the south coast of Western Australia. In an extensive area of unaltered natural vegetation near Mount Ragged I had my first good look at the flora of the south-western sandplains.

In that region deep clean sandy soils support a fantastic variety of plants forming a low heathy scrub. Further west, near Esperance, I came across vast expanses of land cleared of all native vegetation with pasture grasses sown for the raising of sheep and cattle. As the soils are naturally very poor in nutrient there had been extensive use of chemical fertilisers to promote growth of the imported grasses and stock.

It was mid-summer when I was there and the thing that struck me most was that there was no living plant visible in the pasture. There was nil growth or increase of life in

these fields of efficient modern agriculture. Right along-side the uncleared scrub was a thick tangle of hundreds of species, alive. They were breathing and drawing water out of the soil so that they might continue to absorb as much sunlight as they possibly could to grow as much as they could for as long as possible. They were all living, producing life. Whereas, next door, there was no new life, the cattle and sheep were eating dry grass that grew the previous winter.

And the following extract well summarises the whole underlying philosophy applied:

The Approach

"I have tried to identify the important components of an approach to land use that will best support my own life and that of my family in perpetuity. In attempting this I endeavoured to look beyond customary knowledge and to employ the best understanding of living systems while minimising effort, it can be said that we know how to feed ourselves well enough, through farming, but it may be that agriculture is not the best way.

It may be that we can live as part of a more efficient system, a system based on the growth of as many different kinds of useful plants as it is possible to have growing on a piece of land. My conclusion is that such a system is best.

Perhaps I should use the example of my own land. I have five acres of grey cracking clay soil with some lime, on the floodplain of the River Gawler just north of Adelaide, South Australia. The climate is dry mediterranean with the usual warm dry summers and cool wet winters. It is considered to be on the border of the semi-arid zone with an average annual rainfall just

over 400 millimetres. The task is to select trees and shrubs which are adapted to the particular climate and soils.

The plants best suited, of course, are local natives. I have planted some of these for windbreak and fuel but there are not many of them that are good food bearing plants. The next step was to study the floras of other parts of the world with similar climates in order to identify plants that may be useful here.

In this case the type of climate is quite restricted to the southern tip of Africa, the south-west coast of South America, the south-west of North America and to parts of the Mediterranean region itself. Having identified suitable plants one begins the long-term project of procuring plants or seed and planting them.

There are plants occurring outside the regions of prime interest that may be adaptable or able to cope with conditions prevailing here. The Prickly Pear is better suited to summer rainfall areas of the tropical kind but because it is heat and drought tolerant it can survive well and produce its sweet fruits in southern South Australia. Like many desert plants this cactus also has some frost hardiness that allows it to survive the winters here.

The plants that might be well suited are

Grafted Pecans

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(in 5 litre bags, approx 50-100 cm high)

\$12-14 each

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member WANATCA

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many. Of the native plants there are Nitre Bush and three species of saltbush that bear small berries.

The South African Box-thorn and Kei-apple grow well. Those of Mediterranean origin include artichoke, almond, fig, grape, olive and pomegranate. The Algerian Oak and Argan of Morocco are what I call wild-type food plants. They are the sort of thing hunter-gatherers used. Various species of agave, cactus, oak and yucca from the southern United States of America fall into this latter group too.

The best plants for use in this system are wild-types or hardy varieties of cultivated species that can survive on their own merits. As if to verify the thesis some productive plants grow spontaneously, some would say as weeds, on this land including two species of saltbush, the boxthorn, artichoke thistle and olive.

My own garden is still young so I must turn from example to suggestion. The plan is to continue to increase the diversity of plants. I have barely touched on the flora of Africa and have not yet tackled that of South America.

Whatever plant is grown should be left to struggle so that its fitness can be seen. Plant as many as possible from seed. Those that do not thrive should be removed. By this method the natural variability of seedlings can be exposed to the selective forces of nature and human choice so that those favoured will be preserved.

