Quandong

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The Pomegranate *(Punica granatum)* (See: About the Cover, p. 2)

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****** NOTE: SPECIAL ARRANGEMENTS ******

NEXT MEETING: Tuesday November 16: 7.00 pm

The next General Meeting will be in two parts. The first will be at **7 pm (early):**

The Wollemi Pine —A "Dinosaur Tree"

This 90-minute presentation will take advantage of the fascinating travelling exhibition being hosted by Kings Park, featuring a live specimen of this unique "dinosaur" tree. **Admission** to this part of the meeting (a public event) **will be $5.**

Then at 8.30 the WANATCA meeting will continue with a talk by **Luke Penn** of the Water & Rivers Commission on:

Trees, Water, and the Southwest

Dr Penn is the State's foremost expert on complex interaction between rainfall, trees, and the environment in our Southwest 'heartland'. No charge for admission to this part.

Full details on attached leaflet.

Visitors welcome. Queries to Tree Crops Centre, 9388 1965.

In This Issue

About the Cover

The cover drawing of the Pomegranate, *Punica granatum* is from J J Ochse's book *Indische Vruchten*. (Published in Holland around 1926). The Pomegranate, mentioned on page 30 in the article on Louis Glowinki's garden, is a greatly underexploited fruit in Australia, possibly with a real commercial future here.

[Countryman / 1999 Sep 16]

Working with nature

Although permaculture systems are usually associated with fertile soils and cool subtropical areas, a Geraldton producer decided 12 years ago to take on the hot, dry and windy Mid-West Geraldton climate, and establish the first dryland system in that region.

Geraldton permaculturist Julie Firth was not discouraged by the infertile white sands and harsh windy climate of the mid-west town and has developed an integrated system for plants, animals and the environment to sustain and complement each other.

She has also taken the permaculture philosophy a step farther on her three hectare property just north of Geraldton at Waggrakine, by being a host for the Willing Workers on Organic Farms (Australia), taking up to eight student workers at a time.

Julie's longer-term plans involve hosting two-week live-in courses to promote and train people in permaculture systems.

Julie Firth: taking permaculture a step further

She has worked on and established permaculture systems in the Middle East, Botswana and Zimbabwe and said her system at Geraldton provided up to eight others with 99 per cent of their fresh vegetable produce during winter and spring.

During summer, when most plants are out of season, it is more difficult to achieve a high level of production and a lot of seasonal food is processed in spring for consumption during this time.

Quandong Links to ATCROS

Many of the articles, advertisements, and news items in Quandong refer to organizations and people who are listed in the Directory section of the ATCROS Web Site, which is at:

http://www.AOI.com.au/atcros

In this issue, items underlined in the text have Atcros reference numbers listed at the end of an article or elsewhere close by. This is so that readers can get more contact details.

ATCROS usually lists name, address, and phone numbers, also fax, e-mail, and web page details where available.

Quandong: Atcros ref. <A1466>.

She sells none of this organic produce, instead earning her income from a wholesale tree and plant nursery. It has a wide range of exotic plants, and produces old traditional varieties of vegetable seed which have been selected through many generations of plants and adapted to the harsh Mid West climate.

Permaculture, Julie says, is about good practical common sense, developing multiple function systems which provide multiple resources.

"In order to save energy, we grow intensively and grow as many things as we can in a small area while working with the climate and seasons we have here in Geraldton. This is working with nature rather than against it," she said.

"Being totally organic, the system involves establishing a fine balance of predators to biologically control pests. For example we integrate plants which attract ladybird insects, which in turn keep aphid infestations at bay."

Sunflower plants are also planted as a decoy to parrots, which prefer to eat the seeds, sparing other plants. The sunflowers serve a multiple purpose, attracting bees for pollination, provide food for the chickens and shade for summer growing plants.

Another feature of Julie's permaculture system is minimising waste by efficiently using and recycling resources, particularly water.

"We adopt what is called hydrozoning, that is putting plants together which have the same water requirements. Deep and short-rooted plants are also planted together, so that water and nutrients not used by the short-rooted system is picked up by plants with deeper roots," she said.

"For example the grape vine and climbing fruiting cactus are grown together, the grape vine has deeper roots and picks up water and nutrients not absorbed by the short-rooted cactus.

"In addition, the grape vine is grown to provide a canopy over the top of other plants, offering shade in summer."

Other plants are also grown within one garden area — water melon, asparagus, garlic chives, tomatoes, flame fruit, climbing cactus, evening primrose, beans and bunching perennial leeks.

Legume trees, which Julie calls "nurse trees", provide nitrogen for the soil and light summer shade. These are grown among a range of other plants including carobs, palm trees, nuts from Morocco, plums from Israel, cactus from South America, custard apple,

aromatic herbs, olives, mulberries, limes and jelly palm plants.

Many of these are brought into Australia by her as seeds, satisfying strict quarantine requirements.

Within the orchard, Julie grows water chestnuts in a pond, which is segregated by fencing to allow ducks into one half to provide fertiliser, while preventing them from eating the reeds.

Poultry are also an important part of the system. As well as fertilising the ground, they keep pests and weeds at bay.

Ms Firth said the permaculture system involved more than selecting plants which complemented each other.

"It considers locating the plants we use most, like regularly-picked vegetables, closest to the house rather than the back of the garden. Plants which fruit regularly are positioned near the pathways, so we can see and harvest fruits as they ripen," Julie said.

Wind is a big issue at Geraldton, said to be the second windiest city in the world after Chicago. So developing wind breaks was a priority when establishing the system 12 years ago.

Julie Firth has written a book based on her experience — *Permaculture Garden Guidelines & Species Lists for Hot Semi-Arid Coastal Regions.*

WANATCA member Julie Firth is also our Pomegranate Action Group leader. Her nursery business (phone 08-9938 1628) is called Yilgarn Traders <A1615>.

Water data on the Net

A big information catalogue of WA water resources is now available on the Internet.

The Water Resources information catalogue provides a listing of the types of data available for rivers, drains, wetlands and underground aquifers throughout the State. Types of data available include water quality, rainfall, stream flow and water level.

Commission Regional Services director Harry Ventriss said the catalogue was made available on the Internet to keep up with increasing demands for water information from government agencies, consultants and water industry and the general public.

He said the catalogue website allowed people to see what information was available from water monitoring sites throughout the state, and put in a request for the data they needed.

The catalogue can be accessed via the Water Information icon on the Water and Rivers Commission website: http://www.wrc.wa. gov.au. ¥

[Weekend Australian / 1999 Aug 28-29]

Riverland renaissance

Innovative techniques suggest ways to conquer rural economic malaise

Along the languid Murray they stand in neat rows, the shock troops of regional Australia's latest, least-noticed revolution: pink-blossomed almond orchards, young trellised vines, lush, unending groves of orange trees. They are high-tech horticulture's new, high-value progeny.

In the Victorian riverlands, 200 km of scenic terrain between Swan Hill and Mildura, a transformation is under way, an abrupt change of social and economic course executed in concert by government, local communities and entrepreneurs.

Some of these once sleepy towns have, in five years, almost doubled the value of their fruit production. Local growers and farmers set world standards in their use of science and speed of response to international markets.

California in Sunraysia. What lies behind the change? Are there pointers for the rest of the nation in this story of a region triumphantly remade?

Year zero, for the irrigation farmers and mid-scale fruit and vine growers of the Murray, came in 1991, when the Victorian Government decided on an intriguing step, the full consequences of which no one quite foresaw.

It introduced tradeable water rights, in effect setting up an open market in the State's supply of irrigation water. High-value investment in the region's wine and fruit industries poured in.

"This, we now see, was the great catalyst," says Deputy Premier Pat McNamara. "Water no longer went with the land, it became a separate title. People have begun to value water, they have the incentive to conserve it because they can on-sell it, and the benefits have come at a far faster rate than we predicted."

It has been a textbook case of free market economics. Water prices have risen and water use has become vastly more efficient. The result: better environmental protection, less waste, more water available and almost unlimited potential for expansion of high-yield horticulture.

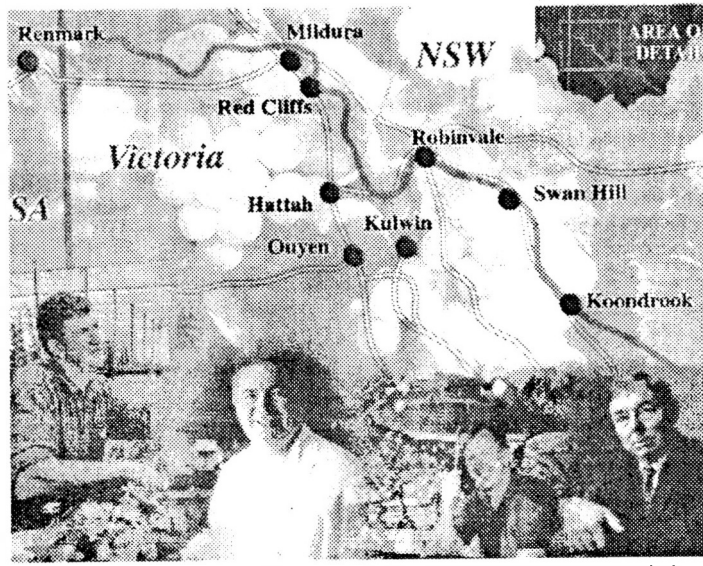
By treating its natural resources as scarce assets, Victoria has jumped from crude water farming in the riverlands to something new, an age of microjet and drip irrigation, hydro-farming as science, an application of fast-advancing knowledge.

