



Quandong

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West Australian Nut & Tree Crop Association (Inc)
www.AOI.com.au/wanataca

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Special Acotanc-2001 Issue



The Durian (*Durio zibethinus*) (See: About the Cover, p. 2)

Quandong • First Quarter 2001 • Vol 27 No 1

NEXT MEETING: Tuesday February 13, 2001: 7.30 pm

Something different again for the next General Meeting:

Field Visit to Aquaponics hydroponic producers

The next meeting is **not at Kings Park**, but at the premises of Aquaponics WA, at Lot 12, Wharton Road, Canning Vale (phone: 9455 2133).

Robert Van Aurich of Aquaponics has successfully grown a range of large fruiting trees and other plants by hydroponic methods, here is a chance to see this amazing growing technique applied to quite different plants that you never believed could be used.

Assemble at the Canning Vale address on the 13th by 7.30 pm, to make sure you don't miss out on the tour. This is something you just will not see elsewhere!

Full details on attached leaflet.

Visitors welcome, no charge. Queries to Tree Crops Centre, 9388 1965.

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About the Cover

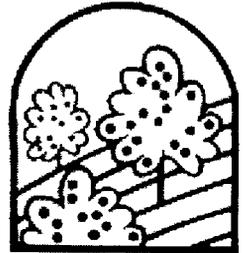
The cover drawing shows the Durian, *Durio zibethinus*, from *Tropical and Subtropical Fruits*, by B E Dahlgren (Chicago Natural History Museum, 1947). An article about this exceptional fruit appears on page 14 of the current issue of *Quandong*.

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.

This is the Big One — Acotanc Special Issue

With this issue of Quandong, the registration brochures and forms for Acotanc-2001 are being sent out. Acotanc-2001 is being held over Easter (April 13-20) at the University of Western Australia.

Billed as "The Tree Crops Event of the Generation", Acotanc-2001 is set to become the one event you mustn't possibly miss. It's likely to be many years before anything even remotely comparable will be available in WA. Are you one of those who will be able to look back and say "Ah, remember Acotanc-2001? That changed everything.....".



[News Release / 2001 Jan]

More than just a tree crops conference — Watershed in rational land use predicted

A big international tree crops conference in Perth this Easter is predicted to be a major watershed for WA and the Australasian region.

Acotanc-2001, the Ninth Australasian Conference on tree and Nut Crops, is being staged at the University of Western Australia from April 13 to 20.

"This is the first time Acotanc has come back to WA since the very first Acotanc, in 1982", said **David Noel**, the conference coordinator. "Acotanc-1 was a groundbreaker, and now Acotanc-2001 looks to have an even

bigger impact".

Mr Noel, Director of the Tree Crops Centre in Subiaco, said that the first Acotanc had the theme 'Tree Crops, the 3rd Component', and sought to establish the place of tree crops in the economy as a new partner with the traditional activities of field crops and stock raising — 'Wheat and Sheep'.

"The last 19 years have seen a revolution

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>.

in land use in WA", he commented. "Back in 1982, our perennial plant crops were very minor — apples and few other traditional fruits. Since then, we have seen the wine and grape industries surge to become very significant. Olives are well on the way too".

"Avocados and mangos were a rare curiosity, and many people had never seen a macadamia or a pecan nut", Mr Noel said. "Now they are part of everyday life."

As well the growth in these new products, Mr Noel said he had been heartened by increasing appreciation of how tree crops can improve the environment and solve land-use problems, and still make money for the land user.

"Our whole landscapes are changing with tree crops, and mostly for the better", he said. "Huge new timber plantations have gone in in the Southwest. Not everyone likes the changes, as you might expect, but they have given new hope to farmers struggling with low returns from traditional lines and battling unfavourable weather events."

"For the wider community, these changes make possible a shift out of logging old-growth native forests and the building of land-use industries which actually improve the environment. Returns to the community are greater and the growing stock is stable, robust and unfazed by bad weather. It is a win-win situation".

"In California, the leading agricultural producer of the United States, tree crops are the major player in agriculture", Mr Noel said. "We have been slower off the block, but WA could become a world leader in tree crops".

Acotanc Conference Manager, **Monica Durcan**, said that she was delighted with the response so far. "We have well over 100

registrations, from more than 20 countries", she said. "That is an exceptional result, still almost 3 months out from a conference of this nature. Almost all these registrations have come from the material up on the Acotanc website, at www.AOI.com.au/acotanc, but we have now sent out news releases and brochures, and we expect big numbers of local people to register".

Mrs Durcan said that both the content of the conference, and the innovative way it was structured, were attractive to potential attendees. "The Conference starts off with up to 36 half-day mini-conferences (MiniAcs) on specific topics such as macadamias, bushfoods, salinity, neem, plant medicines, and quandongs", she said. "These run six abreast over the first 3 days."

"Then there are 2 plenary days, when we have an outstanding range of speakers looking at the wider picture", she said. "Over these 2 days the Acotanc Show, a trade exhibition, will be in full swing at the same place. The last three days are for site visits and the start of post-conference tours."

"The Conference starts on Good Friday, April 13, and has been timed so that people with heavy work commitments can attend over the Easter break", she said. "On Easter Monday we're holding a Bush Dance and Bush Tucker Barbecue where we can let our hair down".

Mrs Durcan said that flexibility was the key to Acotanc-2001. Attendance could be tailored to suit interests and budget, from a single MiniAc or a single Plenary Day up to the Full Conference Package at an attractive price.

Conference Chairman, Dr **Stanley Parkinson**, said that the extensive planning process had been greatly helped by the

Planned Mini-Acs and codes

- A2 Almonds
- A4 Australian Native Plant Foods ("Bush tucker")
- B2 Beverages from Plants (eg green tea, coffee, wine)
- C7 Chestnuts
- D3 Dry-Country Fruits and Nuts (eg cactus fruits, jujube)
- F8 Figs
- F3 Forest Products Including Timber
- H3 Handling Pests, Diseases, and Weeds (eg Integrated Pest Management)
- H6 Harvesting and Post-Harvest in Tree Crops
- H1 Hazelnuts
- I9 Industrial Oils and Plant Essences (eg eucalypt, jojoba)
- L5 Land and Environment Improvement
- M2 Macadamias
- M4 Medicines from Australian Plants
- M9 Multi-purpose Tree Crops
- N2 Neem
- N7 New Approaches to Traditional Fruits (eg stonefruit, citrus, pomefruit)
- N3 Non-Timber Forest Products (eg resins, mushrooms, cork, rubbers)
- O1 Olives and Tree Oils
- O8 Organic Approaches in Tree Crops
- P5 Paulownia
- P1 Pecans
- P2 Permaculture and Tree Crops
- P3 Pistachios
- P4 Pollination and Tree Crops
- P6 Propagation and Tree Crops
- Q3 Quandongs and Sandalwood
- S8 Site Planning and Management for Tree Crops
- S2 Specialist and High-Value Timbers
- S9 Salinity and Tree Crops
- T1 Tropical Fruits and Nuts
- U3 Unusual Temperate Fruits and Nuts (eg blue honeysuckle)
- V9 Vetiver, Ground Covers, and Orchard Practices
- W5 Walnuts
- W9 Water and Tree Crops (water harvesting, irrigation)
- Z1 (Your suggestion -----)

availability of sponsorships, and volunteers from the host organization, the West Australian Nut and Tree Crop Association.

"We've had great support from the HRDC (the federal government's Horticulture Research and Development Corporation), Agriculture Western Australia, and the Countryman newspaper", Dr Parkinson said. "We've been fortunate in getting together a great team of WANATCA members to work everything out before, during, and after this ambitious conference. There's great

enthusiasm in the group and the feeling that we're catching the right wave at the right time".

Registration brochures are now available for Acotanc-2001. Contact David Noel at the Tree Crops Centre (phone 08-9388 1965, fax 08-9388 1852) or Conference Manager Monica Durcan (08-9291 8249) to secure your place. Or you can register on-line, download a form to mail or fax in, or get the latest conference details from the website, www.AOI.com.au/acotanc.

[West Australian / 2000 Dec 16]

Botanist finds new 'living fossil' nut tree

A giant new species of tree, another remarkable living fossil, has been discovered in the vine-tangled rainforests of the Nightcap Range in the far north of New South Wales.

