

Quandong

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West Australian Nut & Tree Crop Association (Inc)

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1/3

STOP PRESS
LMS FieldDay Nov. 15
See page 2

THE CAMBUCI (*Paivaea langsdorffii*) [See p. 17]

Next Meeting:**INTEGRATING TREE CROPS WITH FARMING**

Our speaker at the next meeting (the WANATCA Annual General Meeting) will be **John Bussell**, a consultant in sustainable agriculture systems.

John, who operates the Perennial Agriculture Consultancy, has a background in cattle raising. He worked in this field for many years in Kenya, and some 7 years ago moved to WA, where he had the position of Chief Agronomist for Cresco Fertilizers.

Over the years his realization of the value of tree crops as part of broad-acre farming operations grew, and he is now an enthusiast for their use on our farms. This applies not just to animal fodder species such as tagasaste, but also to easy-to-grow nut and fruit species such as mulberry, fig, chestnut, and the like.

Under the current tremendously difficult rural conditions, one message which is getting home to farmers is the need to extend their range of income-producing crops — “Stability through Diversity”. Any particular crop will always be subject to Ups and Downs, and during a Down in one crop it makes very good sense to switch efforts sideways, into a ‘sleeper’ crop with better prospects, rather than going Down and Out.

This is the area in which we tree croppers can best lend a hand to our broad-acre farming friends. Come and listen to John telling us how it can work in practice!

As usual the meeting is free and open to the public — visitors welcome.

Time: Wednesday November 21, 7.30 pm

Place: Naturalists Hall, 63 Meriwa Street, Nedlands

STOP PRESS !!!!!**“A Question of Survival”****— LMS Field Day**

ABC’s video crew from the top-rating science programme *Quantum* will be filming for a special programme called “A Question of Survival” at a Land Management Society field day on November 15.

The Field Day, to be staged at LMS President Ron Watkin’s farm at Frankland, in the southwest, will be a virtual seminar, exhibition, and display, scattered on strategic areas of the farm, of all the varied disciplines and resources going to make up the concept of ‘whole-farm planning’.

WANATCA will be represented, to give information about the place of crop trees, trees with useful products of every sort, on the farms of today’s and tomorrow’s landholders.

The field day will run from 9 am to 4 pm on Thursday November 15. All members of WANATCA who have the opportunity are very welcome to attend. The producers of *Quantum* have made it clear that they would like the filming to be publicised so that as many as possible can take part in the making of the programme.

The field day has been organized at short notice, and some details are still fluid. Any queries should be directed to Ron Watkins himself on 098-26 7013.

TREE CROPS CENTRE FINDS PERMANENT HOME

After conclusion of an agreement with the Western Australian Horticultural Council (Inc), the Tree Crops Centre moved in September into a new permanent office. This is in the Council's W A Gardener Building, at the Claremont Showgrounds site of the Royal Agricultural Society.

From every point of view, this looks to be a first-class site. The Tree Crops Centre acts as the headquarters for WANATCA, and this site is most convenient and accessible, both to provide services to members (eg access to the WANATCA video library) and as a 'shop-window' open to the public — especially those who are potential WANATCA members.

The Claremont Showgrounds site is open every day, a fact not always appreciated. The WA Gardener Building is on the left of the large Horticultural Pavilion which faces you as you enter the main gates. There is plenty of parking in front of the building.

Associated business services Granny Smith's Bookshop, Nut & Tree Crop Consultants, and Cornucopia Press are now easily accessible in the 'new' Tree Crops Centre office.

WANATCA has a long history of membership and interaction with the WA Horticultural Council, which is an 'umbrella' organization whose members are all societies, clubs, or associations concerned with different aspects of horticulture. In fact the founding members of WANATCA came together through a notice placed in a 1974 issue of the Council's magazine, the *Western Australian Gardener*.

As well as acting as WANATCA's headquarters, the Tree Crops Centre has agreed to assist in liaison between all the constituent members of the Horticultural

Council, such as in putting an enquirer on, say, roses or cacti, in touch with the relevant society. The Tree Crops Centre would also be very willing to discuss acting as an access point for other organizations with interests in the tree crops area — contact David Noel as below.

The placing of the new office on Royal Agricultural Society land also makes it convenient for reference by the increasing number of broad-acre farmers who are becoming involved with tree crops. It is hoped that the relationship with the RAS will continue to develop.

At the last Executive Committee meeting, the Executive discussed formalization of the relationship between WANATCA and the Tree Crops Centre. The name 'Tree Crops Centre' is actually a business name belonging to David Noel's family interests. Because of its nature and constitution, WANATCA cannot operate as commercial concern would, and so any commercial activities in the area have been run under the Tree Crops Centre name.

There have been no problems with the existing somewhat blurred relationships to date. Nevertheless, with the Tree Crops Centre expecting to take on a more prominent public image, the Executive thought it wise to define the relationships rather more formally. This matter will be brought up for discussion at the Annual General Meeting on November 21.

Our sincere thanks to member Wilf Prendergast for his kindness in accommodating the Tree Crops Centre for almost a year, while new premises were sought.

The postal address of the Tree Crops Centre remains, as before, PO Box 27, Subiaco, WA 6008. The phone number is still 385 3400, and the (new) fax number is 385 1612. It is hoped to have the Centre office at the Claremont Showgrounds manned during normal business hours in the near future — any member willing to assist here for a few hours would be welcomed. At the moment, the Centre is usually attended at least from 2 to 5 pm each afternoon.

ELECTION OF 1991 EXECUTIVE

In accordance with WANATCA's constitution, half of the current Executive Committee of WANATCA retire at the end of 1990, and nominations are called for to fill these positions.

Those retiring this year are Don Findlay, Amos Machlin, Neville Shorter, and David Turner. An election will be held at the AGM. The current Executive will be putting forward nominations at that meeting, but other nominations or expressions of interest are very welcome from any member — feel free to contact current President David Noel if you would like to discuss anything in this area.

[The Fruit Gardener (California Rare Fruit Growers), February 1990]

THE VICTORIANA —

a promising fruit from coastal Columbia

The Victoriana (*Eugenia victoriana* Cuatr.), is in the family Myrtaceae, [the same as the guava, feijoa, and the many lilypillies of Australia]. In 1969 preliminary information was published about this new fruit species from the Colombian Pacific Coast.

