



The Australian Sandalwooder

*Welcome to the 16th issue of the Australian Sandalwooder,
produced by the Australian Sandalwood Network Inc.
Thanks to all contributors*

From the Chair

Geoff Woodall

The broader Australian sandalwood industry continues to be strong, though the illegal harvesting of wild wood continues to be problematic and has placed the industry in the mainstream media for all the wrong reasons. Sandalwood was once very common in many WA wheatbelt shires, though in recent times very few wild sandalwood trees remain in many shires and it has been tragic to observe the illegal removal of prized roadside trees. On a positive note, it has been pleasing to read that the government is finally taking illegal harvesting seriously and that arrests have been made and that several cases are now before the courts. Documents relating to the Inquiry into the Sandalwood Industry in Western Australia (<http://www.parliament.wa.gov.au>) make interesting reading! Pastoral lease holders are the key land managers yet they have very little involvement in the rangelands sandalwood industry. Whilst they can apply to be involved in the harvesting they are absent from key land management roles including the establishment and maintenance of the sandalwood resource. More importantly, there are no incentives for pastoralists to be involved in these key land management tasks. Let's hope the focus on illegal harvesting doesn't over shadow underlying issues within the rangelands industry. In term of the private plantation industry, the total estate now exceeds 17,000ha and though establishment of new plantations has certainly slowed. Small areas are still being established in WA, and to a lesser extent SA and Vic. There's no doubt that the cultivation of unirrigated Australian sandalwood (*S. Spicatum*) is a long term crop, with twenty or more years required to produce a high quality product. However what is really encouraging is that a number of plantations are now over thirteen years old, that is, they are over the half way mark. It's amazing how quickly time goes by! A fabulous opportunity to cultivate Australian sandalwood in the wheatbelt still exists, and it need not displace profitable agriculture. Rather, it can add long term value and diversity to the wheatbelt and the hardest issue for most landholders is making a start!

Enjoy the articles in this edition and happy sandalwooding

Memberships for 2013/14 are due for renewal from the 1st July. Membership will lapse if not renewed by 1st October.
The ASN really values you membership and thanks all members for their ongoing support.

Sandalwood plantations provide new habitat for Mallefowl

Over 10 years ago it was hypothesised that multi host sandalwood plantations could become important food sources for Mallefowl. Since then Geoff Woodall has been gathering the evidence and has provided an article to be read in full in Mallefowl Matter July edition no 59 .

Geoff is aware of three situations where Mallefowl have used sandalwood plantations and have been seen scratching around the base of sandalwood trees and adjacent hosts. Farmers report regular sitings at these sites. It is assumed that they are foraging not only for Acacia seed which persist in the soil but also for the insects which gather under the leaf litter of sandalwood and hosts . At one location an active mallefowl mound has been found in a sandalwood plantation about 500metres from the nearest bush. It is likely the key to the use of sandalwood plantations is the use of short lived Acacia species which produce a large seed bank and also large amounts of leaf litter which provide a refuge for a variety of insects. These insects can be found under the leaf litter even in midsummer. It is clear that this food resource attracts the mallefowl and the leaf litter may also be useful for mound building.

The Mallefowl Preservation Group contact details are

Email: mallefowl.wa@wn.com.au

Phone 9828 2007

Web: mallefowl.com.au

Sandalwood Inquiry

The Committee is to inquire into and report on the regulation and management of the Sandalwood Industry in Western Australia; in particular

- a) the regulation and management of the harvesting of wild sandalwood;
- b) the regulation and management of the sales of wild sandalwood;
- c) the environmental sustainability of wild sandalwood; and
- d)) any other relevant matters

There are a few dozen submissions to this enquiry and members are advised to have a look at the website (link below) to get a feeling about the state of the sandalwood industry and the thoughts of the stakeholders. ASN has made a submission if any member would like to read it let Bethan know.