The local botanist who found the tree, Robert Kooyman, has christened it the Nightcap Oak and formally requested emergency protection for the stand under NSW's threatened species legislation.

Environment Minister Bob Debus said the Government would support such a listing.

So far, only 23 adult trees (those with girths of more than 10 cm) have been found.

They are all living in a single catchment which will be kept a closely guarded secret. The biggest individual tree is at least 40 m tall.

The Nightcap oak has not yet been given a scientific name but early research by Mr Kooyman and an expert in Australian flowering plants at the Royal Botanic Gardens, Peter Weston has placed the new tree in

the family Proteaceae — the same group that includes macadamias and grevilleas.

Like the Wollemi Pine, the last major living fossil uncovered in a NSW rainforest, the Nightcap oak has an intriguing record.

In 1875, botanist Ferdinand Von Mueller described a fossilised cricket ball-sized nut aged between 15 million and 20 million years.

Although the Nightcap oak's nut is more the size of a macadamia, it has the same distinctive structure as the fossil.



Robert Kooyman holds Nightcap oak leaves from the colony of rare trees he discovered

[Countryman / 2001 Jan 18]

Native limes bear fruit

Citrus growers are in the limelight with the first commercial harvest of fruit developed from Australian native limes.

CSIRO Plant Industry and Australian Native Produce Industries, a company that grows and sells Australian native food, has developed plantations of new lime varieties bred from native limes.

"Australia has a range of true citrus native limes," Dr Steve Sykes, of CSIRO Plant Industry, said.

"They include the Finger Lime which is long and narrow like a finger and may vary from green, through pink to a dark burgundy colour when ripe, the Round Lime or "Dooja", and the drought-tolerant Desert Lime," he said.

Dr Sykes' original aim in investigating the native limes was to find out if their useful characteristics such as disease resistance, salt tolerance and fruit colour could be bred into

conventional citrus fruits.

"Our research into native limes led us in a whole new direction we never envisaged," Dr Sykes said. "We have now bred lime varieties from the native limes that can be used as fruit in their own right."

Food derived from native Australian plants and animals has risen in popularity over the past decade.

Aboriginal people and early settlers used the native limes as a food source but they have remained relatively unknown to the wider public. "Each of the different native limes has its own unique taste," Dr Sykes said.

"They are all relatively acidic like a lemon but are excellent when used in sauces. "They can also be used as in ingredient for preserves, con-diments and beverages."

Three varieties, each bred by Dr Sykes at Merbein in north-west Victoria, are being evaluated in commercial orchards in Australia.

"These include the Blood Lime, a cross between a mandarin and a Finger Lime and characterised by its blood-red rind, flesh and juice, the Sunrise Lime, a pear-shaped orange fruit that makes an excellent marmalade, and the



Citrus growers inspect the CSIRO native lime research trial

Outback Lime, a cultivar of the Desert Lime, with small green, juicy fruits which ripen at Christmas time.

"The advantage of our varieties of lime is they can be propagated onto normal citrus rootstocks to yield consistent and quite large volumes of fruit.

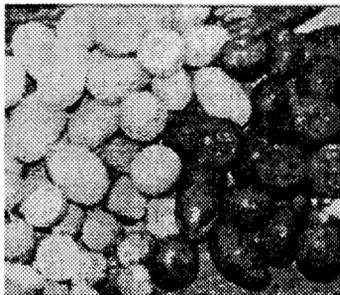
"This is important for the native food industry that has relied on wild-collected fruits, for which consistency of supply from year to year can be a problem."

Commercial quality native limes will now be harvested from orchard, reducing the need to collect native limes from the wild and minimising any detrimental impact on natural populations.

Andrew Beal, of Australian Native Produce Industries (ANPI), was one of the first to recognise the potential of Dr Sykes' research into native limes nearly 10 years ago.

"We are always on the lookout for new and interesting Australian native foods," said Mr Beal.

"Using the CSIRO Plant Industry-bred varieties of native limes we have established



Three of the different native limes being developed

more than 16,000 native lime trees planted throughout the citrus growing areas of Australia."

The trees will now supply ANPI's requirements for the native lime fruit in its manufactured products, which are proving very popular, especially overseas.

ANPI plans to treble the number of trees in its native lime orchards to keep up with anticipated demand.

"Our largest market for native lime products is in the UK," Mr Beal said.

[Native Limes will figure in MiniAc A4, Australian Native Plant Foods]

[Countryman Horticulture / 2000 Nov 2]

Fontanini family nuts it out for half a century

The current level of chestnut hazelnut and macadamia plantings on the Fontanini Orchard has taken nearly half a century to develop.

According to Tony Fontanini, that is largely due to the fact that the planting program generally relied upon an apple or pear tree dying first.

"I suppose we've now been growing nuts for forty years, and basically every time an apple tree died on the property the old man planted either a chestnut or a walnut," he said.

Nut trees are actually in the middle of a resurgence in the region, with new ventures

such as truffle growing leading to solid acreages being planted to nut trees, although according to Tony, this would bring the regional plantings back to the levels of the early 1950s.

"Forty years ago there was probably just as many nut trees around the place because a lot of the potato growers and tobacco growers were of European origin and they all had their small plantings," he said.

The European connection is still relevant today, Tony said, with the majority of the nuts produced on the property being sold on a pick your own basis to large groups that are bussed down from Perth or major regional centres.

"All the nuts we produce are sold on the domestic WA market, and of the 15 tonnes per year we produce about 10 tonnes are taken by people who pick their own, the rest we pick using contract pickers, which we have found to be more viable than machine picking," he said.

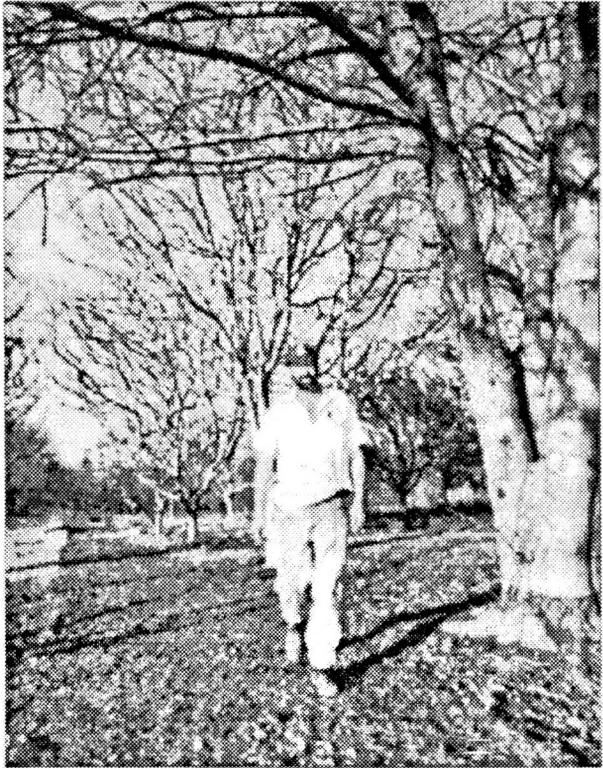
With the local chestnut market fast approaching saturation point, Tony is considering the export market to include value-adding for chestnuts.

The fact that the nut industry in WA is relatively small means that gathering information to support a move into value-adding relies heavily on tools like the Internet.

"The first challenge is getting the husk off the chestnuts, and there is some new air blast technology that has just been developed in the US that I have been chasing up information on, and that would be a major help," he said.

"We will be trying some value-adding experiments over the next 12 months with chestnut flour and chocolate-coated chestnuts."

The value-adding strategy for the operation will be heavily dependent on a belief in the burgeoning tourism focus on the region which Tony believes offers all growers in the region



Manjimup fruit and nut grower Tony Fontanini with some of the chestnut and hazelnut plantings that have gradually been expanding for almost 50 years of fruit and nut production in the region.

new opportunities.

"As soon as more wineries are built in the Manjimup-Pemberton region there will be more tourists and we are really positioning ourselves to take advantage of that," he said.

"Everything we do now on the property is being geared up for tourism because we believe this area is well placed, and I think it will not only be good for us but also be good for the district in general."

[Chestnuts, Hazels, and Walnuts will figure in MiniAcs C7, H1, and W5]

[Countryman / 2001 Jan 25]

\$70m boost for rural research

Salinity solution high priority

More than \$100 million will be invested in a new Cooperative Research Centre (CRC) to be based at the University of WA (UWA).

