



# The Australian Sandalwooder

Welcome to the 9<sup>th</sup> issue of the Australian Sandalwooder, a  
produced by the Australian Sandalwood Network Inc.

Winter 2009

## From the Chair

Bruce Storer, ASN Chairman

Hallo to all.

I hope it has been as wet at your place as it has been here. Season looking good here in the central wheatbelt.

In this issue you will hear about the latest research work that the ASN has been involved in this work is of great significance because it has been conducted on ASN members' cultivated trees. We are getting an idea how the 25 yr plan is holding up. Our thanks to the CSIRO, Avongro and all the members who participated in the recent field work or offered their trees.

Some exciting software is being/has been developed to assist agroforestry, including the sandalwood industry, in assessing potential sites and locations, to run a cost analysis and forecast an income. A program aimed at Agroforestry and I look forward to using it.

Carbon trading seems to be still in the melting pot so we have not come to any conclusions as to how we may incorporate that into the sandalwood industry yet, but I do see an opportunity in the future.

Watch out for our spring field days and hopefully the conclusive results of recent research.

## ASN Membership renewals are due from 1st July to 1<sup>st</sup> October.

Enjoy the benefits of being a member of the Australian Sandalwood Network

Free peer mentoring service

Free copy of Geoff Woodall's new book.

Representation on the committee of the Sandalwood Association of Australia.

Reduced entry fees to field days, free to growers

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Plantation grown sandalwood with good heartwood, near the base of the tree

Jon Brand see next page for details



# The good oil is in the timing

Jon Brand Senior Forester Forest Products Commission

Early results from harvesting of plantation grown sandalwood of different ages have shown significant variations in heartwood percentage, oil concentration and oil quality.

There also appear to be large differences between the different grades of wood within trees and also between plantations of different ages.

In the last two years, the Forest Products Commission (FPC) has harvested Australian sandalwood (*Santalum spicatum*) trees aged 8-26 years from different plantations in the south-west of WA. Each plantation was established in a similar manner, with the sandalwood direct seeded near 1-5 year-old jam trees (*A. acuminata* typical variant).

Each of the sandalwood trees were measured for height, bole length and stem diameter. The trees were removed from the ground using a 4WD vehicle and a chain. Small roots that broke off were also extracted from the ground using a pick and shovel. After harvesting, each whole tree was weighed on site and then de-barked using a pressurized (3000 psi) water de-barker. After de-barking, the trees were cut into small sections, and grouped into five different wood grades:

1. Butts (ground level to 150 mm away from centre of butt)
2. Roots (all root material)
3. 1<sup>st</sup> grade (stems > 40 mm in diameter)
4. 2<sup>nd</sup> grade (stems 20-40 mm in diameter)
5. 3<sup>rd</sup> grade (stems 10-20 mm in diameter)

From each tree, a cross-sectional 'biscuit' of 10-20 mm in thickness was taken from each of the five different grades.

From each biscuit, the fresh weight, air-dry weight and the amount of heartwood were measured, and the oil concentration determined using solvent extraction.

The amount of santanol within oil was also determined using a gas chromatography flame ionisation detector (GC-FID) and a mass-selective detector (GC-MS).

The FPC aims to provide more detail from this study within the next 12 months, and some of the areas of interest will include: (1) the relationship between total commercial air-dry weight and stem diameter; (2) the proportional weights of different grades of wood within a tree; (3) heartwood percentage, oil concentration and oil quality between different grades of wood and between different tree ages; and (4) a general comparison between plantation wood and wild wood.

The results will help sandalwood farmers determine the best time to harvest and give an indication of what oil could be expected from the different parts of the tree.



Antony Crum, Farm forestry officer for Avon de-barking a sandalwood plantation tree with pressurized water. by Jon Brand

# Landcare's CarbonSMART - Bethan Lloyd

Landcare Carbon SMART is one of the many ways that landholders can access the growing carbon market. It is no cost, low risk and has few management requirements... Annual premium payments are made to landholders for the growth of carbon stocks in stands of native vegetation. I attended a training course in York last year to become an assessor and I also applied to have the 9ha of revegetation assessed on my own property. So far I have only done one assessment on a property in Moora and I am still awaiting to hear the outcome of this and my own assessment. So unfortunately at this time I can't tell you how much you will earn.

