

NEWSLETTER

Quandong

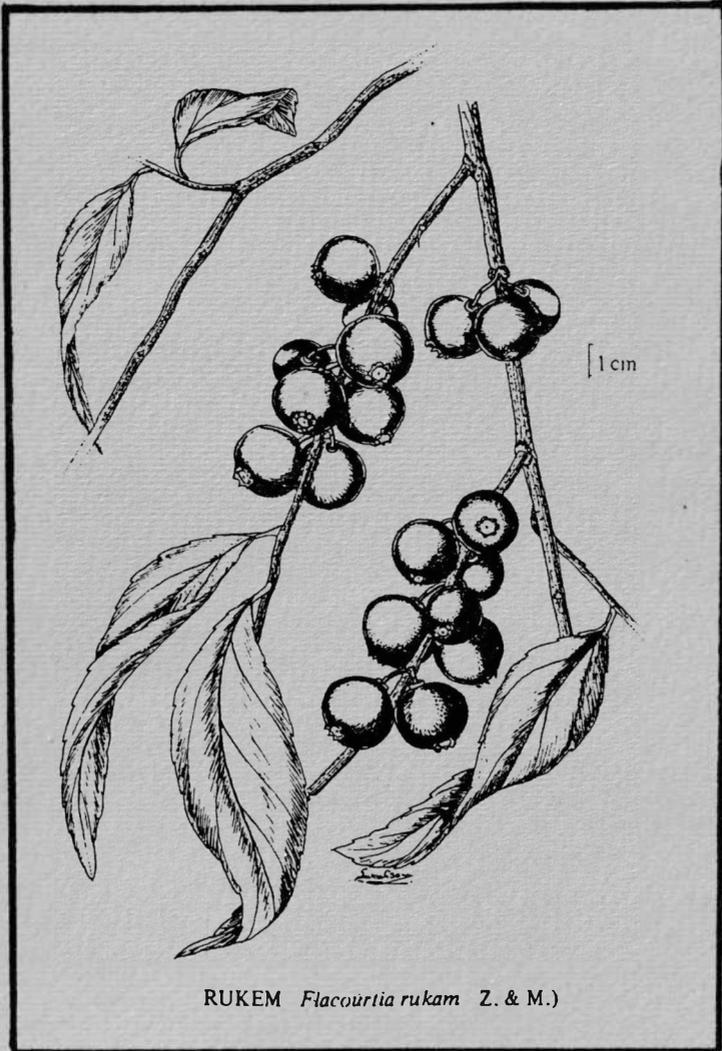
WEST AUSTRALIAN NUT AND TREE CROP ASSOCIATION

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RUKEM *Flacourtia rukam* Z. & M.)

NEXT MEETING
PERMACULTURE AND TREE CROPS

** Wednesday August 20: 7.30 pm **
(Naturalists Hall, 63 Meriwa St, Nedlands)

Our speaker at the next meeting will be RAY HART. Ray was one of the pioneers of the permaculture approach in W.A., and he and his wife Ros Hart are prominent figures in the movement.

Permaculture enthusiasts, seeking to develop permanently sustainable agricultural land use methods, have always recognized tree crops as the kingpin of their strategies. Bill Mollison, the founder of the permaculture movement, was one of the first members of our Association (when it was the W.A. Nutgrowing Society).

We look forward to hearing Ray expand on the close link between the aims of the Permaculture Association and our own organization. At the same time, we can expect to hear something of his particular speciality, the detection and control of the dieback disease (*Phytophthora cinnamomi* or PC) in trees. Well-known in this State as the cause of Jarrah Dieback, a serious disease affecting our best-known eucalypt timber source, PC is better known overseas as causing Avocado Rootrot, which has destroyed large plantings in some areas of California.

At the same meeting we anticipate hearing something from Bill and Pat Scott, who have recently returned from a world trek during which they visited some of the most interesting tree crop areas in existence. These included Israel and Thailand, as well as the foremost U.S. exotic fruit plantings in California and Florida. Bill hopes to have some seed available for distribution at the meeting.

David Noel will also report briefly on the 3rd Australasian Conference on Tree & Nut Crops, held in Auckland, New Zealand, last May. The New Zealanders are moving vigorously ahead with new fruits and new techniques. David will also have some seed to distribute, of the rare Casana (*Cyphomandra casana*), a South American fruit related to the tamarillo. Introduced into New Zealand by Dick Endt, this fruit was so little known that it did not even have a botanical name at the time of its introduction.

TRENDS

Fruit production trend is toward exotics and nuts

Figures released by the Australian Bureau of Statistics show that the biggest horticultural production changes in the years ahead can be expected among the newer fruits.

While the ABS statistics do not cover the more exotic species, they show that plantings of some tropical fruits and nuts have increased considerably.

Overall, the total area under fruit grew only slightly from 172,000 hectares to 173,100ha in 1984-85, an increase of a mere 0.6pc.

In the same 12 months, however, the total number of macadamia trees increased by 19pc, while custard apples showed a 12.5pc gain and avocado plantings grew 8.2pc.

In comparison, the only major conventional fruit to grow substantially was citrus, with tree numbers up 4pc.

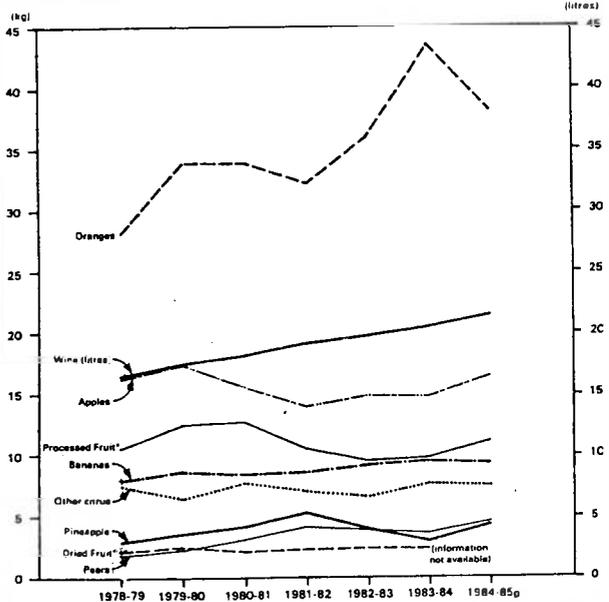
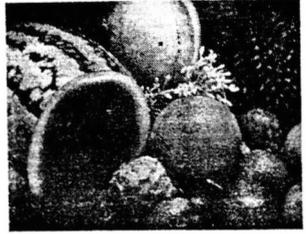
Apple tree numbers increased only 1.3pc, while pears decreased by 2.3pc.

Export performance during the three years 1983 to 1985 showed some major losses. Apple exports slipped from 29,044t to 19,382t, while citrus juice exports dropped from 3.4 to 2.1 million litres. Overseas sales of canned pears fell from 1.4m cartons in 1983 to 1.1m in 1985.

The most important export gains came from sultanas (61,306t in 1985 against 49,692t in 1984) and fresh pears (30,930t against 22,746t). Canned pineapple exports grew from 114,000 cartons in 1984 to 160,000 the following year.