The Federal Government announced last week the CRC for plant-based management of dryland salinity will get \$22 million in Federal funds over seven years.

Farmers frustrated with the lack of solutions to salinity management will see research directed to find profitable plant-based systems.

Professor Phil Cocks of UWA, who will take up the director's position, said the centre would also get a total cash injection of \$33.7 million from industry bodies and a



Professor Phil Cocks who will take up the directorship of the new Cooperative Research Centre for plant-based management of dryland salinity

contribution in time and facilities equivalent to \$85 million over seven years.

Professor Cocks said the decade of landcare had raised awareness of the problems but the research component had been neglected.

"A lot of money has been spent in landcare but it has not gone towards the development of farming systems that are likely to be adopted widespread by farmers," he said.

"Unless we offer farmers something that is profitable enough they are not going to change (practices) to affect salinity."

He said the centre would take up some of the work the Department of Conservation and Land Management had been doing with oil mallees, look at lucerne and phase farming, conduct new research work on plants and genetics investigate saline tolerant crops and help develop industries and find markets

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around the new plant-based products.

Professor Cocks said deep drainage was beyond the centre's scope but it would look at the management of surface soil in how it could affect plant growth.

John Bartle, of CALM, will lead research into genetic resources of woody perennials and CLIMA director Mike Ewing will head research into genetic resources of herbaceous perennials and provide overall leadership of the genetic resources area.

State Salinity Council chairman Alex Campbell will chair the CRC board.

Participants in the CRC, which is expected to be up and running by July 1, include UWA, Agriculture WA, CALM, CSIRO, Department of Primary Industries and Resources South Australia, University of Adelaide, Victorian Department of Natural Resources

and Environment, NSW Agriculture and Charles Sturt University.

Professor Cocks said the Grains Research Development Corporation (GRDC) and Wesfarmers were other participants in the new centre.

GRDC Western Region Panel chairman and Hyden farmer Dale Baker welcomed the announcement.

"With WA's agricultural region seemingly the epicentre of Australia's dryland salinity, it's fitting the CRC is based in Perth."

— *Lara Ladyman*

[This news will have implications in Acotanc Plenary Sessions and in MiniAcs D3 (Dry-Country Fruits and Nuts) and S9 (Salinity and Tree Crops)]

[Australian Olive Grower / 2000 Nov]

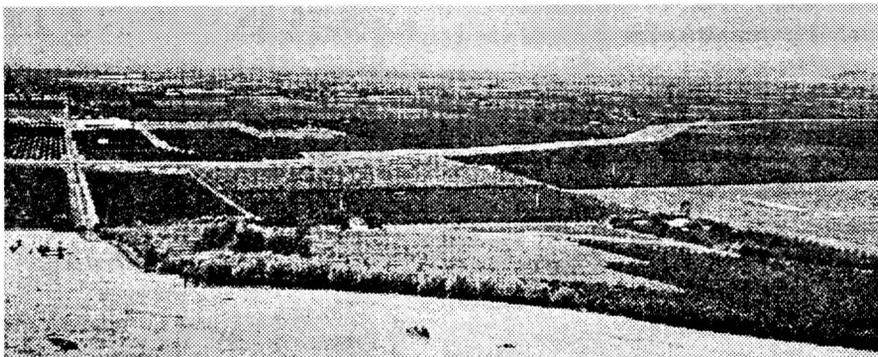
Olives in California and Argentina

Susan Sweeney of PIRSA (Primary Industries and Resources South Australia) was one of several Australians who toured the olive-producing regions of California and Argentina late last year on the Olives Australia Research Tour. Susan has prepared an informative 70-page report on the tour including photographs and collected documents. The Executive Summary of her report appears below.

Executive Summary

California and Argentina have, in many respects, more relevance to the emerging olive industry in Australia than the traditional olive growing areas of the Mediterranean region. The trees in both countries are grown intensively under full irrigation and particularly in Argentina are being developed specifically for mechanisation. Californians have traditionally hand harvested their trees, but economics dictate they must reduce harvest costs. Their efforts at developing machine harvesters will be of enormous benefit to the Australian industry.

The growing conditions of both countries are similar to many parts of Australia. Olives in both California and Argentina thrive in seemingly hostile conditions of desert environments with very hot dry summers and cold winters. The key is a plentiful supply of good quality water for irrigation. It is generally recognised that very hot conditions are not conducive to quality oil production. In California there is a small gourmet olive oil industry on the north coast, which has a milder climate than the main horticultural areas of the Central Valley. However, olive oil production there is barely economic,



Olives are among the tree crops stretching for kilometre after kilometre in California's Tulare County

particularly with the high land prices and hand harvesting costs.

We saw examples of extremely well managed olive groves in both California and Argentina. The maximum average yields achieved by the Californian growers and

predicted by the Argentinian growers is 12-15 t/ha and I believe it is unrealistic for Australian growers to expect average yields much higher than this. The industry in Argentina is tax driven, as it is for some large developments in Australia, and it is important to not be overly optimistic on potential yields from the trees.

Like Australia, both California and Argentina must compete with cheap subsidised olive products from the Mediterranean region. A major determinant for any of these "New World" olive countries to form a viable olive industry, is to develop a successful method for machine harvesting trees. However, Argentina, and to a lesser extent California, have an advantage over Australia as they have a more plentiful supply of low cost labour.

In the scheme of things, California and Argentina probably do not pose a great threat to the Australian olive industry. California largely markets a product (canned black-ripe olives) that is not produced in Australia and Argentina has an enormous domestic market in South America to consume their olive products.

History of the olive in California

Olives were first introduced into California in the late sixteenth century by the Franciscan

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fathers from Mexico, with over half a million trees planted by 1876. The main product marketed then was olive oil, but in the early 1900s a method of preserving and canning olives was developed, and since then the industry has mainly produced pickled table olives. The olive oil industry declined due to the higher prices received for table olives and primarily existed to utilise cull fruit from the table olive industry.

Today, California produces about 11 percent of the world's table olives and 0.1 percent of its olive oil. There are two main producing areas within the Central Valley, the northern Sacramento Valley and the southern San Joaquin Valley. In the late 1980s, an increase in demand for high quality, gourmet olive oil has led to a number of small orchards being planted in the North Coast counties.

Argentina

The olive was first introduced to Argentina in the sixteenth century by settlers from Upper Peru. The main developments occurred in the twentieth century and by 1965, over 5 million trees were in the ground (Campos, 1999). With competition from seed oils, numbers started to decline until in 1982, the Argentinean government passed a law to encourage investment in agriculture.

This law allowed investing firms to defer the payment of taxes at a zero rate for a given period of time (17 years in the case of olives). The law particularly favoured some of the poorest areas of Argentina with up to 20% unemployment, including the provinces of Catamarca, La Rioja and San Juan. Some investment has also occurred in other areas such as Mendoza and Cordoba. By July 1997, the area of new olive groves approved for the tax deferral scheme equalled about 70,000 ha, of which 70% were for oil production

According to the olive growers we visited the government is making it more difficult for investors. They felt that olives will still be planted for the next two years and after that no more. Some felt that it was possible that after the general election (held in October 1999), the deferral could favour other provinces.

Climate

Most of the areas we visited were virtually desert with summer dominant rainfall averaging between 50 and 500 mm. When the rain falls it tends to be torrential causing a great deal of erosion. The key to making these deserts bloom is the enormous quantity of good quality ground water, courtesy of the nearby Andes Mountains.

Temperatures are extreme and variable. At Olivares Andinos the August temperature this year ranged from -3.5 to 39°C. At Aimogasta, summer temperatures are often greater than 45°C. At Nevado del Famatina summer temperatures could be 45 to 50°C for 10 to 15 days, with an average of 42°C.

