

Quandong

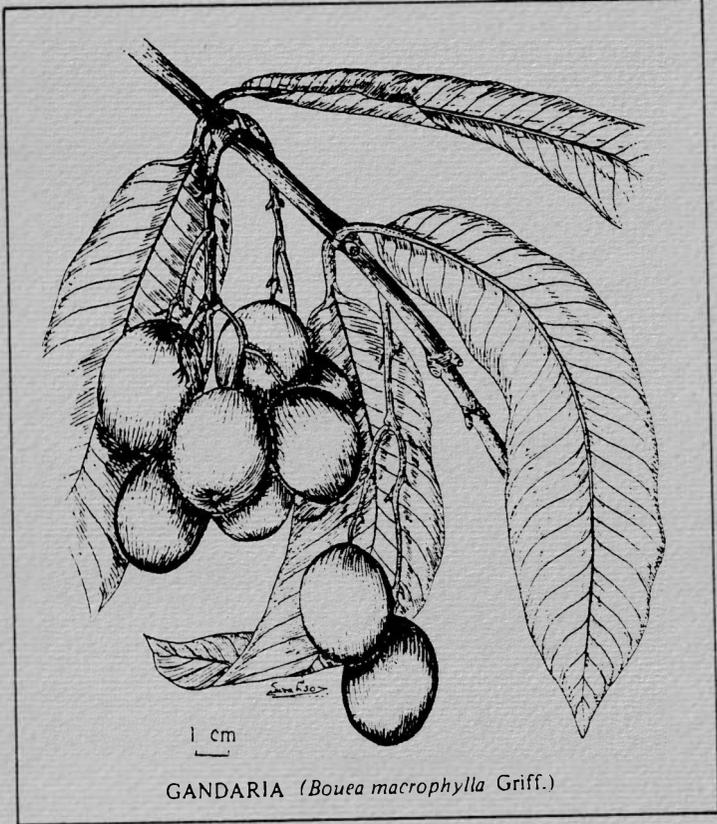
WEST AUSTRALIAN NUT AND TREE CROP ASSOCIATION

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GANDARIA (*Bouea macrophylla* Griff.)

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NEXT MEETING

Charles Peaty
"Tree Planting in China and Arabia"

*** Wednesday November 6: 7.30 pm ***
(Naturalists Hall, 63 Meriwa St Nedlands)

At our next meeting we are fortunate to have Charles Peaty speaking. Charles, one of the early WANATCA members, was founder of the Men of The Trees group in W.A. He is a professional forester and always an entertaining speaker.

This meeting will be open to the public and will be advertised as such. A good crowd is expected, and there will an auction of trees included. Make sure that you come!

ELECTION OF EXECUTIVE

In accordance with the constitution half the executive retire at the end of 1985 and nominations are called to fill these positions. Those retiring are Mirkovic, Napier, Noel, Sas, Washer. An election will be held at the next general meeting. The current executive committee will be putting forward nominations at that meeting, but nominations or expressions of interest are very welcome from any member.

DEVELOPMENT AND RESEARCH FOUNDATION

The association is formulating a proposal to be put to the government for the formation of TANCDARF. A copy of the draft proposal will be available at the next general meeting for members to peruse.

INTERESTED IN SHARING A SUBDIVIDED PATCH OF ORANGE ORCHARD OUT OF TOWN?

- 80 km south of Perth,
- 2.25 ha property, 1ha orchard,
- weekender cottage, stream,
- subdivision surrounded by State forest.

An incorporated club will be owning the property. The existing 3 partners are finding the work involved a bit too much. With more people involved, and prepared to work, the property would be great for weekend recreation.

If six families were involved the cost would be \$5000 per family.

Some diversification to nut trees, and other trees not susceptible to fruit fly, is in progress.

For more details phone Pat Keady on 386 6295 after 6pm.

Quandong Comment

I happened to come across a copy of the September 1938 issue of the 'Journal of Agriculture of Western Australia' the other day. In it was a short article 'The Fruit Industry in Western Australia', by Geo. W. Wickens, Superintendent of Horticulture. Much of it was routine, but it did contain a few surprising facts.

In the year ending 30 June 1983:- 33 159 Tung Oil plants were brought in to W.A, more than any other kind of fruit tree; 300 pounds of Mangosteens were imported from overseas; 1 case of pomegranates was exported to Singapore; and 4,383,300 pounds of bananas came from overseas.

(DAVID NOEL)

I would like more information on things (what a term) already successful and thriving in this south western corner of W.A.. What relevance does a rare tropical fruit have to most of us when they will not grow here? Also, could you try to get articles, information and general stories from growers rather than technical out of state material.

(DAVID RANKIN)

About the location of Capri figs, mentioned in an earlier 'Quandong', I do not have these, but I have had some of the Smyrna figs (the kind which need the Capri Fig wasp for pollination) for around 30 years. As you might expect, they had never borne fruit. Suddenly, last year and this year too, they have fruited quite heavily. I do not know for certain the reason for this, but it may be relevant that a new sort of wasp has been seen in the Baldvis district recently.

(ALF ORTON)

NEMATODES - BADDIES OR GOODIES?

Nematodes are known as a scourge of many perennial crops - grapes, passionfruits, and fruits in the tomato family (pepino, casala tamarillo etc) are just a few of a long list of sufferers. Now some recent work described in the CSIRO publication 'Ecos' shows how useful the nematode or eelworm can be, as a biological pest control agent.

