Quandong

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West Australian Nut & Tree Crop Association (Inc)

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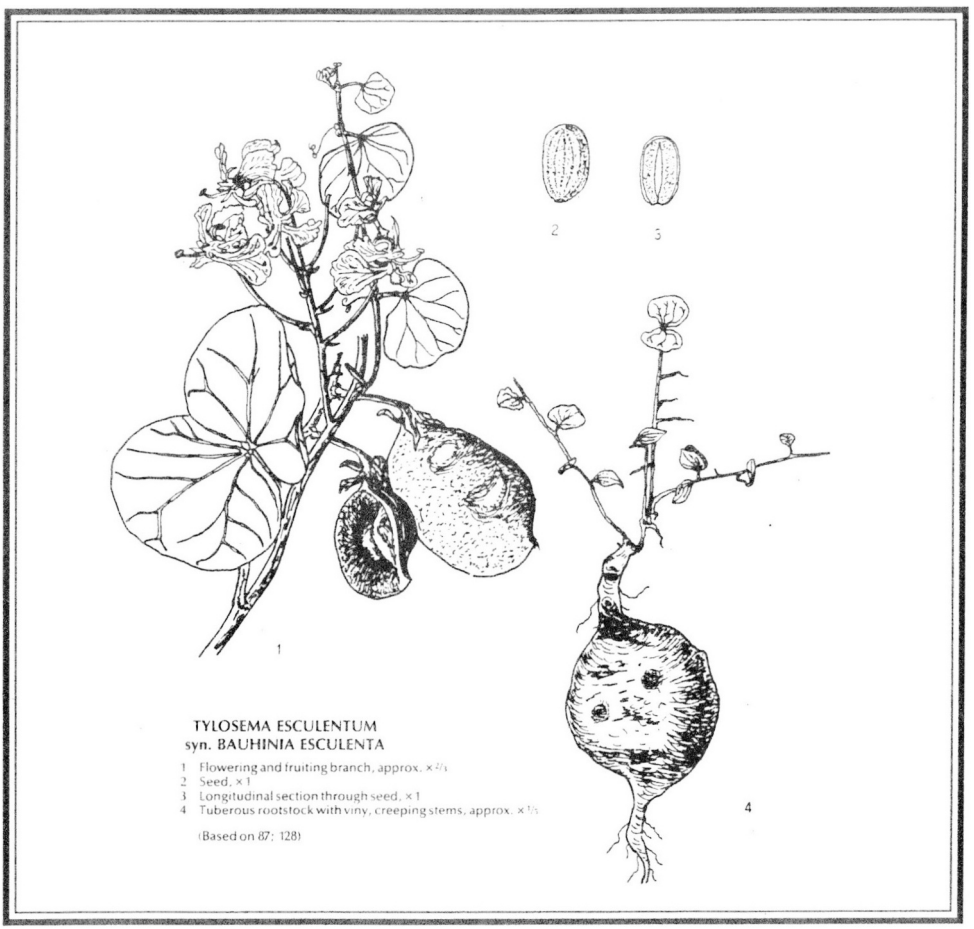


The MARAMA BEAN *(Tylosema esculentum)* (See: About the Cover, p. 2)

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

Wednesday February 17: 7.30 pm

Our main speaker will be **Peter Bindon**, of the WA Museum, who will give a talk on

Stalking the Wild WA Asparagus:

Native Plant Foods of WA

This meeting will be at our new venue, the Greening Western Australia office at 1118 Hay Street, West Perth. **Full details on the attached leaflet.**

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

WANATCA FIELD DAY

Toodyay: Sunday May 30: 10 am

Pistachios, Pecans, Macadamias - Meet 11 am at Pecan Hill Tearooms, Beaufort Road, Toodyay (Rod & Barbara Garcia). Then visit adjacent pistachio plantation of Tom & Christine Bateman. **Full details in the attached leaflet supplied with current issue.**

About the Cover

Our cover illustration shows the Marama Bean, *Tylosema esculentum*, from southern Africa. A close relative of the Bauhinias grown in Perth gardens, the plant was once classified as *Bauhinia esculenta.*

One of the most important plants for the Kalahari Bushmen, Marama bean is a trailing vinous plant able to survive in very dry conditions. The seeds are always roasted before eating, when they have a flavour similar to cashew nuts.

Tubers get huge (10kg), but small ones (1kg) can be baked and eaten as a vegetable.

Illustration from *Guide to Plants Tolerant of Arid and Semi-arid Conditions*, by E. Weiss (Nairobi, 1987)

[WA Horticulture/ May 1992]

Versatile pistachio more than a food

Pistachio nut trees could hold the key to economic viability of drier agricultural lands, according to Tom and Christine Bateman.

Now enjoying their first productive season, the Batemans, who are accepted as "experts" of the infant industry, believe the pistachio has a big future in WA as a food and in conservation.

The Batemans 'fell' into pistachio growing after they bought a picturesque four hectare block at West Toodyay a few years ago. "The block was beautiful but we knew we had to do something constructive with it," Mr Bateman said.

"Neighbours had planted pecan trees which were thriving, and others in the area were raising goats. But neither of those options really appealed to us."

They finally decided on pistachios after looking for something that did not require close attention, as they were visiting the property only on weekends. Animals, therefore, could not be considered.

Finding trees was a probem until they heard of the late Alex Sas, a renowned leader in the field, who had mastered the art of grafting pistachio trees.

Although extremely hardy in the field, pistachios present problems when raised and grafted in a nursery.

And because the industry was not growing here like it was in the eastern states, big scale importation of grafted trees was not an option because of cost and availability of supply. So it was do it locally or not at all.

Another concern was verticillium wilt, which was a problem in the eastern states, particularly where pistachio trees were planted on land previously used to grow apricots.

Fortunately a verticillium wilt-resistant strain of rootstock was found — *Pistacia terebinthus* — which is now the recommended rootstock.

A problem encountered by many nut growers is destruction by birds. But the Batemans believe birds do not like the taste of the covering on pistachio nuts.

Mrs Bateman said one of the main attractions of pistachios was their big market potential. "All of the pistachios on sale in WA are imported from California or Iran, and as far as I am aware there are no local nuts for sale," she said.

Tom Bateman harvests pistachio nuts growing on his Toodyay property

"The entire crop from eastern state plantings is sold through the Sydney markets. Australia does not supply enough to meet local demand."

Mrs Bateman said California, in particular, had promoted the nut actively in South-East Asia and packaged them under a kangaroo logo in Singapore!

The Batemans said Toodyay was an ideal location for an orchard because pistachios had a winter chilling requirement of about 60 hours at less than 7.5°C. The chilling factor is critical because fruit buds will not set if winter temperatures are too high. Special low chill varieties are being developed and extensive research is being conducted in Alice Springs and Israel.

The trees are susceptible to frosts at flowering time (end of September to mid-October), and wind is a bonus during flowering because it helps distribute pollen through the orchard. Winter winds can also lower temperatures because of the wind-chill factor. Mr Bateman said because of their deeply penetrating roots, pistachios were well adapted to growing on slopes and stony soils and were of particular interest in reclamation and conservation projects.

But he said they grew much better on deep, fertile, well drained soils and were also tolerant of alkaline (lime) and saline conditions.

Quality soils are needed to achieve good yields but the trees will survive on much poorer areas. While pistachio trees are highly tolerant of salt, they have low tolerance to water logging, which reduces their use as a means of rehabilitating salt affected land.