Basically existing native trees grown in shelterbelts and remnant buffers and for general revegetation can earn extra income while also providing benefits for crops and stock and improving general land biodiversity. New plantings can also now be funded through this scheme.

## Eligibility

Trees must be planted on freehold land which was clear of vegetation on 31<sup>st</sup> December 1989 and revegetated after 1990 by seeding or some other human action

Five hectares is the minimum eligible area of vegetation.

When mature the vegetation must attain height of at least 2m and crown canopy must cover more than 20% The carbon must remain on site for 100 years at present.

The condition of having to leave the trees on site for 100 years is a problem. Most of us are growing sandalwood with the aim of producing a harvestable crop so for many of us we would not be eligible, however this requirement may be modified over time. If you have bio diverse plantations and are planning to extract only the sandalwood after a period of time and replant back into the area again then you are not reducing the canopy therefore I am guessing that these plantings will still be eligible.

None of us want to see huge permanent carbon sinks over large areas of the wheatbelt. We want harvestable tree crops which will provide NRM and economic benefits to our communities.

Anyone interested in Landcare Carbon SMART can find out further info from

[www.carbonsmart.com.au](http://www.carbonsmart.com.au)

Australian Sandalwood Network's AGM will be held on 24<sup>th</sup> September 2009 at the Dept of Agriculture.

Consider nominating for the committee to help guide our group through these interesting times.

Contact Bethan on [exec@sandalwood.org.au](mailto:exec@sandalwood.org.au) or phone 9574 5882 for a nomination form and more details.



The Australian Sandalwood Net work has been working on this project with Avongro, the Oil Mallee Association and brushwood growers since November last year. The aim of the project is to provide subsidised seedlings, extension material and support to farmers to target areas with wind erosion and water logging. Seedlings on offer included Sandalwood hosts, brushwood (*melaleuca* sp) *Casuarina obesa*, oil mallees and various timbers for sawlogs.

During July most recipients of the 137,000 subsidised sandalwood host seedlings have been getting them in the ground. Many of the farmers are using two or three of the species on offer reflecting the diversity of the sites in the project and suitability of the species for differing positions. All sites will have follow up visits. Antony Crum, Farm forestry officer for Avon will do most of these but as Exec Officer for the ASN I will be checking out many of the sandalwood sites myself, talking to the owners, taking photos and recording the GPS coordinates.

Photo below shows Tim Squire from Muckinbudin with his newly planted sandalwood hosts. He has chosen to use three close rows with a larger gap in between. He has used *Ac saligna* in the middle row to reduce management problems later on.

**Moora field day is rescheduled to 14<sup>th</sup> August. First part of the morning is aimed at new growers followed by a site visit with John Brand speaking on latest research findings. This field day is supported NACC and Lotterywest**

**Great Southern Sandalwood field day on 11<sup>th</sup> September at West Arthur. Free entry to landholders from the Great Southern to attend. This day will be in the field all day around West Arthur and Woodanilling with Geoff Woodall (0427 449 644) looking at managing existing sandalwood sites and maximising returns of and is supported by Great Southern Development Commission and CENRM (UWA).**

**If numbers are sufficient the ASN may take a bus from Northam.**

**Please call Bethan on 9574 5882 for bookings for either of these two events**



# Caring For Country Project

Developing sustainable production systems, resilient to climate change

## **Predicting tree growth, carbon balance and water use in the Avon – an update on CSIRO work in the AVONGRO Caring for Country project**      Don White, Jenny Carter, Tammi Short and Monica Durcan

Since January CSIRO Sustainable Ecosystems have been collaborating with AVONGRO on a large project with funding from the Federal Government through the Caring for Country program. One of the major impediments to adoption of trees is uncertainty about growth rates, carbon balance and other values of trees including changes to hydrology and biodiversity. Our aim is to reduce this uncertainty by undertaking some targeted measurement and combining this with existing knowledge to build a web based tool for quantifying the growth, carbon and water balance and biodiversity outcomes of tree planting for large parts of the Avon catchment.

