

West Australian Nut & Tree Crop Association (Inc)

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**CALENDAR OF FORTHCOMING EVENTS**

2006

*Deadline for next issue: Nov 1, 2006*

- Aug 15 Tue \* WANATCA General Meeting (Dr Brian Ryan - Living with the changing climate of Western Australia)
- Aug 19 Sat \* Beverley Show
- Aug 29-31 \* Dowerin Field Days
- Oct 10 Tue WANATCA Executive Committee Meeting
- Nov 21 Tue \* WANATCA General Meeting

\*General Meetings are held starting at 7:30 pm. Venue: *As Noted in each case.*

These meetings usually include a display of current world tree-crop magazines offered free.

• Event with WANATCA participation; § Refer to news item in this issue of Quandong.

*Material originating in Quandong may be reprinted: acknowledgement of author and source requested.*

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Sugar Maple (*Acer saccharum*)

See: About the Cover, p.2



**DON'T MISS THE NEXT WANATCA GENERAL MEETING:**

**7:30 pm, Tuesday August 15, 2006**

Dr Brian Ryan from CSIRO Marine and Atmospheric Research will speak to us on

**Living with the changing climate of Western Australia**

Dr Ryan has worked for the CSIRO for 38 years and is a leading expert on climate change in Australia. He will speak to us on how and why the climate of the southwest of Western Australia has changed over the last 50 years and how increased concentrations of greenhouse gases may affect the climate in the next 30 years.

**This meeting is at Kings Park Headquarters as usual. It's a unique opportunity to find out more about this vital topic.**

*Late enquiries to 9250 1888 please.*

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*About the Cover*

Sugar maples in their autumn splendour are a major tourist attraction in North America, and in the winter, they are a source of delectable maple syrup. Unfortunately for Australians, maples have a very precise requirement for cold conditions that probably occurs in very few Australian locations. See article about maple syrup on page 16. The photo of the maple tree is from Kansas State University, and the sketch of the leaf, seeds and twig is from the Wisconsin Department of Natural Resources.

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*Notes from the meeting...*

**The Ord Irrigation Area - a long road to success**

**Joe Sherrard of the Department of Agriculture and Food spoke at the WANATCA meeting on 16 May 2006; he outlined the history of the development, described the resource, the cropping history, and plans for the future development of Stage 2.**

The Ord River Project in the Kimberley was designed to prevent seasonal flooding and to store water for irrigating large areas subject to drought. The agricultural potential for the region was observed by the pastoralist M.V. Durack as early as the 1920s.

In the 1930's, there was a plan to establish the State of Israel there, to serve as the homeland for the Jews, but this did not eventuate.

The damming of the Ord River and the development of 72,000 hectares of irrigated farmland were planned before 1945.

Preliminary work on the Ord River Irrigation Area (ORIA) began when the WA government established a small experimental farm in 1941. In 1945, the Kimberley Research

Station was established on Ivanhoe Plain, as a joint Commonwealth/State venture, and continues to the present day.

After more than two decades of experimental farming at the Kimberley Research Station, the Kununurra Diversion Dam was finally completed in 1967. It allowed for the cultivation of the first irrigated farmland. Kununurra town was built nearby as the service and residential centre and a larger dam (300m wide and 100m high) was built 25 miles south of Kununurra, completed in 1974. It holds the main reservoir (Lake Argyle) which harvests 2000 GigaLitres of water per year and generates electricity.

The water allocation plan for Stage 1 provides 10% of the flow to farms, and 66% for environmental flows. Other amounts of water will go to Stage 2 and the tourist industry.

Soils close to the river are good for horticulture. The majority of the area has heavy clay soil. The mean maximum temperature in November is 38.9°C, and the minimum in July is 14°C. There is little rain between May



*Stage 1 and Stage 2 ORIA, shown as green area.*



and October, and a high evaporation rate.

The crops grown have changed over the years. The early crops of cotton, rice, sunflower and peanuts faded away because of pests and diseases.

When the road was sealed in 1985, it was possible to transport melons and bananas. Bananas were produced on up to 130 ha between 1995 and 2000, but have reduced to one grower on 30 ha, because of problems with storm damage.

Other crops grown include soybeans, sugar, maize, chickpeas, asparagus, pawpaw, pitaya, Calotropis (latex), citrus (mainly red grapefruit), tropical forestry (sandalwood, mahogany and Paulownia), Leucaena (for fattening cattle), some specialty pharmaceutical crops and mangoes. Cashews were tried as a crop, but no selections were made, and harvesting and processing are issues that have not been resolved.

Cotton and peanuts are being planted again, because of advances in management of the pests and diseases. The cotton is GM, and Integrated Pest Management techniques are being used, which reduces the need to spray to 1 or 2 times a year.

Another important industry is the production of hybrid seeds which benefits from the isolation and relative shortage of pests and diseases.

The population of Kununurra is about 5000 which makes it difficult to get labour for picking, etc.

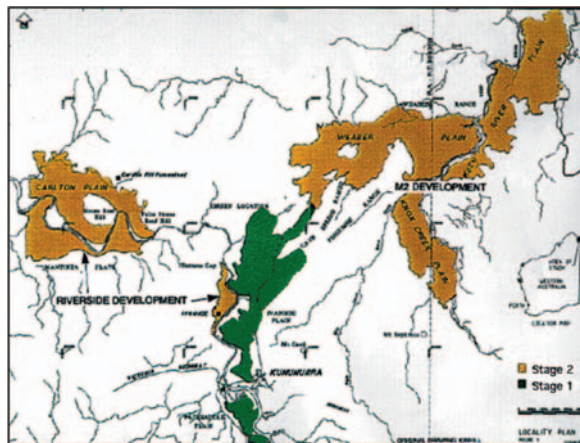
Rising groundwater is an issue since alarm bells began ringing 15 years ago. Land and water management plans were developed, and all local parties were involved to look at different strategies. The situation has stabilised in recent years, and the

water level is declining. The land is sparsely vegetated, and tree crops are being looked at as management tools.

The groundwater is low in salt, but it must be used efficiently. The Department is working with growers to help them apply the correct amount of water, and not get waterlogged or leach the soil. Soil is to be managed with crop rotations, mechanical techniques and consideration of compaction.

Stage 1 of the Ord River Irrigation Area comprises approximately 11,700 hectares of irrigated farm land (mainly flood irrigation).

Stage 2 of the scheme aims to add a further 16,000 hectares of irrigated agricultural lands, in two separate localities. Sixty percent of Stage 2 is in the Northern Territory. A proponent is to do the development. Environmental studies will be carried out. Proposed crops are periodically revisited: they must be economic and sustainable. Water must be recycled: no irrigation water is to drain off a farm or drain to the sea. Native title issues over the land have been resolved, and the Minister has given approval for Stage 2 to go ahead.



■ Stage 1

■ Stage 2

[Tree Cropper, June 2006], [www.treecrops.org.nz]

## Outstanding apple research

**Mark Christensen was elected as recipient of the NZ Tree Crops Association annual prize for contribution to Tree Cropping for 2006, the Dr Don McKenzie Award. This honours Mark's outstanding recent research relating apples and cancer prevention. Mark's contribution is to have tested the old heritage apples using science's most modern analytical tool. No apple industry group or medical research science unit did this: Tree Crops did this, and set the whole scientific community ablaze. Mark has been contributing Apple (anti-cancer) articles to the Tree Cropper for over 6 years. His articles are printed in national magazines, and attract international scientific cooperation, and give a high profile to NZTCA.**

Mark's search for "apples against cancer" on the internet threw up the Finnish study that established a link between flavonoid compounds, mostly found in apples, and the reduced incidence of major human diseases. Finns who eat an apple a day have the lowest cancer incidence in the world. Dr Lieu at Cornell University, USA, was investigating procyanidins to fight cancer. He achieved 49% kill of cancer cells in bowel cancer in mice.

In cooperation with Hort Research at Massey Mark supplied 59 varieties to be tested on their High Performance Liquid Chromatogram. The heritage apples had up to 4 times as much flavonoids and procyanidins as commercial apples.

No two apple varieties are the same - all test with different levels of compounds. There is a strength in maintaining diversity of apple cultivars within the country. New Zealand apple growers have been persuaded over many years to remove old varieties and replace them with supposedly superior modern varieties. From a health aspect, this advice has been wrong. The outstanding varieties identified by this research are all seedling or heritage varieties. This proves the vital importance of maintaining a diverse gene pool of material, in apples as with all plant material.

The latest analysis of 125 apples from apple

collectors all over the country, has shown up Fuero Rous, a French cider apple, with an even higher proportion of procyanidins, flavonoids, anthocyanins. The French medical research team at Strausbourg University are concentrating on anthocyanins (the red colour pigments). Mark has supplied Monty's Surprise apples to Cornell University, to Strausbourg University and to the Finns.

An unexpected outcome from the original research was identifying a unique substance in Russet apples which slows the body's absorption of sugar. This makes them suitable for diabetics. Samples were supplied to Massey University for the Diabetic Unit to follow up.