The artical about work by Dr Robin Redding's team at CSIRO's Entomology Division in Hobart (ECOS 44, winter 1985), describes how a particular species of Nematode, which parasitizes a pest of blackcurrants and other fruits (the currant borer moth), can be bred up in millions and sprayed on the Fruiting canes to achieve excellent pest control. The borers live in holes they cut inside the fruit canes and the sprayed nematodes creep into these holes and attack and kill the pests. The technique is also applicable to other fruits, and recent work has concentrated on ways of breeding and applying the nematodes to get pest control at an economic rate

In the May/June 1985 issue of 'Nut Grower' (California), the same idea is used to combat 'carpenter worm' in walnuts and figs. Results have been very good. James Lindegren, of the U.S. Dept of Agriculture in Fresno, California, has done a lot of research in this area- including use of nematodes against Mediterranean fruit fly in Hawaii and navel orangeworm in almonds.

What's more the nematodes used in California have been imported from Australia! The Californians say they can import the supplies (from a firm called Biotechnology/Australia) cheaper than they grow themselves.

(DAVID NOEL)

THE GANDARIA OR MARIAN PLUM

David Noel

Last year I bought a can of fruit labelled 'Marian Plum' from a Perth store specializing in Asian groceries. I had never heard of the fruit before, and before I tried it, I thought that I would try and find out something about it.

The label (reproduced below) made it clear that the fruit was yellow and egg-shaped, and that the French name for the fruit was 'Mapang'. The fruit was grown in Thailand.

Considerable searching through all my reference books gave no reference to Marian Plum or Mapang. I contacted someone in Thai Airlines, he knew of the fruit and said it grew in northern Thailand, but he had no idea of its family or botanical connections.

Finally I managed to find a reference to a Marion Plum or Maprang, in a general textbook about Thailand, which gave a botanical name - Bouea macrophylla?, the question mark indicating that this assignment was not positive. Once I had the botanical name, the gates opened. I looked up Bouea in J.C.Willis' 'Dictionary of the Flowering Plants and Ferns', which said that this genus was in the Anacardiaceae (the Mango family), was native to Southeast Asia, and had either 3 or 4 species in it, or possibly only 1 variable species.

When I went back to my reference books, looking now under Bouea, I was able to pick up some more details. According to J.C.T. Uphof's 'Dictionary of Economic Plants', the tree has yellow fruits eaten raw or cooked, also used in pickles, and the young leaves are eaten with rice in Java. But the best source of all was a book which I picked up in Indonesia earlier this year, called simply 'Buah-buahan' {'Fruits'}. From the botanical name index in this, I located the following quite full entry:

"The Gandaria (Bouea macrophylla Griff.) resembles the mango

tree, and can reach a height of 20m. The drooping leaves are long and thin, soft and shiny. The flowers appear in panicles, like mango flowers, on leaf axils of terminal twigs of the new wood, and have a light yellow colour. The ripe fruit is roughly the size and shape of a hen's egg, and is yellow or light red, and juicy. The flesh is thick, and the taste may be sweet or sour.

The Gandaria originated in Southeast Asia. It grows well at altitudes of 500-800 m in Indonesia, in light soils. It is now grown in Malaysia, Indonesia, and tropical America. In Indonesia, the Gandaria is occasionally found in the provinces of Central Java and East Java.

Propagation is usually by seed, although grafting is sometimes used also. Plants with sweet fruit are selected for propagation. Flowers appear in August and September, and the fruit ripens in December and January.

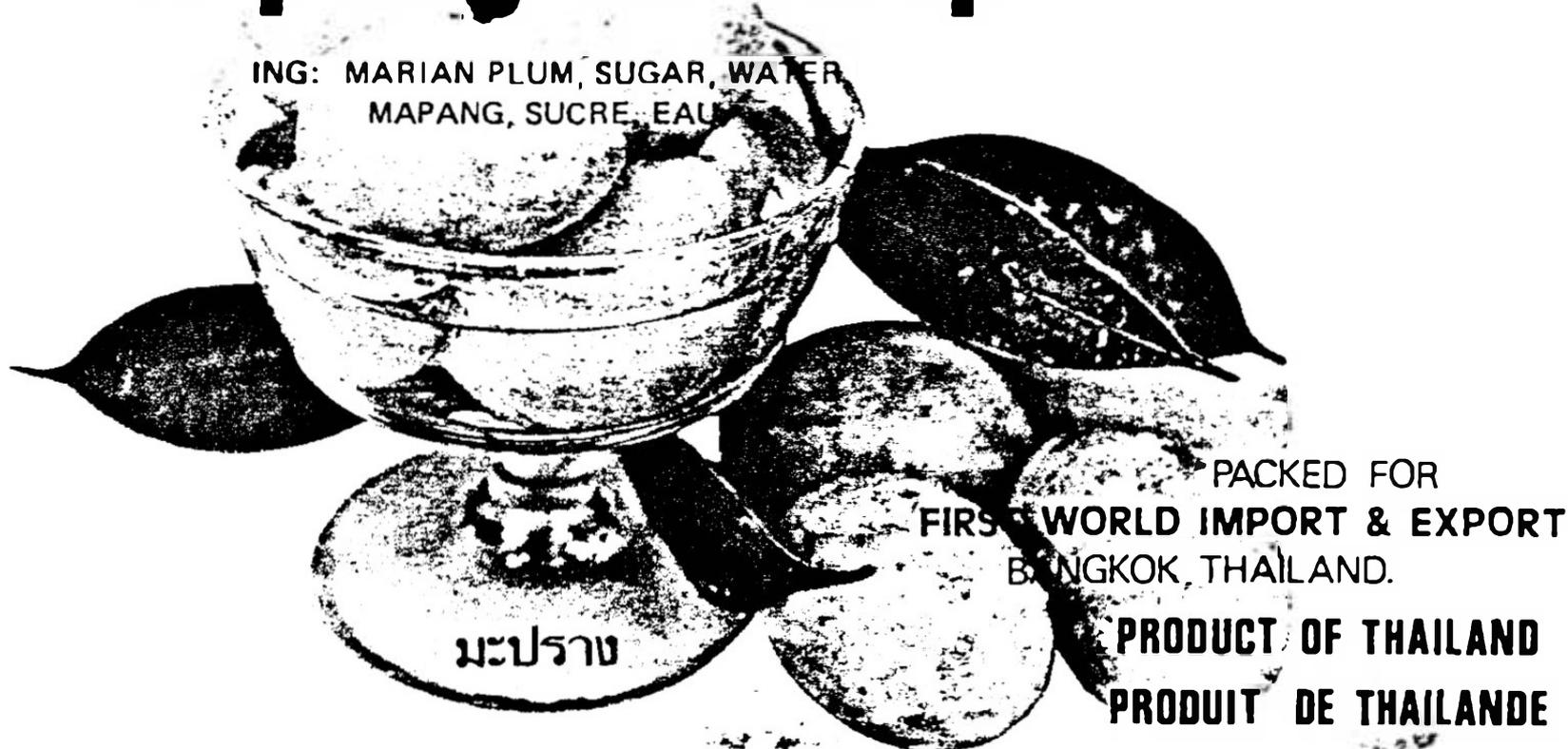
Sweet fruit in good condition is peeled and eaten fresh. Ripe fruit is much used in making fruit syrups and essences. Unripe fruit is used for chutneys and pickles, and sometimes as a substitute for limes or green mangos. The timber may be used in construction work."

