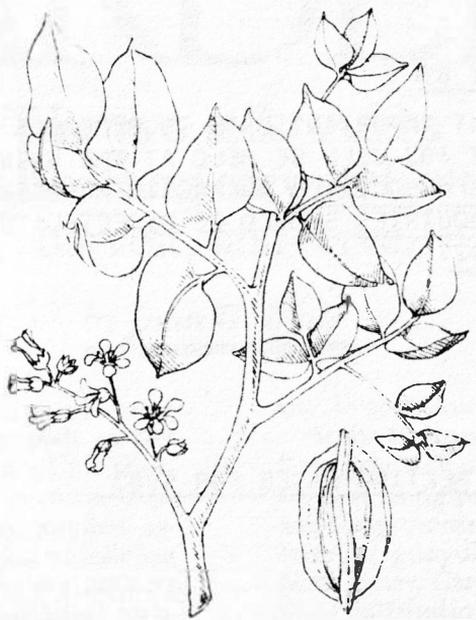


**NEWSLETTER**

# Quandong

WEST AUSTRALIAN NUT AND TREE CROP ASSOCIATION

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Carambola (*Averrhoa carambola*)

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## MEETING DATES

THE NEXT GENERAL MEETING WILL BE HELD AGAIN AT THE NATURALISTS' HALL , MERIWA STREET NEDLANDS ON 2ND OF FEBRUARY.

THE SPEAKER ,MR GLYNN WARD,FRUIT ADVISOR AT THE DEPT. OF AGRICULTURE WILL GIVE A TALK ON THE APPLICATION OF PLANT HORMONES IN NUT AND FRUIT PRODUCTION.

### ACOTANC WEST 83

THE NEXT IMPORTANT DATE TO REMEMBER IS 16-17 April. ACOTANC WEST '83 WILL BE HELD AT THE UNIVERSITY OF W.A. KEN RAWLINGS ASSOCIATES ARE AGAIN HANDLING THE ORGANISATION AND ENQUIRIES SHOULD BE DIRECTED TO THEM ON Ph. 09 3254427

### THE GENERAL MEETING DATES FOR 1983

2ND FEBRUARY

4TH MAY

3RD AUGUST

2ND NOVEMBER.

ALL GENERAL MEETINGS WILL BE HELD THIS YEAR AT THE NATURALISTS' HALL.PLEASE COME ALONG AND JOIN IN THE FUN OF THE AUCTIONS,MEET OTHER MEMBERS AND SHARE YOUR KNOWLEDGE AND PROBLEMS.PROSPECTIVE NEW MEMBERS ARE ALWAYS WELCOME.

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# TEST-TUBE GARDENS

Take two cells. Add a wall-dissolving enzyme. Culture, harvest, and serve.

*by John G. Blair*

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While feats of gene splicing such as the creation of oil slick-eating bacteria capture public attention, another aspect of the biotechnical revolution is quietly thriving in the nation's laboratories. It provides techniques for altering plant sources of food, energy, and pharmaceuticals, for designing new crops, and for producing rare beneficial varieties by the millions.

An engineering technique called protoplast fusion is the latest development in the process known as plant tissue culture. Protoplasts are simply plant cells whose walls have been dissolved by an enzyme. The protoplasts from two different plants can be fused, combining certain genetic material of species that could not otherwise be crossed. After the two protoplasts are fused, they are stimulated by solutions to regenerate a cell wall and then, with culturing processes already in

use, to grow into a new plant.

At the University of California at Riverside, botanist Toshio Murashige is using protoplast fusion to improve yields of the rubber-bearing guayule shrub. And in New Jersey, Campbell Soup Company is funding experiments in protoplast fusion between tomatoes and particular tobacco plants with disease-resistant traits desirable in the company's food crops.

To fully appreciate the possibilities of protoplast fusion, it is necessary to understand its parent process, already used throughout the nursery business for mass propagation. The tissue culture process, in human terms, is equivalent to growing near-carbon copies of people from a piece of skin tissue. With formulas of synthetic growth hormones, mineral salts, vitamins,

*Protoplasts are cells whose walls have been digested by enzymes.*

and an energy source (a form of sugar), scientists can reproduce cells from a tiny piece of tissue that will later develop into plants. The formula's hormones convince plant cells that they are, in effect, embryos. The chemical solutions cause the flask-contained cells to duplicate themselves, sometimes by the millions. Another solution spurs the individual cells to regenerate into whole plants. By culturing tissue, as many as 1,000 plants can be produced from each gram of starting cells and can be ready to plant in a matter of weeks.