A little known French cider apple called Fuero Rous has tested with the highest levels of procyanidins in the skin and flesh. This specialist cider apple variety has tested even higher than Monty's Surprise, although Monty's Surprise still has the highest levels for an eating apple.

Given the nature of cider making and the fact that these cider varieties are not palatable, it would be difficult to develop a better use of these apples than cider (or cider vinegar), where all the benefits of these nutritional and medicinal compounds can be captured in a liquid form that for all intents and purposes should have powerful anti-cancer properties.

Consistent findings on the very high levels of compounds in seedling apple varieties, appears to indicate that the rootstock may have a much greater effect on the phytochemical composition of apple fruit, than has previously been considered. The implication from this is that to grow a tree to achieve the maximum health benefits from its fruit, it should be grown on its own roots.

(It is possible that budding or grafting low to the ground, onto a rootstock, and then moulding or replanting above the graft union, may achieve the desired result - once the roots are established from the grafted scion, but this will need to be confirmed with further research.)

#### Chemical Analysis Data - New Zealand Apple Varieties

##### Comparison of Top New Zealand Apple Cultivars against Commercially Grown Cultivars

Total Phenolics (a large group of compounds that in apples include flavonoids and phenolic acids. Phenolics are known to have beneficial effects on human health, including protecting against heart disease.)

	Skin (µg/ cm <sup>2</sup> )	Flesh (µg/g FW)		Skin (µg/ cm <sup>2</sup> )	Flesh (µg/g FW)
<b>Commercially Grown*</b>			<b>Top Cultivars Tested</b>		
Braeburn	348	368	Otoko House No.1	1832	6657
Cox's Orange	277	530	Monty's Surprise	1676	3773
Granny Smith	330	597	Fuero Rous	1664	11078
Pacific Beauty	546	815	Knotted Kernel	1534	11586
Pacific Queen	612	895	Hetlina	1475	4154
Pacific Rose	500	840	Otoko House No.2	1432	4882
Pink Lady	376	564	Bisquet	1358	11305
Red Delicious	806	815	Makaranui Apple	1155	3420
Royal Gala	441	550	C'huerdo Ru Bienn	963	8747
Jazz	443	544	Sweet Alford	734	4707

\*Commercially grown data courtesy of Hort Research

Another factor to consider is the age of the tree. As a tree gains great maturity, (for instance 80 to 100 years), it appears to exhibit greater levels of compounds. This may in fact be a gradual process as the tree ages. The research data indicates that specific trees that are very old, test with high levels of compounds. Thus apple trees should be allowed to grow to a great age - to realise their full potential - (having been planted on their own roots in the first place!)

Mark's budget this year for research is \$54,000.00. There are another 500 apple varieties to test. Thanks to Mark's enthusiasm, members all over NZ are keen to grow the heritage apples identified so far.

[The West Australian, 9 March 2006]

## Sumac sours the mix

**Thousands of years ago, sumac was known for its diuretic and anti-flatulent properties. The Romans used it as a souring agent before the introduction of lemons and the naturally deep russet colour of the berries made them popular as a dye.**

### What is it?

Sumac, a widely used ingredient in Middle Eastern cooking, comes from the berries of a wild bush (*Rhus coriaria*) that is a member of the cashew family and grows throughout the Mediterranean, especially Sicily, and parts of the Middle East. It is not to be confused with poisonous North American sumacs.

The berries, which have a tart taste and vary from russet to aubergine, are dried and ground to a powder or can be macerated in hot water to release their juice. Along with sesame and thyme, sumac is one of the main ingredients in the Middle Eastern spice mixture, za'atar.

### What do you do with it?

Sumac is used as souring agent in place of lemon, tamarind or vinegar. The juice is popular in salad dressings and marinades and the powder can be rubbed on to kebabs, fish

or chicken before grilling, used to flavour rice dishes and mixed into a paste with oil to spread on bread before baking.

### Why do we like it?

The sour lemon taste of sumac complements meat and fish, especially oily varieties, is great in pita wraps and gives a new taste dimension to lentil salads, eggplant, hummus and savoury yoghurt dips.

### Where can you buy it?

Sumac is usually sold in Australia as a coarse or fine powder and is available in Asian supermarkets and specialty grocery stores.

---Olga de Moeller

(Sumac has recently turned up in a variety of spice mixtures sold in tins in the major supermarkets. It can also be bought in bulk at Kakulas Bros. Pat ☺)



Sumac, *Rhus coriaria*.  
Photo: www.montes.upm.es

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[Advertisement]

## Gardener's Fruit, Nut & Vine Workshops

**Peter Coppin**, a horticultural consultant specialising in tree crops, offers a range of workshops covering all aspects of fruit, nut and vine crops. Tailored for hobby farmers, the keen home gardener or anyone with a keen interest in fruits, nuts or vines, there one to suit every need.

### 2006 General Gardening

**Date: Morning Session (9am – 12am)**

Aug 12 **Care of Large Trees & Shrubs**

Sep 9 **Propagating Plants at Home**

Oct 14 **The Summer Vegetable Patch**

Nov 11 **Saving Valuable Trees & Shrubs**

Dec 9 **Growing Plants in Pots & Containers**

### Fruits, Nuts and Vines

**Afternoon Session (1pm – 4pm)**

**Pruning & Winter Care of Grapevines**

**Nuts & Other Tree Crops for Perth**

**Pruning & Spring Care of Fruit Trees**

**All About Stonefruits & Pomefruits**

**Summer Fruit Care & Fruit-fly Control**

A new series of hands-on fruit, nut and vine care is now being organised to be held at Challenger TAFE in Murdoch, where we have some mature trees to play around with. Email me to register your interest and I will keep you informed.

While the topics look specific, you are most welcome to raise any general fruit growing queries during the question and answer sessions. And come prepared to spend time outside, rain or shine!

### Cost:

\$33 per person (\$55 per couple) for one session \$55 per person (\$99 per couple) for both sessions  
Garden Gurus Club members receive a further 20% discount. All prices are GST inclusive.

### Venues:

**Landsdale Farm School** is a Ministry of Education Support School. Located just 15 km north of the City of Perth at 80 Landsdale Road, the Farm School is a 4 hectare demonstration farm featuring farm animals, an organic garden, orchard and nursery. Wheelchair friendly and with good facilities, it's a great place for these workshops. There is a kiosk so you can stay for lunch, but we need to order by morning tea so they are not caught off-guard.

**Other venues** that will be used later in the year include St Barbe Grove Nursery in Hazelmere, City Farm in East Perth and Challenger TAFE in Murdoch

The workshops promise to be informative, fun and very good value

They are held on Saturdays but can be arranged for Sundays – let me know if you are interested

**Register** by phoning Peter Coppin on 0419 906 584, or e-mail [pcoppin@tpg.com.au](mailto:pcoppin@tpg.com.au)

For more information on these and other workshops, visit

[www.arborlogic.com.au](http://www.arborlogic.com.au) or [www.petercoppin.com](http://www.petercoppin.com).

We also hold more intensive one-day seminars, so check out the topics covered.

[Australian Plants, June, 2005, Vol 23 No 183]

## Understanding soil pH

**Here is a concise and lucid discussion about soil pH - a topic vital to all plant-growing activities.**

I'm sure that at one time or another we've all picked up a book and come across a section talking about the pH of soil. Most folk quickly move on to the next chapter, as all the scientific jargon about pH seems far too complicated - but it need not be. So let us try to get rid of the mystery using simple English to get a basic understanding what soil pH is and what it means to the health of our plants.

### How Do Plants Feed?

Plants can be looked on as pumps. The heat from the sun evaporates moisture from the leaves, this in turn causes the plant to draw up more moisture in the form of sap from the roots and this lowers the pressure in the roots so that the plant sucks in more moisture from the soil. Remember plants do not have teeth - they can only drink so it's the nutrients in the soil moisture that are important. (I can hear folk that drool over Droseras and gaze in awe at epiphytic Orchids muttering in their beards!)

### Why Is pH Important?

The pH of the soil has a bigger effect on soil chemistry than soil moisture, soil air, soil temperature and soil life. Having the correct soil pH for the plants that you are trying to grow may improve your garden more dramatically than any other soil-building effort. Too high or too low soil pH is the most common reason that nutrients present in the soil become locked out of the soil solution and thus are unavailable to the plants. The availability of nutrients to plants changes as the soil pH changes. Acid soils with a pH of less than 6 commonly have deficiencies in calcium, magnesium, phosphorus, potassium and mo-

lybdenum. Even more acid soils with a pH of less than 4 commonly have toxic amounts of aluminium and manganese. With alkaline soils having a pH of more than 7 iron, manganese, zinc, copper and boron may be unavailable. To high or too low soil pH will also kill off many of the bugs, worms and other organisms that live in the soil and are so important for its health. But what is pH and how do you find out the pH of the soil in your garden or bushcare patch?