Michael Taylor, the Bismarck of this campaign in his capacity as head of the State's Department of National Resources, is unequivocal "Largely because of a change in policy, places like Swan Hill and Mildura are going through a huge population explosion and high investment quite atypical of what we're seeing in the rest of regional Australia."

The social effects are plain. Towns along the Murray are booming. New houses rise on new blocks. Unemployment in Swan Hill, 13.5 per cent in 1993, is below 5 per cent.

Some remarkable individuals stand behind these statistics of regional renaissance, visionaries who glimpsed and seized the new patterns of opportunity — like South Australian Graham Johns, manager of Select Harvests, a 1000 ha almond operation; Bruce

Chalmers, a former NSW grain grower developing a giant winery at Boundary Bend; and, most robust of all, Rocky Lamattina, the carrot king of Robinvale, who came from Frankston and turned a marginal dryland farm into a 1600 ha high-yield irrigation centre, complete with on-site cold store and proprietary trucking fleet.



Boom time: among Sunraysia's leading lights are, from left, Paul Croxton, Stefano de Pieri, Graham Johns and Eddie Warhurst

Was there anything government could do to help, State Premier Jeff Kennett inquired solicitously on a recent visit to the Lamattina spread. "Just get out of the bloody way!" came the brisk answer.

Around the entrepreneurs a network of consultants, irrigation technologists, water brokers and environmental experts has sprung up, creating a service sector with its own fast-growth performers.

Along with economic sunshine goes something more intangible. A growth region retains or lures back its younger generation, builds a critical mass, attracts sophisticated professionals. Lawyers and accountants are flooding into the riverlands. Mildura has a thriving arts scene and a campus of La Trobe University.

The strange multicultural alchemy that gives the area its social shimmer has acquired a nationally known symbol in Stefano de Pieri, showman chef of television program *A Gondola on the Murray*, who holds court in the marvellously eccentric Mildura Grand Hotel. What is being created is that rarest of things in contemporary Australia: a fresh, viable regional culture with a distinct flavour, a sense of its own place and permanence.

One key to Sunraysia's success has been the unusually broad nature of the economic advance. Not only are the 90 growers who received a million-dollar grape cheque this year happy. Horticulture is a high-volume employer. Even the small-scale block farmers who see great wineries going in next door have their own few acres down to grapes.

"There's a great degree of cooperation and connection between people here," says State upper house member for the north-west province Barry Bishop. "It's not full of envy and division."

In Swan Hill, economic development officer Gary Tepper sees a society where "growers talk to each other, they're in it together, they're not competitive against each

other. I've worked in agriculture all my life and I've never experienced anything like it."

Is there anything like it anywhere—a communally linked, sophisticated rural region? Swan Hill MP Barry Steggall likes to compare his electorate, not to other parts of Australia but to Israel — except that Swan Hill has more water, land and potential.

McNamara, perhaps unsurprisingly, prefers an analogy with Ireland, the European Union's growth and technology superstar of the moment. Head up Mildura's bustling 15th Street to Boulevarde Nurseries and the comparison begins to seem plausible.

Local boy Alan Saunders and his New Zealand-born co-managing director Paul Croxton have installed a giant state-of-the-art controlled environment greenhouse of north Italian design. Alongside is their tissue-culture laboratory, where plant scientists are engaged in "green micrografting", a French-developed propagation technique for which the company holds the Australian licence.

"We're aiming at the top end of the market," says Saunders. "We're going to have to become continually more sophisticated, much smarter, with a great degree of control over our products."

So far, so good. Boulevarde, with its dedicated 100-strong workforce and ability to produce new plant stock at fast pace for the wine industry, has been growing at 500 per cent for each of the past four years.

Just down the road is a very different style of market leader, Southcorp's Karadoc Winery, the largest in the southern hemisphere, home of Lindeman's Bin 65. A $50 million expansion has been completed. New storage vats and crushing cylinders gleam amidst the vineyards.

The regional general manager, Mike Christophersen, strolls down the 20,000 unit-per-hour bottling line. "We're dealing with a very loyal, professional and progressive workforce here," he says, "and a thriving society. I draw the parallel between what I see happening in Mildura and the kind of feeling you had in Perth a few years ago, a sense of being on the threshold."

Nearby, down a placid reach of the Murray, stands Nangiloc-Colignan Farm, where Bruno Moras, the prince of the Sunraysia fruit exporters, is pioneering another novel technique in his eternal quest for the perfect crop. Giant 6 ha windbreak awnings enclose long rows of citrus trees.

"Do you feel how calm and serene it is in here?" he asks. "Look at the texture of this fruit. This is what makes my adrenalin run. The point is always to try something new. The results are in nature's hands."

Increasingly, as the innovation culture of the riverlands takes hold and spreads, that message is being heard and newer and stranger things are being tried. Growers sit on Internet terminals checking European fruit prices. New road-air transport links to Asia are being readied. A second great irrigation project, the Deakin Scheme, is under feasibility study. It would double the amount of land available around Mildura for horticulture without requiring any further uptake of river water.

For this region, which expects to increase

its population 25 per cent by 2020, and which lives and thrives on imagination and the creation of opportunity, it seems the glum rule of inland Australia — contraction, decline, despair — has been evaded. Is there a secret?

Martin Sammon, of fast-growing accountancy firm Thomsons, hits on a most Victorian metaphor. "The emergence of the wine industry has been phenomenal in attracting a different level of people to the region, and they've combined with the very impressive outback farmers who were here. All these things have of a sudden come together and created an enjoyment of what we have, people really do seem to be bouncing off one another ... it's like the way sometimes you get a football side that just clicks."

— Nicolas Rothwell

David Noël comment: There are great lessons for us all in this report — innovation, research, investment, and cooperation. ***Innovation, Research, Investment, Cooperation.*** These things can help us make Western Australia the Tree Crops Capital of the world.

[Countryman / 1999 Oct 14]

Arid timber niche resource

Pastoralists have a wonderful opportunity to diversify their income by supplying niche markets with much sought-after arid land timber.

Conservation and Land Management's Sandalwood Business Unit manager, Peter Jones, said there were strong markets for timbers that grew on WA's arid lands and these were only just starting to be realised.

He said these alternative timbers would be of even greater importance as other forest wood supplies dried up.

Mr Jones said unlike plantation timber, arid timber was high value and low volume because it was harder to find.

"This makes arid forestry practical because pastoralists don't have to cart off thousands of trees to return an income," he said.

Mr Jones said most of WA's arid timber industry was centred around the Goldfields region but this needed to be expanded into other pastoral areas.

CALM's Peter Jones with some high value wood products from WA's arid timbers

He said CALM was undertaking extensive market research to find out which arid timbers had the best potential and some of these included beef wood, native willow, acacias, corkwood, eucalypts and sandalwood. Many were well suited to production of high-value wood products and for feature timber work.

At present about 2000 tonnes of sandalwood is cut in WA annually — half of which is from dead trees or limbs — and 10-20 t of other arid wood.

But Mr Jones said this could be vastly increased

sustainably, without impacting greatly on natural tree resources or native forest areas.

He said on pastoral properties it was likely station owners would first cut arid timbers from natural resources that would regenerate naturally. But in the longer term it was likely they could have small plots of one to five hectares of trees planted around water sources, such as bores.

Mr Jones said benefits for pastoralists going into the arid timber industry included boosting returns and improving land management with a renewable resource — and it was based where the population was,which kept people on their stations.

— Melissa Vaisey

Monofilament line, a possible bird deterrent

With my Horticultural Cacti planting, an unanticipated problem occurred over the past fruiting season — Birds, specifically Crows and Magpies.

There had been no indication in the work carried out in Perth prior to establishing the planting that birds of any species were likely to be problem.

Searching the "Net", there were references to the use of Monofilament line, both fishing line and stainless steel line, used to deter birds.

A message from my brother drew attention to a newsgroup post mentioning the use of Monofilament line to protect a backyard crop from Crows. In this post there was mention made of Disney World using the technique as a bird deterrent.

A more extensive search of the "Net" was done with the aid of Copernic 99, the results being followed up with e-mail.

Thanks to James Knight and Robert Price, a number of articles were obtained regarding the technique. Perusal of these articles indicate it is useful for control of Sparrows, Seagulls and from the Newsgroup post, Crows.

The technique appears to be somewhat species dependent, as no positive results appear to be obtained in preventing predation of Grape Crops by American Robins, European Starlings or Northern Orioles.

One point, for the house sparrow trials, is: "although all line types used were highly effective in comparison to controls, the pattern of our results suggests that lines may repel most effectively when they are visible enough to be seen but not visible enough to avoid easily".

This coming season, the technique will be trialled in the Horticultural Cacti planting.

References:

**1. Preventing Bird Depredations Using Monofilament Line. James E. Knight, Extension Wildlife Specialist, Guide L-206, New Mexico State University.

2. Monofilament Lines Repel House Sparrows From Feeding Sites. Danilo A. Aguero, Ron J. Johnson and Kent M. Eskridge.

3. Monofilament Lines Fail to protect Grapes From Bird Damage. Donald H. Steinegger, Danilo A. Aguero, Ron J. Johnson and Kent M. Eskridge. University of Nebraska, Lincoln.

