

# Summary of Main Plantation Development Operations For Blackwood Valley

This information refers to lands purchased on the open market by the Forests Department mainly in the Nannup and Kirup Forest Divisions, where all Blackwood Valley plantings have been undertaken to date.

**Planning.** Although all areas are soil surveyed before purchase, more detailed surveys are usually required to define accurately the areas suitable for radiata pine. Considerable planning involving field study and reconnaissance is then necessary for the design and layout of compartments, roads, firebreaks; for the extraction and utilisation of any useful native timber, and to define limits of clearing.

**Clearing.** This varies widely in amount necessary from the complete clearing of timbered country to the removal of patches of shade trees on pasture. Between these extremes are regrowth stands of suckers, saplings or poles, ringbarked and part cleared ground, and areas overrun with bracken and coppice. Bulldozers are used for the heavier work, while hand tools and the chain saw may handle the few scattered trees or the occasional areas too steep for bulldozer work.

Fire is an essential tool, and two burns may be involved. Felled debris may be required to lie for two summers to provide a good clearing burn which must be carefully planned and executed.

**Roading.** Essential in the first place for general access, and fire control during the life of the plantation. Because of the steep and sometimes rocky nature of this locality, roading has been the most costly single item in the works of preparation. However, at a later stage it is essential for extraction of forest produce.

**Scrub, weed, coppice control.** There is much less on the pastured lands than on the areas newly cleared of eucalypt forest. On part cleared land that was ringbarked and allowed to regrow eucalypt coppice, costly work may be necessary to eliminate or check the eucalypts, which could provide severe competition to pine growth. Bracken areas may also retard pine growth initially, but a practicable control method at reasonable cost is unknown.

**Cultivation.** Ploughing prior to planting is very beneficial in reducing weed growth and giving the pines a good start with soil tilth improved, and correct planting made easier. However, because of erosion risks, this practice has been discontinued on steep slopes.

**Nursery work.** Two nurseries at Nannup, totalling 15 acres, produce seedlings for the Blackwood area and some other centres. In 1969/70 they produced 2,120,000 seedlings (1,400,000 *pinus radiata*, 660,000 *p. pinaster* and 60,000 other species) of which 1,345,000 were planted in the Blackwood Valley. Some 350 lb. of seed from Portugal, New Zealand and South Australia were required for this crop.

**Planting** Steep slopes of the valley make planting more difficult and costly than in the more level coastal plantations. Planting machines which are so effective on coastal sands have to be replaced by hand planters operating on a piece-work basis. Unsuitable weather conditions limit planting to some six to eight weeks in mid-winter.

**Protection from vermin.** Rabbit infestation was severe on many less-developed, purchased properties, and damage was high in patches during early years of planting. Vigorous control measures have been taken in conjunction with the Agricultural Protection Board, but small populations still exist. Pines are susceptible to rabbit damage during their first year in the field, but thereafter

are almost free from attack. However, as plantations carry grass for a few years until canopy is formed, poisoning continues annually as part of the normal district control programme.

**Road maintenance.** An annual requirement with attention to grading, drainage and patch gravelling to retain roads in good condition for rapid fire control access.

**Protection from fire.** Probably the most important activity (after planting) during the first 20 years of tree growth.

Firebreak maintenance is an annual requirement. Firebreaks constitute about 5 per cent of the gross plantation area in the valley. The important external breaks are located as far as possible on the non-radiata soils fringing the plantation. They are normally one chain wide and trafficable to some form of vehicle, and constitute one of the most costly "maintenance" items.

**Fire detection** that is rapid, positive and efficient is a first essential, and is achieved from the jarrah forest lookout towers plus two located to cover the Blackwood Valley.

**Immediate communication** is achieved by both field telephone lines and radio from towers to offices and mobile units.

**Fire prevention** is aided by prescribed protective burning of wide buffer areas of eucalypt forest where it adjoins the plantation. In older stands, burning under the pine canopy may be undertaken in the winter months under rigidly prescribed conditions as a fuel reduction measure.

**Training** of all staff in fire control methods is regularly carried out and the *detention* of some staff on weekend duty is required throughout the summer except when a cool change with rain permits brief relaxation from the constant vigilance.

**Fire suppression** has not yet been required within Blackwood Valley plantations. However, men and equipment have been moved to suppress outbreaks in adjoining areas before they develop into a serious threat.

**Control of eucalypt coppice** is necessary in patches. Some follow-up work may be required to prevent coppice from retarding pine growth.

**Silvicultural treatment.** Pine plantations require a considerable amount of tending in early years to ensure the production of high quality timber as economically and as quickly as possible. Production of large, straight logs with a high proportion of clear wood is the aim. To achieve this, the stands are thinned early and pruned to a height of 20 ft. as soon as possible.

It is estimated that 50 per cent of the production from these plantations will be in large size, high value saw and peeler logs. The balance of production will be of lower grade (due to small size and presence of knots) suitable for chipping or pulping.

The ages at which the various silvicultural treatments are carried out vary somewhat according to the growth rates achieved.

Generally, the first pruning (to 7 ft.) initial selection of the better final crop trees and first unproductive thinning is done at five years of age. It is necessary to plant some 700 trees to the acre in order to select 80 to 100 superior trees for the final crop. Severe competition and stagnation result if all are allowed to remain. Better quality seed from the Forest Department tree breeding programme will, within a few years, permit much wider initial spacing and eliminate the need for early cleaning.

At about eight years the trees are again pruned (to 15 ft.) and the final crop trees selected. This pruning is timed according to tree diameter to produce high-value knot-free timber.

At 10 years, final pruning to 20 ft. is carried out on the 80 final crop trees, the selection of which is very important. A year later the plantation is thinned to leave only these 80 or so trees, and this thinning gives some 1,500 cubic feet of timber an acre, which will go some way towards defraying costs to date.

At 30 years the final crop is harvested, producing an estimated 7,500 cubic feet of timber an acre.