

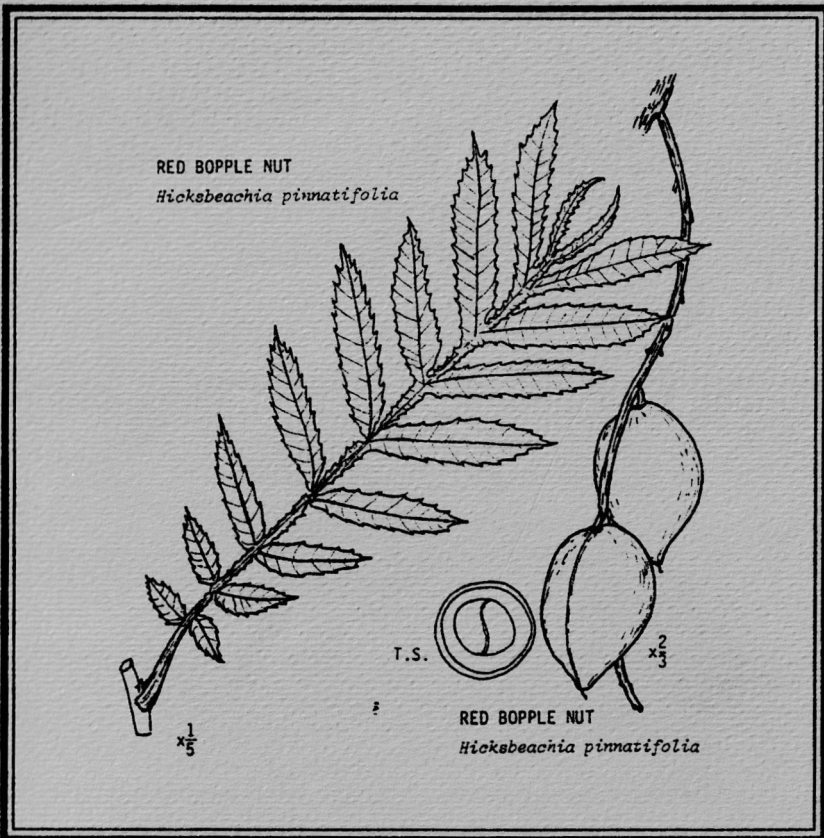
Quandong

newsletter of the

West Australian Nut & Tree Crop Association (Inc)

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NEXT MEETING

Video and Film Evening

Wednesday May 20 at 7.30 pm

After any formal business, the next meeting will be devoted to a showing of a range of **videos and films** on a range of aspects of tree cropping. We expect to show films on **cashew nuts** and **bananas**, and videos on mechanical planting of large acreages of crops like **jojoba** and **pistachio** in W.A., on **tropical fruit** production in Queensland, Australian rainforests, and **pecan** production in New South Wales. There will also be a commercial video made by Forestell Securities on their Pistachio Trust project in Victoria. A member of Forestell Securities will be available at the meeting to answer questions.

This meeting will be open to the public, so feel free to publicise this meeting among your friends and invite them along for what promises to be an interesting and enjoyable time.

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New Membership Leaflet

After many years of service the Association's membership leaflet 'Growing Nuts in Western Australia' is to be replaced by a completely new version, in a new format and with extended and updated information. This leaflet will be available shortly, with the heading 'Growing Nuts, New Fruits and other Tree Crops in Western Australia'. Contact the secretary for copies

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REAL ESTATE SERVICE THROUGH THE TREE CROPS CENTRE

The **Tree Crops Centre** is pleased to announce that it has made arrangements to set up a service to handle buying and selling properties of interest to tree croppers. The service is being offered through **P.I.A. Realty**, specialists in agricultural real estate (P.I.A. is the initials of the Primary Industry Association).

Fuller details of the service will be found in P.I.A. Realty's advertisement in the current issue of *Quandong*. This service is in its inaugural stages, and we would welcome comments and suggestions from readers on how the service could be developed and improved. These comments can be directed to me, or to Alan Bell of P.I.A. Realty. In the meantime, don't hesitate to contact PIAR for a no-obligation discussion if you expect to be buying or selling a property in the future.

David Noel

(*Western Mail* 6.2.87)

Farmers switch to Trees

Farmers are planting trees in a bid to stop pollution of the Mandurah estuary.

The trees are the only way to halt fertilizer phosphates leaching into the estuary from farms and causing algae and weed to choke the waterways, say State Government environmental experts.

Serpentine farmer Clem Overheu, who has land near the Serpentine River

which drains into Peel Inlet, has planted 10 hectares of Tasmanian blue gums.

Mr. Overheu's plantation has been sponsored by a local woodchip producer. WA Chip and Pulp, which supplied the seedlings and management advice, expects to pay tree farmers around \$3500 a hectare for mature trees.

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Seminars on Conservation Farming

A series of three one-day seminars on **Conservation Farming** is being held on the south coast, at Denmark, in the Denmark Environment Centre. One, in late April, has already passed; dates of later ones are given in the Calendar of Forthcoming Events on the back page of *Quandong*.