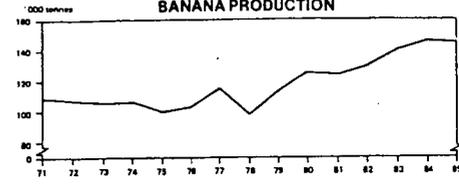
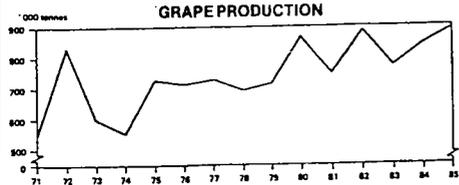
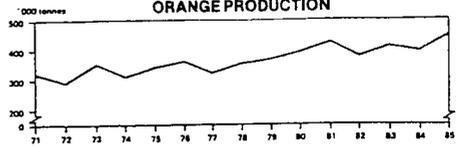
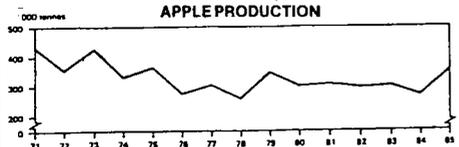
Annual consumption patterns show wide variations. The quantity

of oranges eaten annually slipped back to around 38kg after growing rapidly to about 43kg over the three previous years. Apple consumption, on the other hand, showed a slight improvement.



*Product weight; all others are in fresh weight, except wine, which is in litres. Source: ABS

Apparent per head consumption of fruit and fruit products in Australia.



BOOK REVIEW

PROPAGATION OF EXOTIC FRUITS & NUTS

In this issue we have for review not one, but two, outstanding books on propagation of non-temperate fruits and nuts:

1. PROPAGATION OF TROPICAL & SUBTROPICAL HORTICULTURAL CROPS. Edited by T.K. Bose. Naya Prokash, Calcutta, 1986. 615p. Hard cover. \$59.75 from Granny Smith's Bookshop.

Bose's book on propagation is in the same series as 'Fruits of India: Tropical & Subtropical', reviewed in the last Quandong. Once again Naya Prokash, the publishers, have produced an outstanding publication of great merit. Authoritative and scientific, drawing exhaustively on the published world literature of the topic and on local experience, the only fault noted, a very minor one, is that the index is not organised in the most useful manner possible.

The book is divided into 8 chapters. The first is on Seed Propagation; it deals with seed formation, physiology, dormancy, germination, viability, testing, certification, and storage. The 60 pages of the next chapter, on Vegetative Propagation, cover apomictic seedlings and specialized vegetative structures (such as rhizomes), as well as the typical methods of cuttings, layering, grafting, and budding, and the increasingly important micropropagation (tissue culture).

The important aspect of Adventitious Root Formation on Cuttings is given a whole chapter to itself. Chapter 4, the largest in the book (250 pages, a book in itself) covers individual fruit crops, as follows: Citrus; Grape; Banana; Mango; Pineapple; Papaya; Litchi; Guava; Coconut; Cashew; Avocado; Olive; Sapota; Ber; Fig; Jamun; Jackfruit; Datepalm; Annona; Pomegranate; Persimmon; Phalsa; and Mulberry. Clearly this range covers many tree crops of mediterranean climates as well as both dry and wet tropics, and includes more obscure fruits as well as the commercial leaders.

The next chapter is on Plantation Crops: Tea, Cocoa, Coffee, Rubber, Oilpalm, and Arecanut. Chapter 6, on Spices and Medicinal Plants, covers Black Pepper, Clove, Nutmeg, Cinnamon, Cardamon, and Cinchona (source of quinine). The data on these tremendously important non-fruit tree crops, presented in the same manner as that for fruits, puts the different facets of the tree crop industry in a way where they can be directly and usefully compared.

After a detailed chapter on Propagation of Ornamentals, the last chapter deals with Viability of Horticultural Seeds and Seed Invigoration Treatments for Vegetables and Flowers.

Once again Naya Prokash are to be congratulated on the production of a first-class, timely, and up-to-date work, one that no organization seriously concerned with warmer-climate horticultural production should be without. The standard of printing and production is high, and if the price seems high, it is not unfair to comment that it would be twice as much if published in Europe or America.

2. THE PROPAGATION OF TROPICAL FRUIT TREES. By R.J. Garner, Saeed Ahmed Chaudhri and the staff of the Commonwealth Bureau of Horticulture and Plantation Crops. Published by CAB, U.K., 1976. Paper cover. 566p. \$48.75 from Granny Smith's Bookshop.

This again is a most worthwhile and valuable book. If it had not appeared for review at the same time as the Bose book it would have been recommended enthusiastically; as it is, it suffers from the comparison.

The first third of the book is a practical discourse on Materials and Methods in propagation, by R.J. Garner, probably Britain's leading plant propagation expert. The rest is on individual fruits. These are: Cashew; Annona; Breadfruit; Jackfruit; Carambola; Papaya; Starapple; Durian; Eugenias; Mangosteen; Langsat; Malpighia; Mango; Sapodilla; Myrciaria; Rambutan; Guava; and Zizyphus (Ber). This list includes a number of species not in Bose's book, but omits others - irritating but typical!

Each fruit is dealt with in fair detail, described by a different specialist, usually with lots of references to the literature. There is no doubt that this book contains a lot of very valuable information. Of course it is ten years older than the Bose book, and so is not as up to date (for example, tissue culture techniques are not featured). There is no index at all.

Reproduced from typescript, sometimes not particularly clearly, and stapled together with a paper cover, this is clearly a utility edition and not a professional production like the Indian book -- a surprising reversal of the usual case! Even so, and even at the fairly high price, it is a book which merits a place in any horticultural library.

(David Noel)

TURKISH HAZEL SEEDLINGS AVAILABLE

Ivan Laszlo has some Turkish Hazel (*Corylus colurna*) seedlings available for sale. This hazel species grows into a large tree, bigger than a walnut. It needs about 500 mm rainfall and can stand summer drought. The tree is ornamental, pyramidal in shape, and deciduous. It prefers heavy clay soils, is frost resistant, and will bear for more than 400 years. It should grow wherever the stone pine (*Pinus pinea*) succeeds.

The confectionary trade uses this hazel nut because of its higher oil content.

The seedlings were raised from two lots of seed, from Turkey and from Hungary; now about 1 year old, and 10-15 cm tall. They will be sold only in lots of 10-12 at \$50.00 per lot, on condition that the buyer keeps and raises the lot together, as this is required for effective pollination. Price includes postage and packing (in jiffy bags).

Contact address: I.M.Laszlo
2 Spowers Circuit Holder ACT 2611



DEPARTMENT OF PRIMARY INDUSTRY

PLANT QUARANTINE

IMPORTATION OF SEEDS



All imported seeds are subject to quarantine. Some are restricted in their importation because of seed borne diseases and may be imported only by special permit, which are usually issued only to official agencies such as Departments of Agriculture and C.S.I.R.O., with a period of post-entry quarantine and screening for disease.

Seeds in this restricted group include:

A. Common Names

Barley - *Hordeum* spp.
Bean - Asparagus, Mung - *Vigna* spp.
 Broad - *Vicia* spp.
 Climbing - *Phaseolus* spp.
Bokhara Clover - *Melilotus alba*
Brachicaria inc. para grass
Buffel - *Cenchrus* spp.
Calopo - *Calopogonium* spp.
Cassava - *Manihot esculenta*
Castor bean - *Ricinus communis*
Centro - *Centrosema* spp.
Chestnut, sweet - *Castanea* spp.
Chick pea - *Cicer arietinum*
Citrus - *Citropsis*, *Citrus*,
 Eremocitrus, *Fortunella*
 Microcitrus, *Monathocitrus*
 Pleurocitrus, *Poncirus*
Coconut - *Cocos nucifera*
Coffee - *Coffea* spp.
Cotton - *Gossypium* spp.
Cowpea - *Vigna* spp.
Desmodium - *Desmodium* spp.
Digitaria - *Digitaria* spp.
Dolichos bean - *Lablab purpureus*
Elms - *Ulmaceae*
Flax - *Linum* spp.
Grape - *Vitis* spp.
Guar - *Cyamopsis tetragonolobus*
Hops - *Humulus* spp.
Horse beans - *Vicia* spp.
Hyacinth bean - *Lablab purpureus*
Kenaf - *Hibiscus cannabinus*
Kikuyu grass - *Pennisetum* spp.
Lettuce - *Lactuca sativa*
Leucaena - *Leucaena* spp.
Linseed - *Linum* spp.
Lotonis - *Lotonis* spp.
Lucerne - *Medicago sativa*, *M.media*
 M.falcata, *M.glutinosa*
Maize - *Zea mays*