Our first task is to calibrate our models of tree growth, carbon sequestration and water use for local species and conditions. This is by far the most important part of the project as we must make every effort to reduce uncertainty associated with these predictions. With the help of Helen Job (Brushwood Growers), Bethan Lloyd (Australian Sandalwood Network) and Tim Emmott (Oil Mallee Association) we selected sites to cover the range of climatic conditions, soil types and stand age of oil mallees, sandalwood and brushwood plantings in the region.

Measurements got under way on May the 4<sup>th</sup> and will continue until mid June. A team that includes Dwayne Durcan, Tristan Job and John Larmour (CSIRO, Canberra) have been measuring trees in three plots established at each site and collecting soils using a drill rig and plastic push coring system. We are focussing our measurements on Sandalwood and Brushwood as we already have access to a good oil mallee data set through John Bartle at the Department of Environment and Conservation. In June and July we will visit a small number of sites to destructively sample trees. We will use this data to establish relationships between biomass and the simple growth measured we are collecting at the other sites.

Although our focus is on productivity we couldn't resist the opportunity to make some physiological measurements on the parasitic Sandalwood and one of the hosts. Just before dawn on March 9<sup>th</sup>, we collected shoots from sandalwood and jam trees at Bert and Norma Wansborough's place near Beverley. We took the shoots back to River Cottage on Avon Terrace where we repeatedly measured their water status as they dried out over more than 24 hours. These measurements tell us about the way plants will respond to drought and the level of water stress they can endure and still continue to function. Since 1991 we have made similar measurements on species range from environments spanning Australia from the wet forests of Victoria to the dry eastern fringe of the wheat belt. This data has provided important insights into the way Australian tree species cope with drought.



Tristan Job and Dwayne Durcan measuring sandalwood on jam tree hosts south of Beverley.

For all of our work the generosity and knowledge of farmers, local agency staff and representatives of local grower groups has been invaluable. We appreciate it and do not take it for granted



# Caring for Country Project Developing sustainable production systems, resilient to climate change – continued

A small but very enthusiastic group gathered at Bert and Norma Wansborough's property in July to assist CSIRO to remove some of the oldest plantation trees for sampling as part of this project. Bruce Storer was in charge of tree removal as he has some experience in this matter. Under the supervision of Jenny Cater from CSIRO and Dr Geoff Woodall we had a very interesting day in removing and packaging up the trees to take to the lab. During the removal process we were given some fascinating explanations by Geoff of what we could see beneath the soil. I think apart from having great fun we all got something useful from this exercise and look forward to seeing the results. Many thanks to Bert and Norma for their hospitality on the day.



Bruce Storer, Chair of the ASN shakes hands with Landholder and ASN member Mr Bert Wansborough next to the first of two 14 yr old trees to be removed

More pictures from the day on the back page



Flooding the tree roots for easy removal



The group pauses for a photo just before the second tree is removed

# Peer Mentoring Service

If you are just starting out on your sandalwood adventure you may like to utilise one of the Sandalwood Peer Mentors. The Peer mentoring system is currently funded by the University of Melbourne and allows us to pay experienced growers for up to three hours of their time plus some travel. Mentors make themselves available to chat with new growers about their own experiences.

Peer Mentors do not claim to be experts nor should they take the place of consultants. However they are dedicated members of the Australian Sandalwood Network and very willing to share what they have learnt with others just starting out. Mentors undergo specialised training themselves so that they are best equipped to help others.

