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The Role of Eucalypt Plantations in WA and selection criteria

R. Mazanec - CALM Department, WA

In WA Eucalypt plantation forestry is important in two areas 1) Regeneration of southern Karri forests after logging and 2) Rehabilitation of bauxite mines in the northern Jarrah forest.

Karri. Karri (Eucalyptus diverisicolor) is an important timber species accounting for about 30% of WAs total hardwood sawlog production. Currently some 2000 ha of Karri forest is clearfalled annually. About 75% of cleared areas are replanted with seedling Karri and 25 % regenerated using seed trees (Breidahl pers. comm.). To date, relatively little progress has been made with breeding despite the establishment of provenance trials and seed orchards within the main Karri range. The major problem has been seed production. Heavy seed years occur only about one a decade in virgin forest (Breidahl 1983). Owing to its general scarcity, seed for regeneration is currently collected from logging coupes with little regard to the form of tree collected from.

Since 1984, 120 ha comprising 15 ha of seed orchard and 105 ha of seed production areas have been established on sites outside the main Karri range. Climatic conditions of hot dry summers and wet winters in these areas favour early seed production. The estimated seed yield of 1 kg/ha.a will be adequate to meet the current demand of 120 kg/yr for planting.

Emphasis has been on establishment of seed production areas owing to the lower cost of establishment. Families selected for seed orchards and seed production areas, are derived from parent trees selected subjectively for good form, vigour and freedom from defect. Future priorities in Karri breeding will be aimed at the production of high quality trees for sawlog and pulp.

Rehabilitation in the Northern Jarrah Forest. At present some 350 ha of forest is cleared annually for bauxite mining. Mining operations are presently located in the high rainfall (>1100 mm) western Jarrah forest on the Darling scarp, and may in the future extend into the lower rainfall central and eastern Jarrah.

Two key problems associated with mining in the Jarrah forest include 1) The presence of the root pathogen Phytophthora cinnamomi which is easily spread by operations such as logging and mining, 2) large concentrations of salt stored in the soil profile of the central and eastern Jarrah forest.

In the western Jarrah, the objective of rehabilitation is to create a multiple use forest compatible with the remnant Jarrah forest. It should be suitable for water production, commercial timber production and recreation. In salt prone areas, clearing the rapidly transpiring Jarrah forest results in a rising water table leaching stored salt into streams. (CALM Dept. Bulletin 169, 1984). Here the primary objective will be to rehabilitate mined areas with forest cover providing high transpiration rates, to minimize discharge of salt into water catchments.

Criteria for selection of rehabilitation species include 1) Apparent adaptation to drought prone, infertile and saline environments, 2) Tolerance to P. cinnamomi and 3) Timber production potential. Analysis of 5 arboreta containing 97 species for transpiration, durability and timber value, targeted 12 eastern states Eucalypts for further testing in family/provenance trials (Davey and Bartle 1986).

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