B. Scientific Name List

Aphananthe spp.
Arachis spp.
Agropyron spp.
Avena spp.
Brachicaria spp.
Cajanus spp.
Calopogonium spp.
Carthamus tinctorius
Castanea spp.
Castanopsis spp.
Celtis spp.
Cenchrus spp.
Centrosema spp.
Cicer arietinum
Citropsis spp.
Citrus spp.
Cocos nucifera
Coffea spp.
Cyamopsis tetragonolobus
Desmodium spp.
Digitaria spp.
Dolichos spp.
Eremocitrus spp.
Fortunella spp.
Glycine spp.
Gossypium spp.
Helianthus spp.
Hibiscus cannabinus
Hordeum spp.
Humulus spp.
Juglans spp.
Lablab purpureus
Lactuca sativa *
Linum spp.
Lotonis spp.
Lycopersicon lycopersicum
Macroptilium spp.
Macrotycoma spp.
Manihot esculenta
Medicago spp.

Millet - *Panicum miliaceum* etc.
 Molasses grass - *Melinis* spp.
 Oats - *Avena* spp.
 Panic grass - *Panicum* spp.
 Pea - *Pisum sativum*
 Peanut - *Arachis* spp.
 Pigeon grass - *Setaria* spp.
 Pigeon pea - *Cajanus* spp.
 Potato - *Solanum tuberosum*
 Peuro - *Pueraria* spp.
 Rhodes grass - *Chloris* spp.
 Rice - *Oryza sativa*
 Rye - *Secale cereale*
 Safflower - *Carthamus tinctorius*
 Sainfoin - *Onobrychis* spp.
 Sesame - *Sesamum indicum*
 Sorghum - *Sorghum* spp.
 Soyabean - *Glycine* spp.
 Stone fruit - *Prunus* spp.
 Stylo - *Stylosanthes* spp.
 Sunflower - *Helianthus* spp.
 Sweet corn - *Zea mays*
 Tapioca - *Manihot esculenta*
 Teosinte - *Zea mexicana*
 Tick trefoil - *Desmodium* spp.
 Tobacco - *Nicotiana* spp.
 Tomato - *Lycopersicon lycopersicum*
 Velvet bean - *Stylozobium* spp., *Mucuna* spp.
 Vetches - *Vicia* spp.
 Walnut - *Juglans* spp.
 Wheat - *Triticum* spp.
 Wheat grass - *Agropyron* spp.

Melilotus spp.
Melinis spp.
Microcitrus spp.
Monanthocitrus spp.
Mucuna spp.
Nicotiana spp.
Onobrychis spp.
Oryza sativa
Panicum spp.
Pennisetum spp.
Peuraria spp.
Phaseolus spp.
Pisum sativum
Pleurocitrus spp.
Prunus spp.
Ricinus communis
Secale cereale
Sesamum indicum
Setaria spp.
Solanum tuberosum
Sorghum spp.
Stylosanthes spp.
Stylozobium spp.
Triticum spp.
Ulmus spp.
Vicia spp.
Vigna spp.
Vitis spp.
Zea mays
Zea mexicana
Zelcova spp.

Seeds which may be imported, without restriction on quantity or growth in post-entry quarantine subject to a permit being issued and inspection on arrival include:

Acacia
 *Allspice - *Pimenta officinalis*
 Avocado - *Persea* spp.
 Barberry - *Berberis* spp.
 *Bottlebrush - *Callistemon* spp.
 Cactus - *Cactaceae*
 *Clove - *Syzygium aromaticum*
 *Eucalypts - *Eucalyptus* spp.
 *Guava - *Psidium guajava*
 Norfolk Is. Pine - *Araucaria* spp.
 Rubber - *Hevea* spp.
 Tea - *Camelia sinensis*

Acacia spp.
Araucaria spp.
Berberis spp.
 **Callistemon* spp.
Camelia sinensis
 **Campomanesia* spp.
 **Eucalyptus* spp.
 **Eugenia* spp.
 * *Hevea* spp.
 **Jambosa* spp.
 **Marlierea* spp.
 **Myrciaria* spp.
 **Palvaea* spp.
Persea spp.
 **Pimenta* spp.
 **Psidium* spp.
 **Syzygium* spp.

*Seeds from South America and Caribbean - as for restricted group, conditions overleaf.

HAZELNUT VARIETIES - Are We Confused?

By:- Milan Paskas

THE VICTORIAN NUTGROWER

Along with the renewed interest in growing hazelnuts, there has been a widely felt need to identify the varieties growing in those older groves which have formed the basis of recent plantings. Both growers and suppliers of planting material tend to feel more comfortable dealing in "named" varieties, so it is almost with desperation that names have been sought.

A short walk through any of the older groves in Victoria will reveal however, that there are many more types of hazelnuts than one could ever hope to find names for. This is not very surprising given that Australia's early settlers must have found it a lot easier to bring seed than plants with them on their lengthy sea voyage. If genuine "named" varieties do exist in Australian groves, the task of identifying them amidst the vast heritage of seedling selections, is a daunting one.

Cosford, Kentish Cob, Barcellona and Hall's Giant are old European variety names used frequently in Australia in recent times. Some of the nuts thus described locally are compared in the following drawings with imported samples supplied by Professor Maxine Thompson (hazelnut researcher, Oregon State University).

COSFORD (Miss Young's Thin Shelled)

This must be the most widely used (and abused) of the European variety names in Australia. FIGURE 2 typifies the nut shape often accepted as a Cosford-type nut in Australia. Although the general nut shape bears a resemblance to the original Cosford (FIGURE 1), the Australian nut has a much thicker shell with a rougher surface and a more pronounced furrow down the centre of one side. If we accept the likelihood that this Australian Cosford (FIGURE 2) is an old seedling selection, then it could be speculated that the old English variety Webb's Prize Nut (FIGURE 5) is likely a parent of the original Cosford.

The other two Cosfords (FIGURES 3 & 4) are from Agriculture Department trials plantings. The nut represented in FIGURE 3 comes from the Orange Research Station (N.S.W.) where a collection of about two dozen exotically named hazelnut varieties has been held for some years. The Cosford (FIGURE 3), like other samples from this collection, scarcely resembles its European name-sake. FIGURE 4 depicts a Cosford grown at both Toolangi and Myrtleford Research Stations (Victoria) and could best be described as "almost but not quite entirely unlike" the original Cosford.



FIGURE 1



FIGURE 2



FIGURE 3



FIGURE 4

KENTISH COB

(Du Chilly, Longue d'Espagne)

Because they are both known to be long nuts, some confusion has existed locally between the varieties Kentish Cob and Cosford. As can be seen from the examples however, Kentish Cob is broadest at the base and tapers gradually toward the apex whereas Cosford is almost the reverse of this. Local Kentish Cob samples (not illustrated) appeared to be identical to those of Du Chilly (FIGURE 6), indicating that at least some of the Kentish Cob available locally may be the genuine variety.

FIGURE 5



FIGURE 6

BARCELONA (Fertile de Coutard)

The Barcelona nut known in Victoria's North East (FIGURE 8) is a very small round nut almost completely filled by the kernel. The similarity in shape to that of the American Barcelona (FIGURE 7) suggests that it may have originated as a seedling selection from that variety. The obvious difference between the two nuts is the size. The medium-to-large size of the American Barcelona, the roundness of the kernel and high yields have made it a versatile nut satisfying to a degree, demands of both "in shell" and "kernel" trades in the United States. In comparison, the local Barcelona is largely an unknown quantity - although its small round kernel must give it some potential in the confectionary trade.

