

Quandong

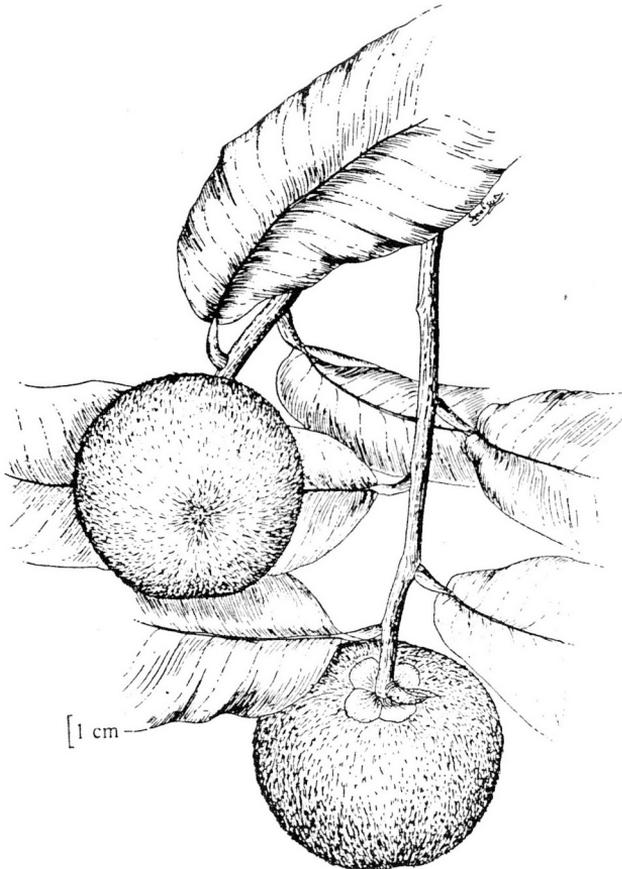
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THE BISBOL OR KAMAGONG (*Diospyros philippensis*)

NEXT MEETING: FIGS IN W.A.

Figs are one of the oldest tree crops brought to WA by the early European settlers, and although they have been ignored for many years, there must still be many good varieties existing as neglected trees in old local backyards.

We may now be seeing something of a revival of interest, as shown by the formation of WANATCA's Fig Action Group. For our next meeting a member of FIGAG, **Judy Monks**, has kindly agreed to talk to members on

Figs in Western Australia

The Monks family have a 40-acre property near York, backing onto the Avon River, which is salty at that point. There were some old almond trees on the property, and the Monks have planted, in addition to figs, pistachios, carobs, wandoos, Geraldton wax and other wildflowers, and turkish hazels (the latter with no success).

The property is being run on a multiple-use basis, with figs representing one component with two markets, as fresh fruit and as dried figs. Wildflowers and collected seed are other markets which Judy regards as useful.

A geologist by trade, Judy is currently working as a Gym Instructor — with running her large family and working on the property, that makes at least four current trades! While Judy does not claim to be a fig expert, she aims to have something interesting to relate on the subject and on her approach to running their multiple-use property.

Visitors to the meeting are welcome and admission is free.

Time: Wednesday November 15, 7.30 pm

Place: Naturalists' Hall, 63 Meriwa Street, Nedlands

Election of Executive

In accordance with the constitution, half of the current Executive Committee of WANATCA retire at the end of 1989, and nominations are called for to fill these positions.

Those retiring this year are Alex Hart, Milan Mirkovic, Bill Napier, and David Noel. An election will be held at the AGM. The current Executive will be putting forward nominations at that meeting, but other nominations or expressions of interest are very welcome from any member — feel free to contact David Noel if you would like to discuss this.

[Dept Agric. NSW : Agfact H6.16]

Lychees in the garden

The lychee (*Litchi chinensis*) is a native of southern China. It is a slow-growing evergreen tree up to 12 m high and 12 m wide. The foliage is very attractive — pink, orange or copper leaves being produced with each flush of new growth. The fruit is round or oval, 2.5-4 cm long, and has red, leathery skin. The edible flesh is white and sweet and contains a seed which varies in size according to the variety. Lychees can be eaten fresh and can be dried, frozen or preserved .

The lychee is a subtropical tree, requiring cool, frost-free winters and warm, humid summers. High humidity and good soil moisture are important during flowering, but rain at this time can damage the flowers and prevent fruit setting (flowering occurs in October).

Varieties

Varieties available at present include Tai So, Bengal and Wai Chee.

Tai So ripens early to mid January on the North Coast of New South Wales. The tree grows quickly and lacks resistance to wind damage. *Tai So* bears large, attractive fruit of good flavour when fully ripe.

Bengal ripens mid to late January on the North Coast. It is a spreading tree of moderate vigour. The fruit are large with a brilliant red skin and the taste appeals to a broad spectrum of people. The seed is relatively large, so flesh recovery is poor compared with some other varieties .

Wai Chee ripens late January to mid February. The fruit ripens over several weeks, making it a very suitable variety for planting in the garden. The tree also grows more slowly than other varieties. The flavour is good but may not be as good as Bengal or *Tai So*.

Location

Lychee trees prefer deep well-drained soils, but can be grown on heavy clay soils provided the drainage is good. They are not susceptible to *Phytophthora* and *Pythium* root rots.

Lychees are susceptible to leaf burn and limb breakage through wind, and windy dry weather can result in the fruit skin cracking. For these reasons they should be planted in protected situations and preferably grown in a moist climate.

Lychees grow well in both alkaline and lightly acid conditions.

Propagation

Lychees are propagated by acrial layering in spring. Seedling trees are unreliable and may take up to 20 years to bear fruit. Named varieties are available from nurseries.

Planting

Trees can be planted at any time of the year except during very hot or cold weather. Plant them at least 6 m away from other trees, fences and houses.