Mrs Bateman said their pistachio nuts were the species *Pistacia vera.* Other species did not produce saleable nuts but were used as rootstock — the most common in Australia being *Pistacia terebinthus* and *Pistacia atlantica.* She said other varieties were used as ornamental garden trees because of their colourful autumn foliage.

"Rootstock seedlings are raised from *Pistacia terebinthus* or *Pistacia atlantica* seeds and then are grafted or budded with male or female budwood," said Mrs Bateman.

Pistachios have a long history — they have been cultivated in the Middle East for centuries.

The tree is native to parts of Iran, Afghanistan, and Syria, where it grows on open stony hillsides which receive only 200-400mm rainfall annually.

The pistachio nut grows on a small deciduous tree which eventually develolps to a height of about five metres, with a spread of 10m.

Its straggling growth is similar to a fig tree, it has a long tap root, and a peculiar odour produced by resin which exudes from the bark.

Mrs Bateman said a high quality turpentine or mastic produced from the resin was the base for the drink resinata in Greece and Turkey.

"It is commonly believed that it is the resin which discourages parrots from eating the nuts, which have an attractive red hull," she said.

As well as producing a crop with good nutritive value, new evidence suggests pistachio trees could help prevent damage to wind eroded and degraded land.

There are male and female plants and the wind transfers pollen from male to female trees.

"In commercial orchards it is important to have selected males that flower at the same time as the female trees.

"Because males are less precocious than females — that is they develop more slowly — they should be planted a year or so earlier than the females so all trees are productive at the same time, otherwise commercial returns are delayed."

She suggested ordering months in advance due to the difficulty in obtaining supplies.

Mr Bateman said the first crop could be expected after five to six years, but this could vary depending on tree spacing and rootstock. And with care, first nuts could appear after four years, as they did at the Bateman property.

Cropping life can last about 50 years, but it has been reported some trees in Syria have produced for 900 years.

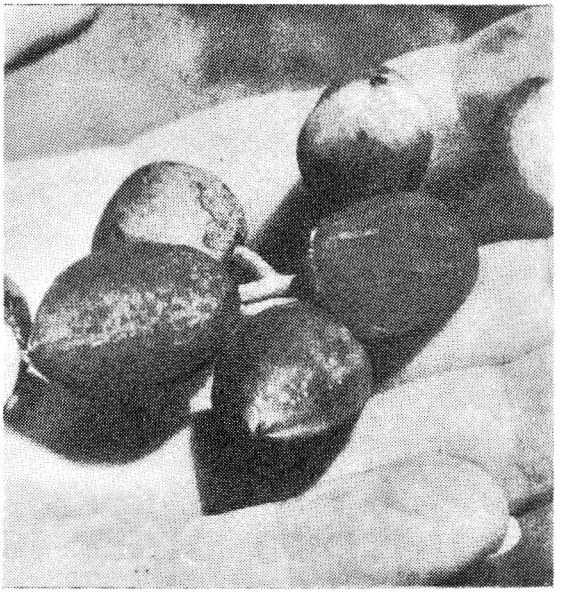
The nuts do not ripen at the same time, but over a three-week period, starting in April.

Mr Bateman said that while pistachio nuts were not a common food in Australia, this was expected to change with increased availability of a quality product.

They are served as salted nuts, stuffing for meat dishes, in biscuits, slices or pies, and to give flavouring and colour to ice cream.

There is strong demand from ethnic groups in Australia for both green pistachios (dehulled and salted) and roasted pistachios.

— Valma Ozich



Freshly picked pistachio nuts in their hulls

The Brown Soapbox

[As from this issue, Quandong will from time to time feature comments and opinions offered by members in the public interest. Editorial intervention will be largely restricted to reducing the frequency of libel actions and fitting in with space limitations— readers are encouraged to comment directly to the contributor. This contribution, stemming from the last WANATCA meeting, is from Executive member David Brown].

There were three speakers at the last WANATCA general meeting on 17 February 1993.

Bob Paulin, a horticultural advisor with the WA Department of Agriculture spoke on the topic of *Sustainable Horticulture : Tree Crops and the Environment*, with special reference to nutrient effects on the Swan coastal plain. He identified a number of specific problems arising from attempting horticulture in this situation (deep sand with almost no holding capacity) e.g., the large amounts of water and fertilizers applied in some areas and the draining of wetlands in others. In the case of fertilizers, the quantity applied has led to unwelcome "side effects" in the form of contamination of ground water, streams and wetlands. Personally, I was not totally satisfied with the suggested solution — encourage the use of less fertilizer by mechanisms such as taxes on pollution.

Bob referred to the ever expanding suburban "red brick fungus" which covers the most productive land with buildings, roads and the like. The Government's projected and desired population growth for this area leaves little room for optimism about the future. WANATCA would unanimously endorse his view that good horticultural land should be retained close to the city and towns, especially on account of the opportunity-rich, Mediterranean climate in this region.

Not unexpectedly, Bob spoke from the perspective of a public servant. I think the aspects of his/the? Department's approach that left me unsatisfied, all rested on a lack of a clear definition of *sustainable*. Because of this lack the Department is not **eager** to challenge its own current policies, nor confront its disastrous past record, e.g. as to land clearing, use of fertilizers and pesticides, etc. Notwithstanding its valuable work in many areas, there are few Departments that have contributed as much to land degradation (and farmer bankruptcy) and there are none with equivalent opportunities to right some of these wrongs today.

The starting point has to be its abandonment of all **financial** models as the primary (or sole) predictors of sustainability and their substitution with **biological** or **ecological** models. Financial success and sustainable horticulture sometimes go together although the connection is often quite accidental and depends on the mood in foreign board-rooms. One basic test of sustainability is through energy (rather than monetary) budgetting to ensure the production system returns an energy surplus or profit. Almost all farming carried on in WA operates in energy deficit mode and is therefore unsustainable regardless of narrow "economic" factors. Even King Canute and all his board-rooms cannot stop the inevitable tide of this reality of nature. For example, our cereal cropping probably has a negative efficiency rate. Ultimately, true farming harvests only the sun's energy via photosynthesis but modern farms are "re-packaging factories" converting a great deal of fossil fuel (in farm fertilizers, pesticides,

distillate, etc.) to food-energy on our supermarket shelves.

Although financial viability is not necessarily based on long-term factors (whereas sustainability always is), it is an important aspect to take into account in making sound decisions (along with other factors such as human satisfaction).

It is not valid for the Department to claim to be conservative in its research and business **promotion** activities and therefore unable to take the "big punt" and invest effort in other than known quantities like apples, stone fruits and citrus. To put all one's eggs in just a few baskets is a very big punt. The arrival of the codling moth in the apple growing district of Bridgetown since our last meeting is proof of this point. There has to be a place for a wider range of tree crops and this is where a conservative, low risk, non gambling Department would direct its energies — to establish a broadly based horticulture with emphasis on many perennial crops.

At least Bob speaks from the perspective of horticulture. It presents the greatest opportunities in sustainability. The Department's failure to see the obvious, i.e. that horticulture should be their most important and lasting work with the lion's share of their total budget and personnel, is a tragic case of bureaucratic myopia.

There are two possible extremes :

Either, we try to increase export markets for a few products (e.g. apples, plums and oranges);

Or, we expand the diversity of our production for home consumption in order to cut imports. Although this might be more difficult, it is less risky in the long run. The trend over a number of decades has been to import an increasing range of foodstuffs and other products that once were and still could be grown here. In addition, there are many other feasible tree crops not even on the agenda.