Frosts can be a problem in these areas, particularly when there has been a period of warm weather preceding the frost. In the Mendoza area this year there had been a week

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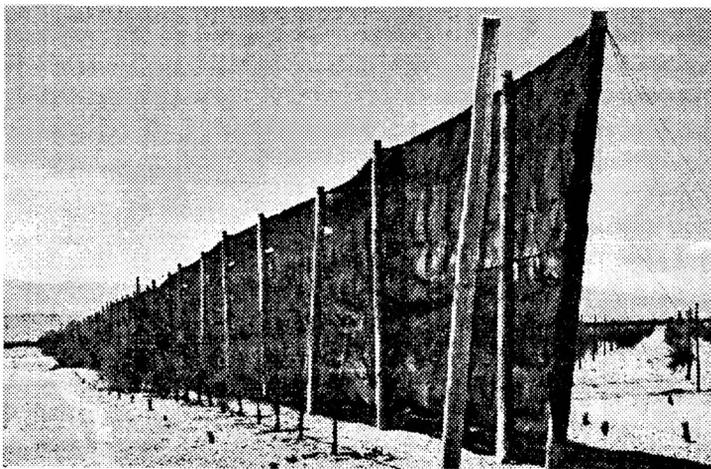
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of warm weather in August before the temperature plummeted to -12°C for approximately 12 hours. In some instances this caused 100% loss of flowers. One recently planted grove of 5,000 ha in the Mendoza region (thought to be one of the largest groves in the world) lost 1,000 ha of young trees due to this frost.



Synthetic windbreaks are used extensively in many Argentinian olive groves

Very strong winds that descend from the Andes also blow in some of these areas. They occur from August through to October, decreasing to December. We saw some very lopsided trees formed by the strong prevailing winds. One grower claimed that the the winds were actually beneficial for pollination and the health of the

trees and despite these extreme weather conditions, most of the young groves we visited comprised some of the healthiest, well grown trees I had ever seen.

[Olives are the main topic in MiniAc OI, Olives and Tree Oils]

[Natural History (USA) / 1999 Sep]

The fruit I can't get past my nose

Americans will soon spend \$10 million to eat Southeast Asia's stinkiest fruit, the durian

My Thai hosts are smiling and offering encouragement. "Eat some more, go ahead, it grows on you," they're saying. Before me on a plate are several soft, pale yellow sections of a durian — the sweetest, creamiest, smelliest fruit I've ever tasted.

I've already eaten one of the custardy segments, but the smell of rotten eggs is so overwhelming, I suppress a gag reaction as I take a bite of the second.

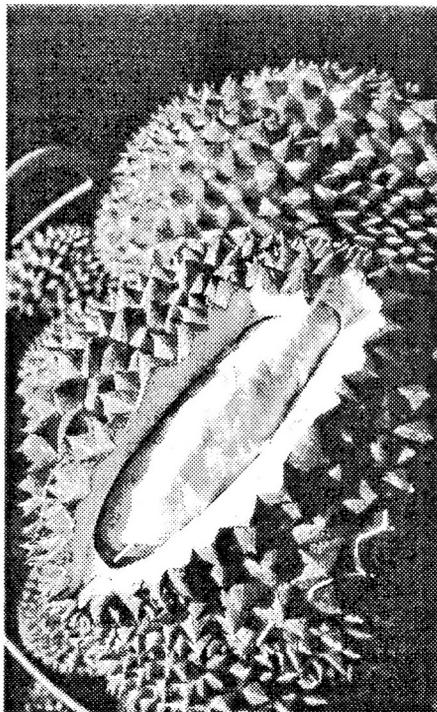
I feel a little foolish sitting here in the formal living room of Prabhadpong Vejajiva, Thailand's former deputy minister of finance. His palatial house, located in the middle of a durian plantation in the fruit-growing area of

Chanthaburi, is named Barn Kradum Tong, or Golden Button Home. Golden Button is the name of an early-maturing variety of durian that has proved especially profitable for the former government minister. The news that an American is having his first encounter with durians has caused a small crowd to gather. Someone is snapping photos while I make my feeble attempt to eat the stuff.

Called 'stinkvrucht' by the Dutch colonists of the East Indies, the durian is one of those distinctive foods that is at first repulsive and yet has become highly desirable to some epicures. Watching Westerners experience their first bite of a durian is a great source of amusement for many Asians. And in this case, my hubris made the scene even funnier. As a veteran food writer who likes overripe cheeses and brutally hot chili peppers and has eaten bugs, barnacles, and goat brains in the line of duty, I expected to delight the crowd by eating a whole durian at my first sitting. To my chagrin, I couldn't even eat two small sections.

Durio zibethinus doesn't look (or smell) like any fruit I can think of. Many are bigger than a man's head. With its covering of stout brown thorns, it looks something like a hedgehog. The husk contains five interior compartments, each one filled with glossy, malodorous flesh (ranging from pink to orange) in which the large seeds are embedded. Field botanist Otis W Barrett has described the aroma of durians as a blend of decayed onion, turpentine, garlic, Limburger cheese, and some spicy sort of resin.

Enzymes in the fruit break down two common sulphur-containing amino acids, methionine and cystine, into sulphides and bisulphides that have a very intense aroma. To find out more about its chemical composition, I call Ron Buttery, a research chemist at the U.S. Department of Agriculture's Western Research Center in Albany, California. Buttery begins by explaining that sulphur compounds contribute to the smell of many common fruits. Grapefruits, for instance, have a tiny amount of thioalpha-tepineol, the most potent odorant known. Rummaging in his files, Buttery finds a 1996 paper by R. Naf and A. Velluz that notes the presence of forty-three sulphur



A sliced-open durian at a Bangkok fruit market

compounds in durians. The major ones are ethyl propyl disulfide, also found in onions; dialkyl disulphides, found in garlic; and diethyl disulphide. Similar sulphur compounds are employed by skunks, says Buttery.

The durian, thought to have originated in Borneo or Sumatra, became an important trade item about four hundred years ago in Burma, where it was a favourite at the royal palace. There are hundreds of cultivars of the fruit, but the three major commercial varieties are the early-maturing Golden Button (var. kradumthong), the midseason Golden Pillow (var. chanee), and the late-maturing Matong (var. monthong), this last being the favourite of connoisseurs.

Today most of the world's durians are

grown in Thailand and South Vietnam. To the chagrin of Thai fruit farmers such as Prabhadpong Vejajjiva, however, buyers throughout Asia are beginning to ask for "Singapore durians." The tiny island nation of Singapore is famously adept at filling orders promptly, meeting shipping deadlines, and promoting its products to the rest of the world — which is why its campaign to sell "Singapore durians" to customers in Japan and elsewhere has met with such success. But there's a catch, protests Vejajjiva: "They don't grow any durians in Singapore!"

To say that the durian is very popular in Southeast Asia is an understatement. In Thailand and Malaysia, it is called the king of fruits. Every year, tourists from Japan and other parts of Asia come to the Malay Peninsula's fruit-growing regions during the

harvest season to participate in durian tours and durian festivals. I imagine that it was overzealous tourists, breaking open the malodorous fruits midflight, that prompted several regional airlines to institute their famous "nodurian" policies. Signs forbidding durians in hotel rooms and on public transportation have sprung up all over Singapore.

We haven't had much resistance to public durian eating in the United States — yet. But stinkvrucht may turn up in your neighbourhood any day now. According to figures provided by the Thai Department of Export Promotion, the United States is currently the world's largest purchaser of frozen durian from Thailand. In 1996 Americans spent about \$6.9 million to buy it. Last year that figure rose to \$8.8 million. The frozen product is sold primarily in Asian groceries in major American cities but is considered a poor substitute for the fresh fruit. At My Thanh Oriental Market in my hometown of Austin, Texas, it is currently selling for \$1.89 a pound.

So far, efforts to bring fresh durians to the United States have largely failed because the fruit does not survive the required quarantine process well. But Asian-Americans who long for fresh durians shouldn't give up hope; they may yet be cultivated in the United States if demand continues to grow.

University of Hawaii plant biologist Surmusk Salakpetch, who works at the Chanthaburi Horticultural Research Center, reports that she has seen thriving durian trees in Hawaii. According to Salakpetch, several former sugarcane plantations there are being considered as sites for durian orchards. I wonder if growers will plant the extremely pungent variety of the fruit that true durian fanciers prefer or a less aromatic cultivar that Americans might find more palatable.



Japanese tourists buy fresh durians from a vendor at the floating market in Kanchanaburi, Thailand.

Odourless cultivars of the fruit have already been produced but have never gained acceptance. In Southeast Asia, the stinky ones are simply preferred. In fact, Singaporeans and Malaysians are very fond of a preserved form of durians that is even smellier than the fresh variety.