These one-day seminars are intended to cover methods, options, and strategies for conservation farming. They are being held at the Denmark Agricultural High School. Topics for the three days are: '**Diversity & Profit**', '**Forest Farming**', and '**Carob, Tree Lucerne, and Innovators**'.

For details of these seminars, please contact Kim Johnson, either by mail to the Environment Centre in Denmark (PO Box 78, Denmark 6333), or by phone on (098)-40 9380.



The changing face of '*Quandong*'

We hope that readers will notice, and approve of, the changes which are being made to ***Quandong***. As from this issue, while we will continue to reprint articles from many previously published sources, all text will be completely re-set to improve appearance and legibility.

We are also making efforts to increase the amount of advertising of useful products and services. Readers are asked both to make use of the offers and services advertised, and to bring to the notice of the *Quandong* Office any services or products available from them or their colleagues, also items they require which they would like a potential supplier to advertise.

Adverts can be placed by phone as well as mail, and printed Advertising Rates schedules are available. Contact the **Quandong Office** on **09-386 8093** or at **PO Box 565, Subiaco, WA 6008**.

THE NAPIER-RAYNES TROPHY FOR BIRD DETERRENCE

Winner of the Napier-Raynes trophy for bird deterrence for 1987 was **Andy Monks**, of Roleystone. Congratulations Andy!

Andy's suggestion was based on the use of 'Touch Powder' (Ammonium tri-iodide) as a coating for nuts on the tree. This chemical is applied as a solution to some of the ripening nuts. When it dries out, it forms an explosive coating which goes off with a BANG when it gets a touch – a real shock for a bird which bites the nut!

Of course, there are problems, but Andy's idea is an excellent one which has the germ of a practical application in it. Andy is the current holder of the trophy – a truly indescribable bird figure.

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Hybrid Hazel Seed Project

The **Northern Nut Growers Association** (that is, northern North America) have advertised an interesting offer of seed of hybrid hazel varieties.

Most people think of hazels as only shrubs, but some species reach 30 metres in height. In the 1920's, Jack Gellatly of British Columbia did valuable breeding work on hazels, using native American species and Turkish and Chinese species, as well as the usual European species. Among other things, he was looking for great cold resistance. He produced many interesting hybrids.

Gellatly's varieties are the basis of the NNGA offer. The offer gave the price of sample packets of 8 seed nuts as U.S. \$4.00 each; the address was NNGA Hybrid Hazel Seed Project (attn. S E MacKay), RR#2, Box 249, Delphi, Indiana 46923. While it is not known whether this offer is still available, or will be repeated in the future, readers interested in the hazel may wish to enquire at the address given.

Report on "Tree Crops for W.A. Farmers" Seminar

The Seminar, held at Muresk Agricultural College on February 28, was very well attended - around 100 participants. The meeting was a joint presentation of three groups: Men of the Trees, Greening Australia, and WANATCA.

Barrie Oldfield of the Men of the Trees' Farm Tree Project was the principal organizer. He is to be congratulated on a well-balanced programme with many good speakers. I particularly liked Geoff Overheu's analysis of the benefits of growing trees just to sell as firewood; with the increasing popularity of wood-burning stoves, this source of farmer income seems very promising and well worth making more of.

One very interesting story was of the fencing contractor in New South Wales who had found that he could 'hot-wire' complete trees by running electric-fence wires into the cambium layer of their

trunk. Apparently this electrifies the whole sap, including that in the leaves, so that cattle trying to eat the leaves of a hot-wired tree get a shock and are suitably discouraged. I thought immediately of trying it as a bird deterrent, but on second thoughts realized that birds would not make the necessary complete circuit with the ground.

Barrie had a number of pre-recorded items (including one recorded in a railway waiting-room in Oxford, England!), but the best was undoubtedly a typically lively and robust video segment, specially made by David Bellamy ('The Botanic Man') for the Seminar. Another video, supposed to be a locally-made item on pistachio planting, turned out to be an episode of 'Little House on the Prairie'. The name of the person responsible for this is being suppressed to encourage an offering of 'hush money'.

David Noel

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WANTED

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TAGASASTE PIONEER RECEIVES AWARD

WANATCA member John Cook was awarded the 'Tree Farmer of the Year' prize in the 1986 John Tonkin Tree Awards for his work with tagasaste.

John's interest in tagasaste goes back many years, and during the last seven he has been bringing to reality the broad acre farming of this useful plant.

It is now possible to harvest the seed mechanically, direct seed, and harvest forage mechanically. In developing the package for his own use, John has gathered a lot of expertise and now supplies seed and advice to interested people.

"As a broad acre farmer, I could see the need for trees in the landscape and I was also very aware of the economics involved. Tagasaste helps to control erosion, provides shade and

shelter, controls ground water in recharge areas and is a fast-growing high-quality fodder."