Water the young tree before removing it from its container — this will make the soil cling to the roots and protect them during transplanting. Dig a large hole, more than twice the pot size, and prepare a mixture of

topsoil and well-rotted manure or compost to fill it with. Set the tree at the level it was growing previously, fill in the hole with the soil mixture and water well, watering every few days. Use mulch around the tree and hessian or shade cloth screens to protect it from wind damage.

Nutrition

Young trees can be damaged by excessive fertiliser, so in the first year use a slow-release organic fertiliser such as blood and bone. Monthly applications of small amounts (20g) of urea during the warmer months will promote tree growth considerably. Once the tree is established use an NPK fertiliser at the rate of 500 g for each year of age of the tree, up to 10 years. Thereafter apply 5 kg each year, giving two-thirds in late summer and one-third in late spring when the fruit have set. On sandy soils, split the yearly amount into four applications.

Pruning

At planting, remove any branches growing at a sharp angle to the main trunk as these will tend to break in later years. Avoid severe pruning as this will retard the tree's growth.

Fruit is borne on new growth on the outer part of the tree. Avoid pruning young trees because pruning tends to hinder flower development. Encourage flowering in older trees by keeping the tree open. This can be done by removing limbs that are causing crowding.

Harvesting

Lychees normally take 4 to 6 years to begin bearing. Harvest the fruit when it tastes sweet. Lychees do not ripen after picking. Pick by cutting off only the fruit

cluster as this will promote good cropping the following year.

The crop ripens over a period of a week or two, depending on the variety, so pick every few days.

Pests and Diseases

Flying foxes and birds are the most troublesome pests. Fruit fly will sting the fruit, but the larvae do not develop. Erinose mite can be a problem, and nursery stock may already be affected; avoid buying trees with a felted appearance under the leaf and a bubbling on top of the leaf.

A number of scales and leaf-eating insects can also be a problem. There are no common diseases of Lychees.

— *D. Batten*, Tropical Fruit Research Station, Alstonville. Edited by Anne Ferguson.

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Queensland Menace Threatens W.A.

The West Australian horticultural community has been shaken by the discovery last year of an outbreak of Queensland fruit fly in Perth.

Previously only the Mediterranean Fruitfly, which attacks many fewer fruits, was known. The extracts which follow give an update on the topic.

[West Australian, August 5 1989]

Plan to Fight New Fruitfly Menace

State Cabinet will consider a \$5 million proposal within the next two weeks to eradicate the state's first outbreak of Queensland fruitfly.

It is estimated that 100sq km of the metropolitan area is infested with the fly, which was discovered in February after a complaint by a Dalkeith woman.

It is not known how the fly entered WA, but its spread has been estimated by the Agriculture Department, which has 260 traps in metropolitan backyards and the fruit and vegetable growing areas of Spearwood, Wanneroo and the Hills.

The outbreak is worrying growers because the fly attacks a far greater range of crops than does the Mediterranean fruitfly, which has been a problem in WA for 100 years.

The Agriculture Department is preparing a submission based on recommendations of world expert Alan Bateman, who advised on an eradication program after visiting WA last month.

However, if the fly is not attacked this summer it will be too late, according to Dr David Yeates, department quarantine entomologist. The fly would spread too quickly for a later campaign.



Dr Yeates with one of the fruitfly traps

He said it would be based on insecticide baiting, followed by the release of sterilised males, which would lead to females laying infertile eggs.

The president of the Avocado Growers Association, John Galatis said the fly would be a particularly severe blow to avocado growers if un-checked. At present they did not use any pesticides, but would be forced to if they needed to control the Q-fly.

— *Michael Zekulich*

[West Australian, August 19 1989]

Flies Face Fruitless Frolics

Millions of Queensland fruit flies will soon be lured to their deaths by a lethal love potion in a \$5 million WA Government-sponsored orgy.

A small square of wood fibre impregnated with a chemical irresistible to male fruit flies will be nailed to every fruit tree on the 75,000 properties in the infested area of Perth. The attractant will be mixed with a mild dose of the pesticide malathion.

This plan will be followed by the release of up to 30 million sterilised male fruit flies each week to swamp the local males. It is intended that the "wild" females will unsuspectingly spend much of their time in pointless trysts with these sterilised males. Liquid baits will also be squirted on to each tree bearing fruit to kill off most of the females and surviving males.

The infestation is believed to range over 100 square kilometres from Scarborough in the north to White Gum Valley in the south, and west of the Kwinana and Mitchell freeways. The Department of Agriculture believes the eradication program must start early in spring if it is to be effective.

The chairman of the Environmental Protection Authority, Mr Barry Carbon, said such a program would normally require a notice of intent which would be available for public comment. As there would not be time for this process, the EPA had organised a public information day and would seek comments from the public.

Mr Carbon said it was possible that the Department would subsequently wish to spray insecticide in the metropolitan area to kill emerging fruit fly adults.

— *Brendan Nicholson*

[WANATCA President David Noel wrote the following letter to the 'West Australian', with a copy to the Minister of Agriculture. Most of the letter was published on August 18]

Time to Clear the

Mediterranean Fruit Fly

The State Government is to be congratulated on its prompt decision to spend the money needed to clear out the recent infestation of Queensland Fruit Fly.

Now is the time to ask how much extra it would cost to clear out the Mediterranean Fruit Fly in the same run.

The hated Medfly has been a scourge of commercial and backyard fruitgrowers for decades in this State. Many exotic fruit growing enterprises with good commercial potential have been stifled by the presence of this fly.

A huge export potential has been stillborn because many overseas markets, such as Japan, refuse to take fruit from areas infested with Medfly.

The Government has been aware of this situation. It has also done the pilot work needed to mount a successful fruitfly eradication programme, when the Carnarvon area was cleared some years ago.

But so far it has not been able to put find the money to clear the Medfly from the metropolitan area and other infested places. Now the money has been found for its Queensland relative.