Continuing this process through successive generations will lead to an improvement by our own criteria and in response to natural stresses. By this means also there will be evolution of all the living components of the system toward more complex and reliable ecological

relationships in which we are included.

I have a variety of almond trees. I want good tasting kernels that are large, easy to harvest and store and that resist the attacks of local cockatoo flocks. To this end I plant seed of a vigorous tree that has large hard-shelled nuts that fall readily and dehusk easily. Almonds can self sow in this part of the world so they can be planted directly. This will make it easy to try plants on different patches of ground where they might be subject to different conditions, of drainage, exposure to sun and wind, competition from other plants and of soil type.

It does not matter if most fail. That is actually a good result because you can discover which individual plants do thrive in the local conditions and these can become the parents of the next generation. While this process goes on one should bear in mind that the maintenance of variety preserves the base on which selection can operate. This opposes the effect of selection to some extent but need not reverse it. Any conditions may change and the maintenance of variety allows for an ability to respond to change. If I had selected for large easily shelled almonds so that all the trees produce these uniformly, and if cockatoos eat all the soft shelled almonds first, then I would lose the crop."

Quandong contacted Mr McNamara with great interest, and a specific query: did he have Argan growing?

His response was: "Yes I have Argan. I know of only one old tree in Adelaide. It fruits and sets seed.

My 4 seedlings are from it. They are very slow and small, still, after several years on natural water. I suggest they need summer watering to get going."

[Sunday Times / 1995 April 2]

Jujube is showy and useful

The jujube or Chinese date (*Ziziphus jujuba*), also known as the red date, and in China as zao, is a most unusual fruit.

It is thought to have originated in Syria, others say China, but it has spread throughout the hot, dry climates of the world.

It is known to have been cultivated in China in the third century BC and was introduced into England in 1640. It grows only in mild areas.

This important fruit in traditional Chinese medicine is used mainly as a tonic to overcome anaemia, irritability, diarrhea, and insomnia. It's fairly well known as a soothing fruit, particularly for throat and chest problems, and the juice is often used to alleviate cold symptoms and sore throats. This is where the word jube, the lozenge one chews to treat throat problems, came from.

If you aspire to grow all the fruit from A to Z here is a tree that can finalise your collection, but the trees are available in only limited quantities. The fruit of the jujube is shaped like a plump olive and is about three to five centimetres long. When ripe it is a reddish mahogany-brown and has a flavour remarkably similar to a Granny Smith apple.

The fruits are harvested in autumn. When fully ripe the flesh is spongy and very sweet. Fresh jujubes are quite delicious and they can also be dried. This dried fruit is what is known as traditional Chinese dates.

In this form they can be used in savory dishes such as fish casseroles and soups. They are also tasty additives to puddings, cakes and breads. Jujubes can be candied and this is another famous Chinese dessert.

To candy your own fruit puncture fruit all over with a pin then boil in syrup. The juice of the jujube makes an excellent jelly. Fruits can be frozen for six weeks in an open container.

The tree is a very handsome small deciduous specimen, growing somewhere between three to five metres high in most locations. It is an incredibly tough tree, drought-tolerant and able to withstand freezing temperatures in winter and extreme heat in summer.

Many varieties have a weeping habit and the unusual way the shoots grow in a zigzag makes even the bare branches unusual and attractive in winter. In summer the foliage is a



Fruiting branchlet of Ziziphus jujuba

shiny deep green. In autumn leaves turn a rich golden yellow.

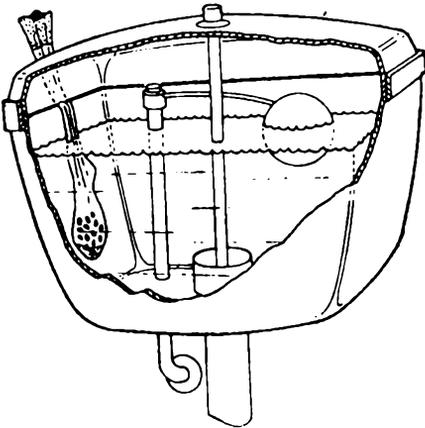
Jujube needs a long dry, hot, summer for best fruit development, and it dislikes humidity, which means most of the

Seed germination? Put a sock in it ...

