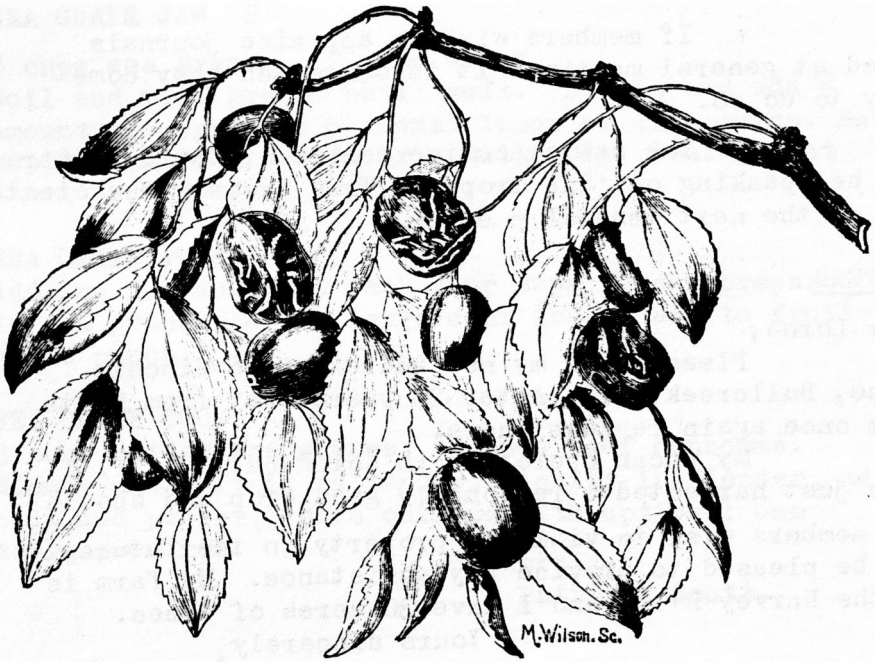
NEWSLETTER

Quandong

WEST AUSTRALIAN NUT AND TREE CROP ASSOCIATION

JULY 1984 Vol. 10 No. 3
Issn. 0312 - 8989 Pub No. WHN 0868.



THE JUJUBE—GROWN IN SONOMA COUNTY, CALIFORNIA.

CONTENTS

MEMBERS' CORNER

The new address of W.A.N.A.T.C.A. is P.O. Box 565 Subiaco, 6008.

Meeting Notes: Members suggested that an advertisement be put in the Sunday papers periodically, letting the public know when trees propagated in W.A. were available. These trees stand a better chance of survival than those brought in from the Eastern states which have to go through stringent quarantine regulations. Growers would be well advised to check on where their saplings were cultivated.

If members wish to appraise journals tabled at general meetings it is suggested they come early to do so.

The new executive member Mr David Turner will be speaking on 'Sub Tropical Tree Crops with Potential' at the next general meeting.

LETTERS

Dear Lorna,

Please note my new address is 6 Minchin Place, Bullcreek, W.A. After 25 years away from Perth I am once again resident here.

My pecan operation is doing quite well. I have just harvested a reasonably good crop and should the members wish to visit my property in the future, I'd be pleased to provide any assistance. My farm is in the Harvey Hills and I have 30 acres of trees.

Yours sincerely,
Murray Raynes.

Dear Editor,

I said a few bad things about Sea Grapes at the last meeting and would like to make amends by passing on these recipes. They were developed by the agricultural extension service in Florida and also appear in "Tropical Fruit Recipes" published by Rare Fruit Council International Inc., Miami, Florida, 1976.

Sea Grapes - gather dark fruit - shake bunch over bucket use only a few green ones.

SEA GRAPE JAM 1

Wash sea grapes in 1½ the amount of water until skin and pulp slip. Drain juice through cloth. Cook 3 or 4 cups of juice at a time with an equal amount of sugar until it reaches 108.5° C, sheeting stage. Seal in sterilised jars.

SEA GRAPE JAM 2

8 cups sea grapes, 2 cups water
Boil and mash grapes until soft. Strain and add ¾ amount of sugar and optional lemon or lime juice. Boil rapidly until a cooled drop will gel. Seal in hot sterilised jars.

SEA GRAPE JUICE
Add one cup sugar to each four cups juice, prepared as in sea grape jam 1. Serve over ice or add to fruit juice punch.

SEA GRAPE SOUP
3 cups pitted sea grapes, 4 cups beef consommé.
Simmer until fruit is tender, liquify in blender, add salt and pepper, serve chilled with optional one tablespoon rum.

Sincerely,
Patricia Scott.

STOP PRESS
The 1984 WANATCA YEARBOOK IS NOW AT THE PRINTER — You should receive your copy within a few weeks..

Glen Allan Seeds

P.O. BOX 338, CAIRNS, QLD 4870, AUSTRALIA
PHONE (070) 543517 or 53 5888

AUTUMN LISTINGS
OF
SEED & PLANTS

6 - 4 - 84

FOOD PLANTS & FRUIT TREES

BOTANIC NAME	COMMON NAME	500 SEEDS	TUBES 3 INCH
ARTOCARPUS INVISA	BREAD NUT		$1.00
AVERRHOA CARAMBOLA	FIVE CORNER		0.70
AVERRHOA BLIMBI	TREE CUCUMBER		0.70
ANNONA MURICATA	SOUR SOP		0.60
ANNONA RETRICULATA	BULLOCKS HEART CUSTARD APPLE		0.80
BASELLA ALBA	CEYLON SPINISH		0.80
BLIGHIA SAPIDA	AKEE NUT		0.80
COFFEA ARABICA	COFFEE	$11.00	
CITRUS AURANTICA	WEST INDIAN LIME	16.00	0.70
CLAUSENIA WAMPI	WAMPI NUT		0.70
COLOCASIA ESCULENTIA	TARO 50 CENTS & $1.00 A BULB		
EUGENIA CARISSIOIDES	CEDAR BAY CHERRY		0.60
" " JAMBOS	ROSE APPLE		0.70
" " DOMBEYI	GRUMICHAMA		1.25
MORINGA OLEIFERA	HORSE RADISH TREE		0.70
RANDIA FORMOSUM	BLACK BERRY JAM BUSH		0.70
ROLLINIA DELICOSA	AMAZON CUSTARD APPLE		0.60
TERMINALA CATTAPA	INDIAN ALMOND	16.50	1.00
SPONDIAS LUTEA	YELLOW MONBIN		1.00
INGA SPECTABLIS	ICECREAM BEAN		1.00
" FROGIFOLIA ?	" " " "		1.00
UVARIA URTIFOLIA	AMAZON TREE GRAPE		1.00
DIPLOGLOTTIS HARPULIOIDES	NATIVE TAMARIND		1.00
ERIOBTRYA JAPONICA LOQUET			0.80
MANIHOT ESCULENTA	TAPIOCA unrooted log cutting	20 cents	
DILLENIA INDICA	ELEPHANT APPLE	16.50	
GRANADILLA VINE			0.80