My own reaction to durians surprised me, however. My disgust was completely involuntary, and there's no getting over it. A Thai friend who lives in the United States puts the phenomenon into perspective by comparing my reaction to durians to his reaction to cheese. As a child in Thailand, he never had dairy foods, he says. To him, the smell of cheese is horrible, and as much as he may wish he could eat foods that contain cheese, he can just never get them past his nose.

Just how do people from a particular culture come to love one smelly food and find another disgusting? I ask Paul Rozin, a professor at the University of Pennsylvania who specializes in biocultural psychology, particularly in people's food habits.

"Durians and blue cheese both have a rotten smell, which is offensive to most humans," Rozin says. "But this aversion is not innate. I believe the disgust reaction comes from a universally acquired aversion that is probably taught in the toilet training process." Infants play with their faeces, and animals show no particular aversion to theirs, he observes. In the socialization process, we learn to feel disgusted by things that smell rotten, especially if, like blue cheese and durian flesh, they are also mushy in texture.

Yet the curious thing, says Rozin, is that in many cultures, a few rotte-ly-smelling substances become highly favoured foods. Cheese for Europeans, fermented fish sauce

and durians for Southeast Asians, and rotted whale meat for the Inuit all fall into this category. What these pungent foods have in common is that they taste much better than they smell: the food doesn't necessarily have the spoiled quality that the aroma signals. And we get pleasure from situations in which our body tells us no, but our mind tells us it's okay — which Rozin calls "mind over body experiences," a form of thrill seeking.

But of course I want to know why. Rozin doesn't quite provide a reason but tells me that time and again, humans develop a strong liking for things that are initially off-putting — like riding on roller coasters, going to sad movies, and eating blue cheese and durians.

"We're crazy," he chuckles. "What else can I say?"

— *Robb Walsh*

David Noel notes: "Australia allows import of frozen durians from Thailand also. The freezing appears to kill the seed. The USA now allows import of fresh durians from Thailand — I sampled some when in Los Angeles last November. Delicious (but I have little sense of smell!)."

Some of the seeds were sent back to Australia, have been through AQIS inspection, and are now growing strongly. Australia intends to allow import of fresh durians in the near future.

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Mallee industry coming of age as source of eucalyptus oil and energy

The concept of developing WA's native gum trees, as sources of eucalyptus oil, energy, and other useful products, has been worked on for many years. Now these efforts by researchers, farmers, growers, and official bodies are starting to pay off.

[Countryman / 2000 Dec 21]

Mallee plant a step closer

The official announcement of a \$5 million integrated wood processing plant for Narrogin takes the oil mallee industry a step closer to offering farmers a new commercial crop.

The demonstration plant will produce renewable electricity, eucalyptus oil, and activated carbon, which is an absorbent used in water treatment, food production and gold processing.

Energy minister Colin Barnett said the demonstration plant, owned and operated by Western Power, would provide enough renewable energy for 1000 homes and was expected to inject more than \$600,000 a year into the local economy when completed.

Construction was expected to begin within six months and the plant was expected to be operational by February 2002.

Oil Mallee Company chair, Syd Shea, said it marked the beginning of a major new growth phase in the development of the oil mallee industry.

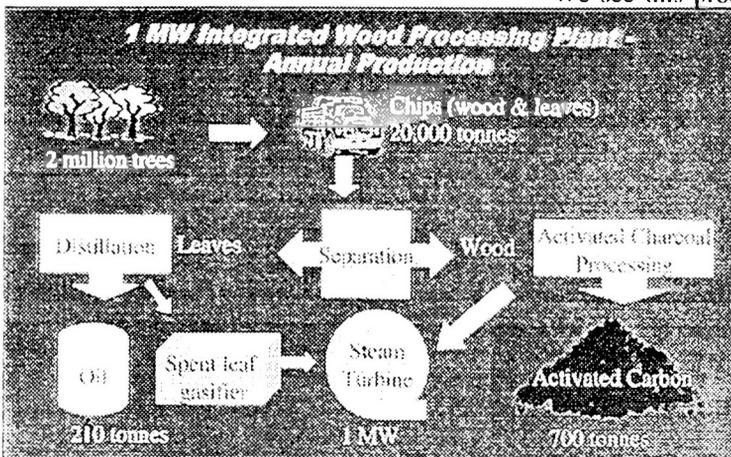
He said until now there had been a lot of enthusiasm from farmers and they have had the faith to plant the trees.

Others have been on the sidelines to see if an industry developed. It was a catch 22 as there had to be trees in the ground to have an industry, but to get trees in the ground there needed to be commercial returns.

"We see this processing plant as a real circuit breaker," he said.

"We have had farmers planting in hope and for landcare and now we have a processing plant that is going to buy the product," he said.

Professor Shea said he thought the announcement would stimulate mallee plantings as a lot of farmers had been waiting for something tangible



Construction of 1 Megawatt pilot plant at Narrogin, to process oil mallees to produce activated carbon, eucalyptus oil and renewable energy will begin mid 2001. Diagram from Western Power

that they could sell.

But farmers would need to get tree orders in within the next week for mallee seedlings for next year.

Professor Shea paid tribute to Western Power and Enecon, the company who held the license for the activated carbon process. He congratulated the Farm Forestry Unit in CALM led by John Bartle and Professor Allan Barton, of Murdoch University, for their role in the development of the integrated processing concept, and Australian Greenhouse Office and Department of Industry Science and Resources.

He said the pilot plant would consume 20,000 tonnes of mallee feedstock per year, which would come from about 2 million mallees.

— *Lara Ladyman*

[Countryman / 2001 Jan 18]

Woodside and Oil Mallee Company launch joint venture

Woodside Energy Ltd and the Oil Mallee Company of Western Australia have announced plans to cooperate in the development of business based on oil mallee planting in WA and beyond.

The first phase of this plan is to establish a one million tree oil mallee crop in the Esperance region and to develop a mallee harvester. Woodside will initially contribute \$550,000 to this first phase.

Woodside would be able to use the oil mallee biomass (plant material) for a proposed Esperance power station and may obtain future carbon credits from mallee plantations under an agreement to be negotiated with the growers and the Oil Mallee Company.

A Woodside/Energy Equity consortium

has included a bioenergy facility as part of its proposal in the recent Esperance power supply bid process undertaken by the WA Office of Energy.

"The development of an energy and carbon sink business based around oil mallee plantations is a win for the entire community," according to Woodside's business development director Richard Beresford.

This sentiment was echoed by Professor Syd Shea, Chairman of Oil Mallee Company, who praised Woodside's role as visionary.

"We are very encouraged to see a company like Woodside investing in the future of WA by putting these resources into development of an industry that will also result in immense environmental benefits, such as combating salinity in the State's wheatbelt, reducing carbon dioxide in the atmosphere, producing

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biomass fuel for energy use, and supporting biodiversity in the south of the State," Professor Shea said.

Native to the drier areas of WA, oil mallees are members of the eucalypt family, from which eucalyptus oil can be extracted.

Woodside is looking to the time when rows of these trees across the WA Wheatbelt can be used to supply energy and combat dryland salinity.

Professor Shea also paid tribute to the past research done by the Department of Conservation and Land Management and the

Oil Mallee Company on improving the genetics and management of mallee species.

"The global future of energy supply will mean an increasing reliance on low carbon emission and renewable energy sources," Mr Beresford said.

The addition of oil mallee-based bioenergy to Woodside's portfolio would mean better opportunities for off-grid renewable energy supply in WA, he said.

[This important topic will figure in Acotanc Plenary Sessions and in MiniAcs 19, L5, and S8]

Australian plants now the focus of commerce

Products from the huge range of Australian native plants have been quite late entrants onto the stage of world commerce. Timber trees were the earliest, first as cut wood, and later as plant stock for eucalypt plantations around the globe. Sandalwood to Asia was once WA's biggest export item, and later on, macadamias from Australia were developed in Hawaii. These three items are now beginning to be overtaken by a rush of tens, perhaps hundreds, of species entering world trade — the beginning of a revolution in the use of Australian plants.

[Fruit Gardener (California Rare Fruit Growers) / 2001 Jan-Feb]

Riches of the Australian Flora: Native Fruits, Nuts, Flavours, Essences and Medicines

The biological treasure box known as Australia is unique. Isolation of The Land Down Under from the rest of the world is well-known, but the implications of this remoteness for its flora are not.

