

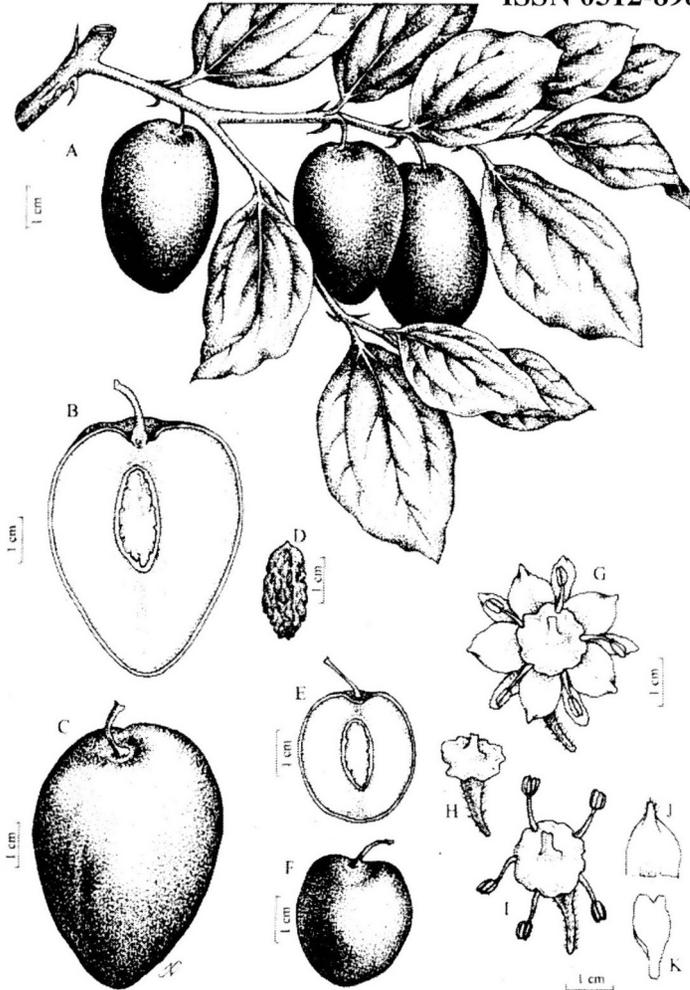


Quandong

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

Third Quarter 2002 • Vol 28 No 3

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TWO BIG EVENTS COMING UP!

NEXT MEETING: Tuesday August 13, 2002: 7.30 pm

Our speaker at the next WANATCA meeting will be **Neville Shorter**. Neville has been a long-time contributor to WANATCA and has great experience in horticulture.

Neville will be talking with us on:

What's New in Fruit Crops?

ZOO FIELD DAY / BARBECUE/ SOCIAL

Sunday September 22, 2002: 12.00 noon

Meet at gate, corner of Angelo and Onslow Streets, South Perth. Cost \$5 adults, \$2 children. Special admission, you must be on time.

Full details on the two attached leaflets.

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

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About the Cover

The cover drawing shows the Ber or Indian Jujube, *Ziziphus mauritiana*. See also the book review on page 22.

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.

[Post Down South / 2002 Jun 8]

Boronia: sweet smell of success

Supplying the perfume world with native boronia oil is the vision of a Margaret River man.

Anthony Quinlan and WA company Bio-gene Technology aim to commercialise the once common WA native boronia plant for oil production in perfume, aromatherapy, as a food and beverage additive and in the cut-flower market.

"The climate and topography in Margaret River are perfect for growing boronia," said Mr Quinlan.

Boronia was once sold every spring in the Murray Street Mall — and the highly scented flower, endemic to the South-West, is set to fill city streets again.

Picked

Last year, cut flowers were sold to passers-by. But instead of being harvested from native bush, as they once were, they were picked by commercial growers in the South-West.

Mr Quinlan first learnt that the plant could be grown in and adjacent to wetlands on his property when he was doing viticultural soil consultancy. "Hearing that the prized boronia oil had fetched \$10,000 a litre in the past soon got me motivated to find out more," he said.



Anthony Quinlan in fields of semi-mature boronia with his companion Jake

As far as Mr Quinlan can determine, no other boronia growers in WA have embraced commercial oil production on the scale he has. "I came down here for a two-week holiday — and didn't leave," he said.

Originally from Claremont, he soon found himself living in Margaret River, juggling

Quandong Links to ATCROS

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

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

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

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

Quandong: Atcros ref. <A1466>.

two jobs. Mr Quinlan is now working with 40,000 boronia plants, which can be harvested annually.

"Only half of the plants will be suitable to continue growing, and we'll then concentrate on taking cuttings and cloning all of the good ones," he said.

With help from the University of WA in selecting 30 superior clones from the native population, Mr Quinlan has been able to set about testing different varieties to see which types have the most suitable compounds.

He says he and his company have the rights to 10 varieties. There are 40 species of the plant endemic to WA.

Mr Quinlan says he has narrowed the optimum producing species down to two species suitable for oil production.

"We've taken it to a level where we know all the husbandry for it," he said. "However, we need to grow five times what we are producing at the moment to take it to a commercial level."

With further backing, Mr Quinlan said he could be producing on a commercial level within the next five years.

He believes another exciting application is in the flavouring industry. "The compound

we are after in boronia oil has been known to heighten flavours, particularly berry flavours — like a natural MSG," he said.

The potential to use this in soft drinks was huge, he said. The healthy food/beverage market offered a lot of scope, with people more conscious of their health.

Considering the amount of additives, sugars and artificial flavourings in many soft drinks, a natural flavouring would be very attractive to the market, he said.

"It's been studied in depth, but not as much as needed" he said.

The regularity of supply had been a problem in the past, when boronia was taken from bushland for oil and cut flowers. Several areas had been cleared of native boronia.

At the moment in WA there were 12 boronia cut-flower growers, with only one person making oil.

Dr Ken Atkins, acting manager of CALM's wildlife branch, said: "Harvesting from native bushland has been very low in recent years. It is now more tightly regulated than other licensed wildflower picking."

Mr Quinlan wants to see an industry develop where boronia is no longer taken from the bush and national park areas, but grown and harvested on properties with a suitable climate.

In fact, Mr Quinlan and Biogene Technology are interested in commercialising any Australian plant that has a desirable compound. "The two active compounds that we are looking at are beta-ionone and dodecylacetate," he said. "These two compounds have been used in the perfume industry for the past two years."

Growers of boronia can only harvest the oil when the plant is in flower. This had

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decreased the reproduction of wild boronia in areas where it had been picked, he said.

"Boronia can be grown anywhere south of Bunbury through to Albany," Mr Quinlan said. "Last year, we exported cut flowers to Japan".

"For this trial run, we only exported a couple of hundred kilos and received really promising results. "The cut flower is beautiful, but work needs to be done in manipulating the length of its vase life."

In terms of monetary rewards, Mr Quinlan believes that perfume is the area that will generate the most income.

Five years ago he and his backers were looking at bulk distribution. "Now we are interested in product design with a view to eventually refining our own oil on site," he

said.

The long-term goal is to have the operation running organically. But for an essential oil processing plant to be built, more capital is needed.

"We want to build a plant that will be available for the whole region," Mr Quinlan said. "In the future, we may be able to supply boronia seedlings and all plant material to nurseries."

Spin-offs in the region could include extra employment opportunities and tourism possibilities. "It could create a new industry for the whole region and give small to medium farmers another option. On a per-hectare basis, you get quite a lot of commodity in small properties," he said.

— *Kim Christian*

World tree crop magazines to sell at WANATCA meetings, TCC

The Association receives a large number of magazines each month from many sources — by subscription, and especially by exchange with local, interstate, and overseas organizations working with tree crops, nuts, fruitgrowing, permaculture, horticulture, organic growing, the environment, and productive rational and sustainable land use.

Current issues of these magazines are vital to keeping us up-to-date on important happenings and information on tree crops. Our publications Quandong and WANATCA Yearbook are regarded as world leaders in presenting an informed, carefully selected, and relevant picture of the changing world of tree crops to our readers.

However, once the current usage is over, these magazines are not sufficiently used. We have never had the resources to create a proper library for all the back numbers, accumulated over a period of nearly 30 years. In addition, the first information source people go to has been gradually moving away from libraries and onto the World Wide Web.

So WANATCA has decided to offer these current magazines, and a selection of older ones, for sale at General Meetings, and afterwards (if any are left!) at the Tree Crops Centre. Most will be sold at \$4 each, with smaller issues (16 pages or less) at \$2 each, first come, first served.

A jar will be provided into which money should be placed, starting with the August 13 General Meeting at Kings Park, so please bring change with you, to pick up some unique items — sometimes the only ones in Australia!

Spending 40% of your income on watchdogs

A qualitative appreciation of the importance of soil organisms to tree growth has begun to move into people's consciousness. Facts such as that Douglas Fir trees live in symbiosis with some 2000 different soil organisms are now well-known.