***David Noel** said he had been experimenting with foliar spraying to supply nutrients to trees growing in sand. The trees are well mulched so spray that misses the leaves is available to the roots in the mulch. Good results had been obtained with less than 1 gram of fertilizer per tree so this technique has promise. As against that, it was necessary to spray every few weeks.*

David commented that the yield and growth rate improvements obtained from this simple two-part experimental approach had been dramatic over the previous two years. The amounts of fertilizer used were almost 'homeopathic' or symbolic, enormously less than conventional applications. Any fertilizer run-off from the leaves was absorbed by the mulch, and was automatically positioned at the 'drip line', the conventionally favoured point to apply fertilizers.

In the second part of the meeting, **Barrie Oldfield** from Men of the Trees gave an update on their work at the Dowerin arboretum of 9.6ha, commenced in 1985. In line with their foundation ideals, trees are

planted as a hedge against the encroaching desert but in addition, productive species are chosen, to support human settlement. They include carobs, sweet chestnut, and pistachio nut and rootstock species.

Without any watering during scorching summers there has been a 20% overall survival rate. Considering the circumstances (kangaroos, rabbits, locusts, hot dry winds, underlying hard pan), this rate seems very high to me, because such species have not been tuned to the environment by millions of years of residence, as have Eucalypts.

One of the difficulties in getting landowners to grow productive trees has been the comparison with the raw score obtained when planting Eucalypts. It is relatively easy to plant many hundreds of the latter in a short time and the score sounds very impressive. Some people win admiration by spouting their personal score for trees planted over the past year. This is the sort of way in which our politicians think. Growing trees, however, takes much more effort than simply planting them; just as raising children involves more than simply having babies. Further, a mixed species stand of productive trees is more demanding than one of single species. The survival rate ranges between the easy species at ~100% success and others that are almost impossible with ~100% failure. Barrie said this was their experience at Dowerin. The production rates for each species and each tree, are as yet unknown.

It was good to hear a challenge of the rigid, official view that the Wheatbelt is for growing wheat (Why else would God have named it the "Wheatbelt"?). Barrie invited any interested WANATCA members to "adopt" some aspect of the arboretum (e.g. the carob trees) to take it on as a demonstration of the potential for productive tree crops in the Wheatbelt. By some care (occasional pruning, top-dressing, dealing with the parrots, etc.) it should be possible to reap the benefit. There is a 10 bed dwelling available for use by voluntary workers. (Barrie can be phoned on 09-291 6619).

There is also an adjoining 98ha farm they lease from the Shire. I believe the precise purpose of this enterprise should be defined. Is it primarily for experimental or for demonstration purposes? Once again the question of sustainability arises.

It is OK to do research simply for the sake of interest or enjoyment but a demonstration that sets out to show others how to do something, must be done in a way that is feasible. It is a cruel hoax to hold up to farmers a model that cannot pay its way in either environmental or economic terms.

Therefore, I was worried about the application of 70 tonnes of rock dust/hectare after it has been trucked many kilometres to Dowerin. It is hard to see how this practice can produce anything but an energy deficit because it is unlikely to return a net energy surplus in the produce. It is also difficult to imagine how there could be sufficient rock dust or funds to follow this practice throughout the Wheatbelt. The quantities and cost would be astronomical. I hope it is being done at Dowerin simply as an experiment in simulating some effects of an ice age and not being recommended as desirable practice for wheat growers generally.

— David Brown

[Countryman/ April 18 1991]

Setbacks can happen . . .

Weekend hobby farming can present small landholders with as many failures as successes. Robert van Koesveld and his wife Libby Lloyd have tasted both in the seven years they have owned a two hectare block near Balingup.

When the couple bought it in 1984, the hillside land was bare but for a few aged fruit trees. They discovered it when visiting friends nearby, and decided immediately that it was what they had been looking for. Both had a love of the land and wanted their own piece of the countryside.

Its aspect was good, it had a permanent creek at the bottom of the slope, and it carried a big tin shed that offered temporary accommodation.

Robert and Libby had no ambitions to live permanently on the block. Both are in full employment in the city, and they intend to remain there for years to come. But they wanted their hobby farm to pay its way, as well as to give them the recreation they wanted.

They first planted cherries on a Tatura trellis system, and some hazel nuts. They had a dam built, and a reservoir on the creek. Later, a diviner located an underground stream, which they tapped and walled to form a soak. A pump brought the water to the orchard.

Then a series of calamities overtook the hobby farm. Someone stole the pump, the soak and dam walls were breached, the cherries failed to thrive. Then a neighbour's sheep, grazing the property by arrangement, broke into the orchard.

But the hazels made good progress. So did the grove of stringybark eucalypts that Robert and Libby planted for potential sale as power poles. Meantime, some lining and other

improvements made the shed a comfortable weekend cottage.

Today, the couple have 100 hazel nut trees just starting to bear, and 20 pecan nut trees.

They are selling small hazel nut trees of named varieties from suckers on the bearing trees. They have planted a small orchard of fruit trees for their own use. Also, they now have their first child.

Robert and Libby have no regrets about their hobby farm in spite of the setbacks they've suffered. When they travel to the block on a Friday night after a week or fortnight interval, they go through the same sequence that a lot of us know so well from our own weekend excursions. And like so many of us, they've often wandered round the property with a torch soon after arriving, to check on progress.

Also, their neighbours and the rest of the local small landholder community have been friendly and helpful, all adding to the joys of hobby farming.

Hazelnut Trees

Orders for pick up or delivery in July 1993 or 1994 are now being accepted for advanced hazelnut trees in named varieties. The trees have been grown on for two to three years. This assists greatly with initial establishment and earlier bearing. A limited number of four year grown trees are also available. The trees are sold bare rooted for winter planting.

We have been locally trialling many varieties under Southwest conditions over eight years, and are offering those varieties which show early promise, together with their pollinisers.

Varieties Available

Barcelona. Description: Sweet medium size nuts easily removed from husk. Pollinisers: Cosford, Gunslebert.

Cosford. Description: Well flavoured rounded nuts. Pollinisers: Barcelona, Gunslebert, Halls Giant.

Halls Giant. Description: Well flavoured large size nuts. Pollinisers: Barcelona, Cosford.

Wanliss Pride. Description: Large size nuts, high yielding and early bearing. Spreading form. Pollinisers: Cosford, White Aveline.

Webb (aka *Kentish Cob*). Description: Larger size nuts. Pollinisers: Cosford, Gunslebert

White American. Description: Large size nuts, said to be high yielding. Pollinisers: Cosford, White Aveline.

White Aveline. Description: Small conical and tasty nuts. Pollinisers: Barcelona, Gunslebert

(Note: There is unfortunately some confusion regarding hazelnut varieties and their names in Australia, we can only guarantee to supply trees true to the mother plants as grown on our property. Only healthy plants will leave our nursery, we cannot accept responsibility for their performance once they leave the nursery.)

Cultivation Notes

The hazelnut tree grows well wherever apple trees are grown and is well suited to the Southwest.

The trees will grow on a wide range of soils but prefer fertile and reasonably well drained conditions. They certainly respond to a mulch of sawdust, chicken manure or similar. Light fertilising with Dynamic Lifter will keep the tree growing well. Local experience has shown no problems with pests or diseases .

