

Quandong

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The MAHWA (*Madhuca latifolia*) (Sec: About the Cover, p. 2)

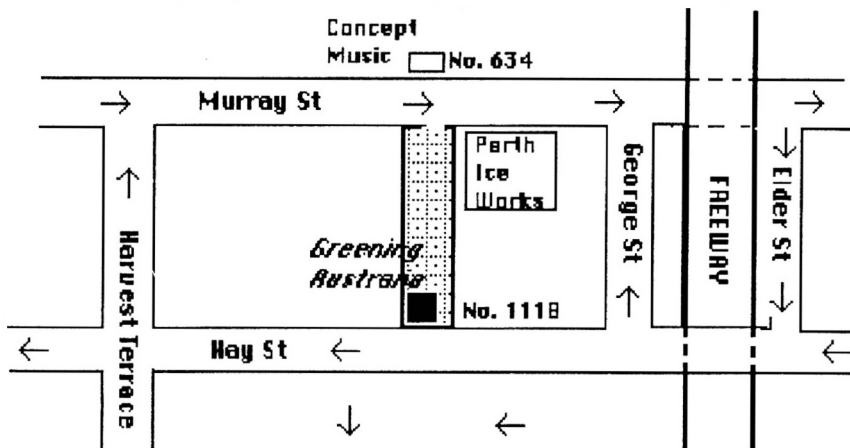
***** Next Meeting ***** Note New Location!!

Wednesday November 18: 7.30 pm

Our speaker will be **Kevin Whiteley**, who will give a talk on

40 years in Horticulture — What Happened?

This Meeting will be held at a **New Venue**, the Greening Western Australia office at 1118 Hay Street, West Perth. Parking is available in the GWA carpark entered from Murray St (see map), or you can park in Hay St itself. All streets nearby are one-way.



Kevin Whiteley, a long-time WANATCA member, retired earlier this year from the Horticulture Division, WA Department of Agriculture. For most of his career he was concerned with extension work with fruit and nut growers around the State.

Kevin hopes to give an insight into not just the changes in techniques and crops which have occurred, but also the human picture, with control of orchard decisions passing from the older heads of migrant families to their younger locally-born members, who demand a more scientific approach backed up by computer analyses. Mention will be made of some of the strong personalities active in the Department over the years, and their influence on today's local horticultural scene.

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

WANATCA FIELD DAY

Chittering Valley. A modern citrus planting and a macadamia nut orchard. Meet at 10am for 10.30 sharp start, at the O'Neil farm, 27.5 km from Bullsbrook on the Chittering Valley Road. A leaflet is enclosed with this issue.

[*WA Horticulture* June 1991]

Citrus industry needs to be revitalised

Chattering orchardist Clint O'Neil has just returned from the eastern states where he attended a conference of citrus growers. A more prominent national profile was one of many ideas suggested to revitalise the industry.

The WA citrus industry has the potential to rebuild itself to the prolific stage it was at from 1920 to 1940, according to O'Neil.

Mr O'Neil is secretary of the recently formed WA Citrus Improvement Group, which believes if enough up-to-date information can be distributed to orchardists, then in the long term the industry will prosper.

"The group was formed to provide a forum for sharing knowledge, to act as a consulting group with the WA Department of Agriculture, and ultimately provide information which will increase the viability and net returns of the citrus industry in the state," he said.

He warned that unless citrus producers and agents/wholesalers got their act together for the good of the consumer, then the industry in WA would continue to decline. There were a lot of factors involved in expansion and one was to try to convince financiers that the industry had long term viability.

To achieve this the industry needed to lift its profile — preferably on a national basis, Mr O'Neil said. The improvement group had already partly achieved this through affiliation with citrus groups throughout Australia, and planned, within two years, to have a national citrus co-ordinator and central information data base under the umbrella of the Horticultural Research and Development Corporation.

Mr O'Neil has just returned from a

national conference in the eastern states and said the uniform opinion at the meeting was the need for 'visions for the future'.

"The industry is now in a state of flux — it can go either way" — he said. "The knowledge of growers in the industry now is not good at all and there is little new blood with new ideas trying to become involved in citrus.

"If you look at all your prime industries you see it is the younger people, those 25 to 40 years of age, who are willing to take the most risks with the aim of getting financial returns as fast as possible. But when an industry starts to decline and things start to tighten up, what happens is that people start to survive on what they have got and don't do any developmental work. The biggest problem is that those who survive tend to be the conservative ones — the young ones take the risks with new ideas but as soon as the interest rates go up they go under."

Perhaps the most significant point to come from the conference was the need for effective communication to growers — both the traditionally minded and the risk takers.

"Just how do you convince someone that they should adopt new techniques or management practices, if they are the industry survivors simply because of their traditional workings?" Mr O'Neil said.

"And it is here that the new planned role of a national citrus co-ordinator will fit in. Rather than have every citrus grower and

major body running around chasing the same information there would be the central data base they could go to.”

What Mr O’Neil saw as the biggest obstacle now was not in setting up the group and increasing its membership but rather keeping up the enthusiasm of its members. He was especially aware of situations in other horticultural groups where membership numbers increased only when there was a crisis facing the industry.

One of the biggest problems facing citrus growers now was the supply of new varieties. He believed the citrus industry was going through a similar growth phase to the low-chill peach growers.

While one grower in the eastern states now had his second crop of the new summer navels on the market, WA orchardists were lagging behind. He said it was these varieties which held one of the keys to the WA industry again establishing a firm foundation. The new varieties were returning about \$30 to \$40 a carton, a big jump on the usual \$10-12 for standard lines.

One of the reasons for the big interest in the summer navels range was the ability they gave growers to stretch the season. With the new varieties, growers were able to stretch their cash flow rather than have it concentrated at one particular time of the year.

As the situation was now, mandarins for

example were prolific in July and Washington navels in August, and both correlated with the lowest market prices for the season. “Growers are trying to get out of these peaks and the new varieties offer them this option,” Mr O’Neil said.

Also receiving a lot of attention were the new Spanish easy-peel mandarins which were now in WA after 18 months in



Clint O’Neil is testing the cost-saving idea of planting exceptionally small trees on his property and growing them on using individual wind shelters

quarantine. Never one to preach something he does not practice, Mr O’Neil has planted a selection of the new navels and mandarins which could be described as a big trial.

He is learning the hard way — through trial and error and a gutsy determination not to be forced to work full-time off-farm like his parents because of a series of circumstances largely beyond their control.

The first block on his property was

planted in the early 1920s by his grandfather. But while things were going along nicely for more than 30 years, three complicating factors in the early 1960s devastated the industry, particularly in the Chittering Valley. First, there were two dry frosts within as many years and while the first one destroyed many trees some growers survived because of cash reserves. But the second was the deathknell for growers.

With the change to decimal currency, growers who had been receiving £5 a carton, suddenly found they were getting \$5. Buyers, he said, were linking up the number rather than the value and grower returns were reduced by 100 per cent. The Nullarbor Plain opened up for increased road transport in the mid 1960s, in turn enabling a bigger influx of eastern states citrus to WA.

In the case of his parents, the circumstances meant soldiering on with the old trees and it was a classic diminishing returns situation. In 1972 they left the property, working it only at the weekends.

It was not until after many hours of long calculations that Mr O'Neil and wife Carol decided to take the punt and buy the property. "What I decided right from the beginning was that if we were going to start anything, we should do it correctly," he said. The first thing he did was push down any variety that was not productive, which included parker mandarins.

"From an economics point of view I did not want to be tempted to try and make another dollar from a variety that was not very productive," he said. "The development program started in 1982 when I bought the first 100 trees and since then I have been carrying out a gradual planting process I have also changed my strategy and have gone into high density plantings.

"Results of high density planting trials in the eastern states have shown that you can get results as impressive as 30 to 50 tonnes a hectare — a far cry from the 10 tonnes a hectare under conventional planting.

"However, there is then the problem that in such situations the trees tend to grow faster — the supposition is that with high density there is environmental modification and less wind exposure, meaning that each tree actually produces its own micro-climate."

Rather than have to pay about \$10 to bring over trees in three to four litre pots from the eastern states, Mr O'Neil is testing the concept of buying small trees (about six to eight buds), at 43 cents each, and with the extra effort of putting individual shelters around them, growing them to a suitable size.

"Yes, I am doing a lot of experimenting, but research and trials are the key to making inroads in any industry," he said. **Y**

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

[Subiaco Post/ November 3 1992]

I've got a lovely bunch of pawpaws

Cottesloe man Ron Sheen holds what must be one of the biggest pawpaws ever grown in the western suburbs — perhaps even in Australia.