HALLS GIANT

(Hallesche Riesen, Mervielle de Bollwiller)

This variety name is also well known to Australian growers. The imported sample (FIGURE 9) has a distinct conical shape with a very broad base almost entirely covered by the scar. Once again the sample from Orange [labelled Hallesche Rusen (FIGURE 10)] looks different. People growing the Orange Hall's Giant may have become suspicious of this freely suckering variety when reading in their "little green book" Nut Tree Culture in North America - Jaynes (Ed.) about the use of Hall's Giant as a rootstock due to its non-suckering characteristic.

FIGURE 7



FIGURE 8



FIGURE 9

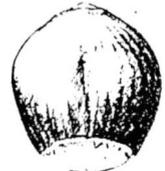
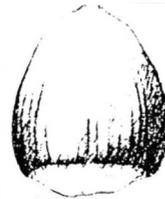


FIGURE 10

Clearly, with such genetic diversity abounding under our most commonly used variety names, both growers and nurseries need to become more specific about the labelling of plants. If we are to use variety names so freely to describe the plants we buy or sell I believe we should resolve to include the source of the plant on the label, in order to at least limit the confusion. Never was my conviction so clear as when one day last year, an extremely optimistic nurseryman recommended a local hazelnut selection to me on the grounds that it was, "well sort of an Australian Butler.

Put your money on trees and watch it grow

"Farmers have been suffering a good deal lately," says Mr David Noel, President of the WA Nut and Tree Crop Association. "Not least in being inundated with helpful advice on what they should do to avoid being part of the rural crisis, and suggestions of where they went wrong in the past.

"I am going to look here at how these problems could be relieved for farmers if they altered their mix of crops a bit to include a higher proportion of tree crops," he said.

"That it is 'A Good Thing' to plant trees on farms has, by now, been pretty widely accepted in the farming community.

"What as yet is not widely realized, is that as well as being a good thing, trees can also provide an increasing proportion of farm incomes and can add stability to any farming enterprise.

"Of course, like anything else, it has to be done right, and you have to have the information needed to do it right.

"Most farmers still look at trees as similar to paint.

"Painting the tractor shed may make it look better and even protect it a bit, make it last longer, but it is essentially decorative.

"So with trees; they can improve the look of the place, even give a bit of shelter to stock, but they are not what real farming is about.

"Sorry, think again — think of trees as part of capital, part of farm inputs, and, very important, as part of the essential crops which go out from the farm to bring in cash returns.

"What can farmers hope to sell as products from trees growing on their farms?

"The range of possibilities is enormous.

"Trees produce not only food and construction timber, but are also the sources of most beverages, much of the world's fuel, much of its paper, many industrial raw materials, spices, pharmaceuticals and industrial chemicals, fibres, even cork and pet-

food stabilizer and cocoa and chewing gum!

"Perhaps these are interesting things, but not of any real importance on the world scene?

"On the contrary, take for example, coffee, currently a major world tree crop, and the largest single agricultural import item of some countries.

"Last year, Australia spent over \$110 million on importing coffee, and the United States spent about \$4 billion on coffee alone.

"Each year, the money value of what goes in and out of American coffee cups is about the same value as everything that Western Australia exports: wool, meat, minerals and grain.

"Tree crops have major muscle on world markets.

"Fuelwood, is a major, renewable resource which has been much neglected in this State; in some countries, wood is the major fuel.

"In the Philippines, trees are grown specifically for commercial electricity generation, so-called dendrothermal power stations.

"In some areas of Africa, stricken by drought (largely caused by excessive removal of trees), food may be obtainable through international aid agencies, but no fuel is available to cook it.

"Firewood sells on the Perth domestic market for \$50-150 per tonne, depending on type.

"A planting of casuarinas, our very own native she-oaks, can yield 4-10 tonnes of wood per hectare per year, plus a further four tonnes of twig and needle droppings.

"This with no fertilizer, no chemicals, and a crop able to grow on the poorest, infertile, and saline soils.

"Different she-oak species grow in the true desert, on salty beach dunes, on eroded gullies; casuarinas are nitrogen-fixers, they make their own fertilizer.

"Talking to a farmer recently, he estimated in a projected wheat planting,

he would get around one tonne to the hectare, and each tonne would return him around \$100 after deductions.

"He would be spending \$25 per hectare in fertilizer, and slightly more on herbicides.

"Fuel was costing him around \$400 per tonne, machinery depreciation he did not take into account at all and, of course, the biggest cost was interest on land purchase loans.

"In New Zealand, farmers have been able to get returns of \$30,000 from a kilometre of double-row pinus radiata windbreak, 18 years old, and given no attention during their life-

time except for two prunings.

"In the United States, a single tree of black walnut timber sold for \$30,000 a few years ago; this was a world record, but it does show there can be big money in specialist timbers.

"Every farmer needs trees, every farmer needs windbreaks.

"The benefits in improved field crop yields and reduced stock losses, have been shown clearly in the past.

"Now some forward-thinking farmers are moving further on than this.

"They are using fodder trees — things like

tagasaste, to double and triple their sustainable stocking rates.

"They are putting in plantings of nut trees, like the pistachio, well-suited to wheat-belt areas, as a sideline to give future stability, and they are beginning to plant trees to sell for construction timber, wood pulp, and firewood.

"The increased soil fertility is just a bonus.

"At the moment, farmers have most of their capital tied up in two things — land and machinery.

"The machinery depreciates rapidly, the land seldom appreciates faster than inflation, and, in some cases it even falls."

The Farmers Weekly, Wednesday, May 21 1986

THE WEST AUSTRALIAN MONDAY AUGUST 4 1986

Grill tells growers to switch

WA's WHEAT farmers should look to alternative crops, says the Minister for Agriculture, Mr Grill.

He said they would be worst-hit by the decision to subsidise U.S. grain sales to the Soviet Union.

One alternative was horticulture. WA could turn a \$32 million industry into one worth several hundred million with big overseas markets.

OTHER NEW BOOKS

Some really worthwhile new books on tree crops have become available in the last few months. We do not have space to review them all fully this time, but will give some a mention now.

1. MAROOCHY HORTICULTURAL RESEARCH STATION REPORT No. 4. Queensland Department of Primary Industries, 1986. 236p. Pb. Available from PO Box 822, Nambour, Qld 4560, at \$12.00 + \$7.00 postage.

A most interesting and useful report, with 100 short papers on topical matters relating to subtropical fruit and nut crops, both major ones like avocado, macadamia, and lychee, and minor ones like longan, ginger, and casimiroa. Recommended; notable for the curious 'Not for Publication - contents may not be cited without permission of the authors' on the title page, quite ludicrous (and should be ignored) for a publication with an International Standard Serial Number.

2. TAGASASTE/ TREE LUCERNE: High Production Fodder Crop. Laurence C Snook. Night Owl Publishers, 1986. 102p. Pb. \$7.95 from Granny Smith's Bookshop.

Dr Laurie Snook pioneered tagasaste as a fodder crop in Western Australia and has studied its use and application under practical conditions over many years. Here is his most useful account of this crop, which promises to achieve something of a revolution in stock raising and integrated land use.

3. GROWING CAROBS IN AUSTRALIA. Henry Esbenshade & Geoff Wilson. Goddard & Dobson, 1986. 136p. Pb. \$18.95 from Granny Smith.

Henry Esbenshade, U.S. President of the International Tree Crops Institute, is a WANATCA member and currently living in Perth. He has studied and promoted carob culture for many years, and has now produced this unique book on a very valuable but underexploited tree crop with a myriad of uses.