### What Is pH?

In plain words it is the measure of acidity or alkalinity. For the technically minded, pH is the negative logarithm of Hydrogen Ion concentration, i.e.  $\text{pH} = -\log_{10} \text{H}^+$  In other words, soil pH is a measure of the hydrogen ions ( $\text{H}^+$ ) in the soil. The more Hydrogen Ions there are, the more acid the soil. But what are ions?

Take the example of common salt or sodium chloride ( $\text{NaCl}$ ). When it dissolves in water it splits into two ions - an electrically positively charged sodium ion ( $\text{Na}^+$ ) and a negatively charged chlorine ion ( $\text{Cl}^-$ ). Evaporate the water and the two ions recombine to form little grains of salt. Similarly water ( $\text{H}_2\text{O}$ ) is made up of two ions - a negatively charged hydroxyl ion ( $\text{OH}^-$ ) and a positively charged hydrogen ion ( $\text{H}^+$ ).

How big are these ions? They are very, very small - you can easily pack about 100,000,000,000,000,000,000 ions into 1 cubic centimetre.

### The pH Scale

The pH scale runs from 0 (most acid) to 14 (most alkaline). Acids have a pH between



0 and 7; alkalis have a pH between 7 and 14 whilst pure water is neutral with a pH of 7.

Because the scale is logarithmic, going down the scale from 7pH (neutral), each number is 10 times more acid than the one before it. A soil with a pH of 6 is 10 times more acidic than a neutral (7pH) soil; a soil of 5pH is 100 times more acidic than a neutral (7pH) soil. Similarly each 1 pH going up the scale is 10 times more alkali than its predecessor.

The pH of sulphuric acid is about 0 and the acid in your stomach is about 1.5pH. On the other hand, caustic soda is about 14pH and lime about 12pH. Your blood is slightly alkaline (pH = 7.2) but cow's milk is slightly acid (pH = 6.5). On the basis of its acidity alone there seems to be a case for drinking beer (pH = 4.8) rather than tea (pH = 4 when hot, dropping as it cools).

### How Many Hydrogen Ions Are There?

As a rough guide, there is about 1 gram of hydrogen ions in a litre of sulphuric acid (pH = 0). At the other end of the scale, you would need 100 million, million litres of caustic soda (14pH) to end up with 1 gram of hydrogen ions. In the middle of the range pure water (7pH) has 1 gram of hydrogen ions in every 10 million litres.

### What Is Normal For The pH Of Soils?

It depends on where you live. In the average garden the soil ranges between about 5pH (acid soils) up to a little under 8pH (alkaline soils). Go into the desert and you will find that the soil pH is usually strongly alkaline and can range from about 7 up to over 10. However, if you go to a swamp and check the pH of sphagnum moss or peat you will find that they are strongly acidic with a pH between about 2.2 and 4 - this is about as acidic as vinegar or lemon juice but not as acidic as the acids in your stomach or Coca Cola! Bush soils on the East Coast generally are acidic whilst those on the other

side of the Great Divide, and particularly in Western Australia, are alkaline - thus most WA plants grow better on the East Coast if they are grafted onto local rootstock.

### Does The pH Of The Soil In My Backyard Remain The Same?

The short answer is no. The soil can change up to 1pH following periods of heavy and prolonged rainfall or drought. In the short to medium term the addition of lime and fertilisers to the soil will change its pH. Also, it has been found that over the past few decades the pH of soils in the inner suburbs of our cities have fallen due to the effect of acid rain as a result of motor vehicle and industrial emissions (including emissions from homes with wood-fired heating systems). Fertilisers and acid sulphate soils decrease pH.

On a more local scale remember that a couple of metres can be a long way in a garden. If builder's waste or cement was dumped in an area, the soil may look like that nearby but its pH can be vastly different. A patch subject to continued stormwater run-off from a concrete driveway will quite likely be more alkaline than other areas in your garden.

Bushfires also change the soil pH, although after a while it will return to its natural level. The immediate effect is a rise by up to 1pH (i.e. the soil becomes more alkaline). But a bushfire also releases vast quantities of smoke, ash, water vapour (steam) and carbon dioxide (CO<sub>2</sub>) into the air. As it rises, the water vapour cools and condenses back into water droplets that combine with the CO<sub>2</sub> to form carbonic acid that then falls as acid rain, thereby reducing the soil pH.

### Measuring Soil pH

Two main methods used to determine the pH of soil are a simple pH Test Kit or a pH Meter and its associated electrode system. Unless you are a chemist or an experienced

user of pH Meters and understand concepts such as buffering and the calibration of the meter, then the use of a pH Meter is far too complicated for the average gardener. If you send your soil sample to a Soil Test Laboratory they will determine its pH using a pH Meter. The simple low-cost pH test meters that you find in many garden centres have not proved to be very accurate - I have found up to a 4pH difference in the readings obtained when repeating the test on a single sample.

### The Simple Fizz Test

There is a very rough and ready test that you can carry out in your kitchen to find out if the soil in your backyard is a potential disaster zone. Dig up a handful of soil; remove any pebbles and large bits of plant debris and then let it air-dry. Crush any large lumps of soil, then scoop up a tablespoonful of dry soil and add several drops of vinegar. If this makes your soil fizz then your soil pH is greater than 7.5 and is too alkaline for most plants. If it doesn't fizz scoop up another tablespoonful of dry soil, add water until it is very moist then add a pinch of baking powder. If this makes your soil fizz then your soil pH is less than 5 and is too acid for most plants.

### Using A Soil pH Test Kit

So your soil doesn't fizz but you still would like to know its pH a little more accurately. An easy way to do this is to visit your local garden centre and get a pH Test Kit. First you have to get a representative sample of your topsoil. To do this, scrape away any mulch on the surface then dig a hole and take a sample from the side of the hole - each sample should extend from the surface to a depth of about 10 cm. Remove all pebbles and the larger bits of organic matter then thoroughly mix the sample.

Put a level teaspoonful of soil from your sample on a clean, dry non-absorbent surface (i.e. the test plate in the Test Kit, a kitchen plate or piece of glass), add the indicator fluid

from the Test Kit and stir until the sample is a thick paste. Next, dust the sample with the white powder in the Test Kit and wait about 1 minute. The white powder will change colour. Compare the colour of the powder with the colours on the colour card. The colour nearest that of the sample will be the pH of your soil sample. A typical Colour Card from a pH Test Kit is shown on the next page.

### Laboratory Soil pH Tests

This is the most accurate but most complex and expensive method. Soil Testing Laboratories determine the pH of soil samples using a pH Meter and Electrode System using the method specified in Australian Standard AS1289 Part 4.3.1 - Methods of Testing Soils for Engineering Purposes - Soil Chemical Tests - Determination of the pH Value of Soil - Electrometric Method (that sounds complicated - but this part of AS1289 is only one page long!).

In the laboratory, soil pH can be measured in calcium chloride (CaCl<sub>2</sub>) or in water (H<sub>2</sub>O). Most soil scientists prefer the CaCl<sub>2</sub> method as this generally more accurately reflects the actual soil pH found in the field. Soil pH measured in water is 0.5pH to 0.8pH higher than if measured in CaCl<sub>2</sub>. The accuracy of the results is normally +/-0.1pH. When you get your Test Report back from the Laboratory it will state whether the pH was measured in CaCl<sub>2</sub> or water. The Test Report will often also state the 'Buffer pH'. This indicates the soil's capacity to resist pH change when acidic or alkaline materials are added to it. It takes more lime to raise the pH of a soil with clay or organic matter present than it does for a sandy soil containing very little clay or organic matter. The reason for this is that when you add lime you raise the pH of the soil solution by removing hydrogen ions from it. There is now an imbalance between the hydrogen ions in the soil solution and those in the clay

and organic matter. Through the buffering, or storage action, of the clay or organic matter, hydrogen ions come out of the clay and organic matter and replenish those lost from the soil solution.

### The Difference Between Active and Reserve or Stored Acidity

You may come across these two terms, so what do they mean?

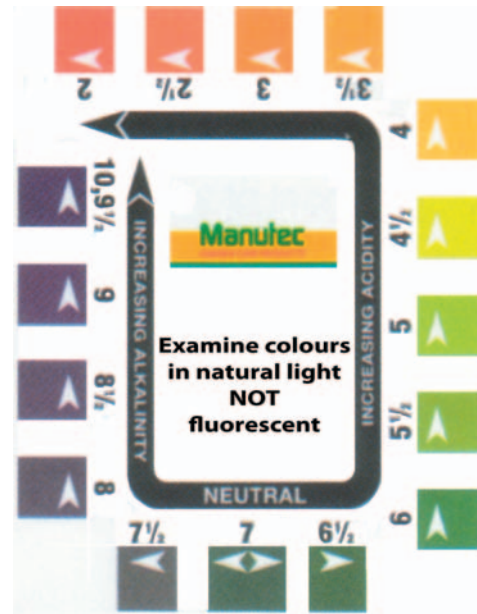
Active acidity is mainly the acidity of the soil solution and so it's the acidity that the roots of plants see. Reserve or stored acidity is the acidity locked up in clay particles and organic matter in the soil; the plant roots don't necessarily see the stored acidity.