It weighs 5 kilos — and he has fruit weighing an estimated 70 kilos still to be picked from his two bisexual trees. Ron, of Eric Street, says his secret is dolomite.

“Some people may find it hard to believe, but Cottesloe soil can be too acid, with a pH of 6.6,” he said. “You have to neutralize the soil with crushed lime or dolomite.”

Our gardening correspondent writes: It's not unusual to grow pawpaws in the western suburbs, but this is the biggest pawpaw I have seen, and that includes specimens grown in the tropics. I'll be adding some lime to my own poorly-looking trees this weekend!



Ron with his next-door neighbour Hugh Taylor
(picture: Annaliese Frank)

Exchange Rate Blues

Around 14 years ago, the Australian dollar was worth about 1.20 American dollars. When Paul Thomson visited us in 1982, he commented that our dollar was declining, and had fallen below US\$1.00.

As everyone knows, since then the decline in the value of the Aussie dollar has continued, with some ups, but a lot more downs. Two years ago I thought it had stabilized around 0.80. A year ago I thought it had settled around 0.75. Today it is down to 0.69.

In 1979 our dollar was worth 240 Japanese yen, today it is hovering around 85, a fall to a terrifying 35% of the 1979 value. In effect, these figures mean that Australian labour and enterprises are worth perhaps half

what they were in the late 1970s, as far as the world is concerned. Australia continues to slide down the standard of living scales. Once we had the second highest standard of living in the world, now we are definite also-rans.

I am especially hit by these declines as far as the books sold through Granny Smith's Bookshop are concerned. A big proportion of these books come from overseas, and so their cost in Australian terms continues to rise. Readers would be amazed at the number of quite ordinary technical books I am offered,

originating in Britain or elsewhere in Europe, which come in at \$400 or \$500 each. Of course these are quite unsaleable locally.

Books already in stock I generally sell at the old prices, but when I need to replace stock, of course I have to pay the higher prices. I stock some excellent tree crop books from Germany, which has experienced a considerable rise in the value of its currency. To replace stocks from there, I have had to pay a massive 31% more than I did 3 months ago.

Where will it all end? I discussed the matter with a wholesale agent for German books, and asked him if he thought the Aussie dollar would pick up. He sombrely replied that he could only see a further decline, perhaps another 10% drop over the next year.

Of course, there are some apparent benefits from a low local dollar. If we sell our macadamia nuts on the world market, we appear to get more Aussie dollars per tonne than we did before. But try going on an overseas holiday with the proceeds, or buying a book published overseas, and you find that you are no better off. In fact, as anyone who has travelled to Europe recently knows, if things continue as they are doing Australians will eventually end up trapped within their borders by the same economic barriers that restrain the populations of Bangladesh or Burkina Faso.

Why does it happen, why are we on this inescapable downward slide? My theory on this is simple. That theory says that the only thing that has any long-term effect on a country's standard of living is the proportion of its income it puts back into research, education, and public infrastructure.

Look at Germany, a country which continues to rise in the standard-of-living

stakes. Typical degree courses take 6 years, so a university graduate is 28 or 30 before they start work. The entire population is on a continuing adult education and training jag, with immense public investment in the area. German business investment in research and development is huge compared to Australia's, \$40 billion a year compared to our bare \$2 billion.

As a proportion of turnover, German business puts \$25 out of every \$1000 they earn back into research and operational improvement; Australian business puts a fifth as much, only \$5 out of every \$1000. The German federal and state governments plough back terrifyingly large proportions of their taxes into research and infrastructure gains, we continue to cut back in these areas.

Look at Japan, a country where education is a national obsession, where research into manufacture and operational improvement is paramount. Look at the 'Asian Tiger' countries, Malaysia, Thailand, South Korea, places which don't know there is a recession on, places which are rising continuously in the standard-of-living stakes, rising from a low base but taking care that their intellectual reserves are always rising faster than their daily draw to keep themselves fed.

Meanwhile, back at the farm, Australia's only response to hard times is to cut back further on our education, research, and public infrastructure reserves, slowly 'cash-converting' everything we own into enough for a few more days' living wage. Disband the State Government Division of Horticulture, pull out the pecan trials, pension off more public servants. I can understand why the book agent was sombre.

Steven Prowse takes the plunge

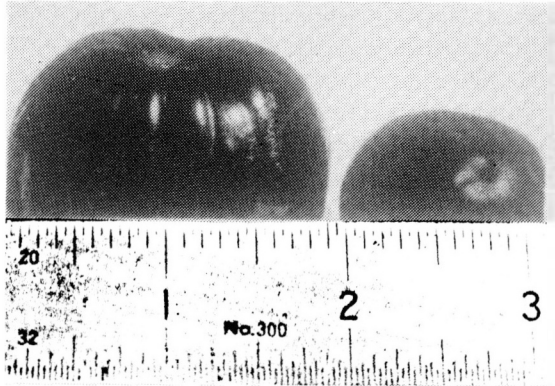
WANATCA member Steven Prowse writes that he has recently given up his position as Head Propagator at the Flecker Botanical Gardens in Cairns, to concentrate on plant research and importation and trial work on his private research property, Mulgrave Gardens.

Steven is a major player in the ethno-botanical field, working on every type of plant used by man in his immediate home area, other than plants which already form part of traditional commerce. He has a long history of involvement in the area, has worked with the Queensland Government on various projects, and has held key positions in the Rare Fruit Council of Australia and the Beneficial Plant Society.

Mulgrave Gardens is a major and exciting initiative being developed by Steven. He says that the property has been registered as an Ethnobotanical Garden, and its role is to act as a tropical/subtropical ethnobotanical gene pool and resource pool; to carry out research trials on on plants useful in subsistence farming, agroforestry, permaculture, and biodynamic systems; to introduce, trial, and supply new crop species; to operate a nursery supplying plants and information; to carry out breeding and selection trials; and, in the future, provide guided tours and offer educational facilities in this subject area.

Burdekin Plum

Steven says "The longest term project I have been working on, with some very good results to date, is selection of superior genotypes of *Pleiogynium timorensis*, the Burdekin Plum. This tree has far more potential than any *Santalum* species. It is Australia's next 'big one' after the



Superior Burdekin Plum selection
[photo: Steven Prowse]

macadamia, or will be. A very nice fruit, heaps of genetic variation, excellent timber, hardy."

"This work is going very well. In 1-2 years I will be selectively crossing the best selections. I am still establishing a gene-pool orchard of superior genotypes for pollen production".

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The Burdekin plum grows well in Perth, so there is plenty of opportunity for locally-based members to follow up this research. There are two trees in Kings Park. David Noël has a tree in his Shenton Park garden which is now as tall as the house — it has flowered several times but not yet fruited, perhaps cross-pollination is needed.

Mulgrave Gardens has over 200 new species already in development. The nursery operation is not yet open, but Steven has supplied preliminary plant lists which are reproduced below. Contact details are: PO Box 648, Gordonvale, Qld 4865 — phone/fax 070-56 1818.

Nuts

- | | |
|--------------------------------------|-----------------|
| 1. <i>Araucaria bidwillii</i> | Bunya Nut |
| 2. <i>Artocarpus altilis</i> | Breadnut |
| 3. <i>Adenanthera pavonina</i> | Red Sandalwood |
| 4. <i>Aleurites moluccana</i> | Candlenut |
| 5. <i>Anacardium occidentale</i> | Cashew |
| 6. <i>Athertonia diversifolia</i> | Atherton Nut |
| 7. <i>Canarium ovatum</i> | Pili Nut |
| 8. <i>Chrysobalanus icaco</i> | |
| 9. <i>Cordia subcordata</i> | |
| 10. <i>Hicksbeachia pinnatifolia</i> | Red Bopple |
| 11. <i>Macadamia integrifolia</i> | |
| 12. <i>Macadamia tetraphylla</i> | |
| 13. <i>Semecarpus australiensis</i> | Native Cashew |
| 14. <i>Terminalia catappa</i> | Tropical Almond |
| 15. <i>Terminalia edulis</i> | |
| 16. <i>Terminalia kaernbachii</i> | Okari Nut |
| 17. <i>Terminalia ferdinandiana</i> | |
| 18. <i>Santalum acuminatum</i> | |
| 19. <i>Santalum spicatum</i> | |
| 20. <i>Cocos nuciferum</i> | Dwarf Coconut |
| 21. <i>Cocos nuciferum</i> | Golden Malay |
| 22. <i>Juglans neotropica</i> | Tropical Walnut |
- * When ordering, eg: *Araucaria bidwillii* = NI