The extra cost of eliminating the Medfly at the same time as the Q-fly is really quite small. No extra spraying would be needed. Sterile males of the Medfly could be released at the same time as those of the Q-fly, avoiding extra labour costs.

The only extra funds would be for producing the sterile Medflies, and this should only be a tiny incremental cost on the whole project.

This is a golden opportunity for the Government to render a great public service at minimum additional cost, one which could yield very positive export returns. But it must act now.

WANATCA at the Royal Show

For the first time, WANATCA was represented at the Royal Show in Claremont, the State's premier show event. Our stand was in the Horticultural Pavilion, by arrangement with the Primary Products Promotion Unit (the government-aided industry promotion group) and the Royal Agricultural Society's Fresh Fruit & Vegetable Committee.

The main features of our exhibit were:

- As a major drawcard, a commercial size Pecan Nut Cracker, operated every day, demonstrating its working and presenting locally grown nuts to the public. The machine was kindly lent by Amos Machlin, and the nuts were grown by Murray Raynes. Special thanks to these members.

- A short video was shown continuously of pecan harvesting operations at Amos Machlin's Gingin orchard. Great assistance was given by the W.A. Agriculture Department's Information Services Branch in preparing this.

- A set of colour blowups of unusual fruits and nuts, prepared by David Noel.

- A display of carob beans and tree propagation in used household containers, prepared by Henry Esbenshade and Lloyd

Marshall.

- A handout leaflet on *Growing Nuts, Exotic Fruits, and Other Tree Crops in WA*, with a map of recommended zones for the different crops.

Public response to the exhibit was very good, as evidenced by the number of people who watched the nut cracking, obtained samples, and asked many pertinent questions of the members who manned the exhibit. We extend a warm welcome to the number of new members who joined WANATCA as a result of this contact.

The crops about which most information was sought were: *Pecan, Macadamia, Pistachio, and Carob*, not necessarily in that order. As we did not have individual leaflets available at the Show on these crops, enquirers were referred to relevant sources.

The Executive Committee wishes to thank sincerely all those members (about 13 in all) who so willingly gave of their time to man the Exhibit. We look forward to a bigger and better exhibit in 1990!

WANTED !!!!!

LOCALLY GROWN NUTS

We are seeking supplies of locally grown nuts for sale. Small quantities will be handled – give us a go with your nut crops. **Wayne Geddes** is the marketing expert. We also have available a large range of imported nuts and dried fruits – call in at our stand.

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BUDDING AND GRAFTING WORKSHOPS

Budding and grafting is a dying art within Australia and New Zealand. It is not uncommon to find major rose growers employing overseas budders due to the lack of skill in Australia.

To help overcome this, John and Linda Stanley have developed Budding & Grafting courses at their Phoenix Studio in the Perth Hills area.

The first workshop was held in late August. To launch the series of workshops, John and Linda flew in David Ridgeway from the UK as a tutor.

Mr Ridgeway is recognized as one of the world's leading tutors in this skill. Apart from managing his own nursery where he buds and grafts ornamental trees, he also tutors the three-year course in Nursery Practice at the Hadlow College of Horticulture.

The first course was overbooked, and as a result a further course will be held in December. The course concentrates on teaching the basic skills of budding and grafting, including chip budding, field grafting, and bench grafting, with the emphasis on doing rather than listening.

Tree Crops Centre Relocates

Due to expiry of current lease arrangements, the Tree Crops Centre has relocated from its Nedlands premises to Claremont. There are new phone and fax numbers applicable.

Most of the other organizations associated with the Tree Crops Centre have moved too. These include Granny Smith's Bookshop, Comucopia Press, and Nut & Tree Crops Consultants. Some WANATCA services, such as video hire, have moved too.

WANATCA President David Noel is also operating a publishing and typesetting business at the new premises, called Personal Publishing Press Services. He will be pleased to quote on the typesetting and production of books, magazines, and other publications.

Accommodation has been kindly provided, on an interim basis, by WANATCA member Wilf Prendergast. The Centre would be interested to know of longer-term arrangements which members might know of as becoming available in the Subiaco/Nedlands/Claremont area — please contact David Noel on 385 3400.

**New Address: rear 37 Brown Street,
Claremont**

New Phone: 09-385 3400

New Fax: 09-383 1612

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Association News**NEW WANATCA PUBLICATION**

Beginning in 1990, WANATCA is to produce an additional publication supplied to members as part of their subscription, the **WANATCA Sourcebook**.

Production of the *Sourcebook* was foreshadowed in the recently-issued *WANATCA Yearbook* for 1988, where three contributions of a directory nature were put under this heading. These directories are to be transferred from the *Yearbook*, substantially expanded and upgraded, and supplemented by further sections presented in tabular form, such as Pollination Tables and the like.

Almost all the *Sourcebook* material will be backed by appropriate computer databases, so the tables presented will represent current snapshots of the material in the databases. As time goes on it is hoped to increase the number of databases to cover all material of relevance to production of tree crops in our region.

In contrast to the *Yearbook*, the *WANATCA Sourcebook* will accept and encourage advertisement material, especially that relating to the Nursery & Commercial Sources section. However, entry of material in the Directory sections themselves will remain without charge, and all readers are asked to send in material which can be used to improve these sections, whether it relates to their own businesses or not.

If you know where something useful to tree croppers can be obtained, please let us know — perhaps by cutting out ads from other sources and passing them on

— send material to WANATCA Sourcebook Editor, PO Box 565, Subiaco, WA 6008.

1990 SUBSCRIPTION RATES SET

The Executive has set the 1990 WANATCA Subscription rate for Full Members at \$35, a slight increase from the old rate of \$30. The concession rate for Student Members increases by \$2.50, to \$17.50. Life and Sustaining Memberships remain unchanged at \$500 and \$200+.