### And In Conclusion

It's best to know what soil you have in your garden and work within its limitations. Remember that it can take years to really make a change to your soil (although you can ruin it really quickly!) and you are unlikely to permanently change its pH. But make a start - grow local plants that thrive in your soil and add organic matter - then at least the people who live at your place after you've

moved on could have soil at least as good as nature intended.

---Doug Rickard,  
Sutherland District Group



A typical colour chart from a  
Soil pH Test Kit

[AP-FoodTechnology.com, 18 May 2006], [Agriculture & Food Industry News: Issue 23, 31 May 2006]

## Australian wine exports to China soar

Perhaps some relief in sight for producers, currently suffering from over supply.

Volumes of Australian wine exported to China grew almost 350 per cent last year, making it an increasingly important market for wine producers. The Australian Wine and Brandy Corporation (AWBC) says the country, which has only started consuming wine in recent years, is now its tenth largest export market in volume terms. It bought 8 million litres of Australian wine during the 12 months to April 2006, with bulk red wine accounting for three quarters of the increase in

sales. The volumes are still significantly lower than those imported from Chile and Spain, both responsible for a significant share of the total 40 million litres of bulk sent to China in the last year. Imports of wine have surged since 2004 when Chinese import duties dropped from 65 per cent to just 14 per cent as a result of its accession to the WTO. But much of the bulk wine is being bought by domestic wine producers who blend the beverage with their own wines.

[Original manuscript from David Karp, a freelance writer on fruity topics]

## Offbeat citrus: Buddha's Hand Citrons

Another instalment in *Quandong's* series of unusual citrus.

For over a millennium the Chinese and Japanese have prized the bizarre Buddha's hand citron, which looks like a cross between a giant lemon and a squid, and can perfume a room for weeks with its mysterious tangy fragrance.

Normal citrons resemble big, rough lemons, with thick yellow rinds often used for candying. A mutant form of this citrus, the Buddha's hand splits longitudinally at the end opposite the stem into segments that look remarkably like gnarled human fingers.

Scholars believe that sometime after the fourth century A.D., Buddhist monks carried this graceful oddity from India to China, where it came to symbolize happiness, wealth, and longevity. Chinese like to carry about the "fo-shou" in their hands, place it on tables in their homes, and present it as a sacrificial offering at temple altars. Artists classically depicted the fingered citron in jade and ivory carvings, in prints, and on lacquered wood panels.

Though esteemed chiefly for its exquisite form and aroma, the Buddha's hand citron is also candied as a dessert, and prescribed as a tonic in traditional medicine.

The golden fruit is a popular gift at New Year's, for it is believed to bestow good fortune on a household. At year's end the Japanese buy the "bushukan" at decorative ornament shops, and place it on top of specially pounded rice cakes, or use it in lieu of flowers in the home's sacred tokonoma alcove.

The fingered citron grows on a small, spreading evergreen tree, which bears its main crop in winter, though it may produce a few fruits from "off blooms" throughout the year. American gardeners coddle the frost-

sensitive tree as an ornamental, and there are even a few small-scale commercial growers in California, who sell to flower shops and fancy food stores.

Some varieties of Buddha's hand citrons have a little sour pulp, some none at all, but cooks interested in exotica value the fruit for its aromatic peel.

Gary Palm of The Mission Inn in Riverside, California chops up pieces of rind to add a slightly bitter citrus tinge to fish marinades. Lindsey Shere, pastry chef of Chez Panisse in Berkeley, uses the candied peel in Italian desserts, such as pane forte. Allen Susser of Chef Allen's in Aventura, Florida bakes pieces of candied rind in biscotti; it adds a flavor that he describes as "kumquat-tangerine," distinct from the more lemony taste of regular citrons.

---David Karp



Buddha's Hand Citron  
Photo by David Karp



[http://www.jhfoshou.com/en/value-3.htm]

## Buddha's Hand in China

**This unusual citrus is economically very important in China. It is cultivated intensively and used for many purposes, including tourism and religious offerings. The following paragraphs are straight from the website; the grammar is not corrected.**

The medicinal value of the fingered citron is very great. The root, stem, leaf, flower and fruit can all be used as Chinese traditional medicine. It has a taste of pungent, bitter, sweet, mild, nonpoisonous; absorbed in the liver, spleen and stomach channels; and has the following medicinal effects: regulate the flow of vital energy and remove obstruction to help digestion, relieve cough and reduce sputum, smooth the liver and strengthen the spleen. It's recorded in the historical data that the root of the fingered citron can cure the aching and limp extremities of men; its flowers and fruits can be made tea which can calm one's anger; its fruits can cure the tummy bug, vomits, choke, high blood pressure, tracheitis, asthma, and so on. According to the "GuiJin's" recordation, the fingered citron can cure the tympanites and tumefaction, the leucorrhoea of women, can sober the drunkards up. It is the main material to confect the traditional patent medicine of the fingered citron.

According to clinical report, old fingered citron can cure children's infective hepatitis, the jaundice disappears in 4-5 days on average, their spirit and appetite turn good, the efficiency is above 90% after using fingered citron. It has obvious functions for the old tracheitis and asthma to take the fingered citron after decocted. The curative effects of dyspepsia and tympanites are more obvious.

The fingered citron can be made into many kinds of products. For example, series of health food (preserved fruit and candied fruit, for example), series of beverage (fingered citron wine, fingered citron tea, fingered citron honey), series of traditional patent medicine

(fingered citron cough Lin and anodyne soup) and series of chemical (fingered citron essence).

The bergamot oil is of great use in cosmetic, foodstuff and other commodity. Such as toilet soap, shampoo, detergent, washing powder, air freshener, face cream, toilet cream, perfume, candy, chocolate, chewing gum, fruit juice, carbonic acid beverage, dairy products, flavoring, and so on. Now, it is used in various products with the effect of fragrant therapeutics.



*An intensive plantation of Buddha's Hand*

***This is a suggestion from Ariel of Israel: We can bottle the Buddha fruits and add liqueurs. After anthesis, we strip the leaves and leave 1 fruit of 1 cm diameter on the stripped branch 40 cms long.***

***Then we clean and wash the fruit and place it into a bottle made out of glass and attach all to a strong branch and wait. It is essential to spray against ants and pests.***

***After 6-7 months we have a large Buddha fruit in the bottle. We cut the branch, wash the fruit and bottle, fill in a clear liqueur with various herbs (rosemary and any type of dry herb, seal and store it for 30 days.***

[New Scientist, 4 Mar 2006]

## Floral eavesdroppers get defensive

**Plants defend themselves by making toxins in their leaves when they are attacked by leaf-eating animals and insects. Here is an up-market way to deter those pests...**

If you smell Chanel No 5 perfume you might conclude a wealthy, sophisticated woman is nearby. If a plant detects it, however, it primes its chemical defences and readies itself for attack.

Methyl jasminate, used in Chanel No 5, is produced by sagebrush when it is attacked by herbivores. The volatile chemical stimulates the production of toxic defence compounds, but other plant species "eavesdrop" on the alarm signal and crank up their own chemical defence.

Sagebrush that has been clipped produces

methyl jasminate. Andre Kessler, an ecologist at Cornell University, New York, found that wild tobacco growing next to such plants grow faster than tobacco next to untouched sagebrush. Plants tipped off by the fragrant signal have an even more subtle response.

Instead of producing a costly arsenal of toxins such as nicotine, Kessler discovered that tobacco simply primes itself for defence: it elevates levels of precursors of its defence chemicals. Nicotine can then be produced more quickly. Kessler believes eavesdropping is widespread in the plant community.

[NWFP-Digest-L No. 5/06]

## Chestnuts: Rare American chestnut trees discovered

**A stand of American chestnut trees that somehow escaped a blight that killed off nearly all their kind in the early 1900s has been discovered along a hiking trail not far from President Franklin D. Roosevelt's Little White House at Warm Springs, Georgia.**

The find has stirred excitement among those working to restore the American chestnut, and raised hopes that scientists might be able to use the pollen to breed hardier chestnut trees.

"There's something about this place that has allowed them to endure the blight," said a biologist with the Georgia Department of Natural Resources who spotted the trees. Experts say it could be that the chestnuts have less competition from other trees along the dry, rocky ridge. The fungus that causes the blight thrives in a moist environment.

The largest of the half-dozen or so trees is about 40 feet tall and 20 to 30 years old, and is believed to be the southernmost American chestnut discovered so far that is capable of flowering and producing nuts.

The chestnut foundation has been working for about 15 years to develop a blight-resistant variety. The goal is to infuse the American chestnut with the blight-resistant genes of the Chinese chestnut.

American chestnuts once made up about 25 percent of the forests in the eastern United States, with an estimated 4 billion trees from Maine to Mississippi and Florida.

The trees helped satisfy demand for roasted chestnuts, and their rot-resistant wood was used to make fence posts, utility poles, barns, homes, furniture and musical instruments.

Then these magnificent hardwoods, which could grow to a height of 100 feet and a diameter of 8 feet or more, were almost entirely wiped out by a fast-spreading fungus discovered in 1904.