This fruit had been seen since 1945 but was described for the first time in 1969. With the passage of time, not only have other wild samples been found on the same river, the Calima, where the original sample comes from, but also from other rivers of the Vallecaucano shore. Now it is beginning to be cultivated.

For example, on the La Mojarra oil palm plantation, of Lozano and Olaya, along the Calima, there exist up to a dozen examples which have been fruiting for several years. Some natives of the region have small trees on

their ground. The Granja del Bajo Calima (a farm) has produced seeds and distributed seedlings. On one farm, on the stream La Perla, a tributary of the Dagua River, 15 miles above the Buenaventura-Cali highway, there are other specimens also in full fruit.

Laboratory analyses of the fruits, to give the chemical composition of the pulp, have not been carried through.

As the survival of this species seems to be assured, and as the initial information about it is difficult to obtain, I have assembled some basic information.

Early Work

During my explorations in 1945-46 to establish the 'Agro-forestral del Pacifico' Station (on the banks of the Calima River, Municipality of Buenaventura, Colombia), I observed on the right bank of the Aguaclara River, a tributary of the former, a small tree of showy appearance with fruits of attractive color and shape.

Some time later, I visited the area again with the object of collecting material for propagation; however, the specimen had disappeared due to the collapse of the river bank where the tree had been growing. The steps taken during the following 16 years to find another sample proved fruitless.

In 1962 I saw, on the 'San Luis' farm, an adult example of the tree in question, fruiting norma-

lly. The farm had belonged to Mr Carlos Ponton Rangel during the first observations (1946-49). He had been, at that time, administrator of the station. He had found the little tree at Aguaclara and had transplanted it (oral information from Mr Ponton, at Monteria).

From the San Luis example (Fig. 1), which is the prototype, large seeds have been

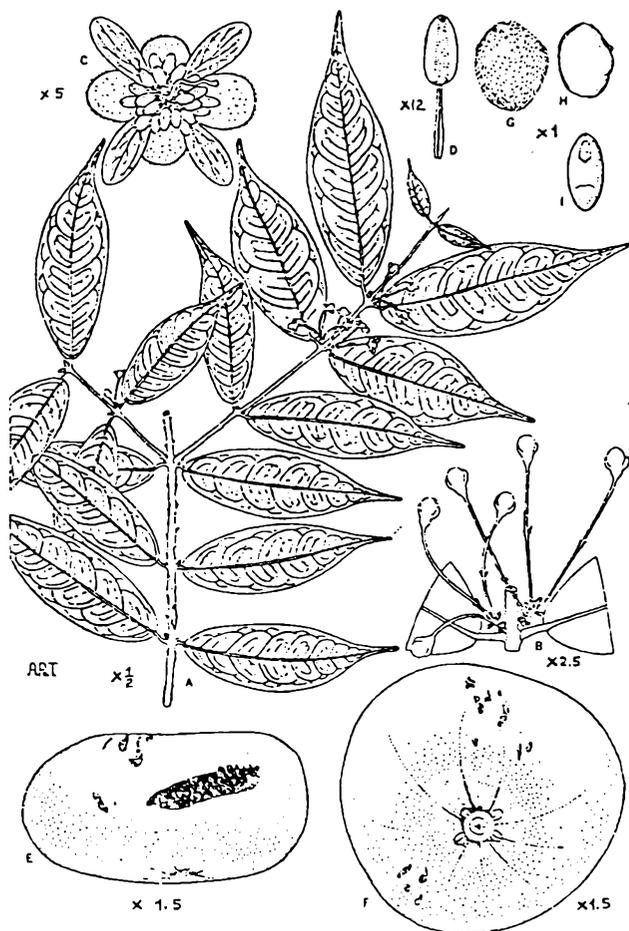


Fig 1. *Eugenia victoriana*. A. Branches (leaves and flowers). B. Inflorescence. C. Flower seen from above. D. Young stamen. E. Fruit, side view. F. Blossom—end view. G. Seed. H, I. Embryo.

obtained during the past years. These have been planted on two farms on the two rivers, Dagua and Calima. Only one of these plants, which is about five years old, has started blooming. The rest are too young.

The botanical material obtained from the original tree (V. M. Patino, 278) on various occasions was turned over to Dr Cuatrecasas of the Smithsonian Institution for further

identification. Dr Cuatrecasas has described this Myrtaceae, which turned out to be a new species, now named *Eugenia victoriana* Cuatr.

Description

This is a small tree some 3-4 m high, with a spheroidal silhouette and thin, flexible branches growing erect; its scaly bark is chestnut-coloured. The wood is very hard and compact even in thin branches.

Leaves are opposite with petioles 2-3 mm long, entire, lanceolate-elliptical at the base, and mostly attenuated-acuminate or having at the apex somewhat noticeable secondary venation; 3.5-12.5 cm in length including the petiole, and 1.5-3.5 cm in width.

The blossoms are 7-8 mm in diameter with four firm sepals and four narrow, elliptical or ovoid-elliptical, white petals; 24 to 28 stamens 2.5 cm long. The ovaries are bilocular with 18 to 24 ovules arranged in the form of a pineapple. It has thick, flexible styles 3 to 4 mm long.

The fruit: Large berries like the grape, somewhat flattened with four or five irregular acute angles; about 7.2 cm wide and about 4.5 cm high at the center; umbilicate; attached to very thin, flexible peduncles about 1.5 cm

long. A very thin (0.1-0.2 mm) pericarp; yellow, smooth and shiny. The mesocarp is between 0.5 and 1 cm thick. Very succulent, orange. The fruit has a very intense odour typical of the Myrtaceae. The seeds are ellipsoid, arranged compactly, 1.1 cm long and 1.35 cm wide and 0.8 cm thick. The epispem is somewhat leathery, the inner surface membranous and the outer surface fibrous and woolly. The endosperm is white and creamy.