4. PERSIMMON CULTURE IN NEW ZEALAND. Hirotoshi Kitagawa and Paul Glucina. DSIR, New Zealand, 1984. 74p. Pb. \$13.00 from Granny Smith.

Persimmons have been a major fruit for centuries in Japan and China, but little more than a curiosity elsewhere. Now the picture is changing, with the introduction of non-astringent varieties which can be eaten when still crisp. New Zealand has mounted a major offensive for the development of persimmon as an export crop, and this unique book is essential for anyone interested in getting into the act.

Study Tour of Californian Pistachio Industry

I recently received a report by Alan Epstein which contains many points very relevant to us as an infant industry. Mr Epstein is Orchard Manager at Kibbutz Sde Boker in the Negev Highlands of Israel.

1. Per capita consumption of pistachios in the U.S.A. has doubled between 1983 and 1984.
2. Some growers report higher yields and better split ratios on *P. terebinthus* rootstocks compared with others.
3. *P. integririma* is generally accepted as producing one year earlier than *P. atlantic*, with bigger yields.

4. Pollination is possibly the most important link in the chain to high yields/profitability.

The most vital time for pollination is during the first two or three days, when stigmas of the female flowers stick out. Placing of male trees is of utmost importance.

5. "T" budding is the most widely accepted propagation method, and is performed from the end of May (November in Australia) to mid September (March).

It is essential to use freshly hardened wood, and to bud onto young, vigorous, shoots or branches, or onto the trunk if its not too thick and hardened. Care must be taken not to use the very first or the last buds on the budstick, as oozing sap will cause a weak bud.

The bud once placed in the "T" cut is quickly tied with a rubber strip about 15cms long and 0.5 cm wide, wrapped snugly, but not too tight around the incision, making sure the bud is tight. The rubber strip must be around the top and bottom of the bud. The bud (eye) is left exposed and it is not necessary to close every part of the "T" incision.

This is in direct contrast with the method used here (Israel) with plastic tape. It is felt that the plastic causes heat build up, and moisture to form underneath.

If the budding is done before mid-September (March), the bud will be forced. To assist shooting, the branch above the bud will be cut about 15 cms above, and a hacksaw cut made a little way above the bud. The rubber will deteriorate and fall off by itself after approximately two weeks. Trees budded after mid September (March) should not have the bud forced, but left to lay dormant until the following spring. In this case do not cut off the rootstock leaves above the bud until the spring.

6. There is now no doubt that adequate water is required to obtain economic yields, better quality and higher percentage of split nuts. In-line drippers are suitable for the first two years, but there is now evidence that points to better results all round when a greater area of root zone is wetted as with under tree sprinklers.
7. Autumn application of fertilizer appears to be more effective than in Spring as the latter could be a little late for the current season's crop.

Tests conducted at Davis University California in 1983 showed a lack of response to high rates of nitrogen. It is known that most other fruit and nut trees will take up excess nitrogen, but this is not seen in the pistachio.

8. There are definite opinions forming now that trees should be placed in their final positions right from the time of planting.

A 5.8 metre distance between rows is the minimum required for harvesting equipment currently being used.

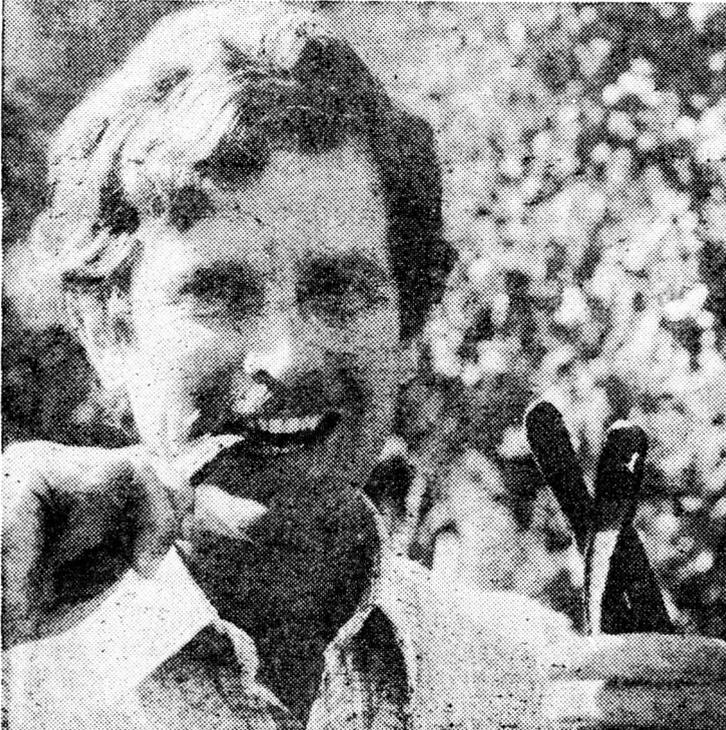
Epstein observed a great range of planting distances but he favours either a 6.2m x 5.2m or 6.2m x 4.6m.

(Information from the Secretary,
Pistachio Growers Association Australia)

THE WEST AUSTRALIAN WEDNESDAY JULY 30 1986

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WANTED: OLD CAROB TREES



Mr Esbshade tastes some carob pods.

Search for the oldest known fruit

A CALIFORNIAN farmer and scholar wants to hear from people who have any carob trees on their properties.

Mr Henry Esbenshade wants to compare the development of the trees with that of modern European varieties in a bid to find a high-quality strain that may have been overlooked.

He is studying for his doctorate in geography at the University of WA.

He is also world president of the International Tree Crops Institute. He has just co-written a book about growing carobs in Australian conditions.

He said that the carob, sometimes called St John's bread or the honey locust, was the world's oldest known fruit tree.

It had long been grown on marginal land in the Middle East and Spain and was ideal for much of Australia's arid interior.

"One of the carob's values in this country is as an end-of-summer stock feed," he said.

"It is a drought-resistant legume that drops its bean-like pods when other stock feed is becoming scarce.

"It takes about seven years to produce pods but, once established, it is very hardy and almost disease-free.

"It has a long tap root which penetrates several metres into the soil. The tree seems to have some tolerance to salt.

"Farmers can also use the tree for shade and wind breaks and as a soil stabiliser."

He said that some important work on carobs was being carried out by Mr Lloyd Marshall and his son Craig, of Armadale.

They had selectively bred improved trees and had developed a method of growing seedlings without soil.

Mr Esbenshade said that carob was a popular alternative to cocoa.

There was a world demand for locust bean gum — widely used in food, textiles and cosmetics.

Australia imported about 2000 tonnes of the gum each year.

Details of WA carob trees can be given to the WA Men of Trees, Lesmurdie, on 291 6619.

THE WEST AUSTRALIAN SATURDAY MARCH 8 1986

Mulberry – old-time favourite tree

By NEVILLE PASSMORE

THE Mulberry is a beautiful deciduous tree of Persian origin.

Made famous in this century by the children's nursery rhyme, the luscious, sweet, incredibly messy fruits are much loved by children.

Mums the world over probably view them with less enthusiasm as the dark-red juice seems to stain everything within its reach.

Botanically known as *Morus*, the mulberry is a hardy adaptable tree from the same family of plants as the jakfruit and fig.

Deciduous trees are enjoying a revival in Perth gardens. They can cool down a garden or part of a home in summer with dense shade and in winter their bare stems allow in every warming ray of sunshine.

Deciduous trees drop all their leaves in one short burst, which can be a welcome contrast to some trees which make a little mess every day.

The mulberry is a cluster of small berries partly fused together. Delicious eaten fresh, the fruit can be used to make a memorable mulberry pie.

The colour and flavour is so intense that a mulberry sorbet

makes a dramatic dessert to serve to your guests. The stewed fruits are another dessert possibility and partly-ripe fruits can be made into a lovely jelly. Mulberry wine also has its devotees.