Rising costs, and the additional cost for 1990 of the new *Sourcebook* publication, have forced this increase. Nevertheless, the Executive are always mindful of the need to hold subscriptions to the minimum possible level, and feel confident that our subscription remains one of the best examples of value for money when compared to the charges of comparable organizations.

1988 YEARBOOK ISSUED

All members should by now have received their copy of the 1988 *WANATCA Yearbook* (except for those subscribing for the first time in 1990). The Executive are confident that this will be as well received as that for the previous year.

Production of this Yearbook was,

regrettably, delayed. The Executive is setting tighter deadlines for our publications. It is the firm intention that the 1989 *Yearbook* will be issued together with the Second-Quarter *Quandong*, in May 1990. The 1990 *Sourcebook* should be issued with the Fourth-Quarter *Quandong*.

WANATCA Member Pat Scott has propagated Chinese Water Chestnut. At a recent PAWA meeting she handed out her surplus stock.

This is the writeup Pat produced with the seeds:

Chinese Water Chestnut (*Eleocharis dulcis*)

Each chestnut can produce prolifically. Plant one in a ten-litre bucket or three in a one-metre child's plastic wading pool, in 20 cm of a good, organically-rich soil. Keep soil flooded.

Reeds will die in late autumn. Harvest the chestnuts and store in a plastic bag in the fridge. They will

ORGANIC FRESH HOME DELIVERY

Member Bob Davidson is starting a new service to supply unsprayed fruits, nuts, and vegetables. He will be based at the new Market City complex in Canning Vale.

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[Uniview (University of WA), August 1989]

Towards the Self-Sustaining Farm

Geography PhD student Henry Esbenshade may be a Californian, but he knows the southwest of WA more intimately than his home State.

He is working on a survey of about 600 farms in the Southwest's 600mm-and-below average rainfall zone, an area of 95,238 sq km, or 3.5% of the State. His aim is to determine farmers' interest and activity in tree planting to combat wind erosion, salinity, and waterlogging, and to boost farm income.

His thesis takes him on regular field trips to the area, which he says has soil degradation problems as bad as anywhere in the world and an output per hectare which is the second lowest in the world.

Mr Esbenshade believes, as an agroforester, that tree planting is an important step towards developing sustainable agriculture.

And on his family farm in northeastern California he has experienced firsthand the benefits of low-input management. He explained that low-input farming means reducing chemical input and working towards a balanced, sustainable system.

"In California there has been an increasing demand by the public for food which they can be certain is pesticide free", he said. "On our farms we grow walnuts, citrus, and apricots organically. We now have fewer pest problems and our methods are more efficient. For example, we were spraying malathion for worms until we discovered that a natural bacillus, *Bacillus thurengensis*, can do the job

just as well".

"Similarly, the granulosis virus controls

codling moth in walnuts. For nitrogen we grow deep-rooted cover crops such as fava (broad bean) in the orchards".

Henry Esbenshade said that these methods were more cost-effective and appealing to the consumer. His family sell their produce direct at farmers' markets for lower than supermarket prices.



Henry Esbenshade

The Esbenshades created, on their property, a microclimate with a cauarina windbreak which allows for the intensification of agriculture, reduces wind speeds, increases humidity, and allows for the natural, biological control of insects. Henry believes WA farmers can achieve a similar balance.

Trees can help reduce wind erosion and salinity, and can be grown as fodder (tagasaste and carob, for example), for fence posts (white gum and jam acacia), and for nitrogen fixation (casuarina and jam acacia).

Even sunflowers or lupins grown down the middle of a paddock can reduce losses of topsoil caused by high winds. Understorey perennials and annuals can attract insects which fight pest species.

BOOK REVIEW

NUTEERIAT: Nut Trees, the Expanding Earth, Rottnest Island, and All That . . . [by] David Noël. Published by Cornucopia Press, 1989. 200p. Pb. Recommended retail price \$19.95.

Starting with chapter 1 (an appetizer) the book draws from a wide range of subject areas in setting up a new way to understand and explain our world. Of particular interest to me was the use of species distributions (mainly productive perennial plants) to speculate a story/schema about the positions of present land masses over time. Even Rottnest Island gets an honourable mention, although I am not sure whether it is moving south in absolute terms or just relative to the Swan Coastal Plain, which is in turn 'shuffling' south relative to the Darling Scarp.

I warmed to the suggestion that the eastern part of Australia was once joined to South America (the fit is quite good). Through an interest in the Huon pine of Tasmania, some years ago I had noticed that equivalent species (i.e. of the genus then called *Dacrydium*) were present in South America, together with close relations of the Norfolk Island pine and the Bunya pine (*Araucaria sp.*) and also the leatherwood (*Eucryphia sp.*) represented in Tasmania, N.S.W., New Guinea, and Chile: thus I assumed the common view of 'science' to be that Gondwana had been stitched up in that way. I was ill informed about the common view, which actually places Australia and South America at the far sides of that 'super-continent'. Perhaps in due course I will be able to return to my first impression, if the logic of this position (as presented so well in *Nuteeriat*) is ultimately accepted as the conventional wisdom.

The idea of Expanding Earth is a main theme of *Nuteeriat*, as stated on p. 41: *The Earth's current continents were once all joined together to completely cover the surface of a much smaller sphere, which has since expanded.* *Nuteeriat* challenges a glib explanation often used to avoid problem areas in standard species-distribution theories, i.e. spread by human agency. If there is no fossil evidence (including pollen) and the spread of seeds is not feasible by natural means (wind, waves and wool) we should also be able to exclude human intervention from a plant's distribution if it is a species which no one would be interested in for any reason.

