

FORESTS DEPARTMENT.ARTIFICIAL REGENERATION OF BROWN MALLET (EUCALYPTUS ASTRINGENS)BY A. J. MILESI.General.

A number of years of experimentation and commercial regeneration of Brown Mallet by the Forests Department in the Narrogin District has proved conclusively that the regeneration of this species is very easy and cheap.

Although it is found that Mallet can be established on a large number of soil types, the farmer is primarily interested in its establishment on areas considered unsuitable for cropping or grass growing. The ideal type is the rough Mallet break-away and the adjacent slopes. However, its satisfactory establishment is also possible on the gravelly slopes carrying tall Powder Bark or Wandoo. Where the Wandoo or Powder Bark is stunted, results are seldom satisfactory. York Gum, Jam and Sheak country is not generally suitable for Mallet regeneration. There are considerable areas of suitable Mallet land, privately held along the Great Southern Railway.

Regeneration by burning under seed trees is not recommended, as the method is not always certain, owing to the destruction of seed by the fire, and the resulting crop is confined to patches of excessively dense stands separated by more or less unstocked areas. The method outlined below, that of "Spot sowing" seeds, is very cheap and should result in up to 95% germination and survival.

Collection of Seed.

The trees from which seed is to be collected should be carefully selected, large, well-formed, well-grown, mature trees ensuring seed which will give the best results in plantation.

All branches carrying mature seed vessels (gum nuts) are lopped and spread out on a tent fly or other suitable sheet, which is staked out on the ground in such a way that the corners are elevated 18" to 2 ft. above ground level, forming a large shallow basin in which the seeds and chaff collect. Coarse hessian is useless, since the seeds are very small, and would be lost. A 12' x 14' sheet made from super. bags would be ideal if tent flies are not available.

If a large amount of seed is required, several such sheets should be used to save time.

The branches are thrown loosely on the sheets to provide for free circulation of air, and a pole may be rigged up, say 3 ft. above the sheet, on which other branches may be leaned.

Two or three days of bright sunlight opens the seed vessels and the seed and chaff falls out on to the sheet. The branches are now thrown off, after being well shaken to remove all the seed, and the residue left on the sheet is sieved to remove twigs, leaves and seed vessels that may become broken off; the seed and chaff remains. It is practically impossible to remove the chaff from the seed, nor is it necessary.

The handiest sieve for this job is made by cutting a petrol tin in halves lengthways, and replacing the bottom of the container thus formed with zinc gauze. The perforations of this material are most suited for the work, and are preferable to punching holes in the tin, as the latter method results in uneven perforations which are either too large or too small. Fly wire is not suitable, as the material in the sieve clogs between the cross wire strands. If zinc gauze is not available, small holes 1/12th to 1/10th inch in diameter punched in the bottom of the tin will serve.

Seed can be collected during the months from November until March.

Regeneration.

It must be realised that to obtain the best results Mallet seed must be sown on ash beds. The ash left after the burn plays a very important part in securing rapid development in early years.

The correct method of procedure is :-

- (1) The area to be regenerated is "chopped down", no grubbing or ploughing is necessary. It is also advisable to slash all tall scrub, say everything over 3 ft. This ensures a good even ash bed over the whole of the area.
- (2) After a summer on the felled area, it is burned up at the opening of the burning season with as fierce a fire as possible. It may be as well, at this juncture, to sound a note of warning with regard to the burning operations. Every precaution should be taken to prevent the escape of the burning-off fire. The area to be burned will be in a highly inflammable condition, with all the trees down, and all the very tall scrub slashed and dry, and the resulting fire is liable to be dangerously fierce, and will escape if adequate breaks are not provided.
- (3) The sowing is started immediately after the burned area has cooled down, and must be completed not later than the end of May, or the first week in June.
- (4) Method of Sowing.

At intervals of approximately 5 ft. in lines 4 ft. apart, "spots" are cultivated with a light garden hoe with a shortened handle. The "spot" is a circular cultivated area, approximately 1 ft. in diameter, and 4 ins. deep. The soil is merely loosened and stirred up, not excavated and refilled, as this would tend to place all the ash at the bottom of a hole filled on top with raw soil, which is a condition to be avoided.

The earth is firmed down with the foot, leaving a saucer-shaped depression to retain moisture; the saucer should not be too deep or the seeds will be smothered with wash from the burned area; an inch deep at the centre is ample.

A small pinch of seeds (3-4 seeds) is scattered over the spot, not deposited in one heap, and a light dusting of earth is kicked over the seeds.

The absolute necessity of sowing on an ash bed must be realised by any one attempting to regenerate Brown Mallet; even if it means deviating somewhat from the regular spacing;

patches of ash must be followed up in the sowing. No spot should be prepared in the centre of a heap of ashes, but seeds may be sown on the edge of the heap left by burned logs, but it must be thoroughly understood that, if there has not been a good complete burn resulting in a good ash bed over the area, the germination and subsequent growth of seedlings will not be satisfactory.

(5) Quantity of Seed.

For a spacing of 5' x 4' from three quarters to one pound of seed is required per acre, and a tent fly well filled with good seed-laden branches may yield up to 4 pounds of seed, but this, of course, will vary with the amount of seed vessels on the branches.

(6) Future Treatment.

After sowing, no further attention is necessary until the plantation is 3 years old; when it will need sucker-bashing to liberate the young Mallets from the competition of the suckers. At the same time, the firebreaks around the plantation will need attention to ensure that no fire gets in while the bashed suckers are in an inflammable condition.

After this first sucker-bashing, which must not be delayed beyond $3\frac{1}{2}$ years nor carried out before the plantation is three years old, further treatment will vary with each individual plantation, and must be decided upon after inspection of the condition of the stand.

A final note of warning: Just as the absolute necessity of a good burn in the felled area has been stressed, so also must be stressed the absolute necessity of keeping fire out of the established plantation. Brown Mallet is exceptionally fire sensitive, and the radiant heat of a big fire up to two chains away is liable to kill, or seriously damage even fairly old trees. Good breaks must be provided around the plantation, and these must be kept in order until the stand is in such a condition that it is no longer in danger from fire, and that will not be until it is nearly ready to strip.

Advice on any particular problem arising is always available from officers of the Department in the District.
