

# Quandong

magazine of the  
West Australian Nut & Tree Crop Association (Inc)

November/December 1988

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**THE JUJUBE OR CHINESE DATE (*Zizyphus jujuba*)**

## NEXT MEETING

**Wednesday November 16 — 7.30 pm**

Our next meeting will be the *Annual General Meeting*. After a short business meeting we have been fortunate in obtaining as a speaker

**Allan Cooke**

of Science Associates and Peace Shield Investments Ltd.

Allan is currently actively involved in a wide range of developments which have bearing on tree cropping and rational land use. He will be talking about some of these, and will be willing to answer questions and expand on any areas of interest to members.

Allan was the inventor of 'Agrosoke', a harmless and inert material which can be added to soils and potting mixes to greatly improve their water-holding capacity and hence boost the growth of plants and reduce the need for watering. This product was produced some years ago, and is finding increasing application throughout the world, especially in countries with drier climates.

This work led to further developments in three different directions:

- **Ethical Investment.** This relates to investment projects which are both commercially viable and also not liable to be harmful to the environment or the human race. This is a new investment concept for Australia, but one which has found increasing acceptance in some overseas countries. Peace Shield Investments Ltd is the financing arm for these projects, and Science Associates is a membership organization for the originators of the ideas used in the projects. Those active in either of these organizations have signed an ethical charter which commits them to an ethical code of conduct in pursuing the affairs of the organizations.

- **Arid Land Development.** There has been special emphasis in these projects on ones which can facilitate the development or reclamation of drier areas with poor or eroded soils, especially through the use of trees and other perennial plants. An Arid Land Development Centre is being set up which will work closely with the Tree Crops Centre.

- **Alternative Communities.** Under the headings of 'Natureville' and The Arid Land Farmers' Association, projects are being developed using new arid-land perennial plants as the basis for financially self-sustaining communities.

Come to the meeting and learn and ask about all these things!

*Visitors will be very welcome - admission is free.*

## ELECTION OF EXECUTIVE

In accordance with the constitution, half the current Executive Committee of WANATCA retire at the end of 1988, and nominations are called to fill these positions. Those retiring are Aitken, Geddes, Raynes, Sheppard, and Turner. An election will be held at the AGM. The current Executive will be putting nominations at that meeting, but other nominations or expressions of interest are very welcome from any member — contact David Noel if interested.

## POMEGRANATE GROWING

The pomegranate, *Punica granatum*, is an Old World fruit originating in the Middle East and Orient, where it enjoys popularity to this day.

The tree may eventually grow to about 6 metres tall and remain productive for many years. Specimen trees over 200 years old are recorded in Europe.

In Australia the pomegranate is commercially insignificant, probably largely due to the availability of a wide range of preferred alternative fruits. However, in New South Wales there is evidence of some opportunity for an increase in commercial production. For instance, the growing numbers of people in the State with a Middle East/Mediterranean background are creating a little more interest in the fruit. Even so, demand is thought likely to be satisfied by a relatively small volume of production.

Supplies from domestic sources appear in Sydney wholesale markets during late summer/autumn. In the past, and again in recent years, pomegranates have become

available from California during our early summer/midsummer period. The imported fruit is usually of a high standard - well coloured, very uniform, about 90mm. in diameter, and well packed - and very highly priced. There is little doubt that fruit of comparable quality could be produced in New South Wales and profitably marketed at rates considerably below those of the imported fruit.

The market seeks relatively blemish-free, medium to large fruit, with plenty of red colour evident, both externally and in the juicy sub-acid pulp surrounding each seed. Seed should be tender. Good varieties have a large proportion of edible pulp to rind and cell partitions, which are unpalatable and bitter.

The plant may be grown as a multiple-stemmed shrub or a single-stemmed tree. The latter is preferred.

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Few varieties suitable for commercial production are available. Considerable diversity in fruit character is evident from observations of fruit grown in gardens. In the garden the pomegranate can be an attractive shrub, with snowy flowers and colourful fruit. Some varieties produce both a dwarf shrub and small fruit but are of value only for ornamental purposes.

However, the variety Wonderful, of long standing repute in the U.S.A. and now imported annually into Australia, is being propagated by some nurseries. The Department of Agriculture is currently evaluating other varieties and selections gathered from N.S.W. and interstate sources and a number of seedlings. In due course it should be possible to make a number of varietal recommendations.

#### CLIMATE AND SOIL

The pomegranate plant is very adaptable and will grow in regions ranging from temperate to tropical. It is deciduous or semi-deciduous depending on its location. The best prospects for commercial fruit production exist in those parts of the State where the summer is warm to hot and where



*Pomegranates should be fairly large (ca 90mm diam) and evenly shaped, with well-developed red colour*

rainfall is minimal during late summer/autumn. Water should be available for irrigation. Much rain as fruit approaches maturity can result in fruit splitting and hence in considerable loss. Very hot weather can lead to sunburn injury on fruit.

Deep, loamy, well-drained soils are preferred but the pomegranate has some tolerance to less than ideal drainage and to mild



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alkaline conditions.

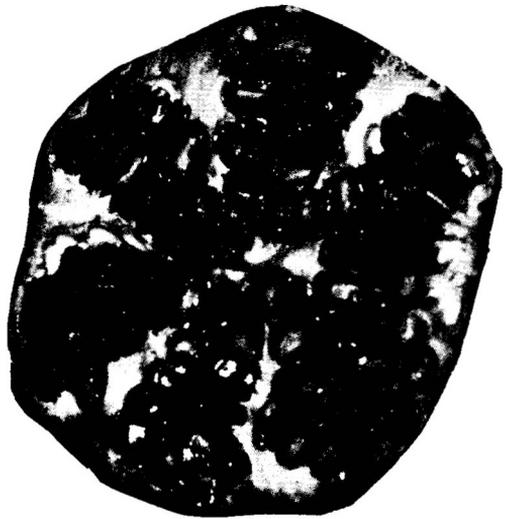
## PROPAGATION

Commercial plantings should not be established from seed, as too much variability in fruit character is likely to occur. Plants can be propagated readily from hardwood cuttings 15 to 20 cm. long taken in winter. Leave only the uppermost bud exposed at planting. Remember that the plant and fruit eventually produced from a cutting will be identical with the parent plant and its fruit. Therefore, only use cuttings from recognised, desirable varieties or selections known to have good cropping characteristics.