What is not yet so well appreciated is the hugely dynamic nature of the tree/soil organism symbiosis. As an example, I use a long-term composting method, the TCC Compost Stack, which processes big volumes of garden materials (tonnes each year), mostly tree prunings.

Sometimes I remove complete trees, including the roots, and root pieces not big enough to dry for firewood logs go onto the Compost Stack too. I have been surprised to see how these root pieces compost up relatively rapidly. After about a year, root pieces 2-3 cm across have decomposed into friable black compost, as quickly as, or more quickly than, branch material of similar size.

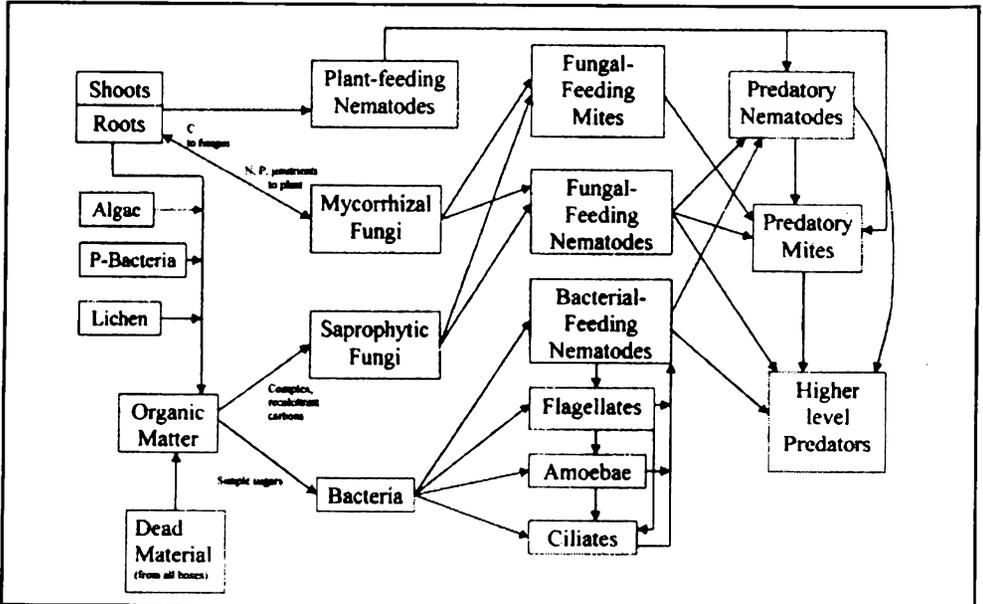
So the decomposing organisms in the stack are obviously working rapidly and efficiently.

The question then is, why don't these organisms attack the roots of standing trees with the same vigour?

Living roots

The big difference appears to be that live roots exist in dynamic equilibrium with soil organisms. The tree actually expends its resources on feeding 'watchdog' organisms, or perhaps 'buying off' predatory organisms by tossing them diversionary baits.

And according to Dr Elaine Ingham, principal of Soil Foodweb, plants may spend 40% of the energy they make from photosynthesis on feeding or otherwise placating soil organisms. Of course, it is a symbiosis, many of these organisms help to feed the tree or protect it from diseases and micro-predators.



As might be seen from the diagram, which originates from Soil Foodweb, the situation within the soil is very complex. But it is obvious that the living complexity which should desirably exist around and within a tree's roots cannot be duplicated or matched by the simple application of chemical fertilizers. As always, the motto is "Stability (or Sustainability) Through Complexity".

Soil Foodweb have offices in the United States and Australia, they issue a free e-mail magazine and have a useful website, at www.soilfoodweb.com. For further contact details, check the ATCROS website as on page 3.

— David Noel

SFI: Soil Foodweb Institute Pty Ltd: A3490.

[BioOrganics Inc. Newsletter / 2002 Jul]

The Search For The Great Fungi

A few years ago, I had the opportunity to observe an experiment that consisted of transplanting tomatoes into large pots containing pure beach sand – unwashed and quite salty.

Each of the dozen or so groups of test plants had been inoculated with a different type of endomycorrhizal fungi — *Glomus mosseae*, *G. intraradices*, *G. aggregatum*, *Gigaspora margarita*, etc.

Very quickly it became obvious that the beach sand was a less than ideal potting medium. The non-inoculated control plants died almost immediately, followed by most of the test plants. Some test group plants survived, but were weak in appearance and bore only a few small fruits.

However, one group of test plants all thrived and produced good crops of large

tomatoes. That one particular fungi, and only that one, had the ability to help its host plants deal with the extreme low-fertility/salty growing conditions.

The moral of this? With more than 150 named types of AM fungi, plus countless local adaptations that have evolved, be very sceptical of the projectability of any testing that involves only one or two types. Just because one beneficial fungus does not perform well in a lab test does not mean those results are typical of all types.

I would speculate that AM fungi that have evolved in the harshest soil and climate situations will prove to be most useful for growing crops in poor soils, and hope that researchers will devote some time to identifying, capturing, and trialling such types.

Yes, it is more convenient to conduct tests using only commonly available types, but I'm guessing that the greatest rewards will not show up there.

— Don Chapman, President: BioOrganics, Inc. Please direct comments or questions to: don@bio-organics.com.

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[West Australian / 2002 Apr 10]

Going nutty over trees

Flourishing in the backyard of David Noel's Shenton Park home is a fruit and nut feast from around the world.



Grower: David Noel has turned the yard of his Shenton Park home into a haven for more than 300 shrubs and trees from 50 countries. The plants produce native and exotic fruits and nuts. Picture: Trevor Collens

He has nurtured 300 tree crops from about 50 countries in his small suburban yard.

It all began for Mr Noel, 65, when a librarian colleague at the University of WA suggested about 35 years ago that planting nuts was the way to go.

Mr Noel became the founder of the WA Nut Growing Society. The society evolved into the WA Nut and Tree Crop Association and has about 400 members, including some who live overseas.

He coordinated Acotanc-2001, the 9th Australasian Conference on Tree and Nut Crops, with the theme "Tree Crops Essential to the Earth", held in Perth in April 2002.

Mr Noel organised the first Acotanc conference in Perth in 1982, to provide a key source of information exchange, after attending a conference of the Northern Nut Growers' Association in Ohio in 1979.

"Properly managed, tree crops can lead to environmental improvement and can solve many land use problems," Mr Noel said. He runs the Tree Crops Centre in Subiaco.

¥

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[*Acuminatum* (AQIA) / 2002 Autumn]

Ancient fruit boasts exciting prospects

Australia's burgeoning quandong industry is about to take a big leap forward.

Breakthroughs in quandong propagation techniques will allow expansions of orchards across South Australia while offering a viable diversification option for broadacre farmers in drier areas.

A severe shortage of suitable quandong planting material is about to be reversed, thanks to the development of propagation techniques that pave the way for large-scale plantings.

One of the first to diversify a broadacre farming enterprise by growing the unique native fruits, Robin Schaefer of Loxton, believes the new techniques are just what the industry needs. The more trees available, the better for the industry," said Robin, who decided seven years ago that quandongs were the ideal option for his property.

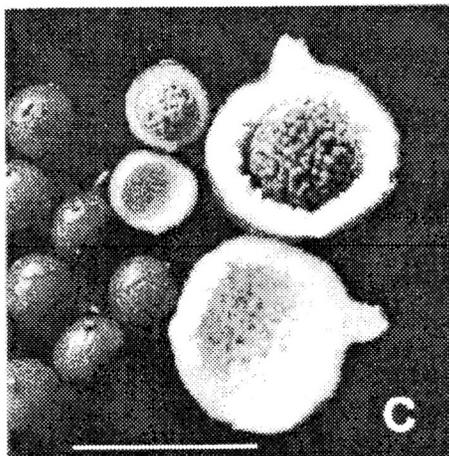
Robin says the native trees are particularly suited to, drier pastoral country, are well adapted to harsh conditions, and can tolerate saline water up to 7000 ppm.

Selling to food outlets in SA and Melbourne, Robin says the quandongs provide good returns and he plans to expand his orchard.

He hopes the industry can eventually move into the export sector, and it appears some companies have already set the ball rolling.

Quorn Quandongs is planning a 4000 tree orchard and tourism enterprise at Quorn in the north of SA. It also plans a 2000-tree orchard at Keith, as a hedge against lower production years of prolonged extreme heat at Quorn.

The lack of a consistent and reliable supply of planting material of suitable quality has so far prevented major developments in the



Small wild quandongs and large fruit (scale is 5 cm) from a suburban Adelaide garden. From "The Quandong, Australia's Premier Native Fruit", by Elizabeth Gordon-Mills

industry.

The industry expects a viable future for quandong orchards so long as grafted trees — with superior genetics for a consistent supply of top quality fruit — are made available in sufficient numbers.

This has not been possible until recently, because of the difficulty growers had propagating the varieties, but Quorn Quandongs' Ian Powell has perfected the propagation and orchard management techniques needed to tame the quandong for commercial development and industry expansion.

The company is now taking orders for 'Powell's # 1' grafted quandong trees and has a contract with Australian Quandongs to develop, propagate and market 'Powell's Red Supreme'.