To book an appointment with a Sandalwood Peer Mentor, contact

Monica Durcan, Executive Officer

AVONGRO Wheatbelt Tree Cropping Incorporated [www.avongro.com.au](http://www.avongro.com.au)

Ph/fx: 08 9291 8249 Mobile: 0418 934 870 Email: [mdurcan@iinet.net.au](mailto:mdurcan@iinet.net.au)



**Peer Mentors: Bethan Lloyd, Bob Huxley and Bert and Norma Wansborough gaining insights from their own mentor, Geoff Woodall.**



# Do reptiles (i.e. squamatas) benefit from hardwood profitable perennial farming systems? Frances Leng

## Summary

The aim of this study is to understand what contributions native profitable hardwood perennial farming systems have towards biodiversity conservation in farming landscapes, in particular reptile fauna.

Reptiles provide a means to assess biodiversity as they are a major component of vertebrate diversity in the WA wheatbelt, although it is unknown if reptiles do actually respond rapidly to environmental degradation. The Oil Mallee Biodiversity project (CRC Salinity) on the WA wheatbelt indicates reptiles may have successional patterns of colonisation in farmland re-planted with perennial vegetation. This suggests reptiles may function well in measuring how anthropogenic changes in agricultural systems affect biodiversity.

The investigation of the efficiency of reptiles to measure profitable perennials affects on biodiversity shall be ascertained by developing an understanding of how reptiles respond to the main threats to wheatbelt biodiversity i.e. fragmentation and habitat loss and/or degradation.

## Why my research is important

From a biological view point, a major goal of agricultural revegetation is its conservation value to native biodiversity. However, there is little knowledge of the ecological benefits of agricultural revegetation, with limited research on habitat resources provided for fauna.

There is also minimal existing revegetation wheatbelt studies examining how these resources may change as vegetation matures or in the case of hardwood perennial plantings, is removed or harvested.



Western Bearded Dragon)  
found in bush block adjacent  
to Geoff Woodall's  
sandalwood farm



# Gondwana Sandalwood

Ben Boxshall, Spicatum Resources Australia, [www.spicatum.com.au](http://www.spicatum.com.au),  
[info@spicatum.com.au](mailto:info@spicatum.com.au)



Greening Australia is one of a number of groups collaborating to support Gondwana Link - an ecological program focused on protecting and restoring ecological resilience in Australia's only internationally recognised biodiversity hotspot. A key focus area lies between the Fitzgerald River and Stirling Range National Parks on WA's south coast known as the Fitz-Stirling area.

The Biodiverse Sandalwood Project (BSP) came about through Greening Australia's successful application to the federal Department of Agriculture, Fisheries and Forestry to establish a 'Land Innovation Fund' to provide investment capital to projects able to demonstrate both commercial and environmental benefits. Applicants to this fund were required to meet a high level of due diligence, and be able to leverage the public investment with private equity in the project at a ratio of 2:1.

Spicatum Resources Australia (SRA) is a boutique agribusiness company based in Fremantle, Western Australia that specialises in growing and producing Australian sandalwood. SRA formed a partnership with Greening Australia in 2005, and in association with Gondwana Link, using projections based solely on the sale and production of wood, raised \$1 million in capital from 2 private investors to fund implementation of the largest plantation project established on the south coast to date.

# Gondwana Sandalwood – continued

The Yarrabee Wesfarmers Reserve and Peniup Creek properties are strategic acquisitions within the Fitz-Stirling that were purchased in 2006 by Greening Australia and Bush Heritage Australia to improve ecological function and reconnect critical habitat. Both properties fall within the Pallinup River Valley that was host to sandalwood cutters as early as 1848, that used Bullock teams to cart wood to a ship loading facility at Cape Riche near Bremer Bay (Bignell 1977). The Biodiverse Sandalwood Project has established a sandalwood production area covering 204 hectares across both properties that incorporate a total of 56 taxa, representing 17 genera of native plants that function as sandalwood hosts. As well as providing habitat, these areas are buffering adjacent vegetation and waterways from threatening processes, providing connectivity and helping to restore ecological function.

