For efficient alley farming, the mallee eucalypts must be positioned to take up water, yet not hamper other farm enterprises such as cropping or grazing. They must also be easy to harvest. To achieve this, they are planted in double rows to form a hedge, often along contour banks where water collects.

From WA comes the 'good oil' on trees

Planting trees is central to repairing land degradation caused by overclearing for agriculture. Without sufficient deep-rooted vegetation, some rainfall leaks down into the groundwater system, causing water tables to rise, and bringing salt to the surface. With skilful design, trees planted to control groundwater and prevent salinity can also achieve erosion control and nature conservation.

Establishing trees, however, is a costly exercise. While the long-term gains are many, tree planting, unlike cropping or wool production, doesn't yield a regular income. As a result, many farmers are struggling to plant enough trees to make a difference.

But what if farmers could have their trees and profit from them too?

Researchers in Western Australia believe they have found a way to make this possible. Their solution involves planting trees not just as a repair-mechanism, but as a crop in their own right.

Bluegum (*E. globulus*) for pulpwood production, first developed by farmers in WA's higher rainfall (above 600 mm) agricultural areas, has now become a tree crop enterprise. But the real challenge is to extend tree crop options into the much larger and drier areas of the wheatbelt.

A wide range of potential species and products has been evaluated for this purpose. The crop judged to have the best chances of success is the ubiquitous mallee eucalypt, and the product for which they forsee great potential is eucalyptus oil.

John Bartle, manager of the Vegetation and Tree Planting Advisory Service at WA's Conservation and Land Management Department (CALM), says trees and other woody-plant crops are an obvious option for 'radical diversification' on farms. He says 10% of WA's 15 million hectares of agricultural land needs to be revegetated just to 'stabilise' the agricultural systems.

'Diminishing areas and access to native forests around the world has highlighted the opportunity to grow timber on farmland,' Bartle says. 'In contrast to agricultural commodities, timber prices have been firm in the past two decades. Likewise, a wide range of industrial products could be produced from farmland if the investment was made in developing the species, products and markets.'

Researchers from CALM, the WA Department of Agriculture (DAWA) and Perth's Murdoch University are learning all they can about oil-producing mallee species. These include the blue mallee from NSW and Victoria (*E. polybractea*) and the WA sub-species of the *E. oleosa* group of mallees. Their aim is to select and breed superior oil-producing mallee species and understand how to best manage them on-farm.

Some 30 species trials have been established across the WA wheatbelt to test variation in oil yield with species, soil type and climate. DAWA, supported by the Rural Industries Research and Development Corp, has built a small mobile still to test oil yields on experimental areas.

Six centres representing the full range of soils and climates across the wheatbelt have been selected for commercial-scale planting. The aim is to develop and demonstrate planting techniques, explore tree distribution options such as alley farming and to develop an initial leaf oil resource for market development. About 1.2 million seedlings (1000 ha) were planted in winter 1994 and the aim is to plant three million in 1995. This work is supported by the National Landcare and Farm Forestry programs.

Eucalypt oil is traditionally used as a pharmaceutical, but shows potential as a natural substitute for industrial degreasers and solvents such as trichloroethane.

About 750 000 tonnes of trichloroethane is used world-wide every year, but the product is being withdrawn from use internationally during the mid 1990s under regulations to control ozone depletion. According to Bartle, some 10 million hectares of eucalypts would be needed to produce enough oil for this market.

Alongside the breeding and selection work, the technical and commercial feasibility of an oil industry in WA is being investigated. Economic analysis shows that the cost of oil extraction will be the key factor of industry viability. Improving extraction technology, as well as improving the yield and oil content of mallee eucalypts, are therefore major research priorities.

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