Growing to about 10 metres high, the tree is vigorous, with an extensive root system that is useful in combating soil erosion.

Because of the long flowering season, mulberries ripen over an extended period. They are self-fertile and wind pollinated, so you only need one tree for fruit, and in windy Perth you'll have a crop every year.

A precocious tree, the mulberry will crop in the first year after planting.

There are three main families of mulberry trees — the black, red and white.

Black English is the best known variety and is appreciated for its big sweet fruits.

The red mulberry originated in North America and is represented by Hick's Fancy and the beautiful weeping mulberry tree. The fruits are equally delicious, but not as dark in colour.

Silkworms are fed the leaves of the white mulberry, which is not

commonly grown as the fruit is insipid, though sweet.

Mulberries are easy trees to grow and perform well in sandy or loamy soils with good drainage.

Prune your tree in summer to keep it compact and try to direct growth to achieve an open vase shape. A full sun location is essential.

It is possible to grow a mulberry tree in a tub and this will keep it quite small. You should avoid planting in an area of paving as the fruit can stain the surface.

Plant a mulberry tree and you will be popular with all the children in the street. You will also be able to create some innovative and flavourful desserts to surprise your guests with.



Red mulberries

Dr. K. D. Chauhan
P.O UNJHA-384170
North Gujarat, India

AIR MAIL

Par Avion

Amerbharat Library
UNJHA - India.

AUSTRALIA

Date 18/4/1986

Most hon'ble PRESIDENT, W.A.N & T. Crpps Assn.

Dear Sir,

Salutation, Adoration greetings and good wishes for your long live & service at large to Humanity. I convey on behalf of our poor Tribal commune for whom We maintain a Library but we lack your unique publications, ie *QUANDONG* Quarterly old issues and back + current annual & another year book.

So, may we sir take liberty with the request to donate some of your publications new, old, bruised, defective or paper back books whatever available on any subject.

AIR MAIL

Sir,

we have no resources of any finance, hence may please be excused for such odd request for our noble cause. Please also publish our dart need of old books & magazines in your news letter & magazine

Thanking your honour
Cordilly yours

Kochan
(Dr. K. D. Chauhan)



To, AUSTRALIA
Honorable Mrs. M's. PRESIDENT
WESTERN AUSTRALIAN
NUT & TREE CRCP ASSN.
PO. BOX 27
SUBIACO, WESTERN
AUSTRALIA
PIN 6008
AUSTRALIA

(The Executive has acceded to Dr Chauhan's request)

OUR COVER PICTURE

FLACOURTIA RUKAM Z. & M.

Khrop-dong (Thai), Rukam manis (Malay), Rukam (Indonesian), Bitongol (Philippines), Indian prune (English).

This species can be easily recognized by its showy young leaves, which are light red to pale brown. Its flowers are small and green. Its fruits are spherical, thick fleshed and watery, blackish red, many-seeded and taste sweetish-sour. It flowers in June to August and sets fruits about September to November.

This species is native to Malesia and has been widely spread to other tropical and subtropical areas. In the tropics it will grow on all kinds of soil at 5 – 2100 m alt.

This species is propagated by marcotting or root sprouts. Budding is also successful onto *Flacourtia inermis*.

The ripe fruits can be eaten fresh or made into rujak. Often these fruits are found as one of the constituents of asinan. Young fruits are also used as medicine whereas the young leaves are served fresh as a raw vegetables. In the Malay Peninsula the wood was used in making household utensils and furniture as well as for making rice pounders.

One of its wild relatives in Indonesia is called kupa landak (which literally means porcupine *Eugenia*); it has sour and pungent fruits. There are two cultivated varieties called var. *domestica* and var. *erythrocarpa*, distinguished by the size of their fruits.

From: Fruits (Indonesia)

★★ SMALL ADVERTISEMENT SECTION ★★

This is a new section appearing in 'QUANDONG' for the convenience of members and others. Send ads to

'QUANDONG ADS', PO Box 565, Subiaco WA 6008 with your remittance for the cost - \$1.00 per line. The deadline for Small Ads will be 1st of February, May, August, and November at present.

LAND AVAILABLE IN PORONGORUPS FOOTHILLS. Patrick Spurgeon, W.A.'s most prominent biodynamic farmer, wants to negotiate sale or partnership arrangement for part of his land in the Porongorups, near Albany. 40 acres with original mudbrick homestead, around \$80,000; planning permission sought to make available 5 parcels each 51 acres, at \$95,000 each or will negotiate suitable arrangement with persons interested in non-chemical farming and tree cropping. Contact Patrick at Woodlands Organic, Narrikup WA 6326, phone 098-532085.

'CASUARINA ECOLOGY, MANAGEMENT AND UTILIZATION', review of this powerful family of nitrogen fixing trees, able to colonize sand dunes, deserts, beach swamps, salt soils etc. Produce timber, forage, fuel. CSIRO, 1983. 286p. \$10.00 from Granny Smith, PO Box 27, Subiaco 6008 or 09-381.2607.

Approx 60 MATURE (3') GRAFTED PISTACHIO TREES available, \$12 each. Contact Pecan Industries, 15 Kyarra St Innaloo 6018 or phone 446 2316 after 5pm.

Complete DIEBACK (PHYTOPHTHORA) testing and management service, contact Hart Simpson & Associates, 21 Rankin Rd Shenton Park 6008, phone 09-382 2086.

TOPGRAFTER New-Zealand made Grafting Machine \$249, available for 10 days Free Examination from Indian Pacific Export Merchants, 225 Riverton Drive, Shelley WA 6155, phone 09-457 8899.

**WEST AUSTRALIAN NUT &
TREE CROP ASSOCIATION (Inc)**
PO Box 565 Subiaco WA 6008 Australia

EXECUTIVE COMMITTEE 1986

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CALENDAR OF EVENTS 1986

(General Meetings are held quarterly at the Naturalists' Hall, No. 63 Meriwa Street Nedlands, at 7.30 pm on Wednesdays)

AUG 20 Wed	General Meeting (Ray Hart: PERMACULTURE AND TREE CROPPING)
OCT 7 Tue	Executive Committee
NOV 19 Wed	Annual General Meeting

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

Current Subscription Rate : \$20.00 per year
(includes all publications); Students \$10.00.

Granny Smith's Bookshop

LIST No. 10 : AUGUST 1986

*=New on our List; *=Special Price; C=Coming title, price tentative

CA 109W 101 WAYS OF USING PAWPAMS. Endt (NZ, 1986). Unique source of recipes and brief cultural notes for Carica species: Babaco, Toronchi, Mountain Pawpaw, Chamburo, as well as Papaya. Expected end 1986 around \$12.00.

