Quandong

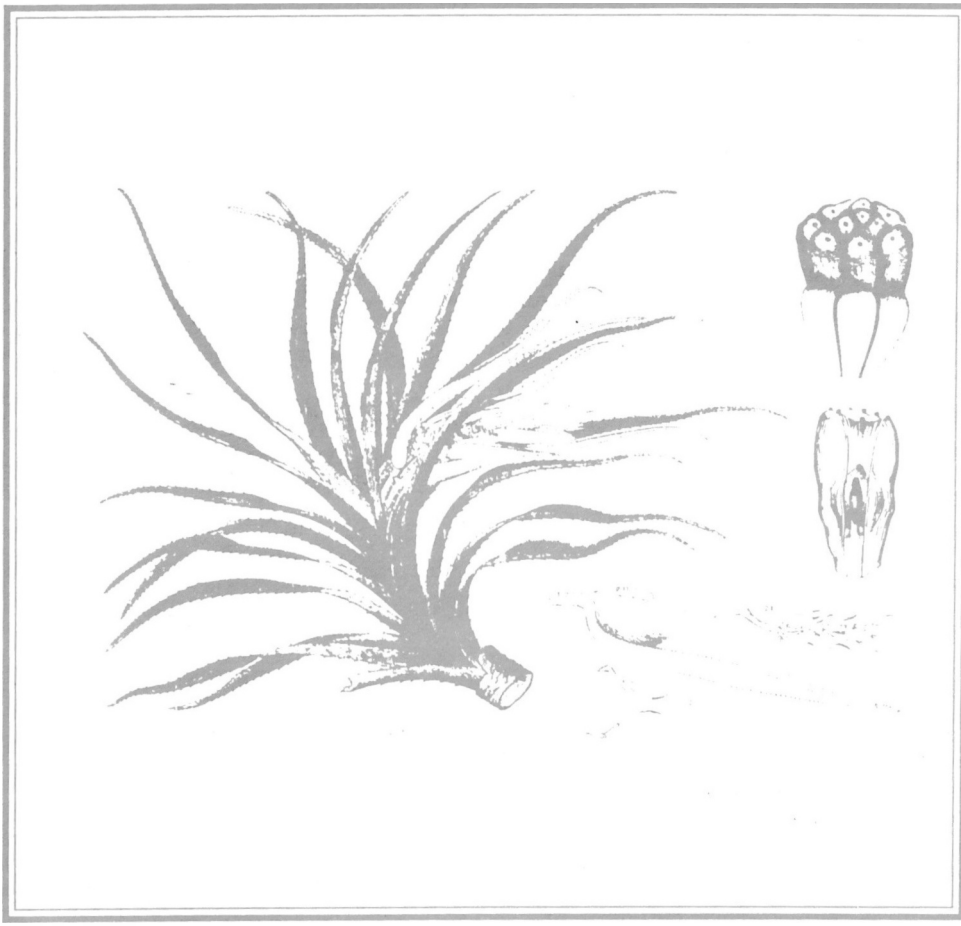
magazine of the

West Australian Nut & Tree Crop Association (Inc)

First Quarter 1992

Vol 18 No 1 • ISSN 0312-8989 • $2.50

Registered by Australia Post : Publication WBH0868



The FARA SCREWPINE (*Pandanus tectorius)* (See: About the Cover, p.2)

Next Meeting:

For WANATCA's next General Meeting we have been fortunate in arranging as speaker Baard Maehle. Baard will be talking on

AERIAL DATA SENSING AND WATER MAPPING IN TREE CROPS

This fascinating subject is allied to that of information gathering with the Landsat Earth Satellites. However, instead of using a satellite, a much greater resolution is obtained over a smaller area by overflying it with a sensor-equipped aircraft.

One general agricultural application, using heat sensors, is that of Water Mapping. The techniques developed allow the presence and movement of water under the ground to be mapped to depths as much as 6 metres. Resolution of detail on the ground can be as little as 15 cm.

The results can be used for siting trees to take best advantage of the natural water regime, as well as for sensible siting of dams and soaks. More recently developed cheaper techniques, based on CCD video cameras and special filters, allow determination of tree stress in standing orchards — individual trees which are transpiring normally, or are suffering from disease or lack of water, can be readily picked out.

Baard became involved with the original techniques in his native Norway, where the sensing was used for power-line studies. Since settling in Australia in 1986, he has seen great new developments in the equipment and techniques used. He is now the Principal of the company ImageCraft (09-313 1924), offering commercial data acquisition services to all types of user.

Don't miss this meeting! As usual, visitors are very welcome and admission is free.

Time: Wednesday February 19, 7:30 pm

Place: Naturalists Hall, 63 Meriwa Street, Nedlands

WANATCA Field Day — Sunday March 22, 1992

Our first 1992 Field Day will visit two properties in the Perth/Hills area.

The first is the RA & D Doubikin property at 89 Canning Mills Road, Kelmscott. This outstanding property has 100-year old mango trees, still bearing heavily (tonnes each year), two types of black walnut, and other nut trees.

The second is the Mazzardi Bros property in Pickering Brook, where a Nashi planting is the highlight.

Current subscribers should receive a detailed leaflet with this issue of Quandong. For late details, contact David Noel on 385 3400 or Neville Shorter on 450 5606.

We will meet at Doubikin's at 11 am. Non-members are welcome to attend this Field Day.

About the Cover . . .

Our cover picture shows *Pandanus tectorius*, one of the big family of screwpines or screwpalms from South Asia, Australia, and the Pacific.

The illustration is from *Lesser known crop plants of the South Pacific*, by John Palmer.

The fruits of this and many other screwpines are edible, and some of the highland New Guinea species produce excellent nuts (karuka nuts).

A useful reference for more information is *Use of Pandanus fruit as food in Micronesia* (C.D.Miller, *Pacific Science*, 10(1), 3-16,1956).

The Red Pitaya - A real commercial goer?

A new fruit I sampled recently has left me more impressed with its commercial potential than anything else I have seen in years.

The fruit was a Red Pitaya, kindly sent to me by WANATCA member Frank Jordan of Brisbane. Its appearance and flavour was outstanding — the 670g fruit was beautifully coloured, violet/magenta and green, in an interesting pattern.

Inside was a deep red flesh with tiny black seeds, aromatic, with texture like a firm watermelon. It was excellent. I offered some to a visitor, and only later managed to drag the last bit of the fruit out of her hands!

I am convinced that this truly exotic and flavoursome fruit, growing on a plant in the cactus family known for its toughness and lack of problems, could be a star commercial introduction for us in Western Australia.

Some extracts from a letter from Frank, and the article mentioned in his letter, are reproduced below.

— David Noël

Dear David,

I've managed to find the article that got me interested in pitaya many years ago. My interest was rekindled when my plant produced a fruit two years ago.

Enclosed in this box are cuttings from the red and yellow pitayas mentioned in the article.

The plants in the box are dehydrated and are a bit difficult to tell apart in this state. Once they fill out and start growing they are easy to tell apart. The yellow pitaya is rounder, greyer, and slower growing.

They are not very fussy. They can grow in shade or full sun. They need support, eg a wall or post. They grow faster if fertilized and watered.

I am still working out how to get them to fruit. The clump seems to need to reach a certain size before it flowers.

My yellow pitaya has flowered for the first time, this year, a few nights ago. It may not produce any fruit though.

— ***Frank Jordan***, PO Box 5167, West End, Qld 4101. Phone 07-844 6677.