Fruits

- | | |
|----------------------------------|---------------------------------------|
| 1. <i>Annona muricata</i> | Soursop,
Guanabana |
| 2. <i>Annona glabra</i> | Pond Apple |
| 3. <i>Artocarpus altilis</i> | Breadnut |
| 4. <i>Artocarpus integer</i> | Jak |
| 5. <i>Artocarpus hybergureus</i> | Tropical Apricot
(native S. China) |

- | | |
|--|--------------------------------------|
| 6. <i>Artocarpus odoratissimus</i> | Marang |
| 7. <i>Artocarpus rigidus</i> | Monkey Jak |
| 8. <i>Artocarpus integer X heterophyllus</i> | |
| 9. <i>Artocarpus heterophyllus</i> | Chempadak |
| 10. <i>Averrhoa bilimbi</i> | |
| 11. <i>Averrhoa carambola</i> | |
| 12. <i>Baccaurea motleyana</i> | Rambai |
| 13. <i>Blighia sapida</i> | Akee |
| 14. <i>Bunchosia sp.</i> | |
| 15. <i>Casimoroa edulis</i> | White Sapote |
| 16. <i>Chrysobalanus icaco</i> | Cocoplum |
| 17. <i>Chrysophyllum cainito</i> | Star Apple,
Cainito (Green) |
| 18. <i>Chrysophyllum cainito</i> | Star Apple,
Cainito (Purple) |
| 19. <i>Clausena lansium</i> | Wampee |
| 20. <i>Coffea arabica</i> | Coffee |
| 21. <i>Diospyros digyna</i> | Black Sapote |
| 22. <i>Diospyros discolor</i> | Mabolo |
| 23. <i>Durio zibethinus</i> | Durian |
| 24. <i>Eugenia brasiliensis</i> | Grumichama |
| 25. <i>Eugenia carrisoides</i> | Cedar Bay Cherry
(Aust native) |
| 26. <i>Eugenia jambos</i> | Rose Apple |
| 27. <i>Eugenia uniflora</i> | Brazil Cherry |
| 28. <i>Euphoria longan</i> | Longan |
| 29. <i>Garcinia livingstonia</i> | Imbe |
| 30. <i>Garcinia mangostana</i> | Purple
Mangosteen |
| 31. <i>Garcinia fitzlanii</i> | Yellow Mango-
steen (Aust native) |
| 32. <i>Inga edulis</i> | Icecream Bean |
| 33. <i>Litchi chinensis</i> | Lychee |

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- | | | | |
|--|--|------------------------------------|---|
| 34. <i>Malpighia glabra</i> | <i>Acerola</i> | 9. <i>Courouptia guianensis</i> | <i>Cannonball Tree</i> |
| 35. <i>Mangifera indica</i> | <i>Mango (Common & stringless types)</i> | 10. <i>Castanospermum australe</i> | <i>Black Bean, Moreton Bay Chestnut</i> |
| 36. <i>Manilkara zapota</i> | <i>Sapodilla, Chico</i> | 11. <i>Dillenia alata</i> | |
| 37. <i>Myrciara cauliflora</i> | <i>Jaboticaba</i> | 12. <i>Dillenia indica</i> | |
| 38. <i>Myristica insipida</i> | <i>Native Nutmeg</i> | 13. <i>Dillenia fruticosa</i> | |
| 39. <i>Nephelium lappaceum</i> | <i>Rambutan</i> | 14. <i>Erythrina crista-galli</i> | |
| 40. <i>Pometia pinnata</i> | <i>Fijian Longan, Tawn</i> | 15. <i>Hyndocarpus kurzii</i> | <i>Chalmoogra, Leprosy Tree</i> |
| 41. <i>Pourouma cecropiaefolia</i> | <i>Uvilla</i> | 16. <i>Ixora klanderana</i> | <i>Native Ixora (white flowers)</i> |
| 42. <i>Pouteria caimito</i> | <i>Abiu</i> | 17. <i>Kigelia pinnata</i> | <i>Sausage Tree</i> |
| 43. <i>Pouteria campechiana</i> | <i>Canistel</i> | 18. <i>Lopanthera lactescens</i> | <i>Golden Chain Tree</i> |
| 44. <i>Pouteria sapota</i> | <i>Mamey Sapote</i> | 19. <i>Mimosa pudica</i> | <i>Sensitive Plant</i> |
| 45. <i>Psidium cattleianum</i> | <i>Strawberry Guava (Red)</i> | 20. <i>Mucuna novo-guiniensis</i> | <i>Flame of the Forest (vine)</i> |
| 46. <i>Psidium cattleianum</i> | <i>Strawberry Guava (Yellow)</i> | 21. <i>Phalaris clerodendron</i> | |
| 47. <i>Rollinia deliciosa</i> | <i>Amazon Custard Apple</i> | 22. <i>Medinella Sp.</i> | <i>Dwarf Medinella</i> |
| 48. <i>Rollinia musoca</i> | <i>Amazon Custard Apple</i> | 23. <i>Morinda citrifolia</i> | <i>Cheesefruit</i> |
| 49. <i>Randia formosa</i> | <i>Blackberry Jam Fruit</i> | 24. <i>Morinda pterygosperma</i> | <i>Horseradish Tree</i> |
| 50. <i>Salacca edulis</i> | <i>Salak Palm</i> | 25. <i>Murraya koeniga</i> | <i>Curry Leaf Tree</i> |
| 51. <i>Sandoricum koetjape</i> | <i>Santol</i> | 26. <i>Samanea saman</i> | <i>Rain Tree</i> |
| 52. <i>Spondias cytherea</i> | <i>Ambarella</i> | 27. <i>Sauropus androgynus</i> | <i>Sweet Leaf (perennial vegetable)</i> |
| 53. <i>Spondias sp.</i> | <i>Kedondong, Dwarf Ambarella (to 4m)</i> | 28. <i>Tectona grandis</i> | <i>Teak 90%</i> |
| 54. <i>Spondias sp.</i> | <i>Passionfruit</i> | 29. <i>Quassia amara</i> | |
| 55. <i>Spondias venulosum</i> | <i>Spondias</i> | 30. <i>Quisqualis indica</i> | <i>Rangoon Creeper, Pride of Burma</i> |
| 56. <i>Synsepalum dulciferum</i> | <i>Spanish Plum</i> | | |
| 57. <i>Sicana odorifera</i> | <i>Miracle Fruit</i> | | |
| | <i>Casa Banana</i> | | |
| | <i>Melon</i> | | |
| 53. <i>Tamarindus indica</i> | <i>Tamarind</i> | | |
| 59. <i>Pleiogynium timorensis</i> | <i>Burdekin Plum</i> | | |
| 60. <i>Eugenia malaccensis</i> | <i>Malay Apple</i> | | |
| 61. <i>Tamarindus sp.</i> | <i>Sweet Tamarind</i> | | |
| * When ordering eg: <i>Annona muricata</i> = <i>F1</i> | | | |

General

- | | |
|------------------------------------|--------------------------------|
| 1. <i>Azadaricha indica</i> | <i>Neem</i> |
| 2. <i>Alternanthera triandra</i> | |
| 3. <i>Bauhinia hookeri</i> | <i>Mountain Ebony (native)</i> |
| 4. <i>Barringtonia asiatica</i> | |
| 5. <i>Barringtonia calypttrata</i> | |
| 6. <i>Bixa orrelleana</i> | <i>Annatto</i> |
| 7. <i>Cananga odorata</i> | <i>Ylang Ylang</i> |
| 8. <i>Carludovica palmata</i> | <i>Panama Hat Plant</i> |

When ordering eg: *Mimosa pudica* = *G19* ¥

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Tony Pearce new Life Member

Another WANATCA member of very long standing has taken up our Life Membership option.

Mr A.T. (Tony) Pearce, member no. 41, joined the Association's predecessor, the West Australian Nutgrowing Society, in 1975. This was very soon after its formation.

Tony, who is 36, is a man of wide interests and capabilities. He has degrees in both physics and engineering, but is still studying, with a view to moving into naturopathy.

Currently working in the Eastern States in an engineering capacity, Tony is not a commercial tree cropper, though he has interests in pistachio and pine plantations, also a yabbie farm. He has always had a keen concern for sustainable agriculture and sees his commitment to WANATCA as a way to support more rational land use.

[The WANATCA Executive has continued its policy of placing the \$500 life membership fee into a deposit account, with only the interest to be used for current running costs].