## PLANTING OUT

After one year in the nursery situation the young plants should be sufficiently developed for orchard planting.

Although adoption of higher density plantings - for example, in hedgerows - has been shown to increase production with many fruit crops, planting at traditional distances so as to maintain separate producing units is preferred for the pomegranate. With crowded growth, fruit colour will be poor, fruit scarring may occur and harvesting and



*Pomegranate half-section. A good fruit will have a high proportion of fleshy seeds in the inedible pulp*

pruning are likely to become a problem. The suggested distance between plants is approximately 5.5 to 6 metres.

At the suggested planting distance, an annual production of 40 to 50 kg. per tree could be expected; with more widely spaced trees yields would be higher.

## TRAINING AND PRUNING

At planting, reduce each plant to a single stem and shorten this to about 50cm. above ground level. A short stake may be needed for support until the stem becomes rigid and sufficiently strong. Subsequently, select three to five shoots arising from the upper half of the stem to provide the main framework. These will be shortened at each winter pruning to produce a strong compact frame. Several secondary limbs should be allowed to develop from each main limb, but excessive numbers which would lead to overcrowding should be removed, as should any suckers which develop from the base of

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the tree.

Pruning of the fruiting tree will consist mainly of removal of excessive over-crowded growth, deadwood and suckers. Adequate fruit-bearing wood should be retained. This will be mature growth 2 to 3 years old from which short flower-producing spurs arise.

## IRRIGATION AND NUTRITION

Although the pomegranate tree is very drought-tolerant it needs adequate moisture to produce good crops. Its summer water requirements are considered by some overseas authorities to be almost as great as those of citrus. Adequate soil moisture as fruit approaches maturity is said to reduce the susceptibility of the fruit to splitting.

Overseas experience indicates that fully grown trees will benefit from one or more applications of fertilizer which in total provide 0.25 to 0.5 kg. nitrogen annually.

## HARVESTING, PACKING AND STORAGE

Fruiting should commence by the tree's third to fifth year of age. If there is a large amount of fruit to be handled, harvesting can begin a little before full maturity because ripening will proceed during the postharvest and storage periods. The fruit should, however, be sufficiently coloured and be reasonably sweet. On the other hand, if harvesting is delayed the chance of fruit loss as a result of splitting will increase.

The pomegranate stem is thick and strong and the fruit is best removed by clipping. At least two pickings should be made. Remove only fruit that is adequately sized and coloured at the first pick.

Size grading is required to provide a good pack of well-presented fruit. In NSW there is no package specifically for pomegranates, but in the interests of rationalised packaging any package selected should be prescribed under Regulation 63 of the Plant Diseases Act.

Two prescribed packages that could meet the needs of local producers and are worth a trial are the Standard Package for applies (450 mm x 290 mm x 270 mm) and the Half Peach Package (450 mm x 270 mm x 145 mm). Both would be used for pattern-packaged fruit, which could be either wrapped or unwrapped. Also worth considering for top-quality fruit are the Australian Traypack (500mm x 300mm x 275 mm) and the Standard Tray (450 mm x 290 mm x 100 mm) for single layer packs.

There are no details of local experience with cool storage. Information from overseas is rather contradictory, with cool storage life stated to be anything from several weeks to six months. Reports indicate that, with storage, internal fruit quality improves. The rind becomes thinner but tougher and the proportion of other non-edible parts decreases. The flavour becomes richer, but, against this, overall fruit shrinkage occurs and the skin may become dull.

J.F. Johnson

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Americans, the Israelis, and the New Zealanders, but it looks as if the ball may now be in our court. Some of the research and development being done here is certainly of world class. Whole new industries are on the verge of realization, and some older ones are being dusted off and approached with new vigour.

Of particular interest was work on 'new' tree crops such as tea-tree oil and neem oil. Tea-tree oil is actually an old Australian product, gathered from the bush for the past 50 years, but it has now been developed to the commercial plantation stage. The oil is a natural disinfectant with enormous potential for world-wide sale.

Very new, and also very promising, is the production of insecticidal and medicinal products from the Neem tree. Here is a potential industry which already has overseas buyers clamouring for huge orders of the products. With proper organization, it can become a real money-spinner for Australia.

With over 80 papers and talks presented, plus a number of poster displays, it is not possible here to list full details of what went on, but a list of keywords is given at the end of this report, and the full Proceedings of ACOTANC-88 should be available this year. In summary, I believe that this conference will be looked back on as a turning point, the time when our industry Came of Age.

David Noel

### **KEYWORDS from ACOTANC-88**

World subtropical horticulture; Horticultural trade; Annona varieties; Custard Apples; Cherimoya pollination; Lychees;

Longans; Nashi; Hydrogen cyanamide dormancy breaking; Nut mysteries revealed; Tagasaste; Pine nuts; Paclobutrazol and lychees; Pecans; Honey locust; Paulownia; Beekeeping; Domestic markets; Fertigation; Avocados; Macadamias; Persimmons; Citrus and salinity; Peach varieties; Low chill peaches and nectarines; Pollination by Trigona bees; Chestnuts; Tea growing in Australia; Tea-tree oil; Irrigation of tree crops; Afforestation; Boron micronutrient; Kiwifruit; Soil testing; Orchard sprayers; White sapote; Weed control; Durians; Neem trees; Rambutan; Cashew yields; Mangos; Carambolas; Australian coffee; Importing rare fruit seeds; Sustainable agroforestry; Windbreaks; Integrated subtropical agroecosystems.

[Soil & Health/ Aug 1988]

### **THE HOG PLUM**

The genus *Spondias* belongs to the Anacardiaceae or Cashew family, which also includes the mango.

It has about 8 to 10 species in the genus found in the tropics of Asia and America. The fruits of some of these species constitute an important source of food in their native areas. *Spondias cytherea* (syn. *S. dulcis*) is commonly called the Ambarella or Otheite Apple. The species forms a medium sized tree 12-15 metres tall, with a smooth bark and large pinnate leaves to 40cm. long. The flowers are borne terminally in Spring and fruits ripen in the Autumn and early Winter.

The fruit is 6-8 cm. long and 5-6 cm. in diameter. The skin is yellow when ripe and somewhat leathery. The edible flesh is yellow in colour and about 1cm. thick. The stone or seed casing has spines that stick out in the flesh, which complicates the use of the

...Continued p. 15

# JUJUBE SPANS CENTURIES

The jujube, or Chinese date (also known as the red date and, in China, as Zao), is a most unusual fruit.