Both cultivars stem from years of work by Ian's father Brian, who has a lifelong association with the fruit.

Mr Bob Lott of Quorn Quandongs said they are now taking orders for 'Powell's # 1' grafted trees, as hundreds from earlier graftings reach maturity.

Large quantities of scion material are being gathered for a mass commercial propagating program. Quorn Quandongs expects to complete the first 4000-tree orchard of grafted 'Powell's Red Supreme' by April 2004.

— *Kate Dowler*

AQIA: A1645.

[David Noel]: *There has been concern among Australian growers about whether all the statements made by suppliers of trees claimed to have PBR protection are justified*

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— *for example, there is no protection under PBR for a variety which has not yet gained a full grant from the PBR office. Many PBR submissions have not been granted, and many may never be. WANATCA's expert on Quandongs, Graham Herde of Nectarbrook Discovery Plantation, has recently made a study of the implications of the PBR Act, as follows.*

Of mousetraps and trees

Circumstances of the last year have required us to get a legal opinion on the responsibilities and rights of owners of trees with provisional Plant Breeders Rights on them, as well as a legal opinion on the rights of the owner of the provisional PBR over these trees.

Following my usual practice of not asking a question unless I have an understanding of the question and the potential answer, I downloaded the entire act for study: Plant Breeders Rights Act 1994: Act No 110 of 1994 as amended. This can be found at <<http://www.alfa.gov.au>>.

What is PBR?

It is not a trademark. It is mostly like a patent with some similarities to copyright. A mousetrap can have a new innovative part of its mechanism patented. A new tree with proven breeding can have PBR granted. You can buy the mousetrap/ tree, it is your mousetrap/tree to use as you wish, trap mice/ sell produce, throw it at the cat/decorate the house, etc.

A Patent/PBR is personal property

20. PBR is personal property (from act):

(1)PBR is personal property and, subject to any conditions imposed under section 49, is capable of assignment, or of transmission by will or by operation of law.

(2) An assignment of PBR (otherwise than because of the order of a court) does not have effect unless it is in writing signed by, or on behalf of, the assignor and assignee.

(3) If a grantee of PBR in a plant variety gives another person a licence in that right, the licence binds every successor in title to the interest of that grantee to the same extent as it was binding on that grantee of the PBR.

What you cannot do without the permission of the owner of the patent/PBR is replicate the patented mechanism of the mousetrap in your own new improved mousetrap and sell it/ replicate the tree for sale or knowingly sell material to replicate the tree.

The above is a bit simplistic, however PBR means the ownership of the right to replicate the plant commercially.

Nature of PBR

11. General nature of PBR (from act):

Subject to sections 16, 17, 18, 19 and 23, PBR in a plant variety is the exclusive right, subject to this Act, to do, or to license another person to do, the following acts in relation to propagating material of the variety:

(a) produce or reproduce the material; (b) condition the material for the purpose of propagation; (c) offer the material for sale; (d) sell the material; (e) import the material; (f) export the material; (g) stock the material for the purposes described in paragraph (a), (b), (c), (d), (e) or (f).

The owner of PBR has no right to stop you using the PBR plant for experimental purposes or for the creation of new plants!

Acts not infringing PBR

16. Certain acts done for private, experimental or breeding purposes do not infringe PBR (from act):

Any act done in relation to a plant variety covered by PBR that is done:

(a) privately and for noncommercial purposes; or (b) for experimental purposes; or (c) for the purpose of breeding other plant varieties does not infringe the PBR.

PBRA web site

In the answers to questions on the PBRA web site is the following:

Can I prevent someone from using my variety to breed new varieties?

No. It is in the public interest, and the aim of the PBRA, that plant innovation is encouraged. Therefore further breeding based on PBR varieties is legal.

Does this mean someone can insert a gene in my PBR variety and gain PBR rights in the resulting variety?

Yes. Provided that the new variety is new, that is that it meets the criteria under the PBRA regarding distinctness, uniformity and stability.

There is provision, despite the granting of PBR in the resulting variety, for the grantee of the first variety to exert dual control, by applying for a declaration that the resultant variety is "essentially derived" from the first variety. It should be noted that no such declarations have been made to date.

You are free to make mousetraps and trees, in fact you are actively encouraged to do

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so. Anyone attempting to stop you risks legal action that could affect his or her ownership of the original provisional PBR.

The following are some more headings of sections of the act that space does not allow to be reproduced in full. The comments in italics are mine and may not be a correct interpretation of the section of the act.

18. Other acts that do not infringe PBR

This says you can do anything with a PBR plant except replicate it for sale or sell plant material for the purpose of replicating the PBR plant.

19. Reasonable public access to plant varieties covered by PBR.

The owner of PBR on a plant can be directed to make this protected plant available for commercial use after two years.

Owners of provisional PBR and PBR protected plants that wish to use them commercially should read the act and become familiar with their rights and responsibilities.

If you are replicating PBR protected plants and selling them or selling a plant and misrepresenting it as a PBR protected plant, may the sky fall on your head!

If you are selling products generated from the PBR protected plants you own, and a threat is made against this commercial

operation, get a legal opinion from a qualified patent attorney. The cost is not excessive.

We offer our thanks to Howard Schulze of Collison & Co for the assistance he has given us with the legal opinion. Howard acted as attorney for the first patent on a plant for a breeder in Australia (Sid Monkhouse for an Orchid). He is an appointed member of the Advisory Council on Intellectual Property (ACIP) which advises the federal Minister for Industry, Science and Resources on intellectual property matters and the administration of IP Australia.

With section 16 of the PBR act in mind, the first 10 people to send \$4.00 to cover post and packing will receive 100 gm of "Nectarbrook" cultivar seeds (50 or more seeds) generated by the Powell's #1 clone pollinated by our superior "Nonning" seedling cultivar.

The "Nectarbrook" cultivar resulting from this breeding may produce a superior tree. If you are lucky enough to get one and wish to commercialise it we suggest that you think of a catchy name for it and register the name as a Trade Mark.

It seems to me that a trademark is a simpler and lower cost option to initially protect a plant commercially, particularly a plant where specific breeding is difficult to prove and where full PBR may not be granted when the provisional PBR runs out.

— *Graham Herde*

Nectarbrook Discovery Plantation: A3273

[David Noel: Readers wanting to get more background to how patents and trade secrets effectively operate in our society can refer to my IdeasBank website at www.ideasbankinternational.com].

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[Countryman / 2002 Jul 18]

High times for WA citrus

While orange growers in the eastern States are struggling to fill their lucrative US export quota because of a glut of small fruit, WA citrus orchardists are blessed with big oranges and strong prices.

Prices for WA citrus have been steady at \$20-\$30 for a 20 kilogram case.

Citrus wholesaler at the Perth Market in Canning Vale, Gordon Berryman, expects prices to follow last year's trend and hit \$40-\$50 a case by the end of the season.

"Last year was a stellar year for the WA citrus industry and this year looks like it will end up the same," Mr Berryman, of EPT Sales, said. "WA oranges are of exceptional quality this year."

The high quality of the fruit helps WA sell higher-priced oranges into South-East Asian markets.

Mr Berryman has just returned from a

business trip to Asia and said the market for WA citrus in near neighbours like Singapore and Malaysia was growing steadily.

"Perth market prices are good so it is difficult to develop the export market," he said.

"But we are keeping fruit in the South-East Asian market so that when South Australia has a good year— probably next year—we can compete with them here and in several other markets."

Mr Berryman said WA citrus growers were generally exceptionally good at growing fruit. They were employing new farming techniques and selecting stand-out varieties

to stay in the market longer to compete with SA growers.

Citrus plantings were increasing throughout the State but the expansion was mostly due to existing citrus growers getting bigger rather than new growers entering the industry.



Chittering Valley orange grower Greg Beales is the grower-appointed leader of an expanding industry now enjoying the fruits of many years' labour

Fruit fly limits access

WA growers do not have access to the US orange market because of Mediterranean Fruit Fly, a pest found in all citrus growing areas of WA except the Ord River Irrigation Area.

Eastern States growers who do have access to the US quota are expected to fall short of meeting this year's lucrative navel quota because of a lack of large fruit required by the market.

Australia is expected to be 10-15 per cent under quota. Eastern States growers are likely to get reduced returns as a result.

WA Citrus Council chairman Greg Beales said prices were "very good".

He said WA growers produced only a small fraction of Australia's citrus — 1-2 per cent — and supplied about 40 per cent of the domestic WA market.

— *Mignon Shardlow*

20-hectare fruit cover completed

Crop Cover Netting, Gingin, has recently completed construction of one of the largest protective canopies in WA.

The structure, covering table grapes destined for export markets, spans an area in excess of 20 hectares (50 acres).