On the other hand, I prefer to believe the author used the Expanding Earth idea as a good excuse to write a book about some of the ecological realities of our world and to present them from a novel perspective: "Since

starting the work on which this book is based, I have examined the distributions of something approaching 20,000 different species of fruit plants and their relatives, keeping a particular eye out for anomalies. I have been unable to find a single example of a plant which glaringly contradicts the principles outlined" (p.56).

In general there is high praise for tree crops and polycultures as the best way to grapple with the many inter-related problems and achieve stability and security: "Trees . . . (and) the whole class of perennial woody plants — are by their nature equalizers. They have evolved to live through all the seasons and through all the cycle of years, through years of high rainfall and drought, through hot years and cold. When the grass is gone, the cattleman may need to move his stock to other pastures, but the trees withstand. When the rains do not come, the wheat farmer will not plant, but the trees grow on. They smooth the benefits of land use out through the years, trimming off the peaks and using them to fill the troughs. They are essential for sustainable, long-term agriculture. Such agriculture should not be based on trees alone, but on a thoughtfully integrated combination of tree crops, field crops, and stock raising, a sort of planned synthetic ecology" (p. 173). This is borne out in practice by the higher productivity (x10,000) and greater stability of these systems as seen in Indonesia and the Philippines (p. 123). A new slant on the use of trees to cure the ill of salinity is also given (p. 176).

The use of *Propositions* throughout the book, helps to tie it together; but their nature must be understood. They vary — some are fairly non-contentious statements of orthodoxy (and therefore are especially dangerous) while others are highly speculative proposals for more heated discussion (see p. 9). The use of the word *proposition* allows a distinction from the *rules* listed in chapter 7. This book does a lot of propositioning. It is unlikely to be left on the shelf. (See also, the photograph on page 73.)

Now let me give some thoughts on the moral stance of *Nuteeriat*. It is in this area that most of its core heat is likely to be generated, perhaps occasionally even blowing the plug in a great volcanic eruption. The fact that a scientifically sound work can have a moral stance, should not come as any surprise. What we have here is simply a more frank disclosure of the author's outlook than 'science' often permits. There is no question that the author expects people to **behave** and **act** in the light of the views expressed, rather than simply find them interesting. Let us take a more contentious Proposition (17A): "*Concern over the 'Greenhouse Effect' is misplaced, and represents a 'manufactured' crisis*", to see why this must be so.

At present there is much public concern over this issue and people are starting to see the need for change — to think globally and much further

ahead. What if *Nuteeriat* is correct — are we wasting our time? On his own terms, this would be true but only up to a point. Tree planting, better resource use, etc. he correctly argues as desirable activities but he says, on other grounds. (This should come as a relief to those environmentalists and others who have argued for these things for many decades before *Greenhouse* came along.) But in various ways his personal and political program is a different one to follow and it is this difference in proposed human action (based on predicted scenarios) which causes anxiety as well as academic argument. This is not just a theoretical speculation. The outcome matters. That is why “greenhouse” scenarios have caused concern.

What if we do what he says and he is wrong? What if he is right, and we don't? And if he is right about CO₂ ‘starvation’ in the plant kingdom, and some *greenhouse* exponents are right about nasty global climates just around the corner? These two scenarios are not mutually exclusive. Plants do not only require carbon dioxide. Neither is **general** planetary heat of any interest to plants. They need the right temperature conditions and water (normally from rain) as well, throughout their growing season, **in the place where they are growing**. The conditions existing at the Poles are of no interest to a plant growing in Perth.

In summary, *Nuteeriat* will probably capture more interest in its relatively small area of action-oriented claims rather than the cosmic, theoretical, ‘scientific’ claims.

I must say, the conclusion drawn from the Oil Crisis (p. 176) bothers me a bit. He writes: “. . . *mineral resources are not, in practice, finite; what happens when one standard resource runs thin is that another is found to substitute for it . . .*” I believe this could allow us to view our Western **cargo cult** mentality as sound.

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"Using his power of thought, Man has become master of the planet. But it cannot be said that this mastery has been a very benevolent one, as each day passes the planet moves closer to self-destruction; with increasing power has come the ability to inflict greater and greater harm.

But there is increasing hope, hope that the species Homo sapiens is maturing" (p. 172).

Perhaps this is a good lead-in to the underlying flavour of the book, viz. an essential optimism, no, more like a belief in the inevitability of human progress (with the occasional reservation expressed). There is a danger that we will rest complacent in the belief, a sort of happy fatalism – that "science will **always** find a solution". I am not sure that this is the view of the author but it is the flavour of the book, or at least of important parts of it. The final *Proposition* states: *We can re-make the Earth* (17L). Perhaps it is best for us to overlook the fact that this is what we have been doing for some hundreds of millenia – or have we been un-making (devastating) it? And how do we know the difference?

We **can** do all sorts of things, but should we? And do we know what we are doing? These are the moral issues. To some extent they are easily blurred by placing them in a non-human time-context. Geological time has little to do with moral choices. Even Hitler and Pol Pot are irrelevant in terms of those time-periods but human life is exceedingly short.

Despite these reservations, I can recommend *Nuteeriat* as a book for those who like the challenge of intellectual fun and the fun of intellectual challenge. Altogether, I found it a most stimulating enjoyment to read, ponder and be propositioned by.

— **David Brown**

[*Nuteeriat* is available from Granny Smith's Bookshop, PO Box 27, Subiaco, WA 6008, and also from Boffin's Bookshop and Rellim Bookshop in Perth, The Lane Bookshop in Claremont, and from most good bookshops.]

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MACAG BULLETIN

NEW MACADAMIA ACTION GROUP FORMED

WANATCA is pleased to announce the formation of a MACAG, a new Action Group devoted to the macadamia nut.

MACAG will be led by Wilf Prendergast of Claremont (phone 384 3047; fax 383 1612; PO Box 291, Claremont 6010). The macadamia is likely to prove one of the most commercially-important nuts for W.A., and this Action Group is likely to have a busy time ahead of it.