In deciding which common name is to be preferred, it is usually least confusing to use the vernacular name of the area where a fruit is native. I suggest that the form used in Malaya and Indonesia, 'Gandaria', is to be preferred. The Thai characters at the bottom of the label transliterate as 'Maprang', but this name is less common in the literature. The English name, 'Marian Plum', is confusing, as the fruit is not a plum at all, but a relative of the mango.

Finally I opened the can. The fruits were as described. They had what was probably a flattish seed removed from each by trimming off both ends and pushing the large seed out, it appeared to have come out fairly cleanly, unlike most mangos. The fruit had a good flavour and seems to be a real candidate for further development.

Marian Plum in syrup

Mapang en Sirop



PAWA Newsletter - August 1985.

TAGASASTE OR WHITE-FLOWERED LUCERNE TREE - Laura Hodan

This is a summary of a talk given by Dr. Laurie Snook at the February, 1985 meeting of W.A.N.A.T.C.A. Although the topic was "Forage Plants" it was clear that Dr. Snook's interest and knowledge lay with the tree Tagasaste (*Chamaecytisus palmensis*) formerly known as *Cytisus proliferus*. I have therefore confined the summary to this plant.

Tagasaste had its known origin on Las Palmas, one of the Canary Islands. All the islands in this group have a low rainfall, but on Las Palmas only, the crops grew well and the stock were thriving. One astute observer noticed this but also noticed that here a certain shrubby tree grew abundantly and was cut and used as fodder for the stock. This tree was tagasaste. Some seeds were collected and taken to Kew Gardens in London and it was from here some seeds were sent to the Colonies.

In 1925-26 Dr. Snook had the job of clipping the tagasaste hedge which had been planted around the Narrogin School of Agriculture. The clippings were thrown to the sheep who obviously thrived on it. Later, after World War II, as Animal Nutrition Officer with the Department of Agriculture, he made trial plantings and carried out analyses of the food value of tagasaste. When lopped in the period from January to May the clippings contain up to 30% protein compared with 18% for lucerne hay.

Since his retirement Dr. Snook has been growing tagasaste on his Margaret River property. He claims the growing of tagasaste as a forage tree can triple the carrying capacity of pastoral land. It has other virtues as well. It is an excellent shelter tree and assists in preventing soil erosion. Grazing animals seem to make better use of available dry fodder when fed even small amounts of green feed (this can even be young eucalypt growth.) Crops grow better between rows of tagasaste and there is a 20% increase in pasture growth in the shelter of these trees. Being a legume it has the power to use free nitrogen from the air and store it in root nodules. However, unlike clover etc., it does not seem to require inoculation, apparently being able to use the rhizobia occurring naturally in the soil. It flowers profusely, providing an excellent source of bee food. It also seems to be fire resistant. On Kangaroo Island off the coast of South Australia, some years ago a raging bushfire so threatened to engulf the homestead on a property that firefighters had to abandon their attempts to save the home. When the fire had subsided and they returned to inspect the damage, the homestead, complete with its surrounding tagasaste hedge was the only area left unburnt.

Untreated seed can be very difficult to germinate. One way is to bring water to boiling point, remove from heat, then drop the seeds in. Leave to cool overnight, then plant, barely covering the seeds with soil. This should give 75% germination. It is now possible to buy scarified seed i.e. with a nipped end, and these should give about 98% germination. This has made large scale plantings feasible because the scarified seeds can be direct seeded in rows and fertiliser incorporated at the same time. Clay soils should first be deep ripped. (Note:- scarified seed is available from Kimberley Seeds, Osborne Park.)