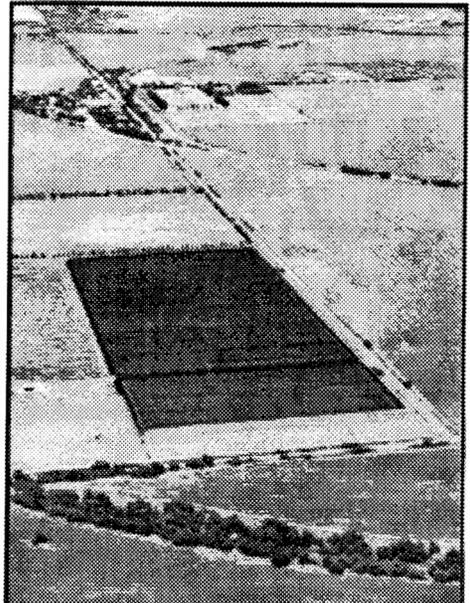
Andrew Coldbeck, from Crop Cover Netting, said: "The size of the project presented few problems but the planning phase was crucial to the success of the structure.

"The vineyard, located just south of Geraldton, required a special windbreak material on all sides while the canopy consisted of a heavy grade bird net".

"The fact that a wind farm is to be built in the near vicinity illustrates the wind load the structure is subjected to, and stage one of the

project, completed in August last year, has withstood the severe winds experienced in the area over the summer months with flying colours."

Crop Cover Netting can be contacted at 1800 501 337, e-mail: ccnet@iinet.net.au.



The huge protective canopy over grape vines near Geraldton

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[ARS News Service, USDA]

Soaking willow cuttings enhances rooting

Channel erosion is a serious problem in many areas. For years, researchers have tried to stabilize streambanks with planted vegetation. This technique is usually cheaper, better for the environment, and more aesthetically pleasing than artificial structures made from concrete and stone.

For four years, Agricultural Research Service hydraulic engineer Doug Shields at the National Sedimentation Laboratory, Oxford, Mississippi, and University of Memphis wetland plant physiologist Reza Pezeshki investigated the survival or effectiveness of willow cuttings when planted along streambanks to control erosion.

Planting willow cuttings 8-20 cm in diameter and 1-2.5 m long in winter when they are dormant is an attractive option for rapidly eroding sites. The posts hold and stabilize the bank until the young trees become established. However, in many cases, willow posts planted in streambanks have died within a year.

To find ways to enhance willow survival and growth, the scientists conducted a series of field and greenhouse studies that showed that cuttings are very sensitive to moisture and soil type.

Recent greenhouse studies have shown that survival rates can be doubled by soaking cuttings for 10 days before planting. Soaked cuttings outperformed those planted immediately after they were cut, growing higher and producing more biomass and greater numbers of roots.

— **Hank Becker**, hbecker@ars.usda.gov.

[Q Ed: This technique could be tried with any sort of plant cutting.]

Death of Peter Good

Peter Good, first President of WANATCA and its predecessor, the West Australian Nutgrowing Society, died on July 19 after a long battle with cancer.

Peter was a big contributor to our organization in its early days. He was our President from 1975 to 1980 and set the course for our progress. Working professionally in the education field (as a lecturer in English, and later as head of a further education college), Peter brought good writing skills to his President's Reports in our early Yearbooks. He was a keen landscape gardener and was a pioneer in establishing many new crop trees in his Wembley Downs garden.

These included avocados, at that time still a novelty in Perth. But Peter will be best remembered for his introduction of the locally selected Fig variety named in his honour, the 'Peter Good'.

In later years, Peter retired from education and established himself as a distinctive painter, of landscapes and people, working through his own 'Captured On Canvas' gallery. He won numerous prizes and has work hanging in many public and commercial sites, as well as in homes in Australia and overseas.

Peter leaves behind his wife Lorna, five fine children, and their children, and a large hole in our social landscape. A great bloke and a close friend to many, with a great sense of humour and until recently a great vitality. He'll be very widely and sadly missed.

— **David Noel**

[Australian Nutgrower / 2002 Jun-Aug]

Pruning huge mature pecan trees at Stahmann Farms

At 'Trawalla', **Stahmann Farms'** 700-hectare pecan plantation at Moree in NSW, rows of mature trees are being transformed to a narrow wall of foliage.

The pecan trees at 'Trawalla' are some 30 years old and despite the fact that the trees are planted on a 10 metre grid, the branch spread extended out into the inter-row about 5 metres from the trunk and caused considerable shading.

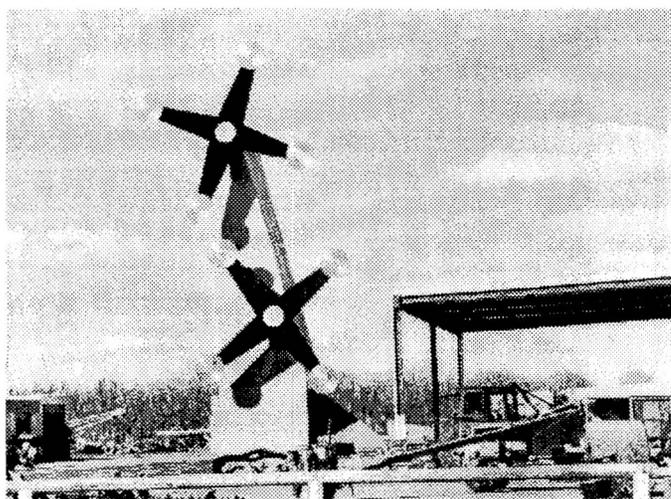
The first pruning program to improve light penetration in the orchard involved hedging the trees at 3.3 m from centre and topping the canopies at 10 m. However each summer after pruning, the tree growth extended out a further 1.8 m and the shading continued. This shading caused many problems, including die-back in the branches and a reduction in nut quantity and quality.

Many different options to rectify the problem were considered but the solution was

found in a trial block on the farm. In this block the trees had been cut back to 1.05 m from the trunk. The canopies recovered well, production increased, and the nuts were of a very high quality. It was also observed that nut production in this block was more even from year to year and did not show the strong alternate bearing cycle experienced with other blocks of mature pecans.

On the strength of this success, the severe pruning program carried out in the trial block was put in place for the whole farm. Over time, all trees will be hedged at 1.05 m from centre with an annual follow up hedging at 1.2 m from centre. The aim in forming a narrow hedgerow is to allow sufficient white light through the canopy wall to support optimum photosynthesis within the whole canopy.

However there was an additional problem to solve. The main planting at 'Trawalla' was an even mix of Wichita and Western Schley, but the nut quality of the Western Schley variety was disappointing while the Wichita variety produced excellent quality nuts. Wichita and Western Schley are planted in alternate rows and it was decided to reduce the height of the rows of the



One of the 15-metre hedgers used currently for hedging 'Wichita'

Western Schley and increase the height of the rows of Wichita.

This alternating tall Wichita and short Western Schley hedgerow effect is expected to considerably increase Wichita production. The plan to manage row height according to variety was incorporated into the new pruning program. Hence rows of Wichita trees will be topped at an eventual height of 18.6 m while the height of the Western Schley will be maintained at 10 m.

One major problem arises when pruning large pecan branches and that is damage from the longicorn beetle. This large beetle lays its eggs in the cracks that develop in the ends of sawn branches. The growing larvae develop into large grubs that bore into the wood causing dieback. To prevent this infestation, all sawn limbs over a diameter of about 7.5 cm must be painted soon after pruning.

At Stahmann Farms the paint chosen is Partix waterproof sealer. But when the trees reach great heights, painting the ends of all sawn branches is not for the faint hearted and requires large hydraulic ladders.

In fact at Stahmann Farms, routine longicorn prevention work is a 7 day a week job for five teams working from hydraulic ladders. These teams saw off any damaged branches to remove dieback or breakages and then paint the cut face. Prevention of dieback in branches and subsequent longicorn infection is another reason to improve light penetration in pecans.



Mature pecan trees after hedging treatment

Massive hedging machinery is required to develop and maintain hedgerows of tall trees. At Stahmann Farms there are two machines for hedging the Western Schley rows at 10 m, two taller machines for hedging the Wichita rows and there is also a topping hedger. It is fortunate that the trees at 'Trawalla' grow on levelled land.

Stahmann Farm's program to reduce all rows of trees to a canopy wall 1.05 m from centre is progressing well and a quarter of the plantation was completed last year. However initial loss of production is substantial and therefore the process must be gradual. While the time frame on the return to full production and anticipated production increase is not yet proven, the improvement in light penetration in the completed hedged section of the plantation is most encouraging.

— *Jennifer Wilkinson*

(Jennifer Wilkinson talked to Ken McClymont).

Stahmann Farms: A1524.

Australian Nutgrower: A1058.

[*Australian Horticulture* / 2002 Jun]

IVS: WA breakthrough in propagation of woody plants

Perth researchers have developed a new strategy that greatly improves root strike in microcuttings of many woody ornamentals, which previously were difficult or impossible to propagate in tissue culture.

Hailed as a "world first", a system dubbed In Vitro Soil (IVS) was launched in late April at the Western Australia Department of Agriculture, where it had been developed and then tested for almost three years.

So successful has the technique proved that it is expected to revolutionise plant tissue culture and benefit every area of horticulture — amenity, export, landcare and so on — that relies on clonal propagation.