4. Discouraging Seagulls: The Los Angeles Approach, Sandra L. Mathias.

**5. Wire 'net' at dump repulses seagulls. Dick Ferguson, The News Tribune, Feb. 4, 1988.

— Robert P Nederpelt

(** articles reproduced below)

Wire "net" at dump repulses seagulls

A privately operated landfill near Puyallup has begun to attract regional attention with its apparently successful system for driving away seagulls.

Landfill operators in the Puget Sound region have tried a variety of gimmicks without success but Harvey Doman, operations manager at the 56-acre Hidden Valley Landfill on South Hill, may have come up with the ultimate solution.

His "better mousetrap' consists of a dozen 60-foot poles erected in a random pattern with light-gauge wire strung between the tops of the poles. Although holes in the wire pattern are large enough to drop a house through, no gull has attempted to land since the wire was strung, according to Doman.

"The results are better than anticipated." Doman said. "Seagulls don't like to be around wire, especially wire that is hard for them to see. I think they are afraid of the unknown and that they will run into the wire."

Between 1,000 and 1,500 gulls normally arrive at the landfill shortly after daybreak, feeding on freshly dumped garbage until mid-afternoon when they leave for parts unknown.

On Wednesday a small group of gulls approached the landfill from the north and circled overhead, but didn't attempt to set down. After a while, the birds left, apparently returning to the main group. That has occurred daily.

"I think this is going to be a success." Doman said.

Hidden Valley, also known as Thun Field landfill, was visited Wednesday afternoon by Dave Nyblom, King County solid waste division supervising engineer. The landfill was covered with gulls when he last visited, a couple years ago.

The change was obvious.

"There were no seagulls. For a site that had a bird problem, that is impressive." he said. "I hope it stays that way."

King County receives numerous complaints from neighbours about the bird problem at Cedar Hills landfill south of Issaquah. "We hope to try an overhead wire similar to Thun Field." Nyblom said. "Based on Thun Field's experience, we would expect it to work."

In the past King County and other jurisdictions have tried scaring gulls with shotguns and firecrackers, chasing them with dogs, and buzzing them with radio controlled, model aeroplanes — all with marginal success at best.

Failure of King County's model-plane "attacks" didn't surprise Betsy Stubs of South Hill Action to Protect the Environment, which has been concerned about the bird problem for some time.

"I had to chuckle when I read about the model aeroplanes. We (Pierce County) tried it with real planes, and it didn't work," she said in jest.

The Federal Aviation Administration considers the Pierce County gulls a hazard to flight operations at the adjacent airport. The FAA, in fact, informed county officials in December that funds for a $1 million runway-realignment project planned for this year won't be released until the bird problem is resolved.

"That caught us by surprise." said Bruce Thun, airport manager.

County officials approached Land Recovery Inc., which operates the landfill, about their dilemma and asked for help. Doman's plan grew out of discussions with Thun and others.

"Running wire over the landfill had always been talked about. But the assumption was that it would be expensive," Thun said. "I think that's why it wasn't done earlier"

But Dominoes system cost just $3,000, in large part because 35 acres of the landfill is covered by a temporary plastic liner designed to keep rainwater from seeping through the garbage and contaminating the ground water. The overhead wire protects the small "working area" and adjacent areas where garbage will be dumped in coming months.

Thun said seagulls virtually have disappeared from the airport area. "Today I counted about 10 flying around. They will come down and see if anything (wire) has changed, but they won't go beneath that wire," he said.

— *Dick Ferguson*, The News Tribune [Oregon].

Preventing Bird Depredations Using Monofilament Line

Birds can be pests in farm crops, orchards and vineyards. The damage from their feeding can be significant in terms of crops consumed or damaged. Many methods have been tried to reduce bird depredations through taste aversion, exclusion or visual and auditory repellents.

These methods have met with some degree of success when they are practical to try. Barriers such as netting or other types of covering over crops, are sometimes used. However, birds that have become accustomed to feeding on a crop are difficult to deter. A method using monofilament fishing line has been developed. It is inexpensive, easy to apply and has met with a great deal of success.

Monofilament line, placed near crops, serves as a repellent to birds. The actual effect of the monofilament line is not clear. It has been speculated, because monofilament line seems to appear and disappear, the birds are repelled by the uncertainty of whether a barrier exists or not. Perhaps the fear of becoming entangled in something they cannot be sure of is part of the deterrent.

The monofilament line does not pose a physical barrier to the birds attacking the crops. The monofilament is spaced far enough apart that the birds could easily pass between strands if they were so inclined.

This method is relatively new and has not been fully tested. Neither the proper size monofilament line nor the optimum line spacing for best deterrent is known at present. At this point, however, these factors are not the most important when protecting crops in certain situations.

Row Crops

Most damage to garden row crops occurs as seedlings first emerge. Monofilament line is suspended directly above the row of seedlings as soon as they emerge from the ground. The monofilament is anchored at each end of the row and as the plants grow, the stakes at the ends of the row are gradually pulled out of the ground to keep the monofilament directly above the seedling.

Fruit Trees

Because tangling would result if the monofilament was placed directly on the branches of fruit trees, the line is attached to a pole placed directly in the center of the fruit tree. The monofilament line is run from the top of the pole to the ground. Spacing at the ground is approximately 2 feet. This forms a tepee over the fruit tree. If branches protrude from the monofilament line, outside the tepee,

this will not pose a problem. The birds are repelled from the monofilament in a rather large area around the line.

Vineyards

Although birds normally prey on grapes only for a short period when they are ripening, the damage that occurs can be significant. The best way to suspend the monofilament line along a grape trellis is to use number 9 fence wire forming a half circle. This half circle is placed on the wooden or metal supports from which the creeper lines are suspended. The monofilament line attached to these half circles the length of the trellis. Normally, line is attached on each side at the bottom of the half circle, halfway up and at the top, on each side.

Bedded Crops

For bedded crops, such as strawberries or blueberries, the best way to suspend the monofilament line is at 12-inch intervals over the entire bed. This allows berries to be harvested as they ripen, and still provides sufficient concentration of the monofilament line to repel birds that might be feeding on the berries.

Conclusion

It should be emphasised that this method is relatively new and there are many variables that have not yet been addressed. Normally, 20-pound test line is most suitable because it provides an acceptable degree of strength and the low visibility necessary for this method to be effective. Sunlight will damage the monofilament line over a long period. Normally, wind damage will not harm the line unless the crops being protected are allowed to abrade the line.

Monofilament fishing line is available at most sporting goods stores and can be bought in bulk from several mail order sporting goods companies As field tests progress, the efficiency of using monofilament line to protect larger crop areas will be determined. It is expected, as these field tests continue, the methodology for using monofilament to protect crops from birds will be improved.

— ***James E. Knight***, Extension Wildlife Specialist, New Mexico State University.

— And a suggestion for deterring deer: perhaps might work for kangaroos?

[from the NAFEX list server <nafex@onelist.com>]

I heard from a friend today of a new way to keep out deer. He had tried them all.

But after they got nearly his whole strawberry patch, not only berries, but the plants also, he tried a new way he had just heard of.

He strung 4 and 6 pound monofilament fishing line back and forth, starting at 18 inches between two posts, every 18 inches up to 36 inches. They never crossed it. He watched one day as one deer jumped his fence, and jumped right back. It did this a few times then left.

He thought this strange, then he went out and it was near the strung line. He put up another stretch at another area of trouble near his barn. He does not stretch it. He said at first he just put the sticks in buckets at each end, till they fell over.

No more problems there. He don't know why, but he says it works. I would like any input from any one who tries it please. Is it a noise, feeling, seeing??? I don't know.

— ***Gordon C Nofs***, 6422 E. Pierson Rd, Flint, Michigan 48506-2258. Phone: 810-736-7089, <gcnofs@hotmail.com>.

NAFEX: <A1363>

Seeing exotic fruit in the Darwin area

Earlier in 1999 I had the opportunity to visit the Darwin are and see some of the tropical fruits grown there. Plantings in private and public gardens were surprisingly few, although many yards had mango trees.

Perhaps the two highlights of this trip were visits to the Darwin Botanic Gardens and to Southport Siding Exotic Fruit Farm. The Botanic Gardens had an excellent range of species, including many non-native species in a special "Fruit Plant" area (unusual for botanic gardens), including the South American Sapote described in the 1999 Wanatca Yearbook.

The description of the Southport Siding Exotic Fruit Farm below is from their publicity leaflet. Helen West, the owner, is an ex West Australian, from Toodyay!