The hazelnut tree has separate male and female flowers on the same tree. The female flower is barely noticeable, while the male flower takes the form of a long catkin. The trees flower in the middle of winter, and as the male and female flower are often active at different times, cross pollinating varieties are needed.

Trees are usually planted about 5 metres apart. Some people will have seen the hedgerows of hazelnuts in Europe, however this method is not very productive, as the shade limits flowering and

the nuts themselves can prove very hard to reach.

Consequently trees are now grown as a single-stemmed tree. This involves pruning out the suckers which sprout from the base each year so that one strong trunk is formed. On spreading varieties such as Wanliss Pride, the trees are trained to 3 or 4 stems.

Trees can be planted quite deeply in winter. The leaves are susceptible to wind burn and trees grow best where there is good wind protection. Regular watering is required during establishment but once well established, in soils which have good water holding capacity and with the use of mulch, trees can manage quite well with little irrigation.

The nuts mature late February to early March and are either picked from the ground or from the tree. They need to be allowed to dry to reduce moisture content if they are to be stored. A percentage of nuts are always 'blank', that is they have no kernel. This varies with variety but there are always some blanks which usually drop before the filled nuts. The first nuts are produced after about 4 years.

— Robert van Koesveld

Varieties available in 1993 and 1994

Barcelona	advanced	super advanced
Cosford	advanced	super advanced
Halls Giant	1994	
Wanliss Pride	advanced	
Webb	1994	
White American	advanced	
White Aveline	1994	

Prices: advanced trees $8.50 each, super advanced $10.00. (Minimum order 10 trees) (above prices are for farm pick-up, freight is charged additionally)

Hazelbrook Nut Farm, Balingup WA
(Members of WANATCA)
PO Box 15, Subiaco WA 6008
Phone 09-388 1121 (after hours).

[WA Horticulture/ March 1993]

Nuts lose out to fruit

While growers accept patience is a virtue when it comes to harvesting nut crops, most would be alarmed by Michael Scolaro's decision to remove 70 healthy 10-year-old macadamia trees from his property.

"It is all a case of economics, and stone fruit trees are more profitable in my situation," Mr Scolaro said. "We may have inherited the nut trees when we bought Riverglen, but I have always believed if you are going to grow something you might as well get the best possible return."

A notable stone fruit grower, formerly of Pickering Brook, Mr Scolaro and wife Glenyse moved to Roleystone two years ago as part of a semi-retirement plan. But now Mr Scolaro's plans for his new property have put retirement out of his mind.

Michael Scolaro pruning a nectarine. Pecan trees are seen behind him

"The situation rapidly changed when we realised how well things were growing on the property and retirement quickly took a back seat." he said. "The land around here is quite expensive so we are about the only commercial grower in the area.

"The Canning River runs along the back of the property and with the climate being a bit warmer here than Pickering Brook, we thought we would try some new low-to-medium chill varieties."

But rather than stay with traditional varieties Mr Scolaro chose 250 Anna apple trees, 250 nectarines, and 300 peach trees, made up of an even distribution of Flordagold and Flordaprince.

While agreeing Anna apple trees could be considered a risk crop, Mr Scolaro justified his decision by explaining that all his stone fruit selections were those already attracting a lot of interest and high prices, particularly the peach varieties.

Like the peach selections, the Anna apple originated in Florida, USA and in WA has found an early market niche.

A red-fleshed apple, Anna matured in early to mid-January and, as well as its taste, this would be the secret to its success, Mr Scolaro said. Anna is the first early variety apple to be released in WA.

"Many people are not keen to buy fruit which has been in cold storage for a long time and that is the only option they have in January," he said. "Most other apple varieties don't mature until late February or early March, giving us that nice niche market."

With only a few people marketing the variety, Mr Scolaro believes there is no need to be alarmed by the limited consumer demand so far. He said consumers needed to be made aware of the apple first and then acceptance would follow. Bigger supplies of

the apple were also needed.

Only about two growers had fruit to put on the market this year. Mr Scolaro's first crop would be harvested next year. "The beauty of the project is that by waiting for the fruit trees to mature, we have, in effect, had a little break," he said.

Their decision to pull 70 of the 150 macadamia trees on the property was made easier after some quick calculations.

Assessing that the trees would produce about 350 kilograms of nuts in their shell, and return $4.50 a kilogram, the total value for the area would be $1575.

The same area could grow 500 stone fruit trees on a central leader system and within three to four years each could be expected to produce four trays of fruit at $8 each — giving a total block return of $16,000. "The labour cost difference has not been taken into account because being on a semi-retirement plan, I have time on my hands," Mr Scolaro said.

"Macadamias grown on a small scale like this are more difficult to harvest than fruit, but in every other respect fruit growing is more labour intensive, and more chemicals are also needed."

While the macadamia trees came with the property, Mr Scolaro calculated the cost of setting up a similar orchard in comparison with a fruit tree block.

At about $18.50 a tree, it would cost $1300 to establish a 70-tree macadamia block. Five hundred fruit trees could be planted on the same block and, at a average cost of $6 each, the outlay would be $3000 plus an additional $1500 for trellis material.

There are also several pecan trees on the property and Mr Scolaro is still uncertain about what to do with them.

He said unlike macadamias, there was more of a market for pecans. "People are prepared to buy pecans because they can shell them, but macadamias need a special nut cracker."

Worthwhile Crop

Mr Scolaro said while persevering with macadamias in his situation was unattractive, he believed they were a worthwhile crop for WA horticulture. "A lot of people are hobby farming and therefore have limited time to spend around the trees," he said. "For the amount of time you put into them, you get quite a good return."

Despite exhaustive efforts to establish why his macadamia trees were not producing expected crops of 20 kilograms a tree —the trees were cropping about half that amount—Mr Scolaro could not find a cause.

But his instinct as a horticulturist told him that the small cropping could be attributed to the trees being too healthy, with all their vigour going into growth rather than nut production.

*— **Valma Ozich***

Editor's Note: WANATCA member Michael Scolaro expects to schedule the removal of the 70 macadamia trees for later in May, 1993. These trees, which are up to about 3 metres tall, are offered to WANATCA members and others interested in transplanting them.

The trees themselves will not be charged for, but recipients will be expected to contribute towards the cost of machinery for removal. Ten macadamias are already reserved for Men of The Trees.

Contact Michael on 09-495 1608 if you are interested in acquiring some. Macadamias can be transplanted, we will be interested to hear how successful these transplants turn out. ¥

THE MACADAMIA STORY

Macadamia nuts, although well known to the local Aboriginals, were first discovered by Europeans in Australia's east coast rainforests in the 1820's. They were named after the notable Australian Dr John Macadam in 1858, but were called Bush, Bauple or Queensland nuts for many years. Today these delicious nuts are commercially called macadamias.

These nuts grow on large dark evergreen handsome rainforest trees which reach 12 metres in height. Nuts are not produced until the fourth or fifth year and trees can live for hundreds of years. The nuts fall to the ground when mature. They have a green-brown fibrous husk and the kernel is protected by a hard shell difficult to crack. Before modern technology, a macadamia enthusiast had a satisfied smile and bruised fingers.

The macadamia is a native of Australia and this is our only indigenous plant to produce a world food.

Although grown now in Hawaii and other parts of the world, Australia leads research, growing, processing and quality technology. Our subtropical environment coupled with varieties with special qualities make Australia the leader in the production and marketing of macadamias.