GRAFTED FRUIT & NUT TREES

SHAHTOOT King White Mulberry

MANGO

MACADAMIA

KIWI FRUIT (Male & Female)

PEACH, NECTARINE (Low Chill)

CUSTARD APPLE

CARAMBOLA

PERSIMMON

NASHI, AVOCADO, CASIMIROA

Also seedling Papaya (Taiwan hybrid),

Tamarillo, Guava, Carob, . . .

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R.I.P. Stoneville Pecans

We are sad to report that the Stoneville pecans mentioned in the last issue of *Quandong* are gone.

By supreme irony, on the day that your Editor heard of their removal, he also heard from Ray Worley, a pecan expert at the Georgia Plains Experiment Station in the US. Ray enclosed 50-year yield tables on different pecan varieties in Georgia, and emphasized the need to continue trials, as the varieties which behaved very well in their earlier years (up to age 20) did not necessarily do as well as other varieties later on.

However, the situation is not a complete loss. The Minister for Agriculture, Ernie Bridge, has told us that the majority of the pecans have been given for replanting to other government-type institutions, and that the Association will receive copies of any information on these. We have had verbal assurances that the destinations of particular pecan varieties will be recorded and passed on to us (nothing so far), so that arrangements could be made, through the Association, to obtain budwood for further propagation.

Six of the pecans have been passed to the University of WA, where they will be under the eagle eye of WANATCA member Ian Fox.

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Mahwa — versatile old tree crop with modern potential

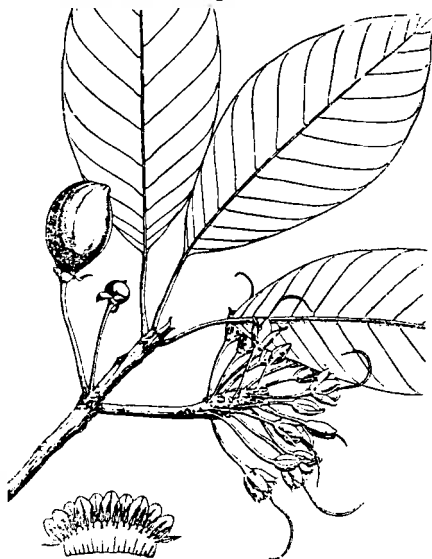
A multi-purpose crop tree with potential for much of Australia may become the subject of research as a commercial crop.

Called the Mahwa or Indian Butter Tree, and botanically known as *Madhuca latifolia*, the plant is native to central and northern India. It grows right up to intermediate elevations in the Himalayan foothills, so it is likely that seed provenances can be found which have enough cold resistance for good growth in subtropical and warm-temperate areas.

The Mahwa is the source of a multitude of useful products. The most unusual of these is its flowers, which are very high in sugar content. This is not just an interesting botanical curiosity — in the latest edition of H.F. Macmillan's *Tropical Planting and Gardening* it notes that "In India the fleshy flowers, produced in February, are dried and eaten, the average annual yield per tree being about 90 kg. It is estimated that some 25,000 tons of the flowers are gathered in India each year. These are sometimes used for the extraction of alcohol".

The Mahwa is also a major source of cooking oil. Macmillan says of this, and the closely allied Mee Tree (*Madhuca latifolia*), "From the seeds is obtained a thick yellow oil or fat known as Mowra fat, commonly used in India for cooking ... the fleshy seeds yield an oil used locally for cooking, and in medicine ... the bulk of the crop, some 30,000 metric tons per year, is crushed and used locally".

Two longer extracts on this promising crop tree follow. The first is from a modern source, M.S. Randhawa's *Flowering Trees*



(National Book Trust, India. 2 ed, New Delhi, 1968), which is also the source of the illustration used on the cover of this issue of *Quandong*.

The second extract is from a much older Australian source, *Cultural Industries for Queensland*, by Lewis Adolphus Bernays, and published by the Government Printer in Brisbane in 1883, 109 years ago. This absolutely fascinating work of some 230 pages has the subtitles *Papers on the cultivation of useful plants suited to the climate of Queensland; their value as food, in the arts, and in medicine; and methods of obtaining their products*.

This book contains a breadth and depth of information which is absolutely astonishing and sobering to realise already existed and

was published in Australia so long ago. It is a reflection of an age of past versatility — Bernays' 'proper' job was as Clerk of the Legislative Assembly of Queensland!

This book is being reprinted by the Tree Crops Centre under its R*O*D imprint (based on bound photocopies). It can be ordered under stock item R05C, at a cost of \$26.20 plus \$3 postage.

THE MAHUA OR INDIAN BUTTER TREE

Madhuka lafolia (Syn. *Bassia latifolia*)

Family: SAPOTACEAE

Common Indian names: Hindi, Bengali & Marathi — mohwa mahua; Malayalam — illupa; Tamil — ka-illipi, illupai; Telugu — ippa.

Bassia is after Fernando Bassia, curator of the Botanical Gardens at Bologna in Italy and *latifolia* meaning broad-leaved.

Distribution: Common in Central India, Uttar Pradesh and sub-mountain Himalayan region extending from Ravi to Kumaon. Along with mango it dots the entire countryside of Uttar Pradesh.

Description: It is a large deciduous tree with wrinkled bark which may be of grey or brown shade.

Leaves are leathery and clustered near the ends of the branches. Young leaves are coppery red, and are a beautiful sight in February-March.

Flowers cream-coloured, half-inch across, with plum-coloured calyces. They appear from February to April when the tree is almost leafless. The tree blooms at night and flowers fall to the ground at dawn.

Fruit a green juicy berry, ripening in June-July and edible.

Mahua is a forest tree, which is also cultivated for its nutritious flowers which are the staple food of the farmers of Uttar Pradesh and the forest dwellers of Central India. Its virtues are celebrated in numerous folk-songs from Central and Eastern India.

The flowers are eaten raw or cooked or made into sweetmeats. Sometimes they are also fermented and distilled for spirit. Seeds on crushing yield oil which is used as a substitute for ghi, hence the name Butter Tree. Mahua oil is also used for illumination. Mahua cake is used as manure. The bark is used as a dye. Milky sap from cut flowers, stems and branchlets is used as a cure for rheumatism.

Gardening notes: Commonly grown from seed. Seedlings do not stand transplanting well and hence are transplanted when big enough. Young seedlings being slow in growth require protection from frost.

It is an excellent tree for avenues where shade is required.

MAHWAH TREE

(*Bassia latifolia*. - SAPOTACEAE)

A handsome tree attaining a height of from 40 to 60 feet and a girth of six to seven feet. Trunk straight but short, with a smooth ash-coloured bark, and branches numerous, the lowest ones spreading horizontally. It is native to and common in most parts of India and is largely protected. It is also to some extent cultivated, possessing the advantage of thriving in dry stony ground unadapted for the plough, and of producing a crop of unflinching certainty. The flowers are numerous, crowding at the extremities of the branchlets on a footstalk about an inch long. They generally appear between the

shedding of the old leaves and the opening of the new. The crown of the tree is close, shady and rounded. The fruit is the size of a small apple, one to four seeded, but the seed, like those of most of the genus, are perishable and will only carry successfully sown in soil.

The mahwah is one of the few trees the chief economic value of which lies in its flowers. The corolla in this case is thick and fleshy, with a sickly sweet taste like that of manna, and is very nutritious. The flowers are borne in great profusion and, being very deciduous, thousands of tons of them fall to the ground in the season and are feasted on by the forest birds and beasts. During the day before they fall, birds, squirrels and other tree-resorting animals feed upon them largely. Deer, bears, pea-fowl, jungle-fowl and creatures of all kinds eating vegetable food, take their fill either from the tree or at its foot, and, when the number of these depredators is considered in connection with the fact that there is an abundance left for the wants of man, the productiveness of the tree may be understood. A single tree will produce from 200 to 400 lbs of flowers, without any other trouble of harvesting than gathering in the early morning off the ground where they have fallen during the previous night.

The fondness of many kinds of animals for the mahwah is taken advantage of by sportsmen and hunters, white and native, to get within range; and many a deer, bear and bird fall victim to the engrossing nature of their occupation when feeding on the falling flowers of this remarkable tree.

The season of the mahwah lasts for two months but, as the flowers dry and keep well, large quantities are stored and constitute a staple article of food. So dependent indeed upon it are the native population in some

districts that, in expeditions undertaken for the punishment or subjection of unruly tribes, the threat to cut down their mahwah trees often operates to bring them to their senses without resort to arms.