This species has no common name, perhaps because of its rarity. One should discard the temptation of calling it "tree tomato," since that name has been reserved for the Solanaceae *Cyphomandra betacea* (Cav.) Sendt., of the equatorial Andes. The name used here is based on the botanical name.

Ecology

The species has been found, so far, only in the Rio Calima area, above the confluence of the narrow La Brea valley localities of Buenaventura County. The region situated between 15 and 50 m above sea level and about 20 km, as the crow flies, from the port

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of Buenaventura, is characterized as having about 8,400 mm of rain per year, on an average of 314 days. Average temperature is 26.9°C, relative humidity 93.9%, with an average of 1,978 hours of sun per year.

Uses

Because of its globose silhouette, the shininess of its foliage, the lustre and colouring of the fruits, this species is highly ornamental.

The fruit is acidic, so that it does not lend itself to be eaten out of hand. Because of the highly succulent character of its mesocarp, shipping ripe fruits is difficult. Home trials made with the first material, which was obtained in 1967, disclosed that excellent jam and jelly can be made. The typical aroma and the orange colouring of the pulp are retained.

The fact that up to now only one adult tree has been known, has limited the quantity of fruits needed to carry out biochemical and organoleptic trials. To remedy this difficulty, the planting of seeds has been promoted. On a farm of the Calima and on another on the Dagua river there are several specimens. In the latter, a small tree about five years old has set fruit.

Fifteen seeds were sent with a cover letter to the Palmira Agricultural Research Centre. The germination of the seed takes about one month. Because of the scarcity of material, not much information has been gathered.

First flowering can occur between three and four years of age. The future that awaits this new species must remain uncertain while there is insufficient fruit for thorough analysis. But the discovery of such a notable fruiting species, in a well-explored region, indicates that exciting possibilities still exist for the exploitation of the useful flora of the

tropical Americas.

Eugenia victoriana from the Colombian Pacific Coast does, in fact, compare favourably with the commonly cultivated species native to eastern South America — the pitanga, *E. uniflora* L., and the grumichama, *E. dombeyi*.

SOURCES

1. Cuatrecasas, J.: Una nueva Mirtacea frutal de la costa del Pacifico. *Mutisia* (32): 6-8. Bogota, 1970.

2. Patirlo, V M.: *Eugenia victoriana*, Un nuevo arbol frutal de la costa colombiana del pacifico. Proceedings of the tropical region American Society for Horticultural Science. XVII Annual meeting, Cali, Colombia. 1969, 13. pp. 313-318.

3. Ponton-Rangel, C.: Personal communication.

— *Victor Manuel Patino* (Scientific advisor, INCIVA, Cali, Columbia). Article translated by Bernardo Wohlgemuth.

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[Australian Horticulture, May 1990]

Fuji fruit flourishing in Kingaroy

South Queensland nurseryman Neville Nott has proved that a successful amount of commercial stock of Fuji fruit (non-astringent persimmon) can be propagated in an area where winters are colder than generally considered ideal for raising persimmon seedlings.

Nott owns Rosedale Retail Ornamental Nursery in Kingaroy. He raises about 80 per cent of his stock, and undertook the Fuji fruit project at the request of a group of local growers.

Seed of a recommended variety considered suitable for the area was imported from Japan and pre-germinated in a specially formulated mixture based on sand, peat and composted sawdust.

Warmth was a particular consideration, accentuated by the fact that the seed arrived two months later than planned. Rather than lose a growing season, Nott decided to proceed with propagation even though it meant doing so at a non-optimum time (July).

The seed trays were placed in heating beds with sensor control misting. They required several checks daily and were given additional hand misting as required.

Nott took frequent samplings, discovering that due to the nature of persimmons, tap root development was likely to be advanced even when seedlings had not appeared.

At the first sign of germination the seedlings were lifted into five 13-cm growtubes, which Nott uses in preference to the book-type planters. They were then wintered in glasshouses before being placed in planter bags in October for subsequent grafting.

Of the 15,000 seeds germinated, approximately 7000 were raised (after germination failures and seedling selection) to be grafted in late winter with cultivars obtained from the Maroochy Horticultural Research Station.

From this promising start in Kingaroy, it is expected that South Burnett will become a significant area for the growing of Fuji fruit. He is well satisfied with the results of the Fuji fruit project, particularly the good rate of germination, and says he has learned some valuable lessons which can be put into practice in further propagation.

Even with the use of heating beds, the seedlings showed some evidence of cold retardation when sown in July. In future they will be sown in April direct into growtubes.

Also, Nott finds the seedlings too variable and would prefer to use a better variety of seed to make a more satisfactory rootstock.

He believes cloning from elite stock may be a future option and is looking for a technique to propagate persimmons from cuttings, which would be cheaper and eliminate the problem of variability.

The nutrition program may also need slight changes because of a possible boron deficiency in the seedlings.

Finally, Nott suspects that persimmons may benefit from a mycorrhizal association. If this is correct, then the appropriate fungus

spores could be made available to the plant roots at seedling stage.

Neville Nott started his nursery at Kingaroy in 1977. He describes himself as "something of an anachronism" because, like the nurserymen of yesteryear, as a relatively small retailer he still prefers to raise most of his own stock.

He enjoys the work for its own sake but there are also practical advantages. One is cost, particularly the saving on freight charges and handling costs. Another is that he can raise and supply plants suited to the local area which are not readily available elsewhere.

He can also maintain a flexible approach to changing market demands and raise those plants which have a place in our gardens but which are not easily obtained, and cites trees as an example because of the more limited market.

He says he has been influenced by the Japanese idea of raising and carrying a small number of a multitude of lines.

At Rosedale the propagation program produces mostly — but not exclusively — native trees, with the bulk of production being tube stock. Much of this is supplied for windbreaks and other purposes on small acreages. At present, Nott is trying to introduce a wider range of rainforest species.

However, he believes that there is an equally important place in the home garden for exotics which, within a human environment, are often preferable to natives and enrich the garden with variety and interest.

Climatic demands

Though stating that there is "nothing really new in propagation today" he does find

that standard techniques must be adapted to suit the local climate (cold, dry, sometimes frosty, winters, and hot summers with the varying rainfall typical of south east Queensland's fertile inland belt, lying between the arid west and the warmer, wetter coast).