All the qualities claimed for tagasaste relate to well cared for and fertilised trees. A suitable fertiliser programme would seem to be super-copper-zinc initially and in later years, plain super and potash (ratio 5-1) at a rate of 200kg/ha. If planted at the recommended spacing of 2 metres between trees and 4 metres between rows this would give 1250 trees/ha requiring 200kg fertiliser or 160 grams per tree, per year. Experiments with this sort of treatment showed that a 4 year old tree would produce 16kg of edible dry matter in a season. However, it is necessary to continually cut to produce this amount and to promote good leaf growth. It is the lush new shoots and leaves which are the most nutritious. (In addition, the uneaten woody parts do make good firewood.)

While the plants are very small, cutworms and grasshoppers can destroy them, but once reasonably established, trimming by grasshoppers does not cause death of the plant. Rabbits can be a problem, in that, at the dry time of the year, they will nibble the bark of tagasaste trees, ringbarking them and causing them to die.

When used as a browse shrub there would be no need to use herbicides to control weeds as the animals will do this. However, if overstocked they can kill tagasaste if they start eating the bark. One answer to this is a lot of trees and fewer animals. It was noticed also that there was little or no inclination on the part of the sheep to eat the bark when they were also supplied with mineral supplement licks. In addition a system of trimming right back to $\frac{1}{2}$ metre from the ground, thus encouraging multiple growth near the ground, tended to overcome the problem of stock damage to the tree.

Finally, tagasaste, which is frost tolerant and is known to grow in most parts of W.A., at least as far north as Northampton, must surely rate very serious consideration as a forage tree as a complement to the normal system of pasture feeding.

P.S. Information on tagasaste from a Land Management Society Field day last year:- Tagasaste is not related to lucerne. Its nitrogen fixing bacteria are acid tolerant so the crop does not respond to liming.

Pistachio prospects

The creation of Australia's largest pistachio nut farm, producing 100-150 tonnes annually, is the objective of a new investment trust launched recently by Forestell Securities.

The Trust intends to plant 100 ha of pistachio trees in the Telopea Downs area of Victoria, close to the SA border

The Trust managers say the project has been extensively researched, and the services of Don Maggs, a former CSIRO pistachio expert, have been retained. Some \$200,000 has been budgeted for purchase of mechanised picking equipment, packing sheds and processing plant.

Pistachio nuts have enjoyed rising popularity on

the Australian market, with imports totalling 222 tonnes coming into the country in 1984. Prices for the nut have almost doubled in five years, rising from \$3.29 a kilo at retail to \$6.25.

From: MPA Bulletin, August 1985.

ORGANIC MATTER MULCHING FOR MACADAMIAS.

It is reasonably well accepted now that macadamias need and should have a mulch under the trees for best growth and most efficient use of applied nutrient (fertiliser). This does not necessarily mean importing mulch as is done for avocados BUT it does mean the eliminating of the bare earth policy presently being adopted by many growers.

Macadamias are naturally surface feeders (ex rainforest trees) having a mass of root hairs which do two things.

1. Hold onto the soil mulch, organic matter etc. and,
2. Absorb nutrients from the decomposing organic matter and applied fertiliser.

If these roots are encouraged to develop by mulching then the soil erosion is reduced, harvesting is made easier (no ruts or gullies) and applied nutrients are held and used rather than washed away by rain. The bare soil method of farming, using regular weedicides, exposes the delicate root hairs to the harsh environment of dryness and heat. This kills them and their benefits mentioned above.

Hopefully a new era has reached the macadamia industry - that of reducing weedicid useage and increasing the undertree mulching, by the following,

1. Mulching up the weeds, branches etc under the tree itself rather than weediciding.
2. Moving grass mulch from the inter-row areas under the undertree areas by means of side delivery flail mowers, hayrakes etc. If the ground cover growth near the tree is poor it will pay to eliminate it for better growth. A nutrient recycling process will then occur.
3. Growing mulch in between the rows of young trees, harvesting it and spreading it under the trees as (2) above. Barner and tall growing sorghums have been used here, but

there are problems using barner grass.

4. Macadamia husks from the husking line.

Two obvious questions arise:

(a) Will this mean the end to the use of weedicides

and

(b) How can you harvest (especially by machine) with all that mulch?

For the first question, the answer is no, but it will greatly reduce the times and the amounts.

Knockdown sprays will still be needed just prior and during the harvesting periods for winter annuals but this will be certainly much less than normal. For the second question, the recommended undertree mulching just before harvest time will pulverise any large organic particles (twigs) branches, old nuts, large weeds) and these will either decompose and/or be swept out by the machine at harvesting. Only that organic matter deposited recently (within say 3 months) of mulching will be still unattached by the root hairs and thus swept away.

After a couple of years there will be a gradual build-up of mulch and root hairs under the tree forming a spongy ground cover resistant to erosion.

If you intend to mulch the trees with heavy introduced mulch like bagasse, barner grass or forage sorghum, it is best to apply as much of this as possible (within reason) when the trees are not bearing because once harvesting commences, this bulky additive will need to be dramatically reduced.

Finally, a bonus effect already noticed from mulching instead of heavy weedicid is that the ground cover close to the trees changes from upright annual weeds such as farmers friend (cobblers pegs) and paddy lucerne (sida retusa) into the more spreading perennial types such as kikuyu, couch grass and clovers.