"I do believe that the native vegetation must also be retained and re-established as well," said John, "it is heartening to see the current interest in provenances amongst tree growers. All agricultural areas in W.A. can be considered for tagasaste production. The site must be carefully chosen, it should be a moisture-gaining site with free-draining sandy loam. Heavy clays are not suitable."

John is President of the Land Management Society, and is very enthusiastic about their programme for the coming year, especially the Innovative Farmer Directory. He is always happy to talk to interested people, and can be contacted on (095) 44 7062.

DO TREES GROW AT NIGHT?

(From: The Nut Kernel/ 38(3), 1986 Summer/Fall)

A recent article in the Pennsylvania Nut Growers' publication 'The Nut Kernel' gave a fascinating account of the work of a Pennsylvanian researcher, Joseph Illick., in the early years of the century.

One item deals with tree growth:

Mr. Illick noted that for many generations boys and girls have been taught that "mighty oaks from little acorns grow". Many a father has told his son or daughter about the small tree he planted twenty years ago that is now 40 feet high, and that he knows of none superior. But it seems strange that from the vast information available about trees, nothing is mentioned about whether trees grow more during the day or at night.

Mr. Illick told a small group of boys about this interesting question. They became interested at once and agreed to help make a study of this feature of tree growth. No time was lost. Plans were immediately made for a careful study of this interesting subject. The first thing they did was to select 100 trees representing about twenty different kinds. Among them were

White Pine, Norway Spruce, Wild Black Cherry, Rock Oak, Tulip, and White Ash.

Each tree was tagged and given a number. The numbering of the trees made it easy to keep records of daily measurements. Each morning at 7.30 and again at 7.30 in the evening, the growth of each of the 100 trees was measured and recorded. This meant that each morning and evening about two hours were spent in measuring the trees. All measurements were recorded in the book that was especially prepared for the study. Every effort was made to make the study worthwhile.

He said it was great training for the boys and gave results which were not only new but really-worthwhile. The study showed the remarkable fact that trees make about 67% of their growth at night and only 33% during the day – that is, they grow about twice as much at night as during the day. The study went a little bit further and showed that the greatest height increase of trees usually occurs late at night and that the least growth takes place in the middle of the afternoon of clear days.

(The West Australian, February 27, 1987)

Testing an old Remedy

To look at the small quandong shrub it is hard to imagine it could have miraculous healing properties. Yet that is exactly what Dr. Gwyn Jones, of Deakin University, and his research team are hoping to find. This year they will investigate reports that the kernel of the quandong fruit promotes healing of damaged skin and skin irritations.

The quandong, or *Santalum acuminatum*, is found throughout the drier part of the southern half of Australia. It is distinguished by its shiny red or yellow fruit, about the size of a plum. The fruit was eaten by Aborigines and early white settlers, who called it the "native peach".

Dr. Jones first became professionally interested in the quandong when the CSIRO began promoting the fruit's macadamia-like kernel as an alternative type of beermut.

He was concerned that not enough was known about the possible health implications of some unusual fatty acids in the oil of the kernel — specifically one called satalic acid. Though that research was inconclusive, promotion of the kernel as a nut has stopped.

Dr. Jones' s latest line of research was prompted by a chance meeting with some WA Aborigines at a conference at Griffith University seven years ago. They told him that Aborigines gathered the seed from dried-out emu droppings. They broke the seeds to get the kernel, which was either eaten as a snack food by the children or crushed and made into a paste. The paste was then applied to wounds to assist healing.

Now — with a joint Deakin-CSIRO research grant — Dr Jones and his team will try to discover whether there is any biochemical basis for the Aboriginal practice. If the results are encouraging, Dr Jones will apply to the Australian Research Grants Scheme for further funds in 1988 to develop the full commercial potential of the quandong kernel.

At the same time the chief of the CSIRO's division of horticulture research in Adelaide, Dr John Possingham, is trying to make the quandong shrub less variable and so enhance the market potential of its sweet fruit.

Dr Possingham believes the quandong could prove an ideal cropping plant for marginal dry lands. The sweet fruit can be dried and used in jams or as pie filling. It could be, Dr. Possingham says, a uniquely Australian addition to the international exotic fruit market.

The only stumbling block is the quandong's extreme variability throughout its range. The fruit yield, colour and size fluctuate a lot, making the quandong unattractive as a commercial crop. A selective breeding programme in Adelaide and Mildura aims to iron out the differences.

But Gwyn Jones does not expect the quandong's variability to affect its pharmaceutical potential. His previous research showed that the levels of the kernel's major constituents — oil, water and protein — remain fairly constant throughout the plant's range.
David Forman

(The West Australian, Feb. 19, 1987)

Trees could provide rich pickings

"If it works, I could be earning more from 8000 pistachio trees than from the rest of the farm." So said Corrigin wheat and sheep farmer Laurie Pitman (36) yesterday as we headed for his 15 km of pistachio plantings on barren, sandy soil on the 2200-hectare property.