[Rare Fruit Council of Australia Newsletter/ July 1983]

PITAYA

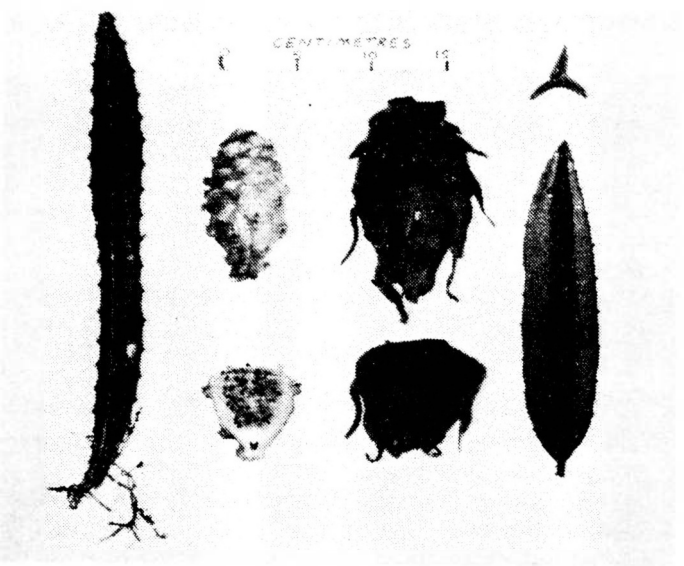
For those wanting something different in their fruit orchard, these little known members of the Cactaceae family might be what you're looking for.

They require an old tree stump or a trellis, as the pitaya has a self supporting climbing habit. It is a vigorous growing plant capable of obtaining nourishment from wherever the active aerial root system adheres itself. The fleshy deep green stems will branch anywhere along the main stem, these branches or joints of all sizes often reaching 5 metres. The stems are triangular, 2 - 10 cm in diameter, more or less wavy, with the rounded edges having short ash coloured spines.

The two species imported to North Queensland from Colombia are, *Hylocereus oncampensis*, Red Pitaya, and *Cereus*

triangularis, Yellow Pitaya. Pitaya fruits are globose to oval, 5 - 15 cm long, with spongy pulp containing numerous small black seeds.

The yellow pitaya is the smaller of the two fruit, and is distinct in that it is covered with many small clusters of spines, which are easily brushed off the fully ripe fruit. The red pitaya has no spines, but instead large leaf like scales on its surface.



Pitaya plants and fruits. Left: Yellow Pitaya. Right: Red Pitaya

Both pitayas have a delicious juicy sweet flesh which separates easily from the skin. Red pitaya has a staining red to purple flesh, and yellow pitaya has a translucent white flesh.

The fragrant red pulp of *H. oncampensis* is not appealing to all, whilst *C. triangularis* has a flavour readily acceptable to European tastes.

Pitayas produce large showy nocturnal flowers 25 - 30 cm long. These strongly scented trumpet like flowers are freely produced in late summer with some flowering occurring throughout the year. These fruit mature in 4 - 8 weeks from anthesis.

Pitayas are naturally hardy, growing in arid or fertile areas, the latter producing a larger fruit and crop size. They are easily propagated by stem cuttings or seeds, both of which take about 2 - 4 years to produce fruit.

Many varieties of pitayas exist, one of which has the size and shape of *H. oncampensis* and the appealing translucent white flesh of *C. triangularis*, which raises the need for selecting and cloning the best varieties.

Pitayas are not tropical climate requiring, and do well in sub tropical and temperate climates to 0°C without any major damage. No yield figures have been documented for pitaya, however existing North Queensland plantings have produced 20 Kg of fruit in a season, on young plants.

The fruit would be a good market place attraction, having good ornamental qualities and a delicious juicy flavour. They are in season when most tropical fruits are finished, and under refrigeration store well.

A lot of research is yet to be done on Pitaya, however initial response is promising for commercial prospects.

— Geoff Parker

[Horticulture Today/ December 1991]

Pecans on Gingin property pay off for former city engineer

Nuts have become a profitable hobby for former City of Perth city engineer Amos Machlin.

His 50 acre Gingin property is covered in flourishing pecan, pistachio and macadamia trees, and he boasts the only nut processing plant in WA.

It was mid-1970 when Mr Machlin decided he wanted to make an early retirement, invest in a small property and establish a horticultural crop.

With a professed affinity for the land, but no knowledge of horticulture, he considered his options.

Pecans . . . a lucrative investment

"I wanted to establish a crop that I could develop over the weekends, and I wanted to be stimulated both mentally and physically," he said.

"Market gardening was too back-breaking, citrus and stonefruit orchards too labour intensive,and I had no knowledge of vineyards.

"Furthermore, it wasn't viable for me to get involved with perishable produce, as I couldn't tend to the crop on a daily basis."

After extensive research, Mr Machlin discovered that about 90 per cent of the nuts on sale in Australia were imported.

He also read that the world-wide consumption of nuts increases annually, and returns on nuts can be quite lucrative.

Amos Machlin with his imported nut cracking and processing plant.

In 1975 he toured several nut crops in the USA, and became particularly interested in pecans. On his return to Perth, he began searching for suitable land.

"I didn't want to drive longer than one hour away from Perth, and the Bindoon and Gingin region was suited to pecans, pistachios and macadamias. The climate in the region wasn't cool enough to grow walnuts, and birds would have posed a threat to an almond crop.

"The Agriculture Department couldn't supply me any information at the time, so I joined the Texas Pecan Growers' Association."

The association provided Mr Machlin with valuable technical information.

"I bought my Gingin property in 1977 because it was essential that I had a well-drained soil, a long, hot dry summer and a fairly cold winter."

Mr Machlin and his family grafted the pecan trees themselves, but during a trip to the USA in 1980 (when he delivered a paper on the potential of growing pecans in Australia), he discovered they had used the wrong planting pattern.

Once the crop was ripped out, re-planted and started to thrive, Mr Machlin established contact with local wholesalers.

"I think the in-shell nut market is fairly limited, and because I had a good product I was determined not to be faced with a situation where I couldn't sell my produce. So, in 1986 I imported a nut cracking and processing plant from San Antonio in Texas."

This year, Mr Machlin's trees should yield about 15 tonne of pecans, but he estimated that once the trees reached full production, they should yield 25 tonne of nuts.

He presently has six different varieties of pecans, three different pistachios and four different macadamia varieties.

"There are about 10 other pecan growers

in the state, and they are mainly located around Harvey, Donnybrook, and Bridgetown.

"It is necessary to have a high capital investment to get started in nuts, and a certain sized orchard is also necessary to justify the outlay. Practically everything on my properly is mechanised and I think that's important. A tree shaking machine, for example, is a necessary investment.

"At present, I only need to work about three days a week, and help is only required during the six week harvesting period. Weed control is the worst problem."

Pecans can grow to 150 ft tall and and live to between 200 and 300 years old.

It takes about five years until they start producing nuts and a further six or seven years until they reach maturity.

— Tracy Taggart

[Amos is the leader of WANATCA's Pecan Action Group]

Gardens, Orchards and Useful Bamboos

Although bamboos have a wide range of appeal and a long history as garden subjects they are still little understood by western gardeners.

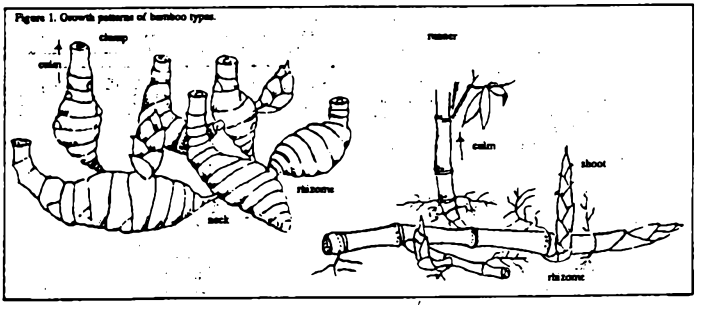
Since at least the time of the first Emperor of the Chinese Qin Dynasty (259 to 210 BC), who had gardens built in which was planted 'white bamboo', Chinese horticulturists have included bamboos in their designs, one bamboo being considered necessary in every garden.

