Establishment of Native grasses to compete with ALG

Ian Chivers, Native Seeds

In the two previous articles I have talked about the different characteristics of the grasses and in particular the Australian native grasses and how they might be used to prevent the encroachment of pastures by African Lovegrass. This article aims to give people simple instructions about how to get the grasses established and how to get the most out of every kilogram of seed.

Seedbed Preparation

It might seem obvious but I need to stress to everyone that just because the native grasses are able to grow on compacted soils and with little rainfall, that is not the way to sow them. They, like any grass, need to be sown into a condition in which they can establish successfully and develop deep and fibrous roots. Broadcasting the seed onto compacted soil and hoping for a result will not give you one but sadly this has happened in the past. They need to be sown into soil that is free of weeds, decompacted and with sufficient niches to allow for the seeds to be surrounded by a mix of fine soil particles, moisture and air.

This may not mean a full seedbed such as would be prepared for a lucerne sowing, although that would work well, but it involves as a minimum killing off weedy growth on the surface, creation of grooves or niches in the soil and burial of sown seed.

Taking each one of those in turn, killing off the vegetation can be through chemical means such as Glyphosate or through some organic chemicals such as Pine Oil or other essential oil compounds. At the moment we are trialling a new organic herbicide (not Pine Oil) that involves a range of different essential oils which operate in a different manner to herbicides such as Glyphosate and which are seemingly equally effective at killing off the foliage. This organic herbicide does not have the problems of residual chemical and off-target effects that are being reported with herbicides such as Glyphosate. Maybe I can talk about that more at some future time when we have more experience with this product.

Creation of grooves in the soil surface can be through rudimentary means such as dragging harrows or even a spiked roller over the surface. The grooves do not need to be continuous or deep, as long as they are creating a niche where the seed can fall. The niche need only be around 5 to 10 mm deep.

For some grasses the use of a deep litter layer can work very well to provide a sowing medium and indeed this can be applied directly over compacted soil. We have done this very successfully with grasses such as Weeping grass (*Microlaena stipoides*) as it is very able to punch through deep litter layers, even as a seedling, and emerge strongly. I did this once in an unplanned way where some seed was sown and then a load of sheep droppings were placed over it. Even in those places where 100 mm (4 inches) of droppings were dumped the weeping grass emerged!

This grass is well adapted to this circumstance. Maybe this method could be applied on rocky areas where cultivation is impossible. I know that we sell a lot of seed for sowing blended in with a fine compost onto bare areas such as roadsides and the results are very good.

Seedling establishment is aided by simple grooves or cracks within the soil (left) or under mulch (right)

Ignoring the step of seed sowing for the moment, let's go to seed burial. Once the seed is on the soil and has found its way into the niches, it needs to be covered by soil. The germination rate of seed on the surface is less than half that of seed that is slightly buried, so it is vitally important to cover the seed in some way. This allows the seed to remain moist which is really the key to good germination success, especially with the cool season grasses. To achieve this is less difficult than might be imagined. Simply dragging a sheet of mesh or some old heavy cloth will shift soil that is loose into the niches and cover a lot of seed. There is a less effective but cheaper option of bringing in a large number of stock to shift the soil, a favourite tactic use in New Zealand.

Seed Sowing

Many people get hung up on this and try to find elaborate precision methods of getting seed into the soil. My advice here is not to let this step be the make or break. With some of the native grasses the seed is very fluffy and chaffy. It will not sow evenly in that form and you are better off buying seed that has been pelletised. While you get fewer seeds per kilogram of seed and you are paying for the clay and colouring, it does help get the seed onto the soil in the area where it is desired. It is definitely worth the cost. I expect some of you will have tried some seed balls where big balls of clay the size of marbles are impregnated with seed (usually trees) and they can then be spun out or tossed out onto the soil. The concept is that with rainfall the clay will melt away and in effect create an instant seedbed for the accompanying seed. The same concept applies here for the grass seed, except the coated grass seed is much smaller than marble size.

Chaffy wallaby grass seed (left) is difficult to sow, but pelletised wallaby grass seed (right) is easy to sow

For small areas sowing seed from a bucket, like feeding the chooks, is quite legitimate and successful and it is surprising how much area can be covered in a short time.

Seed treatments are now available for the native grasses that allow even those with long awns to be sown through most spinner-type spreaders, so they are no longer impossible to sow evenly.

One step that I always encourage people to do is to establish some monitoring points. Usually putting two pegs in the ground about 1 metre apart and sowing heavily into a well-prepared groove between those pegs will provide a reliable and useful monitoring point. This helps both to show when the seedlings are emerging and what they look like. This makes the evaluation of the success or failure of the sowing to be more realistically undertaken.

Fertilizer for sowing

Applying fertilizer to a native grass sowing? I hear you ask. Yes I do recommend it and this is probably the only time in the life of the grass that this is really important. Usually the seedlings will go through a phase about 6 weeks after they emerge when they will benefit from an application of a nitrogen fertilizer to help grow a strong root system and more foliage. Applying moderate rates of N at 6 weeks of age will give substantial benefits to your sown native grasses.

I do not recommend sowing and applying fertilizer at the same time as this will usually benefit the weeds more than it will the native grasses.

What about Lime? No thankyou. These grasses are really well adapted to low pH soils and applying lime will only benefit the weeds.

Or gypsum? I am not opposed to gypsum applications when they are warranted on the basis of a reliable soil test. Just be wary of applying too much at any one time and remember the effect of gypsum is slow and cumulative, and to get good results you will need to apply it consistently.

What to watch out for

I have lost seedlings of native grasses to Red Legged Earthmites and Gnats so I am quickly warning you of them. You should keep an eye open for these pests. Less likely are problems such as Damping Off and Fusarium, but you might need to be watching for them.

I know that severe and repeated frosts can kill off seedlings of many native grasses in their early stages, so picking the time of year to sow is also important if you are subject to those.

Things that are coming soon

Technology is emerging around seed treatments prior to sowing that increase the stress tolerance of the seedlings and will help to prevent seedling deaths. This will be amazingly helpful in achieving good sowing results.

New seed treatments are also emerging that are taking difficult-to-germinate seeds and making them far simpler. A recent test of one of our weeping grass lines raised the germination rate at 7 days from 23% to 75%, so this is looking very helpful.

When these technologies are verified and scaled up we will be trying to tell everyone so keep your eyes peeled,

it might be only a year or so away.

All the best with your sowing of native grasses.

Dr. Ian Chivers