[Notes from a talk given to the Royal Society of WA by Dr. Saupe, 15 May 2006]

## Maple syrup is not just about pancakes!

**Dr Stephen Saupe is Professor of Biology at the College of Saint Benedict, Saint John's University, Collegeville, Maine, U.S.A. For the past 5 years, he has been Syrup Master of the University's Maple Syrup operation.**

Sugar maples are one of the few truly North American crops used today (others include pecans, blueberries, cranberries and sunflowers).

The sap of sugar maples on average is about 2% sugar concentration, about double that of most other trees. Hundreds of years ago, Indians of northeastern North America discovered how to concentrate this sap into crystallised sugar, which could be stored. They would make a gash into the bark of the tree, insert something like a sumac twig to guide the sap into containers made of hollow logs or sheets of birch bark. They would then heat the sap by dropping hot rocks into the sap to boil off the water, until it crystallised. European settlers copied the Indians, to garner a valuable food resource.

### It is not an easy task!

**First**, you have to find your tree. Sugar maple buds are distinctive, but maple trees can be quite large, mixed in with many other large trees in the forest, so only large trunks are visible (you have to learn to distinguish the bark).

**Second**, weather conditions have to be just right. Maple sap only flows when the tree is dormant, when there are warm days above 0°C and cold nights below 0°C. The cells of sugar maples have an unusual property; they contain air-filled hollow cells (fibres, walls, spaces). There is no sap flow without freezing at night. If it is too warm, the tree doesn't fill with water (dormant trees have no leaves to bring water in through the roots).

### Summary of weather conditions:

- cold night → gas contracts in stem → reduces pressure → stem fills with water from roots → water freezes in hollow cells (fibres, walls, spaces) and traps gases in ice bubbles.
- warm day → ice melts → gas expands → pressure increases → pushes sap out of the xylem cells.
- no flow if consistently above freezing because stem doesn't refill with water.
- no flow if consistently below freezing because ice bubbles don't melt and gas pressure doesn't increase in the stem.
- no flow when buds burst – sap pulled upward to leaves by normal mechanism of water transport in the xylem (Transpiration-Cohesion Theory).

Birch trees also have a sweet sap which is sometimes collected to make syrup, but the trees have a different manner of taking water in through the roots.

**Third**, a spile, or tap, is inserted into the tree. There are several ways to do this, such as a brace and bit or a small, portable drill. A hole 7/16 th of an inch is drilled at an upward angle to a depth of 1 1/2 to 2 inches into the sapwood, or xylem (rare exception to the rule that sugars are transported in the phloem). The spile should fit snugly, but not too tightly, into the hole. Trees smaller than 12 inches in diameter are not tapped, and trees greater

than 18 inches can have 2 taps.

Tap holes should heal over by the next season, and new holes are made a short distance away in a spiral pattern to avoid the old holes. The height of the holes is related to the depth of snow cover.



*Sugar Maple tree with collection buckets.*

**Fourth**, a bucket or bag is hung on the spile to collect the sap, which can drip out at one or two drips per second on a warm, sunny day. Sap flows for only a few hours in a day. Squirrels can be a nuisance. Grey squirrels have learned to chew on the collecting bags or vacuum tubes to get at the sweet sap, and red squirrels like to eat the inner bark of maples and can strip seriously large areas from the tree, which hinders or kills the trees.

**Fifth**, the sap is collected and transported to a sugar shack for processing. Large commercial syrup operations dispense with buckets

and bags, and simply run tubing from the holes directly into vats in the sugar shack, up to a kilometer away with the assistance of vacuum pumps.

Saint John's still operates its maple syrup business, begun in 1942 and inspired by the shortage of sugar during the war, in the old fashioned way that was originally established by Benedictine monks.

Inside the sugar shack, the barrels of sap, transported by tractors, are filtered and poured into evaporator pans. The evaporator is quite large, 4' by 16', where the sap flows slowly through a maze-like arrangement of trays over a wood-fired furnace. It is a continuous flow process: sap in at one end, syrup (almost finished) coming out the other end. It has to flow at the correct depth (too shallow and it burns, too deep and it doesn't evaporate sufficiently and takes longer). This arrangement can cook off 200 gallons of water per hour, which makes 5 gallons of syrup.

It takes 1 cord of wood to make 25 gallons of syrup. A cord of wood is a stack 4' high, 4' wide, and 8' long. They use mainly oak for burning, and also ironwood and maple.

They measure the readiness of the syrup with a hydrometer or a thermometer (syrup is cooked to 7°F above 212°F - the boiling



*The depth of the sap is continually monitored*

point of water). This nearly finished syrup is filtered again to remove mineral salts which have precipitated (sugar sand). The syrup is then put in a smaller pan above a propane flame to cook to the finish, 66 Brix, 35.6 Baume, 87.2% solids.

The finished syrup is 98% sucrose, with traces of amino acids, malic and citric acids and mineral salts, mainly calcium. It takes approximately 43 gallons of sap to make 1 gallon of syrup

The government specifies the quality standards for maple syrup based on colour and flavour. There are 4 grades which can be sold. Grade A Light Amber is the best quality. The lower grades are darker in colour. The flavour is mainly a result of the cooking process, being slightly caramelised. Flavour is also influenced by the season - early season

being lighter than later.

The rapid processing of sap produces a better quality syrup. The sap is sterile inside the tree, but it rapidly becomes contaminated with microbes, lowering quality. It can be stored only briefly at a cool temperature. UV light can be used to sterilise it. The sap can also be processed with reverse osmosis to remove part of the water. This reduces the heating period.

The quantity of syrup produced depends on the number of taps and the weather. The last several years have been poor years. Saint John's placed 600 taps in 2005 to produce 45 gallons, and 800 taps in 2006 to produce 120 gallons. Their 'sugarbush' contains several hundred maple trees in an area of about 5,000 square metres. The sucrose content of the trees ranges from 0.8 to 7.3%, to give a mean of 3.22%.

[*New Internationalist* 391, July 2006]

[[www.sinkswatch.org](http://www.sinkswatch.org)]

## 10 things you should know about tree 'offsets'

**Planting large quantities of trees has come to be seen as a 'good' thing. However, there are contraindications for certain kinds of large plantings.**

**'Good' plantings include farmers planting a certain percentage of their land for the purpose of lowering groundwater, creating windbreaks, or income-producing activity.**

**The 'bad' kind of plantings are those that impose a massive monoculture, which some people now term 'green deserts', as they disrupt local ecology. Offenders in this regard include companies offering tax avoidance schemes which buy up entire farms and displace the people who lived and worked there. The loss of population destroys small communities; local businesses and services wither away. This has happened already in parts of the southwest of WA and in Tasmania. In many cases, valuable agricultural land disappears, perhaps forever, just because cash-starved farmers sell up to the big companies.**

**It is possible that some large-scale plantings, such as that being done in China to combat desertification are 'good,' but it really depends upon the human and social impact: are people being displaced? Are communities becoming ghost towns? Is valuable agricultural land being lost? Some sort of socially-responsible balance is required, especially when you consider the emerging information that tree planting isn't a real solution to the increasing amount of greenhouse gases in our atmosphere.**

**1. Carbon in trees is temporary:** Trees provide temporary carbon storage as part of the normal cycle of carbon exchange between forests and the atmosphere. Trees can easily release carbon into the atmosphere through fire, disease, climatic changes, natural decay and timber harvesting.

**2. One-way road:** The release of fossil carbon is permanent and, over relevant time scales, will accelerate climate change by increasing the overall amount of carbon in the atmosphere - the very cause of today's climate change. Fossil fuels such as coal, oil and gas are locked away and their carbon is only released when humans dig up and burn them for energy. Once released, they become part of the active carbon pool, disrupting the natural cycle.

**3. Fake credit:** Carbon credits from tree planting claim that carbon stored temporarily in tree plantations can justify permanent releases of fossil carbon into the atmosphere without any harm to the climate.

**4. Big foot:** Carbon credits from tree planting increase the ecological debt of the developed countries. The more fossil fuels a country consumes, the more land it is 'entitled' to use to 'offset' its emissions. This increases the already high ecological footprint of developed countries.

**5. Subsidies for mega-plantations:** Carbon credits from tree planting stand to provide a new subsidy for the plantations industry. Large-scale plantations have a long list of negative impacts on forests and forest peoples and often exacerbate local land disputes and violence.

**6. Communities suffer twice:** First, climate change affects the livelihoods of forest peoples and rural communities through increased droughts, floods, forest fires and deforestation. Second, carbon credits from tree planting

promote the expansion of large-scale tree plantations, which gobbles agricultural land and disenfranchises indigenous peoples in many parts of the world.

**7. Ticking time bomb:** Avoiding climate change requires drastic reductions of greenhouse gas emissions from fossil fuels. Offsets, however, allow emissions to continue under the false premise that they've been 'neutralized'. This just masks the real crisis and sentences future generations to live with fewer choices and worse conditions.