Gently swaying feathery foliage provides a background effect well appreciated by Oriental gardeners and a scene not easily duplicated using other plant groups. When garden space is available, clumping bamboos should be scattered sparsely through the view, or planted in small groups, avoiding any temptation to spread them evenly throughout the landscape.

Groves of running bamboos can be grown thickly for screens or severely thinned to allow glimpses of other parts of the garden. Smaller gardens require the use of just a few culms to provide vertical accents or silhouettes against plain walls. Windbreaks, visual screening, noise screening and background screens against which to display other plants can be made using running bamboos as long as some way to check their vigorous growth is included in the garden design.

Some bamboos are unsurpassed as living fences, especially along driveways, river banks and earth walls, forming a dense barrier which prevents animal access and slows wind currents without causing severe turbulence.

Bamboos suitable for stock-proof fencing



include a few with thorns and short scratchy branches. For this task you could try: *Thyrsostachys siamensis, Bambusa bambos* or *Dendrocalamus strictus.*

For wind-breaks and screening there are two types of suitable plants, depending on whether you can easily control the rhizome growth of the more vigorous species. *Phyllostachys nigra, P. edulis* (syn. *P. pubescens*), *P. aurea*, and *Pseudosasa japonica, Pleioblastus hindsii*, are suitable running types and *Bambusa multiplex, B. multiplex* "Silverstripe" and *B. oldhami* are non-running varieties which can be used as screening plants without confining the root systems.

Along ditches and stream edges, bamboos provide bank stabilisation and shade. The bamboo benefits from the good drainage provided by the steep banks and also profits from the ready availability of water.

Bamboo roots and rhizomes do not grow into running water which would restrict the flow; in fact the shade they provide reduces the growth of aquatic weeds and consequent silting up. Ditches and waterways prevent running bamboos from spreading and are useful barriers in that regard.

Running bamboos, with their widely spreading tough rhizomes, can be used to control gully erosion and will stabilise slips and batters. They are most effective on steep slopes and where there is a potential for appreciable soil movement. Besides the

Figure 2. Bamboo barriers.

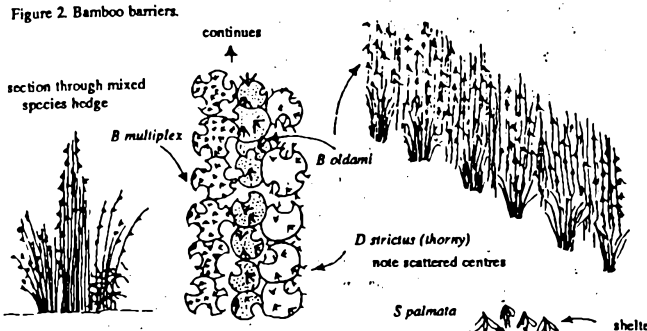
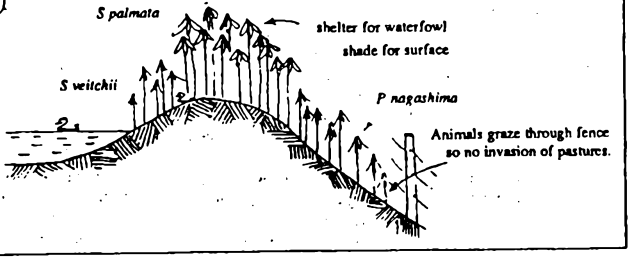


Figure 3. Waterside plantings of bamboo.



mechanical strength of the rhizomes, the high transpiration rates of bamboo leaves help dry out the soil, and the accumulation of shed foliage forms a mulch that further protects the soil surface.

Pleioblastus hindsii has proven effective when planted on the contour to stabilise slips; its roots were found to penetrate to 1.5 m deep. *Pseudosasa japonica, Phyllostachys aurea* and *P. nigra* are also effective in erosion control plantings.

Many bamboos have edible shoots which are prepared by boiling in two changes of sweetened water, or for a very few species, peeled and eaten raw as a salad vegetable. The genera *Dendrocalamus* and *Phyllostachys* provide most of the large shoots we eat in Oriental meals.

Recently the Western Australian Department of Agriculture has published a note on growing bamboo shoots for use as vegetables which should provide all the information necessary for someone starting out on this enterprise.

An unlikely source of food is provided by bamboo seed, which is similar to the seeds of other grassy plants, but taking the seemingly erratic flowering of bamboos into account, this is not a viable source of food except where large wild populations of plants of suitable age exist.

An exception may be *Melocanna baccifera* which is best known for its enormous edible seeds, each attaining the size of a small pear. Sadly the best Australian example of this bamboo which flowered recently was not allowed to develop its seeds to their full potential, as inquisitive visitors to the gardens where it grows broke off most seeds before they reached maturity.

Just as with trees, bamboo yields the best poles from inside the closed canopy of a grove. Culms from near the edges are curved, more tapered and have greater numbers of branches, consequently they are of less use.

For good yields, a rule of thumb is to have the ground area of any plantation reflect the height of the variety, i.e. a grove of *Phyllostachys aurea* which will reach some 10m in height should cover a space 10m x 15m, or a grove of *P. bambusoides* which grows to 25m should be planted in an area 20m x 45m.

Yearly harvesting of culms, older than four years, allows room for new growth to develop and yields top quality poles. New shoots grow quickly and any surplus shoots should be harvested for eating.

Culms harvested before they are fully mature tend to crack while drying and are more prone to insect attack because of their relatively higher starch levels compared to older culms. This is worth remembering

whether you are harvesting small varieties for tomato stakes, larger types for pruning saw handles and trellis building or jungle giants for props in the orchard.

The above ground biomass (green) in a plantation of running bamboo has been calculated for *Phyllostachys edulis* in Japan, as 50.8 tonne/ha, consisting of 60% culms, 10% branches, 23% foliage and 7% sheaths. The weight for a clumping species, *Bambusa bambos*, in India is approximately 89.4 tonne/ha and for *Thyrsostachys siamensis* in Thailand, between 50.8 and 101.6 tonne/ha.

Depending on the species, environmental conditions, management practices, and growth habits, the average number of air-dry culms per tonne falls between 30 and 700. Annual yields of various species in tonnes per hectare falls between 3 and 14.2.

Clearly there is great potential for pulping, for light timber, for decorative panelling for craftworks, and numerous other applications within this plant group.

— ***Peter Bindon***, Australian Bamboo Network, PO Box 174, Fremantle WA 6160. Phone 09-339 6481.

Big range of fruits available now

I was impressed with the big range of uncommon fruit available from a local fruit store I visited on January 23. As well as all the usual fruits (mango, avocado, 6 varieties of plum), I particularly noticed the following ones. [Origin in brackets if known].

Starfruit (carambola)	1.99ea [Ord]
Rambutan	14.95 kg [Queensland]
Pepino	1.00 ea
Fresh dates	14.90 kg [California]
Lychee	14.95 kg
Fuji fruit	1.75 ea [California]
Lime	9.99 kg
Kiwano	99c ea
Casimiroa	99c ea [Perth]
Papaya (pawpaw)	3.50 kg [Carnarvon]
Red papaya	4.99 kg [Carnarvon]
Champagne melon	3.50 ea
Blueberries	3.99 /200g [Perth]
Raspberries	5.95 /200g [Tasmania]

In addition, the store had tiny 'yellow pear' and 'cherry' tomatoes at $1.50 per 250g punnet, grown near Perth. There were the usual honeydew-, rock-, and water-melons.

Perth must be one of the few places in the world which can describe goods from the Ord River area in WA, 4000 km away, as 'Local', as some of these fruits were marked. This was the first time I had seen fuji fruit (non-astringent persimmon) from California in a local store. They were beginning to break down — our season for local production begins soon.

It is worth pointing out that many of these fruits can be successfully grown locally from seeds of these fruits, in fact they represent a very cheap and convenient seed source. And you can enjoy the fruit as well first!