However, he said that establishing and getting the trees to commercial production was costly and demanding, with tree losses frustrating. He estimated the cost of the initial 3000 trees at \$ 50,000. Then there is a 20-year wait for maximum production. But

he said that there was strong demand for pistachio nuts in Australia, currently supplied by Israel and the United States.

In addition, the pistachio trees, with other varieties planted on the property, are important for erosion and salinity control. Mr. Pitman became interested in tree planting when he read that production increases of 25 percent could be achieved for a five percent property cover. Many other WA farmers are also planting extensively, though tough economic times have made heavy investments difficult.

BOOK REVIEWS

Two excellent new books are available for review in this issue, one on nuts, and the other on exotic fruits.

GROWING NUTS IN AUSTRALIA.

Anthony Allen.

(Night Owl Publishers, 1987). 160p. Pb.

RRP \$19.95.

This is the book we have been waiting for - the first book devoted solely to growing temperate nuts in Australia, since Rumsey's classic of the 1920's. A note on the book says that it is "for the gardener, farmer and investor. It explains how to establish a nut grove from first principles ... Propagation is described so growers can save by producing young stock themselves ... each nut is detailed with notes on production, climate and soil requirements, flowering and pollination, tree management, nutrient needs, harvesting, preparation for market, pests and diseases ...".

The seven species of nut described are the walnut, hazelnut, chestnut, almond, pistachio, pecan, and macadamia. Each is dealt with competently, although greater emphasis is given to those growing well in Victoria, especially the walnut. The list includes all the 'commercial' species of tree nuts grown here outside the tropics, and the book is really intended for those contemplating commercial plantings, an aim which it fills very well. There is no mention of undeveloped species like the bunya or the athertonia, nor of tropical species like the cashew and the coconut.

Tony Allen is well qualified to write this book. He has many years of experience working with nutgrowers as a member of the Victorian Department of Agriculture. One of the early WANATCA members,

he was active in formation of the Victorian Nut Growers Association, and also active in promoting the three ACOTANC Conferences to date, in Perth (1982), Melbourne (1984), and Auckland (1986). This book is highly recommended.

EXOTIC TREE FRUIT for the Australian Home Garden.

Glenn Tankard

(Nelson, 1987). 152p. Pb. RRP \$24.95.

If 'Growing Nuts in Australia' is a book for those interested in today's expanding nut industry, this is one for those developing tomorrow's exciting new industries. It is a book for today's amateurs and enthusiasts, laying the ground for what will be a huge and profitable national resource in the future.

After an introductory section on selecting and modifying garden planting sites, the main part of the book deals with about 45 species, from Abiu to Sweetsop, which have had the basics worked out for them, either in Australia or overseas. For each of these, information is given on Microclimate, Varieties, Culture, Harvest, Problems, and Culinary Use. Each has an excellent line illustration, and some appear also in the 32 colour plates. A further 54 species are described in less detail, including some with outstanding characteristics, crying out for further work. A special section deals with 42 really 'new' fruits from Malaysian Borneo, some of which have never been described in print before. A real treasure-chest of species!

The book concludes with a few pages of recipes, and an appendix giving addresses of nurseries and organizations concerned with rare fruits, a list of books for further reading, a table of botanical classifications, and a good index.

In putting together this book, WANATCA member Glenn Tankard has done a first-class job. The book is well organised, very nicely produced, and right up to date. My only complaint is that Glen has re-used exactly the same title as his earlier book, published in 1984, a completely different work which does not bear comparison with this one. To have two completely different books by the same author and with the same title is, I believe, misleading and confusing.

This Book is also highly recommended. It, and 'Growing Nuts in Australia', are available from Granny Smith's Bookshop.

PRACTICAL HINTS FOR BUDDING AND GRAFTING FRUIT AND NUT TREES.

D. McE. Alexander.

(CSIRO, 1986). 31p. Pb. RRP \$6.00.

Recently retired from CSIRO's Division of Horticultural Research at Merbein, Don Alexander succinctly summarizes in this book his years of experience and observation with a wide range of fruits and nuts. Probably no other person in Australia has the same fund of first-hand knowledge to call upon.

Some 37 species are covered, ranging from traditional fruits such as the peach, through mid-term introductions like the cashew, on to lesser known species such as the jujube and quandong. No attempt has been made to cover as many species as possible, by summarizing results from elsewhere, instead the coverage appears to be limited to those species Don has actually worked with (and this is a very wide range).

For the species covered, this is an unmatched source of practical

information, derived under Australian conditions. Highly recommended. Available from Granny Smith's Bookshop.

AGROFORESTRY : An Alternative Approach to Farming.

(Department of Conservation and Land Management, W.A., 1987). 12p. Pb.

This little booklet has the subtitle 'How to grow radiata pine on farmland in W.A. with pasture or another crop'. It reflects CALM's initiatives in encouraging farmers to devote part of their acreage to radiata pine, to expand the State's softwood reserves.

If the subtitle had been the title, that would have been fair enough. The subtitle topic is covered adequately and clearly, and the booklet will be useful for farmers wishing to graze stock under pine growing for timber production. But that is as far as it goes.