The simplicity of the technique is as surprising as its effects are impressive.

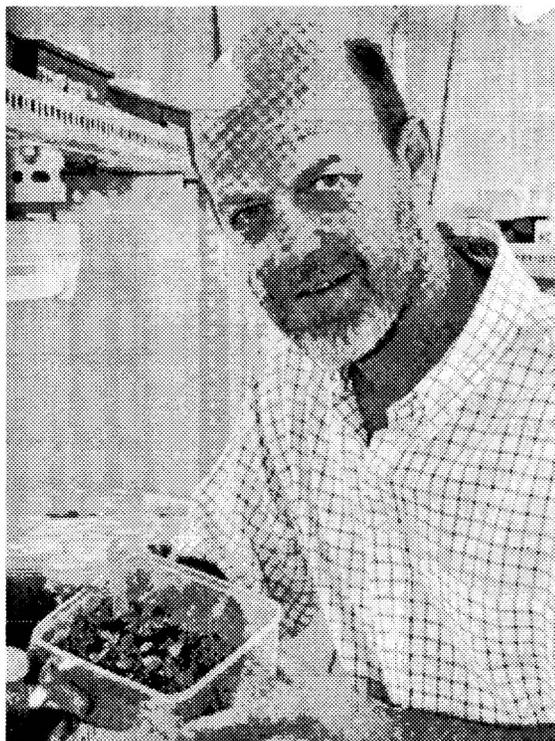
It begins in the conventional in-vitro way, using agar to initiate shoots. The difference is in the next step — root strike followed by root elongation which traditionally is initiated by transferring the micro-cutting to yet another agar medium.

Instead, an IVS micro-cutting is transferred to a porous sterile propagation mix comprising sphagnum peat, coarse river sand and horticultural grade P5 perlite at a ratio of 0.5:2:2, which has been put into peat pots, watered to capacity and sterilised for 40 minutes at 121°C.

To give two examples of the contrasting results between the old and new methods, IVS micro-cuttings of *Verticordia grandis* showed more than 90% root strike after one week,

compared to 28% in agar, and four times the root growth (measured in average root length) after a fortnight, while IVS micro-cuttings of *Conospermum eatoniae* developed 1400-millimetre roots in IVS, compared to only 20 mm in agar.

It is not just the quantity of the roots but also their quality that IVS improves. Roots



Chris Newell, Western Australia Department of Agriculture research officer in floriculture, with In Vitro Soil (IVS) micro-cuttings

that develop in agar are often swollen and brittle, with a poorly developed vascular system and no root hairs or branching, whereas IVS roots branch and age properly.

Another major plus for IVS is that it does away with double-handling, and the subsequent lack of disturbance helps plantlets to acclimatise when they reach the nursery.

There they must cope with fluctuating temperatures, relative humidity and light conditions, so it is an advantage not to have to subject them to the bruising that can occur when they are removed from agar.

IVS plantlets can simply be carried from the laboratory to the nursery and later transferred into tubes —still safe in their original peat pots. As there is no transplanting at this stage, there is no corresponding check in growth or breakage of roots, which can make them vulnerable to bacteria, and the result is vigorous plantlets.

To sum up, IVS principles are based on modern propagation practices and they closely integrate laboratory and nursery functions. IVS is claimed to have the potential to lower production costs by cutting losses, reducing propagation time and improving material handling rates.

Genesis of IVS

For roughly a decade, the WA Department of Agriculture has conducted a breeding program focused on interspecific and intraspecific crosses within the *Chamelaucium* genus and intergeneric crosses between *Chamelaucium* and *Verticordia*. Very few seeds result from these crosses, so the technique of embryo rescue is practised, with the embryo going straight into agar for shoot initiation.

Research officer in Floriculture, Chris Newell, says: "Obviously we wanted to get a

return on our breeding investment. But eventually we had a whole suite of putative hybrids that we could not strike roots on, and they were all different genotypes".

Consequently, when he and his colleagues began investigating means of improving root strike for woody plants in vitro, they knew that one criterion for assessing success was that, whatever system they developed, it had to work over a wide range of genotypes.

For many years, researchers worldwide who study plant tissue culture have sought to find a trigger which will promote root strike in recalcitrant species.

Growth hormones like auxin have long been favoured as a solution, and indeed succeed in many species, but hardly ever with woody ornamentals. While reviewing conventional techniques, Newell suddenly wondered whether the wrong question was being asked.

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"We — the whole [scientific] community — were looking for a switch that we could turn on to initiate root strike. The assumption was that if we could turn on that switch, then the process would continue," he recalls.

No oxygen in agar

"But I hypothesised that the switch for initial root strike had already been turned on and that, if this was so, then there must be something we were doing that was stopping the process from continuing. At that point I felt I knew the answer. I believed that because there is no oxygen in agar, then respiration at the base of the micro-cutting was being compromised."

Newell made a prototype IVS system and began testing his hypothesis. Virtually every micro-cutting responded so positively and immediately that, within little more than eight weeks, he cleared the laboratory's culture room of thousands of selected genotypes, which previously refused to strike roots.

Having dealt with all the hybrids from the *Chamaelucium* alliance Newell then applied

IVS to various *Conospermum*, *Pimelea* and *Eucalyptus* species and other woody plants, which were being tested for amenity horticulture and cut-flower export potential under the Department of Agriculture's new crops program.

All had previously been notoriously difficult to propagate in commercial numbers but, again, under IVS the response was astonishing. In all cases, root strike was predictable, consistent and rapid.

"Also, if we select different genotypes within one species - such as *Pimeleaphysodes*, the Qualup bell - we get positive results across the board," Newell says. "They may vary incrementally, but always the results are improved to a significant degree."

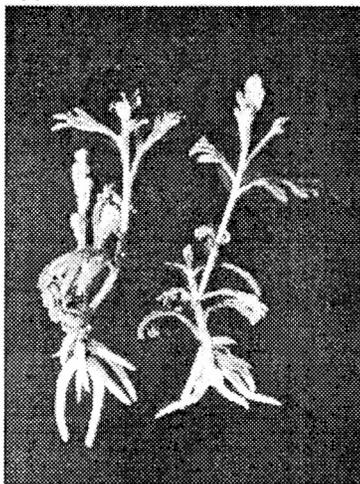
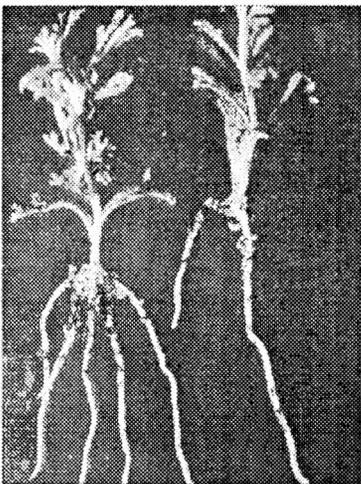
Easy propagation — which has long been the limiting factor for the commercialisation of many aesthetically desirable West Australian plants — now seems a reality.

But Newell is confident that the IVS technique can be applied to all woody plants, whatever their country of origin.

"I believe that over the next five or 10 years there will be a shift to IVS strategies. There now seems no reason to stick with conventional agar-based systems," he adds.

Implications for industry

In the early 1980s, Sandy Pate (now industry development officer



Roots on an IVS micro-cutting (left) develop and branch normally, compared to roots on a micro-cutting cultured in agar (right) which are swollen, brittle, unbranched and devoid of root hairs.

for the Nursery & Garden Industry Western Australia) ran an experimental farm for alternative horticultural and forestry crops which, it was hoped, would help struggling wheat, sheep and cattle farmers in WA to diversify into other sources of income.

"That was the first wave of trialling WA natives for plantation growing, and I can not tell you how many good plants never saw the commercial light of day just because they had propagation problems. I wish we'd had IVS then," he reflects.

"Unless it's an extremely high value crop — which most of those were not — no nursery can afford to be bothered to fiddle around with something that is hard to propagate. Any new plant has got to be able to be adapted into the traditional management techniques of a nursery."

The nursery industry will embrace IVS, he says, because until now growers have often been frustrated in their aim of producing new varieties. It is not just local consumers who will benefit; there will now be opportunities to export more woody ornamentals and cut flowers selected from WA's vast, diverse flora.

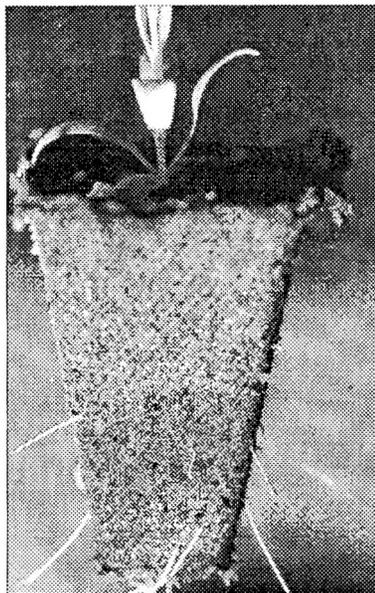
IVS should also be as important to mine-site rehabilitation schemes and endangered species rescue programs as it is to the nursery sector.