— ***David Noël***

Chestnut Varieties in Western Australia

The chestnut cultivars that have been introduced into Australia from many parts of Europe, and maybe other parts of the world, have been planted in the most suitable growing areas all over the southern states and mountain regions. They have adapted quite well to Australian conditions.

We refer to them as Spanish Chestnuts (*Castanea sativa*). Out of this group, a large number of selections have been collected. Some of them have proven to be of reasonably good quality. A few "distinct" types have been noted.

Chestnuts prefer well-drained land. The root rot *Phytophthora cambivora* occurs mainly in the presence of wet conditions, caused by lack of drainage and the very nature of clayey type soils.

Do not irrigate with surface water (dam, creek or river). Bore water is suitable, otherwise chlorination may be a good proposition. Don't use drip irrigation, small sprinklers are better.

We have, at the moment, six cultivars available, they are listed in order of ripening.

BROWN EARLY

The first nuts to drop, reddish tinted skin, with some striping, big nut (32 graded nuts = 1 kg). A reasonable cropper, more demanding of good soil, and especially atmospheric moisture. This variety will only be successful in areas with special conditions (high humidity, protection from dry winds). Fruit starts to drop in mid-March .

MORENA

Very dark-coloured nut, almost black, heavy cropper. A vigorously growing tree but an early bearer. This variety will produce regularly every year, but as with the Brown Early, needs good conditions (35 graded nuts = 1 kg). Not a good chestnut for roasting, ripens a few days after the Brown Early.

FLAT MID SEASON

Flat shaped nuts, medium in size, usually three nuts in each burr. The tree tends to overproduce, light pruning may help to overcome this problem. Ripens after the first week in April. A good roasting variety.

MANJIMUP MAHOGANY

By far the most beautiful looking fruit, dark shining skin with brown stripes,

beautifully shaped with a small base. The nuts begin to appear around the middle of April and in most cases they fall free from their burr, thus making harvest easy. This variety belongs to the group of marrons, the highest quality type of chestnut. The largest of all the nuts available at the present. Not a heavy cropper.

NEIL'S SPECIAL

Very similar to Mahogany, again a free falling fruit, reddish husk with pronounced stripes, nut generally single. Tree is vigorous, with dark coloured bark on main trunk and branches. Not very many trees of this variety have been planted, it is a new variety. It ripens at the same time as Manjimup Mahogany.

AUTUMN BOUNTY

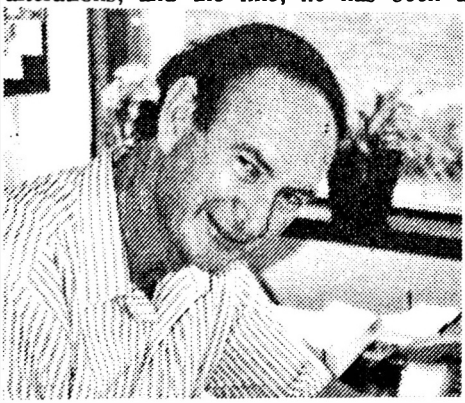
This variety begins to fall at the end of April and continues well into May. Large fruit with typical chestnut colour, light-reddish with few stripes and a small base. This variety is the most productive of all those listed. A good keeper, can be stored under refrigeration for up to three months in a sealed container. Excellent variety; recommended.

(From the 1991 catalogue of Olea Nurseries, RMB 44, West Manjimup WA 6258.)

Kevin Whiteley retires from the Aggie

Over all the years of existence of WANATCA, and before that during its previous form as the WA Nutgrowers Society, the person we have relied on more than any other in dealings with the WA Department of Agriculture has been — Kevin Whitely.

Always willing to listen and help, Kevin has been much appreciated by all who have had contact with him. Through cutbacks, changes in management style, policy alterations, and the like, he has been a



constant support to the Association and its members.

Kevin is on the WANATCA books as member no. 116, and that goes back a long way. Now Kevin has retired from the Department. He will be missed!

The good news is that Kevin hopes to take a more active part in the affairs of the Association, now that the tiresome need to attend the office each day is past. We truly look forward to this.

No longer 'C/o Ag Dept, South Perth', Kevin can be contacted at 72 Parramatta Road, Doubleview 6018. Phone 446 3089, but do let him have a good lie-in each day!

— David Noël

[Horticulture Today/ December 1991]

Early harvest grape method developed

A method of growing grapes that can be harvested at least three weeks earlier has been developed by the Department of Agriculture's Swan Research Station.

Alex Sas with a bunch of grapes grown at the research station

The grapes are grown in a half hectare greenhouse in Upper Swan. Viticulture research officer Alex Sas is responsible for the project.

He is aided by technical officer Colin Gordon. The research team is experimenting with Flame Seedless and Red Globe varieties.

The greenhouse gives the grower an advantage over the normal field grapes in that it increases the daytime temperature.

Temperature increase

The increase in temperature shortens the time taken from the bud bursting stage to the flowering stage of the grapes.

Mr Sas said the greenhouse did not increase the actual size of the berry. He attributed the increase in size of the grapes to improved management techniques.

"The greenhouse simply speeds up the maturation of the vine and its berries," said Mr Sas.

"The greenhouse process allows growers in the southern half of the state to get their produce onto the market at roughly the same time as their Carnarvon competitors.

"Carnarvon growers have an advantage in growing grapes because the outside temperature is equivalent to the greenhouse temperature.

"The quality of greenhouse grapes are better than field grapes because they are protected from climatic extremes, such as wind and hail, and other problems like birds".

Mr Sas said the effect of the greenhouse is aided by a chemical, hydrogen cyanimide, which breaks dormancy and makes the buds burst 28 to 38 days after application.

He said this chemical causes all the buds to burst at the same time and allows them to be harvested and sold simultaneously. "This is an effect not present in field-grown grapes."

Mr Sas said the research team had discovered problems with the greenhouse process. The most notable problem is splitting caused by a water imbalance in the grape.

"The bunch seems to be in good condition at first glance, but on closer inspection the grapes show signs of splitting. This is caused by the rapid growth of the grapes.

Irrigation

The research team are trying to rectify the problem by experimenting with irrigation. There are three greenhouses in the Swan Valley, including the experimental greenhouse based at the research station.

The biggest greenhouse used for grape production is located at Bindoon and there are a total of six greenhouses in Western Australia.

Mr Sas said there were some disadvantages with greenhouse grapes that were not experienced in the field. "Large amounts of plastic used for the construction of the greenhouse turned out to be rather costly.

"Other disadvantages included the need for fertilisers to be soaked into the ground thoroughly so as to avoid an accumulation of salt in the soil. In order to do this, sprinklers had to be used in place of drip irrigation."

The greenhouse cost about $25 per square metre to construct. To minimise some of the costs, some growers are waiting for their vines to become established before coverng them with greenhouses.

The aim of the experiment is not only to increase the size of the berries and speed up the growth process, but also to determine the optimum number of bunches per vine, also known as the ideal crop load.

[The Alex Sas mentioned in the article is the son of WANATCA Life Member Alex Sas]

Seed Exchange Offer — Puerto Rico

Our WANATCA member in Puerto Rico, Gerardo García-Ramis, has an excellent range of fruit and nut seeds which he offers on exchange for seeds from elsewhere. This list is reproduced here. To obtain seed, write to Gerardo at the address below, stating what seeds you would like and what you can offer in return.

Seeds can usually be imported into Australia without problems (a few, eg avocado, are barred because of seed-borne disease problems). As long as the package is clearly marked and the seeds are clean and identified to at least the genus level (so no research is needed), the package will usually go through quarantine inspection without any charge (this does not apply to whole fruits or plant parts such as budwood).