It is thought to have originated in Syria, though others say China, and has spread throughout the hot, dry climates of the world.

It is known to have been cultivated in China in the third century B.C., and in 1640 was introduced into England, where it grows only in mild areas. An important fruit in traditional Chinese medicine, it's used mainly as a tonic to overcome anaemia, irritability, diarrhoea and insomnia.

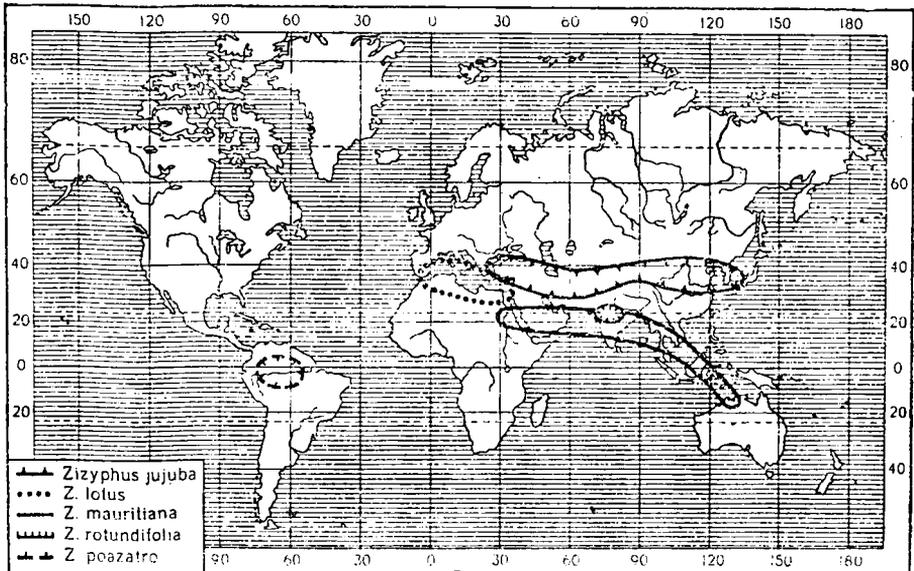
It's fairly well known as a soothing fruit, particularly for throat and chest problems, and the juice is often used to alleviate cold symptoms and sore throats. Hence, the word jube as in the lozenges we chew to overcome throat problems.

The botanical name is *Zizyphus jujuba*. For fruitgrowers who want to grow from A to Z, here is a tree to top off your collection. It's a difficult plant to obtain, but is available in limited quantities in W.A.

The jujube fruit is shaped like a plump olive and is about 3-5 cm. long. When ripe, it is a reddish mahogany brown and has an apple-like flavour - the ones I've tasted are remarkably similar to a Granny Smith. They are harvested in autumn, and when fully ripe the flesh is spongy and very sweet.

Jujubes are eaten fresh and are certainly quite delicious, but they can be dried, and these are the traditional Chinese dates. In the dried form they can be used in savoury dishes, for example, with fish casseroles and soups. They are also valuable additives to puddings, cakes and breads.

Jujubes can be candied, and this is another famous Chinese dessert. To candy your own fruit, puncture the fruit all over with a pin and then boil in syrup. The juice of the jujube makes an excellent jelly. Fruits can be frozen for six weeks in an open container.



The tree is a very handsome, small deciduous specimen somewhere between 3-5 metres high in most locations. It is said to grow more than 10 metres high, but a mature tree I know of in Maida Vale has only reached three metres.

It is easy to grow, tough, drought-tolerant and able to withstand sub-freezing temperatures in winter and extreme summer heat.

Many varieties have a weeping habit and the unusual way the shoots grow, in a zig-zag style, makes even the bare branches unusual and attractive in winter. In summer the foliage is a shining deep green. In autumn, before it drops, it turns a rich yellow.

Jujuba needs a long, dry, hot summer for best fruit development, and it dislikes humidity. It is tolerant of heavy clay soils, even alkaline and poor-draining soils, and is not demanding when it comes to feeding. In

fact the rule of thumb is to wait till the leaves have some yellowness about them before feeding with animal manure. Pruning isn't essential as the tree tends to be fairly well formed.

It does have a few problems. It has spiny branches which have to be manoeuvred around when picking the crop. It does have a tendency to sucker, which takes some years to overcome. The best preventative is to water only occasionally through summer, but to give a very deep watering - this encourages the roots to go down rather than outwards. Fruitfly can spoil the abundant crop, so some spraying is necessary to keep them clean.

All in all, the jujube tree is very attractive, exceedingly tough and a proven winner in the Perth metropolitan area. The fruits are useful and the trees have many enjoyable ornamental qualities.

*Neville Passmore*

### ***New Jujube Action Group***

*The fourth WANATCA Action Group has been formed. It will be the Jujube Action Group (JUGAG), and will be chaired by Ian Fox (contact details on back page of Quandong).*

*JUGAG will cover all tree crops in the plant genus Zizyphus. Currently the most important is the Chinese Jujube or Chinese Date, Z. jujube. This is the source of a major fruit crop and trade item, both as fresh fruit and in the dried form.*

*Other species include the Indian Jujube or Ber, Z. mauritiana, and the African Jujube or Lotus, Zizyphus lotus. Both produce edible fruits, and in addition the Ber is an important host for raising the lac beetle, the source of commercial shellac.*

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## *More Unusual Plants Offered*

WANATCA members are being offered first stab at some unusual crop tree seedlings raised by Ian Fox from seed obtained by the Association.

These plants include true Date Palm (*Phoenix dactylifera*), Casimiroa or White Sapote (*Casimiroa edulis*), Wampee (*Clausena lansium*), and Tea (*Thea sinensis*). The Date seeds was from actual fruiting West Australian date palms, supplied by Henry Esbenshade, and the others were supplied by Paul Recher.

Distribution of these plants has been arranged through Blossom Garden Centre (see advert elsewhere in this Quandong). They will be available to WANATCA members only, for two weeks, from November 17 to 31. Any left at the end of this period will be sold to anyone.

Full price for each plant is: Date, \$10.00; Casimiroa, \$10.00; Wampee, \$8.00; Tea, \$8.00. A discount of 25% is available to WANATCA members. If you want some of these plants but cannot call at Blossoms immediately, contact Dixie or Anne at Blossoms on 398 1315 and ask them to put the plants aside for you. If you have a credit card, you can pay by quoting the number over the phone.