To meet climatic demands he uses polytent over seedling beds and regular misting. Although he uses IBA as a quick dip, Nott has found that one or two species respond better to long term soaking in a low level solution. For example, 50 parts per million IBA soaking for 24 to 28 hours, rather than the more usual 2000 parts per million soaked for five seconds — feijoas are a case in point.

This low soak method is used extensively in Europe but is less common in Australia. From Nott's observations, this method seems to promote a better leaf-holding ability. It also apparently releases inhibitors to rooting in some species.

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Nott is sure that these advantages hold true. He is also experimenting with techniques of wounding cuttings on harder rooting species for better results.

Due to a run of poor seasons and often unsatisfactory prices, South Burnett growers are increasingly diversifying into horticultural products rather than the traditional broadacre crops because they can produce slightly out of season compared with other, established areas and thus obtain premium prices.

This has led to a demand for stock of low chilled stone fruit, and here again Neville Nott is making slight adaptations to standard

techniques to propagate by cuttings, to produce a suitable stock of mainly new, unnamed varieties. These include peaches, nectarines and plum varieties 'R2T46' and 'Gulf Ruby'.

Nott's methods include a potting mix that is more open than usual, and taking thicker and heavier cuttings with more starch reserves to get better results. He has found that these bigger cuttings seem better able to regenerate bud and leaf under heat stress and says similar work is being done in Africa on exotic hardwoods.

—Julie Lake

[West Australian, April 6 1990]

NUTS BRING DOWN THE CPI

The price of betel nut — a widely used euphoric drug — was the most telling influence on the Papua New Guinea inflation last year, according to the Central Bank.

The bank's governor, Sir Henry ToRobert, said the fall in the CPI from 5.4 to 4.5 percent last year was "almost entirely explained by the behaviour of betel nut

prices".

Betel nut chewing is a national pastime in Papua New Guinea, widely enjoyed by young and old. It induces a sense of gregarious well-being and stimulates digestion.

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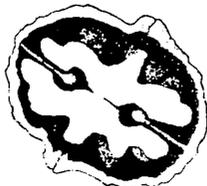
[The Nutshell (NNGA), May 1989]

WALNUT GETS A NEW GENE

A walnut's tiny white embryo hold the key to moving useful new genes into that species and others.

Research horticulturist Gale H. McGranahan with the Agricultural Research Service, and colleague Abhaya M. Dandekar of the University of California at Davis, recently transferred a foreign gene into specially cultured walnut embryos — a laboratory first.

Two of six dozen embryos that McGranahan and Dandekar used in the experiment have passed on a gene from a bacterium, *Agrobacterium tumefaciens*, into new embryos and plantlets. They say the embryo route may be the best-yet approach

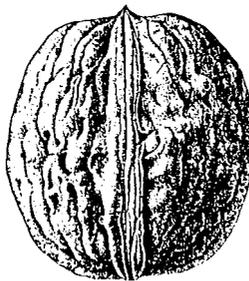


for moving new genes into other crops as well, including pecan, almond, grape, cherry, and peach. Like walnut, those crops can be induced to produce successive generations of embryos in the laboratory — a phenomenon known as repetitive somatic embryogenesis.

Although the marker gene that the two scientists transferred doesn't confer useful traits, the accomplishment paves the way for giving new genes that are valuable to the walnut species. Two transfers of top research priority: A gene that gives resistance to codling moth, and genetic material that may

protect walnut from blackline, a disease that weakens and kills walnut trees.

Here's how the scientists moved the marker gene: The first step was to bathe the embryos in a special *A. tumefaciens*



bacterium. (Other scientists had previously genetically engineered the bacterium to contain a gene that gives resistance to an antibiotic.) The bath gave the bacterium and the gene the chance to move into the embryos.

The embryos were allowed to multiply, and the new-generation embryos were exposed to the antibiotic. The survivors — those that had taken up the resistance gene from the bacterium — went on to produce another generation of embryos. But embryos that hadn't taken up the new gene stopped producing new embryos.

The scientists moved the marker gene into walnut in only 9 months—a feat possible only with genetic engineering, McGranahan says. "Before modern biotechnology, you couldn't take a gene from one form of life, such as a bacterium, and move it into another, such as a tree. With traditional breeding, walnut could only be crossed with other members of the same species or a closely related species. And using conventional breeding to move just a single gene into a commercial variety of walnut could easily take a lifetime."

— Marcia Woods, USDA ARS

[West Australian, May 18 1990]

Facinating Look at the World's Exotic Fruit

My first thought on receiving a review copy of the reprint of Glenn Tankard's interesting and beautifully illustrated book *Tropical Fruit* was: good on him.

Lovely pictures, luscious fruit. Great if you live in Queensland, and a useful reference to guide you round the delights of Bali.

But what relevance would it have to the dwellers of Perth's sandplains or cold-in-winter, hot-in-summer hills?

Thinking about it for a moment longer, though, I realised I was being unadventurous and shortsighted. It will, I am sure, be only a matter of time before someone writes to say his or her mangosteen has produced fruit, or that they narrowly escaped death when a ripe 20kg jackfruit fell to the ground.

Both these fruit trees are optimistically on sale in Perth. And presumably people are buying them. To get these, and other unusual tropical fruits to grow in our climate is probably to the backyard botanist the equivalent of flying a Tiger Moth from England to Perth: it's a challenge.

And why not? For some years Perth gardeners have been successfully growing tropical fruit such as mangoes, avocados, bananas, papayas and custard apples

without very much effort. So why not push the boundaries just a little further?

One person in WA who is doing just that is John Verheyen. In the latest issue of *Quandong*, the magazine of the WA Nut and

Tree Crop Association, there is a tantalising item about Mr Verheyen's venture.

"John has recently taken possession of Barbados Valley Tropical Fruit Farm, situated on the Moore River about 60km north of Perth," says the report.

"Barbados Valley is probably the most advanced plantation of exotic fruits in Western Australia.

"The plantation has some hundreds of lychee, longan and casimiroa (white sapote) trees, which have now commenced producing."