SEED EXCHANGE LIST:

Scientific name	Family	Spanish/English common name
Adenanthera pavonina	Leguminosae	peronía chata, jumbie bead
Annona glabra	Annonaceae	cayur, pond apple
Annona muricata	Annonaceae	guanábana, soursop
Armona reticulata	Annonaceae	corazón, bullock's heart
Ardisia humilis	Myrsinaceae	-
Artocarpus altilis	Moraceae	pana pepita, breadnut
Artocarpus heterophyllus	Moraceae	jaca, jakfruit
Antidesma bunius	Euphorbiaceae	bignay
Bauhinia violacea	Leguminosae	-
Carica papaya	Caricaeae	papaya
Cajanus cajans	Leguminosae	gandul, pigeon pea
Casuarina equisetifolia	Casuarinaceae	casuarina
Chrysobalanus icaco var. icaco var. pellocarpus	Chrysobalanac.	hicaco, cocoplum (rojos/red) (negros/black)
Chrysophyllum cainito	Sapotaceae	caimito, star apple
Citrus aurantifolia	Rutaceae	lima, West Indian lime
Citrus spp. orangelo)	Rutaceae	chironja (a native
Coccoloba uvifera	Polygonaceae	uva playera, seagrape
Couroupita guianense	Lecythidaceae	bala de cañón, cannonball tree
Crescentia cujete	Bignonaceae	higüera, calabash tree
Delonix regia poinciana	Leguminosae	flamboyán, royal
Dillenia indica	Dilleniaceae	dilenia, elephant apple
Diospyros discolor	Ebenaceae	mabolo, velvet apple
Eryngium foetidum	Umbelliferae	recao, Puerto Rican coriander

Eugenia uniflora	Myrtaceae	pitanga, Surinam cherry
Flacourtia indica	Flacourtiaceae	ramontchi, governor's plum
Carcinia hombroniana	Guttiferae	kandis
Garcinia mangostana	Guttiferae	mangostán, mangosteen
Garcinia spicata	Guttiferae	rata goraka
Garcinia tinctoria	Guttiferae	mundu
Genipa americana	Rubiaceae	jagua, genipap
Hymenaea courbaril	Leguminosae	algarrobo, W. Indian locust
Koelreuteria elegans	Sapindaceae	shrimp tree
Lecythis minor	Lecythidaceae	olla de mono, monkey pot
Malpighia punicifolia	Malpighiaceae	acerola, Barbados cherry
Mammea americana	Guttiferae	mamey, mammee apple
Manilkara sapota	Sapotaceae	níspero, sapodilla
Melicoccus bijugatus	Sapindaceae	quenepa, Spanish lime
Muntingia calabura	Eleaeocarpaceae	capulín, Panama berry
Parmentiera aculeata	Bignonaceae	guachilote
Parmentiera cereifera	Bignonaceae	árbol de cera, candle tree
Passiflora edulis var. flavicarpa	Passifloraceae	parcha, yellow passionfruit
Phyllanthus acidus	Euphorbiaceae	grosella, Otaheite gooseberry
Pithecellobium spp.	Leguminosae	
Posoqueria latifolia	Rubiaceae	jazmin de monte
Pouteria campechiana	Sapotaceae	canistel
Psidium cattleyanum var. longipes	Myrtaceae	red Cattley guava
Pterocarpus indicus	Leguminosae	terocarpo, India padauk
Ptychosperma macarthurii	Palmaceae	
Rheedia spp.	Guttiferae	[2.5-3 cm fruit, yellow, sweet, small tree]
Roystonea borincana	Palmaceae	palma real, Puerto Rican royal palm
Sabal causiarum	Palmaceae	palma de sombrero, Puerto Rican hat palm
Severinia buxifolia	Rutaceae	-
Sicana odorifera cassabanana	Cucurbitaceae	pepino angolo,
Spondias dulcis	Anacardiaceae	jobo de la India, ambarella
Spondias mombin	Anacardiaceae	jobillo, hogplum
Sterculia apetala	Sterculiaceae	anacagüita, Panama tree
Syzygium jambos	Myrtaceae	pomarrosa, rose apple
Tabebuia heterophylla	Bignonaceae	roble del país, pink pui
Tamarindus indica	Leguminosae	tamarind
Tecoma stans	Bignonaceae	-
Tectona grandis	Verbenaceae	teca, teak
Terminalia catappa	Combretaceae	almendra, tropical almond
Terminalia muelleri	Combretaceae	-
Thespesia populnea	Malvaceae	emajagüilla, cork tree
Uvaria rufa	Annonaceae	calabao

Some seeds are available only seasonally. Some others not listed are available occasionally but not on a regular basis. Please state requests/areas of interest. List accurate as of 26 June 91.

Contact: Gerardo L García-Ramis,
PO Box 1651, Canóvanas,
Puerto Rico 00729,
via USA.

New macadamia nut harvester built in WA

A new macadamia nut harvester, the Convine Harvester, has been produced in WA.

The new machine has been built by John Deere, the international agricultural machinery suppliers, under contract with the designer, Bill Convine of Dunoon, NSW. It is a production prototype, and left WA at the end of January for proving trials in the coming East Coast macadamia harvest.

The machine has impressed WANATCA members Alex Sheppard and David Noel by its apparent efficiency and lower cost compared to imported equipment.

Further details of the harvester will appear in the next issue of Quandong. Anyone with an urgent need for more details can contact Rod Tunnercliffe at John Deere on 09-362 0399.

[Australian Horticulture/ May 1991]

Quandong is a potential peach from the desert

Dr John Possingham, Horticultural Division chief of the CSIRO, says people across the semi-arid part of southern Australia, who know the quandong, appreciate it.

He says CSIRO quandong research will prove profitable through the fruit's commercial potential in pies, jams, fruit blends, casseroles, sauces and jellies.

"The question is, can varieties be developed for the pampered palate of the populace at large?"

South Australian entrepreneur, Grant Paech, is growing quandongs at Hahndorf and selling 'homemade' jam to Qantas. "If this is any indication, then the quandong has a bright future," he says.

Quandongs are small trees, two to three metres high with great variability. Farnell Hobman, South Australian Department of Agriculture's industrial crops development officer, says consistent yields of two to four kg of dried fruit have been achieved.

A germinating quandong seedling

"Australian production is about 500 kg, but it's difficult to estimate the potential size of the market. There are very few, if any, truly commercial quandong growers at this time," he says.

Prices range from $25 to $40/kg for dried fruit — the form in which it is supplied to processors and restaurants.

Hobman estimates a $50,000 gross return at $30/kg, from 833 trees a hectare. "This could only be achieved from high yielding, good quality trees."

But, the production cost for this infant industry is double the income, says Hobman.

Plantings consist of seedlings, which are variable in yield, maturity date and quality. So sequential harvesting is necessary and operations such as taking the flesh of the kernel are done by hand.

Quandong, *Santalum acuminatum*, is one native fruit which is edible but quality has precluded them from being economically significant.

The CSIRO says research to improve the quandong as an edible fruit is worthwhile because the tree can grow in poor soil, in poor rainfall and with salty water — up to 3000 microsiemens.

The quandong flesh is nutritionally valuable due to a high vitamin C content (double that of oranges for equal fresh weights) and the kernel is a rich food with 25% protein and 70% oil. Sufficient is known about quandong growing to provide information to orchardists.

CSIRO research has concentrated on devising improved methods of seed germination, vegetative propagation and grafting, developing orchard management techniques and measuring yields, fruit size,

shape, colour and nutritional content.

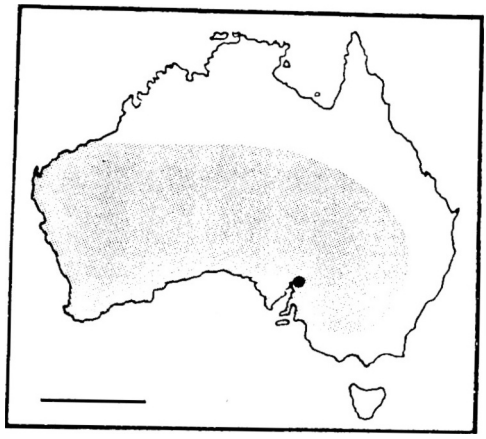
But domestication of a native wild fruit is a long term project. Dr Possingham says the CSIRO is using modern selection and propagation techniques to speed up the process for the native peach.