166H 65 HOUSE PLANTS FROM SEEDS, PITS & KERNELS. Efraimson (US, 1977). 144p. Pb. Contains much useful information on germinating seed of 'bought' fruit and nuts, eg brazil nut, cherimoya, litchi, passionfruit. Recommended. \$12.95

CA 254A AGROFORESTRY IN AUSTRALIA AND NEW ZEALAND. New edition. Reid & Wilson (Aust, 1986). ca 240p. Pb. Updated version of this highly-praised book, due soon. Recommended. \$28.00

* 267A ALL ABOUT GROWING FRUITS & BERRIES. (U.S., 1982). 112p. Pb. All-colour volume in the Ortho guide series. \$ 9.95

102A ALTERNATIVE FRUIT & NUT CROPS: Prospects for the South-West. (WA, 1984). 36p. Pb. Special issue of WA Journal of Agriculture, excellent introduction to these exciting new tree crops. Highly recommended. \$ 3.00

116A ARID LAND PLANT RESOURCES. Proceedings of International Conference, Texas, 1979. 724p. Pb. 49 papers on using plants from/in arid areas, includes jojoba, guayule, mongongo nuts, salt-tolerant crops. Massive source book. \$35.95

122A AUSTRALIAN GARDENER'S GUIDE TO GROWING FRUIT. Lindsay. (Aust, 1980). 72p. Pb. Nice little book for the backyard fruit grower, good for recommended varieties. \$ 4.95

195A AUSTRALIAN HAZELNUT. Tokolyi (Vic, 1984). 47p. Pb. New account of hazelnut growing in Victoria by the pioneer. Recommended. \$ 6.65

214A AUSTRALIAN RAIN-FOREST TREES. Francis (AGPS, 1981). 468p. Pb. Government reprint of this major 1929 book. Describes our richest tree flora, incl. bunya, macadamia, candlenut, kuranda nut. A basic reference. \$18.85

* 205A AUSTRALIAN SMALL FARMS DIRECTORY: Services, Supplies, Equipment. (Sydney, 1984). 139p. Pb. Really valuable directory and handbook. Recommended. \$ 4.95

134A AVOCADO GROWER'S HANDBOOK. Koch & Thomson (Calif, 1983) 273p. Spiral. Will become the most used reference for all serious avocado growers. Highly recommended. \$34.95

140A AVOCADO IN WESTERN AUSTRALIA. Hawson (WA, 1982). 16p. Pb. Large-format all-colour booklet from the Ag. Dept. \$ 2.50

146B BABACO SEMINAR 1981 (NZ, 1981). 14p. Photocopy. The 5 papers from the seminar, with hard-to-find data. \$ 3.95

152B BLACK WALNUT FOR PROFIT. Thompson (US, 1976). 285p. Pb. 22 chapters on all aspects of black walnut culture. \$22.95

232C CAROB COOKBOOK. Whiteside (UK, 1984). 192p. Pb. New, enlarged edition of this popular title. \$ 7.50

164C CASHEW. Ohler (Holland, 1979). 260p. Hb. Outstanding sourcebook on cashew, from an expert at the Royal Tropical Institute, Netherlands. Highly recommended. \$20.95

170C CHECKLIST OF ECONOMIC PLANTS IN AUSTRALIA. Hartley (CSIRO, 1979). 214p. Pb. Comprehensive reference work, botanical/common name indexes, citations of sources. \$ 8.00

176C CHRISTCHURCH 1982. (NZ, 1982). 84p. Pb. 21 papers from NZ Tree Crops Association conference incl. walnut, nashi. \$ 5.95

182C CITRUS, HOW TO SELECT, GROW & ENJOY. Ray (Ariz., 1980). 176p. Pb. Excellent all-colour handbook on all aspects of citrus culture, species, and varieties. Recommended. \$ 9.95

108C CITRUS IN THE HOME GARDEN. (NZ, 1979). 27p. Pb. Good introduction for warm-temperate climates. \$ 1.20

188C COLLECTING & TESTING TROPICAL FORAGE PLANTS. Clements (CSIRO, 1980). 154p. Pb. \$ 7.00

256C COLLINS GUIDE TO TROPICAL PLANTS. Lotschert. (UK, 1983) 256p. Hb. Useful reference work, translated from the German original, 274 colour photos, many fruits. Recommended. \$16.95

103C COMMERCIAL ALMOND GROWING. Baker (SA Ag Dept, 1984). 48 p. Pb. New edition of this excellent review. Recommended. \$ 4.35

191C COMMONSENSE GARDENING IN AUSTRALIA: Organic Growing for all Gardeners (WA, 1982). Excellent local book, lavishly produced, authoritatively written by 12 experts. \$ 5.70

241C COMPLETE AVOCADO COOKBOOK. (Aust, 1984). 96p. Pb. Excellent new large-format book, recommended by the Avocado Growers. Very good value. \$ 4.95

* 111C COMPLETE BOOK OF FRUIT. Johns (Aust., 1979). 309p. Hb. Informative, well-illustrated, comprehensive review of rare and common fruits from all over the world. Our most popular fruit book, no longer available elsewhere. \$ 9.95

* 268C COMPLETE BOOK OF HOME PRESERVING. (UK, 1981). 192p. Hb. Nice 'Good Housekeeping' on jams, pickles, and preserves. \$ 9.95

117C COMPOSTING & ORGANIC GROWING FOR W.A. Conacher (1980). 28p. Pb. From our Organic Growers Association. \$ 1.20

123C COOKING WITH MACADAMIAS. Hastings (Qld, 1983). 52p. Pb. Large-format book, over 100 recipes, soups to salads. \$ 5.70

204C COOKING WITH CAROB: The Healthful Alternative to Chocolate (US, 1980). 32p. Pb. A Garden Way booklet. \$ 3.95

242D DECIDUOUS FRUITS & VINES: PESTS & DISEASES and their control. Nel (S.Afr, 1983). 191p. Hb. Good modern summary for professional orchardists. \$34.95

129D DICTIONARY OF ECONOMIC PLANTS, 2 ed. Uphof (Germ., 1968) 591p. Hb. Result of years of labour, first-class, massive compilation. Very highly recommended. \$51.50

106D DISCOVERING HYDROPONIC GARDENING. Dickesman (US, 1975). 142p. Pb. Simple introduction for the home gardener. \$ 9.95

205D DRIED FRUIT: Natural Goodness all Year Round. Dark (UK, 1952). 128p. Pb. Useful 'health-food' book on production, importance, uses, nutrition. \$ 3.95

141D DRYING & PROCESSING TREE FRUITS. McBean (CSIRO, 1976). 20p. Pb. Good practical summary. Recommended. \$ 1.00

136E EDIBLE & USEFUL WILD PLANTS of the United States and Canada. Saunders (US, 1934). 289p. Pb. Reprint of an old classic, includes jojoba, 14 wild berries, etc. \$ 7.50

147E EDIBLE NUTS OF THE WORLD. Menninger (US, 1977). 175p. Hb. Profusely illustrated compendium on hundreds of species, from all over the world. Unmatched source of interest and enjoyment for new tree crop possibilities. Buy it! \$24.95

* 261E EDIBLE TREE NUTS IN NEW ZEALAND. Bull & Jackson (NZ, 1985). 79p. Pb. Good introduction to temperate nut production. \$12.25

105E ENCYCLOPEDIA OF FRUITS, VEGETABLES, NUTS & SEEDS FOR HEALTHFUL LIVING. Kadans (US, 1973). 215p. Pb. Nutritional and medicinal values, 'Symptom Index' for self-cures. \$ 7.95

208E EXOTIC TREE FRUIT for the Australian Home Garden (NSW, 1984). 32p. Pb. Well-produced local summary. \$ 4.95

* 264F FIRST AUSTRALIAN MANGO RESEARCH WORKSHOP Cairns 1984: Proceedings. (CSIRO, 1986). 392p. Pb. 40 wide-ranging papers covering every aspect of mango growing. Highly recommended. \$15.00

171F FOOD CROPS OF PAPUA NEW GUINEA. French (PNG, 1978). 55p. Photocopy. Simple introduction to topic, includes 6 nuts. \$ 5.00

177F FOOD PLANTS OF THE SOUTH PACIFIC. Massal (Noumea, 1956) 52p. Pb. Excellent review, much unique data. \$ 4.00

221F FOREST FARMING. Douglas & Hart. New ed. (UK, 1984). The widely-acclaimed story of the importance of tree crops in ecology and economy. Valuable species lists. Highly recommended for the overall picture. \$18.95

231F FRUIT & NUT BOOK. Radecka (UK, 1984). 256p. Pb. Superb new highly informative, densely-packed, beautifully illustrated book, descriptions, culture, uses of rare and common fruits, 600 recipes. Recommended with enthusiasm. \$19.95