The use of the mahwah is by no means confined to the localities of the trees, but they are carried long distances for sale in the bazaars, and are eaten both raw and cooked. As a food for cattle they are extremely useful and are in much request and mahwah-fed pork has a very high character.

The 'Journal of Applied Science', referring to an importation of mahwah flowers by a New York house from Calcutta in 1880, says that the sample as imported shows a soft sticky mass, having much the appearance of raisins of a poor quality, such as are packed in casks. When soaked in water the individual corollas swell out, and assume a flattened globular shape, and are found to consist of a very fleshy cup within which are a great number of anthers. The consignees having had an analysis made, the report shows that the flowers contain the remarkable amount of 63.4 per cent of sugar. This enormous percentage of sugar, without reference to other constituents, fully accounts for the value attached to the flowers in India as an article of food and for use as a source of spirituous liquor.

The fruit is the size of a small apple, one to four seeded, and is eaten both ripe and unripe. Its chief use, however, consists of the extraction from the seeds of a greenish-yellow oil which concretes rapidly after expression and retains its consistency at a temperature of 95°. In a cold climate it keeps a long time, but in the plains of India after a few months' exposure it gets a bitter taste and rancid smell, separating into a heavy brown deposit with a little clear fluid above. The

oilcake is used for stupefying fish and the smoke from its combustion is said to kill insects and rats. The fresh oil is used in coarse cookery, in the manufacture of soap and for burning. The value of the oil in London for the purpose of making candles is about £35 a ton.

Having described the more innocent uses of the mahwah, I come to it as a raw material for the distillation of an enormous quantity of a coarse strong spirit. This is a large industry from which the Government of India derives a considerable revenue. In 1875 an excise duty of 8s. was paid upon every hundredweight of mahwah flowers entering the distilleries; but this charge was based upon the belief that the quantity of raw material named was only capable of producing three gallons of proof spirit. Since then, however, the yield has been found nearer six gallons and the duty has been increased. The Parsees seem to be the great distillers and sellers of this spirit between Surat and Bombay, pushing their distilleries and shops into the very heart of the districts where the tree is most plentiful. The extent of the industry may perhaps be judged from the fact that the Government revenue from this source in one small island off Bombay reached £80,000 a year some years ago. Apart altogether from the regular manufactories, large and small, distillation from the mahwah is carried on among the tribes, with all sorts of rude appliances, for home consumption.

The first product contains an essential oil which gives to the spirit not only a peculiar and somewhat fetid flavour and smell, but imparts to it a deleterious quality. Some years ago a patent was taken out for the removal of this material disqualification, the result being a spirit free from smell and nearly, if not quite, equal to the best French brandy; but the influence of the rum distillers of Calcutta is stated to have led to the imposition of a

prohibitive duty which completely put an end to the manufacture of the pure scentless spirit, and this in face of the facts that the process was cheap and simple and the product a wholesome spirit. It is fortunate that, as in the case of rum, age greatly improves the mahwah spirit.

The timber is not much used, as the tree for obvious reason is not often cut down; but it is very good, being close, durable and tough.

Too much stress can hardly be laid upon the value of this tree for Queensland. It thrives in stony poor soil and its crop *never* fails; the season never having been known in India when the crop of mahwah flowers was not abundant. The simplicity of the method of harvesting the crop, and its extraordinary keeping qualities for whatever of its numerous uses it may be wanted, contrast the mahwah favourably with many of the plants upon which so large a number depend for their living, and the partial failures of which so frequently involve them in difficulty. ¶

Executive elections due

At the AGM on November 18, an election will be held for the half of the WANATCA Executive Committee whose term ends this year (members are elected for a 2-year term).

Those retiring this year are: Brown, Napier, Scott, Sheppard, and Shorter. Some are willing to stand for re-election, and the Committee will itself be putting forward a slate of nominations to fill the positions. In addition, recently co-opted member Neville Passmore's membership is due for open ratification.

We try very hard to avoid a 'closed shop' on the Executive Committee, and welcome approaches from any member interested in serving on the Committee. Contact current President David Noël on 385 3400 at any time if interested.

Unusual citrus fruit growing at Nannup

Jeff Nugent of SARI (the Sustainable Agriculture Research Institute at Nannup) reports that he has a very unusual citrus fruit growing there which could open up quite a different market.

The fruits are very large, about 20 cm across. The majority of the fruit is taken up with firm flesh of similar consistency to that of a pear, with a refreshing lemon flavour. This flesh is in place of the pith in an ordinary citrus fruit.

Right in the middle of the fruit is a small golf-ball sized second fruit, like a small lemon. This can be used for juice or discarded like a pip.

Jeff says that the fruit has been described as a 'Ponderosa Lemon', but pictures of this variety in books are nothing like the fruit he has. It would be better to call this fruit a 'Nannup Lemon' or 'Nannup Fruit'.

Jeff is willing to supply a small amount of scion wood to propagators interested in working to spread the Nannup Fruit with an aim to possible commercial development. He can be contacted at 097-56 1271.

The Fruit Tree Doctor

For help with your tree health and pest or disease problems, phone:

Neville Shorter

Horticultural Consultant

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Advice also given on:

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- nutrition
- tree establishment

Letter from Kim Ong

In some past issues of Quandong there appeared two small articles, one on Amla (Phyllanthus emblica) and the other on Wood Apple (Feronia limonia). These articles seem to be taken from a publication called 'Cultural Industries for Queensland'. Perhaps you are aware of details of this publication, if so I would appreciate if you could advise me where I could obtain a copy.

Incidentally, preserved Phyllanthus emblica has been sold in some Asian grocery shops in Melbourne, and I have recently seen Wood Apple jam and cream being sold in Asian grocery shops here. Also, Thailand jujube in brine water, in glass jars, is also appearing. I do not know whether they are Zizyphus jujuba or Zizyphus mauritiana.

I have also recently come across the following from Thailand — the information is that marked on the jar labels:

- 1. Yanang leaves (Tiliacana triandra)*
- 2. Cassia leaves in brine [the first time I have known cassia leaves being eaten - what species or cultivar?]*
- 3. Khi-lek leaves [probably a Thai vernacular name]*

I do not yet have details of such plants, but am looking for them, doing it as a hobby on plants which appear to be generally not known. Perhaps I should buy them and taste them myself!

— K.Y.Ong, 27 Dayboro Road, Whiteside Qld 4503

[Editor's note: Details of the Cultural Industries for Queensland book will be found in the articles on Mahwa in this issue of Quandong.]

TRY SOME COCONUT, SPORT

If you came across Macapuno Balls, would you expect to be dancing there, playing sport with them, or what?

In fact 'Macapuno' is an unusual variety of coconut, often described as a 'coconut sport'. The word 'sport' is used in the sense of a mutation, rather than fun and games.

In a macapuno coconut palm, the tree and the nuts it produces appear normal until you open them up. Inside the nut, instead of the usual crisp coconut meat, there is a firm white jelly-like substance with about the consistency of cooked macaroni.

I recently bought a jar of macapuno balls from an Asian food shop. The balls were packed in a very thick sweet syrup. I washed most of this off and ate some — they had quite a good flavour, not very strong, like some chinese sweets or bean-curd cakes.

Macapuno-type trees can appear in any coconut population, but for some reason they appear most common in the Philippines. As far as I know, all commercially-sold macapuno comes from that country.

Macapuno-type nuts appear on particular coconut trees, and the trees affected have only nuts of the special kind. As macapuno nuts do



Label from a jar of Macapuno Balls

not foster normal embryo development and germination, and coconuts do not normally branch or sucker, the only way to propagate a particular clone of this sport would be through tissue culture.

— David Noël

1993 WANATCA Subscription Rates

The Association's Executive Committee are pleased to announce that they are not recommending any increase in membership subscription fees for 1993.

These will remain at \$40 for full members, \$20 for student members unable to pay the full fee. The last increase in the general rate was at the end of 1990, when the rate was \$35. Times is hard, we continue to keep fees to the lowest possible level where we can provide good service.

[Countryman/ September 3 1992]

Ancient ritual produces finest oil

Olives, plump and black in the wake of summer rain and winter cold, have meant a good harvest and premium oil this season for monks at the Benedictine community, New Norcia.

From July each year, a small band of monks and their helpers harvests the crop from the 150 or so trees which have stood for well over a century in an olive grove east of the Moore River.

They bring the fruit of each week's pickings back across the river to a processing shed where, surrounded by the distinctive smell of fresh olives and with an old diesel engine drumming in the background, they extract the oil.