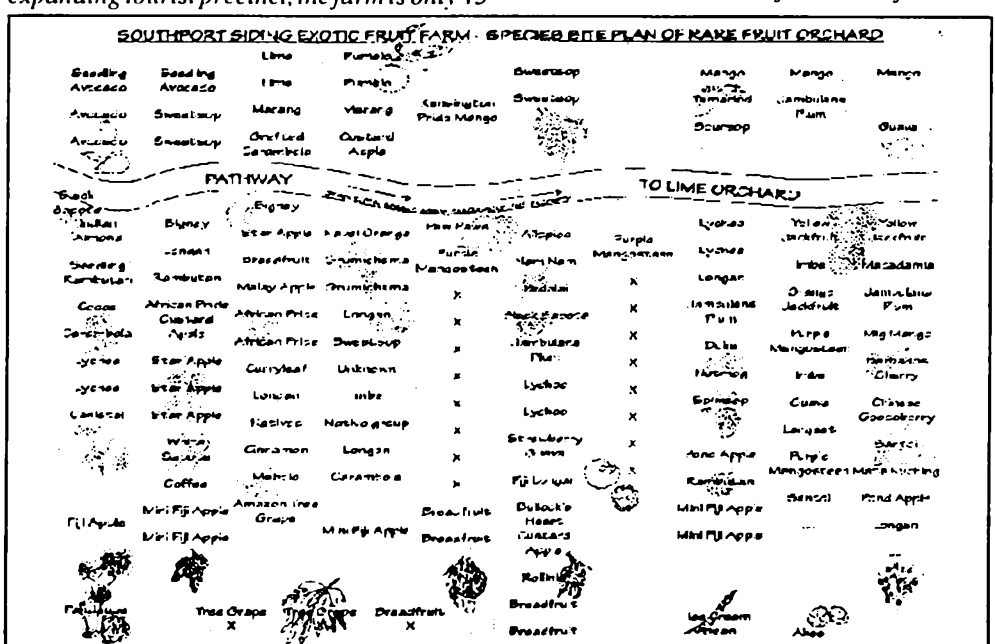
— David Noël

Situated at Darwin River, 65 km south-west of Darwin, in the hub of a rapidly expanding tourist precinct, the farm is only 45 minutes drive from the city. The tropical fruit orchards are nestled amid 16 hectares of woodland and landscaped gardens. A new tourism concept for the Top End, the farm is open to the public Tuesdays, Thursdays and Saturdays. Bookings are essential for our 9.30am tours which are only on these days. Twenty-four hours notice is required to allow for fruit collection.

Your host, Helen West, has lived in the Top End for over forty years and established this property 15 years ago. She is keen to share her extensive knowledge of tropical fruit species and welcomes you to join her on a tour of the Farm.

You can ...

- *Taste the exotic fruits and juices in*



season in the cool, shady reception area.

- *Tour the orchard - which consists of approximately 150 trees marked with common and botanical names and their country of origin.*
- *Purchase jams, chutneys, sauces, dried fruits and fruit trees.*
- *Enjoy the beautiful bushland setting and meet the Peacocks, Wildfowl and Buffalo residents.*
- *Or perhaps you may also like to take a stroll amongst the rare Palm species.*

For Bookings and further information contact: Darwin Day Tours - 08-8981 8696

Self-drive welcome. Tours - 9.30am Tuesday, Thursday & Saturday. Please phone 89886066 for details.

Darwin Botanic Gardens: <A3324>; Southport Siding Exotic Fruit Farm: <A3291>.

Exotic fruit displays at Southport Siding

Dwarfing trees by bark inversion and other methods

Trees grow and so does the problem of living comfortably with them. Unless your grounds are of sizeable proportions, there can be to much of a good thing — even a tree. Plant an infant, and in a few years you are struggling with a lusty usurper, intent on outgrowing the space limitations of your home grounds.

Even if you attack with pruning shears, the surgery seems only to stimulate the tree's growth. That is why dwarf trees have been catching our fancy, arousing interest in the home landscaper — and also the fruit farmer who wants trees that bear sooner and are easier to pick. Not until you have seen the dramatic results of research at the Arnold Arboretum, can you realize how near we are getting to trees that are measured to order.

Dr. Karl Sax can deftly peel off a three-quarter-inch-high band of bark from completely around an apple tree, then "graft" it back on, but upside down this time. The tree which would normally start producing fruit in its eighth year now becomes a six-foot dwarf, bearing at three years of age. Several years later, it resumes growing — and is again dwarfed this way.

Or take a shade tree, such as a maple. Invert a two-inch ring of bark when it has grown two thirds of the way up to an overhead power or telephone wire, and research indicates that the tree can be checked in growth before it engulfs the wire.

Almost any young tree can be dwarfed by this bark-inversion method, says Dr. Sax. the arboretum's noted botanist-horticulturist and

former director. He has done it on trees up to six inches. For even faster results in dwarfing a tree, he can reverse two bands of bark, one above the other.

Just what happens? Obviously, this practice is not the same as a mouse or rabbit fatally girdling the tree. The difference is that Dr. Sax replaces the bark, deftly, although admittedly upside down. The dwarfing trick lies in this inversion. Now the sap cannot descend normally. It is retarded, the roots do not get enough nourishment and the tree's growth is checked.

Plant-growth fluids are manufactured in the leaves, but less of these nutrients can go to the roots. Thus, they accumulate in the top of the tree. It is this condition of growth above that explains earlier bearing and larger fruits.

Four for one

This is but one of the dwarfing methods used at the arboretum. All told, they add up to Dr. Sax's firm conviction that "there is no longer any excuse for planting large fruit trees in the home garden."

He sums it up this way. "On a plot that is large enough to grow four standard trees, it is possible to grow sixteen dwarfs. Instead of two standard varieties of apple, a pear and a peach, why not grow four varieties of apple, four of peach, and four of pear, and four plums — with space left over for raspberries and grapes?"

Bark inversion is obviously a method for the experienced green thumb. But there are many other dwarfing tricks that Dr. Sax plays on trees, several of them not only eye-openers, but within the grasp of ordinary hands.

Most curious perhaps is looping. A single loop, called the overhand knot, is tied in the stem of a young seedling, in early summer when it is a limber whip.

In a couple of years, the tree is a thriving dwarf with a pretzel like bulge in its trunk where the knot was tied.

Dr. Sax began this as a quickie method for saving space in his testing orchard where experimental varieties have to spend several years. Three years later the knotted trees were only half the size of normal ones growing nearby.

When he budded them with McIntosh buds, they bore fruit earlier than did nearby trees of the conventional dwarf type (where dwarfing rootstock had been used).

Using radioactive-tracer methods, he found that knotting works somewhat like bark inversion. It is a case of interference with the nutrient sap which does not flow up the loop in the knot easily-an uphill trip. Thus, the roots lose nourishment, and their loss becomes a gain for the fruiting top of the tree.

The heads of such trees are kept down to a height of about six feet.

Actually, dwarf trees are not new. They have been grown by European gardeners for centuries. But only in recent years have they aroused enthusiasm in this country, and they are now on sale by many nurseries. Among standard types, apple trees are dwarfed by grafting on special dwarfing stocks, pears by grafting on quince varieties.

The Arnold Arboretum experiments have

been modernizing this technique. For instance, Dr. Sax has developed new dwarfing rootstocks for peaches and plums.

The basic technique used is budding, the simplest form of grafting. When you learn how to do it, you will open a new way to fun and profit. For example, you can produce you own peaches and plums on trees that fruit quickly and are the right size for growing on a lawn or even in handy tubs which you can switch from lawn to patio.

This possibility arises from the unique dwarfing rootstock that Dr. Sax found for peaches and plums. It is the Nanking cherry (*Prunus tomentosa*).

Hardy and inexpensive, it is a low shrub producing tasty but small sour cherries. Technically, this ornamental is more closely related to the peach and plum than it is to cherry.

When you plant its seeds, they sprout like weeds, providing an abundance of seedlings for rootstock. When you bud scions from desired plums or peach on to this stock, they "catch on" easily and start fruiting in their second year. Dr. Sax's three year old peach trees dwarfed this way are only about six feet tall, but bear nearly 100 large peaches per tree after heavy thinning.

Three-year-old Stanley plum trees dwarfed on *Prunus tomentosa* are laden with fruit, though less than five feet high.

Dwarfing Pears

Another dwarfing method used in the producer of pears which belies the old saying "Plant pears-plant for your heirs". Dr. Sax obtains fruit much faster by grafting on ordinary coteneaster roots. Since this plant does not transplant easily, the cotoneaster is first budded on hawthorn rootstock. Then by this double-working method, a pear scion is budded to the upper cotoneaster portion of the tree.

Seckel pears grown on hawthorn roots with cotoneaster interstock were under five feet tall at five years of age, and covered with fruit.

Suppose a tree has not been grafted to grow like a midget, and you are timid about inverting the bark or tying knots. Even if the tree is already a few years old, it can be restrained without any grafting know-how, simply by looping its upper branches, or tying them together with string or rubber bands so that they form arches or bridges.

Old Balkan Method

A version of this method has been practised in the Balkans for centuries. Actually it is an easy and ornamental way to discourage upright growth. According to Dr. Sax, this bending the branches into horizontal and upside down

positions is another version of sap discouragement. The tree's growth is checked when the flow of nutrients to the roots is retarded. Similarly, you can get results from various methods of the type — tying branches to walls or fences, espalier fashion. Or you can stretch pear's upright branches out horizontally with strings anchored to the ground.

Besides these various dwarfing methods, Dr. Sax also uses the slower methods of genetics to produce new ornamentals and fruits. He calls the arboretum a "Plant Breeder's Paradise" because trees and shrubs of all parts of the world are grown there, available for experimentation. Among his new hybrids is the Hally Jolivette cherry, an especially charming shrub that blooms profusely for several weeks. It was named for his botanist wife.

Currently, he is working on hybrids between the Nanking cherry of China, the Bessy plum from our Midwest, and peaches from Asia. The object of this matrimony is a golfball-size cherry with undertones of peach flavor.

All such dwarfs are planted in soil the ordinary way. But how about potting them, so they can be moved about, where you want them? For over a thousand years, the Japanese have skillfully used Bonsai methods for turning normal trees into decorative midgets. But this a patient art involving pot-binding the roots, skillfully pruning, frequent transplanting and the like. The frequent watering is a drawback.

