RESEARCH

USING OUR NATIVE TREES AND SHRUBS TO SUPPLY NEW INDUSTRIES

Don Cooper

The SEARCH project aims to identify a range of large-scale profitable woody perennial crops and associated products, suited to the different climatic regions and soil types in the WA Wheatbelt. The Department's Farm Forestry Unit is coordinating the project, with funding from the NHT.

SEARCH consists of three components:

- systematic selection of species and products;
- demonstration plantings of likely prospects; and
- large scale planting of early candidates.

SEARCH has examined the WA flora to select species with promising attributes for large scale planting on farmland. Simultaneously, potential products were examined to identify those best suited to the type of material that could be produced on wheatbelt farms. The products chosen were panel boards, pulp and paper, and energy. SEARCH is now testing the wood attributes of the most promising species to determine which are suitable for these products.

Why were the products chosen?

Wheatbelt growers may be able to produce large volumes of small timber at a very low cost of production. Products that are best suited to this type of raw material are panel boards and pulp and paper. These industries have very large markets with strong growth, both domestically and internationally. The wood they use makes up a significant share of their total production cost, which gives low-cost wood producers a competitive advantage.

Energy is an ideal third product group to look at, because it can be produced from any plant material. Residues from other manufacturing processes can provide a cheap, convenient and reliable supply of raw material, leading to multi-product industries. For example a panel board plant may use the leaf, bark and lower quality wood to generate electricity to supply its own needs and feed any surplus into the grid. Waste process heat may also be used for other purposes, for example water desalination. Because electricity and water are transmitted long distances to most wheatbelt towns, the cost of supply can be higher than the price paid by wheatbelt consumers. A cheaper option may be to generate electricity and desalinate water locally.

How are the species being matched with the products?

Matching WA species to products has been a multi-stage process:

1. Coarse screening: Approximately 250 species native to the WA Wheatbelt were selected for investigation, based on their height, growth form and distribution. Wood samples were collected from each of these species by extracting a core from their trunks. The wood cores were tested for density and colour, two important criteria for panel board and paper production. For species with other potentially commercial attributes, samples of other plant parts were collected. For example, 3g leaf for leaf oil analysis, 200g leaf for fodder analysis, and 10g bark for tannin extraction.
2. Intermediate screening: From the species tested in stage 1, approximately 100 were selected for more intense screening, based on their favourable density and wood colour.
3. Laboratory testing: Based on wood density and colour, and an assessment of their growth potential, approximately 50 species were selected for more intensive laboratory investigations. Ten kg of wood was collected from each of these species, for measurement of fibre characteristics, pH, buffering capacity and extractives content.
4. Sample products: The most realistic test for each new species is to make sample products and test their quality. All of the 10kg wood samples will be tested for pulping and paper manufacture. Panel board manufacture is more complex and expensive, and requires a minimum of 150 kg of dry wood. At the time of writing, wood from seven species has been collected for panel board testing; results, we hope, by April 2003.

Which species were chosen?

As SEARCH has progressed, the range of species suitable has steadily diminished. However, the results have been pleasingly diverse. Twenty-five genera are represented in the lab testing phase, and thus far seven species have been selected for sample panel board testing. They include the fast-growing disturbance opportunists.

What is the expected end point of this project?

The manufacture of the test products will represent the end of the "SEARCH" phase of the project, but the results should lead to planting of trial plots of the most promising species and further R&D by the Department and the Cooperative Research Centre for Plant Based Management of Salinity.

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More melaleucas (eucs etc) anybody?

Many people took advantage of the opportunity to plant trial areas of melaleucas last season - well, more species are available this year. There is quite a large range of melaleucas, eucalypts, sheoaks, etc, all at 5.5c each. You prepare and manage the site. For more information contact Dan Huxtable: 9334 0186.