A recently-published book, *Germination of Local Native Plant Seed - for Revegetation, Tree planting, and Direct Seeding Projects* (Murray Ralph - \$13.45 from Granny Smith) is packed with useful ideas.

A novel approach to seeds germinating which contain chemical inhibitors is shown below. For such species, continuous leaching in running water for up to 2 weeks is needed — washing or soaking is not enough.

The seed is placed in a permeable bag, such as a nylon stocking, and hung in your



toilet cistern.

The cycles of soaking and flushing produced in the cistern are ideal for easy breaking of this chemical-based dormancy.

Neat, eh?



metropolitan area should be ideal.

It tolerates heavy clay soils, even alkaline and poor draining soils, and is not demanding when it comes to feeding. Pruning isn't essential for fruit development and isn't usually necessary to shape the tree because it tends to be fairly well formed.

But the jujube tree does have a few problems. It has spiny branches which have to be handled carefully when picking the crop. It does have a tendency to sucker which takes some years to overcome. The best preventative treatment to sucker formation is to water only occasionally through summer.

When you do water, leave the sprinkler on for a long time to drive the moisture down deep. The roots will follow the moisture to greater depths and this discourages surface rooting. Fruit fly can affect crops so spraying is necessary to keep the fruits clean.

All in all, the jujube is a very attractive, exceedingly tough tree that is a proven winner in the Perth area. The fruits are very useful and the tree has very many enjoyable ornamental qualities.

First Time Offered In Australia TOCTE TREES

(*Juglans neotropica* —
the Evergreen Black Walnut)
\$15 each; reduction for quantity (20+)
From WA-produced seed! Healthy well-grown
trees in plastic bags, up to 1 metre tall.

These fast-growing, almost evergreen true
walnuts produce excellent timber, good edible
nuts, and may also be used as rootstock for other
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Avowest Nursery, Carabooda
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A NEW VISION FOR WESTERN AUSTRALIAN FARMLAND

It is becoming increasingly obvious that more perennial vegetation is necessary in the agricultural landscape if we are to have any significant impact on salinity.

Other side-effects of our current farming systems such as waterlogging, soil erosion and the pollution of waterways will also benefit from more perennial vegetation in the landscape.

One approach known as alley farming mimics, in a very basic sense, the structure of the original woodland, forest and heath ecosystems of the agricultural areas.

It's a system where crops and pastures are grown in the spaces or alleys between rows of trees and shrubs.

The concept is new to Western Australia but one that is likely to become more familiar over the next few years. It is described in the current edition of the *Journal of Agriculture*.

The objective is to use trees and shrubs to decrease the environmental side effects of agriculture, such as erosion and salinity, while increasing farm profit through the direct and indirect value of the trees.

The challenge is getting the right tree species and layout to maximise the benefits, while minimising competition with crops and pastures for water, nutrients and light.

Alley farming originated in the tropics as a method of reducing erosion on sloping land and preventing a decline in soil fertility.

In the South-West of Western Australia, similar farming systems have evolved quite independently over the past decade in response to a different set of conditions.

Responding to the effects of salinity, waterlogging, wind erosion, the lack of autumn stock feed and declining terms of

trade in agriculture, farmers, foresters and agricultural scientists have been working together to develop solutions that combine trees and shrubs with conventional agricultural crops and pastures. It differs in several important respects from tropical alley farming.

The most obvious is that the alleys are much wider in order to accommodate machinery, and the trees are often planted in straight parallel lines.

This is common on sandplain where trees are planted at ninety degrees to the most damaging winds to provide the best protection. On sloping land contour plantings may be a higher priority.

Trees are spread across the landscape rather than being concentrated in a few locations, and this improves our chances of controlling large scale processes such as rising watertables, soil erosion and contamination of soil and water. Small blocks of trees alone will not do this.