Department of Agriculture — Western Australia
District Office
80 Railway Parade, MIDLAND 6056
Telephone: 274-5355

Your Ref
Our Ref 514.10
Enquiries to Shorter
Date 26 March 1984
MFC

Ms Dinah Hansman
66 Alexandra Ave
ROSE PARK SA 5067

Dear Ms Hansman

NUT TREE SELECTION AND BREEDING

Our interest in nut tree crops has been confined to the introduction of selected overseas and Australian varieties for inclusion in a variety evaluation and crop performance studies.

Trial work to date in this field has been limited to a one hectare 1981 pecan variety evaluation planting at our Stoneville Horticultural Research Station, near Perth, and two smaller pistachio variety evaluation blocks, one at Stoneville with an earlier one at the Muresk Agricultural College some 140 km east of Perth.

The pecan block consists of four replications of eighteen introduced American varieties.

The pistachio consists of much fewer number varieties. These include Kerman, the CSIRO selection Sirora, developed by D.Maggs of the Horticultural Research Station, Merbein, Victoria.

The pecan and pistachio plantings at Stoneville have established well but have not yet commenced cropping. Both blocks receive summer irrigation.

The earlier Muresk planting has been set with practical problems not the least of which has been the failure of male pollinator plants to establish satisfactorily.

Commercial planting with these two crops, as indeed with any other nut crop, is limited in this State.

There has been some small scale planting of Macadamias which will grow well here as do European chestnuts. The latter are found in limited numbers in traditional deciduous fruit growing districts. Trees are highly susceptible to the Phytopthora cinamoni fungus.

Enclosed for your information are copies of leaflet material dealing with the cultivation of nut crops in this State.

There is an active Nut and Tree Crop Association in W.A. The President is David Noel of P.O. Box 27, Subiaco 6008 ~~c/- 27 Adelaide Terrace, Perth~~. Some breeding work in a small way may have been carried out by members of this association.

I hope this information will be of assistance.

Yours faithfully

N. H. Shorter

(N.H. Shorter)
HORTICULTURAL ADVISER
OFFICER IN CHARGE

(Inc)

1984 May 30

The Town Clerk
City of Subiaco
Rokeby Road
Subiaco WA 6008

Dear Sir,

WANATCA/Subiaco City Caryetum

Our Association is anxious to achieve a greater rate of progress with the establishment of the Caryetum in accordance with the agreement reached between the Council and ourselves in 1980. Since that date, a number of shelter trees were planted, of which a proportion have survived and reached heights of up to 2 metres, and a black walnut was planted which grew for two years but has now disappeared. It may have died or been accidently mowed over during its leafless season.

Our resources are limited, so to get the Caryetum firmly established, we propose to seek outside help. We have been fortunate in enlisting the aid of Kings Park and Botanic Garden Staff in designing a basic Primary Development Area for the Caryetum. This area would include a bark-mulched Intensive Area enclosed by brick paving -- trees in this area would be free from the danger of accidental mowing and would also be less liable to damage from casual ball games and the like.

To get the bulk of the work implemented, we propose applying for a Community Employment Program grant. It would be of great assistance in this project if we can get your support for this grant.

The formal application could either be a joint application by ourselves and the Subiaco City Council, or we would would be prepared to apply if we had Council's assurance of support and assistance. We see our role as one of supplying the layout and design and the specialized plant materials, while the Council might be expected to supply the necessary supervision for the brick paving work, and also certain materials such as the bark mulch. The CEP grant, if obtained, should cover the labour costs and the brick costs. Your assistance would be needed in estimating the costs involved to prepare the CEP application. The supervision and materials costs to be met by the Association and the Council should add up to the 30% normally required; if not, we may be able to achieve a CEP component higher than 70% on the grounds that our Association does not have enough resources, and the project is one of clear public benefit.

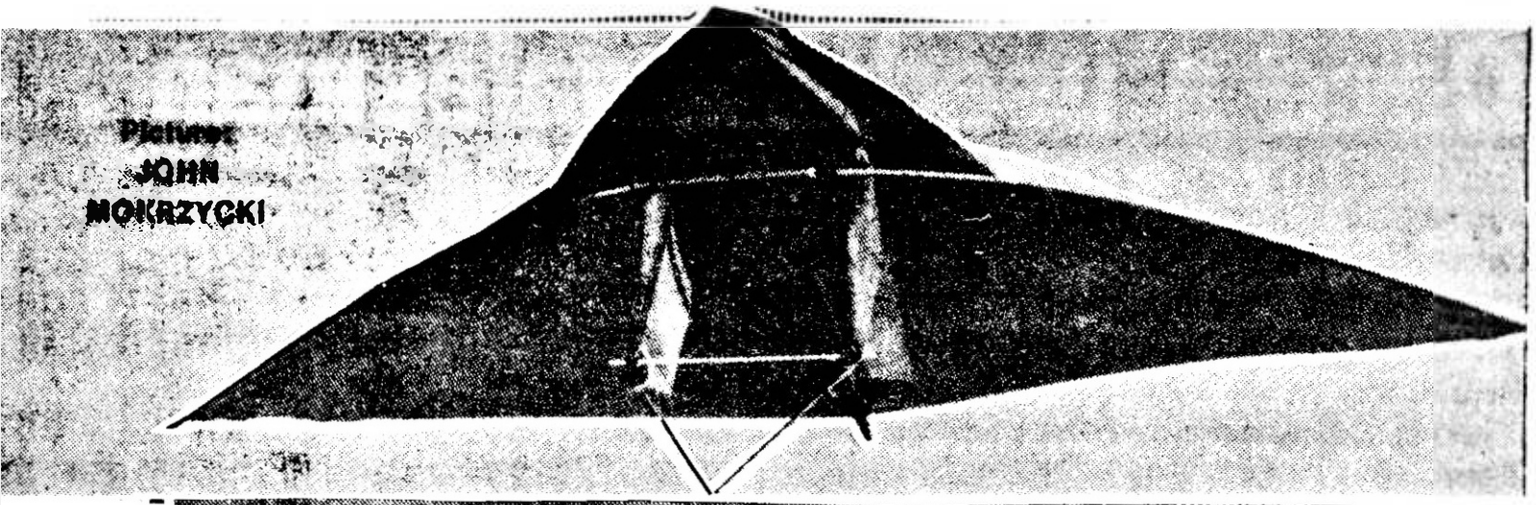
There may be no need to refer this matter to Council, as what is proposed is only a formalization of what was agreed earlier, but in event we would be grateful if Council was informed as to the progress of the project. We look forward to your response to this proposal. Letters may be directed to our address above, I can be contacted at home on 381.7341 or at work on 380.2326.