Wilf is already being backed by a number of long-time members with considerable expertise in the area; he would like to hear from others with a special interest in this valuable Australian nut.

MACADAMIA ORCHARD FIELD DAY

Don't miss the chance to visit the oldest commercial macadamia plantation in W.A., set up by WANATCA member Tim Lynn-Robinson in the early 1970's.

Meet at noon on Sunday November 26 at the Lynn-Robinson Chittering Valley property on Chittering Road, 2 miles/3km south of the Julimar Road junction. Full details have been produced on a separate sheet issued with this edition of *Quandong*.

OWNERSHIP CHANGES AT MPA

The Board of Macadamia Plantations of Australia Pty Ltd has issued a report on the restructuring of MPA.

The principal shareholder is the Fulcrum 2 Investment Fund, whose core investor is the Superannuation Board of New South Wales.

The Chairman of the Board and Chief Executive Officer is Mr. David Liederman of Davids Speciality Foods Inc., New York. Mr Keith Ainsbury remains as General Manager and all other executive staff are unchanged.

Foundation partners of MPA, Mr Mel Braham and Mr Tom Hault, retain a minority shareholding in the company.

MPA see the investment by DSFI and the Fulcrum 2 Investment Trust as a vote of confidence in the future of the Australian industry. MPA plan to grow the company in an orderly manner to maximise the return to the industry.

*[Australian Macadamia Society: News Bulletin,
July 1989]*

Macadamia Nut Yet To Reach Full Potential

The Macadamia nut has not reached its full potential, according to the president of the Australian Macadamia Society, Mr. Keith Ainsbury.

Although regarded as a luxury in Australia, the humble nut has found worldwide acceptance. Most Australian supplies were sent overseas either in gift packages bought by tourists, or as bulk supplies.

"As more nuts are produced and more consumers learn about the delicacy, the market will again expand," Mr Ainsbury said. But that does not mean a spiralling price for farmers. "Macadamia growers should expect the price for nut in shell to fall," he said.

For the past 10 years Mr. Ainsbury has been involved with Macadamia Plantations of Australia in growing, managing orchards, and developing sales and marketing. He took over the reins of the Society last month.

The MPA group has 700 hectares of its own under nut trees and manages a further 1000 ha of trees in New South Wales and Queensland. Mr Ainsbury said the price for nut in shell at the farm gate was too high and was being subsidized by processors.

"There is a disproportionate profit at the farm gate," he said. "Growers expect processors to expand markets and develop product lines for the future without paying. Growers are paying for research and development through a levy to the society, but not for product development.

There also is an apprehension that if growers think the high farm gate prices are the norm, they will not be so determined to lower production costs".

The macadamia nut market still remains largely untapped, Mr. Ainsbury said. "Plantings will not slow down until there is a reduction in the farm gate price," he said. "People see the high price as a bonanza.

The Society believes Australia can sustain an industry of 2.5 million trees. We estimate there are 1.6 million trees in the ground, half of which are bearing. This year the harvest estimate is 7000 tonnes".

"Macadamias still have not made a dent on the North American market," Mr Ainsbury said. "There is no real macadamia product on any of the markets because there are not enough nuts to guarantee supply. There is a small amount used in cookies, but no other product. Once there are enough nuts the big processors may be interested."

The price for nut in shell should stabilize in the near future, now it has been linked to fluctuations in the Australian dollar. If the value of the dollar drops against the US dollar, farmers can expect a higher return. Now all companies are linked to the same system the price variation is steadily decreasing.

"Besides price, the Society is concerned about harvesting and increasing yields," Mr Ainsbury said. "There have to be improvements in the method of harvesting because the cost of casual manual labour is increasing and mechanical harvesters are having a detrimental effect on the soil and tree root health.

The major challenge is to develop techniques to harvest nuts without disturbing the roots or soil. A number of options, including netting, are being examined by the Society. This year \$176,000 will be spent on harvesting research and development".

OUTSTANDING NEW MULBERRY VARIETY NOW AVAILABLE

Quandong is pleased to introduce and recommend trials with an outstanding new variety of mulberry, imported and propagated by WANATCA member Nick Gilbert, who has prepared the following description.

SHAHTOOT — King White Non-staining Mulberry

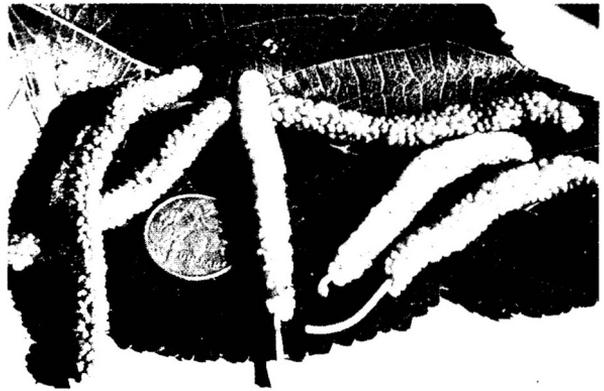
Shahtoot is a new multi-purpose tree for Australia. It is a popular hybrid species in Pakistan and the Middle East because it is an attractive fruiting tree which is easy to grow and maintain. The large non-staining fruit is very sweet and nutritious.

At around 30% sugar when fully ripe, Shahtoot is much sweeter than the English black mulberry. Being white and essentially seedless avoids the messy staining associated with other mulberries. Fruiting occurs from October through to December, and commences the first season from planting.

GROWTH HABIT

Shahtoot is a vigorous growing deciduous tree to 10 m. It forms a dense crown with pendulous branches and makes an attractive spreading shade tree, especially when 'pinched out' to the desired shape.

The leaves are semi-lobed



Shahtoot fruit may be 100 mm long

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and vary from lime green on the new flush to dark green when mature. It is the branching nature of Shahtoot to grow 'out' rather than 'up' which sets it apart from other mulberries as an excellent garden specimen tree.