SRA uses establishment techniques that are familiar to the readership of this newsletter that were developed over many years of research and innovation spearheaded by Dr. Geoff Woodall. These techniques rely on sophisticated direct seeding systems to achieve a dense and structurally diverse system of production.

The sowing of hosts was carried out in July of 2007 and 2008 using specialised seeding equipment. This direct seeding has been consistently successful across a diversity of soil types and demonstrates reliability at a scale that is unprecedented in the region. Despite experiencing periodically challenging conditions, an excess of 500,000 perennial native plants have been established, and there is both an excellent representation and suitable balance of key sandalwood host species. The sandalwood production area is now well ‘occupied’ and is already providing functional benefits.

Around 40 hectares were sown with locally sourced sandalwood seed at year 0 (2007), which has provided outstanding growth from an initial survival rate of around 200 per hectare. The remaining area has been sown in the year following the establishment of hosts, also with excellent results. Stocking levels are now within the target range of 300-400 trees per hectare, and the rate of tree growth has matched that found anywhere. The project is on track to generate anticipated merchantable yields of around 5 tonne per hectare over a 20 year timeframe.



## ASN Sandalwood Fact Sheets

A series of five fact sheets about Sandalwood are available to members either by post from the EO or they will be on the website in the next few weeks

1. Preparation and planning
2. Layout and Site preparation
3. Sandalwood Establishment
4. Ongoing Management
5. NRM benefits of growing sandalwood

# Wescorp Market Summary for July 2009.

If you need any further information, please do not hesitate to contact Tim Coakley at [tim@wescorp.com.au](mailto:tim@wescorp.com.au).

Sales are similar to last year for powder and pre-grind. There has been a shortage of raw sandalwood in the market and there is particularly a short supply of Unclean Logs (spicatum). For the first part of the financial year after “the melt down” no one wanted to carry stock and buyers were uncertain of the future. Fortunately after Chinese New Year, the prices were increased and sales proceed to normal levels.

Pacific sandalwood has been very slow with the uncertainty of “democracy” in the region and Fiji devaluing the currency. Oil sales have been slow from the region and many end users are letting their stocks run low and carrying much smaller quantities. The price for some of the oils has dropped by up to 20% even though this is with small volumes.

In slow markets that exist at the moment it is much harder to sell low value products that can be replaced with other products and substitute woods. Sapwood (plantation thinnings) has come down in demand and the price may have to be dropped to achieve sales in the future. Twelve months ago, this was selling very well.

There are some sales of plantation album sapwood from the Ord happening in the last 9 months and this product is generally preferred to spicatum sapwood. We expect larger volumes to come onto the market in the next few years and we are working with buyers in Asia to develop a long term strategy for spicatum sapwoods acceptance and price stability.

The Chinese market is continuing to grow and demand outstrips supply for much of the higher quality products. Unfortunately their main growth is still in the lower end of the market quality but this continues to improve. Wescorp remain confident that there is still about 500,000 tonne of product going into the agarbatti industry worldwide per annum. The “real” sandalwood products still only makes up about 5,000 tonnes of this raw material. There is still good opportunities for plantation sandalwood with good heartwood and reasonable santalol levels in the future.

India still has the ban on importing sandalwood. Recently it may decided to allow the importation license of sandalwood but only to be processed in free trade zones and all of the product must then be exported. This will probably be for oil extraction and then they will send the oil to the Middle East. The Indians are now allowed private growing of album plantations, and there is about 200 hectares planted up to the beginning of this year. There is one large consumer of album sandalwood oil in India that is planting, and they intend to plant 400 hectares per annum. They are probably the largest consumer of sandalwood oil in the world. They are being realistic and will not even consider harvesting any of this sandalwood until after 35 years plus.





## More photos from 1<sup>st</sup> July



The logo for Lotterywest supported, featuring the word "lotterywest" in blue and "supported" in a smaller font below it, with a yellow sun-like graphic above the text.

Many thanks to all  
contributors to this newsletter