## **Paulownia Project Moves Ahead**

Arrangements have been made for the Paulownia project mentioned in the last issue of Quandong to go ahead in a joint venture with Greening Australia.

When the Research Assistants pack of 16 different Paulownia trees arrives in the near future, it will be planted and grown on at Greening Australia's Hamel Nursery under the care of Manager Alan Lewis.

The site has already been prepared, and a few secret weapons put into place to ensure that we make a good showing in the Paulownia Race. It is expected that the site will be heavily guarded by special Military Grade composting machines, which will make short work of any jealous Eastern States saboteurs.

### *Life Membership for Alex Sas*

*Long-term WANATCA member Alex Sas of Roleystone has been honoured with the award of Life Membership in the Association.*

*Alex has provided stalwart support to the Association since its early days, when it operated under its previous name, the West Australian Nutgrowing Society. He has served as a member of the Executive Committee and in the office of Vice-President.*

*Over the years, Alex has represented the Association on numerous occasions, acting as a speaker at country shows and horticultural society meetings. As the principal of Nut Tree & Conifer Nursery, he has enviable skills in the propagation area and has demonstrated these often to members and others, in both formal and informal programmes.*

*Our very best wishes and thanks to Alex, and we hope to have the benefit of his wisdom for many years to come.*

[Western Farmer/ Sept 10 1987 ]

## STUDIES SHOW TAGASASTE VALUE FOR SHEEP GRAZING

Tagasaste could provide the means for turning near-useless land into a profitable farm asset, the Martindale research group believes.

In the first scientific evaluation of tagasaste or tree lucerne's worth as a stockfeed, the Martindale team found that 1000 tagasaste trees a hectare produced feed equivalent to 1.1 tonnes of wheat - on sands capable of yielding only 700 kilograms according to trials by the Agriculture Department.

Research Director Dr Chris Oldham said most farms in Western Australia had significant areas of unproductive soil that could be used for tagasate. It could play a vital role in replacing grain feeding in summer and autumn.

The Martindale reasearch project is based within the animal science group of the University of WA and research is undertaken at Newdale farm near New Norcia, owned by the McCusker family.

About 300 hectares of poor sands on Newdale have been sown to tagasaste. Sixty hectares of four-year-old trees recently have been grazed to assess feeding for sheep.

Results from the project's first year's work were released to 80 agribusiness leaders at a field day on Monday.

Dr Oldham said four-year-old tagasaste stands rationally grazed by ewe weaners from October



*Tagasaste — a good prospect as summer feed*  
to May had produced 1kg more wool than normal pasture.

In another experiment adult ewes grazing tagasaste produced 20 more lambs per 100 ewes than pasture-fed controls.

Vast amounts of research remained to be done on tagasaste, Dr. Oldham said - and considerable improvement on these results could be expected.

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# BOOK REVIEWS • BY DAVID NOEL

## *Mineral Nutrition of Fruit Crops*

Ed. by T K Bose. Published by Naya Prokash, Calcutta, India. 1988. 773p. Hardback. \$69.75 at Granny Smith's Bookshop.

This is the third in the series of monumental books about tree crops to issue from the Indian publisher Naya Prokash (the others are *Fruits of India: Tropical & Subtropical* and *Propagation of Tropical & Subtropical Horticultural Crops*).

The book resembles its partners in that it is based on a very comprehensive review of what has been published on the topic, in this case fruit tree nutrition. In spite of the word 'mineral' in the title, all nutritional sources are considered, as the abbreviation fym (farmyard manure) appears throughout.

What puts this book apart from the others in the series, is that it considers all the major fruit and nut crops, temperate ones as well as tropical and subtropical ones. Some 27 fruits have a complete chapter devoted to them, a further 7 less important ones are grouped together.

After an introductory chapter on the different mineral elements important in plant nutrition, the book moves straight into the first fruit, Citrus. Some idea of the depth of coverage can be gained from the point that some 120 pages are devoted to this one area, enough to form a substantial book in its own right. The chapter has 20 pages of references, quoting about 800 published sources on citrus nutrition.

Then follow 12 chapters on warmer-climate fruits, namely Banana, Grape, Mango, Pineapple, Guava, Litchi, Papaya, Coconut, Cashew, Avocado, and Date

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Palm. Seven less important species, that is Sapota (Sapodilla), Ber (Indian Jujube), Pomegranate, Custard Apple, Loquat, Fig, and Phalsa (Grewia), take up the next section.

The traditional temperate fruits follow: Apple, Peach, Apricot, Plum, Pear, Cherry, Strawberry, Olive, Raspberry, Currant, Gooseberry, and Blackberry. Finally there are the three temperate nuts, Pecan, Walnut, and Almond.

All the information available on nutrition of these fruits appears to be summarized succinctly, but there is no critical analysis of this. If Smith's trial found that X was good, while Jones found it was bad, both are reported, and it is left to the reader to follow up details through the references cited.

As far as I know, there is no competitor for the scope of this book. It is essentially a reference handbook, and is recommended for the library shelves of organizations concerned with commercial production.

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## **Kiwifruit Handbook**

Daniel M. Johnson, Craig A. Hanson, and Paul H. Thomson. Published by Bonsall Publications, California. 1988. 106p. Pb. \$18.95 from Granny Smith's Bookshop.

This book is a must for anyone seriously trying to grow kiwifruit or its relatives in

Australia. Before it arrived for review, I had thought that the subject was well covered by Sale's book *Kiwifruit Culture*, the standard New Zealand work. Now I have had to think again.

This is the third in the series of *Horticultural Handbooks* edited and produced by long-time WANATCA member Paul Thomson, of California (the others are *Jojoba Handbook* and *Avocado Growers Handbook*). Like those, it is not a slick professional publication, but instead is full of really practical advice from those working at the grass roots level.

The book is in three parts, with the first, 'How to Grow Kiwifruit', written by Daniel Johnson and edited by Paul Thomson. Johnson is credited with providing the urge for the appearance of the book, and provides a solid and knowledgeable summary of topics such as kiwifruit botany, history, climatic, soil, and water requirements, land preparation, vine support systems, pruning, pollination, varieties, propagation, fertilization, pests and diseases, harvesting, storage, and yields.