WHERE TO PLANT

Shahtoot is renowned for its hardiness. It withstands extremes of heat and cold, allowing it to thrive in Australia from the arid interior and tropical north through to the cold temperate south of the continent. In Pakistan, it is cultivated to 3050 m (10,000 feet).

Shahtoot is grafted onto vigorous seedling rootstock, making it a deep rooted tree which grows rapidly given adequate moisture and nutrients (3.5 m in 12 months). However, Shahtoot will also survive drought conditions, making it an excellent shade tree for sheep and cattleyards where it can be topped for fodder. In fowlyards, chickens thrive on fallen fruit and benefit from the summer shade and winter sun that Shahtoot, being deciduous, provides. Shahtoot has excellent fire-retardant capabilities.

Most soils are suitable for Shahtoot including heavy clay types. This adaptability makes Shahtoot excellent as a street tree and suited to all sunny garden situations as well as 'problem' landscaping sites like hot courtyards or concreted carparks.

TREE CARE AND PRUNING

Shahtoot is easy to establish and maintain. No sprays are needed since there are no known pests or diseases which attack the leaves or fruit, other than fruit eating birds. Shahtoot To obtain maximum branching on young trees it is preferable to 'pinch out' the terminal growth tips between thumb and forefinger when branches reach 0.5-1 m length. Shahtoot can be pruned during winter dormancy, with each lateral cut by

approximately half. This also facilitates branching and maintains Shahtoot to a manageable size.

USES

Fruit: Shahtoot fruit can be eaten at half green stage when they are crisp and semi-sweet, or left until fully ripe when they turn white in colour and obtain maximum sweetness. Fruit falls to the ground at the white stage, assisted by shaking the tree.

Shahtoot fruit is excellent eaten fresh, its sweetness provides an ideal contrast to other foods in salads and sambals or on a cheeseplatter. Shahtoot makes a novel garnish to many dishes. In Pakistan, Shahtoot is often dried and used as a source of sugar.

Analysis (fresh weight) (Aust. Govt. Anal. Lab.): Fructose 14%; Glucose 13.1%; Sucrose 1.1%; other carbohydrates 1.8%; Vitamin C 10 mg/100 gm.

Tree — other uses: Shahtoot leaves are unparalleled for rearing silkworms. Shahtoot wood is hard, suitable for turning and carving, especially for hockey sticks, cricket bats and stumps.

— *Nick & Carol Gilbert*, Gilberts Wholesale Nursery, Pacific Highway, Moorland NSW 2443.

Sources: Single trees for backyards are available at around \$20 each from (WA): Blossoms Garden Centre; Guildford Town Nursery; Kelmscott Azalea Gardens; Arbor Farm, Denmark. (SA): Perry's Nursery, McLaren Flat; Peter Taverna, Upper Sturt. (VIC): Victorian Tree Crops Nursery, Ellenbank. For wholesale orders (preferably delivered bareroot next dormant season) contact the Gilberts direct (see advertisement in this *Quandong*).

[W.A. Gardener, Spring 1989]

FASTEST GROWER OF THEM ALL

Want a tree that's a real talking point, that grows enormously fast and can become a local landmark? Your answer could be the Paulownia tree, a species that originated in China and has created considerable interest around the world recently.

The reason for the interest is that it is exceptionally fast growing and with its massive leaves is a major consumer of carbon dioxide. Once established it has superb windbreaking abilities.

Aside from its fast growth habit, the leaves are enormous — up to 30cms by 22cms — making it a superb shade tree.

Two local organisations taking a keen interest in the tree are the Organic Growers Association and the Men of the Trees. According to Ian McAllister, of the Organic Growers, China has recently planted two million hectares of them as windbreaks.

They can grow six metres in their first nine months and varieties have been known to grow as high as 40 m. Within five years they are likely to be millable size — roughly a third of the time taken for a pine to reach the same development.

One of their problems is that they are massive feeders with a huge root system, so they need to be kept well away from sewer lines and septic tanks. As they are legumes they supply nitrogen to the soil, and in China cropping takes place right up to the base of the trunk.

The trees are deciduous, and the leaves make a high nitrogen fodder for cattle and a first class compost for other crops — but beware of the "crashing leaves in autumn".

Only limited supplies are available in W.A. as yet — test growing is currently being undertaken by the Men of the Trees organisation. Spokesman Barry Oldfield



Barrie Oldfield of Men of the Trees with 7-month Paulownias planted as root cuttings

said their findings had been that the tree really needs a wet summer and dry winter, but nevertheless it can grow well with attention.

The group is trying 16 different varieties of Paulownia at its Hazelmere trial site — all being from root cuttings supplied by Farm Fodder Trees of Victoria.

H.G. Kershaw & Co., of Terrey Hills, NSW, mention three varieties in their catalogue:

Paulownia imperialis (Empress Tree) that grows to a height of 20 m with a 5 m spread; *Paulownia kawakami*, a native of Taiwan, that grows to 12 ms with a 3 m spread; and Royal Paulownia, that grows to 13 m with a spread of 4 m. Propagation of these, according to the catalogue, is by seed.

The Association funded purchase of a Paulownia Research Pack last year, and the trees were kindly grown on by member Alan Lewis at the Hamel Nursery of Greening Australia. We received 16 different Paulownia varieties in the pack, and one aim of the trial was to see how the different varieties fared under southern West Australian conditions. Here is Alan's comment on the picture to date:

PAULOWNIA RESEARCH TRIAL

The 16 Paulownia varieties (supplied as small root cuttings) showed a wide range of growth, with heights reached by the end of the growing season as shown in the table.

The project went off quite well considering the late arrival of the kit. Our main problem was weeds. I was loath to use herbicides in the light of no relevant information being available.