Yours sincerely

David Noel (President)

Attachments: Development Proposals and Plans

1



Pictures: JOHN MOKRZYCKI

Graham's no nut

GINGIN farmer Graham Ross has taken to the air to protect his almond trees from hungry birds.

Graham flies his new Danford Birdscare kite over his property and he's over the moon at the results.

The hawk-like kite, designed by an English aeronautical engineer, has given the marauding birds the twitters.

And once launched the kite will stay in the air for days.

That is, unless there is absolutely no wind.

The kite costs $75 and Graham says it is money well spent.

INDIANS SET FOR ORD NUT SCHEME

By PETER HOOKER

AN Indian-backed consortium looks set to take the first steps towards a multi-million dollar cashew nut industry on the Ord River.

State Cabinet is expected to consider a recommendation that an Indian-Australian joint venture be chosen from several would-be developers bidding for the right to set up a pilot cashew farm in the Kimberleys.

The Government sees a big potential for a major Kimberley cashew industry after the success of cashew trees planted in the area.

It believes nut plantations in either the East or West Kimberley could supply Australian demand for up to $13 million worth of cashews a year and become an export-earner.

In September the Government called for submissions from companies interested in a pilot cashew scheme.

Interest

Interest was shown by major British and Indian groups as well as from some big Eastern States companies, including Queensland and New South Wales macadamia growers.

An inter-departmental committee has studied submissions from final bidders and is understood to have recommended the Indian-backed proposal for a pilot scheme on the Ord.

India is by far the world's biggest producer of the expensive cashew nut.

A pilot farm on the Ord will allow fertilizer and water needs to be studied, management and harvesting techniques to be developed and the commercial testing of superior varieties of tree identified in an experimental planting by the Agriculture Department.

The pilot scheme is likely to last six years.

The Western Mail, Weekend, July 7-8, 1984

NEWS CLIPPINGS from NEWSPAPERS and MAGAZINES

WA is Missing Out on Millions

WESTERN Australia is missing out on a million-dollar sunrise farming industry because of short-sightedness by investors and the Agriculture Department.

That is the view of David Noel, president of the WA Nut and Tree Crop Association.

Mr Noel said WA's traditional wheat and cattle industries were certain to contribute a decreasing share to our future economy.

But farmers, investors and the Agriculture Department were sluggish in looking at the exotic fruit and nut industry which was budding worldwide.

He said WA had ideal climatic and soil conditions for the tree crops and ready access to major markets in South-East Asia, Japan and the Arab world.

Potential

A Californian tree expert had said WA had the potential to be one of the major food baskets in the world.

"And this is from somebody from a US State which has an annual tree crop of around $3000 million — 100 times our present level," he said.

Mr Noel said it was ludicrous that we paid exorbitant prices to import fresh dates from Israel, lychees from South Africa and cape gooseberries from New Zealand when they could be grown here.

In a plea to Agriculture Minister Dave Evans, he urged more research into exotic tree crops.

"It could easily be a million dollar business. It could equal the value of the wheat crop and it takes up less farmland," he said.

In the past six years, pecan plantings had risen 2400 per

By SHIRLEY SKEEL

cent, mangoes 1400 per cent and chestnuts 370 per cent.

Tree crop production in WA still made up only one per cent of total agricultural produce.

The hardest point to sell was that investors could not expect a return for at least seven years.

Some of the crops which could thrive here included pistachio nuts, cherimoya (like a custard apple), feijoas (like a guava), jujubes (Chinese dates), lychees, pecans, avocados and mangoes.

The Western Mail
May 5-e, 1984.

QUARANTINE

The National Farmer

'Italian job' a scare for chestnut men

The blossoming chestnut industry has been put at risk by the import of a 10-tonne consignment of Italian chestnuts that were inadequately sterilised.

The threat was simultaneously spotted by a chestnut grower in north-eastern Victoria, and by the Victorian Agriculture Department's plant quarantine branch.

Fresh Italian chestnuts were recently seen for sale at Wangaratta's K-Mart store, in the heart of Australia's chestnut growing district.

This time of year is the off-season for fresh Australian chestnuts and Italian chestnuts often fill the niche.

A local grower decided to do a germination check on these imported chestnuts after spotting one nut which appeared to be shooting in the store's bulk bins.

He was concerned that these nuts, if not properly sterilised, could be carrying the notorious chestnut blight virus. European and US chestnut crops have been devastated by this disease but Australia, as yet, is in the clear.

The Wangaratta grower found that several nuts in the batch germinated. Immediately he rang the plant quarantine division in Melbourne, to find that their standard germination tests on all imported nuts and seeds had that very day also picked up the faulty chestnuts.

Eventually the nuts were found to be part of a 10-tonne consignment sold at the Melbourne wholesale fruit and vegetable market just before Christmas.

Less than one tonne of the poorly-sterilised chestnuts have yet been traced and destroyed. ●

Is this the Year of the Blueberry?

APART from being the Year of the Rat, 1984 may well be remembered by investors as the Year of the Blueberry.

Blueberries are the latest glamour investment to hit the scene and appear destined to gain the prominence once enjoyed by avocados, macadamia nuts and jojoba beans.

A BLUEBERRY bush in fruit — 30,000 are being prepared for planting at Bullsbrook.

Unknown

While relatively unknown in Australia, blueberries are considered a gourmet's delight in the US, Europe and the Middle East.

They are popular as fresh fruit and commonly feature in pies, muffins, jams, ice-creams, yoghurt and chewing gum.

A $7 million blueberry-growing venture at Bullsbrook which is currently being marketed by Horizon 2000 is already attracting considerable interest from local investors.

Horizon 2000 marketing manager Gary Connors said yesterday that West Australian Blueberry Farms Pty Ltd looked set to be a big success.