Craig Hanson's contribution, 'Growing Kiwifruit in San Diego County', has the sub-heading 'as told to Paul Thomson'. Clearly Paul has zeroed in on someone with real practical experience and managed to get all the good oil from out of his head and on to paper — a difficult process which is seldom carried through. A practical point which I much liked was his development of a successful method of rooting kiwifruit hardwood cuttings — these are buried upside down in sand till the roots form, when they are then reversed (the conventional approach is much less successful).

Hanson covers similar points to Johnson, but from his own local viewpoint. San Diego County is in the extreme southwest of California, close to the Mexican border. It is perhaps comparable to the Geraldton area north of Perth, quite different to any New Zealand conditions. It is in this respect where this book is so valuable to Australian growers.

The Californians are building a kiwifruit industry based on low-chill varieties (one brought in from the Canary Islands), very different to those which are successful in New Zealand. As in W.A., California has temperature extremes and natural aridity quite unlike those of the Bay of Plenty where the Hayward variety was selected. Hayward performs reasonably in central California, but will no doubt eventually be replaced even there by better-suited local selections.

The third section of the book, 'Other Edible Species of Actinidia', is Paul Thomson's own review of these interesting kiwifruit relatives. Noted for their cold-hardiness (some down to -45°C), much of the U.S. work on these has been done in colder areas such as Washington State, on the Canadian border. The closest Australian parallel would be in southern Tasmania.

Several of these Actinidias (kiwifruit itself is *Actinidia deliciosa*) produce excellent smooth-skinned fruit, resembling grapes. They have been almost completely neglected in Australia, and this is a great pity. The newer cooler-climate fruits provide the potential for rejuvenating our more or less static pome fruit areas, with some of the glamour which has helped our tropical introductions.

Highly recommended.



# Tree Crops Centre Appointed as BOSTID Distributor

The Tree Crops Centre has been appointed as official Australasian Distributor for the publications produced by BOSTID (the Board on Science and Technology for International Development, part of the National Research Council of the U.S.).

These very important publications will be the responsibility of the new Planetary Development Group being set up at the Tree Crops Centre. They will be sold through the Tree Crops Centre's publication sales arm, Granny Smith's Bookshop.

The BOSTID series include a number of titles, highly regarded among tree crop growers, which have not previously been

available for sale until a recent change in policy occurred. These cover topics such as Jojoba, Leucaena, Casuarinas, Tropical Legumes, Amaranth, Firewood Crops, Sowing Forests from the Air, and Calliandra. However, the full range of current BOSTID titles will be available, including items unrelated to tree crops (eg on water buffalos, fisheries technologies, and tropical disease control).

A list of available BOSTID titles is being distributed at the same time as this issue of Quandong. Further copies of the list can be obtained from Granny Smith's Bookshop (see advert in this issue).

## PISTAG Offers Imported Pistachio Seed

**The Pistachio Action Group of WANATCA is offering limited supplies of specially selected seed of pistachio, imported from Syria.**

All seed is of the true pistachio nut, *Pistacia vera*, and is being distributed to widen the genetic base from which desirable pistachio selections can be made.

Past experience with seed from this source has shown excellent germination and vigorous growth. Usually about half the seed produces female trees, and half male — separate selections from each type are needed.

In Iran it is common to grow pistachios in own-selection orchards. Seedlings are

grown at the desired spacings, and when fruiting of some trees commences, those with poor-quality or scanty nuts (and excess males) are grafted over with budwood from ones producing good nuts. In this way a productive orchard is rapidly established using varieties proven to do well under the local conditions.

Cost of seed is \$8.00 per 100 gm, available to any enquirer until all sold. Contact Milan Mirkovic at PO Box 69, West Perth, WA 6005, to get yours.

## WHERE THE MONEY GOES

To give members some idea of how their subscription money is spent, we are summarizing the main areas of income and expenditure for the financial years 1986/87 and 1987/88. Detailed accounts are available for inspection at the AGM or on request. The figures given below have been adjusted to include the cost of the last Yearbook (actually paid for after the official figures were closed).

	1986/87	1987/88
<b>INCOME</b>		
Subscriptions	4928	6237
Bank etc. interest	340	317
Sale of books, trees, seeds	<u>109</u>	<u>411</u>
	<u>5377</u>	<u>6965</u>
 <b>EXPENDITURE</b>		
Printing WANATCA Yearbook	2420	2030
Printing Quandong	1543	1718
Secretary's Honorarium	780	820
Phone	220	187
Postage	490	534
Hall rent	60	120
Stationery	214	216
Seeds for offer	—	182
Affiliation fees	25	35
Research grants	—	100
Refreshments, taxes, other sundry	<u>80</u>	<u>145</u>
	<u>5832</u>	<u>6087</u>

*(Continued from p. 7)*

fruit. Seeds are produced in 5 small cavities in the stone. Only 1 or 2 of the seeds will be developed. There is some variation among seedlings, some being sweeter and with a thicker flesh than others.

*S. cytherea* can be grown from a seed or from cuttings. The *Ambarella* is the hardest of the *spondias* group, taking a little bit more cold than the others.

They require good drainage, but will grow in rich or poor soils. They have to be grown in full sunlight to produce fruit. A shaded tree will produce little or no fruit. The trees

are also drought tolerant. They will go dormant in late winter.

The fruits usually drop off when they turn yellow. I have found that they can be picked green and they will turn yellow in about 5 days at room temperature. The taste is reminiscent of pineapples. The fruit can be used in jams, jellies and sauces when ripe and when unripe in pickles or relishes. Very quick growing!

MARJORIE SPEAR, P.O. Box 112, Kuranda Qld 4872

# Tree Crops Centre : ACOTANC Permanent Secretariat

At a meeting of the ACOTANC Council held during the Lismore Conference (reported elsewhere in this issue of *Quandong*), the Tree Crops Centre was appointed to run the Permanent Secretariat of ACOTANC.

The ACOTANC Council consists of representatives of organizations within Australasia which are interested in hosting or participating in future sessions of the Australasian Conference on Tree and Nut Crops, or have been involved in the past. Membership of the Council is available without cost or obligation, but only to organizations rather than individuals.

The Lismore ACOTANC was the fourth in the series, which are held two years apart. The first was in Perth, in 1982; ACOTANC-2 was in Melbourne, in 1984; and ACOTANC-3 in Auckland, in 1986. ACOTANC-5 will be in South Australia (probably in the Renmark area) in 1990, and in 1992 ACOTANC-6 will be held again in New Zealand, possibly in the Bay of Plenty area.