Origins of Australia's plant families can be traced back to the time around 200 million years ago when its land mass was part of the single world continent of Pangaea, and was connected to South and Central America, the southeast of Asia, India, Madagascar and southern Africa.

In the breakup of Pangaea, which was caused by expansion of the Earth, Australia inherited the ancestors of many species which are part of genera still currently shared with other continents: *Ziziphus*, *Eugenia*, *Melia*, *Beilschmiedia*, *Adansonia*, *Ficus*, *Terminalia*, *Castanospermum* and *Acacia*. Some Australian species of these shared genera are quite similar to their overseas relations, while others have adapted and changed; for example, Western Australia (WA) has *Terminalia* species adapted to desert conditions. In addition, Australia saw rapid development and expansion of its own plant families, in particular the Eucalypts, which now dominate much of the landscape. At the same time, intense evolution of its animal populations occurred, especially its marsupials.

Nature is the scene of constant battles, and in Australia these battles led to massive "Plant Wars," with plants developing defences against animals, and animals developing counterattacks, all this to a level not seen elsewhere. An example is the development by *Gastrolobium* plants in WA of animal poisons containing fluoroacetates identical to those in commercial 10-80 baits.

This long and isolated saga of change has given Australia a unique genetic heritage, with species having characteristics not matched elsewhere. This has given Australia a huge, peerless variety and range of plants with unique smells, tastes and flavours, and medicinal and commercial uses as well.

Australia is also unique because of its late entry into the world-civilization scene, having been settled by those from other, more-developed societies less than 250 years ago. Moreover, the Australian aboriginal inhabitants had no agriculture at all, as far as is known, and there is no history of the sort of plant exchange or trade that has occurred for thousands of years elsewhere.

So if you open the lid of the treasure box and peer inside, you are sure to be taken aback by its richness and variety. Take just one example, the *Syzygiums*, the Lilly-Pilly family. Australia has around 80 native species, all of which produce edible fruits, some with unique flavours. If you look at plant genera native to the United States, which is about the same size as Australia, how many of these will have 80 species in them, let alone 80 unexploited fruits?

Only one native Australian fruit or nut figures in world trade, and even this, the macadamia, was not grown commercially in Australia until about 30 years ago. And yet a study I did in 1980 of Australian nut-producing plants gave me a list of over 200 species, the

big majority still hidden away in the bush and scarcely known.

On the pharmaceutical side, one product, eucalyptus oil, is well-known, although most of this oil entering international trade comes from China. We are working on this. Another minor item is the marvellous antiseptic, Australian Tea Tree Oil. There are probably thousands more valuable pharmaceuticals out there yet to be isolated.

Finally there are all the edible 'bush tucker' products with unique flavours— things like Lemon Myrtle, Tasmanian Hill Pepper, and Riberry, the latter one of the Lilly-Pillies, valued not as a fruit to be eaten fresh, but as a flavouring agent.

So there it is, a huge, varied, and often unique collection of plant products, crying out for recognition, research, and exploitation. Who wants to be in it? The job is so enormous, we will have to share it out around the world.

— David Noel

[A report from the Festival of Fruit, held in November 2000 in Fullerton, California.]

[Bush tucker and native medicinal plants feature in MiniAcs A4 and M4, and Earth Expansion is the topic of an Acotanc Plenary Session presentation]

California Rare Fruit Growers: A1115.

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[Native Food News (ANPI) / 2000 Sum]

Wattleseed Production Seminar

Around thirty current and potential wattleseed growers, from as far a field as Western Australia, attended an **ANPI** [Australian Native Produce Industries] and **PIRSA** [Primary Industries & Resources South Australia] seminar on wattleseed production in Renmark in December.

Workshop participants heard about wattleseed products, markets, crop management, costs and returns, actual grower experiences and undertook a bus tour of a local planting.

There is a growing market for wattleseed, a versatile food ingredient with a wide range of potential uses, including in sweet and savoury sauces; chutneys; dressings; curries; ice creams; dampers, breads, cakes, biscuits and other baked



Growers discuss the finer points of wattle management

goods. However, high prices and inconsistent supply of wild-harvested product has acted as a constraint on market growth, while stimulating interest in commercial cultivation.

While participants heard that there is still much to be learned about wattleseed as a cultivated crop, they agreed that the crop presented a profitable production opportunity and that the knowledge and experience shared at the seminar, and the contacts made, went a long way to bridging this information gap.

In 2001 ANPI will be conducting a range of similar activities covering other native

crops. Contact Anthony Hele or visit ANPI's website for details.

[Anthony Hele will figure in MiniAc A4, Australian Native Plant Foods]

ANPI: A2758

PIRSA: A1520

[Bushfoods <bushfoods@listbot.com>]

Wattleseed from *Acacia retinodes*

In answer to a couple of questions about *Acacia retinodes*, yes it is commercially viable and the price can vary just as in other native foods.

If you sell at farm gate price you should not expect much more than \$8 to \$9 per kilo but that is actually quite good.

If you value add then you may get \$20-\$25 per kilo, but your intended market(s) will be the real acid test, so my advice is to knock on

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a few doors and see if you can sell it first. We have plantings of this and other *Acacia* species and would rate this second on the ladder to *A. victoriae*.

As to planting *A. victoriae* in 1100 mm rainfall areas and irrigating, I would suggest you would not need to irrigate very often as our experience with this species shows it survives and produces well with less than 400 mm annual rainfall. It is a dryland species so you need to emulate the natural habitat rather than force it to perform too far out of its climatic range.

The timber of *A. retinodes* is quite straight and at first appearances, looks good for fence post material, but its density is quite low so perhaps someone else out there in cyberspace can tell us if it is of any commercial use.

— **Brian King, Muntari Wild Food Plants Of Australia** <muntari@capri.net.au>.

Muntari Wild Food Plants Of Australia:
<A3220>

Bushfood, Small-leaved Tamarind, and conservation of bushfood species

An interesting exchange has occurred on the Australian Bushfood e-mail list, <bushfoods@listbot.com>.

Following a call from Erika Birmingham for supply of fruit of Small-leaved Tamarind, Tein McDonald <teinm@ozemail.com.au> queried the source of such seed:

"Isn't Small-leaved Tamarind on the Threatened Species list? I suppose you and the collectors would ensure that the fruit is collected only under permit under the Act? (i.e. not collected from the wild?)"

Two replies to this query are especially informative:

From Cornucopia Nursery <cornucopial@dingoblue.net.au>:

"I believe that it still is listed. Its entire population of mature wild trees was getting down to about a dozen or so apparently, a few years back.

Probably more than 5-10,000 seedlings (and probably in excess of that if you include SE Queensland and the wider region) have been planted in the northern rivers of NSW region over the last five years or more. What was once a rare endangered tree is now relatively common in cultivation in this area, and often available as a \$2 tubestock or similar at suitable nurseries.

In fact it is probably the widespread interest in the plant and fruit, and its subsequent

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availability for bushfoodies, that will ensure much more availability in the future, and protection of wild populations.

In my home town I've had people in suburban blocks around town come to me and ask what all these strange looking reddish fruits dropping and rotting all over their gardens were. *Diploglottis campbellii*, planted by previous owners! More will be available as time goes on if this keeps up. It is a relatively decorative tree, with showy fruits."

From Erika Birmingham
<erikab@nor.com.au>

"Having worked as a bush regenerator for NSW NPWS on the Endangered Rainforest Plants Recovery Project over a three year period, on the *Diploglottis campbellii* sites in northern NSW, I am well aware of the Schedule 1 listing of this species under the NSW TSC Act 1995.

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John, Linda Price: 08-9497 2302

Bill Napier: 9399 6683

As a part of the recovery program, I have personally collected seed under the authority of NSW NPWS, and propagated and distributed plants of different genetics to arboretums and botanic gardens, to ensure that the species is adequately conserved *ex situ*. As a representative of the Australian native foods industry, I have tried to promote the cultivation of this species to again, ensure *ex situ* conservation. There are now large plantations of *Diploglottis campbellii* under cultivation. Still, I continue to promote the use of this species over other species of *Diploglottis*, to ensure that genetics are distributed and trees are planted in the ground.

I have personally collected fruit from cultivated trees for the last 4 years for supply of seed to rainforest nurseries, propagation of trees for sale to bushfood growers, and sale of fruit to the catering industry. As a result, I have probably been responsible for thousands of trees going into the ground.