[http://www.parliament.wa.gov.au/C8257837002F0BA9/\(InqByName\)/Inquiry+into+the+Sandalwood+Industry+in+Western+Australia?opendocument](http://www.parliament.wa.gov.au/C8257837002F0BA9/(InqByName)/Inquiry+into+the+Sandalwood+Industry+in+Western+Australia?opendocument)

Avondale Discovery Harvest Festival

Bethan Lloyd

Marty and Connie Winch Buist and myself attended this with a display about sandalwood and sandalwood product. All the products developed from the wood, oil and nuts were on view with information on the ASN and how to grow sandalwood. Most of the products on display have been collected by Marty and Connie over the last few years and they also bag up their sandalwood seed in attractive hessian bags with their own label. The display created a lot of interest to the visitors on the day. Avondale has a sandalwood demo site now which we hope will provide further interest in the future fitting in well with historical nature of Avondale and its displays

Acacia Acuminata seed for sale.

**8.5kg Acacia Acuminata seed - typical variant
(collected Jan 2013)**

\$220/kg (inc GST)

Phone Roger Harrington

0417 959 842

Email: rharrington@bigpond.com

Indigegrow started its first sandalwood plantations in 2009.

Our first plantation is located in the Murray Darling basin about 40 kms North of Wentworth N.S.W. on the river banks of the Darling. The soil structure is of grey sandy loam. The average rain fall is 150mm to 300mm a year.

Our First trials of one hundred host trees were based on the Western Australian sandalwood plantation solutions. This included *Acacia Acuminata*, *Acacia saligna* and other varieties of acacias that were selected from Western Australia. Unfortunately the success of this trial was poor. We believe the largest contributing factor was the use of non-natives to the area. We went back to the drawing board and chose a new selection of host trees that were native to the Murray Darling Basin area. These varieties included, *Acacia Implexa*, *Acacia pendula*, *Acacia victoriae*, and *Acacia oswaldii*, *Acacia glaucoptera*, *Acacia coriacea*, *Acacia acinacea*, *Acacia loderi* and *Acacia salicina*. This mix was chosen for the broad variety in growth stages. Planting was conducted using tube stock approx 3 months of age.

The results from the second trial were outstanding, there were only 2 trees lost. Giving us a 98% success rate of growth. These results were taken six months after the initial planting.

Our next trials involved selecting different areas within the plantation: we selected 100 area native hosts at tuber stage and placed them in selected areas around the proposed plantation. As the plantation has over 1km of river frontage we needed to see if the plants continued to thrive near the water edge or preferred the extreme dryer areas. We had outstanding results across the whole area. Again we believe the contributing factor is the use of Area native hosts.

Six months on and the trial site is established with vigorous growth in host trees. The time had come to sow sandalwood seed to host. We had sourced three suppliers of sandalwood seed and early in 2010 started the sandalwood trials.

We obtained the seed from the three different suppliers and planted out rows of the same seeds in each of our areas. Unfortunately we found that two lots of the seed supplied seemed quite retarded in growth compared to the seed supplied by Bob Huxley. (We are calling this the super seed) We obviously recommend that more than one supplier is required but sourcing and trialling new supplier's seeds are paramount before large scale planting commences.

Nine months on and all was looking very good. Sandalwood loss was very small. The time had come to plant on a large scale.

"We had Sandalwood fever" we commenced planting tube stock in late September of 2010. We learnt very quickly that planting this late in the seasons in an extreme heat area was a mistake. Summer was approaching and there had been next to no rain fall for months. Host tube stock is becoming stressed.

Thirteen days of temperatures above forty degrees had an extreme effect on the host trees and in fear of losing the plantation the decision was made to irrigate. We used lines with small spray heads and gave the hosts about 50ml of water every three days during the night. This allowed us to nurse them through the extreme conditions until they took hold. We then decided to continue irrigation but on a very limited scale. Plants receive approx 50ml of water once a week during extreme temperatures with no rainfall.

On top of this a locus plague of epic proportion had hit the Murray darling basin. We imagined our whole plantation would be eaten to the ground like so many of the other crops and trees around us. The locusts actually had next to zero effect on the sandalwood and little if any effect on the host trees. The key was narrow or ribbon leaf acacia. Some of the broad leaf acacia were nibbled on but still the damage was minimal.