From: MPA Bulletin, August 1985.

F R O S T B A G S

Have you lost young trees from frost this Winter? Having lost trees in the initial year of planting out MPA staff sought ways in which to ameliorate the effects of frost and reduce tree losses.

Dr. D. McE. Alexander's work at CSIRO's Division of Horticulture Station, Merbein came to our attention. Dr. Alexander had demonstrated that a polythene bag, heat sealed into tubes which are partially filled with water and a dilute ice nucleation chemical (silver iodide) provides practical protection for stems and graft unions during frost.

MPA's staff tested these bags for protecting macadamia stems using cold rooms at Lismore. Results showed that the bags kept the stems at 0°C after six hours of exposure to -6°C ambient temperature.

MPA had a commercial run of bags produced for the 1985 season. These bags have been used on the Atherton Tablelands on macadamias and along the Murray River on Avocados.

Results to date are good and MPA will have the bags available for full scale marketing in 1986. Ultimate cost is yet to be determined however it is thought that in small lots the bag will sell at \$2.50 each with appropriate reduction in price of larger quantities.

If you have interest in these bags which are reusable contact our Dunoon Office on (066) 895269.

MACADAMIA PLANTATIONS OF AUSTRALIA PTY LTD

Frost protection for fruit trees

Frost can have dire consequences for some fruit trees and shrubs. However, scientists in the CSIRO Division of Horticultural Research have discovered a new way to protect young trees from frost damage.

They have designed a device consisting of a fluted plastic bag filled with water and an ice-nucleation chemical — to encourage the formation of ice crystals and to prevent supercooling (cooling of the water to below 0°C without ice formation). The double-layered plastic bag is wrapped around the stem of the tree and provides good insulation against sub-zero temperatures. Water in the plastic wrap takes longer to cool than more conventional stem wraps like newspaper, straw, reflective insulation, and insulwool.

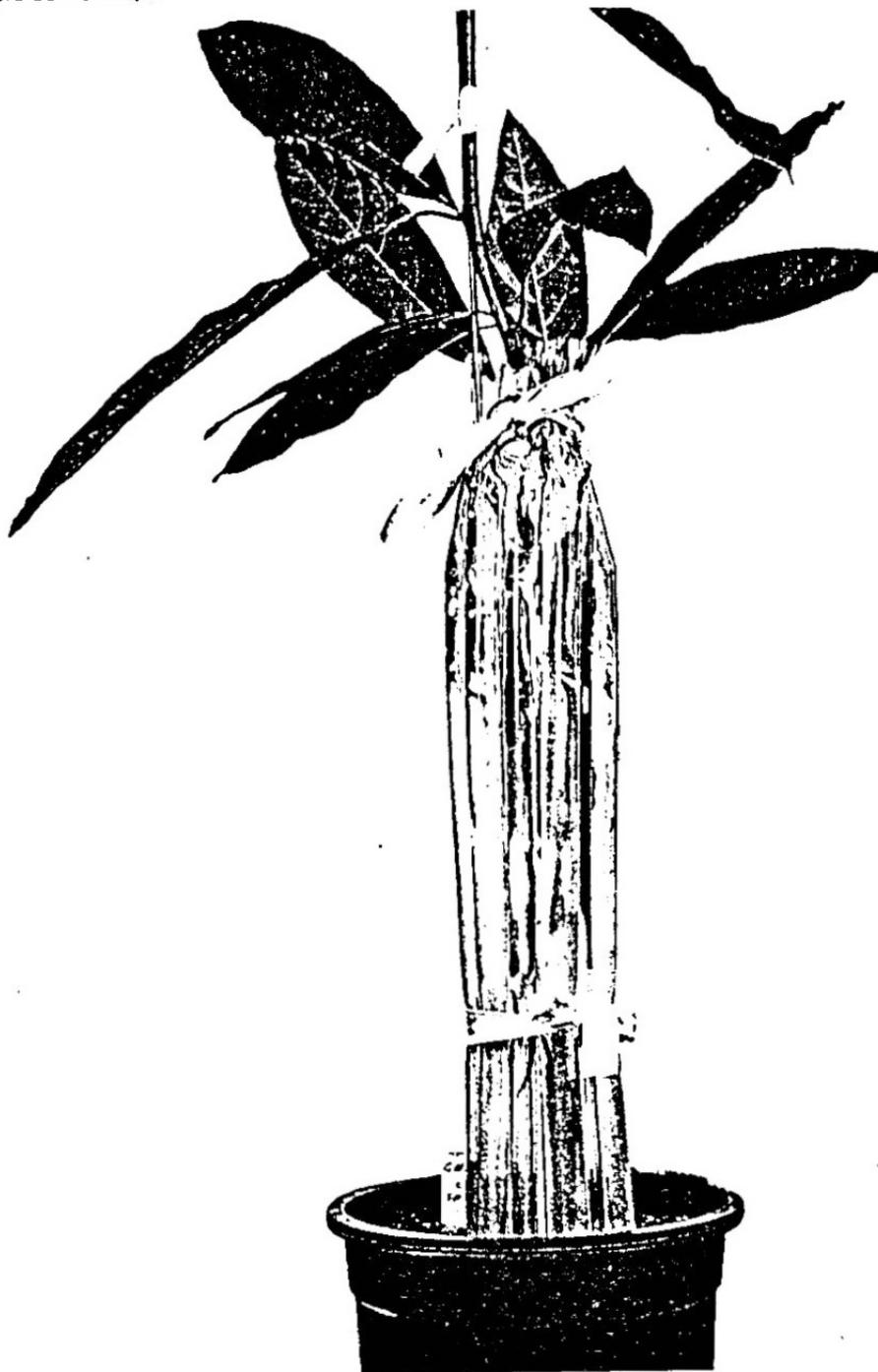
It may seem improbable that a water blanket really works in freezing conditions, but the basic principle is

sound enough: as the water in the bag slowly freezes it releases latent heat of solidification and this keeps the tree stem relatively warm. It is a reversal of the process whereby snow or hail absorbs heat from the air as it melts — so making it feel cold. And the method does work, maintaining the stem temperature at 0°C for up to 12 hours when the 'outside' air temperature is -4°C. The wraps also minimize damage caused by repeated freezing and thawing.