He said that growth and income projections showed that a person who invested the minimum amount of $6400 for a 1000 sqm share in the blueberry farm could see the investment appreciate 300 per cent in seven years.

Mr Connors said that blueberry bushes usually produced fruit after two years that could command prices of between $4 and $11 a kilo.

As a general guide the bushes each yielded one kilo of fruit at the end of the third year, rising to a maximum of five kilos a bush at the end of year seven.

Blueberries were the top scorers in a recent exotic fruits investment survey by the Bureau of Agricultural Economics.

The internal return rates on blueberries was an attractive 27.1 per cent followed by lychees (18.4), kiwifruit (15.4), mangoes (15.2) and macadamias (10.1).

WATCH OUT FOR PITFALLS

By PAUL PATERSON

THE blueberry investment exercise is not without its pitfalls and should not be considered without first seeking professional advice.

One uncertainty is the effect of inflation, which could increase production costs.

Also, as with any crop, blueberries can be damaged by unseasonal rain or heat and even pests.

Another danger is that the market could be flooded with blueberries, which would have a depressing effect on prices.

Overproduction at present affects bananas, avocados and guavas.

For 1983-84, Australian blueberry production is estimated at 20 tonnes; in 1984-85 it is expected to more than double to 50 tonnes. In 1978 there were just four blueberry bushes in Australia but that figure has now grown to about 400,000.

That is nowhere near an oversupply, but it gives an indication of how quickly production can be expanded.

10

Western Mail Weekend
May 26-27 1984

Cashew plan set for take-off

Dave Evans

By PETER HOOKER

INTEREST from major Australian and overseas companies has boosted hopes for a multi-million-dollar cashew nut industry in the Kimberleys.

The State Government is studying final proposals from several would-be developers bidding for the right to set up a pilot cashew farm near Broome or on the Ord River.

Kimberley hopes get big boost

The Government sees strong potential for a major cashew industry in the Kimberleys following the success of cashew trees already growing.

Last September it called for submissions from firms interested in testing the viability of a full-scale industry. It said it would be prepared to take part in a joint venture pilot farm with a suitable developer.

Agriculture Minister Dave Evans declined this week to give details of the final submissions.

But it is understood that early interest came from major British and Indian groups and that at least one foreign-backed consortium is among the final bidders.

Several big Eastern States groups, including Queensland and New South Wales macadamia growers, also expressed interest.

Detailed proposals from final bidders are being studied by an inter-departmental committee which will recommend a candidate for the pilot scheme.

The State Government believes a Kimberleys cashew industry could satisfy Australian demand and become an exporter.

$150m nut boom goes begging

It seems that every advanced country in the world can support a healthy exotic nuts industry — every country except Australia. Julian Cribb looks the opportunities in this sideline industry that, so far, have gone begging.

Australian farmers are missing out on a farm industry worth, potentially, $150 million a year.

Nuts, says a report by the Victorian Agriculture Department, are one of the last great untapped farming opportunities in Australia.

We now import more than $40 million's worth of nuts a year: there is no reason why we shouldn't grow them here, and reap export benefits into the bargain, the report by economist G.A. Birch suggests.

Australia is one of the few advanced farming nations in the world without a significant nut-farming industry — the exceptions being Queensland's peanut industry and the infant macadamia and pecan industries.

Most other production of nuts is on a very small scale.

Compared with worldwide production of 2.7 million tonnes of nuts annually, Australia turns out only 5000 tonnes of the major varieties other than peanuts. (See Fig.1).

We import almost the same volume of nuts from Europe — chiefly almonds, hazelnuts and walnuts.

The VicAg report points out that with a wholesale turnover of more than $50 million a year, wholesale prices of usually $4-6 a kilo, and large opportunities for expanding market demand for nuts and nut products both at home and abroad, there is no reason why we shouldn't have our own commercial nut industry.

Domestic demand can be expanded by: production of processed nut products, accompanied by strong promotion greater use of nuts for flavoring dairy-foods and other products, greater use of nuts in confectionary use of nuts in cosmetics, use of nuts in the liquor industry development of a glace chestnut industry.

On the export front, Australia has the chance to become the first big supplier of out-of-season produce in the southern hemisphere for northern markets.

At the same time, Birch says, there is unexplored potential for selling high value-added nut products to SE Asia where they would be a luxury and compete with produce from Europe.

Combining these three areas would give Australia a $150 million-a-year nut industry, he says.

There are however several major obstacles to its development. The first is farm size, which is often only one or two heactares.

Birch calculates that for full economy, with mechanical harvesting instead of hand-picking, the average nut farm will have to be around 20-25 hectares.

An investment of $200-400,000 is needed to launch such an operation — around $10-20,000 a ha.

So far banks have been exceptionally cautious in lending such large sums, especially as returns do not begin to come in till year five or six.

By year 15, however, returns of $6000 a ha can be achieved, rising steadily as trees mature.

Nut farming is definitely a long-term proposition and, he suggests, will require State Government involvement to help ensure development finance is available.

A second possible area for finance is from booming Asian investment in Australia: if Chinese entrepreneurs felt there were prospects for producing a food to be sold in their own area, they would be willing to invest in the industry, Birch says.

A big problem facing the industry in its early stages is the supply of sufficient young trees of the right varieties — partly because of the lack of Plant Variety Rights in Australia.

To develop a sound long-term domestic demand for nuts, growers will have to be able to promise both quality and continuity of supply.

One of the biggest users, Cadbury-Schweppes, imports all its nuts because, it claims local supplies are unreliable.

Hand-in-hand is the need to promote the product more widely to Australian consumers — especially new nut products.

Birch says the best prospects for farming are almonds, chestnuts, hazelnuts, pecans, walnuts and macadamias in the temperate regions and cashews in the far north.

A lack of sound economic information on nut farming is one of the initial problems the industry will face — but with modern production methods, he sees few reasons why Australia should not become self-sufficient in nut production over the next 15-20 years, and begin to cash in on extensive export opportunities in the region as well as in traditional markets by producing off-season. ●

AUSTRALIAN DEMAND FOR SELECTED TEMPERATURE NUTS — 1981/82

VARIETY	PRODUCTION (t) (1)	IMPORTS (t) (1)	WHOLSALE PRICE ($) (2)	TOTAL DEMAND (t) (3)	WHOLESALE TURNOVER $m
Almond	2,000	1,550	4.00	3,500	14.2
Chestnut	100	neg.	6.00	100	0.6
Hazelnut	3	1,073	4.18	1,076	4.5
Macadamia	1,200	neg.	10.30	1,200	12.5
Pecan	1,700	neg.	6.05	1,700	10.3
Walnut	150	2,197	4.90	2,347	11.5
TOTAL	5,153	4,820	—	9,973	53.5

Sources: ABS, VDA

Succulent Quandong: the Outback fruit?