Although admittedly different people understand different things by the term 'Agroforestry', I feel it deserves a much wider application than the present weak and sterile one of pine trees plus cattle. While not a monoculture, it is only one small step removed. Most would prefer to see the term Agroforestry applied to a rich and varied marriage of Agriculture and Forestry, encompassing dozens of species of animals and plants, working towards an integrated land use ecology. The present usage is more like having one animal and one tree in the same zoo cage, and calling it a nature reserve; it is pretentious to represent this as 'an alternative approach to farming'.

The booklet is available free from CALM at 50 Hayman Road, Como, W.A. 6152.

David Noel

Continued from page 9

According to world-famous botanist, Professor David Bellamy, who was in Perth last week, the need to plant trees in the WA wheatbelt was urgent. He said that from the air the wheatbelt looked more like a desert than farmland.

Mr. Milan Mirkovic, a partner in Pecan Industries of Pinjarra, which is responsible for the Corrigin plantings, said that last

year only 1.5 tonnes of pistachio nuts were produced in Australia, and the present retail price was about \$15 a kilo. Mr Angus Belford, who has been involved with pistachio plantings at Moora since 1977, said they grew well but did not produce nuts. "You need very cold weather to make them fruit", he said.

Michael Zekulich

(National Farmer, Nov. 27, 1986)

PAWPAWS: Quick freeze pawpaw to the rescue for North Queensland couple

A year ago, Roy and Thelma Wilson's pawpaw-based livelihood was in danger of collapse. The couple from Yarwun, near Gladstone, were facing a 100 per cent increase in Queensland's pawpaw production - with no corresponding jump in market demand.

The Wilsons saw no alternative but to throw away 50 tonnes of slightly blemished fruit, about a third of their crop - and sell only top quality pawpaw to the premium Sydney market. Then inspiration hit. Instead of dumping low-grade fruit, Roy Wilson believed there was "no reason why we couldn't process pawpaw to the point of resale".

About \$100,000 and a lot of hard yakka later, the Wilsons are now marketing blast frozen pawpaw cubes in around 150 independent supermarkets in NSW and Queensland. They say it is the first time frozen pawpaw has been successfully produced. Unlike previous attempts to freeze fleshy tropical fruit, the Wilson's product is neither slushy on defrosting nor choked with additives. It is 100% frozen pawpaw flesh.

They claim the product, sold in 375g packs, will last up to 12 months in the freezer and can be used as simply as frozen vegetables. The packs sell for around \$1.80 each, a vast improvement on the \$1 a kg for fresh fruit, but as Roy Wilson says, the labour and production costs are high. The eight part-time workers they employ to remove seeds account for around 60% of the wholesale price.

Wilson says sales to date have been encouraging. He expects to use all the property's lower grade fruit and start buying in on the peak of the next high production period around Easter. At the same time, he sees a long hard marketing road ahead. Number one problem is enticing consumers

to try frozen pawpaw, especially when fresh fruit is in peak season. The Wilsons are using the reusability, convenience, and consistency factors of the frozen fruit to counter this problem.

As they point out, frozen pawpaw is usable in any quantity: "Unlike fresh fruit, if you don't eat it all at once it won't go mushy." They also highlight the quality angle of the frozen fruit, which is guaranteed, due to the hand processing of individual fruit.

Problem two, says Roy Wilson, is promotion: the big supermarket chains, Coles and Woolworths, are reluctant to give a product space if there's no promotional money available. By not selling into Woolworths, for instance, the product is missing out on 42% of the State's consumers. "If we had \$500,000 to spend promoting a new frozen product, like Edgell has, then we'd be right. We're convinced there is a fairly large market there, it just needs developing. But whether 1987 is the year for frozen fruit is another thing."

He believes young people, who are not really the traditional pawpaw eaters, could be a fertile market if the product is presented well. Emphasis would be put on the product's convenience and nutritional value. Come what may, the Wilsons are not going to give up on frozen pawpaw.

The increase in North Queensland production, which may come back with a vengeance following Cyclone Winifred in February still bothers them. With 30,000 bearing trees, they don't want to have to dump pawpaw in a similar manner to many of the State's tomato growers. "There's not a fortune in it," he says, "but converting waste product will help out, especially through over-production periods".

Peter Fray

COCONUT (*Cocos nucifera* L.)

(Primary Production Bulletin, (Singapore), Jan 1987)

Coconut palms are important economic trees of the tropical coastlands. As fruits are well adapted to travel by sea without the aid of man, no one knows for certain where is its country of origin. It is believed that the coconut palm originated in the tropical coasts, possibly those of the West Melanesian region of the Pacific. For the last 4,000 years, this tropical fruit has played an important part in feeding the native population as an indispensable source of nourishment.

The coconut is an attractive evergreen, and a monoecious palm. The tall variety grows unbranched to a height of 30 metres. The trunk is crowned by a tuft of 20 to 30 pinnate leaves (fronds) which may reach a length of 6 metres. Old leaves fall off while new ones are being formed, producing 8 to 20 new fronds per year. The trunk does not increase in girth with age and is ringed by scars from the fallen leaf bases.