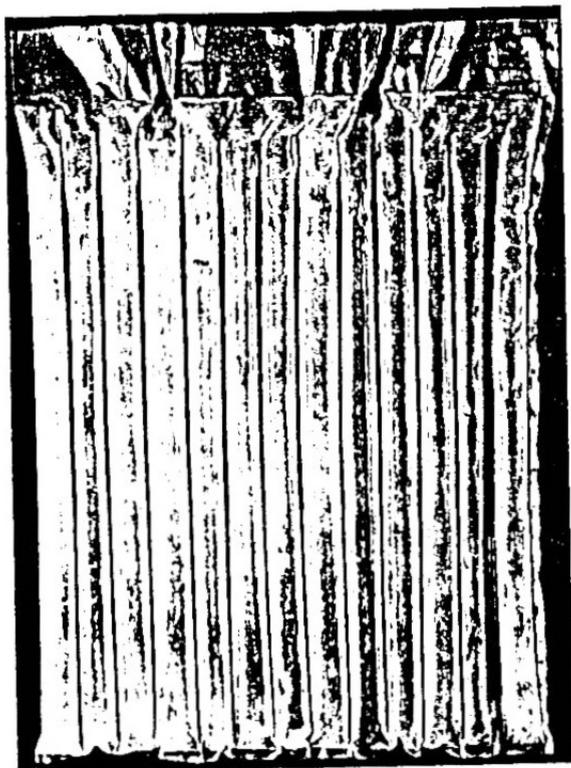
The horticulturists believe that the plastic wraps could be used widely in regions of inland Australia on a variety of crops, including citrus trees, avocados, macadamias, and proteas. In frost-prone areas they should be wrapped around the trees or shrubs in April and removed in September.

The Division is seeking a manufacturer to produce the wraps commercially, and Mr Don Alexander of its Merbein Laboratory in Victoria is happy to supply further information.

An avocado tree — complete with protective wrap.



A prototype of the plastic stem wrap.





Men of the Trees

Mr David Noel
West Australian Tree and Nut Crop Association
P. O. Box 27
Subiaco 6003

25th August 1985

Dear David,

For some time I have been concerned that we ought to grow at least a portion of our staple diet on trees and involve your association in a little research and development project.

I would like to attract your interest in a food and fodder tree arboretum which we have just begun to plant this year. It is at Dowerin, a wheatbelt town about 100 miles from Perth.

We have been granted the use of about 18 hectares of land on which to establish the arboretum in return for which we will help to regenerate the native flora on a nearby reserve. (This reserve, incidentally, already grows quandongs).

The soil is a deep sandy loam with good water retention properties. The nearby farmers are deeply envious! The rainfall is about 12" per annum, most of which falls between May and September. The summers are hot and dry.

Following deep ripping we have so far planted the following species:

Carob	Ceratonia siliqua
Honey Locust	Gleditsia triacanthos
Stone Pine	Pinus pinea
Oak	Quercus robur
Cork Oak	Quercus suber
Tagasaste	Cytissus proliferus
Mulberry	Morus ?
Sweet Chestnut	Castanea sativa
Date Palm	Phoenix dactylifera
Monterey Pine	Pinus radiata

We would like to invite the active support or passive advice from all individuals and groups who feel that we should be looking to tree crops both as a future economic investment for dry-land farmers and as a conservation tool. The Western Australian wheatbelt, with its annual losses due to salination and wind erosion costing over \$100million a year together with one of the lowest wheat yields per hectare in the world, sadly needs our unsparing efforts to prevent a future desert.

To date we have an encouraging story of co-operation between all parties involved in this project. It certainly has the momentum to achieve its ends with which I am sure you would like to be associated.

Yours sincerely


Barrie Oldfield
Tree Farm Project Co-ordinator

THE WHEATBELT'S FIRST CROP TREE ARBORETUM

An 18 hectare arboretum of food and fodder trees could point the way towards a new style of agriculture for the future wheatbelt of Western Australia.

The arboretum, on the Amery Reserve at Dowerin, has been pegged out and deep ripped for planting. So far about 1,200 shelterbelt and 240 crop trees have been planted this winter. The planting work has been done by Geoff England, Grace Clifton and Cheryl Corrie, a team of planters employed by Men of the Trees. The team is based in Northam but throughout the winter they have paid frequent visits to the reserve.

Dowerin Shire Clerk, Mr Alex Read, said that Dowerin Field Days had made the town a Mecca for wheatbelt farmers from

Northampton to Esperance. It was a natural extension of Dowerin's role as a show place to explore future possibilities for farming in dry-land country.

