

Making Headlines:

Word from the Chair

Avon Catchment Council Support of Tree Crops

Farm Forestry Development Officer

Review of Strategy

Direct Seeding Trials

Future Farm Business Planning Tool

Australian Sandalwood Network

FPC Taxa Trials

Bio-diesel from Perennials

Brushwood Field Day

Carbon Eucalypt Project



Edition 7

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FOCUS ON A TREE FARMER

Norm and Trudi Quicke - integration is the key

The Quickes first began planting in 1995 sourcing local species from the Kulin nursery and planting along fencelines. They started planting seriously in 1997 when they put in 17,000 mallees and have continued every year.

Since 2002 the Quickes have been planting increasing numbers of mallees with some saltbush on their lower country. For the last three years the Quickes have been assisted in their planting program via the Avon Catchment Council's (ACC) Integrated Water Management, Salinity/Integrated Tree Cropping Program. Funding has been provided via the State and Australian Governments under the National Action Plan for Salinity and Water Quality (NAP). The Project provides seedlings and other support services while the Quickes contribute to the establishment costs and receive additional incentives based on outcomes, i.e. survival incentive. So far the plantings have not cost them much at all as their survival rate has been excellent and the reward incentives largely covered the establishment costs.

The Quickes have embraced the integration of mallees into their farming system. In 1998 the Quickes bought a 400 hectare farm which had 13 square paddocks with fences running across the creekline. Norm took out the fences, realigned and redesigned the paddocks into four. He now farms these to suit the landscape and is planting 10% to mallees. He has also fenced and revegetated the creekline.

Establishment: When planting trees, Norm crops twice which he has found best for reducing weed burden and helping the trees establish. He puts in young sheep less than 18 months old) and wethers when the trees are about one metre high and after a second crop. He has not found it necessary to overspray as the sheep do a very good job of cleaning up any weeds.

Planting design: The Quickes have eight paddocks under various configurations of belt layouts, some trials and some plantings along contours and creeklines (four rows below contours and four rows either side of the creeklines) and are making use of natural water harvesting.

'We have found that triple rows fit best with our farming. This allows me to do six runs with the seeding machinery in between.' said Norm. Norm likes the idea of working up and back and has set up the rows across the hill as much on the contour as possible so water will run into the crop and trees.

A Word from the Chairman



Ian Hall, Chairman of AVONGRO
Wheatbelt Tree Cropping

Welcome to this seventh edition of the AVONGRO newsletter. Once again it is being produced thanks to funding from the Avon Catchment Council.

Since the last newsletter all of Australia's Private Forestry Development Committees have been informed that the new federal government will not be continuing its many years of support. While this has been devastating news for some PFDCs and not welcome in Western Australia, I am pleased to say that all five of WA's PFDCs will be continuing at least until the end of the 08/09 financial year and are actively seedling other funding sources.

The WA PFDCs are a strong network, are recognised for our value as independent sources of information and for our unbiased links to the community. At the time of writing this, a review of WA's PFDCs is being conducted jointly by the Forest Products Commission and the Department of Agriculture and Food WA. Both agencies have in the past contributed cash and in-kind support to all WA's PFDCs and we are hopeful of their continued support.

As you will be aware, over the past twelve months, thanks to funding from Lotterywest, we have been conducting a review of the 2003 Avon River Basin Tree Crops Development Strategy which has guided our actions since our inception in May 2005. Consultant Sue Middleton from WA GrassRoots Development has guided us admirably through this task and has recommended a new business and operating structure which will serve us well as we move into a more independent funding era. More details can be found elsewhere in this newsletter however the main points are that the old committee structure is being replaced by a Business Development Unit so that rather than functioning like a catchment group or tennis club we will have a more focused and professional management structure. To eliminate the need for our busy supporters to attend committee meetings, 'Teams' will focus on specific tasks for specific time periods. Initially we will be setting up a 'Landscape-scale investment' Team to look at the bigger picture and investment opportunities and a 'Farm-scale investment' Team to work more closely with land managers and implement on-ground change.