The Outback farmer is used of having it tough and going without — it goes with the scenery. But now, via CSIRO, he and his family may soon enjoy what the city dweller takes for granted — a fresh piece of fruit. As John I'Ons reports, the way may even be opening for a profitable Outback sideline.

Succulent new tastes and possible orchard money spinners are on the way for Outback pastoralists with the approaching release of arid-zone fruit varieties.

While city-dwellers take for granted the array of fruit they can buy at the store or supermarket, isolated families in inland Australia have no such luxuries. But soon they will be able to grow their own, even in areas where blistering summer heat and salty water rule out conventional orchard species.

CSIRO's South Australian-based Division of Horticultural Research will release soon improved varieties of one of the country's neglected bush food plants, the quandong, a species that thrives under conditions that would make any peach, plum or pa-paw turn up its toes.

The value of quandongs (scientific name Santalum acuminatum) has been known for a long time. Aboriginals have been eating them for centuries, and some European Australians have discovered they go down well if stewed or preserved. But for most people the raw flesh is too acid.

Work aimed at domesticating quandongs began in 1973, and the next year an orchard of almost 200 trees was established at Quorn, in the Flinders Ranges.

Margaret Sedgley, who is in charge of the quandong program, said what was obvious from the initial planting was the tremendous variability of the plants and their fruit.

By selecting fruit that is relatively sweet and succulent, Sedgely says it has been possible to begin developing varieties that will be more popular.

The Quorn orchard started bearing three years after the seedlings were planted, and by the seventh year the best tree gave more than 10kg of fruit.

The main advantage is that the trees will grow in areas with scorching, dry summers and frosty winters. And, although the trees need to be watered while being established, they can take high levels of salt. The bore water at Quorn is saline in the extreme.

Quandongs may not be the only native bush plants that may increasingly find a place in Outback home gardens. The University of Sydney has developed a range of indigenous species which produce fruit that is highly nutritious, although some of it may not be all that palatable.

A plant that looks good for the Northern Territory coast, where it grows in a belt 2000km long and several hundred kilometres wide, is the salty plum.

With a flavor somewhere between that of a sweet lemon and a gooseberry, the fruit is about the size of an olive and is produce d by a tall, slender tree.

Dr Jennie Brand, of the university's Human Nutrition Unit, analysed the fruit and found it to be 50 times richer in vitamin C than oranges. A weekly consumption of only 100 grams of salty plum would provide 15 times more than the recommended intake of the vitamin.

Not surprisingly, it figures in the diet of Aboriginals living in the north and depending on the bush.●

Asian pears face acid test

This season only a few Australians got their first taste of Asian pears, or nashi fruit. Next time round there will be enough on offer for a real test of market reaction.

While there are not any definite statistics, guesstimates of the area planted to Asian pears in Victoria run at about 200 acres. NSW probably has a smaller total, and there has also been interest in WA and SA.

Fergus Black, who heads the Victorian Agricultural Department's fruit section, says the fruit that entered the market this season went very well. But there was only enough for "a token gesture".

Next season he expects there will be enough to make an impact and give a firm indication of consumer reaction.

"While there have been some areas planted to Asian pears, probably the greatest production will come from Williams trees that have been grafted over," said Black. That means there will be virtually mature trees coming into production within two years, and there could be a large quantity of budwood for more plantings.

Most of the fruit marketed in Victoria this season was Nijisseiki, or twentieth century pear. This clear green-yellow skinned variety is widely planted in Japan, but in new orchards it is being replaced by Hosui, with brown skinned, speckled fruit.

The NSW Agricultural Department's John Johnson says Nijisseiki displayed a fault this year in local trials when fruit split after heavy rain. None of the other varieties suffered.

"It is evident that the clear-skinned Nijisseiki has a sensitive skin because it also marks easily as a result of wind abrasion," he said.

He warned growers against jumping in in a big way with plantings of Asian pear until varieties have been adequately assessed. Also, he thinks windbreaks will be necessary, at least for the vulnerable varieties.

The NSW Department of Agriculture already has 10 Asian pear varieties in quarantine and an eleventh, Kikusui, was introduced from the US in February. Efforts are also underway to bring in the best Korean cultivars. ●

NATIONAL FARMER

ARTICLES

THE ACTINIDIAS: RELATIVES OF KIWI

Michael Lilarski P. O. Box 1064 Tonasket, WA 98855

The increasing appearance of kiwi-fruits in supermarkets has promoted a growing interest in their cultivation and that of its relatives. Following is a brief introduction to those species which show promise for temperate climates.

Actinidia chinensis, the commercial kiwi-fruit, is classified as a subtropical fruit. However, its vigorous growing vines have proven hardy to Washington, D.C. on the East coast and through Puget Sound on the West coast (hardy in a protected position, usually a south wall). They can be grown further north if the vines are taken down in late fall and mulched. One large vine outside of Seattle, WA (on a barn wall) has survived 10°F. several times with little damage. One winter the temperature dropped to 0°F. which caused moderate, tip dieback. I know of at least 4 vines bearing crops of fruit in various parts of the Puget Sound region.

Actinidia kolomikta, or Bower Actinidia, is the hardiest of the genus; purportedly to -50°F. It is native to Japan, Sakhalin, and Manchuria. Alfred Rehder says the fruit is blue and Hillier says it is yellow; both agree that it is oblong and sweet. It is the easiest of the Actinidia's to control since it seldom exceeds 15 feet even if unpruned. It is grown commercially as a landscape plant for its beautiful pink and wite variegated leaves, particularly striking on the male plants.

Actintidia arguta, or Tara Vine, is almost as hardy as A. kolomikta. It is a vigorous grower, up to 40' long and will readily clamber into trees. The fruit is the size of a large sweet cherry, greenish-yellow in color and is acid until ripe, then becoming sweet. It is grown as a foliage plant and for its large, white, bell-shaped, fragrant flowers, which put on a fine floral display.

Actinidia polygama is known as silver vine for the beautiful, silvery-white color of the young leaves of the male plant. Several sources list the fruit as edible although Hillier says it is bitter. A moderate growing vine. Information on hardiness is hard to come by, although the University of Washington Arboretum in Seattle has grown it successfully since 1952. A. polygama has a special fascination for cats who have been known to destroy plants, so the base of the plants should be screened. This is a possibility with A. kolomikta also.