Nurseries purchase tissue culture-produced plants that far surpass seeds, not only in reduced time until harvest but also in genetic uniformity of traits like size and shape. In species such as tomatoes, a field of genetically superior plants derived from tissue culture can be used by growers as seed stock for future plantings. Nurseries already culture everything from Boston ferns to strawberries with assembly line efficiency.

The laboratory technician's ability to multiply in tissue culture cells that are free of virtually every known plant disease has eliminated the need for quarantine on international shipment. Before culturing, plant surfaces are sterilized to destroy many bacteria, fungi, and yeasts. Viruses, which often live within the plant's cells, can be eliminated by culturing an area of the plant that characteristically supports few virus particles, such as the rapidly growing cells of the meristem, at the tip of the shoot. The meristem culture is further heat-treated to kill viruses.

Murashige, whose pioneer hormone and salt formulas for regenerating plants from cells are

used in laboratories around the world, points out that "Temple oranges used to be a very important commercial fruit in the United States. They were all but eliminated by an infectious viroid. Now you can again see what it once was—big fruits, big trees, instead of a sick bush. With tissue culture, we have restored to society a valuable source of food and pleasure."

Tissue culture can also be a tool for creating plants able to survive environments that meant certain death to their predecessors. Plant scientists at several universities, including Colorado State, Purdue, and the University of California at Davis, add to cell solutions chemicals that simulate drought and hostile soil conditions. They then coax surviving cells into multiplying. By repeating the process many times, cells and sometimes plants can be developed that flourish under severely adverse conditions.

Purdue University's Ray A. Bresnan has nurtured tomato cells that thrive in conditions close to those of a semi-arid region and has grown tobacco cells in solutions approximating seawater. But he cautions that plants generated from the cultures might not pass on these characteristics.

Protoplast fusion provides a method of introducing heritable characteristics, though success is often random. After the walls of cells to be fused are dissolved, the cells are cultured in a solution containing a component of antifreeze, polyethyleneglycol. One to ten percent of the barrierless cells will then unite with each other. Not only can fusion produce hybrids that would otherwise be impossible, but additional agents, such as genetic material from another

plant, can be introduced into the isolated protoplasts. Material that confers certain desirable traits like disease resistance may alter the genetic makeup of the resulting plant. However, once the cells have fused, problems in concocting the right regenerative and rooting formulas can be enormous. Flask temperature, light intensity, even the velocity at which the solution is shaken can affect the yield of protoplasts. Yet the possibility of designing extraordinary hybrids—new fruit trees, perhaps, or hardier vegetables—drives scientists on. Though the fusion process does not replace conventional plant breeding techniques, it promises to give agronomists entirely new plants with which to work.

Engineering at the cellular level has other benefits. Scientists hope to learn how to efficiently and economically extract pharmaceutical chemicals not only from harvested plants but from plant cells themselves. Comparing the process to the production of penicillin by growing fungus in big tanks, Donald K. Dougall of the W. Alton Jones Cell Science Center in Lake

Placid, New York, foresees the day when vital biochemicals could routinely be extracted from 1,000-gallon vats of plant cells. The manufacture of such products is already occurring on a small, experimental basis. Dougall has secured limited amounts of heart treatment compounds from plant tissue cultures and hopes to extract some anti-tumor compounds. A Japanese firm and the University of British Columbia have used the chemical extraction method on cells from two scarce Chinese plants that seem to be effective against some types of leukemia.

Each plant tissue culture discovery or experiment provokes questions as well as answers. In many cases scientists are not sure why they are achieving certain results and whether the changes are permanent. But however slowly, scientists are intent on changing the future of plants.

