

OFFICIAL

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Sowing a Multi-species Pasture in HRZ



Multi-species pastures

A multispecies pasture is a diverse blend of plant species which improves soil health while providing fodder for livestock. A multispecies mix should contain at least one plant species from 4 main plant groups (legumes, grasses, tall and short forbs/broadleaves) for optimal benefit.

Multispecies pastures can be a relatively easy way for farmers to integrate many regenerative agriculture principles with one practice change, such as increasing plant diversity, improving groundcover, maintaining living roots in the ground and reducing the necessity for soil disturbance and synthetic inputs.

Multispecies Benefits

Multispecies mixes:

- Support soil biological activity during growth through root exudates- the plant/soil biology relationship helps to improve soil structure, increase moisture infiltration, nutrient cycling, soil carbon levels and plant resilience
- This relationship is called the 'Liquid Carbon Pathway' (Dr Christine Jones)
- Improve biodiversity
- Reduce pest and weed pressure
- Reduce input costs such as chemicals and synthetic fertilisers
- Provide more groundcover and grow for a longer period of the year than traditional species

Livestock Benefits

Annual multispecies pastures are particularly effective at reducing summer and early autumn feed gaps, when traditional perennial pasture species are dormant or slow growing.

Producing nutrient dense home-grown feed reduces feed gaps, grazing pressure and reliance on conserved fodder and bought in feed.

The mixes also often provide a more nutrient dense, balanced diet to livestock as they contain a higher proportion of legumes and broadleaves compared to conventional pastures. This improved quality and diversity leads to excellent production outcomes, fertility and overall stock health.

Fertiliser requirements can also be reduced by:

- Nitrogen fixation from legumes
- Nutrient cycling by broadleaved plants
- Summer and autumn feed increases can improve the winter feed wedge and reduce the need to fertilise perennial pastures to boost autumn and winter production

Multispecies pastures can be a very cost-effective method of sustainably producing home grown fodder while improving soil health.

Take home messages

Multispecies pastures are an effective way to adopt regenerative agriculture practices

Multispecies mixes should contain species from 4 main plant groups

Multispecies often benefit the environmental and economic performance of the farm



Preparation

Prepare the paddock properly

If the paddock is in a pasture phase or has a weed burden, existing plants will almost certainly be an issue. Direct drilling into established pastures is rarely successful, even if the paddock has been grazed or slashed beforehand.

Appropriate management of pasture competition at sowing is absolutely crucial to the success of the multispecies. The risk of a failed sowing through inadequate paddock preparation outweighs any short-term damage to soil biology and soil structure that may occur through the use of strategic cultivation or chemical use.

Some level of cultivation or chemical is usually necessary, at least for the first few sowings. The use of chemicals or cultivation is strategic- the aim is to reduce the level of intervention over time as paddock conditions improve.

If chemical use is preferred over cultivation, sources such as Nicole Masters and Nutri Tech Solutions suggest using citric acid and fulvic acid to reduce the chemical rate required by 30% and to reduce harmful effects of chemicals on soil biology.

If cultivation is preferred over chemical use, shallow cultivation should only have a short-term impact on soil biology. Care must be taken when cultivating light soil types to avoid unnecessary damage, medium and heavy soil types are less sensitive to cultivation.

Take home message

Existing pasture must be controlled before sowing. Some level of cultivation or chemical is usually required. Strategic chemical or cultivation methods should be reduced over time as conditions allow.



Sowing

As a general rule, most multispecies mixes should be sown 1-3 cm deep. Sowing too deeply can reduce germination or slow emergence.

Sow in autumn as early as possible (March onwards) in high rainfall zones in order to have the best chance of establishing and growing a feed wedge before cold, wet conditions slow growth. Creating an annual based feed wedge to graze can take the pressure off perennial pasture paddocks, which are slower growing. These perennial pastures can then be allowed to grow, and can be used for winter feed after the multispecies is grazed. This allows improved management of the winter feed wedge in high rainfall zone areas.

What to plant and when

When creating a multispecies blend, look at what species grow well on-farm or locally, as a guide. It is often better to start off with annual 5-12 species blends and build diversity gradually over several sowings.

Fast growing annual species are a lower cost, quicker establishing option than perennial

species. They will tolerate poorer growing conditions and their rapid establishment helps to smother weeds and resist insect attacks as seedlings. Annual species help to 'prime' the soil, and give the farm flexibility in controlling any issues in the paddock before moving to perennials when soil health and paddock function improve.

