

FARM - FORESTRY

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Pine plantations in Western Australia have until recently been managed for maximum volume production rather than maximum financial return. This has meant close spacings with frequent light thinnings resulting in large volumes of small-diameter material. For economical and silvicultural reasons, this practice has been replaced by a system aimed at producing high quality, large-diameter logs grown over a short rotation. This involves fewer but heavier thinnings, enabling pasture to be grown in conjunction with our exotic forests for a large part of the rotation.

Farm-Forestry as it Benefits the Forester

1. The extra phosphate fertilisers required for pasture maintenance will also benefit the trees.
2. The development of leguminous pasture improves soil fertility and provides a slow-release form of nitrogen to the trees.
3. Access, scrub control and fire protection are greatly improved.
4. Diversification of land use results in earlier financial returns from grazing fees.

Benefits to the Farmer

1. Diversification of land use.
2. Improved hydrological relations within the soil. A possibility of reduced salt movement (this is especially so in catchment areas).
3. Improved land values.

Farm-Forestry Research in New Zealand

Investigations into the farm-forestry concept have been in progress in New Zealand for a number of years. As a result, there is some information available regarding pasture

composition as it effects sheep's attraction to young pines. Initial results indicate that clover-dominant pastures are preferable when the pines are very young. Investigations to find the optimum initial spacing to ensure satisfactory tree form are also being undertaken and specific consideration, such as mowing between rows for hay production and the relative merits of different sheep breeds and age groups, are being studied. Cattle are considered unsuitable for introduction to plantation areas until the pines are aged three years or more (4m in height).

Farm-Forestry Research in Western Australia

For several years in the early 1960's, sheep were run in young plantations at Nannup as a fuel reduction measure but the practice seems to have gradually died out.

The first research trial was initiated in October 1972, with the aim of testing the effect of sheep grazing as an alternative scrub and grass control method. Two sites were chosen, one previously cleared from forest at Collie and the other on old pasture land at Kirup. Both areas had been planted to pines, which at Kirup were one year old and at Collie were two years old.

From the results at Collie, it seems that the cross-bred strains of sheep are better adapted to scrub conditions than merinos. Mature full-mouthed animals are certainly more suitable than their younger counterparts. Damage to the pines only became apparent when other available feed had been totally browsed; the two-toothed sheep of both strains damaged the pines from the start.

It did appear that when the full-mouthed merinos had reduced their plot to a comparable level, pine damage was more severe. It was also evident that scrub types were less palatable when flowering.

The stocking rate was equivalent to 49 sheep per hectare for 28 days. On a relative basis therefore, it can be assumed that scrub-land can support between two and four sheep per hectare for a period of one year, without significant damage to the pines. There is evidence to suggest that seasons will effect the suitability of grazing amongst pines.

The Kirup replicate was a failure for two reasons. Firstly, the sheep caused immediate and considerable damage to the pines, with the result that they had to be withdrawn. Secondly, the grass was not reduced to an acceptable level. The commencement of this trial was left too late in the season, the grass having reached maturity prior to the sheep's introduction.

As this experiment was specifically aimed at competition control, the Kirup replicate was considered a failure. The rankness and composition of the pasture influenced the result. Further work dealing with these and other aspects is programmed.

Current Investigations

Two trials using cattle are currently in progress in older pine plantations at Ludlow. One is situated in six-year-old pines and the other in four-year-old pines. The P.68 area received its first silvicultural treatment under the "Prescription '74" regime, prior to the introduction of cattle. The area had been under lease before conversion to plantation and annual grasses and clover were present but the pasture was of poor quality. A broadcast application of superphosphate was applied at a rate of 400/kg/ha in July 1974, followed by a urea treatment at 200 kg/ha in August, to promote pasture growth.

The four-year-old area under investigation received identical treatment, with the exception of low pruning. The trees were judged to be too small and will be pruned in 1975. Further attempts at pasture improvement will be undertaken in the autumn of 1975. Between-row cultivation and re-seeding is envisaged, prior to the 1975 growing season. This area will be used as a demonstration and to compare with open pasture the level of grass production under pines of different ages.

Cattle were introduced into each area separately and removed only when the grass had been totally grazed. By introducing cattle to plantations directly after initial pruning and thinning (under the current regime, litter almost entirely covers the ground), the processes of decomposition may be hastened, allowing relatively quick regeneration of pasture. Mechanical means of crushing the litter will also be investigated. To date, there has been no evidence of the cattle damaging the pines in either of the two areas.

Three hectares of recently-cleared land in the sunklands has also been planted to pasture. This will be planted with pines in 1976 and sheep introduced in that year. It is on these soil types that the benefits of farm-forestry will probably become most noticeable. The inherently poor nutritional status of these soils is almost certainly going to mean the multiple application of fertilisers during the pine rotation. By diversifying land use, the economic impact of this necessity will be greatly reduced. Assuming that grazing rights within plantation areas will be granted to pastoralists for reasonably extended periods (with the onus on the leasee for fertilisation and fencing), the economics of producing timber on poor soils becomes more attractive.