Three years on and our sandalwood trees are starting to seed. Once the irrigation was applied there is no stopping the plantation. The expense of irrigation might outweigh the decision to sandalwood farm so rain fall is very important. Sandalwood do not like wet feet so if there is any pooling of water in the plantation due to irrigation the sandalwood will die. The fact that you irrigate will have effect on oil produced within the trees and we only recommend irrigation be applied for extreme weather conditions. Irrigation after five years will not be used on our plantation. Irrigation is only a means of host establishment and a boost for host growth in early years.

We have twenty one lines of irrigation; each line has sixty three sandalwood trees. Over one hectare there would be no more than three hundred sandalwood planted. On the irrigated lines the size of host trees and sandalwood compared to the non-irrigated lines has doubled. As this plantation is a large trial site with two thousand trees in total we have many different types of spacing and host selection. Our best results are from a single line of sandalwood 3 meters apart. Host trees are 2 meters apart and 3 meters away from the sandalwood on both side of the sandalwood.

This selection does take up room in your plantation. It has given us the best growth.

With early success in the Murray darling region we set our sights on new prospect. We believe that there is a place for sandalwood farming in central Victoria. First we constructed a nursery with the capacity for over ten thousand tube stock host trees. This is to fill in the gaps of any host that may die and to restore the order of host varieties in plantations. This year we will begin 160 acres of direct sown host seed in the Murray fans region. Applying all the lessons learnt and with a greater host variation we hope to have seeded 100 aches by June July 2013. On top of this Indigegrow has purchased a mini oil extraction unit and over the next 2 years will run trials of oil extraction. Using traditional methods of extraction we aim to achieve a higher oil grade and therefore better prices at the pump, so to speak.

Indigegrow plan is to have all aspects of sandalwood farming from harvested seed to tube stock, direct sowing by machine and oil extraction.



Santalum Spicatum, Darling River

Sandalwood 3 meters from host on both sides.

Further pictures from Indigegrow on back pages

The woylie and the sandalwood tree

The importance of the Woylie (*Bettongia pencillata* or Brush-Tailed Bettong) to assist the spread and natural regeneration of the Western Australian Sandalwood tree, *Santalum Spicatum*, has been observed and recorded for some time. The effect on the Woylie populations throughout Western Australia with the removal of their habitat and the introduction and spread of predatory animals has been significant. The Woylie is listed as critically endangered with some providences on the verge of extinction.

Marty & Connie Winch-Buist have been assisting the Kanyana Wildlife Rehabilitation Centre by donating good quality WA Sandalwood Nuts from their Greenhills property to assist with the captive breeding program. The Woylies absolutely love these nuts. The sandalwood nuts assist to provide a natural high protein food source which helps to support the high metabolism of the Woylies.

Some of the other residents at Kanyana also enjoy the WA Sandalwood Nut treats which helps to supplement their diets and provide an additional activity when they play with and crunch up shells. These include the Boodie (*Bettongia lesueur* or Burrowing Bettong), several species of possum and Henry the Red Tail Black Cockatoo.

Recently the team at Kanyana provided some wonderful news and were able to confirm some breeding success with the Tutanning group of Woylies. The press release is included along with some images of a recent visit to meet some of the residents of Kanyana.

Contact details for Kanyana are available at <http://www.kanyanawildlife.org.au>

Pictures below of Marty and Connie at Kanyana



UWA engineers tackle sandalwood seeding challenge

Researchers behind a new study into the mechanised distribution of the Sandalwood tree's large and irregular seed believe engineering could drive a revolution to meet Australia's agricultural needs. The results of the sandalwood study, to be published in the journal [Bio systems engineering](#), were borne out of a need to reproduce the unique and increasingly in-demand crop with the immediate focus on land rehabilitation projects.

Sandalwood rehabilitation projects currently depend on manual labour to plant the seed in remnant bush land. The reason for this is that the large and variable size of sandalwood seed poses a significant challenge for mechanising the seed sowing process. Commercially available seed meters are designed for small uniform seed such as corn.