Actinidia purpurea is a strong-growing species native to West China. Hillier lists the fruit as oblong, purple, sweet and edible. I can find no data on hardiness, although Hillier does not mention protection as needed in the British Isles.

The Actinidias are ornamental vines which offer us edible fruit. Under suitable conditions they grow rapidly, fruit abun-

dantly and bear early in life. They are excellent for covering walls, trellises, arbors, pergolas, tall stumps and the like. Actinidias prefer a somewhat moist and rich soil. Actinidia vines can be grown over chicken coops and on chicken yard fences to provide shade and feed, since chickens will happily gobble up any fruit which falls. They grow well in sun and in partial shade. They are remarkably free from insect and fungi attacks. Propagation is by seed; cuttings of half-ripened wood in summer; by hardwood cuttings under glass; and by layers. The seed is very small and difficult to succeed with if proper conditions are not met. Seed should be surface sown in flats and lightly covered with a dusting of sifted peat moss. The seed should not be allowed to dry out. The seeds of the hardier species may give a much higher percentage of germination if given a moist, cold period to satisfy winter chilling requirements. 60 days should be sufficient. More work needs to be done to get chilling requirements more defined. The whole flat may be placed in a plastic bag and put in a cold place like a root cellar or garage where temperatures will generally be in the 30's F. After the chilling time put the flat in the warm greenhouse. Don't give up hope for at least a month. Actinidia chinensis may not need a chilling period, or a much shorter one, due to its more southerly native range.

Actinidias have male and female plants separate. Both are needed for fruiting. One male for 7 females is sufficient for pollination if optimum production per acre is desired. If ornamental foliage is desired also, then bear in mind that the male plants are more colorful.

The best cultural information I have seen is a pamphlet available from the Dave Wilson Nursery, 4306 Sante Fe Avenue, Hughson, CA 95362. Entitled Planting Guide Supplement for Chestnuts, Filberts, Citrus, Kiwifruit and Roses. The pamphlet covers A. chinensis only, but some of the information should also prove of value to the hardy kiwi-fruit grower. $2.00 each.

The fruit of the Actinidias offers great promise of improvement through selection and breeding. Selection has progressed furthest with A. chinensis with delicious results. A. kolomikta is grown commercially in eastern sections of the USSR. Although A. chinensis fruits are twice the size of the other species, some are its equal in taste and lack the objectionable fuzzy skin, so the thin-skinned fruit may be eaten whole. The Vitamin C content of A. chinensis is 10 times that of lemon and A. kolomikta is rated by the Russians as even higher. The fruits contain papayin, an enzyme which aids digestion.

I have seeds of A. chinensis and A. kolomikta on hand and should have soon seed for A. arguta. I am willing to coordinate exchanges of seed and cuttings and compile information sent to me.

THE INDIAN JUJUBE - Living Off The Land

Bob Smith

The Indian Jujube is a native of Southeast Asia. It is usually grown from seed. Seeds for planting should be selected from trees with good-tasting fruit, as there is a large variation in both taste and quality. The single stone contains two seeds, which will germinate in ten to fifteen days, if removed from the stone; otherwise it will take four to six weeks to sprout. Young trees are quite sensitive to cold. My tree was frozen to the ground when two years old; but came back from the roots. It was also injured in later years; but now, even though the fruit may be sometimes frozen off, there is little, if any, damage to the tree. After a cold spell, the tree will usually begin new growth and new bloom.

The tree has a weeping ornamental growth pattern. It does have small, hooked spines at the leaf bases; and they will catch you as you pass. The branches weep even more when loaded with fruit. The small (about 1/8 inch) whitish blossoms are very fragile and are loved by honey bees. The fruit looks like a small, smooth apple; and turns yellowish when ripe. They remind me of crabapples. They are still edible when brown, and later become wrinkled, like dates.

We are often asked about the difference between the Indian Jujube (Zizyphus mauritiana) and the Chinese Jujube (Zizyphus jujube). The trees are related and have similar growth patterns. The Indian Jujube has leaves with downy lower surface, and the leaves of the Chinese Jujube are smooth.

The Chinese Jujube was introduced into South Carolina in 1837, and distributed by the U.S. patent office. It grows very well in dry mild areas, but poorly in South Florida, where it is too hot and wet. Russian tests have indicated the Chinese Jujube is very high in vitamin C; and that it has some effect in lowering blood pressure. Is it likely that the Indian Jujube does the same?

Both Jujubes can be eaten fresh, right off the tree. In China, the fruit is sometimes boiled with millet and rice. It is also stewed or baked; and candied by boiling in honey or sugar syrup. Visitors from Viet Nam and Thailand are familiar with the fruit, and I was amused to see them eating green Jujubes with salt- as some folks eat green apples. They also make a stewed dish with it; and I have heard it also makes a very good wine.

THE CHOKEBERRY, A NEW FRUIT FOR THE ORCHARD

Dr. J. Reckin 1303 Finowfurt Gorkistr. 20 German Democratic Rep.

The chokeberry (Aronia melanocarpa) is a native to Eastern North America and, to my knowledge, has never gained any attention by American pomologists. Oddly enough, it was recently transformed into a cultivated fruit far away from its natural habitat. Soviet fruit breeders succeeded in developing the first variety which is in the meantime available in commercial quantities. It is called 'Nero' because of its shiny black fruit. Berries are produced in clusters of some 15 berries. 'Nero' bears fruits weighing about 1.2 g. each whereas berries of wild specimens usually amount to 0.6 g. and scarcely have the size of a pea. The cultivar also bears larger fruit clusters and the yield per tree is more than twice that of wild specimens. The vitamin C content ranges from 15 to 30 mg % in the pulp.

The chokeberry isn't a fruit to be eaten fresh. When eaten raw its taste is rather tart and somewhat astringent, however, when cooked it certainly compares favorably with the best blueberries. It doesn't seem to be exaggerated to state that it could well become the 'blueberry for the north'. Unlike blueberries, it can be grown in virtually any garden soil and even on marginal lands. It comes into bearing very early, usually the first year after planting.

In the G.D.R., 'Nero' is grafted onto mountain ash rootstocks with good success. Commercial plantings have been established on rolling terrains near Schirgiswalde in the South of our country. The berries ripen by the end of August. They are well suited to mechanical harvesting.