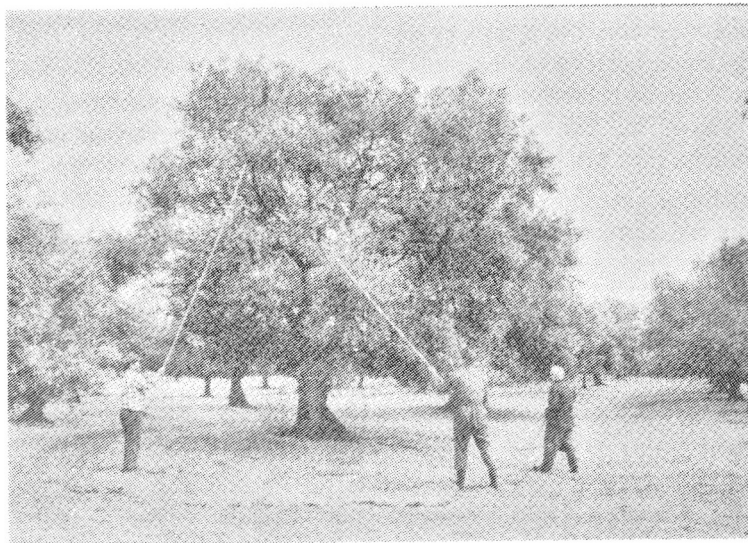
Then the ritual of picking for a week, followed by crushing and cold pressing the olives in the best Spanish tradition, begins

again. It lasts through July and August.

Dom Paulino Gutierrez has led the small but dedicated workforce in the processing shed for the past four years. Before that, he spent 50 years in the monastery bakery.

Dom Paulino is 82. He remembers arriving from Spain at New Norcia in 1928, when olives were still crushed using a horse works outdoors in the grove across the river.

The horse works was replaced by a 5hp diesel engine seconded from the monastery dairy when the olive processing plant was upgraded in the mid 1930s. Little may have



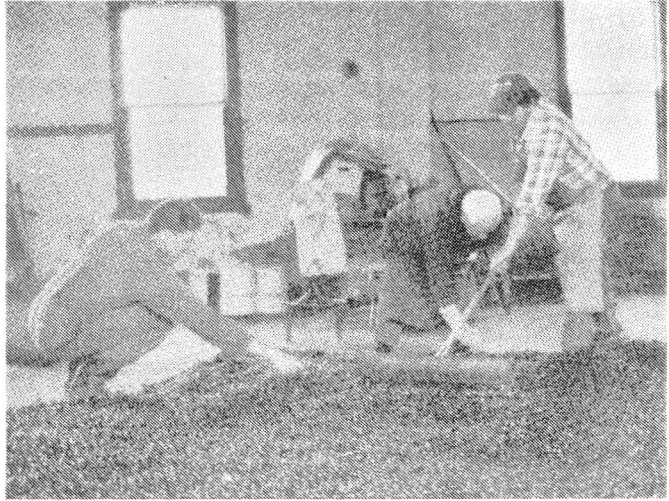
The crop is dislodged with lightweight aluminium poles and collected on hessian spread under trees in the olive grove. Volunteers usually help the monks with the harvest.

changed since, but Dom Paulino believes that may be the secret to quality.

“Our press is very small, and we use no cold water for the extraction, just a little warm water to start things moving,” he said. “The bigger factories use boiling water, which brings out the acids.

“The press determines the quality, and this is the very, very best oil you can get.”

Dom Paulino should know, for Spain is the home of olive oil. According to a recent report, it is



A carpet of olives covers the floor of the processing shed. Harvesting lasts through July and August

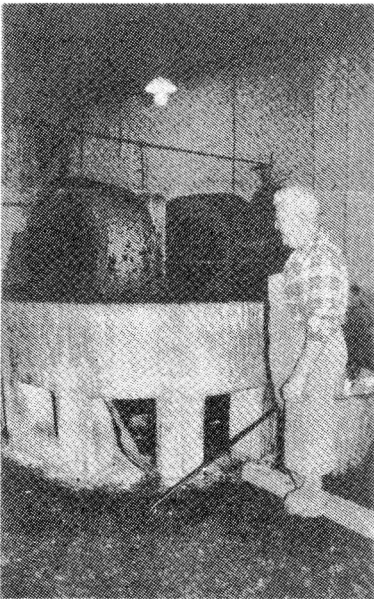
the world's biggest producer, with 30 per cent of world production from some 200 million olive trees.

He and compatriot Dom James Carrasco and their helpers Kerry Sands and Lester Jacobs are understandably proud of the process which they hope this year will yield around 900 litres (200 gallons) of oil.

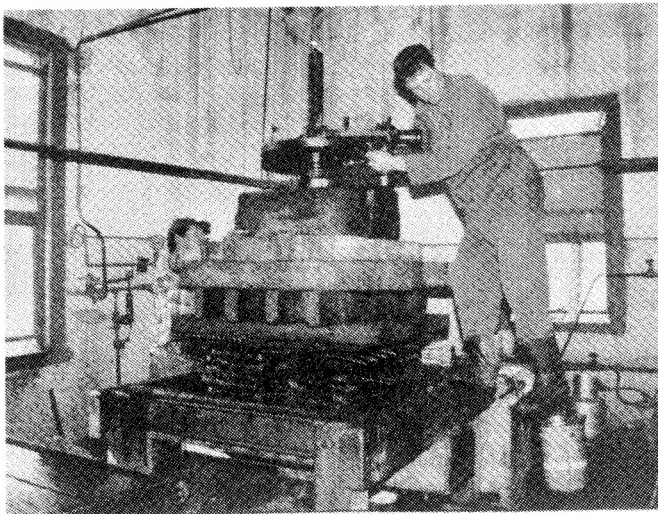
“We would have three or four hundred gallons if it was not for the twenty-eight parrots. They nip off the olives and drop them into the grass,” Dom Paulino said. “We always know when the olives are ready — the parrots tell us.”

Unlike the trees carrying pickling olives, which are plucked green and preserved in April, the oil producing trees are not under irrigation at New Norcia.

Long and lightweight aluminium poles are used to dislodge the ripe fruit which is collected on hessian sheets.



Dom Paulino Gutierrez keeps watch over the first stage of extraction in the crusher.



Lester Jacobs watches the oil start to run as Kerry Sands starts to work the press

Dom Paulino avoids using trees that have been burned or broken in the wind over time so that the wild rootstocks have come away.

These carry small fruit with big seeds which do not ripen uniformly, and are of little value.

Back in the shed, the fruit is sorted from leaf material on a wire grid, then stored ready for crushing.

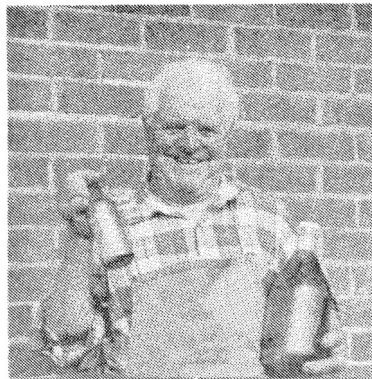
There is an ominous crunch as two steel edged rollers begin their assault on the seeds. About 300 litres of olives makes up each batch that goes into the crusher, and will eventually yield about 30 litres of oil.

After two hours, the pulp is collected and poured into hessian bags then stacked in the press. As the clamps come down, the hessian starts to glisten and soon thick, dark oil is running into the vat.

It is only when the weather turns warm in

September that the clarity of the oil from each harvest brightens enough for it to be strained and bottled ready for sale through the museum shop.

— *Cheryl Rogers*



Olive oil bottled ready for sale through the museum shop. Dom Paulino Gutierrez remembers when extraction was done using a horse works set up in the olive grove.

FIGS REACHING FOR THE SKY

A friend who lives in the high Rocky Mountains of Colorado, USA, has successfully grown 3 fig trees in his south-facing mountainside glasshouse. During the three months of summer 1992 he was able to harvest a few figs every day.

With a climate made extreme by its altitude (2200 metres above sea level) and its continental position, this must be one of the most unusual areas for fig growing in the world.

However, because it is often above the clouds it is fairly arid, with a high light intensity of sunny blue skies and reflecting snow. This would explain figs with a sweetness surpassing those grown under cloud cover in less extreme environments.

— **David Brown**

[West Australian/ July 30 1992]

Castor oil now a cancer killer

Grandma's claim that castor oil will kill off any bad bug is proving to be true.

Royal Perth Hospital's haematology department is using a highly toxic extract

from the castor oil plant called ricin in its fight against cancer. Staff are developing a process which uses ricin to clean extracted bone marrow of malignant cells that could act as cancer seeds.