Sandalwood (*Santalum*) is hemi-parasitic in nature, which makes it dependent on nutrients and water from the roots of neighbouring trees. Native sandalwood (*Santalum spicatum*) depends on trees such as the native wattle. Over the last 150 years, there has been a decline in natural sandalwood stands in the Grain belt of Western Australia due to land development, unsustainable harvesting practices and a decline in the Woylie population, a native West Australian marsupial and natural propagator of the sandalwood tree.

A study on the specific requirements of a mechanical seed meter for sandalwood was undertaken by final year project student Dylan St Jack under the supervision of Associate Professor Dianne Hesterman and Assistant Professor Andrew Guzzomi from The University of Western Australia's School of Mechanical and Chemical Engineering.

They have discovered that sandalwood seeds can be accurately metered through vacuum singulation techniques, an established mechanical method of precision seeding. The published results discuss the design of a modified seed meter for sandalwood and detail links between the dynamic behaviour of the seed pool, the meter speed and the performance of the meter.

"The results of this study take us a big step closer to developing a single pass seeding process for sandalwood rehabilitation", Assistant Professor Guzzomi said. "This will allow larger areas to be seeded, ensure consistent seed spacing, and minimise impact on native flora and fauna. The meter could also be adapted for use on commercial sandalwood plantations."

"What this project highlights is the link between agriculture and engineering that is so important for Australia's future in terms of food security, rehabilitation and sustainability. It is an important connection that is not yet being fully realised in Australia", Assistant Professor Guzzomi said.

<http://www.news.uwa.edu.au/201305165653/research/uwa-engineers-tackle-sandalwood-seeding-challenge>

Seven charged over sandalwood theft- *media release*

Police have charged seven people over the seizure of more than 100 tonnes of stolen sandalwood worth about \$1.1 million dollars last year. Officers carried out a sting at Remlap station, near Beacon, after the owner noticed people removed some of his large trees. A campsite and processing area for the aromatic wood was discovered on the station's land.

Sandalwood trees produce oil that is highly prized in Asia and can fetch more than \$20,000 for 30 kilos. WA produces the most sandalwood in the country largely across the South-West areas of the State. In a series of raids on properties and vehicles across the Wheatbelt including Menzies, Kalgoorlie and New Norcia last year, police seized large amounts of the allegedly illegally-obtained sandalwood. In one case, a truck was heading for the South Australian border with its valuable load.

Seven people have been charged over the raids. Six will appear in the Kalgoorlie Magistrates Court on June 20 and one in the Northam Magistrate's Court on June 24.

More pictures from Indigegrow



Irrigated Sandalwood
Plantation single rows



Irrigated Sandalwood
Plantation double rows



Opposite Six acacia varieties to be directly sown.

Bottom left Sandalwood and salt bush trial Wentworth N.S.W

right Cliff Taylor and his Irrigation filter system



FPC committed to maintaining its sharefarm estate

The Forest Products Commission (FPC) will continue to maintain its sharefarm plantation estate of approximately 49,000 hectares of pine, sandalwood and eucalypt trees.

In the short to medium term, on ground works in the FPC sandalwood estate will primarily focus on optimising sandalwood to host ratios, pest monitoring and nut harvesting.

The sharefarms were established as part of a State Government initiative to develop new forest industries in the medium rainfall areas of Western Australia. The program was discontinued following a review in 2010 which resulted in a decision to exit sharefarming and refocus on core business.

On two occasions, the FPC was unsuccessful in selling parts of the sharefarm estate through a 'request for tender' process. However, this does not impact on FPC's commitment to meeting its silvicultural management and product marketing obligations.

While the FPC is unlikely to undertake any further formal sales processes, it will consider any offers which may be forthcoming. Consideration of these offers will take into account value for money to the State as well as the interests of the landowner.

Anyone with any queries relating to FPC timber sharefarms can contact David Guille on 1800 241 688.