The panicle inflorescences arise from the axils of the leaves and consist of a few female flowers at the bases and, above them, 200 to 300 male flowers. All the flowers are cream-coloured, with three sepals and three petals. The female flowers have an ovary composed of three united carpels which develops, in the course of 12 months, into a mature fruit (nut), called botanically a 'drupe'.

The fruits are borne at the base of the fronds. The oval fruit has a smooth outer skin, which covers the thick fibrous layer beneath, giving the fruit its buoyancy in water and enabling it to float in the sea without harm. The fruit takes about 5 1/2 months to attain full size. After that, the nut shell hardens and the white, fleshy layer, or endosperm, forms the wall of the kernel and is known as the 'meat' of the coconut. The hollow centre of the nut is partially filled with 'coconut water'. The 'water' is a clear liquid which oozes from the endosperm as the endosperm changes from a liquid to a solid substance.

The embryo is only a few millimetres long. It is embedded in the solid tissue at the end of the fruit under one of the three 'eyes'. This 'eye' remains soft and easily penetrable, while the other two 'eyes' become hard and woody. During its germination, and for several months afterwards, the young coconut plant absorbs nutrients present in the surrounding tissue and becomes a spongy mass almost filling the cavity within the kernel.

Fruits should be picked when unripe. If left to fall by themselves, germination may have commenced, and then the flesh is past its best for eating. Harvesting is carried out by men climbing the trees, or by using knives attached to long poles.

The coconut palm is a salt-tolerant, tropical coastal plant which requires an average annual temperature of 27°C and a rainfall of 1,200 to 2,000mm.

It is not only tolerant of salt but likes an abundance of sunlight. It rarely lives beyond 60 years because of increasing trunk fragility. It produces its best crops of fruit

from its twelfth to its fortieth year. A vigorous palm produces 80 to 180 nuts per year. Coconut seedlings are sexually propagated by germination of seed-nuts. Germination begins 1 to 4 months from nut maturity.

There are many varieties of coconut palm, differing either in the fruit characteristics or stature. They may, however, be grouped into two main types according to stature — 'dwarfs' and 'talls'. The tall varieties have longer fronds, a more robust trunk, and grow to a height of 30 metres or more. They can tolerate a wider range of soils. They are slower to begin flowering and are predominantly out-pollinating. They take about 5 to 6 years to mature and then yield continuously for many years, reaching their peak about their 30th year.

In contrast, the dwarf varieties are smaller in all physical attributes and they grow to a maximum height of about 5 metres. They are predominantly self-pollinating. The common fruit colours in dwarf varieties, such as apricot, orange and yellow, are rarely seen in the tall varieties. The dwarf varieties begin to fruit one year earlier, reaching their peak towards their 15th year. They also produce more nuts but their life-spans are shorter.

The main commercial product of the coconut is copra, the dried flesh of the nut. The copra contains 63 to 70% of oil. It is mostly processed for oil locally and is used in the manufacture of cooking oil, margarine, soap, candles, etc.

As food, the nuts are used fresh for cooking or desiccated for confectionery and cakes. Coconut milk, the creamy juice extracted or squeezed from fresh coconut meat, has been and is still an important culinary ingredient among locals, especially among the Malays and Indians. Immature full-sized nuts are also becoming increasingly popular as a source of refreshing drink. Most of the dwarf varieties are mainly consumed in this manner as their coconut water has a mild sweet flavour and their tender flesh can be eaten raw. A green dwarf variety from Thailand is very much sought after as its coconut water contains a pleasant 'pandan' fragrance.

A brown sugar known as 'Gula Melaka' or 'Gula Kelapa' is made from the sap or juice of the immature inflorescence. The immature inflorescence is also tapped to produce a palm wine called 'toddy'.

Coconut palms are cultivated in the tropics on a large scale, mainly for their oil. They have many other uses. The leaves of the palm are used for thatching, and their midribs alone can be bound together as brooms. The trunk provides timber for building and for furniture. The fibrous pericarp is sold as 'coir' for making ropes and coconut matting. It is also used as a filler in horticulture potting mixtures. The hard shells are used as fuel for heating or for the production of charcoal. They can also be used to make household utensils or ornamental carvings.

NEEM TREE YIELDS NATURAL INSECTICIDE

The neem tree, which has been used medicinally and for pest control for centuries in India, Asia and Africa, is now being studied by the USDA Agricultural Research Service for its pesticide properties.

Because it is a natural product, the neem spray will probably be biodegradable and environmentally safe for many uses, say researchers, although more testing will have to be done. So far the U.S. Environmental Protection Agency has approved use of only one neem insecticide, Margosan-O, which is available for some horticultural crops.

In research, neem products killed or repelled insects on flower and nursery crops when sprayed on leaves or applied to potted plant soil, says Hiram E. Larew, ARS entomologist at the Beltsville Agricultural Research Center in Beltsville, Maryland. Neem extract added to the soil enters roots and moves into plant leaves, making them poisonous to leafminer worms.