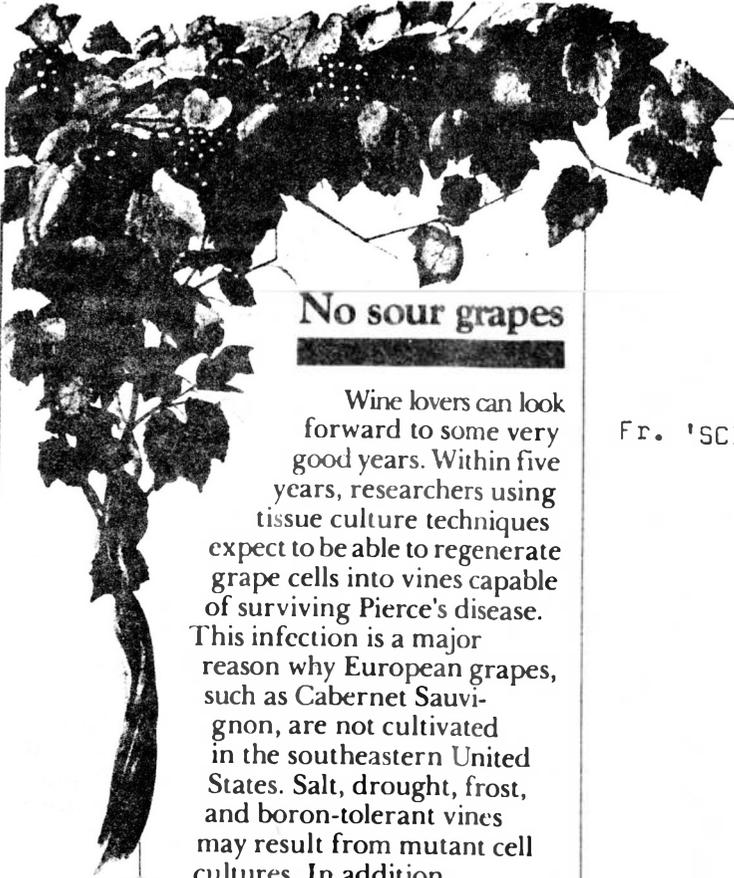
Growers may one day order cultures instead of seeds to meet world crop demands. On the following pages is a catalog for the future based on current experiments.

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This article was taken from a relatively new American magazine, 'Science 82'. Besides being particularly informative and relevant, it can also be entertaining and I thoroughly recommend it to all readers.

It is worth asking your library to subscribe to it.

Editor.



## No sour grapes

Wine lovers can look forward to some very good years. Within five years, researchers using tissue culture techniques expect to be able to regenerate grape cells into vines capable of surviving Pierce's disease. This infection is a major reason why European grapes, such as Cabernet Sauvignon, are not cultivated in the southeastern United States. Salt, drought, frost, and boron-tolerant vines may result from mutant cell cultures. In addition, protoplast fusion of premier European wine grapes with the disease resistant but poor quality muscadine grapes of the South could produce hardy new crops. At a time when the best soils for growing wine grapes are taken, tissue culture also offers a way to expand vineyards into marginal lands.

FR. 'SCIENCE 82'

The day may come when vital biochemicals could routinely be extracted from 1,000-gallon vats of plant cells.

Subiaco Post

# The \$30,000 tree!



When Henry Esbenshade of California visited WA for a brief visit last week he enriched the State in more ways than one.

Henry (left), the US president of the international Tree Crops Institute, and David Noel, the president of the WA Nut and Tree Society, planted a black walnut sapling in Jolimont's Cliff Sadler VC park.

Such a tree recently sold in America for \$30,000 according to Mr Esbenshade, because its wood is highly prized for furniture and veneers.

The only catch is that it's the mature trees that are this valuable — the ones about 65 years old.

But they really used a backhoe!

THE WEST AUSTRALIAN TUESDAY DECEMBER 14 1982 49

# PLEA FOR MORE CAROB TREES

CAROB bean trees should be planted on every WA farm, according to Mr Vic Trafford, a seed merchant and contract tree planter.

He said he had to overcome "prejudice and stupidity" before he could convince people to plant the trees.

He welcomed the Forests Department proposal to test the carob's potential.

"Farmers don't want to get out of the gum-tree idea," he said

Yet the benefits of carob bean trees were numerous, he said. The carob could be used as a stabiliser in ice cream and the beans could be used to make flour.

