

Oil Mallee plantings as a strategic tool in enhancing NRM Assets

“Prevention of erosion requires an understanding of the environment and the adoption of land use practices in harmony with the environment”

R.W. Condon 'Soil Conservation in Dryland Australia' 1972



Oil Mallee Belt planting. Toolibin WA

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The Australian continent's unique ecosystem has historically been shaped by a long history of human inter-relationships. In Pre-European settlement times the indigenous peoples used fire as one means of habitat management, principally in order to sustain nomadic hunting practices though by default altering the breeding and regeneration patterns of the local fauna and flora. Upon European settlement came the axe, plough and in more modern times the bulldozer which cut great swaths across the land baring the fragile landscape of its perennial safety net to the eroding elements of wind and water. The European clearing and grazing practice was seen as a necessary consequence of nationhood building as timber, food and fibre production needs took precedence over any thoughtful ecosystem management.

Little did people understand, or care too much about the natural environment and the crucial

role that revegetation plays in keeping the fragile landscape in place. The continent seemed ever abundant in natural resources. Even as the hallmarks of accelerated degradation in the form of wind, water erosion and salinisation became evident the march to 'tame' the land in order to meet socio-economic outcomes continued in vain. The drive to 'build' a nation was relentless and though partly achieved with great pride and endeavour it has left a conflicting legacy and a challenging restitution task for many generations to come.

Adopting land use practices that are well aligned with restoring rather than depleting the natural landscape remains a central policy and investment platform within many natural resource management strategies. This position is clearly evident in the Avon Catchment Council's NRM investment into woody perennials which supports large integrated tree planting programs

such as the Oil Mallee Project. Simply stated the Oil Mallee plantings provide an attractive and strategic investment dividend at many levels. Not only are the integrated Oil Mallee plantings capable of delivering credible long term NRM outcomes across a range of landscapes in situ but they also develop robust and fundamental changes in land use practices at a farm systems level. This practice quite logically 'mimics' the primary functions of the original ecosystems that pre date the great clearing era thus bringing about the level of understanding and land use harmony necessary to prevent erosion that C.W.Condon alluded too way back in 1972.

Undoubtedly the capacity to undertake the restoration task at a meaningful scale and timeframe realistic to the task will rely heavily on market-driven forces. It is a historical feature that socio-economic drivers created the problem therefore, logically then socio-economic solutions will greatly remedy it. As modern society adapts to external and internal forces such as Climate Change and energy demand the potential coupling of low emission and carbon compliant industries with environmental programs such as tree growing for bio-energy feedstock can provide the desired market based stimulus necessary to drive a rapid expansion in plantings. Even at a modest level of endeavour the positive consequence of enterprise driven tree planting's can provide many complimentary fiscal and environmental service spin-offs for the natural ecosystem and the community alike.

The Oil Mallee Project in WA is a world leader in developing a dryland tree cropping solution that has the unique feature of providing the socio-economic and environmental outcomes necessary to redress the natural resource management challenges of the nation.

The project has selected the hardy endemic mallee tree to integrate across farmland due to its drought tolerance, low stock palatability and potential biomass production.



How do Oil Mallees help NRM outcomes?

Wind and water are 'fluid' elements of the Nations biosphere and have long shaped the natural landscape. However wind and water

have the capacity to become very destructive given the aligned elements of a tempest climate, fragile soil and lack of vegetation cover. The stronger the velocity of the wind and water the more accelerated and destructive the erosion. This could have devastating consequences in maintaining ecosystem integrity and function. As an example strong winds in the Albany region of WA in May 1995 created a dust storm that 'blew' an estimated 2 million tonnes of topsoil and organic particles into the Southern Ocean. The estimated value of soil nitrogen loss alone was 5,000 tonnes at a replacement cost of \$4.2 million. In today's values the cost will be very much higher.



Other negative NRM impacts of a severe 'blow' can be seen across a range of NRM asset areas such as air (pollution), water (contamination, nutrification), biodiversity (smothering, sandblasting) and land (soil stripping).

Strategic planting of Oil Mallees can reduce wind and water velocity thus providing a dampening and infiltration effect of reducing airborne and surface loss of soil and organic and nutrient particles. The more trees the greater the control. As an example strategic use of Oil Mallee tree belts to provide control of wind blown seeds into natural revegetation areas has been implemented by the Department of Environment and Conservation (DEC) in the Lake Bryde Recovery Catchment region of the Avon Catchment Council. Outside Lake Bryde many WA Landholders have adopted many 'integrated' alley plantings of Oil Mallees to provide NRM outcomes such as wind erosion control to protect soil, livestock and infrastructure assets. Many design configurations are available and are tailored to a landholders needs.



Dust storm at KULIN WA, March 2007. Integrated Oil Mallee trees checking the wind and sheltering sheep (foreground)

Salinity is one dramatic example of a hydrological imbalance in our landscape and is a major threat to maintaining the integrity and function of our natural assets. Brought on by excessive clearing and annual climatic 'wet and dry' seasons the interrupted hydrology often accumulate and deposit sub surface salts on the surface with devastating impact on the natural environment.

Planting Oil Mallees is one strategy to reduce the 'recharge' and therefore 'discharge' of excessive water and accumulated salts in lower landscapes. Plantings in excess of 10% are considered to have a positive impact on local hydrology with many Landholders observing a water table drop and recovery of paddock conditions and productivity. The WA Salinity Action Plan acknowledges that large scale and sustained plantings at a regional scale (over 2 million hectares) will be required to dramatically prevent the threat of salt encroachment rendering a third of WA land area 'salt effected'. This reality will equate to an estimated 6 million hectares

of former arable land potentially salt affected 'if nothing is done'. Impacts of this scale will not only severely alter the natural ecosystem but will equally impose greater cost and production constraints on all aspects of society's food, water and fibre needs.

Lesser known but equally beneficial NRM outcomes from planting Oil Mallees are the creation of biodiversity habitat. Birds, bugs and beetles colonise many Oil Mallee plantings and the elongated alleys and block plantings provide a link to natural stands of remnant bush for many fauna like Phascogale and Pygmy possums. Oil Mallee plantings also protect the soil biota from hot drying and eroding winds thus supporting the critical soil biophysical processes of nutrient, carbon and energy cycling so critical for sustaining life, production and eco-system function. Somewhat overlooked the silent world of the soil biota is one of our most endearing NRM biodiversity assets and is the foundations of many ecosystems and life on the planet.

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