Chokeberries make excellent jam and desserts. They are extremely high in anthocyanines and therefore can be used to colorate preserves such as juice, jelly and wine.

==========

From: 'POMONA' April 1983

The macadamia nut is the only native Australian plant to be developed commercially as a food crop.

WALNUT CULTIVATION AND UTLIZATION IN CHINA

REPRINTED FROM INTERNATIONAL PROCESSED FRUITS 1-1980

Many occidentals have the custom of serving walnuts on Christmas Day. In China, on the other hand, this dry fruit is used not only as very popular food, but also as a precious traditional medicine effective agginst a variety of diseases.

China is taken measures to strengthen scientific management and research of walnuts so as to improve the quality and increase yields.

Walnuts of various species and strains have been widely cultivated in the country for more than 2,000 years. The Chinese people have thus accumulated enormous experience in walnut cultivation and utilization, and bred quite a number of fine varieties that are rare in the world.

In China's second general forest survey between 1973 and 1976, Chinese scientists made a comprehensive investigation of walnut reserves throughout the country, and identified the existence of about a hundred walnut strains. From these more than 20 excellent strains that are characterized by early fruiting, high yields, disease resistance and good quality meats were identified. Another interesting discovery was the location of some perenial trees from 500 to 800 year old, that were still growing luxuriantly and bearing vigorous fruits.

The northern slope of the Tianshan Mountains in Xinjiang (Sinkian) is known as the native home of the Chinese walnut. Here a large stretch of primeval wild walnut forests about 1.5 kilometres long and 1.4 kilometres wide was found that has been of great value to scientific research into the development of the genus.

These wild forests have now been designated by the state as a natural preservation zone where scientists can do on-the-spot investigations.

In southern Xinjiang with long growing seasons and abundant heat, several fine fast-growing strains have successfully been bred through artificial selection and propagation. One of them bears fruit within two years after it is sown. The kernels of this walnut are large in size with thin shells and bear high oil content. They are readily released from the shell.

This strain has been successfully introduced in Beijing, Henan, Shandong and many other areas.

In sub-tropical Guangxi, south China, a strain called "paperlike walnut" has been cultivated. Because the shells are only 0.5 millimetres in thickness, or as thin as a coarse piece of paper, they break easily with a light pinch between two fingers. The meats are sweet and crisp and contain 71 per cent oil.

China had 150 million walnut trees by the end of 1978, and the year's walnut output reached 118,000 tons, surpassing the peak output in 1956.

Chinese walnuts enjoy high prestige on the domestic and international markets both for their good eating quality and their high oil-bearing content. Processed by hand, the walnut meats are carefully graded and specified. This kind of quality control is appreciated by consumers.

Beginning in the 1970s, China annually exported about 10,000 tons of walnuts and

5,000 tons of shelled meats to over 20 countries including West Germany, Britain and Canada. Last year, 13,000 tons of walnuts and 5,000 tons of shelled meats were sold abroad. Owing to the growth in domestic consumption, the figure for walnut exports decreased by 17 per cent compared with the record year of 1975. In terms of both annual walnut output and export volume, China now ranks second only to the United States. However, China's per capita walnut output is still rather low, and a far cry from meeting the growing needs of the people at home. To stimulate walnut-growers to increase production and sales, the government has raised the purchasing price of walnut by 25 per cent starting this year.

On account of its highly nutritive and medicinal value, in China the walnut is affectionately called a "friend of people's health with every part useful to the body".

Chinese like to eat raw, roasted and fried walnut meats, or make them into a large variety of wholesome and palatable pastries and confections.

The medicinal properties of walnuts have been known to the Chinese for over 1000 years. In his book "on Chinese herbal medicines", doctor Meng Xi of the Tang Dynasty (618-907) made it clear that eating these nuts "helps whet the appetite, promote blood circulation and keep the skin delicate".

The eminent Chinese pharmacologist Li Shizhen (1518-1593) pointed out other medicinal qualities in his "The Compendium of Materia Medica", a well known classic for world pharmacology. Here he wrote that walnuts had the effects of "invigorating vital energy, enriching the blood, moistening the respiratory tract, reducing phlegm, benefiting the lungs, promoting bowel movements and reducing swollen limbs".

Scientific analysis shows that walnuts contain 60 to 70 per cent fat, 15 to 20 per cent protein, 10 per cent carbohydrate, as well as calcium, phosphorus, iron, magnesium, potassium and many other minerals and vitamins needed by human body.

In clinical practice, the Chinese prescribe walnuts to treat asthma, chronic tracheitis, kidney debility, lumbago, cough, constipation, impotence and some other diseases. The efficacy is satisfactory. Added to refined sugar and sesame oil, it can also be used for bladder stones and urethra stones.

Dried prematured walnut endocarp is made into a medicinal herb.

Because of its close texture, hard walnut lumber is a great favourite for making railway carrieages, furniture and ships. Tannin and dyestuff can be extracted from the bark, roots and exocarps. Active carbon made of walnut shells is used for gas defence.

In most areas of China in the past, walnut trees used to be propagated by seed with practically no systematic management or overall planning.

This resulted in defective seeds, late fruiting (on the whole a walnut tree does not begin to bear fruit until after it is eight to ten years old, poor per-unit yields, unattractive colour, varying size and nuts that were very difficult to separate from the shell. Thus, lack of scientific research resulted in slow progress in walnut cultivation.

In recent years, China has developed scientific research from scratch. Research institutes have come into existence in all major walnut-growing provinces.

Scientists have been working with local peasants to breed and propagate the best varieties.

A highly-prized strain is the "grape walnut" bred on the Yunnan-Guizhou Plateau, a major walnut-growing centre in southwest China. Its name is derived from the fact that it grows in grapelike clusters. Each cluster has about 15 fruits and

each nature tree yields about 100 kilograms of nuts. Walnuts of this strain have thin shells, plump meats, a fragrant flavour and more than 60 per cent oil content.

The propagation of saplings by grafting is another method of cultivation that Chinese scientists are applying to walnut-growing areas to quicken the harvest yields of best varieties.

Results of experiments started in 1977 by scientists and local peasants of the Shandong Provincial Fruits Research Institute prove that walnut grafting in hothouses in winter is effective in regulating the temperature, moisture and ventilation making the environment suitable for the control of the excessive flow of sap and for formation of thick bark around the graft.

Tongue grafts were adopted. This is the method whereby one to two-year-old saplings of the hardy walnut or pterocarya stenoptera variety are used as rootstocks while the well-developed twigs of the more specialized walnut strains are used as scions. The plants united by this method of grafting blossom bear fruit in the same year or the following year after they are transplanted from the hothouses to the fields.

