

A REVIEW OF KARRI SILVICULTURE RESEARCH

by Cameron Schuster

The work of the Manjimup Research Station in silviculture is basically of an applied nature, in that the main objective of the research is to determine new techniques, and modifications that will assist the operations staff in their duties. There have been many researchers in the field which dates back to the mid 1930's, with perhaps the major researchers being Messrs Hart, Loneragan, White, Christensen and Kimber.

PAST RESEARCH

To date the research into karri silviculture has been centred mainly on determining the basic techniques that are required for the successful regeneration of karri after cutting, and it has been through this research that the current seed tree and planting practices have largely evolved. These techniques determined by work in the 1960's and before, are still used in principle for karri regeneration practices, however because the area being cut has increased to such an extent, it is becoming increasingly difficult to regenerate all areas using these methods.

Some of the more detailed past research includes projects on karri spacings at planting, and three very large trials on regeneration success in various forest mixtures using differing regimes of seed trees for regeneration. These plots will continue to yield important information into the future, on the likely progression of the regeneration stands we are now creating.

Some of the most valuable of the past research work has centred on the karri floral cycle, and on provenance collection and the establishment of seed production areas. The determination of the karri floral cycle has been particularly important in the programming of seed collection and cutting cycles, although its influence in this last facet is declining. The initial provenance research, began in 1972, has yielded three potential seed production areas of known heritage, and is a vital part of the future programme.

In summary the past research has been aimed at determining the basic techniques of karri forest management, with particular attention to problems of an applied nature, and in this context a basis for proper management decisions has been made possible.

CURRENT RESEARCH

There are several initiatives being actively pursued at present, again with the overbearing objective being to increase the efficiency and success of the karri regeneration programme.

One that has occupied a great deal of time in the last couple of years is the question of artificial seeding of clay pelleted seed. This technique is very much quicker than planting in the field, and although it has been very successful, the major inhibiting factor at present has been the use of seed, and the collection cost of that seed. In late autumn this year some trials testing both lower seed broadcasting rates, and the technique of spot sowing into favourable sites were established, and if successful these should perfect the technique to the stage where it may become operational.

A natural precursor to any artificial regeneration is the availability of a high quality seed resource, and to date this has been achieved by seed collection from cutting areas in mature forest. However, this is very expensive, and as the demand for artificial regeneration grows, seed collection in these stands will possibly be unable to sustain the demand with the present conditions of labour availability. In an attempt to improve this situation a new project, involving the previously established progeny test areas has been initiated with the aim of providing juvenile age seed production areas of high quality parent trees. In addition to this several closely spaced planting areas have been set aside this year for possible future conversion to seed production areas.

In association with these seed production areas, provenance trials will be initiated to determine which provenances actually display superior growth in different regions so that progeny from these families may be included in future seed production areas.

Many other projects have been initiated in the last few months, and one of the more important of these is an investigation of the role of prescribed burning in the karri floral cycle. This could be of some importance in the planning of any future seed collection or regeneration requirements that may be made on an area. Another project which may grow in importance as the stands created from the current regeneration programme reach the age of first thinning, is a large fertilizer trial to determine firstly the fertilizer response curve for these stands, and secondly the most efficient improvement that may be possible in stand growth after fertilizing.

In the main, the other projects being undertaken by this section revolve around small trials aimed at increasing operational efficiency in the short term, and these largely result from direct requests for information from field staff (an example of this is a current trial examining karri fertilizing regimes at planting).

SUMMARY

This brief resume of the karri silvicultural research merely highlights that our main objective, as before, is increasing the efficiency of karri regeneration programmes, because in essence this would appear to be the yardstick (or metrestick) by which the Department's operations in the southern forests can be measured. A great deal of success has been achieved to date by research staff in this field, and at present the opportunities for increasing our knowledge of karri forest management seem to be increasing day by day.