Highly nutritous

Macadamias are a high energy food and contain no cholesterol. The average composition is 76% natural oils, 9% protein, 9% carbohydrate, 2% dietary fibre and significant amounts of the vitamins thiamine, riboflavin and niacin, as well as the essential elements calcium, phosphorus, potassium, magnesium and iron.

The oil is rich in mono-unsaturates, considered to be beneficial in reducing the risks of heart disease.

The crisp texture, delicate flavour, long shelf life and versatility has made macadamias eagerly sought after throughout the world. Increasing production and industry efficiency has made macadamias affordable by almost everyone.

The nuts may be eaten raw straight from the hard shell or lightly roasted as a snack or aperitif nut. They are also delicious when cooked in oil or roasted and can be used to enhance the flavour of cakes, confectionery, ice cream, roasts, casseroles and Chinese cooking. There are many other exciting possibilities, limited only by the imagination of the user.

World wide appeal

The superb edible qualities of the nut has a world wide appeal and Australia is

supplying a major share of the market from a multi-million dollar industry which had its beginnings in the coastal rain forests of south east Queensland.

Although Australia's first plantation was established in the 1880's, it was not until the 1960's that commercial scale development of the industry began. The industry today is largely centred in northern NSW and SE Queensland.

The Australian Macadamia Society, in association with the International Food Institute of Queensland (a division of QDPI), has implemented a quality assurance programme to ensure a continuing commitment to improved quality and efficiency in the industry.

A macadamia nut industry of major proportions has been established in Australia, extending from the central NSW coast to the Atherton Tablelands in North Queensland.

Large acreages of grafted trees selected from the best Australian and Hawaiian varieties continue to be planted.

Long term investment

Macadamia nut production is a long term investment, and requires a high standard of plantation management from the start through the non-productive time to the bearing stage and beyond.

From the time the seed is planted in the nursery it takes anything up to 15 years for a tree to attain a reasonable level of profitability.

In Australia the trees flower from August to October and although there are several hundred flowers in each raceme, usually less than 5 nuts set and mature. The main harvesting time is from April to October.

There are only two species of edible macadamia, integrifolia and tetraphylla, and both are native to Australia. *Macadamia integrifolia* is the only commercially important species and has proved to be suitable for large scale processing as a high quality eating nut.

New markets

The macadamia is generally regarded as the most exclusive of all tree nuts. The creamy coloured macadamia kernel with its fine texture and uniquely subtle flavour has acquired an immediate following world-wide.

Australian exporters have developed major new markets for bulk raw macadamias in many different grades, value added products and retail packs. The Australian market has expanded enormously with many new high quality products available.

Australia is now developing and marketing in the USA, Japan, Pacific rim nations, Europe and in other parts of the world.

The quality of Australian macadamias is unsurpassed, and the industry is committed to allowing everyone to partake of the finest of nuts available in many different forms. Recipes are available from the Macadamia Society.

[From a leaflet produced by the Australian Macadamia Society, which "aims to promote all aspects of the macadamia industry, to encourage a free interchange of ideas and information, and to foster and promote goodwill among members.

For further information on macadamias or the industry please contact: The Executive Officer, Australian Macadamia Society Limited 148 Virginia Ave, Hawthorne, Qld 4171. Tel: (07) 399 3447, Fax: (07) 399 9165".]

Book Reviews

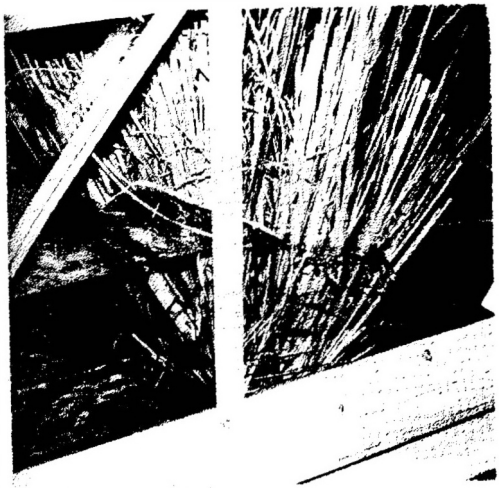
by David Noël

Vetiver Grass, a Thin Green Line against Erosion. Published by **Board on Science and Technology for International Development**, Washington, 1993. 182 pages. Paperback. *$17.95.

This is the latest in the epoch-making publications put out by BOSTID, the third-world development agency of the US National Research Council. It follows on from Neem, a Tree for Solving Global Problems, which fares well to alter the world's attitude to insect control using natural products, and many other development problems.

Vetiver grass is an outstanding plant material for combatting a huge range of erosion, flooding, and land stability problems. Also known as khus-khus, the source of an aromatic oil extracted from the roots, vetiver has many other uses. But it is unequalled to date as a means of soil protection on sloping sites.

In one very appropriate usage for tree croppers, vetiver can be used in a self-terracing mode on sloping orchard sites. Planted in a thin row along the contour, the grass soon forms a barrier which stops soil movement and slows down runoff from thunderstorms to a gentle trickle. The result is that soil builds up above the vetiver and forms a natural terrace, while the vetiver continually grows with the new 'contour bank' and stabilizes it — in contrast to man-made contour ridges, which gradually lose their form.



Oxford, Mississippi. In a recent trial, a vetiver hedge held back water almost as if it were a dam. This test was conducted in a flume (61 cm wide) and the water (flowing at 28 liters per second) was ponded to a depth of 30 cm behind the hedge. This result was all the more remarkable because the hedge was young and less than 15 cm thick. (Sedimentation Laboratory, Agricultural Research Service, U.S. Department of Agriculture)

Here is an extract summarizing the unique advantages of vetiver:

VETIVER IS UNIQUE

Although other grasses and trees have been used as vegetative barriers for soil conservation, vetiver seems to combine several characteristics that make it special:

• It reduces erosion when in a hedge just one plant wide. (Few, if any, other grasses seem able

to hold back soil or moisture when planted in such a thin line.)

• Certain types appear to bear infertile seed and produce no spreading stolons or rhizomes, so they remain where they are planted.

• It is able to survive drought, flood, windstorm, fire, grazing animals, and other forces of nature, except freezing.

• It has a deep-penetrating root system.

• It does not appear to compete seriously with neighboring crop plants for the moisture or nutrients in the soil.

• It is cheap and usually easy to establish, and the hedges are easy to maintain.

• It is not difficult to remove if no longer wanted.

• It is (at least so far) largely free of insects and diseases and does not appear to be a host for any serious pests or pathogens that attack crops.

• It can survive on many soil types, almost regardless of fertility, acidity, alkalinity, or salinity. (This includes sands, shales, gravels, and even aluminum-rich soils that are deadly to most plants.)

• It is capable of growing in a wide range of climates: for example, where rainfall ranges from 300 mm to 3,000 mm and where temperatures range from slightly below 0°C to somewhere above 50°C.

The book deals clearly and comprehensively with vetiver's history of trial and development in all parts of the world, covering its biology and uses, and giving the usual invaluable BOSTID list of Research Contacts in many countries (91 in this case).

So far as people in temperate climates are concerned, a limitation to be borne in mind is that vetiver's growth slows down considerably as the temperature cools. This aspect of the plant's physiology is receiving attention, in looking for colder-climate relatives or possible true vetiver varieties. Experience in Perth, regarded as a typical Mediterranean climate, is that vetiver is not troubled locally by cold or frost, but needs watering in summer to become established.

This book is warmly recommended for its valuable content, good writing, and very reasonable price.