Ian Hall
AVONGRO Chairman

Membership to AVONGRO is open to anyone with an interest in tree cropping. A membership form can be obtained from the AVONGRO website: www.avongro.com.au or by contacting the Executive Officer on 9291 8249 or by email: mdurcan@iinet.net.au

Disclaimer

The information provided in this newsletter have been collated from the best available information at the time of writing. Please check with a reputable revegetation advisor prior to making any decisions based on the information presented here.

'A sustainable commercial tree crops industry integrated with existing regional land use systems which enhances the social and environmental benefits for the Avon River Basin.'

Avon Catchment Council support of tree crops

by Monica Durcan, AVONGRO

For the past three years the Avon Catchment Council (ACC) has been supporting tree crops as part of their suite of solutions to the region's NRM challenges. AVONGRO would like to acknowledge their continued support during that time.

Despite the uncertainty of the new Caring for our Country funding, the ACC has continued their commitment to and support of the integration of tree crops into the Avon agricultural landscape for NRM outcomes.

The current 'gap' year funding for 2008/09 sees a continuation of their support with the focus of their subsidised seedling program being on the protection of the Avon's soil assets. The ACC recognises the role that tree crops, integrated with current agricultural practices, have to play in protecting our fragile soil assets from wind and water erosion, salinity and waterlogging.

The new programs being developed will provide subsidised seedlings of four proven varieties: oil mallees, sandalwood hosts, brushwood and native timber species (including *Casuarina obesa*). Subsidies will also be available for salt tolerant pasture species and lucerne. Anyone farming in the Avon NRM region will be eligible to apply. These rounds will have a focus on the integration of a mixture of tree crops and pastures at various locations in the landscape. Expressions of Interest will be sought during the last quarter of 2008 for the 2009 planting season.

In addition, the ACC will be supporting tree crop field days and extension materials designed to inform land managers of the benefits of these tree crops for their farm and for the environment. Capacity built over the years in the Avon is also being retained to assist with these tasks by funding part time positions for the Avon Brushwood Coordinator, the Australian Sandalwood Network Executive Officer, the Upper Great Southern Oil Mallee Growers Association and the Saltland Pastures Association. The continued support of the Farm Forestry Development Officer and the Farm Forestry Education Program will ensure that the subsidised tree crops and pastures achieve the best possible benefit for the land manager and their soil asset.

AVONGRO commends the Avon Catchment Council for their vision, commitment and continued support of tree crops for natural resource management.

Please contact the Avon Catchment Council or Antony Crum, Avon Farm Forestry Development Officer, for details on any of the ACC tree crop projects. (9690 2268 or antony.crum@fpc.wa.gov.au)



Adventures of a Farm Forestry Development Officer

by Antony Crum, Avon Catchment Council/Forest Products Commission (9690 2268 or antony.crum@fpc.wa.gov.au)



Antony and farmer Gerard McSweeney inspect an oil mallee planting

My first 4 months as the FFDO have been busy but very rewarding. The majority of my time has been taken up with the Avon Catchment Council's Subsidised Seedling Scheme. We had a large number of very good applicants which made the evaluation of sites very difficult. It has been very pleasing to see such a high level of interest in farm forestry. This year saw successful applicants plant 80,000 Sandalwood hosts and 20,000 Swamp Sheoak seedlings around the Avon. Many of the sandalwood hosts headed to the Korda/Bencubbin area and I must thank Bob Huxley for all his help with organizing and mentoring the plantings in that area. Most sites have had some good rain so hopefully we will get some more rain before summer and we will end up with a very successful year.

The rest of my time has been spent travelling around the Avon River Basin to see as many farm forestry sites as possible. Though I have been concentrating on seeing the sites that have received ACC subsidised seedlings over the previous three years, I have also managed to visit a number of other trial sites and privately funded tree crops. It has been very interesting to hear the experiences of the local farmers in regards to both their successes and their challenges. It has been exciting to meet those farmers who have not given up after some problems but have come up with some great ideas and new techniques which may help overcome these challenges which most farmers would face.

In the future I am hoping to meet many more of the people who have established or would like to establish tree crops on their land. It is an exciting time for farm forestry in the Avon with some potential markets on the horizon and I am keen to help landowners to take advantage of these opportunities in any way I can.