By contrast, potting the modern dwarf is easy. The container can be any thing from a gaily painted old washtub to a tub of long-lived redwood which you can buy "knocked down" and assemble quickly. Dr. Sax's own favourites come from a brewery. He gets those wooden beer kegs, which are being replaced by aluminum ones, and saws them in half to provide two pots.

Versatile Polyethylene

He is also grateful for polyethylene plastic. When it is wrapped around the balled and burlapped roots of a tree or shrub being transplanted, hardly any water can evaporate from the soil.

The dwarf can be set out in the soil of the garden or lawn, with the plastic staying on to limit root growth. Or it can go into a pot, where, thanks to the plastic, it will need watering only once or twice a month.

— *William Gilman*

The above article, from a gardening magazine published in 1957, was located by Gordon C. Nofs <gcnofs@hotmail.com>, converted for e-mail, and made available on the NAFEX list server.

Gordon says he has tried the bark inversion method described and believes in it.

NAFEX (North American Fruit Explorers): <A1363>.

[West Australian / 1999 Aug 16]

Hunt is on for cures in WA's native-flora

WA'S diverse flora could yield cures for the common cold or cancer but systematic screening of its plants is needed, says the Department of Conservation and Land Management.

In the next few months, after calling for expressions of interest from commercial researchers, the department will decide how that work might be done.

CALM project officer Caris Bailey said it was hoped the move would unearth new information about the State's flora.

There was a lot of potential in the medicinal properties of plants, following interest generated in native smoke bush, still being studied as a possible anti-AIDS treatment by Amrad Corporation Ltd, which was set up by the Victorian Government.

"We know that the South-West is one of the richest sources of flora, with 80 per cent of its plants not found elsewhere, so it is important there is some sort of systematic screening of plants," Ms Bailey said.

"Because this is not our area of expertise, and also because of the costs involved, we need to find someone willing to take on this project."

The use of native plants will be discussed today at the last lecture of the Cancer Foundation's Cancer Update series. Sydney University professor of cancer medicine, Martin Tattersall, will discuss how some drugs used in treatments such as chemotherapy are derived from nature.

— Cathy O'Leary

Remedy resource: CALM research officer Rob Davis tends to native plants in the department's herbarium at Kensington. Picture: Barry Baker

[West Australian: Habitat / 1999 Sep 24]

Grow your own bushfoods

Book Review by Paul Jennings

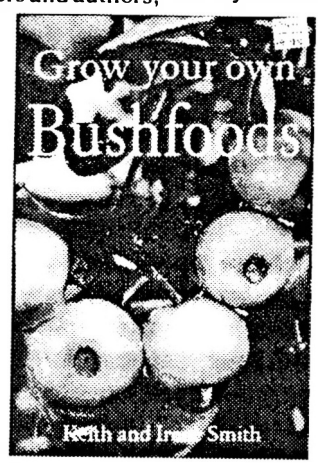
Grow your own bushfoods, by **Keith and Irene Smith** (Published by New Holland, 139 p., Paperback. $19.95 (eg from Granny Smith, see ad p. 31)

Forget fighting your way out of your swag to beat Les Hiddins to breakfast. Forget tramping through the back of Bourke for a lunchtime snack. And forget trying to light a fire with flintstones to cook your evening dinner by a billabong.

Sure, all the natural foods are there for collecting and eating — as Hiddins has shown us on TV. But what about sliding the door to your back garden and picking your own bush tucker?

There is nothing more Australian, according to Keith and Irene Smith. In the introduction to their book, they point out: "Think Italy — think pasta! Think India — think curry! Think Australia — now think bushfoods !"

Long-time organic gardeners and authors, the Smiths have turned their attention to their own bushfood garden — "nothing could be more environmentally friendly". A trip to central Australia last year, when Aborigines took them through outback communities and shared fruits straight from the trees, brought their ideas for this book together.



There are five major kinds of bushfoods: leaf flavours; fruit; vegetables and tubers; seeds and nuts; and nectar. They have a chapter each. The book introduces 70 of them with a further 70 related species or varieties. The chapters include an identikit of each plant, its Aboriginal, common, botanical and other names, best growing areas and conditions and when it is ready to eat.

It even tells you how to eat, or drink, the produce — as a flavouring in jams, muffins or sauces, as bush tea or a sweet drink — and some of the ways the Aboriginal people treated and used these foods.

In line with the Smiths' conservation philosophy, the emphasis in Chapter 6 is on natural, organic growing, free from fertilisers or pesticides. It advises on plants, soil, watering, mulch, fertilisers, compost, pruning, collecting seeds, propagation and, as a space tip, advise digging up your lawn to create a bush garden.

Apart from an extensive bibliography, there is a directory of nurseries and mail order suppliers which specialise in bushfood plants and seeds, including three WA sources.

Obviously with climate and habitats ranging from the cool temperate to the subtropical, not every native is available in every area. But the common names crop up — from leptospermum and melaleuca leaves; myrtle and lilly pilly fruits; yam and pigface vegetables; wattle and macadamia seeds and nuts; and banksia and bottlebrush nectars.

Settlers soon found they could brew a substitute for tea from the sweet tasting, shamrock-like leaves. Fruits, that include forms of apple, plum, peaches and figs, also throw up snottygobble, or wild

pear, found in WA's jarrah forests from Perth to Albany.

Part of the geebung, or Proteaceae family, it derives its nickname from the mucous-like gelatinous matter surrounding the seed when ripe fruit splits open, say the Smiths.

They add snottygobbles were a staple food, eaten for their moisture and succulence by the Nyoongar people of south-west Australia.

There are few bushfoods which people would consider vegetables. So what about stir-fried pigface?

Carpobrutus rossi from the Aizoaceae family is that creeping ground cover you find on beaches, dunes and cliffs in the South-West. Aborigines ate the salty leaves as a kind of relish with meat and other foods but they can be used in a stir fry.

Or break off the ripe fruit and suck out the small seeds and pulp. The taste has been compared to salty figs or apples. European settlers made pigface jam, pickles or chutney.

In the yam family, the warrain is found from Shark Bay to Perth. Its thin tendrils twine over rocks and stony ground. Almost 5 per cent protein, it is believed to have been a staple food among the Nyoongar people for 5000 years.

Explorer George Grey wrote in 1841 that in the Perth area he had found "tracts of land of several square miles in extent, so thickly studded with holes, where the natives had been digging up yams, that it was difficult to walk across it."

Aborigines in Central Australia and the Western Desert made use of edible seeds from 75 species of grasses, acacias (wattles) and other plants. There is evidence that stone grinders used for crushing seeds in western New South Wales date back 15,000 to 18,000 years.

But protein-rich wattle seed is also being claimed by the Smiths as the new flavour of Australia. It has an intriguing taste somewhere between coffee and chocolate with a hint of vanilla. It can be used to flavour drinks, coffee, bread, biscuits, cakes, muffins, tortes, sauces and ice-cream, mousses, parfait and pancakes.

With the wildflower season coming on, there will be ample opportunity to taste some of the nectar that bees use to make honey. Aborigines suck the sweet liquid as they pass by or collect blossom to soak in water to make sweet (an even fermented) drinks. Banksia, callistemon, bottlebrush, dryandra, grevilleas and hakea all yield beautiful flowers and attractive tastes.

The Smiths say bushfoods have a bright future. "In this new and rapidly growing primary industry there are opportunities for more growers to become involved," they say.

So why not give it a try?

¥

Not the Exec Chain Gang

In accordance with our Constitution, elected members of the WANATCA Executive Committee serve for two calendar years, with half retiring each year.

This year those retiring are Stanley Parkinson, Bob Cook, Wayne Geddes, Bill Napier, and David Noël. The Committee meets only 4 times a year. This is not a great time commitment, nor is special knowledge of tree crops expected, and we would welcome offers to help out on the Committee.

Some retiring members will be standing for re-election, and the formal election will be held at the AGM, on November 16, as usual. Put your name forward then or contact David Noël beforehand if you would like to discuss the possibility.

Ginkgo roundup

A truly fascinating tree in its ancient history and uses for food and medicines, the Ginkgo has always been appreciated in China, its natural home, and in Japan, where it has been grown since early times.

Now this tree is achieving a new and widespread recognition elsewhere, principally because its extracts are believed to counter memory loss in the aged and Alzheimer's sufferers.

In Western Australia a new commercial Ginkgo planting is being established south of Perth to produce leaves and extracts from these. A small number of older trees, planted for their decorative value (unusual shape and golden autumn colouring), also exist in WA, but to my knowledge only a male-female pair in South Perth produce the edible nuts (sold in cans in Asian grocery stores as 'White Nuts').

Back in 1987, WANATCA published an important article, *Ginkgo — Tree of Antiquity*, by D A Griffiths, in our WANATCA Yearbook (now available as reprint C001 from the Tree Crops Centre).

Now the increasing interest in Ginkgo is leading to more being published about it. In this roundup, we include a summary from a popular women's magazine, a short review of an extensive new book on ginkgo, and some comments from Bob Ridge (a principal author of the book reviewed — an Australian who has planted ginkgos in Perth, but is now based in Japan). Finally, we are reproducing the first instalment of notes from a website on Ginkgo set up by Bob Ridge.

