



Hand direct seeding

Kathryn Purnell (Frankston)

This note explains the techniques involved in hand direct seeding native plants with a rake hoe.

Hand direct seeding is quick, easy, and cheap. One person can sow up to 600 plants in a day. The only equipment needed is a rake hoe, which you can borrow from your local CFA or NRE depot, or purchase from a hardware store.

It is an ideal method for revegetating sites that are small, steep, rocky, or inaccessible to machinery.

Guidelines for success

Because plants germinating under field conditions are extremely vulnerable in their early stages of growth, successful direct seeding requires good planning and site preparation, and effective weed control and maintenance.

If possible, begin planning at least a year in advance, to allow adequate time for seed collection and weed control:

- Choose a site which minimises the adverse effects of frost, waterlogging, flooding, and cracking clay soils.
- Remove all weed competition. Pay particular attention to perennial weeds as they are difficult to control.
- Where possible, use locally collected seed from indigenous species appropriate to your site and your needs. Ensure seed is viable by germinating samples.
- Sow when conditions are right (see below).
- Protect seedlings from damage by stock, vermin, and other pests.

Seed requirements

Before sowing, the seed of some species (e.g. wattles) needs to be treated to overcome dormancy. Seek further advice from experienced propagators (e.g. indigenous nurseries).

To sow, you will need a small pinch of seed per planting "spot". To plant a hectare to trees and shrubs at 3-metre spacings (~1,000 "spots"), you will need ~300 grams of seed. A mixture of species is best. If appropriate, include acacias, (allo) casuarinas, eucalypts, melaleucas, etc.

Weed control

Effective weed control is critical for successful direct seeding. Poor weed control is the main reason why direct seeding fails. This is because weeds can prevent seedling establishment by competing for light, soil nutrients and, most importantly, moisture.

Thorough weed control well before sowing creates a soil moisture "bank". By tapping into this bank, seedlings can germinate and become established even if rainfall is low. In a wet year, good weed control is still necessary to prevent shading and smothering of young seedlings.

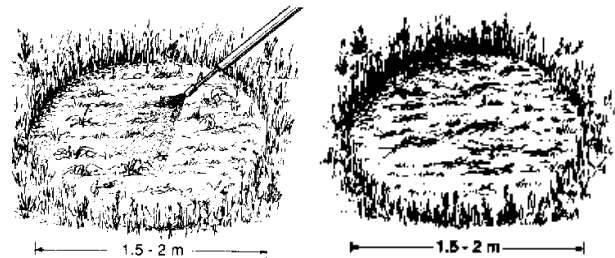


Figure 1: Preparation by (a) spraying or by (b) physical weed removal & spraying

Herbicide use and timing

Although good weed control can be achieved through other means, herbicides provide the easiest and often best method of control, especially for larger areas. (If you do not wish to use herbicides, weed control can be achieved by more labour intensive means such as mulching or scalping to the required width of 1.5 - 2 metres.)

Seek sound advice on the right chemical and application rates for your soil type and weeds present. With hand direct seeding, you only need to spray out spots where you intend to plant. Sprayed spots should be 1.5 - 2 metres wide.

For effective weed control, spray with a knockdown herbicide prior to the sowing season. The sprayed vegetation will die and allow the soil to retain and store moisture. Spray again just before sowing. Note that winter dormant perennial weeds may have to be controlled the previous year.

For the second spray, using a residual herbicide mixed with the knockdown is often recommended. This should maintain weed control throughout the coming season,

improving seedling survival. Residual herbicides work best when applied to bare soil, so remove excess vegetation before spraying by grazing, slashing, or burning.

Be careful with residual herbicides. If the herbicide makes contact with the seeds, they will not germinate. Hence, choose a residual to suit the soil type and to minimise any leaching into the seed bed after sowing.

If you have used only a knockdown herbicide, weed regrowth can be severe, particularly on highly fertile soils subject to irrigation or frequent rain after sowing. In this situation, maintaining effective weed control will require persistent work, spraying weeds while trying to avoid damage to seedlings.

When to sow

The actual time of sowing depends on local conditions. However, successful seed germination and growth is best when adequate soil moisture coincides with warm temperatures.

In south and eastern Victoria, a spring sowing is generally preferred, whilst autumn sowing is preferable in the north west. However, seek local advice. Areas subject to waterlogging should be sown in spring.

Preparing the seed bed and sowing

Use the rake hoe to remove the top layer of soil (~15 - 30 mm deep) from a 30 x 30 cm "scalp" in the centre of the weed control area. This removes any weed seeds, plant residues, and if used, any residual herbicide-affected soil from the scalp. Avoid scalping deeper than necessary, as seeds prefer to germinate in topsoil. Also, ensure that the removed soil won't wash or blow back into the scalp.

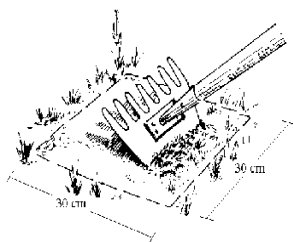


Figure 2: Scalp away top layer of soil

Using the rake part of the hoe, prepare the seed bed by loosening the soil in the scalp and breaking up any hard clods. Then sprinkle with a pinch of seed.

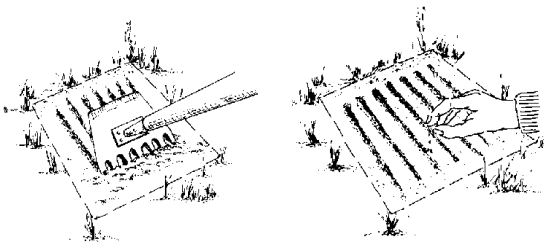


Figure 3: (a) Loosen soil to prepare seedbed and (b) sprinkle with a pinch of seed

It may be better to sow only one species per spot, to prevent different species competing with one another. However, a good mixture of species across the site may cope better with a range of site conditions.

Gently tamp down the soil surface to give good seed to soil contact. With larger seed, first rake lightly to bury the seed and then tamp. Ideally, the seed should be buried to a depth of once or twice its size.



Figure 4: (a) For fine seed tamp down the bed. (b) For large seeds rake lightly and then tamp

On some sites, a light mulch of coarse, clean sand, vermiculite, or similar material may improve germination.

On-going maintenance

Keep the 1.5 - 2 metre wide area around seedlings weed free until plants are well above maximum weed height, either by hand or using chemicals. Grass weeds can be controlled using a selective herbicide which won't harm young trees and shrubs. For broadleaf weeds, carefully apply a knockdown herbicide using a shielded or directed spray, or a ropewick applicator. However, seek reliable advice first.

Read the product label carefully before using any herbicide and follow all label instructions when using that herbicide

Check regularly for insect pests such as red-legged earth mites, snails, grasshoppers, etc. Control any infestations. Also, check that fences remain stock and vermin proof.

Further information

Contact your local office of NRE or your local Greening Australia Victoria Field Officer.

Further information on revegetation is available in other *Landcare Notes*, and appropriate texts such as:

Dalton, G. (1993). *Direct seeding of trees and shrubs*. Primary Industries (S.A.), Adelaide.

Acknowledgements

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