The compounds interfere with the life cycle by somehow jamming hormonal signals for moulting. The worms die trapped within their own skins. USDA-ARS research has shown the neem extract inhibits some 80 insect pests so far, including navel orangeworms, citrus mealybugs, cockroaches, leafminers, Mexican bean beetles, Japanese beetles, Colorado potato beetles, North

American grasshoppers, tobacco budworms, carpet beetles, striped cucumber beetles, confused flour beetles, and milkweed bugs.

Japanese beetles, for example, would rather starve than eat some of their favourite plants which have been treated with neem.

Although the tropical neem trees are scarce in the continental U.S., they thrive throughout the Caribbean and could do well in southern Florida and Hawaii, according to Robert J. Knight, USDA-ARS researcher at the Subtropical Horticulture Research Station in Miami, Florida. Florida research stations have about 50 neem trees growing now.

In tropical Asia and Africa, neem trees are used for timber, the leaves for medicine and animal feed, the bark to tan goat skins, and the leaves, small branches and oilseed cakes for fertilizer. In India, ground neem seeds are commonly added to stored grain to keep out insects. Commercial products, such as soap and toothpaste, also contain neem for its 'healthgiving properties'. All these uses suggest low toxicity for people and other mammals.

[Editor's note: the neem tree is a close relative of the 'Cape Lilac' widespread in Perth backyards. Has anyone tested its leaves or seeds as an insecticide?]

Pistachio Nuts

A Crop with a Future

For thousands of years pistachio, a small nut tree from Asia Minor, has been known as a luxury crop in its area of origin. It is only during the last few years that the little nuts have gained popularity in Australia.

The increase in popularity of the pistachio has been dramatic. Imports of pistachios rose from a value of \$750,000 in 1979 to triple in four years. In 1983, over \$2.2m of nuts were imported. Pistachios now sell at a similar price to the glamour nut, macadamias.

Local demand for pistachios is expected to increase when locally-available nuts become more readily available, as imported nuts are up to two years old when sold here, and may have become stale and lost flavour.

One company which believes in the future of pistachio is Forestell Securities (Australia) Ltd, who are marketing a unit trust investment project based on a 200-acre pistachio

planting in Victoria. At present there are only 150 acres of pistachio in the country, and only a small amount has reached the productive stage.

Pistachios can be grown in exposed positions on poorer soils, but must have good drainage. Worked trees start cropping after four or five years, with 1Kg of nuts in husk for each year of the tree's age. Trees will bear up to about 30 Kg each when fully grown. About 3 Kg of nuts will give 1 Kg of kernels. Wholesale price in 1986 was \$6 per kilo.

Potentially the humble pistachio nut could yield a conservative estimate of around 1500 Kg/ha, which represents a gross of \$6,000 per hectare. A study conducted by CSIRO says there is definite viability in a pistachio crop, and a local ready market is ensured. Because world production is low, there is every possibility that Australia could be exporting pistachios within the next five to ten years.

** The above is a greatly condensed version of an article which appeared in a 1986 issue of the magazine *Australian Investor*. A copy of the full text can be obtained from Forestell Securities.

To find out more about profiting from pistachio nut growing, fill in the coupon below or telephone Forestell Securities (Australia) Limited on (09) 445 3744.

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(Nut Grower, California, Nov/Dec 1986)

1986 U.S. Pistachio Crop 70 Million Pounds

The California Pistachio Commission has estimated the 1986 pistachio crop at approximately 52.5 million pounds of open, in-shell snack nuts.

The snack market estimate is based on the California Crop and Livestock Reporting Services total pistachio crop estimate of 70 million pounds.

The commission estimates 25 percent of the deliveries will be unopened nuts which will be primarily used for nut meat distribution. In the previous high-crop year of 1984, the percentage of closed-shell pistachios harvested was 28 percent. Early deliveries of the 1986 crop have exceeded 30 percent closed-shell nuts. However, this percentage is expected to decrease. Because of the alternate bearing characteristics of pistachios, processors will carry over at least 15 million pounds into the low crop year of 1987, creating market supply stability.

The pistachio industry anticipates an excellent marketing season, due in part to the slowing of imports as a result of recent tariffs imposed on Iranian imports. In a related action, California pistachio producers have voted to continue the state commission for an additional five years.

State Food and Agriculture Director Clare Berryhill indicated that more than 73 percent of the eligible voters participated in the referendum. Of those voting, more than 97 percent by number (representing more than 99 percent by volume of production), voted in favour of the programme being continued.

The Pistachio Commission was established in 1981 as an industry-financed self-help programme. It is authorised to administer programmes of production and marketing research and advertising and promotion of California pistachios.

(Primary Production Bulletin, Singapore, Oct 1986)

PPD's plan for Fruit Tree Resource Centre

The Primary Production Department has initiated plans to upgrade its Demonstration Farm at Lim Chu Kang into a Fruit Tree Resource Centre. This was disclosed at a press briefing organised by the Ministry of National Development in connection with the launching of its Annual Report 1985.

