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SILVICULTURAL SYSTEMS IN JARRAH AND KARRI FORESTS
SYNOPSIS.

Definition:

A silvicultural system can be broadly defined as the process by which forest crops are tended, removed and replaced by new crops (Troup).

Choice of System

Choice of system depends on the objects of management, on forest composition and condition, and on the silvicultural requirements of species, all within the limits imposed by markets, costs of conversion, and other economic factors.

Jarrah and Karri Forests

Western Australian forests are managed primarily for the production of sawlogs with the aim of achieving a regular periodic yield which approaches the maximum the site can produce.

The sustained yield concept is basic to consideration of yield regulation in W.A. and sound fire protection is an obvious first essential for sound forest practice.

Repeated fires and unregulated cutting in the early days of sawmilling depleted the forest and left much of it in poor condition. However regrowth established in openings created by logging has produced useful patches of sapling, pole and pile growth. The need to preserve this growing stock excludes the use of a clear cutting system except perhaps in some pure stands of overmature karri. Excessive reduction in the canopy of the jarrah forest has resulted in trees of shorter bole and undesirable forking habit and has undoubtedly been a contributing factor in the modification of environment leading to the incidence of die back in northern jarrah forests.

Silvicultural characterstics of jarrah and karri are listed in appendices.

Selection System

Considerations outlined above have led to the adoption in a regulated form of the 'selection' system. The flexible control suggested by the variable

nature of our forests is assured by a form of tree marking which enables effective treatment of each forest type and condition for best silvicultural advantage. Jacobs has termed this approach the 'Australian Group Selection System'.

A rotation of 120 years is envisaged for Karri and 180 years for Jarrah. Currently both species are worked on a 30 year cycle; however, advantage would accrue from a shorter cycle allowing more frequent treatment, to encourage the elite trees in each size class to develop without undue restriction.

It is recognised that felling of veterans in second gtowth forest will cause some damage, but observations suggest that this will be within acceptable limits.

Current Practice

The following is the sequence of operations:

(a) Protection of cutting section (advance burn in jarrah, peripheral burn in karri), provision of access.
(b) Prescription for treemarking and regeneration.
(c) Treemarking.
(d) Trade cutting, including cull felling.
(e) Top disposal.
(f) Regeneration burning.
(g) Assessment.
(h) Regeneration appraisal.
(i) Compartment subdivision and record.
(j) Fire protection.

The general aim in treemarking is to -

(a) Remove static volume.
(b) Preserve dynamic volume - vigorous trees of all sizes.
(c) Avoid damage to growing stock (by specifying direction of fall.)
(d) Create openings adequately served with seed trees for generation of the new crop.
(e) Remove cull trees (standard practice in karri forest, but not in jarrah).

Vigorous trees reserved in the top canopy are not only the most productive component of the crop, but are also the best seed resource for the new forest.

Increasing emphasis is being placed throughout the world on the use of genetically superior stock. It does not make sense to rely on inferior crop trees for the provenance of the forests of the future.

It need hardly be stressed that the prime objective of the forester is to achieve for the future an improved forest estate.

The treemarker's brand then, is an important silvicultural tool which plays a major part in determining the composition and quality of the forests of tomorrow.

The paper deals also, in brief, with cutting cycle, rotation, regeneration and cull felling.