The area was rotary-hoed and ripped. D.P.M. chook manure was added at the rate of 2 bags to the 5 x 5m plot. Agrosoke was added

CLONE

HEIGHT

CAF 7	Over 2m
CAF 2	2m
CAF 16	1.2m
CAF 4	1.2m
CAF 13	1.2m
CAF 15	1.2m
CAF 1	1.2m
Rest	Under 1m

to several trees, but no result was evident, presumably due to the heavy nature of the soil.

Two Langley slow-release fertilizer pills (10g) were added to the soil on planting day, 150mm out and 50mm deep. Growth was quite spectacular in leaf area — some leaves were up to 500mm along or across.

A ver pleasing plant to have, but **oh boy, did the Insects love 'em!** Sap suckers, caterpillars, grasshoppers, you name it, we had it. Control was with proprietary brands of general insecticide.

We were pleased to be associated with the project, but think that perhaps too much publicity on untried 'wonder trees' should not be encouraged. As of today (August 23) all the trees are alive and have new shoots on the stems — I will keep the Association informed.

— Alan Lewis

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[W.A. Department of Agriculture: Farmnote No. 130/77]

PEANUT CULTIVATION

Peanuts grow under a wide range of climatic conditions, although they are normally considered a crop for tropical latitudes. Even in cooler parts of W.A. they can grow well during summer months provided moisture is available from rainfall or Irrigation .

These notes on peanut cultivation should be used as a guide only, as the information has been prepared based on experience at Carnarvon and the Kimberleys.

Climate

In the more tropical parts of the State, peanuts may be grown at any time but again need irrigation because natural moisture throughout the growing season could be inadequate.

Ideal climatic conditions for peanuts would be an early spring, consistently high temperatures, a moderate rainfall or irrigation, plenty of sunshine and a dry autumn or harvesting period to minimise loss from weathering and shell discoloration. Peanuts are also very susceptible to frost and a frost-free growing season is essential.

Varieties and period of growth

The period of growth for peanuts varies according to variety and climate. In a tropical wet season environment, peanuts will mature in 90 to 140 days, depending on the variety. In more temperate latitudes these figures will be considerably increased. Long season types may require six months or more (and may still not realise full yield potential).

Both Virginia Bunch and White Spanish varieties are commercially grown under irrigation in the East Kimberley region,

with Virginia Bunch requiring 4.5-5 months from planting to full maturity and White Spanish types 4 months. Seed of some varieties may be bought from peanut processors in Perth.

Spanish varieties have an erect growth habit with a small roundish kernel. Most Spanish types grown in Australia have a red testa. However, the variety now grown at Kununurra has a pink testa. Virginia Bunch types are semi-prostrate with large elongated pink kernels.

Both varieties begin flowering 20 to 25 days after emergence, and continue flowering through to maturity, which for some varieties can be more than five months later.

Soils

The nature of the soil and its fertility is the greatest contributing factor in a profitable crop. A sandy loam with some well decomposed humus is ideal. A heavy soil (although it may be friable and capable of producing heavy crops) often causes great losses at harvest because of the difficulty in freeing the nuts from the soil.

A loose surface texture is desirable to allow the pegs to penetrate the soil and expand to form pods, to mature evenly, and for easy harvesting. Good drainage is essential, and clean bright shells produced in a sandy loam are more attractive to buyers than stained shells from heavy soils, although the kernels are of no better quality.

Soil preparation

Ploughing should be of sufficient depth to completely bury trash residue. The seed bed should then be brought to a reasonably fine tilth which allows planting of seed at about 5 cm depth in the centre of the ridges or raised beds. In a situation where hand weeding is not practicable, a pre-plant herbicide could be incorporated into the ridges or beds, especially if grass weeds are known to cause problems.

Method and time of planting

Peanuts should be planted as shelled seed. Some growers favour soaking whole nuts to accelerate germination, but experience has proven that shelled seed is better than whole. With shelled seed there is no danger of 'duds' being planted, thus giving more chance of an even stand and a good crop.

Planting may be done with a combined drill, mechanical row crop planter, or by hand. If planted by hand, rows should be 90-100 cm apart and the seed placed 4-7cm deep, according to soil condition and the moisture present.

Seeds should be spaced at approximately 9-10 cm along rows for Virginia Bunch and at 5 cm for the Spanish varieties. Where planting by hand, the seed should be covered by harrowing lightly.

When planting on ridges for irrigation, the ridges should not be more than 90 cm apart for maximum yields of runner-type peanuts and should be closed as much as possible (say 60 cm, depending on soil type) for production of erect bunch types.

For the south west areas of the State, peanuts should be planted in early spring or summer to avoid frost damage and to allow the crop to mature.

Inoculation

To encourage nodulation, which allows the plant to "fix" nitrogen from the atmosphere, the shelled seed should be inoculated with Group I inoculant. Inoculants are usually available at stock agencies.

Cultivation

Continued cultivation for weed control usually reduces yield and thus in other than small scale situations, where small weeds can be removed by hand without undue crop disturbance, chemical weed control should be attempted. Where plants are grown on ridges, some banking of the soil around but not on top of plants at early flowering will aid penetration of plant pegs and pod development.

Harvesting

When the normal period for maturity has been reached, most nuts will be found to be fully grown with the inside of the shell showing darkened veins. The crop is then ready to lift.

Harvesting too early will result in a high percentage of empty shells and shrivelled kernels. If the crop is left too long, a big proportion of nuts will be left in the ground. Leaving fodder peanut crops too long will allow many leaves to fall from the tops.

The plants are readily lifted by hand in friable soils, but in heavy soils use digging forks or a suitable digger with finger bags instead of a mouldboard.

After lifting the plants and shaking the soil from them they should be left to dry in the windrow. The pods should be stripped from the plants as soon as they have dried to about 12% moisture content (leaves well wilted but not brittle).