The pods provided a high-protein stock feed and the trees them-

selves prevented erosion and provided wind breaks.

They also grew in arid areas and could be made to grow rapidly and brought into production within five years, provided a reliable seed was used.

The trees lived for about 60 years.

They were deep-rooted, could not be blown over in a storm and were far superior to gum trees.

Mr Trafford has 3000 carob bean trees and 500 honey locust trees growing on his Esperance property. Honey locust trees have similar uses to the carob trees.

The Conservator of Forests, Mr Bruce Beggs, said he certainly recognised the trees' potential and planned

more extensive trials to test them.

Fodder Trees Association spokesman Brian Marlow said that the honey locust trees provided high-protein stock feed and were capable of full production after four years.

They were deep-rooted, nitrogen-producing trees, tough and drought-resistant, Mr Marlow said. They would have a "marvellous future" in WA.

# BAKLAVA

# BAKLAVA

Yield: 30 pieces

Cooking time: 1 hour

Oven temperature: 160°C (325°F)

**500 g (1 lb) filo pastry (page 86)**

**¾ cup melted, unsalted butter**

**2 cups finely chopped walnuts**

**1 cup finely chopped almonds**

**¼ cup caster sugar**

**2 teaspoons ground cinnamon**

**⅓ teaspoon ground cloves**

**1 quantity Syrup (page 87)**

**2 tablespoons honey (optional)**

- 1 Butter base and sides of a 33 × 23 × 5 cm (13 × 9 × 2 inch) oven dish and place nine sheets of *filo* separately into dish, brushing each with melted butter.
- 2 Mix nuts, sugar and spices and spread half of this mixture over *filo*.
- 3 Top with another two sheets of *filo*, brushing each with butter.
- 4 Spread remaining nuts on top and finish with remaining *filo*, brushing each sheet as before.
- 5 Trim edges and brush top with butter.
- 6 Score through top layers of *filo* with a sharp knife into diamond shapes.
- 7 Sprinkle lightly with water to prevent top layers curling upwards.
- 8 Bake on centre shelf in a moderately slow oven for 30 minutes.
- 9 Move up one shelf and cook for further 30 minutes.
- 10 Cover with greased brown paper or foil if top colours too quickly.
- 11 *Filo* must be allowed to cook thoroughly.
- 12 When *baklava* goes into the oven, make the Syrup as directed (if honey is used, add with the sugar).
- 13 Let syrup cool.
- 14 Spoon strained cool Syrup over hot *baklava*.
- 15 Leave for several hours before cutting into serving portions.



This recipe with a little care produces a very interesting sweet. It should be noted that this is the Greek version.

(cont.)

It actually originated in the Middle East. I was told by an Iranian, who's family have a pistachio plantation in Iran, that it originated in Persia and was spread through the east and to Greece by Alexander the Great, along with many other Persian ideas. He explained that when the army moved through Persia many of the soldiers took Persian wives and so these cultural practises were adopted and spread. Greek baklava differs from that made in the Middle East, mainly in that walnut or almonds are used as filling. In Lebanese baklava cashew nuts or pistachio nuts are used. It is also less syrupy, almost crisp. Rose water is used to give a delicate subtle flavour.

If you would like to experience this at first hand, there are in Perth two Lebanese food bars under the name of '1001 Nights' that sell this and many other sweets using nuts as filling and I can recommend that they are delicious. One word of warning though, they are the sort of food to ponder over and eat slowly with good ground coffee or tea without sugar as the sweets use a lot of honey and to appreciate them you need another flavour to compliment them and clear the palate.

Editor.



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## MEMBERS' CORNER

### Warning to members

At the last executive meeting a particularly disgusting incident was brought to my attention by the Aitkens and they have asked me to warn all members. They have a country property which they have planted with Pecans. Some of the trees carried labels with the variety clearly marked while others had their own shorthand ident markings. In their absence from the property some person came in and removed all the useable buds from the best trees marked clearly with variety labels. The buds were removed only from the underside of the branches, where the sun could not have damaged them, and a budding knife was used. Many of the trees subsequently died. Whoever took the buds knew exactly what they were doing. If you own a property and have planted grafted trees, work out your own code when you label them.