Chairmanship of the ACOTANC Council is held by a person appointed by the organizations hosting the next session, so this position is currently being filled in South Australia. Each ACOTANC also has its own (local) Secretary, rotated in the same way as the Council Chairman's, who doubles as Chairman of the Organizing Committee, responsible for the actual running of the Conference.

The purpose of the ACOTANC Permanent Secretariat is to provide long-term continuity for the ACOTANC series, so

that lessons learnt from past sessions do not have to be tackled afresh each time, a centre of reference is available for all past and future sessions, and long-term financial arrangements can be carried on without disruption.

The Permanent Secretariat does not have any responsibility for the running of any particular session, this responsibility is rotated as described within the Australasian region. It is responsible for continuing sponsorships, for example where a commercial firm sponsors a third-world delegate to each session, for ensuring proper flow of information among members of the Council, and for liaison with other relevant bodies outside the Australasian region.

Enquiries on behalf of organizations are welcomed, and should be directed to the Acotanc Permanent Secretariat, Tree Crops Centre, PO Box 27, Subiaco WA 6008, Australia.

## Letter from Grass Roots Magazine

I've just been looking through your Yearbook for 1987 and want to offer my congratulations for producing such an excellent booklet.

The information, the design and layout and general quality are outstanding. Knowing the effort involved in producing such a publication, may I say well done!

*Megg Miller (Editor)*

## THE HORSERADISH TREE

**Moringa olifera, Lam. (syn. M. pterygospermia, Gaerthn.)** the horseradish tree, is native from Arabia and is grown in nearly all warm areas of the world as an ornamental or as a source of oil or food.

The Moringaceae comprise a single genus of about ten species ranging from tropical Africa to Southeast Asia. The family is easy to locate geographically, but it is difficult to place botanically, as noted by Bailey. It probably belongs somewhere between the Capporidaceae, the Caper family, and the Leguminosae, to which it bears striking resemblance.

The horseradish tree may reach a height of 25 feet or more and is characterised by an attractive light and airy appearance, triple compound leaves with one inch leaflets, and numerous fragrant, cream-coloured blossoms. Menninger asserts that it is the only tree that blooms every day of the year in southern Florida. Its fruit consists of striking long thin pods up to 18 inches in length, giving rise to one of the many synonyms for the plant, the drumstick tree.

All parts of the plant except the stem are edible. To the palate the root of young plants is almost indistinguishable from horseradish, and many authors state that it is used as a mustard plaster. The leaves also have a distinct and mildly pungent taste reminiscent of mustard. According to Martin it is "an excellent spinach". Like other dark green leafy vegetables, the leaves are a good source of vitamin C. Watt states

that "twigs and leaves are largely topped for fodder", and Dastur (1964) notes that "the oil cake is used as fertilizer".

The flowers are cooked as a vegetable in India. Very young pods may be prepared like green beans, and slightly immature pods, drumsticks, comprise a special treat in southern India and Sri Lanka, where they are cooked and eaten in a manner similar to artichokes by pulling the cooked stringy pods through the teeth with one's fingers. The mature seeds, ben nuts, may be roasted and eaten; accordingly to Burkill (1966), when fried they resemble peanuts, but he also notes that the seed contains a saponin making it unfit as cattle food, and this suggests that large quantities should not be eaten by humans either.

The tree is also known as the ben tree, and the oil of its seeds, although perhaps improperly, is called ben oil. Burkill (1966) authoritatively states most historians and ethnobotanists fail to distinguish *M. olifera* from *M. aptera*, the true ben or ban of Ancient Egypt. In fact, the two oils are almost indistinguishable. Neither oil becomes rancid in the heat of the tropics and both are excellent cooking and salad oils. They are said to make excellent soap. Both burn in a simple lamp without smoke and have ex-

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traordinary lubricating qualities; the oils were previously used extensively for clock oil until displaced by sperm oil in the 1600's, and later by petroleum products.

Ducros (see Darby) said that Moringa oil was an essential element "that forms part of a complicated polypharmaceutical preparation designed for the rapidly diminishing population of women who wish to grow fat." Ben oil has no odour and picks up delicate scents, making it of use in the perfume industry.

Bailey mentioned in 1929, that the Moringa "had been grown in S. California for many years," but it is rare enough to be missing from the Sunset Garden Guide, and reliable sources of seed are no longer to be found. Part of the problem is no doubt due to the short viability of the seed. In my greenhouse fresh seed germinates in a few days to a few weeks, and growth is rapid after a period of seeming indolence while the root swells and stores energy. Plants are easily propagated from large woody cuttings, and this should be the method of choice for selected cultivars in non-tropical areas where fruiting is often a problem.

Following germination the root enlarges and becomes useful as a horseradish substitute; old trees have fibrous roots and a less desirable flavour. Moringas in my yard bloom in the second year in full sun both in the ground and in five gallon pots. They languish in one gallon pots or full shade. Plants die back in the winter if exposed to frost or prolonged cold, cloudy weather, but vigorous regrowth appears when the soil becomes warm again in early spring. If frost damage or pruning has been severe, a separate trunk may come up from the roots. A really hard freeze will kill the plant.

Do not hesitate to prune this plant severely,

new growth is prompt and vigorous, even when all branches and leaves are removed, except in late fall or winter. Old growth tends to die, turn yellow and drop off; new growth is extremely lush. Never give up during winter months. If the root system has not frozen solid, regrowth will be likely. Healthy plants also resist drought, and are reputed to live about 10 years under most conditions.

Many tropical plants, including food plants, do best in broken shade, and this is especially true in our dry, temperate climate. Oche observes that the horseradish tree "is an excellent shade tree for kitchen gardens which suffer from sunshine. The thin crown throws a slight shade on the beds beneath which is more useful than detrimental to the plants. If the tree becomes too heavy they are simply pruned."

**DIVERSE USES** — Each ethnic culture that grows the Moringa has its own special use for it. Numerous authors mention a wide variety of medical uses for various parts of the Moringa (Burkhill 1930, Dastur 1969, Watt). I was told by a local restaurateur, that in Sri Lanka the leaves are cooked only with crab. My Philippine cookbook recommends it with mud fish (bangos, milk fish, Chanos sp.), but direct observation suggests that it is a widely used vegetable cooked in a wok with poultry, fish or shrimp. I like to cook the leaflets with chicken and use the flows in salads.