FUTURE CROP TREES COULD SAVE FARMS

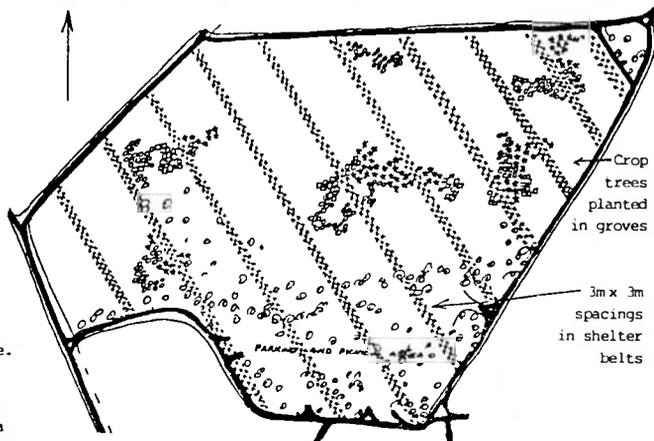
Recent years had demonstrated that the fortunes of wheat farming were chancy. On the one hand farmers have to contend with rising costs and tight wheat cheques whilst on the other hand they were battling with wind erosion, salination and poor soils.

"Trees not only serve as a means of soil conservation but the right kind of trees can actually yield crops which may in future prove to be of economic benefit to farmers." he said. "When others are coming round to that idea Dowerin will already have its flourishing crop-tree arboretum."

THREE-FOLD PURPOSE

The crop tree arboretum is being established to help the farmers and the State to better understand the economic potential of some of the world's best food-producing trees.

The arboretum will DEMONSTRATE a range of crop and fodder trees, it will provide a RESEARCH resource for agricultural scientists and arboriculturists, and it will supply a PROVENANCE for seed, cuttings and budding material.



(ABOVE) Sketch of the crop tree arboretum at Amery Reserve. Shelterbelts run from Northwest to South East not only check the problem North-easterly winds but, fortuitously, follow the land contours. Crop trees are planted in mixed groves between the shelterbelts. So far they include Tagasaste, Stone Pine, Carob, Honey Locust, Monterey Pine, English Oak, Sweet Chestnut, Date Palm and Mulberry.

HIGH YIELDS

Many crop trees can produce a higher yield per hectare than cereal crops. Examples of twentytimes the yield are quoted for some crop trees.

Some of the best yielding species come from semi-arid countries. The Carob Bean Tree (*Cerastonia siliqua*) is the 'locust' eaten by John the Baptist in the wilderness and Allenby's army fed on it as they marched through Palestine.

The Mulberry (*Morus rubra*) can produce enough feed to fatten a pig for market. In North America the mathematics are simple: one 'ever-bearing' Mulberry = one pig.

The Stone Pine is the conifer that yields Pine Nuts used in chinese cooking whilst one English Oak can release 10,000 acorns in a season. Acorns are a highly nutritious feed for sheep or cattle. Once the tannin is removed the acorn meat could become a staple for the human diet.

NEW LIFE FOR OLD RESERVE

The Arboretum development at the Amery Reserve will also benefit an adjoining flora reserve as a result of a 'contra' deal agreed to by the Department of Conservation and Land Management and all those participating in the venture.

For many years the whole Reserve area of 120ha has been used as a water catchment for the railway. Since steam trains ceased running many years ago the future of the reserve has been left undecided. About 50 hectares have been cropped whilst sheep have been allowed to graze through the uncultured area.

In return for the use of the cleared area of the reserve the Dowerin Tree committee, the Shire Council and the Men of the Trees have agreed to help regenerate the native flora from locally collected seed.

Mr Greg Keighery, an officer of the Dept. of Wildlife, C.A.L.M., has surveyed the site to determine what species should be planted and Men of the Trees have already started collecting seed. The main thrust for raising native seedlings will come from the Dowerin Primary School under the guidance of Mr Graham Heard who has set a target of 4,000 seedlings from the school's new nursery by next winter. "The children will not only be learning about nature but will be doing something practical to restore a large area of native bush," he said.

CO-ORDINATING THE VENTURE

Marlene Melvin, Secretary of the Dowerin Tree Committee, has the task of co-ordinating local support for the project. "The idea behind the arboretum has certainly caught on she said, "and we have retired and active farmers, the Shire Council, the school and

our own members all busily committed to the project."

"One of our main concerns is to fence the land against kangaroos. Up to now we have put second-hand wire netting around some of the seedlings but ideally we should fence the whole paddock as soon as possible."

Finance for fencing will be provided from funds generated by leasing the southern portion of the reserve for cropping. However, this will still leave a shortfall and Shire Clerk Alex Read is hoping to obtain matching money under the National Soil Conservation Program. "With such an enthusiastic body of people working towards the project it certainly keeps me on my toes. But it is very rewarding to see things happening and well worth the effort," he said.

TREE FARM PROJECT

NEXT STEP AFTER DOWERIN ARBORETUM

Men of the Trees regard the crop tree arboretum at Dowerin as a first step towards the setting-up of a research project on ten full-scale wheat farms.

The aim of the Project is to conserve the soil whilst at the same time making dry-land agriculture more profitable through the cultivation of both annual and perennial crops.

Speaking about the project Mr Barrie Oldfield said "The idea is based upon growing both cereal and tree crops. We do not have enough rain to support unbroken forest but we do have too much under-utilised water in our subsoils and this is the cause of waterlogging and salination. We will be searching for a balance between tree and cereal crops that will not only conserve our soil but yield an economic return for the farmer."