Strategy Review

by Sue Middleton, WA Grassroots Development (sue@agcorp.com.au)



A key outcome of the planning process has been to clarify the target that AVONGRO is aiming to achieve. The Target for Change is 800,000 ha planted to tree crops in the cleared landscape in the Avon River Basin by 2028.

Currently it is believed that 2-5% of farmers have adopted tree cropping as a technology, and the goal is to achieve 40% adoption rates, which will encapsulate the early adopters and most of the early majority. In theory, if the technology of tree cropping is successful in those categories of adopters, then adoption will occur without targeted one-on-one assistance from that time onward. Mass marketing of benefits as demonstrated by the early majority will be a more appropriate strategy at that time.

The process has identified a Landscape Level Investment Model, which shows the rate of plantings to be achieved if the goal of 800,000 ha is achieved in 20 years. This model also shows the indicative biomass yield that can be achieved from the level of proposed plantings, which helps to drive planning for processing facilities.

A related goal is to plant areas of the landscape that need protection eg. Wind erosion areas. Part of the Strategy is to map the areas of strategic interest for investment to ensure plantings can achieve multiple landscape, environmental, community and commercial outcomes.

To bring it down to a Farm level to encourage adoption, a Farm Level Investment Model will also be an outcome of the Strategy. This could be a web-based tool, functioning as a form of "returns calculator". It could map expected returns based upon different rates/volumes of plantings and different harvesting yield and marketing options. At this stage of the adoption cycle, one-on-one support is critical and this is proposed to be supplied by a network of Farm Forestry Development Officers. Other support activities and tasks to help achieve these processes have been outlined in the Strategy. For more information, contact AVONGRO.

Direct sowing *Eucalypts* on cleared agricultural land

by Geoff Woodall and Melinda Moule, Centre of Excellence in Natural Resource Management, University of Western Australia (9892 8585 or melinda.moule@uwa.edu.au)

Australia urgently requires more robust and lower cost methods of establishing woody perennials into low rainfall agricultural landscapes. The direct sowing of new woody crops may have merit as a low cost establishment method, though there has not been a systematic attempt to develop agricultural seeding systems for these woody crops. This project aimed to improve the reliability of establishment of direct sown woody crops, focussing on the fine seeded mallee eucalypts and other low rainfall eucalypt species. Low cost establishment is critical to a broader national agenda to efficiently roll out perennial vegetation into an increasingly arid agricultural landscape. The scale of the perennial rollout task is enormous – many times larger than the area affected by other sources of landscape degradation like salinity. For example, in Western Australia, the total area of land affected by secondary salinity is ~1 Mha, but the area which is increasingly marginal because of climate change is around 5 Mha.

The research has confirmed anecdotal evidence that *E. cladocalyx* (Sugar Gum) and *E. occidentalis* (Flat-topped Yate) are reasonably easy to establish from sown seed. Oil mallees, *E. polybractea* and *E. loxophelba* are much less robust species to establish from sown seed. Fungal diseases and insect pests are major obstacles to the establishment of all of these myrtaceous species into agricultural landscapes. Unfortunately, seedlings are susceptible for a reasonably long period of time (e.g. 6 leaf stage) and one off applications of chemical to seeds or sites may not be enough to ensure establishment success.

Pelletising seed was not shown to have any positive influence on establishment success and is expensive. Indeed the research suggests that it would be more prudent to increase the rate of seeding raw seed rather than sowing fewer, considerably more expensive, coated seeds.

Dr Woodall is confident that robust establishment systems via sown seed can be developed for *E. occidentalis* on appropriate soil types and *E. cladocalyx* in well drained, low frost risk sites (e.g. mid slope positions).

The research has also shown that:

- supplementary nutrition is of key importance
- seeds can be sown deeper than previously thought
- water harvesting and scalping are important for success
- several chemical treatments can be used to improve germination.



This research is funded by JVAP and various industry partners including funding from Lotterywest via AVONGRO and is delivered through the Future Farm Industries CRC and its partners.



