INFORMATION SHEET 36

REPRINTED FEBRUARY 1981

GROWING EUCALYPTS FROM SEED

R. J. EDMISTON

Raising eucalypts from seed can be a rewarding and economic method of producing a quantity of trees for shade, shelter or conservation. The following guidelines should remove any problems that may be encountered, from seed collection to successful germination.

Harvesting the fruit

The seed of eucalypts is contained within a capsule. frequently referred to as the fruit. On the top of the capsule, two to seven fine lines mark the position of the valves, which open to release the seed when the fruit is ripe. In the fruit's early stages, a cap called the operculum is shed to display the inflorescence. The flower withers and the fruit increases in size. As it approaches ripeness, the fruit will develop a reddish-brown or grey colouring and the valves turn brown. Most eucalypts carry a series of crops and the older more mature fruits with the valves unopened should be chosen. In the north-west some species carry only one crop and shed the seed and fruit capsules when ripe. Seed collection on these species is difficult. Fruit should only be collected from healthy trees possessing the desired characteristics.

Extraction

Once the fruit is harvested, the seed can be extracted by exposing the fruit to heat. It can be put in bags and laid in the sun or placed in the oven at 60°C. When the valves are fully open, the seed can be extracted by shaking the fruit.

Chaff and seed

The seeds of eucalypts vary greatly in size, ranging from 0·5 mm to 16 mm long and from 0·5 mm to 7 mm broad. In any single capsule, only a few seeds are fertile. The rest are unfertilised ovules known as chaff. It is difficult to distinguish the difference between the two in most varieties of eucalypts, and allowances must be made for this when sowing.

Soil mixture

The soil used in seed germination should be of a light texture and can be a dark, surface sand or a sandy loam. If the local soil is heavy, it should be broken down by mixing it with equal parts of sand and compost. Strong

Section of Hamel forest nursery.

manures should not be used, but a handful of a mixture of 50/50 Blood and Bone and Potato Manure E per barrow load of soil is beneficial.

The medium used for covering the seed must be open in texture, and not inclined to compact. It can be sand, metal dust, vermiculite, peat moss, rotted sawdust, finely sieved compost or a mixture of any of these components.

Both the soil and the covering medium should be sterilised before use.

Sterilisation

Soil sterilisation is necessary to destroy weed seed and any harmful pathogen that may be present.

In commercial practice, soil sterilisation is carried out using steam or methyl-bromide gas, but in small programmes these methods are not practicable.

Heating the soil to 82°C on a metal tray over a fire is effective. The main problem with this form of treatment is to obtain an even temperature throughout the medium when treating a reasonably large quantity of soil. Excessive heat can destroy the organic matter in the soil.

The most expedient method for the home-gardener is sterilisation with formalin. This product is readily obtainable, and can be used for treating soil in containers or on open areas. The recommended strength is one part of commercial formalin to twenty-four parts of water. The solution is watered on the soil at the rate of 1·2 litres/m^2 (2 pints/square foot). The soil should then be watered heavily and covered with a tarpaulin, plastic sheeting or bags for forty-eight hours. When dry enough, the soil is worked with implements previously soaked in the solution, to assist in the escape of formaldehyde gas. Plants and seeds may be grown in treated soil when no smell of formalin can be detected—usually in ten to fourteen days.

Other proprietary soil fumigants are available on the market. They are easy to apply and should be used according to instructions.

Care should be taken to ensure that re-contamination does not occur by the use of dirty tools, containers, or by bringing the medium into contact with untreated soil.

Containers

The container used for growing the tree is not important, but good drainage must be provided. The choice will depend on availability and convenience, and can consist either of separate pots for each plant or boxes in which all the seed is sown together. In the latter case, plants are pricked out into pots at a later stage.

Direct sowing in individual pots is recommended because the tree does not receive a check in its growth, as it does when transplated from a seed box. An ideal size is the 10 cm (4 inch) square pot used in most nurseries, but small tins or terracotta pots can also be used. Peat pots are also available, and have the advantage that, when planting out, the pot does not have to be removed.

It is preferable that one type of container be used for a sowing, otherwise different drying-out patterns can cause problems in watering, and subsequent germination failure.

If the sowing is to be carried out in trays, a box 8-10 cm in depth is ample.

Drainage holes should be made in tins and wooden trays. If the latter have spaces between the bottom boards, holes are not necessary. Broken clay pots, blue metal, gravel or cinders can all be used for drainage. If bottom watering is practised, the crocking material should have fines among the bulk to prevent the soil coming out.

The sterilised soil is placed in the container and firmed to within 14 mm of the rim.

Sowing time

The ideal temperature for the germination of eucalypt seed is 20-25°C, which is experienced during the autumn or spring.

The main disadvantage with autumn sowing is that heavy rains may wash the seed-covering away, and the danger from frosts and slow rates of growth during the cold winter months can be detrimental to the plants. However, in some localities autumn sowing can be an advantage.

Spring is the generally-accepted sowing time. After germination, the warm weather hastens growth and the plant will be an ideal size for setting out the following winter.

Sowing the seed

The two most important factors in successful seed germination are sowing depth and moisture.

Too great a depth of soil will impair germination. Too heavy a watering (or lack of water) can be fatal.

When sowing into individual pots, a small pinch of seed (allowing for chaff) is placed in the centre of the pot and firmed lightly with the finger so that the top of the seed is level with the soil surface. The seed is then covered. When the germinants are 2-5 cm high, they are thinned out leaving the strongest plant in each container. In trays, the seed is broadcast and firmed with a flat piece of wood or other suitable object. The covering is then sprinkled over the seed to the desired depth. The recognised rule for depth of covering is twice the diameter of the seed at its narrowest section. This means that the covering thickness could range from 1-14 mm. Where light mediums such as vermiculite or peat moss are used, a thicker covering can be applied.

Moisture requirements

The moisture requirements of germinating seeds are high, and drying out in the surface area where the seed is sown can, at any stage during its early life, result in failure. Likewise, watering with a heavy spray can remove the surface covering, exposing the seed to drying. To prevent this, bottom watering or covering the tray or containers with hessian is practised.

Bottom watering. The pots are placed in a flat container which is filled with water to half the depth of the soil in the seed container. Capillary action will carry the water to the surface, after which the pots should be removed or the water drained from the container.

Hessian is soaked in water, allowed to drain, then placed carefully over the seed containers. If the containers have been correctly filled, the damp hessian should lie on the surface. Weights or wire pegs should be used to prevent the hessian blowing off. Light watering is then applied to the surface of the hessian. Daily inspections must be made, and as soon as germination commences the hessian should be removed and very light frequent waterings applied.

A frame with a plastic covering can also be used to retain moisture in the surface, but it should be lifted every day or two to allow aeration.

The seed containers should be kept in partial shade until the plants are about 5 cm tall.

If planted in trays, pricking out into pots should be carried out when the plants have passed the cotyledon stage and are between 2·5 and 5 cm high.

Liquid fertiliser can be applied at fortnightly intervals once the plant has passed the cotyledon stage and the second leaves have formed.

Seed of most West Australian eucalypts can be purchased from the Forests Department Seed Store at Como. A price list is available on application.