"In many ways IVS is almost too good to be true. It has become available with virtually no holds barred. It does not need space-age equipment or expensive retro-fitting, and it is not patented, so anyone who has access to a tissue culture lab can pick it up and run with it. It's an example of turning a brilliant idea into dollars," Pate concludes.

— *Julia Berney*

(Julia Berney is a freelance journalist based in Perth, Western Australia. She may be contacted on 08-92714276 or juliaberney@optusnet.com.au).

Australian Horticulture: A1050. ¥



Roots are already emerging strongly from the peat pot of this IVS micro-cutting, which can easily and safely be introduced to nursery conditions

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Notes on New Books

by David Noël

BER [Indian JUJUBE]. Author: *O.P. Pareek*. Published by the International Centre for Underutilized Crops, UK, 2001. 291 pages. Paperback. "First-class, detailed account of all aspects of Jujube production, warmer-climate varieties, uses etc. A major world crop with huge potential for warmer Australia. Survey of all *Ziziphus* species. Highly recommended". *\$70.00.

Fruit-growers interested in the Jujube have been well served by the publication of the Californian-based *Jujube Primer and Sourcebook*, written by (WANATCA member) Roger Meyer and fellow Californian Rare Fruit Grower stalwart Bob Chambers.

However, this book was intended principally for fruit enthusiasts, although Roger Meyer has built Jujube production up into a small commercial business in California. Also, it is concerned mainly with the deciduous species *Ziziphus jujuba*, sometimes called Chinese Jujube, which has varieties which do well in colder climates ("apple country"), as well as varieties for the subtropics and warm-temperate areas.

As well as the deciduous varieties, there exist evergreen varieties based on Ber or Indian Jujube, *Ziziphus mauritiana*, and that is one main focus of

the book reviewed here, although the whole genus is covered in fair detail. Ber will grow in very hot areas, including ones with summer-humid climates, although both species have exceptional drought tolerance and ability to thrive in difficult climates and soils.

In actual practice, these two species grade imperceptibly into one another, and in recent times are sometimes combined into a single species, *Ziziphus zizyphus* (notice the fourth letter differs in the two parts). There is also probably some 'hybrid blood' in some varieties from some of the other 84 or so species of *Ziziphus*, which are native to many areas of Asia, Africa, the Mediterranean generally (including some areas of Europe), and North, Central, and South America.

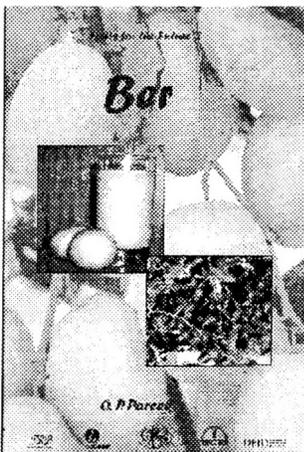
Australia (including WA) has (in my opinion, from a study of their distributions) three native species, including *Z. mauritiana*, although certain people with weed phobias claim our WA populations of the latter are introduced, and moreover are likely to take over the north of the State. This claim is not supported by the available evidence.

In India and China, jujube production is a huge business. The estimated area in India under regular plantations of improved varieties is about 70,000 hectares. To put this in perspective, this area is probably a great deal more than 10 times the whole area under all fruits and nuts in the whole of WA.

China produces almost a million tonnes of jujubes each year, with a value (if it could be sold into the Australian market) of around Aus\$2.8 billion. Again, the figure for this single Chinese crop is probably many times greater than the total value of all Australian horticultural production.

So there are big stakes here, and a renewed and extensive move into jujube production in Australia could be very valuable for the country. The book reviewed is a detailed and extensive manual on every aspect of jujube taxonomy, origin and history, distribution, composition and uses, genetic resources, reproductive biology, breeding, ecology, production areas, propagation, planting, pruning, agronomy, harvest and post-harvest, current status, future impacts, and research needs.

The book therefore provides a first-class



springboard for such a move. To my knowledge, it is the first such detailed professional-level study of Jujube in English. The book production standards are high, with good illustrations, and the publishers should be congratulated for a major contribution to world knowledge. I would give the book a very high recommendation.

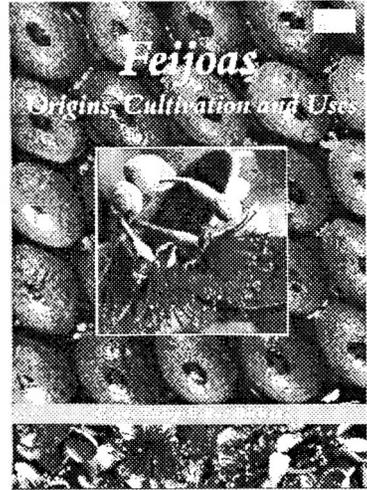
TREES, WATER and SALT: an Australian guide to using trees for healthy catchments and productive farms. Edited by *Richard Stirzaker* et al. Published by Joint Venture Agroforestry Program and CSIRO, 2002. 159 pages. Paperback. "Clear, well-illustrated, soundly-based manual on an essential topic for Australia. Highly recommended for every landuser." *\$39.000

This new publication is a landmark in rational land use under stressed conditions such as currently apply in Australia.

The standard of production is very high, with clearly-written text and excellent illustrations in colour. Everyone concerned with land use in Australia should have this book available for constant and pleasurable reference.

FEIJOAS: Origins, Cultivation and Uses.

Authors: *Grant Thorp and Rod Bielecki*. Published by HortResearch New Zealand and David Bateman, 2002. 87 pages. Paperback. "At last, a great handbook on the up-and-coming Feijoa. Beautifully



produced. Highly recommended". *\$40.00.

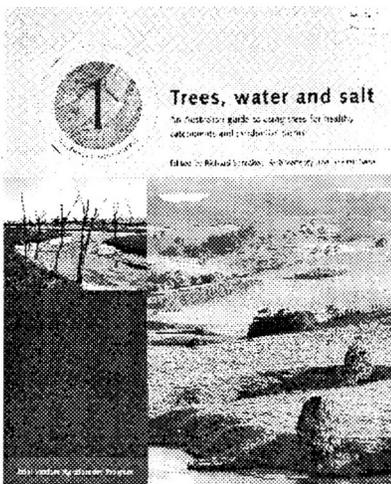
Another important publishing landmark. The feijoa is another of the fruits which have been brought to the point of possible conversion into a significant world fruit.

The majority of the development work involved has been done in New Zealand, with a little in California (where the fruit is often called the 'pineapple guava'). Even so, the fruit originated in Argentina — surprisingly, many 'new' fruits find their commercial development away from their area of origin.

Feijoa does figure in world trade (most fruit sold in Australia is exported by New Zealand), but is not yet a major item, although it has the potential. In WA the plants are not uncommon, as they are planted for their highly decorative flowers, but home fruit production is stymied by their sensitivity to Mediterranean Fruit Fly, the bane of our home fruit trees.

This is a first-class book, containing detailed and readable information, with excellent colour illustrations throughout. As far as I know it is the first such book at a professional level in English. I would recommend it highly as a springboard for serious development of this new temperate fruit.

*Price at Granny Smith's Bookshop, see ad page 31.



Up until the mid-1900s, the oil produced from nuts of the Tung tree was a major constituent of paints, but lost out with the advent of synthetic materials. However, it still has specialist uses for which it is superior. In WA, a number of trees remain from older successful plantings, as in Gidgegannup and Byford. Tung may be due for a revival in fortunes, and Denmark grower Rod Macdougall, who is working towards this, has provided the following article on Tung.

The Tung Oil tree

The Tung Oil tree, botanically *Vernicia fordii* (previously *Aleurites fordii*) is in the Euphorbiaceae family. Tung is a deciduous tree, monoecious, with very attractive flowers, and grows to between 6 and 12 metres.

It is reputed to have been introduced to Europe from China by Marco Polo. Related plants include: Castor Oil plant, Para Rubber tree, Tapioca plant, Candlesnut tree, Japanese Wood-oil tree, and Chinese Mu tree.

The Tung tree is grown traditionally in China as an intercropping species with tea (*Camellia sinensis*), ever since the 10th century.

The US Department of Agriculture has produced a number of high-yielding named varieties of the Tung tree. As far I can determine, the existing trees in Australia are seedlings resulting from trees imported during

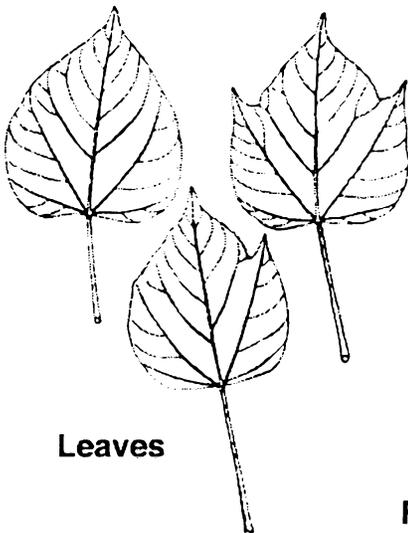
the 1900s for commercial plantations, possibly in the Hawkesbury area.