Trialling different site preparations and water harvesting environments to improve direct seeding success at Ian Hall's farm.



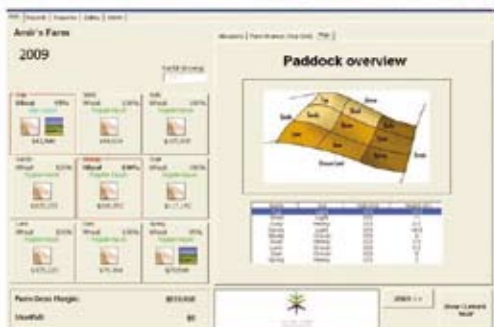
Assessing seedling emergence. Note red topped markers indicate the location of emerged seedlings.

Future Farm Business Planning Tool

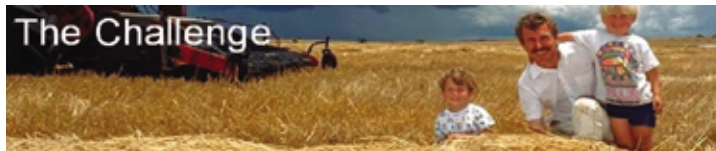
by Amir Abadi, Department of Environment and Conservation (amir.abadi@dec.wa.gov.au)



Presented by
Amir Abadi



Department of Environment and Conservation (WA) and Future Farm Industries CRC



- Can you build and run a sustainable and resilient farm business?
- You need to decide on yearly allocation of land and input like fertilisers to:
 - Annual crops like wheat and canola or annual pastures like clover or
 - Herbaceous perennials like lucerne or saltland pastures; or
 - Trees for wood, CO2 Sequestration, biomass, oil; or
 - Deep drains to reduce water tables
- Must consider past farm records of climate and commodity prices (markets)
- Bear in mind risks and uncertainties of climate, markets & innovations
- Manage the stocks and flows of cash and credit as well as assets and liabilities
- Mind the ground water and manage hydrology to arrest or delay dryland salinity



Future Farm Business Issues

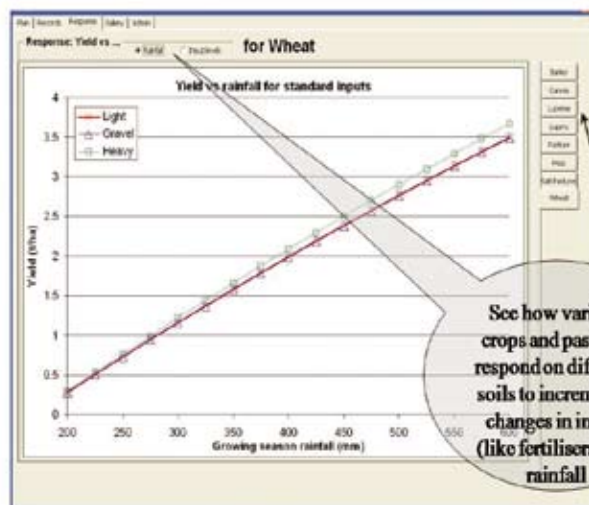
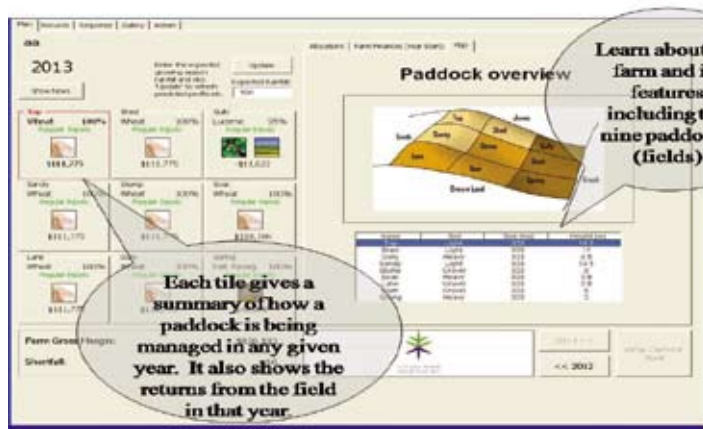
- Adjusting the production systems and mix of crops and livestock to
 - Ever changing commodity prices
 - Deciding if recent price/cost trends are here to stay
 - Land use sequence and choice of crops, pastures and rotations
 - Cost of inputs and adjusting to rising price of fuel, fertilisers and herbicides;
- Climate Change
 - Higher risk and variability brought on by known and predicted climate change;
- Choice of innovations – finding, evaluating and deciding the best way of adopting:
 - Trees for woody biomass and associated end products like energy, oil or wood;
 - Trees in block plantings for reforestation
 - Trees for permanent carbon sequestration;
 - Perennial pastures like Lucerne
 - Saltland pastures on saline land
- Management of farm's hydrology and movement of water
 - Engineering solutions like drains or plants for managing recharge and discharge;