The procedure is undertaken when a leukaemia patient is unable to find a suitable matched donor for bone marrow transplantation.

Hospital workers wait until the patient's disease is in remission then extract bone marrow, treat it with ricin to cleanse it of a small number of malignant cells and store it in liquid nitrogen at minus 196°C until needed.

It is thawed and transplanted back in the patient after he or she has had high doses of chemotherapy and radiotherapy. The process has been used to treat several terminally ill patients.

Ricin is extracted from the water-soluble part of the castor oil seed. The oil traditionally used as medicine comes from the fatty part of the seed.

RPH haematology staff originally extracted their own ricin from castor oil plants found on vacant East Perth blocks, but recently have begun buying it in the processed form.

Scientific officer Brian Meyer said researchers had linked the ricin to antibodies

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which targeted only malignant cells. The final product had been dubbed 'magic bullets', he said.

His department was working on ways to link ricin to another protein which would enable it to be used for a wider range of malignant cells.

Mr Meyer is a member of the WA branch of the Australian Institute of Medical Scientists, which is raising funds for WA's bone marrow registry and further research.

The campaign is being conducted with the

Lions Club and the Cancer Foundation of WA. A thousand marrow-barrow collection boxes — in the shape of wheelbarrows — have been distributed throughout the state.

— *Marnie McKimmie*

[Editor's note: Castor oil production is a major industry in some countries, the oil is used to cure rubber and has other industrial uses. Considering the ease with which the plant grows, there could be another possible industry for WA in this plant.]

Sweeping changes in South Africa's horticulture research

[The following announcement, made by the Director of South Africa's Citrus & Subtropical Fruit Research Institute, Dr J H Terblanche, appeared in the CSFRI Information Bulletin of April 1992. In additional changes, the organization has been renamed to Institute for Tropical & Subtropical Crops, Dr Terblanche has been promoted to Vice-President of the ARC, and Dr J L van Zyl has become the Director of the new ITSC.]

CSFRI - QUO VADIS?

Since the establishment of the Citrus and Subtropical Horticultural Research Station in 1926, much has changed. During the more than 65 years that the Citrus and Subtropical Fruit Research Institute (CSFRI) has been in existence, numerous conclusive contributions have been made to ensure and promote the development of the designated crops. The phenomenal growth of all the South African subtropical crops can be ascribed to two factors, namely appropriate

technology which has been achieved by purposeful research, and the progressive attitude of our farmers towards this research. We praise all those, past and present, who have made this growth possible.

Now, a new era has dawned. The Government has relinquished the responsibility for research, development and the transfer of technology with respect to agriculture and has assigned this to a statutory scientific council, namely the Agricultural Research Council (ARC). The founding of the ARC and all relevant aspects was legalised by the Law of Agricultural Research of 1990. The implication thereof is that the Government has created a mechanism by which agricultural research, development and technology transfer is autonomous, as is already the case with industrial technology (CSIR), medical science (MRC) and the human sciences (HSRC). The CSFRI is one of 12 institutes of the present Department of Agricultural Development which is being transferred to the ARC.

The question, however, revolves around what this process will entail. Any alteration in a system will invariably result in numerous changes at the operational level. The most important will be as follows:

The ARC will enjoy complete autonomy with respect to its policy and the administration of its task. This autonomy will be shifted largely to ARC Institute level. Hereby the possibility of greater flexibility at all levels is created, which will inevitably be reflected in improved functioning.

The CSFRI will concentrate mainly on research requested and paid for by the industries, as is the case throughout the world. The industries will, however, not be financially overburdened because the Government will remain the main contributor. At present it is estimated that industries will not have to pay more than one third of the total working costs. History has proved that an investment in technological development is the best investment that an industry can make on behalf of itself. Contributions from industries should therefore be an investment which is excellent value for money.

With projects that are partially funded by the industry and which are undertaken according to the "consumer pays" stipulation, the industry will dictate the priority, allocation of manpower, funds and the evaluation of progress in relevant projects. In this manner it is anticipated that a full and equal partnership will be established, which will naturally lead to reciprocal loyalty and trust.

Career prospects based on compensation according to merit should provide the incentive for excellence through which the total output will be increased.

The founding of the ARC is thus not only a change for the sake of change, but for the better. The Institute looks forward to the challenges of the new dispensation and trusts that it will succeed in serving the respective industries satisfactorily.

Y

From the WA Ag Dept

Dear David

The Department has been receiving an increasing number of enquiries from people interested in different nut crops.

At present, there is limited printed information that we can give these people. We feel that a short farm note on nuts, detailing general management, production and market information would be very useful.

There is particular interest in Macadamias, Chestnuts, Walnuts and Pecans. Most of our yield and production information for these crops comes from the eastern states and may not be accurate for Western Australian conditions, so there is a need to collect local information.

John Dicks (WA Department of Agriculture, Midland) suggested that I should contact you regarding possible sources of local, relevant information. Would it be possible for you to ring me at the Manjimup Office on 097-71 1299.

Thanking you for your help.

— Roslyn Hanna, Regional Economist, Department of Agriculture, Rose Street, Manjimup WA 6258

[Ed: WANATCA is, of course, cooperating with the Ag. Dept in this matter]

[CSRFI Information Bulletin (South Africa) April 1992]

Papaya shows potential for the future

There can be no doubt that the papaya, (*Carica papaya* L.) has made tremendous progress on the European market in recent years, but there are still some people in the trade who view the fruit with disappointment. Nevertheless there is a steady growth of imports.

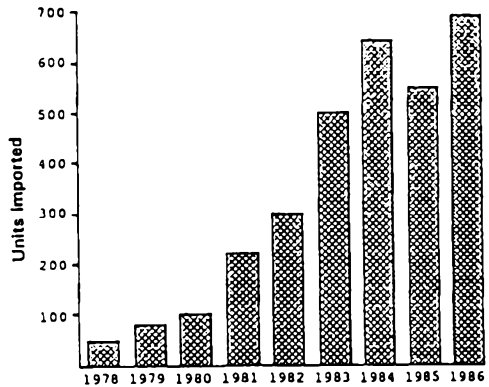
Apparently the major drawback of the papaya has been variability in fruit maturity and condition with consignments either being too advanced or too unripe to meet market requirements. The papaya can vary tremendously in colour (from pale green to dark red), shape (from pear to cucumber-shaped) and in size (from 500g to 10kg and more). These characteristics vary according to cultivar and geographical situation.

However, there are now signs that producers and exporters are coordinating their activities to ensure that the product has good quality as far as cultivar, packaging and post-harvest handling are concerned. It is thus significant that South African growers have decided to establish a Papaya Growers Association. This kind of cooperation should ensure a sound future for the papaya industry.

Culinary usage is almost as diverse as the number of types available. Unripe fruit can be cooked in the same way as vegetables, while mature fruit can be sliced and diced for use in fresh fruit salads, sectioned for eating in the same way as a melon, or cooked to make sweet jams or chutneys. Even the seed can be used as a spice.

In addition, the juice of unripe fruit, which is rich in the enzyme papain, can be used to tenderise meat. Clearly, the papaya is one of the most versatile of fruits for culinary

United Kingdom Imports
of papaya 1978 - 86



purposes - an aspect which should appeal to the most adventurous of caterers. Nevertheless, it must be remembered that ripe papayas have a relatively short shelf life - a mere two to three days at ambient temperatures - and the fruit are particularly prone to bruising if handled incorrectly. More could be done to promote the fruit and its attributes, since many consumers remain unaware of its existence, let alone how to prepare it.

To redress this lack of knowledge, some progressive producers and exporters should be preparing attractive recipe leaflets and the

like to get the message across to the general public. This has been done effectively with other fruits such as avocado, banana and mango. More information on recipes can be obtained from Mr W. Conradie at the ITSC.

There are many exporting countries. Brazil is by far the largest exporter of papayas to the European markets with a market share between 80 and 90%. Additional supplies come from Kenya, India, South Africa,

Jamaica, Israel, Venezuela, Costa Rica and the USA. South Africa produces approximately 10% of the papayas in Africa and 1% of the world production.

The papaya has an excellent future, provided more people become aware of its wide range of nutritional and culinary qualities, and if the post-harvest problems are addressed and rectified.

— W. Conradie

LETTER FROM RUTH WALKER

A word of appreciation, the Quandong books are very interesting and certainly worth reading.

You have not heard a lot from us in Dongara [Ed: this is about 325 km north of Perth, on the coast below Geraldton], but we are not just reading.

I was very interested in the article about the Pecan trees. We are thinking about putting in a grove of trees in the near future.