*Available at $17.95 plus $3.00 postage from Granny Smith's Bookshop, PO Box 27, Subiaco WA 6008. Readers ordering this book through bookshops should ask them to contact the Tree Crops Centre (the Australasian distributors) at the same address.

Australian Rainforest Plants, by **Nan & Hugh Nicholson**. Published by Terania Rainforest Nursery, NSW. 3 vols, 219 pages. *$32.95 set.

This exceptional publication had its beginning with the first volume, published in 1985, which set the standard and format for the series. Since then successive volumes and new editions have appeared, Vol. II first in 1988, vol. III in 1991, and the 3rd edition of Vol. I in 1990.

Each volume is arranged alphabetically by species, with about 100 different species in each. Each entry includes one or more superb colour photos by Hugh Nicholson, beautifully reproduced, and a most useful and accurate description by Nan Nicholson. Each description includes natural growing conditions, uses noted, natural range, and a section on cultivation and propagation.

The Nicholson's Terania Rainforest Nursery is the site of one of the best rainforest plant sources in the country, and the owners

have a very high profile in knowledge and expertise in this area. The reason why this series of books is of particular relevance to tree croppers is that such a high proportion of our rainforest species have edible and useful products. It is true that most of these species are currently very little known and under-exploited, but the appearance of these books provides a remedy for that.

The books include rarely-described native nuts such as *Athertonia, Hicksbeachia,* and *Floydia,* as well as more common ones such as bunya and candle nuts. Over a hundred species with edible fruits are dealt with, and these include some, such as midyim, which are set to move into the commercial area in the future.

If there is a deficiency in the use of this set, it is in the indexes. Each volume has a common-name index, but this means looking in at least three places. The arrangement by botanical names means searching through each book separately to see if it is represented, and for alternative botanical names and ones mentioned incidentally, there is no way of checking at all.

To remedy this deficiency, the Tree Crops Centre has prepared combined common and botanical name indexes for the whole set, and a copy of these indexes is inserted in the back of Vol. III for each set supplied through Granny Smith's Bookshop.

With the addition of these indexes, the Australian Rainforest Plants set becomes an even more valuable tool for expanding knowledge and use of Australia's rich and unique range of species. Highly recommended.

*Set of 3, with inserted index, available from Granny Smith's Bookshop, PO Box 27, Subiaco WA 6008, for $32.95 plus $3.00 postage.

Vetiver News

• Some of the Vetiver Grass being grown by Bob Nederpelt in Perth has flowered for the first time in 1993.

Our vetiver grass clone is supposed to be sterile, with propagation normally from tillers (runners). Bob is running a careful check of the flower 'seeds' produced, to verify that they are, in fact, sterile under our conditions.

WANATCA to sponsor Budding & Grafting workshops

Because of the great importance of clonal propagation techniques in growing and conserving many interesting and useful tree crops, the WANATCA Executive has decided to sponsor Workshops on Budding and Grafting.

Arrangements have been made with WANATCA member Tim Saggers of Vision Seminars to put on the first of these Workshops.

Vision Seminars operate from the Landsdale Farm School at Landsdale, north of Perth and just south of Wanneroo. Vision Seminars have successfully conducted a number of events of interest to WANATCA members in recent years — see the advertisement on this page.

The first Workshop will be held on a Sunday afternoon, September 5 1993. There will be an introductory talk on theory, but the bulk of the session will be a practical, hands-on demonstration and practice. The demonstrator at the first talk will be Lance Morgan, a skilled propagator and demonstrator recently retired from the WA Department of Agriculture.

All bookings and arrangements are being handled by Vision Seminars, and the Workshop is open to both members and non-members of WANATCA. For more information, contact Tim Saggers on 381 3220 (a/h), or at the Landsdale number in the advertisement.

If this Workshop proves to be popular, WANATCA intends to arrange for similar events to be held on a regular basis.

[Northern Victoria Fruitgrower/ March 1993]

Union log of claims served on fruitgrowers

An ambit log of claims served on fruitgrower employers by the Australian Workers Union, on behalf of employees, has been listed for a hearing before Commission Oldmeadow of the Industrial Relations Commission in Melbourne on 13th April 1993.

The log of claims seeks amendments to the Federal Fruit Growing Industry Award. A summary of the claims are listed as follows:

- **A wage base of $1,000 per week.**
- **A bonus of $500 per week.**
- **An industry allowance of $100 per week.**
- **A location allowance of $100 per week.**
- **A service allowance of up to $100 per week.**
- **A site allowance of $10 per hour.**
- **Employer contribution to superannuation of 20%.**
- **Hours of work 35, to be worked 8 am to 3 pm Monday to Friday.**
- **All overtime at triple time.**
- **All shift work at triple time.**
- **Two rest breaks of 30 minutes each.**
- **Meal break of 45 minutes for each 4 hours work.**
- **30 minutes wash up time.**
- **A travel allowance of $2.50 per kilometre.**
- **Six weeks annual leave (8 weeks for shift workers).**
- **Leave pay at double ordinary pay rates.**
- **Ten weeks long service leave after each five years of service.**
- **Unlimited sick leave.**
- **Fifteen public holidays per year.**

Other claims in the log include parental and family leave, health insurance, parking facilities, clothing, amenities, tools and equipment, health and safety, life insurance, workers compensation and provision for education, discrimination, redundancy, termination etc.

On receiving this log, fruit growers might be tempted to offer their orchards to the employees and become employees themselves in order to enjoy the rest of their working lives in luxury.

However, the AWU claim is an "ambit claim", a device used to create a dispute and thereby secure a hearing before the Commission in order to progress their "real" claims.

The NVFA must take this matter seriously and will be represented at the hearing on 13th April by the Association's advocates, the VFF Industrial Association.

All financial members of the Northern Victoria Fruitgrowers Association will be protected by this advocacy and it is highly likely that the parties to the dispute will be instructed by the Commission to enter into conference to determine some common ground for Award amendment.

[*Editor:* Overseas readers of *Quandong* may be confused by the workings of the Australian industrial system of Awards, and may wonder how we ever got ourselves into the current position. They are not alone.]

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Jujube Variety list

The following list of varieties handled was supplied to us by Roger Meyer during his recent visit to Western Australia.

LI. Beautiful Chinese introduction by Frank Meyer. Large, round fruit up to 3 ounces. Earliest to ripen beginning in mid-August. May be picked beginning at yellow-green stage. Tree is many-branched, yet narrow and upright. Best eaten fresh. Tree has thorns but they are not a problem. Refractometer sugar levels of 25-32+% total soluble solids (TSS).

LANG. Large, pear-shaped Chinese variety introduced in the 1910's. Late ripening fruit (late Sept-Nov.) and must be fully colored before picking to be its best. Perhaps 20% of the fruit may skin-split and soften before ripening. When this happens, the fruit must be left on the tree until dried. The tree-dried fruit is excellent and keeps well. Tree is very upright with usually only one or two trunks. Virtually spineless! Sugar readings of the fresh fruit run 31-32+% TSS.

THORNLESS. First year fruit was identical to LANG. Will be made available if any difference can be seen.

SHERWOOD. A seedling plant from Louisiana. Claimed to have extremely large fruit and of excellent quality. To date, it has been a very poor bearer of fruit in California. Perhaps the trees are too young, or it's a climatic problem here. What fruit has been produced here has been excellent, very dense. 31-36% TSS.