A Participatory Action Learning Environment



- Learning from self, peers and presenter
- Engaging - happy minds learn better
- To learn how to make good decisions
- Lets participants choose their responses
- Need to cope with imperfect knowledge
- Combination of rivalry and co-operation
- Software synchronises scenarios and choices
- Software checks and verifies adherence to rules
- Data demonstrates key concepts
- Game offers teaching moments
 - No one right answer – participants may
 - share their opinions and
 - discuss reasons for their choices



Originators
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Contributors
Ross Kingwell
Steven Schilizzi

Australian Sandalwood Network - update

by Bethan Lloyd, Executive Assistant (9574 5882 or exec@sandalwood.org.au)

The Australian Sandalwood Network is progressing with updating our inventory of plantations amongst our members. This will be done every year to keep up-to-date figures for the resource we have in the ground. We have also had information from the Department of Environment and Conservation which shows the main areas where seed is being collected from wild populations and from plantations over the last three years.

Applications have been sent in to Lotterywest and the Wheatbelt Development Commission for funds to develop a series of Best Practice fact sheets. It is hoped that from this, we eventually accredit growers who are establishing and maintaining their plantations according to best practice methods. Purchasers are demanding sandalwood products which are produced by recognised Environmental Management Systems that reduce the impacts we have on the environment. Having best practice establishment, growing and harvesting methods will contribute to this. We are also working with AVONGRO and the Avon Catchment Council in developing incentives for next year to encourage the further uptake of sandalwood plantations in the Avon. Protecting soil resources in priority areas will be the focus of the project.

After much discussion and deliberation the Industry Development Plan is near completion and hopefully will be launched in the next few months. In developing the IDP and an implementation plan it became apparent that a Peak Industry Body would have a number of tasks to perform. The question then was who will be the peak industry body. It seems likely that this role may be filled by the Sandalwood Association of Australia (SAA) which represents all those involved in the Sandalwood industry. Members apart from the ASN include FPC, Santanol, Wescorp, ITC, WA Sandalwood Plantations and Rewards. At their last meeting a list of research priorities was developed. The top few were:

- Sandalwood oil determination using Near Infrared Spectroscopy as a rapid, non-evasive method;
- Seed source and genetic improvement;
- Research into products for the *S. spicatum* nut;
- Commence mapping genetic evaluation;
- Tissue culture for large scale planting;
- Preservation of relict populations and assessment of their commercial potential;
- Core sample trees before seed collection or non-evasive methods;
- Best practice for seed collection (net or hand picking); and
- Storage of seeds and testing for viability of the seeds.

My aim for the next few months is to finish the inventory, assist with the ACC milestones of their project, organise seed pooling for this season, organise two field days for next year and develop the best practice fact sheets if we get the funding.



2008 Autumn Field Day - property of Bert and Norma Wansborough showing good initial establishment of Sandalwood on *Acacia saligna*. On this site, this short-lived host seems to have facilitated rapid growth.

The long term hosts need to be incorporated at the establishment phase as it is difficult to get hosts established later. *A saligna* may also need management such as pruning depending on the form to prevent over shading of Sandalwood and to maintain their vigour for a longer period.