— David Noël

[Australian Women's Weekly / 1999 Jun]

Ginkgo: cures from a tree

The Weekly's natural health expert, Pamela Allardice, tells how this herb can help your memory, improve your health and slow the ageing process.

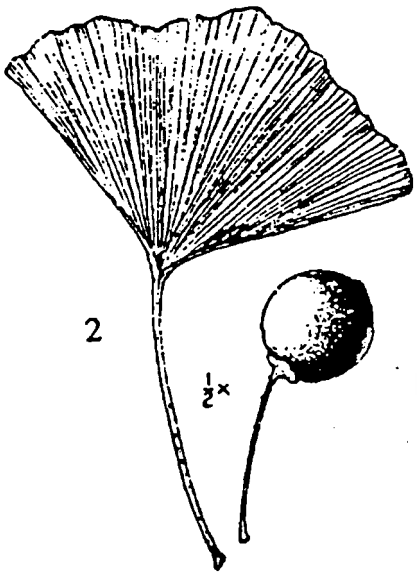
The day my Chinese friend Cathy was born, her father fed her leaves of Ginkgo biloba, crushed and mixed with rice syrup.

According to ancient Chinese tradition, this herb is believed to increase intelligence. Today, with baby boomers finding their minds aren't what they once were, "smart herbs" such as ginkgo, are a hot market item. Enthusiastic users swear they think more clearly, play a better game of Scrabble, match names with faces and remember where they put their car keys.

What does it do? Ginkgo is an anti-oxidant that encourages healthy circulation, particularly to the extremities and the brain, helps boost alertness and restores memory. It can benefit conditions stemming from poor circulation, such as atherosclerosis and other heart problems, eye disease, dizziness, and ringing in the ears (tinnitus). Other disorders that ginkgo is said to benefit are neuralgia, Parkinson's disease and multiple sclerosis.

Exciting research is being done into how ginkgo can help with Alzheimer's disease and dementia. It also acts as an anti-depressant, especially for elderly people with reduced brain circulation, improving concentration, absent-mindedness and confusion.

Ginkgo is also recommended for normal, healthy people to improve mental efficiency and to slow ageing. In one study, healthy women with an average age of 32 were given different doses of ginkgo biloba extract, or a dummy pill. After an hour, a series of memory



tests showed those who took the largest dose (600 mg) recalled significantly more information.

How much do I take? For a normal healthy person who wants to sharpen their mind, 90 mg is considered a reasonable daily dose. Patients with significant memory or cognitive impairment may try taking more.

What is it? *Ginkgo biloba* (the maidenhair tree) is sometimes referred to as "the living fossil" because it has been around longer than any other species of tree on the planet — for about 300 million years. Its pretty leaves turn bright yellow in autumn. Ginkgos grow to around 30 metres.

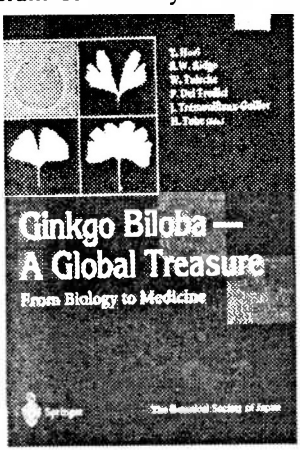
Where do I find it? Ginkgo biloba extract is widely available in health food stores. You can buy it as a fresh-leaf tea, capsules, tablets or tinctures, or you can grow your own tree. If you would like to grow your own, buy a grafted female tree, because the fruit of the male tree smells very unpleasant!

How does it work? Ginkgo's benefits stem from two active components. The first is a mix of bioflavonoid compounds, which reduce platelet aggregation in the blood and account for the herb's ability to help prevent atherosclerosis and benefit the nervous system. The second is a unique group of compounds called terpene lactones, which improve circulation throughout the body, especially to the head.

Book Review by David Noël

Ginkgo Biloba — A Global Treasure: from biology to medicine. By **T. Hori, R W Ridge, and others**. Published by Springer, Tokyo. 444 pages, hard cover. $240.00 from Granny Smith's Bookshop.

This book is a massive and comprehensive compendium of virtually all that is known



about Ginkgo. The 40 contributors are drawn from all over the world, though the majority, naturally enough, are from Japan and China, its area of origin.

Together they have put together 29 chapters giving the full scientific background to Ginkgo, and useful reviews of the plant's interaction with human beings and the environment.

The book has five main sections, the first of which covers Ginkgo as a biological organism. A so-called 'living fossil', Ginkgo biology is way out — the only species in its isolated family, it is grouped with the conifers, has swimming sperm instead of pollen, grows lignotubers unlike its conifer relatives, and is one of the only plants with distinct sexes which are reflected in its chromosomes.

The second section goes into Ginkgo's fossil history and relationships with other plants (*Ginkgo* species were once found all over the Earth). The third section deals with environmental aspects — surprisingly, Ginkgo has great resistance to air pollution and is also little bothered by pests and diseases.

The fourth section deals with Ginkgo chemistry, biological action, and medical uses, and the last section is on 'Ginkgo and Humans' — here is information on its current cultivation and market potential.

This book is expensive, which perhaps does limit it to those with a serious interest in this outstanding tree. For such people, the book is a must.

From: Ridge <ridge@icu.ac.jp>

We eat a lot of ginkgo nuts here, they are very delicious. I have four very large female trees in my front garden, that produce at least 50kg seed every autumn. We give most of them away and eat the rest gradually. The nut is slightly poisonous (but not like nutmeg) and it is advisable to eat a maximum of ten per day (half that for children under 6); however, it would take about 50 to kill a small adult or child if eaten in a short period of time.

It works as antagonist to vitamin B6 (pyridoxal-5-phosphate), important for brain function, and too much of it literally turns off your brain. In case of poisoning give lots of vitamin B6. The seeds smell once they start to rot, after they have fallen. I think it would be quite possible to use a mechanical device to clean the flesh off the seed, as the seed coat is quite strong. The flesh can cause severe dermatitis and should never be handled without gloves.

You can't tell a male tree from a female until it produces sporangia, which may take 50 years. To get around the latter, it is possible to get trees producing fruit from cuttings within three years, but care must be taken on how the cuttings are made as the growth in relation to gravity is remembered by the cut branch and you may end up with an initial forest of small prostrate trees. You will still need some male trees or you will get no fruit.

Ginkgos grow extremely fast in Japan in full sun. You can trim the hell out of them and they produce vast epicormic buddings and very long green shoots (I have seen them my height coming from the base of the tree). They can survive cold very well, and grow rapidly in the warm spring. It may be that they grow better after a cold spell. They produce more fruit the year after a hot summer.

However, the whole Tokyo region (Kanto plain) has extremely rich humus soil, often tens of metres thick, and I have seen nothing like it in WA. So such growth and productivity may not be easy to mimic in WA.

There are several ginkgo trees that I know of in WA but I think are otherwise very rare in Australia. Two were my donations to the University of WA and are planted in front of the library. They are small but are now about 20 years old. They are unfortunately a little too shaded. There may be some examples in some parks in Perth.

— Bob Ridge

[http://mac122.icu.ac.jp/ginkgo/icho.html]

Brief Notes on Ginkgo biloba

Introduction

Ginkgo biloba L.(previously *Salisburia adiantifolia*) common names: ginkgo, maidenhair tree, 40 crowns tree; there are many Chinese names; in Japan called icho, and the fruit is called ginnan. When young, pyramidal in shape, with slender upright branches (this is not always the case). When older, more spreading and broader in the crown (also, not always the case). Can grow over 35 metres with stem up to 10 metres in girth.

Leaves deciduous, scattered on long shoots, crowded at the apex of short shoots. The short shoots are a very interesting aspect of ginkgo. These grow very slowly, producing a crown of new leaves every year, they also produce the microsporangia and ovules. They will, after a number of years growth (this varies) then produce a long shoot with scattered leaves. Long shoots usually produce a terminal short shoot for a few years following. This ability to produce short shoots may be one reason why the tree takes so long to grow (compared to other gymnosperms), it may also have something to do with why the tree is a great survivor.

Leaves are stalked an are variable in size and shape. Generally they are bi-lobed, without midrib, and irregularly crenate. Veins repeatedly fork and sometimes fuse (anastamose). Ginkgo is dioecious, and sporangia arise with the leaves on the short shoots. Microsporangia are catkins, 3-6 on a shoot, each being a pendulous axis bearing numerous stamens loosely arranged. The stamen is a short stalked knob, with 2-4 anthers which dehisce on the long axis. Macrosporangia are usually borne 1-3, more or less erect on the shoot. Each consists of a

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To encourage early payment of Year 2000 subscriptions, WANATCA is again offering all members who have paid their subscription by January 1, 2000, entry into a ballot for free subscriptions.

Renewal notices are being sent out with this issue of Quandong. Members who have already paid for 2000 and later will automatically go into the draw. The lucky winner(s) will have their subscriptions extended for the number of years prepaid, so if you renew for 2000 and 2001, you could win 2 more years free, to 2003.

*Through careful budgeting, the rates for 2000 **remain unchanged at Full Member, $50**, Student Member, $25.*

long stalk which bears an ovule on either side (sometimes three) below the apex. Ovule sessile, straight, surrounded by a collar at the base, and naked.

Fruit: a drupe-like seed, with orange flesh covering a woody shell. The embryo (sometimes 2 or 3) with 2 or 3 cotyledons. The fruit produce large amounts of butyric acid in the autumn, when they drop, and is a particularly nasty smell!