SHUI MEN. From a plant found at the TVA, Tennessee. However, there is a SUI EN (SPI No 38245) at the Chico Introduction Station which Frank Meyer also introduced. My current guess is that they are one and the same. Fruit is elongated and good eating.

SO. A tree of most beautiful, unusual architecture. At each node of a new stem, the branch decides to go off into a new direction. Hence, very zig-zag branching. Possibly a good espalier tree? Fruit is almost perfectly round and excellent tasting.

SILVERHILL. An elongated fruit variety from Georgia. Tree is claimed to sucker little when it's on its own roots. Good tasting when fully ripe. Tests in Florida show this variety to crop well. Late ripening in California. 15-16% TSS at yellow-green stage.

TIGERS TOOTH. Apparently a Silverhill under another name. So far, side by side growing shows these two to be identical. This was confirmed by Dr. Paul Lyrene in

Florida. 18-23% TSS yellow-green.

YU. One of the original, promising introductions by Frank Meyer. Fruit is claimed to process well and to be one of the best flavored introductions. Pictures of the fruit show it also to be elongated. In Chinese, "YU" means "tooth". Could it be that YU, SILVERHILL, and TIGERS TOOTH are one and the same?

GA 866. One of the selections from a program at the Chico Station. Fruited last season with an elongated shape. Outstandingly sweet with a 45-46% TSS! Very promising.

GI 1183. From the program at Chico. No fruit yet. Scions available soon.

GI 7-62. See GI 1183

"SUGAR CANE". Small to medium size fruit. Fruit is round to somewhat elongated. Extremely sweet fruit but on a very spiny plant. The fruit is worth the spines. Plant material obtained from the Chico Station, but not the Paul Thompson CHICO.

"FLORIDA CHICO". An unnamed variety from the Chico Station which was evaluated at Gainsville, Florida. Results under their conditions were not particularly favorable.

ADMIRAL WILKES. From the Capitol Grounds in Washington, D.C. This plant is one of the progeny from the Admiral Wilkes Expedition to the South Seas in 1842.

SWEET-MEATY. A seedling which produced round, meaty fruit. Very late ripening. Both thorns at each node are large fish hooks! Indian friends really feel this is one of the best to their liking.

SWEET SEEDLING. A small but sweet-fruited seedling. This was the first sweet fruit from a seedling that I found. However, newly located varieties may show more promise. Plant will be saved.

TEXAS TART. A high acid (tart) jujube. From the campus of Texas Tech. University, Lubbock.

LUBBOCK #2. Also from Lubbock, Texas.

PEKA. Collected from Meningers Clinic in Topeka, Kansas.

EDHEGARD. From plant material collected in Alabama.

TSAO. From Pennsylvania. Fruit is pointed at both ends. Tsao is the Chinese name for jujube (actually "date").

FITZGERALD #1. From Georgia.

Material also collected:

5 Varieties from Redlands, California. These were just collected from the old homestead of Dr. Berry who obtained early plant material from the Dept of Agriculture. Most certainly 2 of these are the LI and the LANG.

12-15 Varieties from the Chico planting which still remained. See articles in the *Fruit Gardener* Vol.23 No.2 April 1991 or *Pomona* Vol 24 No.1

Varieties under 2 year quarantine from China. 3 Northern and 1 Southern.

1 Variety from Abbeville, Louisiana. An elongated fruit whose plant was traced back 30 years before the trail ran out.

Notes

SWOBODA, LEON BURKE, GEANT, and BELLFLOWER are named plants, but all may just be the LI. Scionwood available through June 1991. Most all varieties will have at least limited scionwood available from January 1992.

Roger and Shirley Meyer, 16531 Mt Shelly, Fountain Valley, CA 92708, USA

From the Jujube Action Group

Some of Roger Meyer's best Jujube varieties have been imported into Western Australia by Phillip Ciminata, and Ian Fox of our Jujube Action Group, and are currently in quarantine in South Perth.

To assist this action, the WANATCA Executive have made a grant of $200.00 to the importers towards the costs involved, in return for members receiving plant material, information, or other return once these superior jujubes have been multiplied up. We hope that this will give a real boost to the future of Jujube here.

[West Australian/ March 8 1993]

Nuts could cut cholesterol, heart attacks

Nuts, and walnuts in particular, appear to lower cholesterol, according to a study published in the New England Journal of Medicine.

Just how is a matter of dispute. But researchers have two lines of evidence that nuts are good for the heart.

"Including walnuts in the everyday diet may be an easy way to lower the risk of heart disease by improving the cholesterol profile," said Dr Joan Sabate of Loma Linda University, who directed the latest study. It was funded by the California Walnut Commission.

The story began with a study of 31,208 Seventh Day Adventists, who generally avoid smoking and drinking. Researchers questioned them about their consumption of 65 different foods. To researchers' surprise, those who ate nuts at least five times a week had only half the risk of fatal heart attacks as those who had nuts less than once a week.

That discovery was published last summer in the Archives of Internal Medicine, along with a sceptical editorial by Dr William Castelli director of the landmark Framingham Heart Study. "Has the magic bullet arrived?" Dr Castelli wrote. "Is it the humble nut?" Dr Castelli clearly didn't think so then. But the latest evidence, from the same team, strengthens the case and even Dr Castelli is becoming a believer.

This time, the researchers put 18 healthy volunteers on two carefully controlled diets for two months. One was a nut-free version of a standard low-cholesterol diet. The other was nutritionally similar, except 20 per cent of calories came from walnuts.

On the no-nuts diet, the volunteers' cholesterol levels fell 6 per cent. When they switched to the walnut diet, their cholesterol declined another 12 per cent. Everyone's cholesterol dropped while eating nuts.

"I think they are really on to something," Dr Castelli said. "It looks like folks on nuts will do better than everyone else."

Why, though, is unclear. The total amount of fat in both diets was the same, but its composition differed. ¥

Posters from the Royal Show

The WANATCA Display from the 1992 Royal Show included a number of photos and posters. Some are reproduced here. Criticisms of the text should be directed to David Noël.

Exporting Nuts from Western Australia

• Two nut species, pecan and macadamia, are believed to have major export potential for WA.

• Possible returns from each are in the billion-dollar range, far exceeding those from conventional, perishable horticultural crops such as apples.

• Each year, California produces almonds valued at more than WA's iron ore production.

• Macadamias and pecans are agronomically suited to large areas of WA.

• Currently, Australia grows much less than 1% of the world's nut production.

• These are longer-term crops, with some produce in 4-5 years, worthwhile production in 9-10 years, and bearing lifetimes in excess of 100 years.

Macadamias

• Macadamias are Australian native trees, related to Banksias. They produce one of the best nuts in the world.

• Macadamia trees originated in subtropical forests of NSW and Queensland. Once established they are quite hardy, but windbreaks and planned mulching and irrigation are important in commercial orchards.

• With adequate water and protection, macadamias will grow anywhere in WA, but are best suited to the coastal plain from Bunbury north to Northampton.

• Selected varieties from Hawaii and Eastern Australia have performed adequately in WA, but it is anticipated that local selections, more closely suited to our different conditions, will become more important as the industry expands.

Pecans

• Pecan trees are related to walnuts. They produce a high-quality nut readily saleable on world markets.

• Pecans grow on large deciduous trees of the hickory family. The timber is valued for cabinet work and axe handles, and is used in smoking foods.

• Pecans will grow and produce right from Esperance in the south up to Carnarvon in the north, and inland wherever water supply is adequate.