The tree is grown now mostly for its oil content which is extracted from the nut. Oil content in the nut varies but may be as high as 40%. The oil is used extensively for wood preparation, varnishes, in paints, and for coating surfaces as a moisture repellent (on containers and for insulating and marine uses). The oil was used in China during World War 2 as an engine fuel.

It is possible that there is another commercial prospect — for Tung and Shiitake mushrooms to be grown together in a symbiotic relationship.

Medicinal properties: There is some evidence that the oil can be used externally to treat parasitic skin diseases, burns and wounds. There are other references to the plant's emetic and vermifuge properties. The oil is also reputed to have insecticidal properties.

Oil consumption figures are difficult to obtain, but as an example the US in 1982 used 250 tonnes in the paint industry alone. World production of nuts is probably between 1000 and 2000 tonnes pa, with most coming from China and Argentina, although the US has



Leaves



Fruit



Flowers

significant plantings.

Apparently the Tung tree grows in a wide range of soils and climatic conditions but prefers a cool winter, 300-400 hours below 7°C; an even rainfall distribution ---about 900-1000 mm. Possibly summer reticulation would be beneficial.

We grew Tung trees at Balingup during WW 2 without reticulation. A pH about 6 is preferred. Winter frosts are tolerated but growth can be damaged by the later spring frosts, most literature recommends planting on hillsides to reduce the risks.

Tung trees are usually free of pests as the nuts and leaves are toxic. They are also relatively disease free, although it is possible that they could be affected in some circumstances with *Armillaria* and *Phytophthora*.

Propagation: seeds are short lived and should be planted within 6 months (usually in August or September) Stratification helps, but in my experience is not essential. Commercial plantings vary but 10 metres between rows and 4.5 to 5.0 metres between trees appear to be a manageable compromise. Acceptable yields are 4 to 5 tonnes per hectare

Any additional information or corrections to this material would be welcomed by the writer.

— *Rod Macdougall*, RMB 1328, Denmark WA 6333. Phone/fax 08-9840 9293.

Seeds for sale (\$1 each)

(a) *Juglans neotropica* (Tropical walnut)

(b) *Vernicia fordii* (Tung Oil Tree)

Young plants of both species are available from time to time.

Rod Madougall, RMB 1328, Denmark WA 6333. Phone/fax 08-9840 9293

[*The Australian* / 2002 Jun 22-23]

Spit helps plants to grow

Deer often browse trees and shrubs, biting off twigs to eat. This is sometimes observed to have the same effect as artificial pruning. In particular, certain species of tree in northern climes seem to produce more shoots in regions where they are browsed by elk.

According to Margareta Bergman, of the Swedish University of Agricultural Sciences in Umea, this enhancement of growth is more than just the result of animal cutting and tearing. The real stimulus lies in the elk's saliva.

*Dr Bergman did her experiments on sallow [*Salix* species, as willow] saplings. She divided her plants into three groups.*

One group had no treatment. A second had the top branches torn off to mimic the biting action of an elk. The third group suffered the same indignity but, in addition, had elk saliva painted on to the torn surfaces.

After 15 weeks the changes were dramatic. Compared with untreated sallows, cutting on its own produced a 20 per cent increase in the number of new branches grown. Sallows cut and treated with saliva, however, grew 110 per cent more branches.

Which component of elk saliva has this beneficent effect remains to be determined as does its precise action, but it is probably another case of chemical co-evolution between plants and their herbivorous predators.

How quickly elk saliva makes its way into the armoury of the average gardener remains to be seen.

[Q Ed: So the old grafter's practice of holding scion sticks to be worked in the mouth is not a bad idea. Try painting your own spit on your plants!].

'Quandong' victim of international mail crime

Issues of WANATCA publications to members outside Australia are sent out via the DHL Worldmailservice. DHL, an international document and package handling group, pick up batches of overseas mail and fly them to international mailing centres.

Until a few years ago, DHL re-posted mail items such as 'Quandong' mostly in mail centres in the country of destination. Nowadays, with the inevitable rationalization, the number of mail centres used overseas has shrunk, and when I last enquired DHL told me that all their Worldmail was flown to Germany and re-mailed in a central German mail centre.

This rationalization has delayed delivery. Before 2000, Worldmail addressed to US

destinations was delivered in a few days. Now it takes several weeks.

New Scotland Yard acts

Today (July 23) we received a large package from the Specialist Crime Unit of London's Metropolitan Police. Their letter said a 'large quantity of mail was recovered in industrial skips on route to a landfill site', and that they were investigating a company called Mail Logistics, based in Acton, London. Their package included 7 copies of the Quarter 2 issue of 'Quandong', addressed to WANATCA members in Europe and South America.

Full marks to Scotland Yard for their action. The recovered mail is being re-sent through DHL, but if any overseas WANATCA members have not yet received their 2002 Quarter 2 *Quandong*, please let us know so that a replacement can be sent.

[*Annual News / 2002 May*]

Ultra Low Volume Irrigation

In recent years a new irrigation practice for low water application rates has been introduced. This system is known as Ultra Low Volume Irrigation (ULVI) or Minute Micro Irrigation.

ULVI requires the reduction of emission rates per emitter to 0.25 to 0.35 litres per hour (lph).

Researchers around the world are analyzing the benefits of ULVI on numerous crops. Trials in Israel with both continuous irrigation and pulse irrigation are looking at the advantages of matching water and fertilizer application rates with that of plant uptake. Some of the data shows that by matching application rates with plant uptake rates the

volume of water and nutrients available to the plant may increase. This in turn may potentially increase the plants performance .

One major factor that was preventing the introduction of ULVI practices were the high emission rates of most drip emitters available on the market, with these ranging from 1.0 to 4.0 lph. In order to apply water at low emission rates of 0.25 0.35 lph the emitters are required to have much smaller water passages than are currently available, which are of course much more sensitive to clogging.

To overcome this problem, the pulsator system was developed. With this system, water is delivered to "pulsators" by parent emitters inserted on a separate lateral. The pulsator injects water into the dripline in short pulses at high frequencies. Each pulsator feeds a specified number of emitters on the dripline. The disadvantage of this system however is

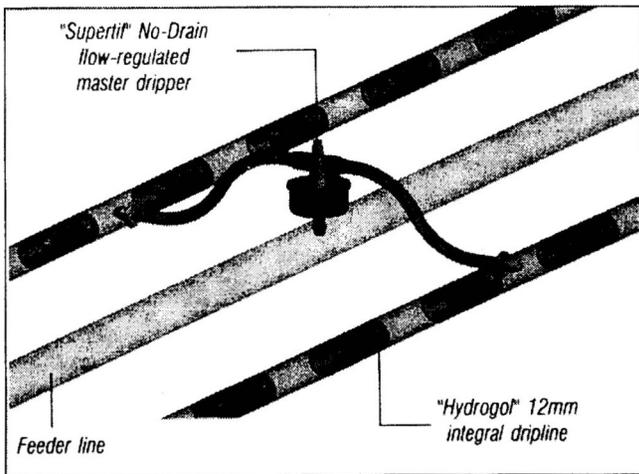
that it requires a large number of pulsators which increases costs and requires a proper maintenance routine.

Amiad Australia in conjunction with Plastro Gvat have developed a system that makes it possible to irrigate at ultra low application rates without the need for pulsators. The system has been successfully operating in a number of crops including vegetables grown on detachable media and in some tree crops. The system functions as follows:

Two rows of plants are grown on detachable media beds. Plastro's Hydrogold non-pressure-compensated integral dripline with 1.0 lph emitters spaced at 20 cm is laid along each row of plants. The Hydrogold emitter has especially large water passages in relation to its nominal emission rates.

A third lateral is laid down the centre of the bed. This is the feeder line onto which a Supertif "No Drain" emitter is inserted. These button style emitters become the parent emitters and have emission rates of 3.8 lph to 8 lph and are connected to the Hydrogold by flexible micro-tube. Each parent emitter will feed 12 to 24 Hydrogold emitters. The Hydrogold emission rate now becomes approximately 0.3 lph. Emission uniformity tests by Plastro have shown very uniform distribution between the emitters.

In tree crops such as olives and stone fruit, the system is slightly different. A feeder line is used like the previous system and Supertif emitters are inserted into this lateral. A length of Hydrogold dripline is then attached to the parent emitter by a length of micro-tube. This length of Hydrogold is variable and determined



by the type of crop, dripline emitter spacing and the parent emitter emission rate. This length of Hydrogold creates a loop around the tree, to wet the root zone.

In areas of low rainfall where sprinklers are maybe not an option, using a system where the Hydrogold is looped around the tree will spread the water more evenly around the root zone than in one small area as is the case with a single button dripper.

Amiad: A3341

WANATEA will be at the
Karragullen
Horticultural Field
Friday September 20,
starts 10 am
Granny Smith's Bookshop will
be there
This is one of the best field
days we attend, don't miss it!
 (KHPD enquiries to 9397 5652)

[West Australian / 2002 May 24]

Living treasures: Arthur Jones grows heritage fruit varieties

Harvey is one of the best-kept secrets in WA. Many travellers believe that it consists of no more than the few buildings on the sides of the South-Western Highway as the road dips down and crosses a river.

