



What farmers say about direct seeding

A case study of Longwood Plains (area in a triangle between Seymour, Murchison and Violet Town)

What is direct seeding of native plants?

Direct seeding of native plants involves sowing seeds directly into the soil to achieve germination and establishment.

Through the experiences of others, this brochure looks at mechanical direct seeding as a method to establish native vegetation in the dryland of the Goulburn Broken catchment.

It sets out a variety of situations in which direct seeding has been, and is being used, including along creek lines; in connecting corridors across open country; in corridors adjacent to roadsides with native vegetation; and in patches of remnant bush.

It also explores some new approaches using a combination of hand planting eucalypts, and direct seeding the shrub and ground layers. Species that are hard to establish through direct seeding can also be hand planted (eg. Bulokes, Sweet Bursaria).

We hope that the experiences of farmers in the 'Longwood Plains' will help you to get the best possible results from your direct seeding projects.

"We chose direct seeding because of the magnitude of the task."

"You can hardly see the germinated plants. A 5 ml shower will keep them going."

"The direct seeded bush area generates seed, it provides habitat for bird and bees, and it looks stunning."

"We are happy to give up that amount of land for conservation and we are witnessing the production benefits too."

What should I know about direct seeding?

Direct seeding generally occurs late winter to early spring. Most species will germinate best when daily temperatures rise above 20 degrees Celsius, providing there is enough moisture in the soil. Seedlings can emerge from spring through to autumn. Following germination, rainfall during summer is required to keep the native plants alive.



Site preparation

Site preparation is critical where weeds are present.

Weeds are competition and they need to be sprayed prior to direct seeding so that seedlings have the best opportunity to germinate and grow to their full potential.

The use of residual herbicides should be avoided in site preparation if seeding is to follow in that season.

“We’ve learnt by experience that the most effective way to get good site preparation is to spray the site at least twice and preferably three times; once at the end of summer to spray out all the summer weeds, then ideally after more summer rains so maybe in March, and finally in the couple of weeks before direct drilling.”

“It’s really important to address the summer weeds.”

Phalaris

Phalaris is a large perennial pasture grass. It requires 12-18 months of control before seeding as it will destroy direct seeding if left untreated. If grasses are tall and rank, slash first and spray regrowth after two to four weeks. Their large crowns readily resprout so lots of follow up control will be needed. Check every six weeks after rain, including summer.



Plants struggle to germinate and survive in phalaris

“We didn’t kill the phalaris – we thought we did but we didn’t. Some plants were a metre high and then died. With the pasture group, we dug a metre and a half deep into the paddock and we couldn’t even find the ends of the phalaris roots.”

Soil compaction and ripping

Soil compaction will have a negative impact on germination so consider ripping to reduce compaction and increase water retention to assist with germination and survival of plants.



Soil compaction



Ripping for increased moisture retention

“We ripped all the lines to enable better moisture penetration. The direct seeding wasn’t necessarily in the rip line but it would have been within 20 to 30 cm of it and that improved the success rate phenomenally.”

“I ripped lines to break down the compaction. The compaction was around 1600 psi and it had set that hard pan at around 75-100 ml. So the ripping was to break that hard pan.”

Stock exclusion

Stock need to be excluded from direct seeded sites for the best outcomes. Extreme diligence must be used if stock crash-graze a site once vegetation is established. Seedlings may be present but not obvious to the landholder and it may be a prime time for germination.



“This corridor was planted 15 years ago and has probably had stock on it three times by accident as opposed to by design. It just goes so much better without stock.”

“We have never put stock in but on the odd occasion some have got in, normally they are out within one to two days once they’re noticed.”



Exclude stock for best results

Four different situations

Direct seeding in open paddocks

Corridors of 40 m plus have the greatest benefit for wildlife and have been used to connect native vegetation. Results have been excellent providing appropriate weed control has been undertaken and stock have been excluded especially during early years.