But there is a fine line between trees that complement or compete with agriculture.

The commercial principle of alley farming is that the net value of the tree products, plus the net effect of the trees on agricultural yield in the alley, must be equal to or greater than the value of the crop or pasture that has been displaced by the trees.

Many questions remain to be answered about alley farming in our environment.

The choice of tree species has a major influence on the degree of competition

between the trees and the crops and pastures, and how effectively trees fulfil their productive and environmental roles.

Competition is particularly important in our semi-arid climate, where we want deep-rooted trees and shrubs that grow mainly from spring to autumn.

This minimises competition for water and nutrients with shallow-rooted winter-growing crops and pastures.

Very little work has yet been done on the competitiveness of different tree species or on selection of species with growth patterns and structure complementary to our annual crops.

The emphasis so far has been on simply finding trees that survive and grow.

It is important to find trees for our environment which have a commercial value and the ability to perform a much needed ecological role.

This will not be easy, and may not even be possible, but the prospect of introducing trees and shrubs into agriculture offers potential environmental and commercial benefits for large areas of Western Australia. The ecological imperative for such a modification to our farming systems is strong.

Just how attractive alley farming proves to be will depend on how the following costs and benefits balance out:

- environmental benefits, such as water table control, soil erosion prevention, soil structural improvement, nutrient cycling and improved nature conservation values
- value of crop and pasture displaced by the trees and lost through competition with them
- more intensive management required
- gains in crop, pasture and animal

productivity due to the influence of trees on microclimate and soil conditions

- commercial value of the trees themselves.

While the costs are immediate, the benefits tend to be medium to long-term.

For a strong commercial incentive, the value of the crop or pasture displaced by the trees and lost through competition with them needs to be compensated by tangible short-term returns.

The task ahead is to measure the net benefits to the environment and to farm profit of different combinations of trees, shrubs, crops and pastures. The Department of Agriculture has several projects contributing to a better understanding of these benefits.

If alley farming does find wider application, it will represent a significant step for our farmers to ensure the persistence of agriculture in our environment.

— *Ted Lefroy and Phil Scott*

Ted Lefroy and Phil Scott are research scientists at the Department of Agriculture's Pasture and Revegetation Branch. This article is a summary of a longer article in the current edition of the *Journal of Agriculture*, 4/94.

Ted Lefroy was awarded the 1994 Churchill-Wesfarmers Fellowship, and travelled to France, the USA and South Africa to study agroforestry.

Neville Passmore resigns

Pressure of work has forced our popular WANATCA media star to resign from the Executive. Many thanks to Neville for his years of help.

The Executive would like to replace Neville with a new volunteer. Please contact David Noël at the Tree Crops Centre.

[West Australian / 1995 January 28]

Veteran lands a plum lifestyle

Brian Collett reckons life's a peach and it is all because of plum wine.

On their property on the banks of the Blackwood River at Nannup, the retired army warrant officer and his family produce Nannup Nectar from plums they grow.

It all began from a desire to add value to their produce.

Frustrated by retail prices, such as a leg of lamb costing what they received for a complete animal, they agreed on a change in direction.

Today, as well as producing about 10,000 bottles of their nectar a year, they grow vegetables for their farm restaurant and make pickles, chutneys, jams and anything else they can sell.

The plum wine, which sells for \$14.50 a bottle, is made from three varieties and blended. Matured in oak, it is a full-bodied, big fruity style high in alcohol at 15.3 per cent.

It is sold around Australia.

"It has been a case of learning as we go," said Mr Collett, a Vietnam veteran.

"That includes the building work. We have had a lot of help from neighbours and done a lot of reading as well."

The neighbourly help included some good-natured ribbing in the early days. Told that his sheep had died from "gok" Mr Collett did a lot of unsuccessful research to find references to the disease, only to find it stood for "God only knows".

The family named the 60ha farm Tathra, an Aboriginal word meaning beautiful country.