I have also raised the profile of this species, through repeated educational programs (I have been teaching Australian native food courses through ACE for 6 years) and through articles in the media. I have distributed trees of a range of genetics into the RTA plantings as a part of their highway upgrade in Byron Shire. The Small-leaved Tamarind is now on the map.

You may be aware that there are approximately 100 trees remaining in the wild. Wild harvesters have no need to target these trees, as most of the trees are inaccessible and fruit poorly in the wild. In fact, this year most trees in the wild did not produce fruit, due to the prolonged dry Spring. Instead, there is now fruit available from mature plantation trees grown under irrigation (and some trees mature after 4 years in the ground). These trees have been selected from a range of superior genetics (e.g. heavy bearing, annual

fruiting) and are now in plantations from Coffs Harbour, through to Maleny, in Queensland. Tweed Council many years ago adopted *Diploglottis campbellii* as their floral emblem and both distributed trees to ratepayers in Tweed Shire and encouraged street and park plantings.

You may also be aware that the *Davidsonia jerseyana* [Davidson Plum] is also on the Schedule 1 list of the TSC Act 1995. However this species is also under commercial cultivation now, with an estimated hundreds of thousands of trees in plantations on the NSW North Coast, alone.

The bushfood industry is no longer in the dark ages and I know of only one subtropical rainforest species which will continue to be wild harvested in commercial quantities for some time — the Illawarra Plum (*Podocarpus elatus*). Cutting grown trees are widely being established in plantations, but are slow to mature and bear fruit.

I have always tried to promote the growth of an ethical and aware bush tucker industry, which practises sustainable farming methods

[*Nafex* (North American Fruit Explorers) listservers <nafex@onelist.com>]

Milk as a fungicide

I guess everybody saw the recent article on milk as a fungicide in the recent HortIdeas. It proved way more effective than synthesized fungicides. I think some work needs to be done to try it on other crops.

— **Dan Hemenway** <YankeePerm@aol.com>

Looking back at the earlier messages, I realized that not very many details were given about the article. The one-page article in HortIdeas (December 1999 issue) describes rqssearch done in Brazil.

All of the research was done in a greenhouse with zucchini squash plants. The

and protects biodiversity by the planting of a broad range of endemic species and genetics. I have consistently condemned the practice of wild harvesting though the media and have personally been responsible for pioneering the commercialisation of new native crops here in Australia.

I have been quoted as saying: "Wild bushfood harvesting has several problems. The resulting product is often of poor quality and expensive, supply is inconsistent and pressures have been exerted on native plant communities in the wild. This form of harvesting is gradually being replaced by sustainable commercial cropping and a new wave of bushfood growers is emerging."

If you would like an update on the industry, may I suggest reading some recent publications, such as the Australian Bushfoods Magazine. And once again, I would like to repeat my motto to wild harvesters in the bush tucker industry: "Think before you pick".

— **Erika Birmingham**, Byron Bay Native Produce

Byron Bay Native Produce: <A3265>

milk solution tested was fresh cows milk (5 to 50% in water). Sprays were applied either once or twice weekly and done to runoff.

Control of powdery mildew improved as the percentage milk went from 5% to 50%, although some other mould growth was seen on the leaves when 30% or more milk solution was applied.

Concerning alternative fungicides to use on powdery mildew, the IPM website of the University of California has some listed for grape powdery mildew:

<www.ipm.ucdavis.edu/PMG/selectnewpest.grapes.html>

— **Mark Doster**, Central San Joaquin Valley, California <Mark@uckac.edu>

Nafex: <A1363>

[West Australian / 2000 Dec 28]

Salt buster digs a channel to success

Bearded, burley John McKay is a salt buster. The 49-year-old contract plant operator works in the eastern Wheatbelt restoring salt-soured farmland for productive use.

For three years, Mr McKay has been involved in building a 120 km network of drains to take salty water from the landscape, lowering the water table so that crops, pasture, trees and shrubs can be re-established.

He said the work — linking about 15 farms in the Narembeen area — represented an investment of about \$3 million.

It was the biggest privately funded farm drainage scheme in the world, based on CSIRO data.

"We have not had a red cent of government funds, yet we have areas back into crop after 40 years of being salt-affected," he said.

"Trees and the bush are being revived and birds and animals are returning."

Farmers in the region began experimenting with drains about 10 years ago.

The run-off water, directed into creeks and a lake system before entering the Avon River, has been measured at 2.5 times saltier than the sea.

Mr McKay, a founding member of the Salinity Drainage Management Association of WA, said the drains had lowered the water table by more than a metre within 400 m on either side, improving thousands of hectares of land in a way tree planting could not.

Land improvement was rapid with some areas cropped within a year of drain construction.

But he accused bureaucrats and politicians of ignoring the successes.

"The salt affects the best land," he said.



In deep: John McKay has helped build 120 km of drains to divert salty water away from salt-soured land

"The Government should make a pool of \$10 million available for low interest loans. The drains cost about \$5000 a kilometre and this money could be repaid by crops as the land comes back into production.

"I also believe a network of drains around the State could result in an extra two million tonnes of grain production, given the amount of salt-affected land.

"This is not about work for me or my boss. We want to beat salt for future generations."

Agriculture WA said it recognised engineering options such as deep drainage were valuable in managing salinity and water logging. But drain projects needed to be implemented correctly.

Agriculture WA manager for water resources Neil Coles estimated there were about 300 km of drains in the Wheatbelt to control salinity.

Some had worked very well, especially in reducing waterlogging, but some had not, mainly because they were in clay.

"Where surface water management has been involved, the same success could be achieved for a much lower cost through contour management," Dr Coles said.

"The downstream impact of large volumes of very salty water can also be a

significant problem, particularly when neighbours are not interested in drains."

Deputy Premier Hendy Cowan, chairman of the Cabinet sub-committee on salinity, denied drains were being ignored.

He said a problem with drains was to make sure salty water was not being transferred to someone else.

Twenty per cent of a \$3 million fund, available under the regional development trust natural resource management program, was going into drainage work.

"But any government funds should be available for a range of control measures suitable for a particular area, not just drains," he said.

— Michael Zekulich

[Salt-affected land will feature in MiniAc S9 and in Acotanc Plenary Sessions]

[Countryman / 2001 Jan 4]

Horticulture shows growth

The WA horticultural industries enter the new millennium with continuing expansion, which is a feature right across the State.

Solid growth opportunities beckon in prime domestic and regional markets.

The face of horticulture in the West continued to change. The increase in the area planted to wine grape varieties in the South West shows no signs of slowing. Continued expansion in vegetable and fruit production in northern areas like Broome are developing strongly.

Export apple sales remained strong, particularly in Europe and India. The two star performers are Cripps Pink [Pink Lady] and

Cripps Red [Sundowner] varieties, but low prices on the domestic markets led to predictions of an industry shakeup. Industry leaders have highlighted the success of grower marketing cooperatives to underpin viability.

Quarantine issues dominated the year, with table grape growers going on the offensive over plans to import Californian table grapes into Australia from regions with the devastating vine disease Pierce's Disease.

Apple growers also led a concerted campaign to ensure New Zealand apples were barred.

Banana growers have lobbied strongly over attempts by the Philippines to import bunches into Australia and have become involved in a three-way standoff.

— Paul Jarvis

[West Australian / 2000 Dec 11]

Fine white grapes emerge from the red desert dirt

Simon Thomas pokes the arid earth east of Wiluna with a big boot.

Dirt. Bulldust. A red talc that dusts you up and sticks like glue when it's wetted by the rare touch of water.

But not to Mr Thomas, manager and one of eight partners in Gunbarrel Grapes, about 950 km north-east of Perth. "It's a sandy loam," he said. "It has a really good balance of nutrients, though it has no phosphorus and is low in zinc. But it has a bit of guts and really good water holding properties."

The proof of this is a spreading oasis of grapevines laden with fruit.