Elwes and Henry described a number of varieties in their publication in 1906. These were variegata, pendule, macrophylla laciniata, triloba, and fastigiata. I have been able to find none of these in Japan so far, although I have heard that there are two specimens of the pendulous variety in the gardens of government house in New Zealand. However, I have found three varieties in Tsukuba. These are a small yellow-leaved variety, an ordinary green leaved variety, and an intermediate of these two. The "ordinary" variety appears to be the most common in the area and in other places I have visited. There is also a variety that produces very small fruits.

Another interesting phenomenon, which may be a variety, is the hatsuki, or ginkgos which grow fruits on their leaves. These were first mentioned in the Japanese literature over 100 years ago, so I guess they've been well known for longer than that in Japan. They are very rare trees, only two are known in Ibaraki prefecture, and both have been labelled living national treasures. These trees produce fruits and leaves normally as well, and only some leaves acquire fruits. The fruits are sterile. There are no obvious attributes of ginkgo to distinguish the sexes, apart from observing the emergence of the sporangia in the Spring; but as the trees generally don't 'flower' for 50 years, it's rather a long time to wait!! It is possible to distinguish the sexes by chromosome morphology, because the female lacks one tiny satellite on one chromosome. To tell the sexes apart seems to be important only in countries other than Japan and China, because of the rather bad smell of the fruit in autumn male trees are preferred. However, the Japanese people certainly don't seem to care and don't mind the smell, and many people collect the nuts for food. I have read that the male trees tend to be more upright, pyramidal, and the females more compact with lower branches and some pendulous, but I have seen the opposite of these attributes. And anyway, it would be better to be able to tell the sex from the seed. Perhaps an antibody is the answer.

Chi-chi (nipples) usually develop on old trees. The ginkgo at Kew (a male) is just starting to develop them now and it is about 200 years old. However, I've seen them quite well developed on a female tree known to be 56 years old. Chi-chi occur singly or in clusters and can take root if they reach the ground.

(To be continued.....)

— ***Robert W. Ridge*** © 1987

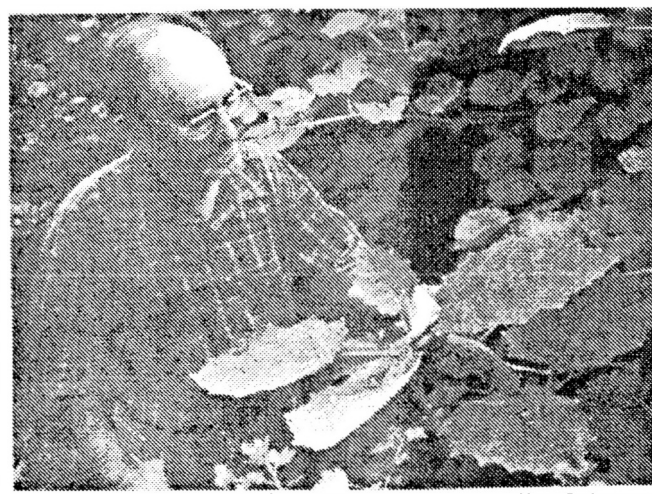
[Gardening Australia / 1999 Aug]

The garden of Louis Glowinski

WANATCA stalwart Louis Glowinski recently featured with his garden in the ABC TV series 'Gardening Australia', and in the ABC printed magazine based on this.

Have you ever heard of a babaco, a white sapote, an ugni or a jujube? For exotic fruit lovers these foreign-sounding fruits represent paradise — and the great news is, they can even be grown in backyards in suburban Melbourne!

Doctor Louis Glowinski has turned a neglected backyard in suburban Melbourne into a productive garden filled with fruits, nuts and berries. Many are tropical and semi-tropical plants, normally not grown in southern climes, but Louis is a man who loves a challenge and he has successfully created a fascinating edible and ornamental garden.



Louis Glowinski proudly showing his Naranjilla (Solanum quitoense), whose fruit makes a frothy refreshing drink.

One man's passion

What makes a man who is a busy general practitioner in Melbourne's western suburbs take up the challenge (bordering on an obsession) with fruit and nut trees? While formulating this story for Gardening Australia, I had the chance to find out.

Nothing gives Louis Glowinski a bigger thrill than seeing a tree laden with fruit - he will often stop his car and gaze in amazement at nature's bounty, be it a fig, an apple or other fruit tree poking over the top of someone's fence. He believes that it's vital we have choices in life, not least a choice in what fruits we can buy from the market or greengrocer. Diversity is the spice of life!

Fruiting plants are as attractive to Louis as camellias, roses and grevilleas are to others. Whether or not the tree is in fruit, he will extol its virtues - but his eyes light up when the fruit is hanging and can be harvested.

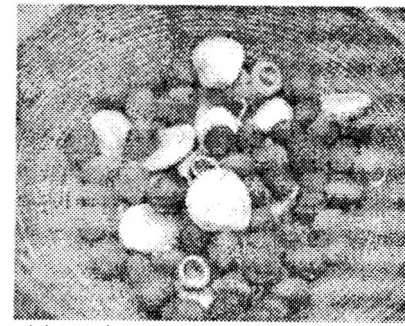
Growing techniques

There are many techniques used to grow fruiting plants, whether they are trees, shrubs, groundcovers or hedges, and Louis has experimented with many of them. I had never seen or heard of some of the plants in Louis' garden before, but he has such enthusiasm for them that I came home inspired to grow a babaco.

I went on to read more about the array of edible wonders in his book, *The Complete Book of Fruit Growing* an enthralling read about Louis' prime love — fruit and nuts. He wrote the book because there was so little to

be found on the bookshelves on the subject of growing fruit in Australia.

Louis initially put pen to paper to jot down a few notes for a pamphlet on avocados. So many people then wanted to know whether his 'Bacon' avocado would grow and produce, that he started a few more notes on other fruiting trees, then found himself with a 380-page book containing information on more than 200 plants.



The red monkey nut (Hicksbeachia pinnatifolia) and the rare oyster nut (Telfairea pedata) both make excellent eating

Perform or perish

Louis' collection of unusual fruit and nut trees resides in a normal-sized suburban garden which is, consequently, somewhat overgrown. He hasn't designed it to look like an orchard of fruit trees growing in neat straight rows; instead, it is a rather interesting mix of foliage and shape.

If one tree is growing in too much shade and is not performing well, out it comes. If the children in the family don't like a particular fruit — it's 'goodnight nurse!' So in effect his selection of plants is based on performance and user needs.

Louis' passion for fruit trees spills out from his own garden to be shared with passers-by. On the nature strip outside the Glowinskis' house you will find a very fine feijoa tree happily growing and fruiting. There is also a pomegranate tree that overhangs the front pathway and, if you don't duck down, the lovely orange-yellow fruit will bump you on the head.

Louis can't grow everything he delights in, but over the years he has experimented with many different fruits. In his book he gives a lot of detailed information about loquats, persimmons, medlars, mulberries, passionfruit and many others, from the unusual to the commonplace.

What does his garden grow?

• White Sapote (*Casimiroa edulis*) A distant relative of the citrus, the white sapote is an evergreen tree, growing to 5 metres by 3 metres, with glossy green leaves and an attractive shape. It bears lots of tennis ball-sized fruit that are harvested when they are hard then left until they have softened.

The texture is similar to an avocado, while

the taste is rather like a custard apple. According to Louis, everyone should grow this ornamental and edible fruiting tree - but you do need a pollinating tree in your garden.

• Naranjilla (*Solanum quitoense*). This is a fascinating shrub with large, hairy, purple-veined leaves and small fruit with greenish pulp that makes a refreshing frothy drink. It is grown and used widely in its native South America and is a relative of the tomato, another member of the Solanum family.

• Babaco (*Carica pentagona*). Described by Louis as a good architectural plant for beside the swimming pool, the babaco looks quite exotic with its large, strangely-shaped leaves, and fruit that hang like green zeppelins close to the trunk. These ripen to golden-yellow and are very fragrant. They are juicy when cut, with an instant tangy appeal.

• Mediterranean Azerollus (*Crataegus azerollus*). Louis describes this as being 'a venerable fruit'. Obviously the history of plants comes into the equation when he grows things, because this plant goes back four thousand years and is ripe for a comeback. Originating in the Mediterranean, it carries a large crop of small, sweet hawthorn-like berries and bears every alternate year.

• Ugni or Chilean Guava (*Ugni molinae*, syn. *Myrtus ugni*). Not commonly grown, this is a slow-growing plant up to two metres, with glossy green leaves. It makes a hardy low hedge and the pea-sized fruit is quite tangy.

• Jujube (*Zizyphus jujuba*). These sweet-tasting red dates are often sold dried in packets, imported from China. The plant is rarely grown in Australia but it is very hardy in extreme cold or heat and should be regarded more highly.

• Tara Figs (*Actinidia arguta*). Related to the Chinese gooseberry or Kiwi fruit (*Actinidia deliciosa*), this trellis-growing vine has fruit the size of a large grape with sweet green flesh.