They restored the historic Ellis cottage on the property as a living museum. A small, jarrah slab home lined with whitewashed

hessian, it was built in 1870.

According to the Colletts, the cottage is rumoured to be inhabited by good-humoured ghost which can often be seen in the bed.



Brian Collett with the quaint machine he uses to label bottles of his plum wine.

For Sale
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Brian Money
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[Hardi Rama Sprayer & Crop Care Magazine / 1995]

114,000 Almond trees

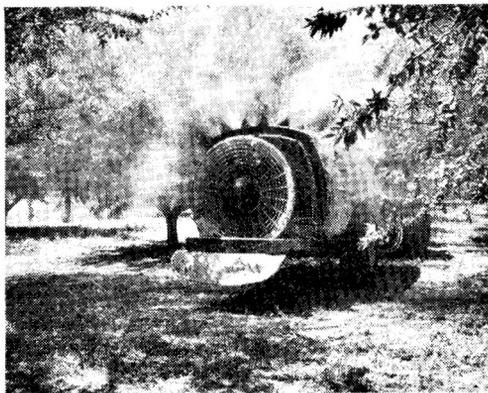
Located in the Riverland of South Australia, a private company Jubilee Almonds, is taking Almond production to peak efficiency on their 464 hectare farm.

Operations manager, Brendan Sidhu, works with and supervises an efficient staff of 8 to 10 permanent workers with an extra 10 casuals through the busy harvest period.

The recently established farm (first plantings took place in 1987/8) is on predominantly sandy soils and utilises water from the Murray River system to spray irrigate all trees. With successful use of cover crops and irrigation, Brendan is pleased with the increase in organic matter in the soil.

An investment of over \$15,000,000 must offer reasonable returns and to this end production is expected to level out at around 2.5 ton per hectare as the trees reach maturity.

John Deere tractors with special low



shaped filtered-air cabins are used as well as O.M.C. Shakers, Flory Sweepers and a Jackrabbit shuttle system is about to be used for this years harvest.

As the tree height and thus density has increased a HARDI TC Airblast sprayer is a relatively new edition to two existing sprayers. These sprayers apply a winter oil, 3 sprays with a fungicide and one nutrient spray at rates around 1200 I/H, so it is understandable why the powerful HARDI was chosen.

As the Australian Almond consumption is still exceeding supply with a positive management approach and the very best equipment the future of this project looks certain.



Hamel Project

The WANATCA project to establish a Gene Bank Repository at the Hamel site near Waroona south of Perth, is continuing with steady progress.

Men of the Trees may also become involved. A Site Visit open to everyone interested will be held at Hamel from 1-3 pm on Sunday, August 27. More details later....

[Farm Trees News / 1994]

Hungarian Shipmast Locust on the Australian Farm

The introduction of Powton (R) by FFT has generated thousands of enquiries from landholders who have realised the potential of farm forestry.

Unfortunately, the site requirements of Powton 'R' only allows forestry projects on land possessing adequate soils and excellent rainfall or irrigation. Further, alternative available forestry products such as Eucalyptus or Pine return little benefit to the small grower, as they are difficult to utilise on the farm.

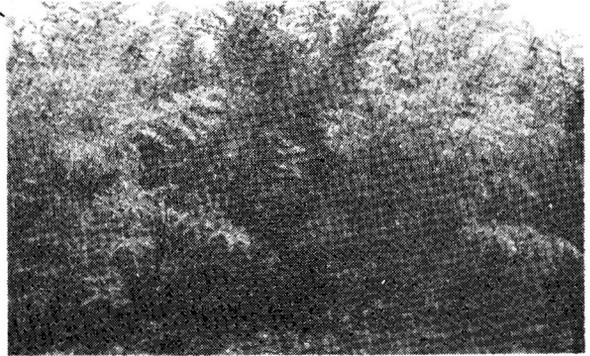
FFT Hungarian Shipmast Locust offers a solution to farmers needs as it is capable of producing good quality timber on marginal land. It can be coppiced at seven years of age to produce fence posts, yard rails, vineyard timbers, orchard poles and firewood.