The magazine says samples of Mr Verheyen's white sapotes handed out at a recent association meeting "were delicious". They were the first of his white sapote to come on the market, and he wants to raise public awareness of the fruit.

A few years ago I obtained a seedling white sapote from a local tropical fruit aficionado and grower who likes to be known only as Johnny Avocado.

(There's something about the word



The casimiroa or white sapote from Central America

avocado that seems to encourage people to use it as a handle. There is a woman working for a well known nursery who likes to be known as Avocado Annie.)

My white sapote, planted four years ago, has not yet produced fruit, although it's in spanking good health and is over 2m tall. Maybe this season.

My other great hope, the feijoa — sometimes known as pineapple guava — produced nine fruit this autumn, but most of them were inedible, nothing like the delicious market fruit I have tasted and which encouraged me to plant the tree.

My only consolation is that, individually, they dwarfed those produced this season by a friend whose tree is a year younger than mine yet produced about 70 fruit (grrr).

To return to the book, *Tropical Fruit* (Viking O'Neil \$27.99) is a great introduction to this fascinating aspect of horticulture. It's worth buying if only to identify the tropical fruit finding its way into Perth's markets.

— Philip Powell

[West Australian, Oct 15 1990]

Tree Oil Backed to Beat Acne

Tea-tree oil, a traditional Australian antiseptic, has been found to be an effective treatment of acne among teenagers. It works slower than conventional treatment with benzoyl peroxide, but has fewer side-effects.

These are the findings of a carefully controlled trial which is outlined in the latest *Medical Journal of Australia*. The trial was conducted on 119 people at Sydney's Royal Prince Alfred Hospital by Professor Ross Barnetson, professor of dermatology at Sydney University.

According to the report, the results showed 5% tea-tree oil in a water-based gel was an effective treatment of acne, although less effective because of its slower action than the 5% benzoyl peroxide in a water-based solution. "Clinical assessment and self-reporting of side effects demonstrated that tea-tree oil treatment was better tolerated by facial skin", it said.

"Skin scaling, dryness, and pruritis (itching) are well-known initial irritant effects of treatment with benzoyl peroxide."

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(*Growing Today* (NZTCA), April 1990)

PAULOWNIA . . . — GROWING FAST

Paulownia is indigenous to East Asia, growing naturally in China, Taiwan, Cambodia and Vietnam. About 1000 years ago it was introduced into Japan and Korea and during the mid 19th century into Europe and North America. It was first recorded in New Zealand in 1860.

Paulownia has probably been cultivated for longer than any other tree. The first written record, dating from 6th century B.C. China, reported that the coffin of King Yui was made of Paulownia wood. In 1049 A.D. Chen Chu wrote the "Monograph on Paulownia". This very detailed work was almost certainly the first silvicultural treatise ever published.

The Chinese have long regarded Paulownia as an important timber which can be used for many purposes. An early custom was to plant a tree on the birth of a daughter and use the timber to build wardrobes at the time of her marriage.

This custom seems to have been adopted by the Japanese who reserve the top quality wood to make tonsue, a dowry chest given by parents on the marriage of a daughter. Top grade tonsue are reputed to cost about NZ\$50,000

Given its many diverse qualities it is surprising that Paulownia is not more widely used outside of East Asia. However people are beginning to realise its potential and its future looks bright.

USEFUL TREE SEEDS FROM CHILE

Good range of seeds of fruits, nuts, and other useful trees from Chile.

Many should be suited to Australia.

Contact **Jan Correa** for list at:

Casilla 53027, Correo Central,
Santiago 1, Chile



Paulownias are particularly attractive in flower and ideal for urban amenity plantings. This P. elongata is in Beach Road, Auckland.

There are 9 recognised species of *Paulownia*. The main timber species are *P. tomentosa*, *P. fortunei*, *P. fargesii* and *P. kawakamii*. Over the past decade the Chinese Academy of Forestry have selected over 800 elite clones and undertaken hybridisation experiments with several species.

In New Zealand we now have seedlings which originated from some of these trees. They have much better form and are growing

50 to 100% faster than seedlings of local origin. The next step is to begin our own selection programme, matching suitable species and clones to our climatic and soil conditions.

Paulownia is easily raised from seed, growing 2 metres tall in the nursery in one season. However the best propagation method, especially for selected plants, is to use root cuttings, which are very easy to strike.

Plants are lifted during July/August and, after the stem is cut off for ease of transport, planted out as a root. If trees can be grown in a nursery adjacent to the planting site they can be planted out with stems intact.

Sites must be well drained. Loamy soils are best with the water table at 1.5 m or more. Before planting, spray 1-metre wide spots to kill all grass and weeds. In its first year Paulownia is very susceptible to competition.

Holes should be dug at least twice the width and depth of the root, which is planted with the root collar just below soil surface.

By October each root will have produced several shoots. When the tallest is about 30 cm tall all but the best should be removed.

With selected high quality trees and careful attention to establishment and initial silviculture, it should be possible to plant Paulownia at a final spacing of 200 stems per hectare. An alternative is to contemplate one commercial thinning and plant 500 stems.

Paulownia are tolerant of a wide range of climatic conditions. The main problems seem to be excessive wind, which shreds leaves but seldom breaks stems, and heavy frost. They will tolerate at least 10 degrees of frost but, if young plants are damaged, they can be regenerated by coppicing.

Once a Paulownia is established you have got a millable tree. Early in the second year the tree may produce several leaders which should

be pruned off to leave the best one. From this point a well formed tree should grow, although further form pruning may be required at the start of the third season.

If tree growth is poor, there are two options. When the trunk is straight for 2 m or more, cut the top off and retain the best

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shoot which emerges from the top of the trunk, removing all of the others. If all of the tree is poor cut the trunk off at ground level and allow to coppice. In spring remove all but the best shoot. By the end of the growing season this should be 4-6 metres tall.

The pruning of lateral branches begins about age 3. The best time to do this is autumn.



Elite Chinese clone, P. fortunei
(Guizhou). 7 m high at three years.

The rotation of Paulownias in New Zealand is expected to be between 15 and 20 years. Initial growth of the best Chinese clones at Hunua is 18 cm diameter and 8 metres height after 4 years. This compares very favourably with 16 cm diameter and 7.5 metres height for New Zealand trees at age seven.