Last October, the Chinese Academy of Forest Science sponsored a nationally co-ordinated conference in Shandong province to study and popularize the experience of the Shandong Institute in walnut grafting and breeding. The 62 scientists from 19 provinces attending the conference read papers on the introduction, selective breeding and propagation of fine-strain walnuts and other dry fruits, as well as on their pruning, biological features, high-yielding cultivation- and prevention and treatment of insect pests. A plan for scientific research on walnuts up until 1985 was drawn up at the conference. For the most part, Chinese walnuts still are haphazardly planted on mountain slopes, along farm borders or home grounds.

In recent years, intensive cultivation and close planting of walnuts have been introduced on selected hillslopes or plains with thick soil and good drainage facilities in such places of Xinjiang, Yunnan, Henan and Hebei. A number of sizeable walnut orchards have been set up to facilitate scientific management, qualitative improvement and quantitative increase.

GARDENING—

By JOAN HILLARY

A fruit and nut guide for WA

THE Department of Agriculture's Journal No. 4/1983 gives a most informative guide to some of the fruits and nuts not so commonly grown in Western Australia.

These include the avocado, guava, feijoa, paw-paw, mango and other tropical fruits like the custard apple.

The journal indicates whether these fruits are worth growing commercially (some are already in this category), or whether they are only for the interested home gardener who likes to experiment.

Helpful information is provided on growth patterns, nutritional value of the fruits and the best areas for growing them.

The nut trees commented on include pistachio, walnut, pecan and macadamia.

I was interested to read that in 1981/82, WA imported around 95 tonnes of walnuts in the shell.

Productive trees are grown privately in this State and have been for more than a century, but as it can take up to 20 years for an orchard to yield sufficient nuts to make their growing viable, this is a major obstacle to establishing their commercial production.

THE WEST AUSTRALIAN SATURDAY JULY 14 1984

(Available from Granny Smith's Bookshop under title 'Alternative Fruit & Nut Crops' $3.00)

Farmnote

No. 162/83, replaces 119/77

Western Australian Department of Agriculture

The tamarillo in the home garden

By T.J. Enright, Home Garden Inquiry Centre

The tamarillo, *Cyphomanda betacea*, also known as the tree tomato, is native to sub-tropical regions of South America. It is a member of the family Solanaceae which includes tomatoes and potatoes, and is a large-leaved, soft-wooded small shrub or tree, ideal for home gardens. Being of sub-tropical origin, it should only be grown in frost-free districts.

The fruit of the tamarillo ripens during winter but pruning can be regulated to extend the fruiting season. A well established plant can produce more than 25kg of fruit in a season. There are two main varieties, a red and a yellow. The red is the most popular and most often grown in W.A.

The fruit has an acid flavour and is very high in vitamin C. It can be eaten fresh, may be bottled or otherwise preserved, making good jams, pickles and chutneys.

Colour deepens as the fruit ripens and when fully ripe fruit tends to give under slight pressure. The home gardener will soon learn from experience the best time to pick.

The skin is bitter and should be removed. This is easily done if the fruit is dipped in boiling water.

The tamarillo

Requirements

The tamarillo requires a light, fertile, well-drained soil. It does not tolerate waterlogging but does require plenty of water during summer. The leaves and brittle wood are easily damaged so adequate protection from wind is also necessary.

Propagation

Tamarillos may be propagated from seed or by cuttings. Grafting on to various rootstocks is also possible but rarely necessary. Trees grown from seed are quite satisfactory and usually produce a crop within two years.

For a commercial planting, plants could be raised from seed but this is not worthwhile for the home gardener as many local nurseries carry stocks of seedlings.

Seedling trees tend to grow out of reach before branching, so branching should be encouraged by pinching out the growing point when they reach about a metre high. A particularly desirable variety can be multiplied by cuttings.

One or two year old wood up to two centimetres thick makes suitable propagating material. Straight pieces up to 50cm long should be selected. These should be cut straight across just below a node and all leaves should be removed. The cuttings should be planted to about two-thirds of their depth in well drained soil.

Plants grown from cuttings branch very readily and result in squat bushy trees.

Planting and fertiliser

Planting out is best done in spring. A site well protected from prevailing winds should be chosen. The planting site should be enriched with well rotted animal manure or compost. Blood and bone is also suitable and half a kilogram could be worked into the soil in the planting hole.

Regular applications of a complete garden fertiliser (preferably containing trace elements) will be necessary to keep the tree growing and productive. Half a kilogram per tree in September and again in December should suffice. In addition a surface mulch of animal manure should be applied around the tree. The tree tomato is extremely shallow-rooted and a mulch helps to maintain moisture and keeps the roots cool during hot weather.

Maintenance

Regular pruning is necessary to maintain vigour and renew fruiting wood. Branches which have borne fruit should be cut hard back. If pruning is done in stages from August to November it will extend the fruiting season from May to August.

Fruit stores well and can be held for several weeks in the bottom of a refrigerator.

Pest and disease control

Tamarillos are not very prone to disease, but powdery mildew is sometimes encountered. This can be controlled by any of the recommended fungicides. Insect pests such as aphids and white fly can be controlled with maldison or dimethoate.

ISSN 0726-934X

PO Box 565 Subiaco, WA 6008, Australia

West Australian Nut & Tree Crop Association

Incorporating the West Australian Nutgrowing Society

EXECUTIVE COMMITTEE

PRESIDENT	David Noel	3802326
VICE-PRESIDENT	Wayne Geddes	3213200
SECRETARY/TREASURER	Lorna Budd	4585 918
YEAR BOOK EDITOR	Lois Evans	4075474
QUANDONG EDITOR	Bill Napier	3260311
	Warren Boucaut	3905311
	Milan Mirkovich	4202068
	Nola Washer	4075888
	Alex Sas	3975628
	Reg Judd	2766844
	Mr & Mrs Aitken	2741469

Editor's address: 11 Canns Road
ARMADALE.

MEETING DATES

AUG 1 GENERAL MEETING
AUG 13-15 ACOTANC-2, MELBOURNE
SEP 25 EXECUTIVE COMMITTEE
NOV 7 ANNUAL GENERAL MEETING

General meetings are held at the Naturalists Hall, Meriwa Street, Nedlands, at 7.30 pm on Wednesdays.

Members wishing any matter to be considered at an Executive Committee meeting should contact Lorna Budd at least 2 days before the meeting.