**8. Forest fraud.** Forests play a vital role in storing carbon and buffering extreme weather events. But linking forest restoration with carbon credits is a dead-end for forest peoples as well as for the climate. Halting the forest crisis requires action against the underlying causes of deforestation, not more fossil carbon in the atmosphere and more monoculture tree plantations occupying land needed by local communities.

**9. Blind guess:** Measuring carbon in forests is fraught with uncertainties. Scientists have found that estimates of the carbon balance in Canadian forests could vary by 1,000 per cent if seemingly small factors - such as increased levels of atmospheric CO<sub>2</sub> - are taken into account.

**10. Carbon credits from tree planting are a phony climate fix!** That is why campaigners argue that genuine solutions to climate change require us to keep fossil carbon (oil, coal and gas) in the ground.

---Jutta Kill

*I would add Point 11: Follow-up on a number of loudly-proclaimed 'offsets' revealed that they were dismal failures. Often, most of the trees, planted with fanfare, die from lack of care and management.*

---Pat ⌘



[<http://www.avongro.com.au>]

## It's time to think BIG about tree cropping

The stated purpose of AVONGRO is to facilitate the planting of trees with commercial potential in the Avon region, and is directed at both farmers and investors. Monica Durcan previously had a long association with The Men Of The Trees.

Private Forestry Development Committees (PFDCs) are a national network of committees, each bringing together the key stakeholders in their region and facilitating a coordinated approach to the integration of commercial tree crops into the landscape to compliment existing agricultural systems while providing natural resource management (NRM) benefits.

While each region is different and each is working to its own individual conditions, PFDC's main aim is to promote and encourage landscape scale plantings of tree crops with commercial potential. A specific aim is to ensure that there is sufficient volume of resource in appropriate rotations to supply industries based on tree crops, providing new employment opportunities and attracting investment to regional Australia. There are 21 PFDCs nationally with five in Western Australia.

AVONGRO Wheatbelt Tree Cropping caters for the entire natural resource management (NRM) region known as the Avon River Basin in Western Australia. The Avon River Basin (ARB) comprises 11.8 million hectares and is a predominantly agricultural region experiencing serious environmental problems. Dryland salinity has already claimed 5% of the landscape and is predicted to increase to 27% if no action is taken. Opinions vary, but some research has shown that revegetation – ie bringing the scale of vegetation cover back to the level of preclearing – has an important role to play in halting this trend. Over the last decade and a half there have been many federal and state government programs that have supported revegetation with local native species

in the ARB. This has had the positive effect of getting land managers in the habit of planting and gaining the knowledge of site preparation, planting, species, timing... This has also meant that many have planted as much of their land to native perennial vegetation as they are willing to sacrifice. Many understand the need for revegetation on a grand scale, however are no longer in the position to give up more land for biodiversity plantings alone. The catch cry is 'if I plant more land to perennials, they need to have commercial potential'.

The Avon Region of Western Australia is unique in that with a large portion of the region receiving less than 400mm annual rainfall, it receives much lower rainfall than traditionally considered viable for the more standard tree crops of sawlogs and woodchips. Tree cropping in the Avon will take on a slightly different look but the principle is the same – there needs to be sufficient 'resource' to support new industries – landscape scale planning and planting needs to be achieved. Hand in hand with sufficient resource and landscape scale plantings will come environmental, social and economic benefits to farmers and their communities; new employment opportunities and investment in the region.

Current opportunities in the Avon include; pines, oil mallees, sandalwood, specialty timbers, broombush, salt sheoaks and firewood as well as 'non-wood' products, bioenergy and carbon sequestration with many more innovative ideas in the pipeline and a lot more work to be done. AVONGRO is keen to hear from any WANATCA members who would like to build up their tree cropping industry

in the Avon. Call the Executive Officer to discuss your ideas.

In the mean time, you may like to have a look at the website:

<http://www.avongro.com.au>

For more information, contact: Executive Officer, Monica Durcan, (08) 9291 8249,

e-mail: [mdurcan@iinet.net.au](mailto:mdurcan@iinet.net.au)

--- **Monica Durcan**

[*Australian Horticulture, Jan-Feb 06*]

## Wollemi under siege

**Evidence of a *Phytophthora cinnamomi* incursion is worrying guardians of Australia's 'dinosaur plant', the Wollemi pine.**

Although widespread in the eastern states, the soil- and water-borne pathogen was previously unknown in the isolated pocket of the Wollemi National Park northwest of Sydney in which the stand of fewer than 100 wild pines grows.

National parks staff detected *Phytophthora cinnamomi* in the soil and in one tree during routine monitoring by rangers late last year. Preliminary testing by the Botanic Gardens Trust in October confirmed the presence of the fungus-like disease, which causes root rot and eventual plant death in susceptible species.

Department of Environment and Conservation deputy director general and parks head, Dr Tony Fleming, says it is likely the pathogen was carried to the site by unauthorised visitors.

"Phytophthora spores can be carried in water courses or transported by people and animals, which is why it is absolutely essential that people do not visit or attempt to find the Wollemi pine grove," Fleming says.

"While it is controllable in horticulture, it can be devastating in the wild, which is why we need to act immediately to establish the extent of the infection, isolate any diseased material, treat the infected tree and stop the Phytophthora spreading.

"Phytophthora and fire have been considered the biggest threat to the future of Wollemi

pines in the wild since it was first discovered, which is why from the very first the site was kept secret and strict hygiene protocols were put in place.

"A handful of parks officers and scientists have approval to visit the site only when absolutely essential to monitor the health of the trees or undertake research.

"On site they follow strict hygiene protocols, including scrubbing boots and washing and sterilising equipment to make sure these types of diseases are not brought in.

---**Brett Fifield**



Wollemi Pine - *Wollemia nobilis*  
Australian Native Botanical Gardens

[The West Australian, Feb 20, 2006]

## Timber grower snares top WA farm for \$30m

In a stark reflection of WA's changing rural landscape, one of Australia's big tree plantation companies has paid a record \$30 million for one of the State's top farms near Esperance.

The acquisition by Integrated Tree Cropping (ITC) of Linkletter's Place becomes the biggest single farm transaction in WA's history, eclipsing the sale of Ned's Corner on the Esperance Plains nearly two years ago for \$20 to \$21 million.

It continues a record-breaking run for the rural property market, in part fuelled by tree-farming companies hunting for high rainfall land after a fresh boom last year in sales of tax-effective bluegum investments.

It is understood ITC, which has only just settled the direct sale, paid about \$3500 to \$3750 a hectare for Linkletter's Place, an 8800-hectare property near Condingup about 70km east of Esperance.

ITC land acquisition manager Rob Chittick said Linkletter's Place was exceptionally productive and the price was above what local farmers were prepared to pay. "I would regard it as one of the top 10 farms in Australia," he said.



*Record sale: Integrated Tree Crops targeted the 8800-hectare farm's high rainfall land for its bluegum potential.*

Mr Chittick said there was still some resistance in rural communities to the growth of plantations but they brought jobs and infrastructure. More than 100 people would be employed planting trees at Linkletter's Place over the next four to five months.

Listed plantation investment managers, led by Great Southern Plantations, Timbercorp and ITC, have bought or leased several hundred thousand hectares in WA's South-West over the past decade to plant bluegums, mostly intended for the export woodchip market.

**---Cathy Bolt**

\*\*\*\*\*

*I cannot help but feel a sense of deep unease when I read this. It is great for ITC and its investors, but bad for environmental diversity, the local community, and in the long term, bad for Australia. Governments have always strictly controlled the use of leased pastoral land. I would like to see some sort of control over prime agricultural land. Why not consortia of experienced farmers to raise money to buy such land and manage it with appropriate farming practices?*

*Just my 2 cents' worth. ---Pat &*

[The West Australian, 3 May, 15 May, 2006]

## Chance attacks MIS move into fee farms

**The minister says tax-effective managed investment schemes (MIS) are not in the best interests of agriculture.**

Prospects for another bumper year for managers of tax-effective agricultural investment schemes have firmed with one big player, Timbercorp, selling out its new \$30 million avocado project just over a week after it went on the market and others reporting strong sales.

But the increasing likelihood the market will jump to a new record of around \$1.2 billion this financial year has coincided with a stinging attack by WA Agriculture Minister Kim Chance on aggressive expansion into mainstream agriculture.

Mr Chance said he was worried about the movement of managed investment schemes into industries like avocados, wine grapes and beef, much of it occurring in WA.

Just as the companies step up their marketing campaigns for the peak pre-June 30 sales season, he joined critics who claim MIS production decisions are not motivated by getting the best return for the product but getting money and taking fees from investors hungry for tax deductions.

He doubted MIS schemes had a place in established industries such as avocados or beef cattle, where Great Southern Plantation has rapidly become one of the biggest players in Australia.

"It's highly distorting in its impact," he said. "I don't think it's in the best interests of agriculture long term. They don't have the discipline about price maintenance and quality that a traditional farmer would have because they don't have to make a profit. MIS production is simply about getting rid of money."