I have only rarely, as of this writing, been successful in obtaining drumsticks (pods) from my plants in San Diego, although success was recently reported from the Fresno area at a CRFG meeting. Flowers are prolific on my plants. Honey bees are rare visitors, but bumblebees frequent the blossoms all day, and an occasional one spends the night.

... *Continued p. 22*

# REPORT FROM ACOTANC-88

I came away from the Fourth Australasian Conference on Tree and Nut Crops with a new feeling of optimism and confidence, and a sense of pleasure that tree crop industries in our part of the world are really beginning to make it at last.

First, on organization: the Conference was held in Lismore, New South Wales, on 15-19 August 1988, a full week. The running and siting of ACOTANC and associated events was excellently organized, one of the best-run so far. Around 300 people attended, with many from New Zealand, and several from the U.S.A. and other overseas countries. Congratulations are due to the organizers, the Exotic Fruit Growers' Association of N.S.W. and the N.S.W. Department of Agriculture, especially to the indefatigable Conference Secretary, John Robson.

Choice of Lismore, in the northeast of NSW and not far from the coast and the Queensland border, turned out to be very appropriate. It is at the centre of an area which has seen great development over the last 20 years or so from predominantly pastoral use to a major producer of subtropical fruits and nuts.

I have often felt that what the tree crop industry needed in Australia was a major Success Story, like the New Zealanders had with kiwifruit, to improve public perception

of its importance and inspire confidence in investment of the necessary money, research, and sweat. Now I believe that we have that success story, with the macadamia.

Our macadamia industry has grown up at last. More and more thriving plantations are being established, and the existing producers are making very good money, with future prospects also rosy. Several modern, efficient processing plants have been established, and macadamias look to become a significant factor in the Australian economy. Of course, the industry is still tiny by world standards, but it looks as if the crucial threshold has been reached, and the industry can look forward to an expanding future with confidence. And success with macadamias will help success with all the other tree crops on which people are working.

For the first time, I came away from a conference with the feeling that Australia is starting to mix it with the best of the world as far horticultural developments are concerned. We are new boys in this leadership circle, and still have much to learn from the

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## GREAT CAROB RACE

**Men of the Trees will launch the GreatCarob Race at the North Midlands Show at Carnamah on Saturday 10th September.**

This unlikely sounding event - to find the "Fastest Growing Carob in the West" - has a very real purpose. Because most farmers reckon Carob Trees take a long time to grow, clearly it is worthwhile finding fast growing techniques to help this potential food and fodder tree get a better rating.

Barrie Oldfield, President of Men of the Trees, says that "it's simply that up to now we have not used the right horticultural techniques. If anyone can develop a good system it's sure to be a farmer."

Carob research by Henry Esbenshade already is indicating the location of well established trees in W.A., the sugar content of their pods, and some worthwhile lines of investigation into developing food products.

This year students at WACAE have been working on a Carob molasses and test sampling various food products made from it. Other students in the School of Biology at Curtin University have been working on propagation techniques, testing a range of potting mixes, fertilisers and watering regimes.

The Great Carob Race will add yet another useful chapter to the development of this interesting tree. And to add a little spice, Men of the Trees are hoping to find a sponsor to put up a \$500 first prize! Already a farmer from Manjimup has offered second and third prizes of \$150 and \$50.

Further information about the Great Carob Race can be obtained from Barrie Oldfield,

3 Over Avenue, Lesmurdie 6076.

[Late information: Trays of 12 carob seedlings for \$10 are available from Men of the Trees' St Barbe Grove Nursery at Hazelmere]

### *Letter from the Solomons*

*There are a number of important nut trees in the Solomons, including Terminalia catappa, Barringtonia edulis, Canarium indicum.*

*There is an undescribed species of Canarium in Temohi Province, with kernels about twice the size of C. indicum, and is widely eaten. It was previously thought to be a variety of C. indicum, but the differences are so great that it is being realised it is a new species.*

*There is a dwarf variety of Barringtonia edulis which flowers at 2 years and about 60cm. high, it is very beautiful. Apparently it eventually grows to a bush about 15ft. (approx. 4.5 metres), though I haven't seen an adult specimen. Terribly hard to get seeds of it, because kids pick and eat them before they're ripe!*

**Colin McQueen** (new address: 86 Darvall Rd, West Denistone, NSW 2114)

In an effort to obtain drumsticks I have unsuccessfully tried hand pollination on several occasions. I have also unsuccessfully inoculated the soil of germinating plants with dried Moringa roots from Thailand and with soil from beneath bearing trees in hopes of obtaining the correct mycorrhizae. Should anyone have a prolifically bearing tree, I urge widespread distribution of cuttings.

The Moringa is an attractive but not a beautiful tree. The food derived from it is wholesome and interesting but hardly delicious or for the gourmet palate. It is tedious to prepare, and, if one enjoys eating its foliage, several trees will be needed. Yet, whatever its virtues or shortcomings, it is a most satisfying tree to grow.

Martin states "This species is one of the best backyard vegetables, and needs to be taken to people who can appreciate it."

Robert E Bond (2801 Fourth Avenue, San Diego, CA 92103)

## Welcome to Peter Molenaar

*The Association is delighted to welcome Peter Molenaar of New South Wales to membership of the Association.*

*Peter has recently been appointed a member of the Australian Government's new Horticultural Policy Council. He has special responsibility for subtropical tree crops.*

*It is likely that the HPC will prove to be an important agency in the future development of Australia's tree crop industry, as it communicates directly with the Federal Minister for Primary Industries (presently the Hon. John Kerin). It is the third of three new Australian Government entities in the area, the others being the Australian Horticultural Corporation and the Horticultural Research Corporation.*

*Peter has indicated that it will be part of his responsibilities to forward matters raised through the Association on to appropriate quarters with which he is in contact. This should be a most valuable communication line.*

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## SUN-DIAMOND SELLS DOWN UNDER

Perched atop the Edgecliff subway station on the outskirts of Sydney, Australia, is a branch of Franklin's, the city's most popular supermarket chain.

A short way down a busy aisle is the display of a familiar red-and-white labelled can — Diamond's popular 200-gram vacuum pack of shelled walnuts. The front of the rack has already lost several cans to this morning's shoppers.

But if it's Diamond you're after, your hand had better not slip or eyes stray as you reach to the shelf. For separated by a single wire divider from the Diamond lineup is another vacuum pack of shelled walnuts, in the same sized container - and, to the casual glance, an almost identical label. Reaching into this display, the consumer comes out not with Diamond walnuts but with Dynamo walnuts - grown and packed in China. Obviously, the Chinese have copied the world's most famous walnut brand down to the same can, pack and colours.