### Pistachio Plantings

There is a growing interest in Pistachio production in W.A. Mr. Don Alexander, the Senior Principal Research Scientist with the C.S.I.R.O. at Merbein Victoria recently asked for details of all Pistachio plantations in W.A., from the Dept. of Agric. At present there are 10-12 hectares that they know of and anticipated plantings of 35- 40 hectares. Existing plantings are at Wandering, Toodyay, Merredin, Mogumber, Gingin and Dwellingup. (They missed Mine! in the York area)

### Lýchee

These have made an appearance for the first time on the Perth markets just before Christmas, selling at \$7-10 per kilo. The supplies came from South Africa, California and Queensland. In the next Quandong we will include an article on their cultivation. It seems surprising that we are not producing our own.

### AUDITOR WANTED

The society is sending out a plea to any member who has the necessary qualifications to audit the books for the society. When we become incorporated our books will have to be audited each year and the help of a professional member would be appreciated.

## MEMBERS' CORNER

### FRUIT FLY CONTROL (the hard way)

This summer, while sitting in my tin shed residence conducting an experiment on how long it takes for the dreaded med. fly to discover a piece of freshly cut peach, (about six seconds) before I ate it thus killing them by sheer frustration, I remembered one of my earlier attempts at getting even with these little brutes in the distant days of my youth. At the same time getting even with my brother alias 'Tiger' for something that he was bound to do to me at some time in the future.

At my parents property in Kalamunda we had many fruit trees and each year around summer time we discussed doing something, next year, about the fruit fly that got increasingly worse as the years went by. One tree, a peach, had managed to escape them for several years. This tree was our pride. It was young though quite tall and grew up close to the front verandah of our sprawling weatherboard house. It had the best light fleshed peaches I had tasted, but usually not very many.

So they were watched fairly carefully by all members of the family, ready to pounce as soon as they were deemed ripe. It was probably the family hovering like vultures that put the fruit fly off!

Well. One year I started my inspection very early when much of the fruit was still very green. Words of disgust, Horror, ..... AGGRESSION ... burst forth. The fruit fly had descended on our peach. It was then I was spurred into my only action against the dreaded curse. Seizing a bucket I stripped all the fruit from the tree. No-one ever made decisions (let alone carried them out) as fast as that in our family, so the true horror of the situation can be imagined.

After stripping the infested tree I poured old sump oil all over the offending fruit then placed it in an old shed which served as a workshop, weather permitting. For a few weeks I got great satisfaction each time I passed the Bucket. I show'd 'em! Well after a while it began to bubble and I would think, Mmm next year I must empty it. Well, one night my brother (tiger) went to the shed, which had no light, to look for something. I had never told any one about the bucket. Yep, he trod in it. With some force it would seem as the festering mess managed to shoot up all over his shirt. It was a great day for me.

Editor.

MEMBERS' CORNER

Quandong Magazine  
c/o Mrs Budd.

Abrayanti Devi.  
c/o 12 Starling  
Hamilton H.  
WA. 6163 Dec3. '82

Dera Mrs Budd,

Greetings. Peace. I hope you are well and thank you for all the material you have sent me.

I am wondering if you can include this letter in Quandong . I am going for donations. Presented on behalf of the 'Friends of the Zoo'. A small but growing group of people ,dedicated to the immediate renewal and improvement of cages for the larger animals at the Perth City Zoo, whose conditions have been sadly lacking for a long time.

At our inaugural meeting for the Big Cats, first on our list, I was able to speak to the Zoo administration and discuss the possibility of nut trees for the Zoo. The administration mentioned the commencement of planting of several varieties of fruit trees with a leaning towards tropical trees, and applauded the possibility of nut trees, particularly Macadamia.

I have promised to try and help this Zoo for the sake of its' animals. I am wondering if there are any sympathetic members of the society who would enjoy trying to get together some seed and/or saplings for the Zoo.

I am positive any nut variety would be valuable there. The Government is doubling each dollar donated by our efforts and we will hold a further function for fund raising next year. Please contact me if you wish to be notified.

Thank you  
Abrayanti Devi.  
Ph.3351369

Notes from the tour to Brunei, Sabah,  
Philippines and Singapore.