Paulownia is a remarkable timber! With an air dry weight of 300 kg/cu m it is almost

half the weight of *Pinus radiata*. It has a high strength for weight ratio and is one of the most stable timbers known. Shrinkage is very low, less than 0.35% compared to *P. radiata* which is about 3.5%. It has one of the lowest thermal conductivity rates of all timbers and thus has a high heat insulation capacity.

Because the heart wood is unaffected by humidity and insects, it is greatly valued for drawers and drawer linings, and is probably the best material available for the storage of clothing.

Paulownia also has excellent resonance qualities, hence its use for musical instruments. It planes very easily to a perfect finish, can be carved and does not chip. The timber glues easily but does not hold nails well.

With all of the above properties it is not surprising that Paulownia has a wide variety of uses. The highest quality timber is used to make furniture, toys, handcrafts, wooden clogs (Japanese geta) and musical instruments.

Industrial uses include plywood, wall panels and even business cards. For house building the wood is good for components requiring lower mechanical strength — doors, windows, ceilings and partitioning. Other uses include packing and gift boxes, food storage, oil, beer, wine and acid-resistant barrels, food bowls and beehives.

Its stability is useful for pattern making and its lightness makes it ideal for aircraft and model aircraft, surfboards and life-rafts. Fibre production includes pulp, insulating material, cushion filler, charcoal and biomass.

If that wasn't enough to demonstrate the Paulownia's flexibility, it is also an excellent agro-forestry tree. Crops can be grown and

stock grazed under wide spaced trees or shelterbelts.

The green and dried leaves, flower buds etc make excellent fodder and nitrogen content is high.

Paulownia will tolerate high air pollution making it an ideal tree for urban amenity plantings. The hairy leaves trap dust and smoke particles. Flowering trees are especially attractive in cities.

The Paulownia is also used in traditional medicine for the relief of coughs, asthma, blood pressure, hair growth, and colour.

The question most often asked by prospective Paulownia growers is, "What sort of return can I expect from Paulownia timber?". This is also the most difficult question to answer.

At present the most important market for Paulownia is Japan. The Japanese have paid as high as NZ\$2400 for a cubic metre of top quality Paulownia timber from U.S.A., with the average price being about NZ\$700.

The Chinese provide about 20% of Japan's importation of Paulownia timber, and in 1988 were paid NZ\$200/m³ for ten year old *P. elongata*, with the best quality Chinese wood reaching NZ\$550. [In 1987 the Chinese exported some 17 million cubic metres of Paulownia timber at an average price of NZ\$430/m³ for raw logs — Ed].

The rate of growth of Paulownia in New Zealand is likely to be slower than in China; we might expect to receive between NZ\$300 and \$800 on the Japanese market.

A recent U.S. paper suggests that expansion of the Japanese economy could result in a sixteenfold increase in Paulownia consumption over the next two decades. Based on this and the current cost of growing

Paulownia in U.S.A., it was calculated that the discounted net returns, at a 10% rate, would be between NZ\$2860 and \$6830 over a 20 year rotation. A very good return by any forestry standard!

However it would be unwise to rely entirely on Japan as the sole market for New Zealand grown Paulownia, and those involved in growing trees will need to devote time to marketing strategy over the years ahead.

The most likely use in New Zealand will be veneer for wall panelling, and a price of NZ\$700 per cubic metre, in the flitch, has already been suggested.

— Ian Barton

About the Cover picture

This issue's cover picture shows an interesting and useful fruit from the subtropical areas of Brazil.

The Cambuci, which is a native of areas from Sao Paulo north up to Rio de Janeiro and Minas Gerais, has been highly recommended for its excellent flavour. A suburb in Sao Paulo is named after the fruit.

Botanically *Paivaea langsdorffii*, the Cambuci is the sole species of the genus, a member of the family Myrtaceae. Better-known members of the family include the guavas (*Psidium*), the feijoa, and the many *Eugenia* species such as the Pitanga and the Grumichama (both also called Brazilian Cherry).

This information and the cover picture from *Frutas Indigenas*, published in 1946 by the Botanic Institute, Sao Paulo Government.

1991 SUBSCRIPTION RATES SET

At its last meeting, the WANATCA Executive resolved to recommend a small increase in future membership rates.

The standard rate will increase to \$40, up from \$35. Student and concessional rates increase from \$17.50 to \$20.00. Other rates (life membership, sustaining membership, overseas airmail premium) remain unchanged.

In comparison with similar organizations, these rates are still very good value. Comparable organizations in the horticultural field now typically charge \$50, or even \$60, per year. The majority of our funds go towards our publications, and our level of service here has often been judged far better than that of comparable bodies.

There will be two measures to provide some relief. First, renewals or new

subscription for 1991 will be discounted by \$5, to the old level, if paid by March 31, 1991 (May 30 for overseas subscribers). Second, we hope to hold the new rate steady for some time to come. If we can achieve an increase in membership, and so spread the many fixed costs over more subscriptions, we will be in a much better position to hold firm.

All readers are urged to think about people or organizations they know who ought to be members. We are very willing to send out membership details and a sample copy of *Quandong* to anyone you suggest. And perhaps a gift membership for 1991, as a Christmas or birthday present, would be appreciated.

MARULA NUTS AVAILABLE

We have received a shipment of Marula nuts from former WANATCA member Len Hobson, of South Africa.

The Marula, botanically *Sclerocarya caffra*, is one of the important food trees of Africa. The edible fruit produced are about the size of plums, and are eaten by both humans and animals — they are a particular favourite of elephants.

Within the fruit, which is much higher in Vitamin C than the orange, is a somewhat irregular shaped nut about 2-3 cm across, containing 2 or 3 delicious separate kernels, high in oil and similar to walnuts in taste.

The Marula is notable in that it is currently undergoing a development phase which may

establish it as the first South African native fruit or nut of commercial trading status, similar to the position of the macadamia for Australia. Considerable work has been done at the Department of Horticultural Science of Pretoria University, under Prof. Lucas Holtzhausen. Several thousand wild varieties were tested, and three with superior qualities were selected for propagation.