"The project aims to produce high yielding cultivars which are reliable, drought and salt tolerant and resistant to pests and diseases," he says.

The CSIRO is working with growers to evaluate and select the genotypes which have quality fruit and flavour. A commercial variety, when produced, would also bring lower costs, by allowing at least partial mechanisation.

Bush Tucker Supply Company owner, Vic Cherikoff, says although quandongs are mostly sold to boutique Australiana type restaurants in Melbourne and Sydney, there is potential for native bush foods in other areas.

International Tree Crops Institute executive director Geoff Wilson says quandong makes an ideal dessert flavouring for restaurant and commercial use.



Quandong distribution, the dot indicates Quorn orchard

"It also makes the quandong of special interest to the dairy food industry seeking a new flavour for ice cream, yoghurt and custard," he says.

Wilson says quandongs are likely to be an Australian success story due to commitment by CSIRO and entrepreneurial growers.

— Jim Pekin

New APACE Catalogue

The APACE Revegetation Nursery has issued a good new catalogue, *Species Lists and Locality Guide for the Swan Coastal Plain.*

The catalogue has a map showing different soil types in the area. You work out your soil type from the map, and select from the big range of mostly native species offered for that soil type.

Trees cost $0.75-2.50 each, according to pot size.

APACE are at 1 Johannah St, North Fremantle 6159. Phone 336 1262.

[Horticulture Today, October 1991]

Fontaninis start afresh after pulling orchard

Manjimup orchardist Tony Fontanini is confident that once the weather warms up, his two hectares of young passionfruit will 'take off'.

Tony planted 1000 vines in October-November last year after having to rip out 16.2 ha of productive orchard that was infected with apple scab.

He is the only commercial passionfruit grower in the region, and hopes to pick two crops a year. Anything that does not meet market standards will be dispatched for processing.

Tony said that establishment costs had been fairly high, with ground preparation and trellis construction the major expense. He has also made use of overhead irrigation from his orchard which is ideal for frost control.

When Horticulture Today visited his property, Merrylands, last month, Tony was preparing to spray the vines with foliar trace elements and fertiliser.

They had already been topdressed with MPK but needed a prolonged bout of spring sunshine to warm up the soil and give the plants a much-needed growth spurt. Shelter belts of poplars have been planted to protect the vines from the weather.

The Fontaninis were partly compensated for the loss of their apple trees, but ironically Tony had just built a brand new shed just before the orchard had to be pulled out.

This will eventually be put to good use once the young 6ha orchard becomes productive in four-five years time.

A variety of apples has been planted, including 500 Pink Lady trees. The Pink Lady was developed in Manjimup and described as 'grower friendly'.

Tony's mixed orchard operation also incorporates over 10ha of chestnut and walnut trees. He said Manjimup was an excellent region for chestnuts in particular, with good local demand.

Last year he planted a hectare of pears and persimmons and the latest project is to put in 100 guava trees next to the passionfruit.

Tony said it would be interesting to see how these tropical fruit coped in the Manjimup area. Guavas have a pale pink, sweet flesh and are delicious when stewed or made into jam.

Another sideline is to sell mineral water which flows through the property.

*— **Anne Simpson***

[The Fontaninis are long-time WANATCA members]

New Seed Catalog

The Tree Crops Centre has recently received a tremendous list of *Seeds for Nurserymen and Foresters* from the F.W. Schumacher Co. of 36 Spring Hill Rd, Sandwich, Mass. 02563-1023, USA.

This list contains quite a number of difficult-to-buy nut and fruit seeds, eg 8 types of walnut, buckthorn, russian olive, american persimmon, medlar, bayberry, and 6 nut pines.

The TCC has ordered a bulk lot of Asimina seeds for a WANATCA Seed Distribution. The Schumacher list can be consulted at the Centre.

[WA Horticulture/ December 1991]

Geraldton a potential horticulture leader

The Geraldton region has the potential to be a leader in the horticulture industry, according to Rod Cary.

Julie Firth

Mr Cary, mid-west TAFE regional co-ordinator, is so confident of the area's future that he is organising a seminar early next year to promote horticulture as a major money-spinner for the region.

"My aim with the seminar is to draw together all the different subject experts and run it during the time of year when conditions are at their most harsh so interested people are under no illusion about how tough it can get."

Mr Cary said perhaps one of the greatest advantages Geraldton had to offer was its relatively cheap land.

Rod Cary

There were also many new areas to explore to allow the dedicated to estahlish new markets just for themselves. The important thing to do was to establish niche markets.

While Geraldton could do nothing Carnarvon could not match when it came to tomato production, there was still a small window open for mango production when the Carnarvon season was finishing and Gingin was yet to start.

There was also the potential for

international markets, with a number of primary producers from the mid-west having already sent trial consignments to Indonesia.

It was possible there was potential for the region to market its produce directly to Indonesia, and part of that product could be fruit, Mr Cary said. About 10 per cent of the Indonesian population was affluent, meaning about 18 million people could afford quality fruit and vegetables.

But trial work to show the potential of the area was exceptionally important, and a venture by locals Iain Stewart and Julie Firth had the full support of Mr Cary. Both electricians by trade, they were in the process of setting up a permaculture nursery.

"If we are going to get a fruit industry going here we need good quality locally acclimatised nursery stock," Ms Firth said.

"We started the nursery because we wanted to supply our own plants. But involvement with the Nut and Tree Crop Association and a number of other industry groups now has us aiming to set up an orchard of specimen and propagation trees."

She believed there were certain fruits which had particular potential in the area.

Geraldton was chosen as one of three special sites throughout WA for the trialling of a special pomegranate cultivar from Russia. Ms Firth said a lot could be learnt from early settlers in the area. Most old housing sites in the Geraldton region had a carob, pomegranate, and pepper tree.

The trial pomegranate tree was performing very well, showing excellent fruiting quality and hardiness.

Mr Carey said that as a result of the February conference he would like a submission to be presented to the WA Department of Agriculture for the appointment of a horticulture adviser for the region.

[WANATCA members Julie and Iain's nursery is called Yilgarn Traders]

Denmark nut and fruit farm a growing venture

An interesting orchard run by Rod Macdougall at Denmark, on WA's south coast, has undergone a lot of development in recent years and has many unusual fruits.

The main crop on the orchard is oriental/hybrid chestnuts, where Rod has 500 trees producing. Rod has written with details of his trees, here is an extract.

"I've enclosed a rough list of most of my trees so you can select anything of interest. Don't hesitate to contact me with any queries, I'm no expert but can pass on my experiences — successful or otherwise!!"

Fruit trees producing well

Medlar
Avocado
Feijoa
Kiwifruit
Casimiroa (white sapote) - 5 varieties
Cherimoya - 5 vars
Persimmon - 5-6 vars
Tangelo - 2 vars
Pomelo
Mandarin - 2 vars
Orange
Toronchi (mountain pawpaw)
Cherry (sour - too hot for sweet vars)
Capulin cherry (tropical cherry)
Apples - 5-6 vars
Tamarillo - 4 vars
(2 sweet, 1 'Guava', 1 'California Peach')

Quince
Monstera deliciosa - produces masses of fruit

Nut trees producing well
Macadamia
Stone pine
Oriental chestnut
(Hazels produce poorly as weather is too warm; we have grown up to 18 different varieties).