FPC taxa trials

by Emer O'Gara, Forest Products Commission (9475 8890 or Emer.O'Gara@fpc.wa.gov.au)

The Forest Products Commission (FPC) is establishing taxa trials that will in time, provide good data to guide future tree farming activity in the Northern Agricultural and Avon catchments, where rainfall is typically lower and evaporation higher.

The taxa trials are being coordinated by Anji Chandler and carried out under the Strategic Tree Farming (STF) project, which is jointly funded by the State and Commonwealth Government's, through the National Action Plan for Salinity and Water Quality (NAP), with agreement from the four NRM region STF project partners (Northern Agricultural, Avon, South West and South Coast). They will be planted on seven sites, each of eight hectares, stretching from Watheroo through to Brookton. This winter, a range of selected varieties of eucalypt, bloodwood, sheoak and pine species will be planted, including *Eucalyptus cladocalyx* (sugar gum), *E. camaldulensis* (river red gum), *E. camaldulensis x globulus*, *E. camaldulensis x grandis*, *E. wandoo*, *E. loxophleba* (york gum), *E. salmonophloia* (salmon gum), *Corymbia calophylla* (marri), *C. maculata* (spotted gum), *C. variegata* (northern spotted gum), and *Casuarina obesa*. An improved drought tolerant variety of *Pinus pinaster*, along with some *P. eldarica* and *P. brutia* will also be included. In winter 2009, pending timely release through quarantine, additional families of *P. brutia* will be planted.

It may be at least 10 years before the trials yield reliable information to help inform decisions for future tree farming activities in these challenging environments.

If you would like more information about the taxa trials please contact Emer O'Gara.



Anji Chandler sorting the taxa seedlings at the FPC nursery.



Property of Peter Shenton at Brookton, 'Nuytsia Downs'



Producing Bio-diesel from Perennials

by Dr Henry Brockman, Department of Agriculture and Food WA, Albany
(9892 8444 or hbrockman@agric.wa.gov.au)

A scoping study identified two tree species tolerant to high salinity levels and frost, assessed as no weed threat via the Australian and West Australian Quarantine Services. These plant species are *Moringa oleifera* and *Pongamia pinnata* (mainly used for bio-diesel production).

The ideal climatic conditions for these plants are sub-tropical or dry temperate but they do grow in Mediterranean climates, with not much known about yields in this type of environment. None of these plants is grown on a commercial scale in WA. Hence, international data on yields was used for an economic analysis on it, which showed promising results in terms of profitability. *Moringa oleifera* (drumstick tree) yields 1,000 – 2,000 litre of bio-diesel/ha and *Pongamia pinnata* 2,000 - 4,000 litre bio-diesel/ha, compared to an average of 420 lt/ha for Canola. The pods are harvested from these trees meaning the trees keep on growing, sequestering carbon. Being trees, the plants do not need intensive management and attention.

Research trails were planted to establish production yields in different climate zones in WA. This includes the Gascoyne, SW Agricultural areas and dry tropics, with more trials to be established in the Pilbara and southern Rangelands. First results in the Gascoyne on *M.oleifera* are very promising with the best varieties yielding 26 ton/ha of green pods within a year (irrigated, equivalent of 350 litre of oil/ha/year). It is unfortunately too early for results on *P.pinnata* and for trials in the SW. Another year will most likely produce results.

Positive results in the SW will lead to real landscape changes and the possibility of Wheatbelt farmers producing a substantive quantity of diesel needed in Australia off marginal land.

Reducing the reliance on fossil fuel is becoming crucial as Australia and the world already reached peak production, with use not slowing down. The mining industry is furthermore the biggest user of diesel in WA, producing large quantities of greenhouse gas emissions (GHGE). Utilising perennials for bio-diesel production would go a long way towards the social responsibility of Industry to reduce GHGE and to use more sustainable practices in production.



Brushwood Information Field Day - 'the potential of Brushwood for conservation and production'

by Helen Job, Avon Brushwood Coordinator (0427 387 980 or brushwood@iinet.net.au)

The Field Day was held on Friday June 27th and attended by 45 people from a range of interest groups including: Brushwood growers, Avon Catchment Council, Natural Resource Management Officers and State Government agencies. Some representatives travelled from outside the Avon region to attend.