207F FRUIT FARE. Berry (UK, 1983) 204p. Pb. Excellent fruit cookery recipe book, includes over 50 fruits, many never even mentioned in ordinary books. \$ 7.50

239F FRUIT FOR THE HOME & GARDEN. Johns (Aust, 1985). 252p. Pb. New edition of 'Complete Book of Fruit'. Recommended. \$ 9.95

112F FRUIT GARDENING IN SOUTH-EAST AUSTRALIA. Ballinger (NSW 1983). 128p. Pb. New edition of the NZ book, rewritten with Hank Swaan. Highly recommended. \$ 7.95

183F FRUIT GARDENING IN NEW ZEALAND. Ballinger (NZ, 1981). 120p. Pb. Thorough review of over 40 species, including subtropicals, in cooler climates. Highly recommended. \$ 5.95

124F FRUITS & BERRIES FOR THE HOME GARDEN. Hill (US, 1980). 272p. Pb. Sensible, useful American book on growing and propagating temperate fruits and nuts. \$12.95

130F FRUITS FOR SOUTHERN FLORIDA. Sturrock (US, 1980). 190p. Pb. Valuable guide to subtropical fruits. Recommended. \$12.95

255F FRUITS FOR THE HOME GARDEN. Hedrick (US, 1973). 171p. Pb. Reprint of the 1944 classic on traditional temperate fruits. \$ 5.50

C 251F FRUITS OF INDIA: TROPICAL & SUBTROPICAL. Bose (India, 1985). 637p. Hb. A publishing landmark, authoritative, detailed coverage of 23 fruits, including mango, papaya, litchi, sapodilla, ber, phalsa. Highly recommended. \$59.75

215G GARDEN TREES. (Calif., 1975). 96p. Pb. Good reference list for trees grown in the U.S. from the Sunset Magazine publisher. Many line drawings. \$ 3.95

142G GROWING & COOKING BERRIES. Cornog (US, 1980). 144p. Pb. Half on culture, half recipes. \$ 9.95

237G GROWING BERRIES & GRAPES AT HOME. Clarke (US, 1976). 372p. Pb. Very thorough guide. Recommended. \$10.50

* 249C GROWING CAROBS IN AUSTRALIA. Esbenshade (Aust, 1986). 136P. Pb. Excellent review by the expert. Recommended. \$18.95

CA 272G GROWING DATES IN AUSTRALIA. Wilson & Petherbridge (Aust, 1986). Appr. 100p. Forthcoming ITCI Australia book. \$20.00

148G GROWING FRUIT IN AUSTRALIA. Baxter (Aust., 1981). 200p. Pb. Professional growers guide to temperate fruit and nut crops, the standard handbook. Recommended. \$19.95

154G GROWING FRUITS, BERRIES & NUTS IN THE SOUTH. McEachern (Texas, 1981). 85p. Pb. Excellent guide from SE USA, similar to inland and East Coast Australia, \$11.80

* 262G GROWING TAMARILLOS. Fletcher (NZ, 1979). 32p. Pb. Good introduction to 'tree tomato' production. \$ 1.50

203G GROWING WALNUTS. Vavasour (NZ, 1984). 78p. Pb. A very good new review of this topic. Recommended. \$ 9.40

194H HANDBOOK OF AGRICULTURE (INDIA) (India, 1980). 1303p. Hb. With climates from the Himalayas to the Equator, India has parallels to all Australia. Detailed coverage of field and tree crops, includes silk growing. Tremendous value. \$10.50

CA 271H HOW TO GROW HONEY LOCUST. Wilson & Williams (Aust, 1986) appr 100p. Pb. Forthcoming ITCI Australia book. \$20.00

107H HYDROPONIC GARDENING. Bridwell (US, 1974). 224p. Pb. Popular handbook for the serious grower. \$13.95

172H HYDROPONICS: A BALANCED VIEW. (WA, 1983). 68p. Pb. Good local introduction, based on a 1983 Perth seminar. \$ 9.95

* 246I ILLUSTRATED BOOK OF FOOD PLANTS. (UK, 1985). 206p. Hb. New edition of 'Oxford Book of Food Plants', comprehensive and well illustrated. Recommended. \$8.95

178I INTRODUCTION TO PISTACHIO GROWING IN AUSTRALIA. Maggs (CSIRO, 1982). 36p. Pb. Highly recommended summary. \$ 3.50

184J JOJOBA HANDBOOK. 3 ed (US, 1982). 162p. Pb. Essential reference for anyone growing jojoba. \$13.40

248K KAIKAI ANIANI: A guide to bush foods, markets and culinary arts of Papua New Guinea. May (Aust, 1984). 192p. Hb. Colourful and informative guide. Recommended. \$21.95

104K KIWIFRUIT CULTURE. Sale (NZ, 1983). 95p. Pb. Excellent handbook on all aspects of the fruit. Recommended. \$12.95

189K KOLA, ITS BOTANY & CULTIVATION. Eijnatten (Holl., 1969) 120p. Pb. Authoritative treatise on the kola nut. \$ 7.80

- 113M MACADAMIA POWER IN A NUTSHELL. Power (Qld, 1982). 120p. Pb. Half on recipes, rest on current & early scene. \$ 4.65
- 238M MACADAMIA CULTURE. Trochoulias (NSW, 1984). 12p. Pb. A good introductory brochure from the NSW Ag. Dept. \$ 1.35
- 119M MAJOR WINE GRAPE VARIETIES OF AUSTRALIA. Antcliff (CSIRO, 1979). 62p. Pb. 30 varieties illustrated. \$ 3.50
- 125M MANUAL OF TROPICAL & SUBTROPICAL FRUITS. Popenoe (US, 1973). 474p. Hb. Reprinted after 50 years, still a most important source book. Highly recommended. \$41.10
- 131M MINOR WINE GRAPE VARIETIES IN AUSTRALIA. Antcliff (CSIRO, 1983). 64p. Pb. Completes the set of 3. \$ 6.00
- 143N NUT TREE CULTURE IN NORTH AMERICA. Jaynes (US, 1979). 466p. Hb. The 'Nutgrower's Bible', handbook on all the 20+ temperate nuts, very highly recommended. \$26.40
- 257N NUTS! : A cookery book for nut lovers. Allison (UK, 1984). 93p. Hb. Attractively produced. \$ 9.95
- 224O ORGANIC GARDENING. Bennett. (Aust., 1981). 176p. Pb. Well-produced, comprehensive all-Australian book. \$12.95
- 149P PALMS OF THE WORLD. McCurrach (US, 1980). 290p. Hb. Classic guide to the most important tree crop family of all. \$29.40
- 190P PERFECT COOKING WITH EXOTIC FRUITS & VEGETABLES. Ortiz (UK, 1983). 32p. Pb. A tiny, random recipe book. \$ 1.50
- 161P PERMACULTURE ONE: A Perennial Agriculture for Human Settlements. Mollison (Aust., 1978). 128p. Pb. The original Permaculture book, ideas adopted world-wide. \$12.00
- 167P PERMACULTURE TWO: Practical Design for Town & Country. Mollison (Aust., 1979). Companion volume to 'Perm-1'. \$12.00
- * 247P PERSIMMON CULTURE IN NEW ZEALAND. Kitagawa & Glucina. (NZ, 1984). 74p. Pb. Excellent DSIR production, essential for anyone contemplating commercial production. \$13.00
- 179P PESTS, PREDATORS & PESTICIDES: Some Alternatives to Synthetic Pesticides. Conacher (WA, 1980). 82p. Pb. \$ 4.95
- * 252P PINON PINE : A natural and cultural history. Lanner (US, 1981). 208p. Pb. The story of the west American nut pines, some references to other world species. \$12.95
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