We are also very interested in the Neem Tree project. Do you know where we can get seeds?

Since we hardly get to Perth (and if, not usually around meeting time), we much appreciate any contact to the Association.

At this stage we are experimenting with a small number of white sapote trees. These were grown from seed by Otto Dik. So far they have been doing all right, the snails seem to give them a hard time.

We are also experimenting with custard

apples, black sapote, jujube (chinese date), and leucaenas. The latter don't look too promising yet, they haven't died, though.

As mentioned, we are looking into planting Pecans, and also Almonds. Maybe even Pistachios, at a later stage.

We welcome any visits from members for a chat, advice, and exchange of experiences.

— Ruth Walker, Box 231, Lot 771
Springfield, Dongara WA 6525.

[Ed: Neem seeds can be obtained (in season) from Australian Neem Plantations, PO Box 10, Machans Beach Qld 4878 (070-911785) and from Ellison Horticultural, PO Box 365, Nowra NSW 2541 (044-216670)]

USEFUL TREE SEEDS FROM CHILE

Good range of seeds of fruits, nuts, and other useful trees from Chile. Many should be suited to Australia. **Contact Jan Correa for list at:**

Gondwana Seeds

Casilla 53027, Correo Central,
Santiago 1, Chile

Table B3: Australian production of fruit, nuts and vegetables, 1978-79 to 1989-90, by value, \$ million (1989-90) a

Product	78/79	79/80	80/81	81/82	82/83	83/84	84/85	85/86	86/87	87/88	88/89	89/90
Fruit and nuts:												
Oranges	183	173	174	164	167	162	191	179	151	166	187	176
Lemons/limes	19	18	17	16	14	13	15	17	16	14	12	13
Mandarins	33	19	30	28	21	26	31	33	31	34	36	42
Other citrus	14	19	13	12	11	12	12	12	9	14	11	11
Total citrus	248	229	234	220	213	212	248	241	207	228	246	243
Apples	247	239	240	228	219	206	258	188	247	212	249	212
Pears b	78	81	84	56	69	70	73	86	94	89	67	79
Total pomefruit	325	321	324	284	288	276	331	274	340	301	316	291
Apricots	33	31	34	33	30	27	28	33	27	35	29	28
Cherries	23	13	20	24	13	13	16	13	13	16	15	17
Nectarines	8	5	7	8	7	8	8	10	12	15	18	17
Peaches	51	53	52	42	35	39	41	40	45	52	45	51
Plums/prunes	38	24	31	21	28	27	29	32	28	25	28	24
Total stonefruit	153	126	144	128	113	115	122	128	124	144	135	138
Table grapes	34	35	35	30	34	31	47	51	60	78	63	52
Wine grapes	173	180	168	172	147	177	193	151	141	201	297	238
Currants	15	16	11	18	11	10	11	14	11	9	7	10
Raisins	12	16	10	24	12	3	5	12	10	5	5	6
Sultanas	136	267	136	163	147	113	119	138	92	106	80	86
Total grapes	370	514	360	408	351	333	375	365	314	400	451	392
Bananas	125	102	120	113	116	133	135	137	156	137	142	182
Pineapples	45	45	40	38	42	40	48	44	53	48	47	41
Strawberries	20	22	17	18	18	19	19	21	23	23	24	27
Avocados	ns	ns	ns	ns	14	15	16	16	20	15	23	23
Macadamias	5	5	6	5	5	4	6	8	11	14	17	22
Mangoes	3	3	4	5	4	5	6	8	8	14	12	16
Almonds	6	6	11	9	11	8	10	15	18	19	13	14
Other fruit, nuts c	24	45	30	33	17	23	29	24	23	19	31	25
Total fruit and nuts	1361	1418	1342	1260	1191	1181	1345	1282	1297	1362	1456	1414
Vegetables:												
Potatoes	303	283	343	331	279	445	235	278	337	307	337	393
Tomatoes	142	143	152	145	160	156	154	140	141	137	152	171
Onions	59	55	92	95	53	79	68	57	70	73	111	88
Carrots	58	49	53	59	45	65	47	52	57	56	80	80
Mushrooms	36	38	37	40	45	45	53	59	63	71	69	79
Lettuce	41	44	49	41	42	44	44	49	50	50	56	58
Other vegetables	362	283	302	212	248	300	308	328	368	379	427	459
All vegetables	1002	894	1028	1016	920	1134	909	964	1086	1074	1231	1328
Total fruit, nuts, and vegetables	2363	2312	2369	2276	2111	2316	2254	2247	2383	2436	2687	2742

ns Not specified separately

a Values converted to \$1989-90 using the RBA price deflator for GDP.

b Includes nashi.

c Includes avocados before 1982-83.

Sources: ABARE 1992a, p 71-73; ABS 1991a (Cat. No. 7503.0), p.11; RBA 1992.

The table on the previous page is from the new Industry Commission report "The Australian Horticultural Corporation — Effectiveness in increasing international competitiveness" (details ad. on right).

President's Garden features in Gardeners Yearbook

The Shenton Park garden of WANATCA President David Noël is featured in the just-released 1993 edition of the West Australian Gardener's Yearbook.

The garden, one of a number of 'lifestyle' gardens looked at in the book, is under the November section. The entry brings out the productive, multi-storey arrangement of the garden, the emphasis on massive biomass recycling through a TCC Compost Stack, and the garden as a prime source of fuelwood.

This new edition of the Gardener's Yearbook is the first to be edited by WANATCA Executive member Neville Passmore. Neville, well-known as a broadcaster and as the Principal of Blossoms Garden Centre, a major WA supplier of unusual fruits and nuts, has contributed a great deal of useful local information to the guide on some of these fruit crops. The book is most attractive and colourfully laid out; the Editor is to be congratulated on an excellent publication.

The 1993 West Australian Gardeners Yearbook has a recommended price of \$19.95 and is available at most newsagents, bookshops, and garden centres statewide. The book can also be ordered for mailing from one of the sponsors, Greening Australia, at 1118 Hay Street, West Perth, WA 6005.

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607A • ASPARAGUS Feher (Hun, 1992). 161p. Pb. The complete manual: culture, varieties, nutrition, pests, commercial aspects. Highly recommended. \$56.95

559A • AUSNEEM III - Third Australian Neem Conference (Aus, 1992). 36p. Pb. Good source on current state of neem production and use. \$12.50

608A • AUSTRALIAN HORTICULTURAL Corporation: Effectiveness in increasing international competitiveness (Aus, 1992). 132p. Pb. Industry Commission report on AHC, with useful statistics and trade pointers. \$12.95

616H • The HEALING FOREST: Medicinal & Toxic Plants of Northwest Amazonia. Schultes (US, 1990). 484p. Hb. Universally acclaimed — see Granny Smith list N25 for more details. \$84.95

612I • INTERNATIONAL TREE CROPS No.2 (Aus, 1992). 114p. Pb. First-class magazine issue, 30 leading-edge articles incl. quandong, carob, acacia food, Japanese chest-nuts, sugar gum, paulownia, agroforestry, timber ... Highly recomm. \$15.00

614M • MANAGEMENT of SANDALWOOD. Kealley (WA, 1991). 36p. Pb. Valuable technical, economic & legal survey of sandalwood production, conservation. \$8.00

617P • The PAWPAW, *Asimina triloba*. Callaway (US, 1990). 22p. Excellent intro. to *Asimina* species, cultivars, culture, research etc. \$7.95

606P • PLANT Resources of SOUTH-EAST ASIA: Basic list of species and commodity groupings. Jansen (Neth., 1991). 372p. Hb. Invaluable source list of every known useful species in the area, with codes, indexes for 38 use categories (food, oils, timber, spices, rattan, ...). \$116.45

Mail: PO Box 27 Subiaco 6008
Phone 09-385 3400; Fax 09-385 1612
Office: WA Gardener Building,
Showgrounds, Claremont



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

CALENDAR OF FORTHCOMING EVENTS

1992

Nov 18 Wed *Annual General Meeting (Kevin Whiteley — 40 Years in Horticulture: What Happened)

Nov 22 Sun WANATCA Field Day, Chittering Valley

1993

Jan 12 Tue Executive Committee Meeting

Feb 17 Wed *General Meeting

Mar ?? Sun ?Field Day, Perth Backyards?

May 19 Wed *General Meeting

Aug 18 Wed *General Meeting

Nov 17 Wed *Annual General Meeting

*General Meetings are held starting at 7.30pm. See page 2 for venue.

These meetings usually include a current magazine display.

§ For contact details refer to the Tree Crops Centre.

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