Mr Chance said his concerns did not ex-

tend to tax-effective investment in plantation forestry, which he continued to support.

He said private capital investment was otherwise likely to be limited for long-term tree crops like bluegums in the southwest and Indian sandalwood, which has become one of the fastest growing crops in the Ord River Irrigation Area.

He also said individual projects could be beneficial where they brought "brave money in big lumps" into developing new industries or markets, such as Indian sandalwood or Rewards Group's plans to grow pink flesh grapefruit for Japan.

One of WA's biggest avocado growers, George Ipsen, said the recent big move into the industry by Timbercorp, one of the major players in the managed investment scheme sector, could destroy the market for other growers.

Mr Ipsen, who manages 65 hectares of avocado orchards near Manjimup and Pemberton, said MIS companies were motivated by the profits they could make from investors.



*Farming fears: George Ipsen says MIS growth threatens traditional orchards and focuses only on profit from investors.*



The investors in turn were motivated by 100 percent up-front tax deductions rather than future returns from selling the product.

“Their production decisions are not made by forces of supply and demand but rather by their ability to attract tax-driven dollars,” he said.

“It is not a level playing field. It’s lazy city dollars, funded largely by other taxpayers, going into agricultural production which is going to displace traditional agricultural produce which relies on price.”

But the outcry has not deterred investors. Timbercorp announced that its new, \$30 million avocado project, which involves leasing around 700 hectares of orchards in Queensland and WA to investors, had sold out a week after release.

Its biggest project this year, a \$50 million almond project, had also sold out. Frank Wilson, chairman of Tropical Forestry Services,

[<http://homepage.nlwORLD.com/scrumpy/cider/real.htm>]

[[http://ourworld.compuserve.com/homepages/andrew\\_lea/content2.htm](http://ourworld.compuserve.com/homepages/andrew_lea/content2.htm)]

## What is real cider?

**If you are serious about cider, or any product fermented from apples or pears, then put a bookmark on these internet sites - a real treasure trove of info and resources.**

Real cider is essentially the fermented juice of the apple with nothing added and nothing taken away. At the moment the majority of the cider sold in the UK is mostly made from imported apple concentrate, is full of artificial colourings, sweeteners, and preservatives, is filtered, is pasteurised to render it inert and is kept and served under carbon dioxide pressure. Don’t assume that if it is served through a hand pump that it is real cider.

To protect traditional English varieties of cider and perry, the Campaign for Real Ale (CAMRA) set up a sub-group, the Apple and Pear Produce Liason Executive (APPLE). APPLE publish the Good Cider Guide which

which manages the world’s biggest Indian sandalwood plantation at Kununurra, said it too was confident of hitting its sales target this year of a record 300ha, but was very conscious of not overplanting.

“We could sell \$60 million rather than \$20 million this year but that just leads to a train wreck,” he said.

MIS companies like Timbercorp and Great Southern have also hit back, claiming they are under stronger pressure to get high prices because they have hundreds of investors waiting on returns.

But Mr Chance said that was “bullshit”. “I had a look at an MIS vineyard at Margaret River the other day and it was not impressive,” he said. “It’s very clear the people managing that investment have achieved their end and are not very interested in what happens from now on.”

---Cathy Bolt

lists pubs in Britain where real cider and perry (made from pears) are available. APPLE have defined two categories of real cider (and perry), anything which does not fall within these categories is not considered to be real cider (or perry).

A definition agreed by APPLE to denote the very best of cider and perry, with nothing added or taken away.

Category A - must:

- not be pasteurised before or after fermentation
- not be filtered
- not receive enzyme treatment

- not contain preservatives or colouring
  - not have the natural yeast replaced by a cultured yeast
  - not have a nitrogen source added unless essential to start fermentation
  - not be diluted
  - only contain sweeteners if labelled Medium or Sweet, and then only if they are shown to be safe and do not affect the taste
  - be produced from only freshly-pressed fruit, and
  - not contain concentrate
  - not contain extraneous carbon dioxide
- Category B - must:
- not be entirely made from concentrate
  - not contain extraneous carbon dioxide

[The West Australian, June 28, 2006]

## Avocado prices up as big frost bites

**Avocado prices are set to rise and consumers could also pay more for potatoes, leafy green vegetables and some winter fruits after severe frosts hit growers already suffering from the prolonged dry spell.**

The increases would inflict more pain on shoppers after banana prices soared in the wake of cyclone Larry. Unprecedented frosts have wiped out at least 20 per cent of the State’s avocado crop, mainly in the Manjimup and Pemberton areas.

Department of Agriculture and Food horticulturist Alec McCarthy said the damage bill was at least \$4 million, but was likely to worsen. One Manjimup avocado grower estimated he had lost \$4 million while another said up to 95 per cent of his crop was wiped out when the temperature plummeted to as low as -6°C and frosts lasted up to 12 hours across much of the southern half of WA on June 17.

Mr McCarthy said consumers were likely to feel the impact by the end of the year. “December, January, February is when the pressure on (avocados) will be heavy and we’re likely to see prices increase quite a bit,” he warned.

Apple and pear chairman Angelo Logiudice said while cold mornings and sunny days had helped the quality and colour of late season apples, if it continued trees would be stressed and next year’s crop would suffer.

While South-West growers enjoyed up

to 20mm of rain yesterday, the cold front failed to deliver the long-awaited break to the season for most of the agricultural area. And the Weather Bureau warned there was a 60 to 65 per cent risk of below-average rainfall across much of the South-West through until September.

WA Farmers Federation president Trevor De Landgraft said the dry spell had reached a critical point.

---Suellen Jerrard



Chill wind: Manjimup avocado grower Tony Fontinini holds avocados ruined by frost. Photo: Jeff Henderson

[<http://english.aljazeera.net/NR/exeres/6EA01DDC-2705-496F-B682-C6606EB588FB.htm>]

## China's first olive harvest strikes oil

**Initially served in bars on the end of a toothpick as just an amusing accessory to a famous cocktail, the olive is slowly moving out of China's posh watering holes and onto the country's dinner plates. Deemed too bitter by many first time tasters, import and consumption figures suggest middle class China cannot get enough of the Mediterranean fruit and its healthy oil.**

Helping lead this culinary revolution is Karim Aljaadi, a 50-something Palestinian who has spent the past two decades promoting Middle Eastern and Mediterranean cuisine across China.

In 2001, after discovering China's only olive grove, Aljaadi set about working with farmers in western Gansu province to help turn a dead end venture into a thriving industry. Last year was his first harvest and the results spoke for themselves.

"In the past, locals did not really know what to do with them. The oil was being used in cosmetics and traditional Chinese medicine. I brought over some seeds from Tunisia and Spain and planted them and now we have almost 1000 tonnes of olives a year," he told Aljazeera.net.

Far more valuable as a fruit than oil, farmers can get roughly \$1 a kilogramme, 10 times what they would earn for growing apples or oranges.

"It takes 17kg of olives to make 1kg of virgin olive oil," says Aljaadi. "But in Beijing and other Chinese cities, I can sell olives for \$3.50 a kilo."

Serving them to his patrons, the fleshy olives quickly dissolve in the mouth, leaving a lingering pepper and sweet perfumery taste, evocative of a Middle Eastern hookah (water pipe).

Marinating them in salt water, thyme, lemon juice, lime and olive oil for three

months, Aljaadi likes to keep the exact process by which he turns a hard, bitter fruit into a mouth-watering appetizer a secret.

The softness of his olives comes from an initial period of fermentation during which the freshly picked and washed olives are rubbed in salt and left standing for a day.

First introduced to China in the 1970's by the Albanians as a token of then close fraternal ties with their communist comrades, preliminary experiments with this foreign tree did not go well.

Planted in subtropical Yunnan province in China's southwest, the trees failed to bear fruit in the humid climate. The more recent replanting of trees in the Wudu valley of Gansu, however, has been an inspired choice.



*The Wudu valley of Gansu enjoys an ideal olive growing climate. Mountains shelter the groves from icy winds and sandstorms*

Sheltered by a series of 2km high mountain ranges from the sub zero Siberian winds and sandstorms that sweep northern China every winter and spring, Wudu enjoys an ideal olive growing average annual temperature of 15 degrees Celsius. After seeing how fast the olive trees grew, local farmers initially began planting them as a means of soil conservation.

However, when Aljaadi first entered the valley in 2001, the olive trees were sparsely planted, poorly maintained and virtually devoid of fruit. When local farmers were shown how to trim the trees, annual harvest shot up



*Farmers have greatly increased the yield from their trees*

from 1kg or 2kg per tree to almost 20kg.

"It's still nothing compared with the Middle East where trees can have as much as 150kg on them," says Aljaadi. But he adds that with time, this will change.

Every year another 10 to 20 new farmers plant trees on their land. Now there are over 1000 acres of olive groves.

Once only available in the small city grocers catering predominately to expatriates, now big chain supermarkets such as Carrefour are selling olives.

Stocking several varieties of brand name olive oil, they have also started selling small glass jars of imported black olives. It is a trend that is likely to grow.