Slashing between rows to optimise growth

Direct seeding along creek lines

In most cases, direct seeding along creeks has been successful when appropriate weed control has occurred and stock have been excluded during establishment of native vegetation. It will be more difficult to establish vegetation in sandy soils where moisture may be limited during the drier months compared to clays.



Direct seeded waterway (Note: Seeds and seedlings may be washed away during floods so re-seeding may be required)



Combination of hand planting and direct seeding

“We know the direct seeded wattles and shrubs will establish over the years particularly when we get wet summers.”

“The slightly elevated creek which has sandy soil is less successful than the lower lying creek with a clay sand base and higher level of water moisture.”

“A lot of the direct seeded wattles are a lot higher than the hand planted eucalypts.”

“Be vigilant about blackberries particularly in waterway sites. Check sites every year and control blackberries while they are small. Any site can get blackberries.”

Direct seeding adjacent to roadsides

Direct seeding can be slow to establish next to roadsides with mature eucalypts. Eucalypts and large wattles will compete for moisture meaning that in drier years there may not be enough moisture available for germination of seed and survival of plants. Soils may be compacted and ripping will allow optimum moisture into the ground.

In several sites that were direct seeded a second time, native vegetation has successfully established.



Second direct seeding a success

“It’s scientifically proven that where you’ve got shelter, the sites will be a lot warmer than out in the open. It’s great for calving down and lambing down.”

“The hand planted eucalypts close to the fence line are already casting shadows into the paddock. Stock will do much better if they have shade.”

“Where there are old Grey and Yellow Box trees, the germination has been very minimal up until this year when we had eight inches (~200 ml) of rain in December (2017). It has germinated a lot of trees and shrubs this last summer.”



Expect variability next to roadsides

Direct seeding in patches of remnant vegetation

In these situations, it is best to direct seed the majority of the seed outside the drip line and preferably 40m away from mature eucalypts. This will allow maximum moisture for germination and plant growth. Results may vary, depending on seasonal conditions, soil compaction and nutrient levels from stock camps.



“The direct seeding on the stony hill (above) has been spectacular and half the remnant Grey Box that were so degraded have survived and regenerated into the site.”

“The direct seeded shrubs are now regenerating into the site which is very exciting.”



Natural regeneration from direct seeded plants and emergence of wildflowers

New approaches to direct seeding

Consider hand planting eucalyptus species and direct seeding the understorey. In this way, you will get an instant result with the hand planting and the eucalypts will be well spaced. Over time the direct seeded understorey species will emerge. Hand plant some eucalypts near fence lines for future shade for stock.

Next to roadsides with native vegetation, hand plant the eucalypts (especially the missing species such as Yellow Box) then direct seed the larger understorey species in several rows and then the smaller understorey closest to paddock. This will allow more moisture for pasture and crops.

“We got an instant result with hand planting the gums which was very satisfying and over time the direct seeded acacias have emerged and grown.”

“We hand planted the eucalypts to make sure we had something in there and since then quite a lot of shrubs have germinated and grown. Seasonal conditions will control the outcome of the direct seeding.”



Four years on

“Livestock use the shade from the conservation areas all the time. They move from one side of the paddock to the other – they chase the shade.”

“Our strip corridors protect the pastures from frost to a large extent and winds. We get weight gains with our steers all through winter.”

“The first two years had dry summers and the results were pretty bad. Then we had a really wet year and everything came up.”

Choose local indigenous seed and consider hand planting eucalypts and direct seeding understorey. Visit www.gbiseedbank.com.au for more information.

Control pest animals if adversely impacting on native vegetation; kangaroos (permit required), rabbits and hares. Grasshoppers, crickets and other invertebrate may affect direct seeding success rates.

Exclude livestock. If crash grazing is introduced once native vegetation has been established, be vigilant to ensure small plants are not removed or severely damaged. Best results are where stock is totally excluded.

Be patient (results may be disappointing during long dry summers) however seed remains viable for years.

“You’re not necessarily going to get good results in the first few years”

“Nine years later, the direct seeded wattles are still generating into the site.”