Autumn and early-mid spring mixes in southern Victoria usually contain: cereals, one or more annual legumes, annual ryegrass, linseed, one or more brassicas.

Late spring and summer sowing: Temperature sensitive species such as millet, sorghum, corn, sunflowers, buckwheat and tropical legumes can be sown when soil temp consistently reaches 14-18C (check exact temp for each species with an advisor). Vetch and summer active clovers usually work well in spring sowings or milder summer environments and may perform better than tropical legumes in cooler climates like southern Victoria.

A summer mix usually contains millet (sometimes sorghum) one or more legumes, one or more brassicas, and broadleaves such as buckwheat, chicory and sunflowers.



Take home messages

Sow early in March or April to capitalise on autumn growth

Use local knowledge to choose approx. 5-12 appropriate species from the 4 main plant groups

Use annual species at least once before moving to perennials

Grazing management

As mentioned previously, livestock farms are impacted by seasonal feed gaps. Multispecies pastures allow the farm to reduce feed gaps by using species diversity to grow more feed for longer periods of the year.

Grazing management would ideally focus on short duration, high intensity grazing.

There are 3 main components of short duration, high intensity grazing.

1. Stocking Rate (Density)

High stocking rates of livestock are contained in relatively small areas to achieve high stock density

2. Short Duration

Stock are moved regularly (ideally 3 days or less) to fresh areas while there is still 100% ground cover and several inches of plant residue remaining.

3. Rotation Length (rest time)

Each small area should then be rested for a minimum of 30, but ideally 60 to approximately 100 days in high rainfall zones, depending on location, rainfall and pasture recovery.

Why?

This type of management benefits the livestock, the pasture and the soil.



Livestock

Livestock eat larger amounts of a consistent diet because they are contained in small areas. They cannot selectively graze, and so eat a more balanced mix of fibrous and high-quality plants. This means their plane of nutrition is fairly consistent and they will maintain condition for a longer period of time.

From an input perspective, stock will be frequently moved and not returned for lengthy intervals, so their need for drenching should be less.

Soil

Stock are confined in small areas, so their waste is concentrated more uniformly across the paddock, improving soil fertility.

Biomass before and after grazing is usually higher in this system, so stock have a 'cushion' of fodder which reduces pugging and overgrazing damage

Short grazings and long rests reduces detrimental effects on root systems and allows strong root development, which helps soil structure, carbon levels, moisture and nutrient cycling and biological activity

Plants

Short duration high intensity grazing maintains the diversity of a multispecies mix. The plants are healthier because the mix is diverse, and they are not stressed from overgrazing which assists regrowth and reduces weed, pest and disease incidence.

Plant production, regrowth and persistence improves and home-grown fodder generally becomes cheaper

Take home message

Grazing management should focus on short duration, high intensity grazing practices first popularised by Allan Savory.

FaQs

How many species should I sow?

5-12 species from the grass, legume, tall and short broadleaf groups is appropriate at first. Diversity can be added over time.

Who supplies seed?

Most seed suppliers will provide multispecies mixes. Two well-known suppliers are AGF Seeds and Down Under Covers.

Should my seed be bare?

Yes- ideally all seed should be bare, which means free of chemical treatment. This reduces harmful impacts on soil biology.

Dr Christine Jones suggests seed can be coated pre-sowing with biological stimulants such as worm juice, compost extract, fish hydrolysate etc

This can be a cost-effective way of enhancing seed vigour.

When should I start grazing?

You can begin grazing a multispecies mix when the plants are firmly anchored in the ground- try the 'pull and twist' test. Many farmers will begin grazing when the multispecies is 30cm tall or taller. Try to keep plants in the vegetative state using grazing for as long as possible, because once plants become mature, their benefit to the soil biota reduces.

Should I provide hay when grazing?

The multispecies will contain a lot of high-quality species, so stock may need some additional roughage when the plants are young, or in midwinter. It is also usually best to provide some hay or access to a pasture paddock when first starting multispecies, to ensure stock can adjust to the new diet without any issues.

How do I know if the multispecies is beneficial?

The multispecies can be assessed in a number of ways.

Some common measurements are fodder yield and quality vs input cost (ROI), animal production, groundcover, chemical and biological soil testing and visual soil and plant assessments.

Visual change to factors such as groundcover, fodder yield, animal production and plant health/paddock biodiversity can occur quickly- within a few months to a year after beginning multispecies.