A major importer of edible oils, Hong Shengping last year handled over 3000 tonnes of olive oil. This year, he anticipates surging demand will more than double his business to 7000 tonnes.

"Chinese people have heard about how healthy olive oil is and they want it," he told Aljazeera.net.

**---Benjamin Robertson** in Beijing

[Agriculture & Food Industry News: Issue 16, 22nd February 2006]

## New pest information service for fruit growers

A new pest and disease news service for Western Australia's deciduous fruit growers has been developed by the Department of Agriculture WA.

Orchard Alert, based on DAWA's award-winning Pestfax service, offers a weekly newsletter e-mailed or faxed directly to apple, pear and stone fruit growers, advising them of topical issues concerning pests and diseases and a range of other information including management issues and upcoming field days and industry meetings. Growers will be encour-

aged to report pest and disease outbreaks so the service can inform other growers quickly of timely managements.

Fruit growers can subscribe to the free e-mail newsletter by e-mailing [msivyer@agric.wa.gov.au](mailto:msivyer@agric.wa.gov.au) or by sending their fax number to fax 9367 6248.

Mr Sivyer can be contacted on telephone 9368 3157. The newsletter is also available online at the Department's website [www.agric.wa.gov.au](http://www.agric.wa.gov.au).



## Walnuts in China

China produces a lot of walnuts. Here is a report on a visit to northern China by the Nursery Manager of Webster Walnuts, the only large-scale commercial producer of quality walnuts in Australia - Webster manages 650 hectares of walnut orchards in Tasmania and 250 hectares in the Riverina, N.S.W. In total, over 300,000 trees.

In June 2005 I visited Shanxi province in northern China. Our base was in Taiyuan. The purpose of the visit was to share knowledge on walnut propagation, orchard developments, varietal selection and tree training techniques.

The main propagation technique used in Shanxi province is patch budding using selected English walnut rootstock. Success rates appeared to be quite good, however repeat budding on rootstocks due to bud failure was common. Successfully budded trees were lifted by hand using a heavy hoe when the trees were dormant.

### Most orchards were:

- Small in size, being less than one acre;
- Planted with inter-row crops ranging from wheat, maize, beans and walnut nursery trees;
- Not irrigated;
- Not fertilised;
- Trees were not sprayed with fungicides or insecticides and looked very healthy;
- Young orchards were planted with budded trees of one of three recently selected cultivars;
- Trees were pruned to a vase shape to reduce overall tree height and ease harvesting;
- Nuts were harvested by hand;
- Crops produced low yields per hectare;
- Walnuts are regarded as a secondary crop in this province and therefore trees were planted on the lower value horticultural land.

### Climate

Summer temperatures peaked at about

40°C. Most daily maximums ranged from low to mid 30's while nights cooled down to around 12 to 15°C. Summer rain is very rare and winters are very harsh with temperatures regularly below -10°C. Young nursery trees were covered or buried with soil to protect them from freeze damage during winter.

### Other observations

- There were small pockets of walnuts growing everywhere.
- Very little machinery was sighted (except for narrow grain headers).
- Walnut crops were sun dried.
- Wutai mountain was a spectacular tourist attraction with a functioning Buddhist community.
- Food was very diverse and very tasty however preparation was not as hygienic as western standards. Hence we endured a squeamish tummy for the duration.
- Every square metre of cropping land was utilized.

---Brendan Bond



A tiered orchard on a steep hillside.  
Photo by Brendan Bond

## Verjus

Verjus (literally green juice), is the tart, unfermented juice of unripe wine grapes and was very popular in Medieval French cuisine. It adds intense flavour and sprightly sourness to sauces, but it does not clash with wine as vinegar does. Use verjus to deglaze the pan with chicken or fish. Reduce a bit of it down and add it to game sauces for that indefinable something extra. Verjus can also be used in water with a bit of sugar to make a refreshing summer drink, or freeze it into a refreshing sorbet.

Verjus or verjuice, more recently made from crab apples, was originally made from the thinnings of grapes.

Thinning the grapes produces a fuller, more succulent crop. As I never like to see anything wasted, let's use Verjus with some of the local hedgerow fruits and nuts to create a delicious and inspiring sauce.

### First, let's make the Verjus.

Carefully wash your grapes.

I place them all in the kitchen sink and give them a good wash, separating the fruit from the stem as I go.

In a juicer, or a juice press if you're lucky enough to have one, press the juice from the fruit, bottle and store in a cool place. It's as simple as that. The product is ready for use.

Traditionally, it was used in place of vinegar. If your Verjus decides to ferment, never fear - it simply turns into a rather horrid wine, but used as vinegar it is divine.

---Julie Craig

[New Scientist, 25 Feb 2006]

## Watering crops in the wireless age

A wireless sensor network to help farmers give their plants enough water - but not too much - will begin field trials next month. The network, being developed at info-tech firm National ICT Australia in Melbourne, consists of a few hundred wireless nodes distributed around a 10-hectare field of stone fruit in northern Victoria. Each node contains a computer chip and a Wi-Fi transmitter, linked with

### Cerulean Blue Sauce

This is an exquisite sauce to have over a BBQ or a cold weather roast. This is best drizzled all over your meat before cutting and serving, so that the flavours can seep in.

The pectin in the berries helps the sauce set to a midnight-blue jelly that is visually stunning and a delicious accompaniment to all meats.

1 kg blackberries  
1/3 cup (50 g) unblanched almonds  
2/3 cup Verjus  
1/4-inch slice ginger, peeled  
salt

- Puree the blackberries in a food processor or mouli, and strain the juice.
- Extract as much liquid as possible.
- In a mortar or in a blender, grind the almonds and ginger, then mix with the blackberry juice.
- Add the Verjus and strain once more.
- Season with salt (to taste)

multiple sensors to measure soil moisture, leaf temperature and evaporation. The measurements are relayed to a central server, which adjusts the water supply to different areas via wirelessly-controlled irrigation pumps.

The team plans to create a system that can fine-tune irrigation to individual plants, and has already developed the necessary algorithms.

[<http://news.bbc.co.uk/1/hi/sci/tech/5038116.stm>]

## Ancient figs clue to first farming

**Ancient figs found in an archaeological site in the Jordan Valley may represent one of the earliest forms of agriculture, scientists report.**

Nine small figs, measuring just 18mm (0.7in) across, along with 313 smaller fig fragments were discovered in a house in an early Neolithic village, called Gilgal I, in the Jordan Valley. The carbonised fruits date between 11,200 and 11,400 years old.

The US and Israeli researchers say the figs are a variety that could have only been grown with human intervention. A comparison with modern wild and domesticated varieties led them to conclude that the ancient figs had undergone a mutation in the wild that produced a sweet fruit but no fertile seeds

The team says the find marks the point when humans turned from hunting and gathering to food cultivation.

The researchers from Harvard University in the US and Bar-Ilan University in Israel believe the figs are an early domestic crop rather than a wild breed. After examining the figs, they determined that it was a self-pollinating, or parthenocarpic, variety, like the kind we eat today.

In nature, parthenocarpic fig trees appear



*The ancient figs are extremely well preserved* Photo: Jonathan Reif

now and again by a chance genetic mutation; but because they do not produce seeds, they cannot reproduce alone - they require a shoot to be removed and replanted.

Ofer Bar-Yosef, an archaeologist from Harvard University and an author on the Science paper, said: "Once the parthenocarpic mutation occurred, humans must have recognised that the resulting fruits do not produce new trees, and fig tree cultivation became a common practice.

"In this intentional act of planting a specific variant of fig tree, we can see the beginnings of agriculture. This edible fig would not have survived if not for human intervention."

The figs were well preserved and found together with wild barley, wild oats and acorns. The team says this indicates these early Neolithic people mixed food cultivation with hunting and gathering.

"This sort of find helps us to learn about human behaviour at the beginning of the Neolithic revolution," said Professor Bar-Yosef. "Before this, you had about 2.5 million years of hunters and gathers in various locations around the world.

"But the Neolithic revolution was all about changing the relationship between humans and nature. Instead of just being consumers of whatever was growing in the wild, we started to plant and cultivate and corral animals, and so on."

The researchers say the carbonised figs pre-date the cultivation of other domesticated staples such as wheat, barley and legumes. They believe the fruit may mark the first known example of agriculture.

## New website for WANATCA

It is time to add a new bookmark to your internet browser:

**<http://www.wanatca.org.au>**

Our website has a new appearance, retains the old features, and continues to add more archived issues of Quandong and the Yearbook.

A new feature called 'Members' Area' has been added. Its purpose is to create a forum where members can ask questions (and, hopefully, get answers), share information and communicate with other members. Letters can be posted to WANATCA, P.O. Box 565, Subiaco, WA, 6008, or e-mails sent to [wanatca@wanatca.org.au](mailto:wanatca@wanatca.org.au). We are counting on YOU to get this apple rolling.

The old website, [www.aoi.com.au/wanatca](http://www.aoi.com.au/wanatca), will continue for a few more months, and then cease being host to WANATCA.



## Another Yearbook available!

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