• Good varieties have been tested and proven for WA, but with these long-lived trees, further variety improvement may be expected for many years to come.

• Under most conditions, pecans need summer irrigation to produce commercial crops.

Other Nuts with Potential

1. Pistachios require long hot summers and cool wet winters. They are a dry-country plant which is performing well in our wheatbelt areas. They are expected to be the third commercial nut coming on-stream in WA.

2. Cashews are ideally suited to the North of the State, as they thrive on the dry winters and monsoonal summers experienced there. Some plantings are underway. While currently lagging commercially, in the future they may eclipse all other nuts as a WA export earner.

3. Bunyas are an Australian native conifer, producing starchy nuts like big chestnuts in a huge cones weighing up to 20 kg. They grow well in wetter areas of the Southwest. The timber of the tree is of high quality, with tall straight stems. Although commercial production and variety selection has not yet begun, bunyas may have good long-term prospects.

Four Outstanding New Fruits and Nuts for WA

• Hundreds of different nut species and thousands of different fruits could be grown in WA. This display mentions four of particular interest.

• None of these species are well-known in Australia, and none have been sufficiently researched in WA for commercial purposes. But each has outstanding potential in particular areas.

• Planting material is difficult to obtain, and improved varieties have generally not yet been developed. But the WA Nut & Tree Crop Association has made a start on this long-term research.

• Over the last 40 years, New Zealand has introduced a succession of new crops, with kiwifruit, pepino, kiwano, feijoa, and fujifruit. We can do better — if we try.

1. Red Pitaya

• The Red Pitaya (*Hylocereus triangularis*) is the fruit of a climbing cactus originating from Columbia and drier Andes regions of South America.

• The fruit is large, brilliantly coloured and completely spineless, with aromatic red flesh and tiny edible black seeds. Keeping quality is good.

• Red Pitaya is a hardy, drought-resistant plant which should be suited to warmer areas of inland and coastal WA.

• Best agronomic conditions are not yet known, as local trials have only just begun.

• Red Pitaya can be propagated from cuttings and from seed.

2. Tocte

• Tocte or Tropical Black Walnut (*Juglans neotropica*) comes from Ecuador and the Andes mountains of South America.

• It is a true walnut, but is fast-growing and almost evergreen under Perth conditions. The leaves may be over a metre in size.

• Nuts are of good flavour, used for confectionary in Ecuador, but are thick-shelled as no thin-shelled varieties have ever been selected.

• The black walnut timber is of high quality, one of the most expensive timbers in world trade.

• Tocte may be high-grafted over to normal walnut, producing standard walnut crops and a saleable black walnut log butt at the end of the tree life.

• Trees have fruited in Perth 8 years from seed.

3. Jujube

• Jujube or Chinese Date (*Zizyphus jujuba*) is a native of China and other areas of inland Asia.

• An extremely tough, heat- and drought-resistant species, Jujube has been recommended for use around wheatbelt paddocks and in agroforestry situations in dryer parts of WA.

• Jujube produces a crisp, apple-like fruit which can be eaten fresh. The fruit also dries very well, changing to a date-like appearance and flavour, to give the Chinese Date of commerce.

• Large-fruited, improved varieties of jujube have been selected overseas, but are not yet readily avaialble locally.

• Jujube is propagated by grafting selected varieties onto seedling rootstock. Trials are under way to produce tissue-culture plants.

4. Asimina

• Asimina (*Asimina triloba*) is a cold-climate relative of the custard apple which is native to the United States.

• A good Asimina fruit may weigh up to 500 gm. The flesh is sweet, delicious and melting.

• As a 'new' fruit, Asimina is exceptional in that it issuited to very cold conditions. Over much of its native range, snow falls every winter.

• Asimina should be suited to the inland South-west, around Manjimup and Donnybrook. The trees are said to grow best as understorey plants in lighter soils.

• Varieties have been selected overseas, but are not yet available in Australia.

[Post/ March 16 1993; Countryman/ March 18 1993]

From wheat to water chestnuts

In their search to find an easier way to earn a living, a farming family has uncovered an unusual, lucrative market. Kimberley and Kerry Ward believe they are the first in WA to grow Chinese water chestnuts on a commercial scale.

Several years ago, the Wards made the tough decision to sell their Lake Grace farm. Wheat and wool prices had plummeted, and farmers were buying bankrupt neighbours' properties.

The rural population was shrinking and morale was low. The Wards bought a smaller property in Harvey. They could sell fruit from its orchard on the roadside and lease land to nearby dairy farmers.

But the property also had a fresh water creek flowing through it all year, which gave the Wards another idea. Kerry did her research and discovered Chinese water chestnuts were in demand. They were mostly imported, sold in tins, and expensive. Fresh ones were rare, and even more expensive.

Nine months ago, Kimberley dug a 20 sq.m pond beside the creek and planted 20 Chinese water chestnut corms. In a few months, Kimberley estimates the harvest will earn about $10,000.

"If we sold the corms as a vegetable, they would be worth about $2000," he said. "But if we pot them and sell them as plants, it should bring in about $10,000. Hopefully we can get enough farmers growing them to set up a small cannery.

Kim & Kerry Ward in their water chestnut paddy field. Photo: Mal Fairclough

"The market for Chinese water chestnuts is pretty big. The Asian population in Perth is increasing and they love them."

Chinese chestnuts look a lot like big onion plants growing out of water — there is little to see from above. But beneath the mud the plants send out corms. The only outward sign that something is happening is when slender

hollow stems begin to push to the surface, filling the pond.

The corms have an appealing, crisp, nutty flavour, a cross between a coconut and an apple. They form the basis of many Chinese dishes, and are currently imported in cans. But once processed in this way, the chestnuts lose most of their medicinal properties long recognised in Chinese culture.

Like most new industries, the best profits are to be made from breeding or growing plants for sale to other entrepreneurs, and this is where the Wards see their biggest market.

Figures show that one square metre of chestnuts will conservatively produce two to three kilograms of commercially desirable product at a price of $9/kg if sold as vegetables.

But if they sell them to home growers as potted plants for about $5 each, their 20 square metre pond will yield $10,000 a year.

Chestnut corms are planted in September into a mixture of sand and organic material in ponds or rice paddy-type fields which are flooded with 20 centimetres of water.

The growing season extends until April or May, when the corms are harvested with a spade or sharp digging tool and the reed-like stems of the plant are either used to make baskets or hats, or are burnt.

— Kellene Driscoll

West Australian Nut & Tree Crop Association (Inc)

PO Box 565 Subiaco WA 6008 Australia

CALENDAR OF FORTHCOMING EVENTS

1993

May 19	Wed	*General Meeting (Peter Bindon — Stalking the Wild WA Asparagus: Native Plant Foods of WA)
May 30	Sun	WANATCA Field Day, Toodyay
Jul 6	Tue	Executive Committee Meeting
Aug 1	Sun	§ Vision Seminar, Landsdale : "Growing Fruit & Nut Trees"
Aug 18	Wed	*General Meeting
Sep 5	Sun	WANATCA Budding & Grafting Workshop (Demonstrator — Lance Morgan)
Oct 2-9		Perth Royal Show
Oct 19	Tue	Executive Committee Meeting
Nov 17	Wed	*Annual General Meeting

*General Meetings are held starting at 7.30pm. Venue: Greening WA, 1118 Hay Street, West Perth. These meetings usually include a current magazine display.
§ For contact details refer to the Tree Crops Centre.

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