When completed, the centre will provide training on propagation, cultivation, and maintenance of fruit trees to schools, community centres, government departments and statutory

boards, as well as members of the public. Materials used in the training will include audio-visual aids and publications such as agricultural handbooks and pamphlets.

The centre will be a storehouse for over 300 varieties of fruit trees and will have a pool of the best genetic resources in tropical fruit trees. The best and most suitable fruit trees will be propagated and sold to members of the public.

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Quandong apologizes for printing an incorrect price for these in the last issue

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THE GUANABANA

The Guanabana, the biggest-fruited member of the custard apple family, hails from the American tropics and also goes by the names of Soursop, Zuurzak or Sirsak.

This is a very popular orchard tree in Cuba, Columbia, Puerto Rico, the Bahamas and throughout Southeast Asia. Weighing in at 1-2 kg each, the oval to heart-shaped fruits have a yellow-green leathery skin with a covering of soft fleshy spines. The white pulpy flesh has a very pleasant aroma and is extremely juicy, with a slightly pineapple-like acid taste.

Refreshing drinks are produced from the Guanabana, and the rich creamy juice makes a fabulous milkshake when mixed with a little milk. A relative of mine who tasted Guanabana in New Guinea said that it was like a combination of every tropical fruit you could imagine. Generally speaking, it is not a fruit that is eaten out of hand, but rather is combined with other fruits in fresh-fruit salads and in sorbets, adding an interesting and pleasant flavour.

CLIMATIC REQUIREMENTS

Guanabana needs a warm, moderately-humid climate for best results. The trees of all ages are frost sensitive and may be damaged at temperatures around zero degrees centigrade. A sunny position that is well sheltered from strong winds is important and the trees thrive in deep, rich, well-drained soils.

Mulching is most important to avoid dehydration of the plant's shallow, fibrous root system. It also helps to increase humidity in the tree canopy.

For success in the Perth metropolitan area some climate modifications are needed. I recommend a climate shelter consisting of shadecloth in summer and an additional layer of clear plastic in a vertical curtain around the tree in winter.

It is important that this doesn't cover the top of the trees, as this can lead to burning on occasional hot winter days.

Once the tree has weathered the first couple of winters it can grow very successfully without the aid of additional climate modifications. The most successful tree I have seen in the Perth metropolitan area was growing in the suburb of Bedford in a well-protected garden.

HOW TO GROW

In common with many tropical trees Guanabana needs a very rich free-draining soil. The addition of poultry manure 4-6 weeks before planting will give a good foundation. This can also be used later as an effective fertilizer mulch. Apply every three months during the growing season. Regular watering is particularly important in spring and summer when the plant is growing quickly. A bushy small tree, you need to allow 2 or 3 metres of space from existing trees or buildings.

Harvesting is usually from mid-summer to early winter. The fruits are picked when fully grown and still firm. They tend to have a slight colour change towards yellow-green and this is a signal of their approaching maturity.

Fruits need to be handled very carefully as they are tender and subject to bruising. They will ripen off the tree in a few days at room temperature. When the flesh is slightly soft it is ready to eat. I recommend keeping ripened fruits in the refrigerator where they can be stored for up to a week.

FRUIT USES

Sweet fibre-free varieties are often eaten fresh or in fruit salads. Refreshing drinks and delicious sherbets are made from the rich, creamy juice, which can be obtained by pushing the white pulpy flesh through a colander or squeezing it in a cheesecloth.

Guanabana is delicious when whipped with ice-cream or made into custards, mousses, jellies, soufflés and sun-dried pieces. The seeds are toxic, so make sure you remove all of them before processing the pulp.

Neville Passmore



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Our philosophy of working in the market place is practical and determined, based on experience and a determination to succeed.

Initially, contact on any matter we may be able to assist with will be through our Perth Office, telephone 09-325 5100, contact Neil Dayman (a/h 09-332 3962) or Alan Bell (a/h 09-3302074).

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CALENDAR OF FORTHCOMING EVENTS

1987

May 20	Wed	General Meeting* (Film & Video Evening: Pistachios, Pecans, Cashews, Tropical Fruits)
May 31	Sun	Conservation Farming Seminar, Denmark (Forest Farming)
Jun 28	Sun	Conservation Farming Seminar, Denmark (Carob, Tree Lucerne, and Innovators)
Jul 7	Tue	Executive Committee Meeting
Aug 19	Wed	General Meeting* (? The Kimberley Cashew Project?)
Sep 29	Tue	Executive Committee Meeting
Nov 18	Wed	Annual General Meeting* (? Casuarinas as and for Tree Crops?)

1988

Jun 13-14	New South Wales Nut Growers AGM & Conference, Goulburn
Aug 1-2	Victorian Nut Growers AGM & Conference, Warrigal
Aug 15-19	ACOTANC-4 Conference, Lismore (Fourth Australasian Conference on Tree & Nut Crops)

*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. 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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