Australia produces a few walnuts of its own in the southern state of Victoria. The true competition for Diamond, however, comes from the Chinese walnuts, priced 20 percent or more below the same quality from California. The Australian tariff of 2 percent on imported walnuts is no barrier to walnuts from either country.

According to Sun-Diamond retail broker Bill King, whose firm employs 12 field staff and eight part-time workers to service its accounts, there are Diamond walnuts in every major grocery chain in the Sydney area. Franklin's, for example, does 42 percent of the grocery trade in the Sydney area - where approximately one in every four Australians lives.

At the Nut Trading Company in Sydney's bustling downtown (cable address "Nutty-Sydney") Christopher Joyce, who also trades in such exotic items as cocoa and Chinese pumpkin seeds, handles bulk imports of Diamond walnuts. They reach Sydney harbour by container ship after 21-24 days at sea.

Bulk shipments are taken by customers, who rebag and sell them, in turn, to wholesalers and small stores. An important ethnic demand for walnuts has grown up since World War II, as Australia opened her gates to immigrants from many parts of the world. Her new citizens from the Mediterranean and Middle East are heavy users of walnuts.

Both India and China fight California for the bulk walnut business. Pricing is aggressive, said Joyce, but neither of these major competitors can match Diamond's reliability as a supplier or its consistent high quality. Since development of the continuous shelling operating at Diamond's Stockton plant, Joyce said, Diamond delivers a flow of freshly shelled and well-handled walnuts. The Indian walnuts suffer from bad handling, particularly at dockside, while Chinese shipments cover all the grades. Chinese light halves are comparable to California walnuts in quality and are priced close to Diamond's, but the other grades are much cheaper.

Why doesn't Australia, with her wide range of climates, grow more walnuts to meet her home demand? The answer - or at least one important answer - according to Joyce, is

lack of good-quality irrigation water with which to expand the present very small acreage. For the foreseeable future, Australia will depend heavily upon imported walnuts - which means the Diamond brand should continue to hold the top of the market Down Under.

Henry Schacht

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## NEWS FROM RUSS YODER

*Things here have been hectic with the filbert and Persian harvest, now chestnuts starting and hickories and black walnuts only a week away. ONGA Fall meeting is coming up Oct 8, with Ohio State fair Nut Show and the Penna. NNGA Annual Meeting just over, we now have some seed nuts produced for the Holden Hybrid Project.*

*On top of it all, our weather here has been strange with little to no rain and very hot in June and July, now lots of moisture in August and Sept. Plants that were next to dead have become fresh and green, the grass needs mowing weekly and some blooms are showing like Spring. With pistillate bloom on the Persians along with maturing nuts we are worried that all is mixed-up. We should have "roasting ears" sweet corn in another week on planting after the rains came. Hopefully the frost will delay a few more weeks.*

*Peaches (even nectarines) were a great crop this year and apples just ripening now, while the garden is producing everything to the point we have to let most produce just rot and return to the soil. And, oh yes, pawpaws by the basket (Asimina?) are cluttering the ground. Our indigenous types look considerably different than the cover picture of Quandong. Instead of 3 leaves on a twig*

*ours have 7 to 11 or even more leaves per branch, otherwise the fruits and flowers are look alike.*

*With our cans full of vegetables and fruits we have taken to "drying": like the pioneers did here before refrigeration and sealed canning. We have tried corn, beans, nectarines, plumbs and pears and will try apples shortly in our electric dehydrator.*

*We still hope to get WA. It is now in our tentative plans for 1989 as we think that may be our last chance. It would be nice to get there when a field day is scheduled like the one you had Sept. 4.*

Russ Yoder

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[Cal Mac News/ Summer 1988]

### WORLD WIDE MACADAMIAS

Updated figures for acres planted to macadamia trees in Malawi, Guatamala, Costa Rica, and South Africa were presented by Rick Vidgin of MacFarms of Hawaii in a recent speech.

Malawi, a country with good agricultural technology and a significant United Kingdom market, has 15,600 producing acres and a total of 21,500 acres planted.

Guatamala, with a lower technology base and much of its land unsuitable for macadamia culture, has 1,550 acres in production and a total of 2,500 acres planted.

Costa Rica, the Central American country with the most advanced agricultural technology and large amounts of good land available for orchards, has 3,500 producing acres and 9,000 total acres planted.

South Africa, a more stable country than the media presents, has considerable agricultural expertise involved in its 2,000 producing acres and 4,000 total acres of macadamia trees.

# West Australian Nut & Tree Crop Association (Inc)

PO Box 565 Subiaco WA 6008 Australia

## EXECUTIVE COMMITTEE 1988

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Milan Mirkovic (Vice-President)	420 2006	Bill Napier	399 6683(H)
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## ACTION GROUP LEADERS

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

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

CHERRY: Neville Shorter, 367 7879 (62 Preston Street, Como 6152)

JUJUBE: Ian Fox, 450 3146/H, 380 2571/W (42 Bradshaw Cres. Manning 6152)

## CALENDAR OF FORTHCOMING EVENTS

1988

- Nov 16      Wed      \*Annual General Meeting (Cooke: Ethical investment)  
Nov 22-23      § Conference 'Developments in Horticulture to 2001'

1989

- Jan 17      Tue      Executive Committee Meeting  
Feb 15      Wed      \*General Meeting (Moore: Agroforestry in China)  
Mar ??      Sun      Field Day  
Apr 18      Tue      Executive Committee Meeting  
May 17      Wed      \*General Meeting  
Jul 18      Tue      Executive Committee Meeting  
Aug 16      Wed      \*General Meeting  
Sep 25-29      § 3rd International Mango Symposium, Darwin  
Oct 17      Tue      Executive Committee Meeting  
Nov 15      Wed      \*Annual General Meeting

1990

Mar/Apr      Australian Pistachio Symposium, Muresk

\*General Meetings are held at the Naturalists Hall, 63 Meriwa Street, Nedlands, starting at 7.30 pm. These meetings usually include a plant auction and current magazine display.

§ For contact details refer to the Tree Crops Centre

Members wishing any matter to be considered at an Executive Committee meeting should contact the Secretary by 2 days before the meeting.

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**(includes all publications for the year). Student Rate: \$15.00**

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