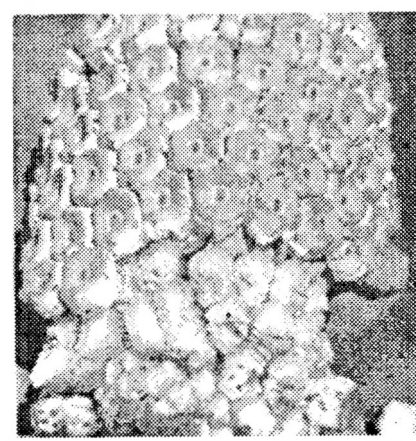
• Appleberry (*Austromyrtus dulcis*). This slow-growing Australian plant is native to New South Wales and Queensland and produces tiny white, sweet-flavoured berries.

Other interesting plants

• Wild Strawberry (*Fragaria vesca*) This tiny red fruit is only the size of a fingernail but has lots flavour. Unlike a normal strawberry, it is not a spreading plant with runners, but it makes a very useful groundcover and will spread by seed.

• Avocado (*Persea americana*). This delicious fruit will grow quite well in a protected spot in Melbourne and can produce several hundred fruit. However, the trees are susceptible to fungal diseases such as root rot and Phytophthora so they do need a well-drained soil. Give them plenty of room to spread, as grafted trees can grow 10 to 15 metres high and 5 to 6 metres wide.

• Macadamia (*Macadamia integrifolia* and *M. tetraphylla*). Known as the 'Mac' nut, this



The Monstera deliciosa (fruit salad or monster plant) produces fruit that is made up of scales or segments, which are edible when they begin to lift from the bottom of stem. Don't eat them until they are ripe though, as they can irritate your mouth.

tree is easy to grow in southern gardens. I found it fascinating that Ludwig Leichhardt was the first white man to collect the seeds.

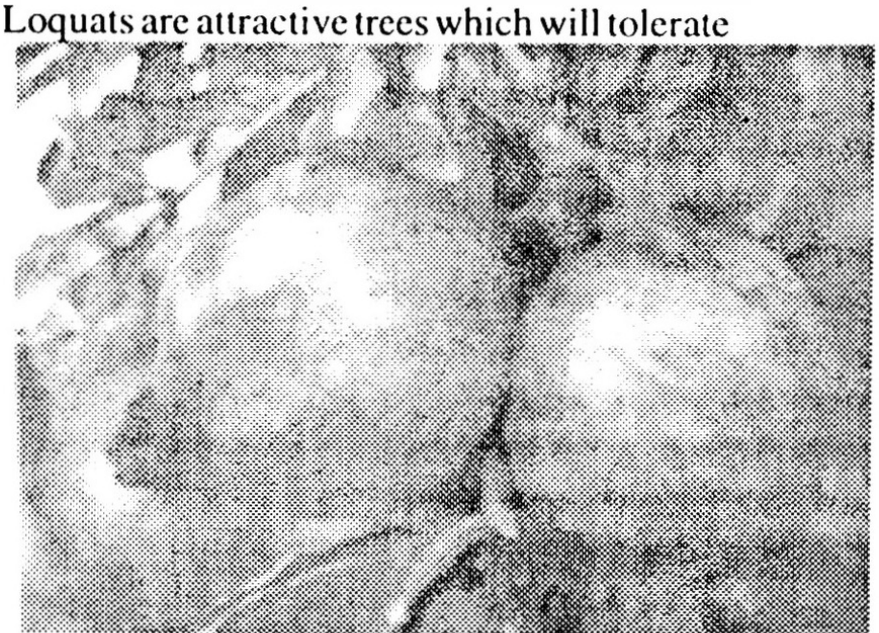
They were forgotten until Baron von Mueller rediscovered and named them in 1867, though obviously the Aborigines ate them before this.

'Macs' will tolerate frost and grow from 7 to 10 metres in Melbourne. They bear lots of nuts after five years.

• Medlar (*Mespilus germanica*). I have always loved medlars for their strange russet-brown skin (they look like a rough brown apple) and they are quite ornamental as they hang on the tree through autumn and winter. Because the medlar belongs in the Rosaceae family, the single white flower, which is borne in spring, resembles a rose.

The fruit is edible when left to ripen for a couple of weeks on the windowsill. It will then smell and taste like an overripe apple and is quite sweet. The tree will grow to a couple of metres high and is hardy in cool temperate gardens.

• Loquat (*Eriobotrya japonica*). Birds love these round, yellow, sweet fruit and so do I. Loquats are attractive trees which will tolerate neglect and give good shade. They are often seen in older gardens and their fruit is a surprise to most people. You should try to discover their delights.



*A pomegranate (*Punica granatum*) leans over the pathway of Louis' front garden. It is a glorious fruit with juicy flesh around the seeds.*

Useful networks

Twenty years ago only a few people in Australia were interested in unusual fruit, but Louis was able to get help from the Californian Rare Fruit Growers, and from a network of a few local people who were as passionate about the subject as he was.

The Rare Fruit Council of Australia, based in Yeppoon in Queensland, and the Western Australian Nut & Tree Crop Association are excellent contacts and their magazines are quite fascinating.

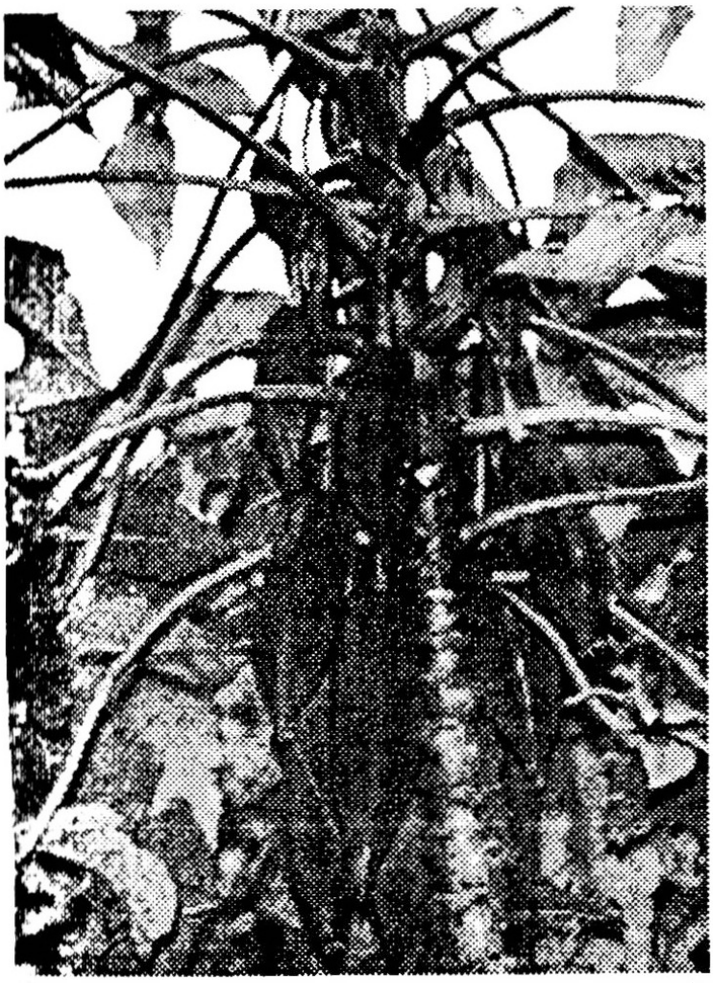
Louis' dream

As a medical practitioner interested in people's health, Louis well knows the benefits of growing fruit in the backyard. As he says: "Growing different things for the table is intrinsically worthwhile". Including plenty of fruit and nuts in our diet is much healthier than consuming fatty 'fast foods'.

He feels sad that young people have not been brought up to relish the flavours of the many fruits that are available. Indeed he anguishes in the fact that today's children don't even pick overhanging fruit or pinch them from the neighbours any more!

He wants to establish a botanical garden in Melbourne's western suburbs, concentrating on fruit and nut trees - an edible garden, specially for children, in which they can pick and eat whatever they want.

It may take a bit of co-operative work with the council and volunteer organisations - plus inspiration from people like Louis Glowinski - but what



*The babaco (*Carica pentagona*) is a good architectural plant with large leaves and fruit that clings to the main trunk. It is golden yellow when ripe.*

an achievement it would be!

Louis sums up his philosophy thus: "Why plant a pittosporum when you can plant something useful?" We are so lucky to live in one of the world's best fruit-growing countries. Why not branch out and grow something unusual in your own garden?

— ***Jane Edmanson***

Louis is the author of a wonderful book about rare, delicious, exotic and native fruits and nuts. It comprehensively illustrates, in a humorous manner, how to grow over 200 temperate and sub-tropical plants. It is well-written and a delight to pick up and browse through.

Complete Book of Fruit Growing in Australia by Louis Glowinski (New edition) is published by Lothian, rrp $45).

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CALENDAR OF FORTHCOMING EVENTS

Deadline for next issue: Jan 20

1999		
Nov 16	Tue	Annual General Meeting (Luke Penn - Trees, Water & the Southwest AND Wollemi Pine presentation)
2000		
Jan 11	Tue	Executive Committee Meeting
Feb 15	Tue	General Meeting (?Bill Davey)
Apr 15	Sat	*Balingup Small Farm Field Day
May 16	Tue	General Meeting
Aug 15	Tue	General Meeting
Nov 15	Tue	Annual General Meeting
2001		
Apr 13-20		ACOTANC-2001 Conference, Perth

General Meetings are held starting at 7.30pm. *Venue: Theatre Room, Kings Park HQ, West Perth.* These meetings usually include a current magazine display.
* Event with WANATCA participation; § For contact details refer to the Tree Crops Centre.

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