ECONOMIC ASPECTS OF BIODIVERSITY

OIL MALLEE: LARGE SCALE ECONOMIC REVEGETATION WITH NATIVE PLANTS

OIL MALLEE is the first of a new generation of perennial 'woody plant' crops being developed for the wheatbelt in the south west of WA.

Woody plant crops are an essential part of the change required to achieve sustainable agriculture. The State Salinity Plan indicates the need for some 3 million ha of revegetation over the next 30 years. It makes clear that governments cannot finance this scale and rate of planting, and that the necessary degree of integration of revegetation with agriculture will require active management and universal participation by farmers. The Plan concludes that commercial incentives must be harnessed to increase farmer motivation to adopt revegetation as an integral part of agricultural practice and farm business.

From the broad perspective of sustainable agriculture commercially motivated revegetation can be seen as complementary to biodiversity conservation. The objectives of biodiversity conservation are unlikely to be met without woody plant crops or, more simply, biodiversity conservation needs woody plant crops! Furthermore, there is potential to improve the compatibility of biodiversity and woody plant crops. Since there are few options currently available (especially for the wheatbelt), development of new woody plant crop species and practices can be designed specifically to accommodate biodiversity objectives. For example, a focus on native species for commercial tree crop development would reduce the risk of woody weed introduction.

The oil mallee development embraces these multiple purpose objectives. All but one of the six currently used species are native to the wheatbelt (see Box). They have proved to be robust and adaptable and are tolerant of sheep grazing. The range of species has been selected to give good coverage of wheatbelt soils and climate. The diversity of species and genera used could easily be expanded. All are selected for high leaf oil content. The mallee habit is well suited to a short production cycle of 1 to 2 years between harvests and to large scale mechanized operations.

Oil mallee (centre and foreground) planted on drainage banks on Peter and Wendy Bessell-Browne's property, Woodanilling. .

The oil has traditional uses, especially in non-prescription pharmaceuticals, but this market is small. Allan Barton from Murdoch University has shown that the natural solvent properties of eucalyptus oil could be developed for industrial use. Industrial solvent markets are large and currently in transition due to recent withdrawal of a major product called trichloroethane, the production of which was discontinued under international convention to control ozone

OIL MALLEE PLANTING STATISTICS

Planting year	Seedlings planted	Number of growers	km of hedge (seedlings/1333)
94	1.10 million	80	825
95	2.05 million	170	1540
96	2.80 million	250	2630
97	1.05 million	100	750
Total	7.00 million	Approx 300	5745

Note: a hedge has two rows 2 m apart and a within row planting interval of 1.5 m

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depletion. There is a strong preference in these markets for 'natural' replacement products. However, large-scale penetration of these markets would require prices about half those prevailing in traditional eucalyptus oil markets. This appears quite achievable given the potential for economies of scale and technical advances in genetics and processing technologies.

CALM initiated development of a eucalyptus oil industry in 1992. Extensive planting commenced in 1994 with the aim of building an initial resource upon which development of an industry might be based. Planting was initially confined to six districts i.e. Canna, Kalannie, Narembeen, Wickepin, Woodanilling and Esperance, to foster local support and reduce the large overhead costs that would be involved in widely dispersed operations. The following table indicates the scale of planting and number of growers.

The Oil Mallee Association was formed in 1995 to represent the interests of growers in the development of the industry. The Association is an incorporated body and has a regional structure built around the initial planting districts. It publishes a quarterly newsletter. Most growers have elected to become members of the Association. Membership is open to all interested parties not just prospective growers.

Total expenditure to date is estimated to have been $4 million by farmers, $3 million by CALM and $1 million from other State and Commonwealth Government programs. The reduction in number of seedlings planted in 1997 arose from the cessation of CALM finance for seedling costs and the assumption of control of the project by the Association. This necessitated change to the seedling ordering system and a much earlier seedling order deadline. Slower than expected progress on developing harvest and extraction operations also made growers more cautious.

A professional business plan was prepared during 1997 by an independent consultant. This was done concurrently with a project developing harvest and extraction systems sponsored by the Regional Enterprise Scheme. These studies indicated that it is commercially feasible to build an industry based on oil mallee but it would take longer than early optimistic schedules had indicated.

Some of the key strategies to achieve commercial success are:

- double the resource base in order to reduce overheads to a level where it will be viable to sell into existing markets.
- take maximum advantage of the existing pharmaceutical market. This market is too small for the long term objective of building a large scale industry but it will provide good prices for initial low volume production and the opportunity to learn 'on the job' to drive future expansion and new market development. An alliance has been formed with a major player in the pharmaceutical market.
- increase planting density and area: detailed analysis of harvest and transport costs show that the early approach of confining planting within a district horizon (to minimize road transport distance) was not as important as building local concentrations of planting (to minimize harvester walking distance and downtime). As a result of this analysis the Association has abandoned its focus on the six original planting districts – it will now seek good concentrations of planting anywhere in the wheatbelt.
- develop efficient bulk handling systems. Oil mallee leaf is a low value raw material that must be grown in widely dispersed patterns to meet the landcare objective. The total size of the resource base and efficient materials handling systems will be critical factors for success. Considerable design work and prototype testing has now been completed and a best-bet development plan has emerged.
- form the Oil Mallee Company to lead development of harvest, processing and marketing. Maintain majority grower shareholding and appoint professional management.

While there is optimism amongst the oil mallee developers it is not yet in the bag as a commercial success. In the meantime oil mallee is an excellent general farm tree, it is friendly to biodiversity and offers promise for future commercial return. It is now generally available. The native oil mallee species are acceptable for inclusion in Bushcare projects. Oil mallee warrants a place in any revegetation project.

If you are interested contact Oil Mallee Association administrator Ric Collins on 08 9478 0330.

OIL MALLEE SPECIES:

All the species being used are mallee eucalypts. With the exception of the NSW/Vic species blue mallee (*E. polybractea*) they are all native to the wheatbelt of WA. A brief description of them follows:

E. kochii ssp *kochii*, *E. kochii* ssp *plenissima* and *E. horistes*:
all from the oleosa group of eucalypts that occur in the northern wheatbelt and prefer well-drained light to medium soils.

E. loxophleba ssp *lissophloia*:
the smoothed bark york gum, occurs in the central wheatbelt as far east as Kalgoorlie. Prefers heavy soils and can tolerate some waterlogging and salinity.

E. angustissima:
from the inland south coast area from Ravensthorpe to Esperance. Is waterlogging and salinity tolerant.

E. polybractea:
the blue mallee from NSW/Vic. Appears quite adaptable to WA soils and has demonstrated reasonable salinity tolerance.