A good write-up on the Marula, by P. van Wyk, can be found on pages 53-60 of our Yearbook No. 2, for 1976. This was produced under our original name of the West Australian Nutgrowing Society.

Nuts of the Marula will be available for sale at the November 21 meeting, at 5 nuts for \$1.00, first come, first served. Past experience has indicated that germination is good (if sometimes slow) for nuts sown now, in Spring, from the autumn harvest, as they

need an after-ripening phase.

The Marula grows very widely in southern and central Africa, and at least some provenances do have some frost resistance. At a guess, it should grow where macadamias can be grown. There are known to be two

mature trees in the Perth area, one at Byford and the other near Applecross.

The location of any other mature trees known to members would be of interest to the Association — have you come across any?

— *David Noel*

TOWARDS COLD-RESISTANT MACADAMIAS

According to a news item in the California Macadamia Society's *Cal Mac News* for Fall 1990, a new macadamia variety has been developed which will take significantly colder winter temperatures.

The variety has been developed by Paul Thomson of Fallbrook. A test plot of the trees has been established at the property of CMS President Jim Russell in Fallbrook.

The Fallbrook area of California can be subject to quite cold temperatures — the Russells lost over 400 macadamia trees three years ago due to low temperatures. So the new planting should give a good test of this recent introduction.

Paul Thomson, a long-time member of WANATCA, has a reputation established over many, many years in the introduction and selection of new fruits for particular growing conditions. He was prominent in the original work to select commercial avocado varieties, and is also known for his selections of cold-tolerant mangos and of jojobas.

Paul will be known to many members who met him when he was in Perth in 1982, making a major contribution towards the ACOTANC-82 Conference.

ACOTANC-90 CANCELLED

The ACOTANC-90 Conference to have been held in Renmark, South Australia this September was cancelled.

Low enrolments were attributed to the rural depression

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WANATCA RESEARCH FUND TO BE SET UP

At its last meeting, the WANATCA Executive resolved to segregate part of current and future funds into a separate Research Fund.

WANATCA has always had a keen interest in assisting projects involving research or development in the tree crops area. We were able to finance a small research project on tissue culture of pistachios about six years ago; we have given several grants-in-aid to students at WA higher education institutes, to assist in practical projects (eg bunya nut glue, carob products, analysis of the Australian nut industry); and we have gone ahead with the WANATCA R&D Partnership Scheme, as reported in the previous two issues of *Quandong*.

All these initiatives have been financed from general Association funds. In future, such projects will be supported from the Research Fund. It would be nice to get a large capital injection to get the Fund well established from Day 1, but chances of

finding a willing sponsor are not good under the present economic climate (show us we're wrong!).

Instead, the Executive propose to allocate the sum of \$5.00 to the Fund from each renewal or new membership subscription received for 1991 and subsequent years. Members will not need to bother about the research component of their subscriptions separately, but they will have the opportunity to add to the fund, by donation or bequest, if they wish. Exchange and honorary members, who do not introduce actual funds, will not be part of the allocation. The allocation from student members (who have a reduced rate of subscription) has not yet been determined.

We would welcome comments from members on this matter, either at the AGM or by other contact.

OPENING FOR HORTICULTURAL EQUIPMENT SUPPLY SERVICE

Member Pat Scott is very impressed with the virtues of the clear plastic tubes placed over young trees to promote growth (e.g. "Grow-Tubes"). She has enquired about the possibility of the Association buying bulk lots of these and distributing them to members at below the (fairly high) retail prices demanded.

At the last meeting the Executive discussed this proposal and could see its value, but thought it would be too complicated to run as part of official WANATCA

services. However, it resolved to alert members to the idea to see if one of them would be interested in developing such a scheme as a small sideline business of their own.

Wilf Prendergast of Claremont, leader of our Macadamia Action Group, has been bringing over bulk lots of large plastic plant tubs from the Eastern States, for use in propagating seedlings. He has suggested that these too could be a useful item in such a scheme; he is willing, in any event, to pass on these tubs to members at a good price while he has enough on hand.

Anyone interested in running such a scheme — particularly from an accessible fairly central site — might like to contact David Noel on 385 3400 to work it out.

TOCTE FRUITING IN PERTH

About 7-8 years ago, WANATCA imported 1000 seeds of the tropical black walnut species *Juglans neotropica* from Ecuador, and distributed them for trials around the State.

Now former Executive Committee member Nola Washer reports that all five of the trees she raised from these seed have fruited in her Wanneroo orchard. This is the first report we have had of this species fruiting here.

The Tocte or Nogal, a fast-growing, almost evergreen species of walnut, is a very promising commercial prospect for warmer areas of the southwest. It produces both first-class timber and also edible nuts of good flavour (although the shells are thick). It is also suitable as a rootstock for the commercial Persian walnut of commerce, *Juglans regia*.

Although nominally a tropical species ('Ecuador' is the Spanish for 'equator'), the Tocte is native to high in the Andean mountains, and so is in practice a warm-temperate or subtropical plant. In its area of growth in Ecuador, particularly around Ambato, it is used for a nut confection similar to nougat. In fact 'nougat' is a word with the

same root as Nogal, the Spanish for 'walnut'.

The Australasian expert on Tocte is undoubtedly Dick Endt of Auckland, who was one of the earliest enthusiasts for this valuable crop tree. He has one of the oldest known trees in our region at his Oratia orchard.

— *David Noel*

Letter from Neil Sloan

I recently read the article on WANATCA R&D Partnerships in the last *Quandong* and was motivated to write.

I was wondering what work has been done in Australia regarding improvement of Honey Locust (*Gleditsia tricanthos*), or if any importations have been made from improvement schemes in other countries (comments from J Russell Smith in his book *Tree Crops* are in mind).

I would like to know of possible sources of budwood available in Australia or overseas.

— *Neil Sloan*, Bells Road, Grosevale NSW 2733

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Sterilizing Potting Soil in the Microwave

I am not a 100% enthusiast for sterilizing natural potting mixes, because the sterilization kills the goodies as well as the baddies. Many crop trees actually depend upon the presence of useful soil organisms to grow properly and thrive.