The Tree Farm Project has significance for dry-land farmers throughout the world. "We have a politically stable nation and enough wealth to carry this project through. The development of high yielding tree species, that will help us turn the corner from land degradation to conservation and improved fertility, will help prevent new Ethiopias," he said.

The project is estimated to cost \$4million a year and currently Men of the Trees are seeking support to launch the program. Tree Farm Project Co-ordinator Barrie Oldfield can be contacted at 3, Over Avenue, Lesmurdie, WA 6076, telephone (09) 291 6619.

THE CHALLENGE OF THE TREE FARM PROJECT

VISION

A sustainable, economic agriculture for the wheatbelt farmers of Western Australia.

TARGET

To double the production of protein per hectare within ten years.

IMPERATIVE

The problems now facing our rural industry are urgent and widespread. They require an appropriate response.

Macadamias on the move

Macadamia growers can look forward to high prices this year, with production unable to satisfy demand from processors.

Jack Gowen, president of the Australian Macadamia Society, says this season's crop is expected to be about 2700 tonnes of nut in shell. Last year production was about 2500t.

"We expect a very high price, with over half our exports going to the United States," Gowen said. The reduced value of the Australian dollar would have a strong influence on exports, and there was an unsatisfied demand "right around the world".

Target bulk raw kernel prices established by the society range from \$11.50

for 95pc minimum whole kernel, to \$8.90 for fines and meal. Gowen expects growers will receive over \$1.75 a kg for 33pc recovery nuts — compared with \$1.52 last year.

After some initial hiccups in its operation, the Macadamia Society is helping coordinate production and marketing. By 1990 yields could be topping 10,000t, well above the 1500t which Gowen estimates will saturate the domestic market. He says it will then be essential for sellers to avoid "cutting one another's throats" on the export market.

Gowen says an important step last year was to gain exemption from the Trade Practices Act, enabling the industry to talk prices together.

"For the next five years, I don't think I can see any marketing problems at all," he said. "Looking further ahead, our good standing in the market should mean we won't have any problem selling overseas." ●



Macadamias: no market problems for at least five years.

Farmnote

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Date growing in W.A.

By J.R. Burt, Adviser, Carnarvon Regional Office

The only commercial area of date palms in Australia is very small and situated near Alice Springs. At Gascoyne Research Station, research has been carried out since 1952 on a small number of palms.

Australia imports about 4,000 tonnes of dates a year. Research shows that good quality dates can be produced at Carnarvon. Although there appear to be vast areas of land suitable for this crop, dates have not been produced commercially in W.A. for the following reasons:

- Quality dates cannot be produced from seedling palms as these are not true to type. The importation of named varietal offshoots is expensive and establishment is often poor. The bulking-up of varieties is slow as only a small number of offshoots are produced on palms up to 10 years old. After this, the trees do not produce offshoots.
- In the 1980s, it was discovered that large numbers of true-to-type plants could be propagated quickly using tissue culture. Only small pieces of plant tissue from named varieties are needed. The technique is now widely used in Australia for propagating other types of plants, and may be possible for dates.
- First crops are not produced until three to five years after planting and good crops are not produced for a further three years.
- Dates are labour-intensive.
- Birds such as the little corella, cockatoos and silver-eyes have damaged 80 per cent of the crop in some years.
- Processing requires expensive machinery and specialised knowledge.
- Knowledge on the correct time of harvesting and method of processing for each variety can only be obtained by experience.

Environment

The date palm (*Phoenix dactylifera*) will withstand climatic extremes varying from minus 7°C to 52°C. Prolonged summer heat without rain or high humidity is required during ripening. Although the plant will tolerate alkaline and saline conditions, yields are greatly reduced under these conditions. For highest yields, 15,000 to 20,000 kilolitres of water per hectare per year is required either from rainfall or irrigation. Dates will tolerate water salinities as high as 4,000mg/L total soluble salts and withstand waterlogging.

Planting

Separation of the offshoots from the parent plant requires considerable labour and skill. At the time of removal, the offshoot may be three to four years old and weigh up to 45kg, with a bulb diameter of 20 to 35 centimetres. Large offshoots are difficult and expensive to transport. The best time for planting is in September or October.

Pests and diseases

Leaves may be damaged by leaf smut disease and roots by nematodes.

Pruning

Pruning of dead leaves and de-spining of the leaf stalks adjacent to the developing flowers is carried out in August.

Hand pollination

Female palms which are not hand-pollinated produce poor quality fruit which is worthless for commercial purposes.

Pollen collected from the male palms is sprayed onto the female flowers in August or September with a knapsack sprayer.

Fruit thinning and covering

Fruit thinning is required in October to improve fruit size and reduce biennial bearing. Wire cages covered with hessian, are placed over the bunches to give some protection from bird damage.

Harvesting

Harvesting is carried out from February to April. Bunches are usually cut when 25 per cent of the fruit is in the succulent translucent stage.

Ants, birds and nitidulid beetles often damage ripening bunches.

Yields

At Gascoyne Research Station depending on the variety palms carry 6 to 14 bunches. Bunches range from 3 to 20 kilograms in weight.

Processing

Processing operations normally include insect fumigation, cleaning, grading, artificial ripening, dehydration, packing and storing.



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CALENDAR OF EVENTS 1985

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

NOV 6	Wed	Annual General Meeting (Charles Peaty : TREE PLANTING IN CHINA AND ARABIA)
DEC 17	Tue	Executive Committee

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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