Last november Mr Mike Hawson went on an extensive tour through the fruit and nut growing areas of Brunei, Sabah, Philippines and Singapore. He has presented the society with an interesting and comprehensive report which will be reprinted in full in the Year Book. Here is a short extract from the report.

Tuesday, November 23 1982.

We departed from Brunei at 8.30 a.m. in a small boat powered by two large outboard motors for the small town of Sipatang in Sabah. Time taken about 1½ hours. After some confusion about meeting our contacts we eventually arrived at the Tropical Fruit Farm (plantation), which has been established by the Rural Development Corporation. This corporation is one of the many government agencies set up by the Sabah Ministry of Agriculture to promote primary industries in this country. Apparently, they have some authority to plant reasonably large areas of tropical fruit crops as a means of demonstrating to potential fruit growers what can be achieved in this field. This centre was managed by Haji Abdul Ali - a pleasant personality who spoke good English. We inspected citrus, cacao (60 acres), mangoes, durian, mangosteen, rambutan and passionfruit crops. A legume, glyricida sp. was planted for high shade in the cacao fields.

At this centre was a Peace Corp worker, Miss Sandy who is an agricultural graduate from USA. She accompanied us to the cashew farm (Sabah Cashews). The road from Sipitang to Beaufort is constructed of stone and very rough on vehicles and passengers.

Sabah Cashew Nuts Sdn Bhd - Papar

The Sabah Cashew project was visited on November 23, 1982 and developments discussed with Mr Chin, the resident manager.

The property is situated on the coast, some 40-45 km south west of the capital Kota Kinabalu. The soils consist of poor, well leached sands. Earlier experimental plantings are 4-5 years old with the majority at 3-4 years. Flowering takes place in April-June with harvesting into July/August. A 3-4 year old tree is expected to produce 10-15 lbs of nuts (Kernel percentage 16-20%).

The manager indicated that about 3000 acres had been established with the final object of planting 5000 acres. Shortage of funds was curtailing further development. Apparently, a processing plant was to be imported but this has been shelved due to lack of funds.

This project and the one on tropical fruits is one of many such projects under the jurisdiction of the Rural Development Cooperation. Other include Sabah Rice, Sabah Cattle, Sabah Vegetables, Sabah Tobacco, etc.

## EXECUTIVE MEETING NOTES

Here are some notes from the last Exec. meeting held on Tues 4th Jan.

All members agreed it was extremely hot. In his short absence from the room, David Noel's windows were forced open. Those that would not open were suitably smashed to allow the passage of any breeze. We weren't particular. These are desperate times.

There was a progress report from Chris Newell on his pistachio tissue culture experiment. He has had some success with buds growing but he requires many more buds to continue experiments. The society is going to approach CSIRO to see if a special allocation of their material could be made available. There was also considerable discussion on the bud wood supplied by the Agric. Dept. and steps are to be made to try and find our own supply.

There is to be a publicity drop in West Perth private post boxes for new members.

The organisation of ACOTANC WEST '83 is proceeding very well and a special pamphlet will be sent to all members when all details are finalised. As mentioned on page 2, Ken Rawlings Ass. are handling arrangements and inquires may be directed to them. Ph.09 3254427

The Aitkens have been asked to draft a constitution for incorporation to comply with the requirements of the Registrar of Associations. The constitution will be discussed at the next Exec. meeting.

The tropical black walnut seeds have been ordered from South America but so far have not arrived.

# West Australian Nut & Tree Crop Association

*Incorporating the West Australian Nutgrowing Society*

## EXECUTIVE COMMITTEE

PRESIDENT	David Noel	3802334
VICE-PRESIDENT	Wayne Geddes	3213200
SECRETARY/TREASURER	Lorna Budd	4585918
YEAR BOOK EDITOR	Lois Evans	4075474
QUANDONG EDITOR	Bill Napier	3260311
	Warren Bouchet	3905311
	Milan Mirkovich	4202062
	Nola Washer	4075888
	Alex Sas	3975628
	Reg Judd	2766844
	Mr & Mrs Aitken	2741469

## ELECTIONS

All six members of the executive committee who were due for retirement stood for re-election and were re-elected unopposed.

Mr Sas retired as Vice President and Wayne Geddes was elected to the position.