Trees well established but not yet producing
Wampee (Clausena lansium)
Bunya
Turkish tree hazel (Corylus colurna)
Coulter pine
American persimmon (Diospyros virginiana)
Cherry guavas

Other plants
Bamboos - various
Cork oak
Tea tree (Melaleuca alternifolia)
Azolla - aquatic form
Neem
Paulownia
Tagasaste
Leucaena (3 vars)
Albizzia (3 vars)

Experimental plantings
Geoffroea decorticans (Chanar?) - S. American
Hovenia dulcis (Raisin tree) - Oriental
Coriander
Arrowroot
Tropical beans
Amaranth

Small trees available of the following:
Casimiroa - $5 ea
Oriental chestnuts - $9 ea

Please note that true chinese chestnuts are not available yet in Australia. Our are open-pollinated hybrids which have exhibited no signs of 'dieback' symptoms. They have been Ag. Dept. tested about 3 times to date for signs of P. cinnamomi, with negative results.

Because of their hybrid nature it is not advised that grafting be carried out from Oriental to Spanish varieties (or vice versa), as tissue rejection has, in our experience, occurred up to 5 years after grafting.

Seeds available:

1. Oriental chestnuts (ready March+) - 75c each + postage

2. Tamarillo - 'Ecuador Orange' & 'Denmark Gold' (both sweet varieties) - $2 per packet."

Rod Macdougall can be contacted at RMB 1328, Denmark WA 6333.

Phone 098-409293.

[The Countryman/ November 21, 1991]

Native fruit good bush tucker

The fruit of the quandong is good bush tucker, but better stewed with plenty of sugar, according to John Saggers, of Kendenup.

Mr Saggers, 75, has been growing quandongs in a non-commercial way for the last 15 years.

A row of trees, some bearing the red, tart-tasting fruit, lines the roadside leading to his property. He has also a few quandongs in his orchard.

"I've got no secret formula for growing them," he said. "Those on the roadside I just planted by digging a hole with my boot and throwing the seed in — I then left them to it."

The quandong fruit has little flesh but Mr Saggers says some people are growing them with an eye to 'bush tucker' markets and restaurants. The tree is parasitic and a native of drier areas.

He said he saw a television program of researchers in South Australia growing them successfully in a paddock of kikuyu grass — the quandong feeding off the kikuyu.

Most of Mr Saggers' quandongs were planted close to wattle trees. He thinks he is probably at the southern extreme for growing quandongs.

His association with quandongs goes back to his childhood at Tambellup.

"There's a couple of trees still standing that I used to pick fruit from as a boy," he said. Different trees have different flavours and fruit size. "Dry the fruit and it will last for years and years and can then be stewed."

Mr Saggers moved from Tambellup to Kendenup in 1949, swapping the block for a homemade caravan plus two weeks' labour.

John Saggers with a handful of his favourite bush tucker.

He said no one wanted land east of Kendenup, running across to south of the Stirling Range, in those days. He farmed and worked for a time in the apple packing sheds at Kendenup, an era long gone.

"We hardly get to pick an apple from our orchard any more because of parrots," Mr Saggers said. "The bird population is changing — more parrots and birds like crested pigeons are common where once you wouldn't have seen any.

"We used to get enough almonds from our

tree to fill a super bag — now the parrots get them."

Parrots too can create havoc with grapes that he has growing on what could be one of Australia's longest grape vines.

Planted 25 years ago by Mr Saggers half way along the fence of a tennis court, the vine's two leaders, trailed in different directions, have grown to nearly encircle the court.

"When the two ends meet I'm going to graft them together and have grapes non-stop year round," he said. "I told that once to a visiting grape grower from Victoria — he thought I was serious."

— Richard Piggott

[John Saggers is the author of the article 'Quandong or Wolgol?' in our WANS Yearbook, volume 3, 1977]

[Australian Horticulture/ May 1991]

PISTACHIO MARKET GROWS IN EUROPE

According to the February '91 issue of US Department of Agriculture's Horticultural Products Review, the consumption of pistachios has increased dramatically in Europe over the past five years.

Today pistachios have become a commonplace snack food in many countries. Pistachios are also used in the manufacture of ice cream, confectionery and meat sausages.

Eurostat, the official statistics agency of the EC says pistachio imports have increased from 3900 tonnes in 1980 to 42,600 tonnes in 1989.

Hamburg is the centre of the European pistachio trade. Traditional pistachio producers are Iran, Turkey and Syria. Italy and Greece are minor producers.

The United States is the second largest producers of pistachios in the world. It has reached this position in only 11 years.

The US industry had its first commercial production of 1,000 tonnes in 1979. By 1990 it produced a record crop of 52,000 tonnes. While mainly for home consumption, a portion is also exported.

This turnaround has been driven by US government duty. Until 1986 the US was the leading importer of pistachios. In 1986 a 318% duty was imposed on Iranian pistachios (in shell) and local production was increased to meet domestic demand.

Despite increased harvests, US producers face an intriguing cyclical problem with yields.

Pistachio trees are naturally alternate bearing. The curious phenomenon in the US is that most trees are on the same cycle.

This means annual harvests vary every other year by a factor of three. Authorities suggest that all US trees may have descended from just one seed.

A radical national cycle is also seen in Italy where yields alternate 10-fold in alternate years. The cycle is exacerbated by Italian cultural practices, where farmers prune trees heavily in off years.

Since 1986 and the loss of the US export market, Iran has developed new markets in Europe and Asia. It remains the world's major pistachio exporter.

New Mango, Guava varieties released in South Africa

Details are given in the November 1990 Information Bulletin of the Citrus & Subtropical Fruit Research Institute (Nelspruit, South Africa) of the release of 4 new varieties of Mango and 3 new varieties of Guava.

The four mango varieties are Ceriese, Heidi, Neldica, and Neldawn. Average weight of fruits of these varieties varies from 284g in Neldawn up to 465g — over a pound — in Heidi. The varieties differ in their harvest seasons, tree growth types, fruit shapes, and colours.

The three guava varieties are Dimple (average fruit weight 120g), Fredene (160g), and Frederica (185g). All varieties have sugar contents corresponding to 11 Brix or above when ripe, and ascorbic acid (Vitamin C) levels above 175 mg/100g (210 mg/100g in Frederica).

A good range of mango varieties is available in Australia, but the selection of guava varieties here is poor. Guavas are relatively hardy fruits, able to succeed well beyond the range possible for avocados, and could merit much more development in WA.

Pistachio Production Levels in USA & Iran

Iran and California are the two leading world pistachio production areas. Both areas have marked 'on' and 'off' years (biennial bearing), with off-year yields often less than half on-year ones. Both areas have the same 'on' years.

According to various reports quoted in Australian Pistachio News, June 1991, Iran's production in the 1987-88 season was 114,000 tonnes from 153,000 acres (a yield of about 300 kg/ha). In California the production has been: 1988 — 42,000t; 1989 — 18,000t; 1990 — 53,000t (of which 79% were open in-shells). The 1991 crop has been estimated at 20,000t.

By contrast current Australian production is negligible, under 100t. Australian consumption is around 500t/year and rising, so the bulk of our pistachios are still imported. But around 400ha of trees have been planted, and if these eventually produce at average Californian levels (2.5 t/ha), this would bring 1000 tonnes on to the market — still well under 1% of world production.

[West Australian/ November 28, 1991]

Native plant hope for medical conditions

SYDNEY: Native flora could hold the key to breakthroughs in two common medical conditions.

Scientists here say Australian tea tree oil is producing promising results as a treatment for acne, while researchers in Newcastle and Canberra believe their work, using the seeds

of the black bean plant *Castanospermun australe*, could revolutionise the treatment of diabetics.

Leading skin scientist Professor Ross Barnetson, of the Dermatology Research Foundation, said results from the first clinical tnal comparing tea tree oil with the common acne medicine benzoyl peroxide were very promising.

The trial involved 124 volunteers, half of whom were treated with benzoyl peroxide and the other half with tea tree oil. Both groups reported similar results, though the oil took longer to work.