Nevertheless, there are cases where a sterilized mix is best. This applies when using seeds which are very fine and could be swamped by the seeds which exist in most natural compost, and when sowing species known to be very sensitive to your particular soil organisms.

In an experiment to see if small quantities of potting soil could be sterilized by putting them in an ordinary domestic microwave oven, I prepared 8 small seedling trays of my normal straight-off-the-TCC-stack compost, put one aside for a control, and commenced microwaving them for various periods.

I started off with 3 trays on the carousel, intending to withdraw one at the end of each minute's exposure. However, on withdrawing Tray 3 (2 minutes exposure), it was obvious the trays were melting. The remaining mix was exposed by emptying the mix into a ceramic bowl for the microwaving, and filling the next tray on withdrawing the bowl after each extra minute. So I ended up with trays of mix microwaved for 0, 1, 2, 3, 4, 5, 6, and 7 minutes.

The experiment did seem to work. Trays 1 and 2 (control and 1 minute microwaving) sprouted a great many weeds; the rest were clear, except for tray 6, which had a single weed, presumably a splash-over from the watering system.

To use this method, you would need to experiment with your own equipment, because the sterilizing varies with the power used and with the amount and wetness of the

mix in at one time. I used full strength (600 watts) and up to four trays worth in the bowl at once.

This does seem to be a quick, convenient way of sterilizing small lots of potting soil at home, if you have a microwave. Of course, it can be done in an ordinary oven, but that takes some time, and you have to dry the mix right out. Commercial potting mix sterilization is usually done with steam, and the microwaving method actually creates steam within the mix without drying it out completely.

— *David Noel*

[Four Seasons (Illinois Nut Tree Association), October 1990]

Trees Ten Times Faster

A method of speeding up the growth of trees from seed — which can mean lower costs and greater availability of desirable species — has been developed at Ohio State University (Columbus, Ohio 43210).

Normally it takes 3 to 5 years for a seed to grow into a 6-8 foot [1.8-2.5m] tree. This has been reduced to 7 months by horticulturist Daniel K Struve. He used copper-treated pots

to inhibit root growth, plus the Accel-O-Gro System (Accelerated Optimal Growth) developed at Michigan State University (East Lansing, Michigan 48823), and “the plants just grew like crazy”.

In the Struve method, roots stop growing and start branching when they reach the pot, which is coated on the inside with a latex paint containing copper carbonate, 3.5 ounces per quart [ca. 100g/litre]. So at transplanting time, instead of having a snarled mass of curled roots which must be cut (shocking the plant and setting it back at least a year), there are healthy intact root tips which immediately resume growing.

The Accel-O-Gro system increases the photoperiod to produce continuous growth of the seedling. The day is extended to 16-24

hours with 50 footcandles of fluorescent lighting in a greenhouse, or 90 footcandles where there is no natural light.

Temperature, moisture, carbon dioxide, and fertilizer are regulated to produce optimal conditions for each species. The growth acceleration continues even after transplanting, resulting in earlier maturity.

The new method also uses a head start for the seedlings. Instead of starting in late Spring, which means the tree has to prepare for winter dormancy just when it's ready for a strong growth spurt, the process is begun in early March in a greenhouse, and the trees are moved outdoors after the last frost. These extra few weeks give the seedlings time for a growth surge before the end of the season.

— *Ralph Kreider*

SUCCESS WITH LIGARO, TAGASASTE CUTTINGS

Ian Fox, WANATCA's Jujube Action Group leader, has reported success in growing 2 more useful tree crop species from cuttings.

The first is tagasaste, previously called tree lucerne. This species, which originated in the Canary Islands, is finding greater and greater application in the south of WA, principally for animal fodder.

It can also be direct seeded for establishment. However, the possibility of establishing stands of tagasaste from cuttings opens up new possibilities for areas where, for one reason or another, direct seeding is not suitable.

Ligaro, *Elaeagnus philippensis*, is a fruit-bearing plant from the Phillipines. Others in the *Elaeagnus* family also have edible fruits, such as *E. multiflora*, the Cherry Elaeagnus from Japan, and *E. argentea*, the Silverberry of North America. The latter extends right up to Hudson Bay in northern Canada, and so must have considerable cold resistance.

The Ligaro specimen which Ian Fox has propagated from was grown from seed by David Noel, using seed sent back from overseas by Pat & Bill Scott. It seems to grow quite happily in Perth, but has not yet fruited.

EXECUTIVE COMMITTEE 1990

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ACTION GROUP LEADERS

CHERRY: Neville Shorter, 450 5606 (2/9 Clydesdale St, Como 6152)

FIG: Alex Hart, 490 1324 (71 Terence St, Gosnells 6110)

JUJUBE: Ian Fox, 354 3131/H, 380 2571/W (15 Stringybark Ramble, Willetton 6155)

MACADAMIA: Wilf Prendergast, 384 3047 (PO Box 291, Claremont 6010)

ORGANICS: Bob Davidson, 4552166/W, 295 4411/H (PO Box 6155, Canning Vale 6155)

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PISTACHIO: Tom Bateman, 401 8138 (4 Lygnern Cres. Kallaroo 6025)

POMEGRANATE: Marius Loeffler, 097-33 5220 (P.O. Box 22, Yarloop 6218)

CALENDAR OF FORTHCOMING EVENTS

1990

| | | |
|--------|-----|--|
| Nov 15 | Thu | LMS Field Day, Frankland (see p.2) |
| Nov 21 | Wed | *Annual General Meeting (John Bussell — Integrating Tree Crops with Farming) |

1991

| | | |
|---------|-----|---|
| Jan 15 | Tue | Executive Committee Meeting |
| Feb 3-5 | | §International Garden Centre Conference, Perth |
| Feb 20 | Wed | *General Meeting (Wally Edgecombe — Growing fruits & nuts in northern WA) |
| Mar 17? | Sun | Field Day, Gingin? |
| May 15 | Wed | *General Meeting |
| May 19? | Sun | Field Day, Medina? |
| Aug 21 | Wed | *General Meeting |
| Nov 22 | Wed | *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

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