Head west off the highway though and you will encounter a big, proud yet charming town with a long history associated with timber, dairy and beef farming, and fruit production.

Some of these industries are now no more than distant memories. The timber mills are closed and the packing sheds that once were at the centre of a huge fruit export industry have mostly been demolished without trace.

On some farms, though, you can still find a few of the old fruit



Once a popular cooking pear, the Vicar of Winkfield is no longer commercially grown but lives on thanks to people like Arthur Jones.

trees. For one Harvey resident, these living remnants are just about the most important thing in the world.

Arthur Jones scours the countryside looking for old fruit trees to add to his collection. Material that he collects from these trees is taken back to his home and grafted on to a suitable rootstock.

On a recent trip to Harvey for the highly successful and enjoyable Garden Expo, I was delighted to be invited to look over the collection. A conducted tour of Arthur's garden is more of a museum experience than a horticultural one.

He and Linda have about 60 varieties of fruit, mostly apples and pears, growing in the front, side and back gardens of an average-sized block. To fit them all in, many of the trees have two, three or more



Gravenstein is a dessert or cooking apple that has been in cultivation for at least 200 years.

varieties of fruit grafted onto them, but Arthur knows every one, along with a history of the fruit and where he was able to find it.

He also knows about pruning to shape. The proof of this is the side garden where there is literally a wall of fruit trees trained as espaliers. When they are all in fruit, the view must be mouth-watering.

While some of the varieties have gone out of fashion because they are ordinary, others,

like Bramley and Cox's Orange Pippin, are still in demand by consumers but rarely grown by orchardists. In many ways, Arthur is just as important a living treasure as the trees he preserves. From time to time he grows and grafts extra trees for sale to fellow fruit enthusiasts but you can tell from the enthusiasm in his voice that he really grows them for love.

— *John Colwill*

Q & A on edible dates in WA

(Question from WANATCA member John Prince in New Zealand).

Dates — as in the edible kind. I've been emailing a bit with someone I met in Phoenix before I came to Los Angeles for the meeting where I met you.

I got shown round the Date Germplasm collection at ASU in Phoenix, and got given some packs of dates from various cultivars. This has unleashed nostalgia in the Phoenix guy I'm writing to (understandable, given how good those Black Sphinx dates were to eat!), and in the course of our emails he's asked to what extent dates are grown in Oz?

I replied that I understood the case to be that they won't mature fruit in coastal Queensland because it's too wet and humid. But I also said that I recalled reading that there was a big commercial development planned in West Australia. I may have asked you about that when I met you. But, really, why aren't there major plantings in WA? You've clearly got the climatic requirements in parts of the state?

— John Prince, [Nestlebrae Exotics](mailto:Nestlebrae.Exotics@xtra.co.nz), <Nestlebrae.Exotics@xtra.co.nz>.

(Reply from David Noel).

Yes, there are huge areas of WA suitable for date growing. As you say, dates are not suitable for humid areas like coastal Queensland. There is a comprehensive article available in an earlier WANATCA Yearbook: *WANATCA Yearbook: "Dates: the Australian industry and the future" (Kenna, Geoff) Vol. 19 Yr: 1995 p. 21.*

There have been no big commercial plantings here in WA, although some years back an enthusiast put in a number of varieties at Gascoyne Junction, inland from Carnarvon, with a view to commercial production. I don't know how this fared.

In my view it's only social/organizational factors which have held back commercial plantings in WA. The commercial species (*Phoenix dactylifera*) almost invariably have male and female flowers on separate plants and are wind-pollinated, and for commercial yields are usually hand-pollinated. The Gascoyne Junction planter intended to collect and distribute pollen using a small battery-powered vacuum cleaner.

Propagation is also complex, traditionally named date varieties were propagated from "pups" — large (100 kg) offshoots produced at the base, but only in a tree's early years. Importing pups implies complex quarantine

procedures. Propagation by tissue culture is possible, but success rates are poor. I understand that there is a good variety collection in Alice Springs, this functions largely as a tourist attraction.

Dates were planted all over northern WA in early years, and there is now a thriving trade in bringing these date trees down to Perth to landscape shopping centres and the like. I'm not sure if many of these are fruiting, but I would expect some to do so. Also in Perth are probably many thousands of Canary Islands Date Palms, *Phoenix canariensis*, which fruit prolifically, giving quite a good edible date.

These would probably succeed for you at your New Zealand North Island property, they don't seem to mind some humidity.

Stores in WA do sometimes have dates imported from California (and sometimes Israel), the California ones are mostly from the naturally-arid Coachella Valley in the south. The Californian industry is described in another WANATCA Yearbook article: *WANATCA Yearbook: "The future of Date production in the U.S." (Abdul-baki, Aref A +) Vol. 21 Yr: 1997 p. 22-26.*

The significant California date industry was built on the enthusiasm of an individual,

[*West Australian / 2002 May 31*]

Q & A on Monstera

I have a tropical fruit salad plant which has produced fruits. I am told that they are edible. Can I eat them and, if so, when will they be ripe?

Yes, the fruits can be eaten. Even the plant's botanical name, *Monstera deliciosa*, reflects this.

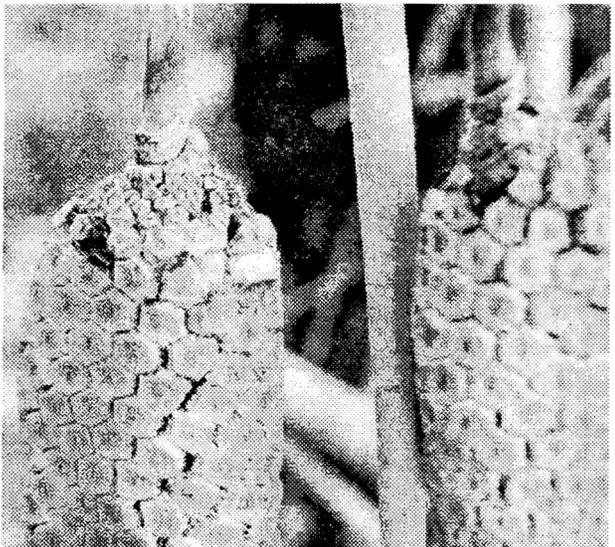
The fruits are ripe when the six-sided scales begin to split and peel back. If you don't see this happening your nose will tell you anyway.

Underneath the scales is a white, fleshy material with black specks. It is delicious and just like a tropical fruit salad. A word of caution though. The black bits have a laxative effect if you eat too much — as I found out on my first encounter!

It is not common for monstera to produce good fruit

in the metropolitan area or further south. It seems our autumn and winters are too cool. Most plants set fruit in autumn but it rots in winter. Keeping the plants in a protected, warm position will improve the chances of getting good fruit.

— John Colwill



The Fruit Salad plant, Monstera deliciosa

Bernard G Johnson, with massive support from the US Government — by 1918 the US Department of Agriculture had imported 28,000 offshoots from North Africa and Persia, an investment which continues to pay back today. We just don't ever see this sort of government support in Australia today.

So if there is to be a significant WA date industry, it will need a significant investment from some source or other. However, new techniques not available at the time of founding of the California industry could make this an exciting prospect.

— *David Noel*

Nestlebrae Exotics: A3360.

[West Australian / 2002 Jun 5]

Macadamia, avocado oils making inroads

We have all been told to cook with vegetable oils for both optimum flavour and health. Olive oil is now mainstream.

But two oils that are really starting to make inroads into the market are macadamia and avocado oils. A feature of the avocado oil is its colour—a vivid shade of green, though there is now a golden version.

Some of these oils are being imported from New Zealand (especially the Olivado range that is available in most supermarkets) though local product is starting to have an impact. And judging by the number of macadamia trees coming to maturity at Olio Belo in Margaret River, there should be no shortage of the stuff in years to come.

Avocado oil is especially delicious when cooked with eggs.

— *Margaret Johnson*

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CALENDAR OF FORTHCOMING EVENTS

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

Deadline for next issue: Oct 20

2002

Aug 13 Tue * **WANATCA General Meeting (Neville Shorter - What's New in Fruit Crops?).**

Aug 27-29 • Dowerin Field Days

Sep 20 Fri • Karragullen Horticultural Field Day

Sep 22 Sun **Perth Zoo, WANATCA Field Day / Barbecue/ Social**

Oct 1 Tue Wanatca Executive Committee Meeting

Oct 13 Sun • Agroforestry Expo, Mount Barker

Nov 12 Tue * **Annual General Meeting (Ian Crombie - How Plants and Animals Interact at Perth Zoo)**

2003

Mar 7 Fri **Wanatca Pistachio Seminar/ Workshop, Northam**

*General Meetings are held starting at 7.30pm. Venue: Theatre Room, Kings Park HQ, West Perth. These meetings usually include a display of current world tree-crop magazines for sale.

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

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