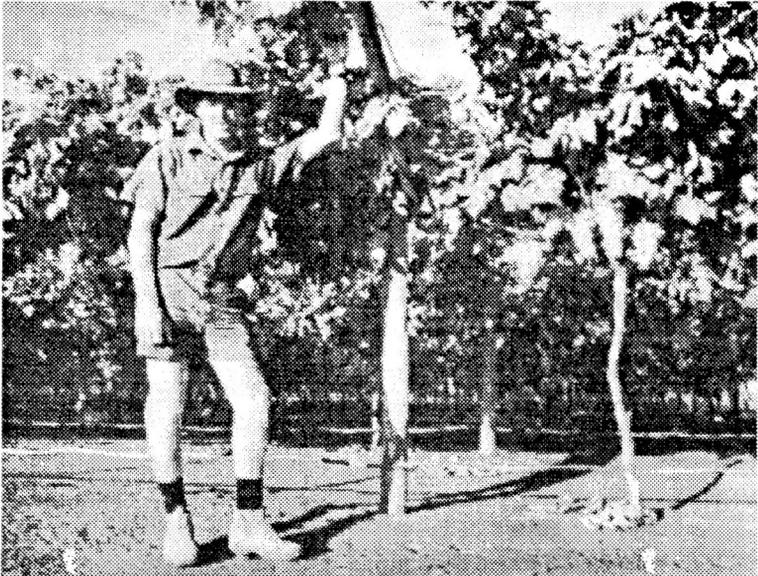
Five years ago, this was a desert landscape. Now it is a burgeoning business. Gunbarrel Grapes is growing Dawn Seedless grapes and

Sultanas ... all white, seedless, table grapes.

Gunbarrel Grapes has five hectares of mature vines. Five more of Menindee variety have just been planted . . . 12,000 cuttings planted by hand. Two bores work 24 hours a day, seven days a week, to water the vines.

They need about eight pickers. All the fruit is backloaded on trucks to Canning Vale markets for sale. There is more work during vine pruning in May and June, which needs six or seven people as well as the vineyard tidy-up in early December.

Gunbarrel Grapes has taken \$1.1 million over five years to establish and the maximum return so far has been \$10 to \$14 a kilo.



Simon Thomas, manager and one of eight partners in Gunbarrel Grapes, says his Wiluna vineyard is the type of country that gets into your blood. Picture: Stephen Scourfield

But Mr Thomas says the hardest bit is done — putting in infrastructure.

"It was a toss-up between oranges and grapes," he said. "We went for grapes because they are a high-value product."

In some ways it wouldn't have mattered much to him. He grew up on a sheep station 160 km east of Wiluna, had no experience of growing and was prepared to learn as he went along.

"It's the sort of area that gets into your blood," he said.

[MiniAc D3 covers Dry-Country Fruits and Nuts]

[West Australian / 2001 Jan 6]

Businesses set to tap new water trade market

Licensed bore users will be able to buy or sell their allocation of water to neighbours under new laws.

Water trading, as it is called, is the most significant change to WA's water laws in more than 80 years. Legislative changes, which will be gazetted this month, provide more flexibility for big water-using businesses such as market gardens.

Water and Rivers Commission acting chief executive Tim McAuliffe said the change would help many businesses. "Water users will be able to buy sell or lease their water entitlement," he said.

"There are provisions in the legislation to ensure the environment is protected. The Act also has in it provisions for local communities to participate in water resource management. From a business tool point of view, we know it increases flexibility and productivity."

Mr McAuliffe said water use had doubled in the past 15 years and would double again by

2020. "That growth is all within the sustainable limits of the State's water resources," he said.

"Fortunately in WA we have some very large water resources, but we also have development that hasn't got ahead of managing the resource.



Nick Trandos with fresh corn. He says water trading provides new opportunities for market gardeners. Picture: Sandra Jackson

"That has happened in other States and they are now in the awkward position of having to take water back."

Neerabup market gardener Nick Trandos — who grows broccoli, corn and onions for domestic and export markets — welcomed the change. "If somebody retires, they can live on the land and have an income by selling their water allocation," he said.

"Also, if someone wants to expand their operation and are already using all their water allocation, they can buy more water."

— **Jerry Pratley**

[Water Trading will figure in MiniAc W9, Water and Tree Crops]

[The Orchardist (New Zealand) / 2000 Nov]

The Japanese mason bee, *Osmia cornifrons* could pollinate our fruit flowers

Ron Becroft in the September 2000 issue of The Orchardist related his memories of an *Osmia* bee which he saw being exploited by Japanese orchardists as a manageable pollinator.

In 1979 I proposed to the hierarchy of the then Entomology Division of the old DSIR that we should introduce this bee, *Osmia cornifrons*, as a backup alternative pollinator in the event that something untoward might afflict our honey bees. The response was that we had plenty of honey bees, and that because of our isolation and a ban on imports of honey bees and used bee equipment, our honey bees were unlikely to be adversely affected by diseases and other enemies.

Well the advent of chalk brood disease in 1983 and now the mite *Varroa destructor* have shown just how vulnerable our honey bees are, despite our laws and quarantine procedures. It is time that the question of introducing *Osmia cornifrons* was revisited.

The Japanese Mason Bee, *Osmia cornifrons*, is just one of a number of mason bees native to Japan which have been investigated by researchers for their manageability as pollinators of fruit flowers. This species has proven to be by far the best. Mason bees do not make honey.

Although the female bees have a sting, the bees are not aggressive and the sting is only used if the bee is accidentally trapped against a person's skin, such as under a shirt sleeve.

There are several features which make these bees excellent pollinators of fruit flowers. The first is that female bees have a very strong preference to collect pollen and nectar from



A Mason Bee pollinating a fruit flower in Japan

fruit flowers, so that flowers of weeds etc. are not major competitors for the bees' pollinating activities. Secondly, Japanese researchers have found that bee-for-bee, *Osmia* females pollinate 82 times as many apple flowers in a day as do individual honey bees. This is primarily due to the fact that *Osmia* females always work over the top of the stigma and anthers, and so always deposit pollen on the stigma. As a result, fewer than 1000 bees are needed per hectare. Also, high quality pollination results in high quality fruits.

Thirdly, because the adult *Osmia* are active

Honeybee Pollination Increases crop yields

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for just a few weeks they do not need feeding. In addition there are no manipulations of equipment of the type needed for honey bees, and because the bees don't defend their nests, protective clothing is not needed. Another important factor is that during winter the nests containing adult bees can be stored in a chiller until a few days before the bees are required to be active in the field for pollination. The bees are so easy to handle that generally Japanese orchardists manage their own bees.

These features have led to widespread use of *Osmia cornifrons* in Japan. Since 1981 the use of *Osmia* has steadily increased. Other fruits for which *Osmia* is used as a pollinator are sweet cherries, plums, peaches and pears. Although there are many species of mason bees in North America, for which researchers are developing management methods, *Osmia cornifrons* was established in the eastern United States for pollination of fruit flowers in 1977.

Osmia cornifrons thus seems to have a great deal of potential for profitable use in New Zealand. However a major question is, could permission be obtained to import the bee?

I believe the answer is yes. This is because, under contract to AgResearch, in May 1955 I obtained permission to import a closely related *Osmia*, *Osmia coerulescens*, for development as a manageable pollinator for red clover.

—**Dr B J Donovan**, Donovan Scientific Insect Research, Private Bag 4704, Christchurch New Zealand <donovanb@crop.cri.nz>.

Native American Mason Bees have now been developed for fruit crop pollination on the West Coast of the USA, and living habitats and bees are obtainable commercially. These will be one of the topics covered in MiniAc P4, Pollination and Tree Crops.

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CALENDAR OF FORTHCOMING EVENTS

Deadline for next issue: Apr 20

2001

- Feb 13 Tue **WANATCA General Meeting** (Visit to Aquaponics, Wharton Rd, Canning Vale)
- Feb 26-28 § Olive Oil Tasters School, University of WA
- Mar 10-11 § West Australian Olive Festival, Gingin
- Mar 31 Sat • MOTT Festival of the Trees
- Apr 3 Tue WANATCA Executive Committee Meeting
- Apr 13-20 **ACOTANC-2001 Conference, Perth**
- Apr 21 Sat • Balingup Small Farm Field Day
- Apr 22-29 § Commonwealth Forestry Association Conference, Perth
- May 15 Tue **WANATCA General Meeting**
- Aug 14 Tue **WANATCA General Meeting**
- Nov 13 Tue **Annual General Meeting**

*General Meetings are held starting at 7.30pm. *Venue: Theatre Room, Kings Park HQ, West Perth.* These meetings usually include a current magazine display.

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

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