AERIAL SEEDING OF KARRI

by Cameron Schuster

At present there are three proven techniques for ensuring the regeneration of cut over karri forest. These include the seed tree method of natural regeneration; the hand planting of nursery raised open rooted seedlings; and the broadcast seeding of clay pelleted karri seed at an application rate of 45 000 seeds per hectare.

One technique which, before 1979, had received little attention is the application of seed from the air. However, the technique is used extensively in Victoria and Tasmania to regenerate cut over areas of mountain ash, alpine ash and other species in the montane regions of those states.

In early May 1979, the Forests Department carried out a demonstration trial of aerial seeding in Weld 4 coupe, south of the old Shannon townsite. The object of the trial was to determine the possible operational advantages, in terms of cost and time, of the technique; while at the same time examining the establishment stocking of karri regeneration on the coupe.

The coupe chosen, Weld 4, was 40 hectares in area, and rectangular in shape, which seemed ideal for laying out flight lines. As no light aeroplanes exist in W.A. specifically for forestry aviation, the plane chosen for the seeding was a Piper Pawnee agricultural aircraft, with a front mounted hopper. The aeroplane could spread to a swate width of 18 metres, from approximately 50 metres above the ground. The flight lines were 18 metres apart, and were marked on the ground by red weather balloons, floating some 20 metres above the ground.

The aircraft's spreading mechanism could only spread material accurately as low as 20kg/ha. This posed a problem as the rate of seeding we were to use (45 000 seeds per hectare as for normal broadcast seeding) only involved 0.5kg/ha of pelleted seed, which required bulking (with Potato Manure E) to 6kg/ha for hand broadcast seeding. However, as the area involved was so small (40 ha) we decided to bulk the pelleted seed to 20 kg/ha rather than spend a great deal of time altering the mechanism to suit. For larger areas it would be economic to alter the spreader mechanism to allow a lower rate of application.

The operation itself went very smoothly with an average spreading time of less than one minute per hectare, and a cost of $3 per hectare for the aeroplane. Both of these figures would be reduced considerably in a large scale operation, particularly plane costs per unit area, which could be halved.

Recently (October, 1979) a regeneration assessment was completed on the coupe, with the following results:

Stocked $4m^2$ (1 milacre) plots (30% acceptable minimum)	41%
Stocked $16m^2$ (4 milacre) plots (60% acceptable minimum)	62%
Number of seedlings per ha (1500 acceptable minimum)	2430

By all measures the stocking produced is acceptable and compares favourably with areas regenerated by hand broadcast seeding.

Aerial seeding of karri seems to be worthy of further operational size trials to perfect our techniques. The two greatest advantages of the technique obvious at present, are the low cost per unit area, and the speed with which areas can be regenerated (40 ha takes 35 minutes by aeroplane; approximately 30 man days for hand planting; and approximately 10 man days by hand broadcast seeding).

At present the major disadvantages are the seeding of roads within coupes, and landings (these can be missed with hand planting or broadcast seeding) which waste seed; and the relative shortage of karri seed. Large supplies of karri seed would be needed if this technique (or indeed hand broadcast seeding) were to be attempted on a large scale. Current initiatives, including the establishment of a karri seed orchard network, may alleviate this shortage in the future.