Professor Barnetson said that if a stronger solution of the oil was used, it would be better than benzoyl peroxide because it caused none of the common side-effects such as skin scaling, dryness and irritation.

It was also relatively cheap to produce from the leaves of an Australian native plant, *Melaleuca alternifolia*.

The foundation was asked to investigate tea tree oil afler US authorities raised fears about whether benzoyl peroxide might cause skin cancer.

Professor Barnetson said that, if benzoyl peroxide was banned, it would leave a huge hole. The market in Australia alone was worth $11.6 million.

The researchers working with the black bean plant seeds are developing a new anti-rejection drug compound.

About 250,000 Australians are diabetic, a small percentage of them requiring pancreas transplant surgery when their diabetes leads to kidney failure. As with all transplant surgery there is the problem of rejection of the introduced organ.

It is hoped the new drug will improve the effectiveness of pancreas transplants by lessening the side-effects through reducing the amount of other anti-rejection drugs taken. One of the researchers is Newcastle doctor Pawel Grochowicz, a recognised pioneer in nerve transplantation.

"So far the research indicates the drug inhibits the influx of cells (that cause rejection) into the graft," he said.

Thc black bean plant is found in parts of northern Australia.

[CSFRI Information Bulletin/ July 1991]

Essential Oils from Citrus

Although citrus is one of South Africa's largest fruit crops (about 13.5 million trees), with fruit exports totalling 450,000 tons, we import large volumes of various citrus oils from the United States (Table 1).

Judging by these quantities of essential oils which South Africa imports from the United States, the production of by-products appears to be an aspect of the local citrus industry which has been virtually unexploited.

The United States is a major producer as well as an important exporter and importer of citrus oils. The soft drink industry is the most important consumer of these oils. Other important users are the food and confectionary industries, and some oils are used in after-shave lotions and perfumery products.

Citrus oils are now also used as an environmentally-safe replacement for petrochemicals in such items as paints and household cleaners, as well as solvents for the cleaning of computer chips.

Table 1. Exports of various citrus oils from the United States to South Africa

Year		*1989*		*1990*
Citrus Oil	*Kg*	*US$ x1000*	*Kg*	*US$ x1000*
Orange	7689	192.8	1973	4.0
Lemon	4113	61.4	1160	27.3
Lime	410	6.1	1094	13.9
Other citrus	482	38.7	330	19.3

Even though the US produces large quantities of orange, lemon and grapefruit oils, imports are significant as they are usually priced lower and are often blended with domestic oils for local sale as well as the export market.

Although the US essential oil exports in 1990 showed an 8% increase over the previous year, citrus oil exports fell from $41.3 million to $36.5 million, despite gains for orange and lime oils and higher lemon oil prices. The main markets for orange oil are Japan, Switzerland, Netherlands, Germany and Canada.

Due to reduced sales to Japan, United Kingdom and Honduras, US exports of other citrus oils were halved in 1990. Oils from lemon, grapefruit, lime and orange had to be imported (Table 2).

Table 2. United States imports of various citrus oils

Year		*1989*			*1990*	
	Kg	*US$*	*$/kg*	*Kg*	*US$*	*$/kg*
Citrus oil	*x1000*			*x1000*		
Orange	5,092,947	8,943.1	1.76	6,546,542	9,894.9	1.51
Lemon	712,495	9,372.7	13.15	1,368,054	18,697.6	13.67
Lime	625,762	11,282.2	18.03	852,748	12,768.4	14.97

Active Countries

• The main supplier of orange oils to the US is Brazil. Imports have increased from 4.6 million kg in 1939 to 5.8 million kg in 1990. Israel was the second largest supplier (186,696 kg) of orange oil in 1989, but was ousted in 1990 by Mexico, which supplied 305,359 kg.

• Lemon oil imports from Argentina, the main supplier of this commodity, soared from 235,617 kg in 1989 to 653,681 kg in 1990. The second biggest suppier of lemon oil was Italy.

• Lime oil is imported mainly from Mexico and Peru. The supply from Mexico increased from 233,135 kg in 1989 to 436,436 kg in 1990.

• Grapefruit oil is mainly supplied by Israel and has increased from 21,887 kg in 1989 to 194,952 kg in 1990.

• Over 1.1 million kg of other citrus oils were supplied by Brazil during 1989, but this volume dropped dramatically (to 68,631 kg) in 1990.

Source: *US Essential Oil Trade*, by M. Purnell.

[Fruit Gardener (California Rare Fruit Council)/ June 1991]

The Fenton:

A Promising New Macadamia

Pacific Tree Farms Nursery recently introduced a new variety of macadamia tree named Fenton. The cultivar started from a seed that came from the California Macadamia Society booth at the 1967 San Diego County Fair.

Capt. and Mrs. Fenton Smith received the sample nut and planted it at their Chula Vista, California, home. The tree grew well and soon began to produce large, delicious nuts. Because of an unusual weakness in the shell,

the nuts were quite easy to crack. Almost every shell has a defect that gives it a stretched appearance. The splitting does not penetrate through to the nutmeat chamber, so fungi-spoiled meats are not a problem.

Capt. Smith, on active duty with the U.S. Navy in 1967, planted the tree next to their small potting shed and greenhouse. The tree is now a handsome specimen and towers over the roof to a height of 35 feet and width of 25 feet.

The leaves are sessile and have the irregular, thorny margins of tetraphylla. Fenton resembles Cate but has large nuts and the harvest period is longer (November-March).

The tree produces a good crop each year even though there is no set irrigation or fertilizer program. Watering of the plants in and around the greenhouse seems to provide well for the tree's needs.

Captain Smith estimates that the crop is about 50 pounds each year. For the past three years Pacific Tree Farms has put approximately 150 air layers on the tree so the production has been affected to some extent. Even so, the tree has produced well. Those 150 airlayer-produced trees have mostly been sold at the nursery's Chula Vista location, but some have been shipped to Egypt, Oman and even a few to Hawaii.

Pacific Tree Farms Nursery owner Bill Nelson feels that the Fenton macadamia will be good for the industry. "It's a fine tree for the homeowner, and it should also be an excellent nut for retail sales," says Nelson. The size of the nut and its ease in cracking will make for effective promotion.

[Ed. note: Air-layering or marcotting is an effective and safe method of propagating macadamias which is easy for a novice to use successfully].

CALENDAR OF FORTHCOMING EVENTS

1992

Feb 19	Wed	*General Meeting (Baard Maehle — Aerial Data Sensing & Water Mapping in Tree Production)
Feb 23	Sun	§Permaculture Association Field Day, Men of The Trees Nursery , Hazelmere
Mar 22	Sun	WANATCA Field Day, Kelmscott & Perth Hills
Mar 27-29		§ACOTANC-92: Whakatane, Bay of Plenty, New Zealand
Apr 11	Sat	§Balingup Small Farm Field Day
Apr 15	Tue	Executive Committee Meeting
Apr 25	Sat	§Men of the Trees Field Day, Hazelmere
May 20	Wed	*General Meeting (Hans Schoof — Soil Fertility & Tree Crops)
May 31?	Sun	?WANATCA Field Day, Mandurah?
Aug 19	Wed	*General Meeting
Nov 18	Wed	*Annual General Meeting

*General Meetings are held at the Naturalists Hall, 63 Meriwa Street, Nedlands, starting at 7.30pm. These meetings usually include a current magazine display.
§ For contact details refer to the Tree Crops Centre

Current Subscription Rate: $40.00 per year
(includes all publications for the year). Student Rate: $20.00

Quandong is produced by the Tree Crops Centre, PO Box 27, Subiaco, WA 6008.
Phone: 09-385 3400. Fax: 09-385 1612.
Advertising Rates: Whole page, $80; Half page, $45; Quarter page, $25; Eighth page, $15. 20% discount for 4 insertions