At fifteen years of age it can be used for bridges, shed construction and landscape timbers. The timber can be harvested with a chainsaw and utilised on the farm, or sold to surrounding farmers. Farmers are aware of the sky-rocketing price of treated pine. Hungarian Shipmast Locust poles contain a natural chemical called Robinol, which makes them ground hardy for 100 or more years, they are stronger and more flexible than their arsenic treated competitors.

Hungarian Shipmast Locust trees are planted at a rate of 2000 per acre and will produce one fence post per tree in seven years, or two fence posts per tree in ten years. (One seven ft. treated pine post is currently priced

at \$8 wholesale). This translates to a return of sixteen thousand dollars from one acre of forest in seven years, or thirty two thousand dollars in ten years.

Importantly your Hungarian Shipmast Locust forest regenerates itself, shooting up from the stumps after harvest and providing



1 year old Hungarian Shipmast plantation.

an on-going timber supply on a seven to ten year cycle for hundreds of years. Hungarian Shipmast Locust forestry is inexpensive with trees costing \$500 per 1000.

The management of the forest is cheap and easy requiring little skill if you follow the instructions in the Hungarian Shipmast Locust Management guide.

Hungarian Shipmast Locust provides a multi purpose forest. A well sited plantation can control erosion, utilise an overly steep or difficult paddock, provide wind shelter for lambing and calving, utilise waste water and effluent from a piggery, dairy or food

processing plant. Slightly saline drainage water can be also used to irrigate these trees.

Because Hungarian Shipmast Locust forestry requires little capital investment and produces a valuable easy to market end product, it lends itself to either large or small scale plantation. It can be considered as a possible second income or a life raft that a farmer, could fall back on in hard times. Imagine having had the capacity to sell 10,000 fence posts at \$8 each over the last 12 months.

A yield like that can be obtained from little over five acres of forest, harvested every seven years. Isn't that how recessions often occur? Hmm, food for thought.

Hungarian Shipmast Locust costs \$100 per 100, \$500 per 1,000.

"Hungarian Shipmast Locust Management Guide" contains detailed instructions on site selection, spacing and planting, pruning, fertilising and weed control. [Available from Granny Smith].

(The Farm Fodder Trees company can be contacted at 12A Olinda-Monbulk Rd, Olinda, Vic 3788; Phone: 03-751 2277; Fax 03-751 1954)

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818B • **BUSH FOOD Seminar: Papers & Proceedings** (Aus, 1994). 116p. Pb. Valuable papers from a NSW semina, expert views on industry potential, promising species etc. Highly recommended. \$33.45

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811P • **PECANS, A Grower's Perspective.** Rice (US, 1994). 198p. Pb. Culture, varieties, propagation, & more - 'Accurate, up-to-date, enjoyable'. Highly recommended. \$69.95. #812P • **PECANS...** Hardback ed. \$101.00

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PO Box 565 Subiaco WA 6008 Australia

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CALENDAR OF FORTHCOMING EVENTS

Deadline for next issue: Jul 20

1995

May 17	Wed	*General Meeting (Firth & Mizrahi - Arid-Country Tree Crops)
May 28	Sun	WANATCA Field Day, West Gingin
Jun 18	Sun	WANATCA 'Bring & Buy' Meeting, Claremont
Jul 4	Tue	Executive Committee Meeting
Aug 16	Wed	*General Meeting (<i>Bee Pollination & Yields of Nuts & Fruits</i>)
Aug 27	Sun	Hamel Project Site Visit
Aug 30-31		Dowerin Field Days
Sep 11-15		§ACOTANC-95, Lismore, New South Wales
Nov 15	Wed	*Annual General Meeting

*General Meetings are held starting at 7.30pm. *Venue: Naturalists Hall, 63 Merriwa St, Nedlands.*
These meetings usually include a current magazine display.

§ For contact details refer to the Tree Crops Centre.

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