Presenters:

- **Dr Liz Kington** (Avon Catchment Council), spoke of the many programs the Avon Catchment Council has that work in the community for the benefit of landholders. The Avon Catchment Council works hard to inform landholders of the ways they can assist people. Water harvesting and subsidised seedlings were two programs that Liz featured.

- **Helen Job** (Avon Brushwood Coordinator) presented 'Why grow *Melaleuca uncinta*?'. She described how *Melaleuca* species grow well in places in the landscape where not too much else grows. She showed the results of the CSIRO study done in Keith, South Australia where the plants transpired 716 mm between September to March and the annual rainfall was 366mm. Helen presented Margaret Byrne's table for the lay person to follow and the results of nine trials by the Department of Environment and Conservation (DEC). The nine sites showed how the sites were prepared (spray rates, the methods used to plant and how they overcame problems) and survival rates.

- **Georgie Troup** (Moore Catchment Council Brushwood Coordinator) presented three case studies on whether it is necessary to fence off brushwood. The three cases were different but each case demonstrated that with careful management stock can graze in the stands for three weeks at a time. When the brush is in its full growth time in summer it has to be shorter time intervals. Georgie did make the point not to put stock into a stand that has been cut. The stock will find the new growth good to eat.

- **Shane Davey** (Davey Brushwood Fencing) represented his fencing company and spoke on how the market is getting larger. He is in the process of sourcing more contractors to cope with the increasing demand. Shane made the point that once the factory is in WA his price per panel will go down and he has an expectation that sales will increase.

- **Dr Frank McKinnell** (consultant engaged to compile the Wheatbelt Brushwood Industry Development Plan) presented progress with the development plan.

In the afternoon there were visits to 3 sites to see the effect of cutting on several *Melaleuca* species of varying ages and to assess their re-growth for potential commercial production:

- Site planted 2007 cut in May 2008
- Site planted in 2002, cut at various times throughout 2007
- Site planted to various species in 2004 (mixed *Melaleuca* with Sandalwood hosts). *Melaleucas* cut during 2006

The field visit was enjoyed by all. We were lucky to have Wayne O'Sullivan with us. He was involved in the work of identifying the eleven varieties of brush. He spoke at each site and members of the audience left better informed.

Many thanks to all presenters, sponsors of the Field Day (Avon Catchment Council and AVONGRO) and to all participants for their attendance and contributions to discussions.



Eucalypts make carbon sink

The Forest Products Commission is working in partnership with organisations seeking to reduce their greenhouse footprint, to plant trees as carbon sinks. These plantings absorb carbon dioxide from the atmosphere and store the carbon in the plant's roots, stem and branches. Existing rules require these plantings to remain unharvested for a long period of time to qualify as a carbon sink.

Depending on the site, the FPC can plant multi-stemmed mallees or single-stemmed tree-form eucalypts, in either block or alley formats, giving the landowner flexibility to select the best possible option for their land and farming operation. The FPC would prefer to integrate plantings into existing agricultural land to provide other benefits to the landowner such as shelter for stock and protection from land and water degradation.

The main species currently being planted are blue mallee (*Eucalyptus polybractea*), York gum (*E loxophleba susp lissophloia*), river red gum (*E camaldulensis*) and sugar gum (*E cladocalyx*). Other species may be available from time to time.

Cash payments and a share in the abatement proceeds generated by the plantings are available for farmers in exchange for access to land for tree establishment. Individual payments are determined by the scale of the planting and the productivity of the site.

Generally these plantings will require minimal maintenance and care once they are established. Rather than harvesting the trees the FPC will measure the carbon absorbed at regular intervals using research and knowledge gained over the last 20 years. The FPC will work with the landowner to manage the plantings over the life of the project. The FPC can also work with the landowner to organise harvesting of the trees if rules allow.

For more information please call 1800 241 688.

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Photos courtesy of Forest Products Commission, David McFall, Helen Job, Richard Moore, Amir Abadi, Dr Henry Brockman, Dr Geoff Woodall and Monica Durcan

