

SOIL HEALTH AND FERTILITY

2. the pasture phase

Key points

- The pasture phase needs to be in as optimal condition as possible to maximise the productivity of the whole farm system.
- During pasture growth, soil structure can be improved and the nitrogen fixed by legumes can replace the nitrogen lost during the cropping phase.
- The beginning of pasture phase is the best time to apply lime and bulk mineral fertiliser.
- Attention should be paid to optimising legume growth – the remainder of the pasture will be “fed” by the nitrogen supplied by the legume.
- A holistic grazing regime is recommended – graze small areas intensively, shift regularly and spell between grazings.
- A pasture phase of at least two years is recommended.

Pasture repairs and replenishes

The pasture phase is the key time to “fix up” aspects of fertility that may have run down during the cropping phase. Soil structure can be “repaired” by several years of pasture and legumes can replace lost nitrogen. It can’t be emphasised enough that the pasture phase needs to be working as well as it possibly can to maximise the productivity of the whole farm system. A pasture phase of at least two years is recommended.

Apply lime and fertiliser

The beginning of pasture phase is the best time to apply bulk mineral fertiliser – it is best to work it in when establishing pasture so that there is more surface area of the mineral in contact with the soil. Biological activity and weathering makes the nutrients plant available.

Lime is a big component of a soil fertility programme in organic farming systems. Apply during pasture establishment so that it can be worked into the soil. A surface application can result in a high surface pH and a lower pH further down.

Fine lime initiates a good biological response, resulting in a fast clover response and a quick release of nitrogen from mineralisation.

Optimise clover

White clover is the pasture species most limited by nutrients – one of the aims of the pasture phase should be to grow the clover well and then the remainder of the pasture will be “fed” by the nitrogen

supplied by the clover. Clover is also the pasture species most susceptible to trace element deficiency, so if clover isn’t limited by deficiency, then none of the other pasture components will be. In other words, clover can be used as an indicator species: if the clover is thriving, then the system is in good shape.

Use a mix of species

A variety of grasses and forbs is recommended for the pasture. Chicory is very deep rooting and can pick up nutrients not available to other species e.g., it can access phosphorus from below the level of other roots, and can “catch” nitrogen and trace elements that have been leached from the crop level. Earthworms are also favoured by chicory and it improves pasture quality and stock resistance to internal parasites.

Graze “holistically”

A holistic grazing regime is recommended. This involves grazing small areas intensively and shifting stock regularly (often daily). This system allows pasture species to recover and grow well between grazings. At growthy times of the year the pasture may require topping. This system is efficient for livestock productivity and also promotes deep rooting, high pasture diversity and the concentrated application of animal manure favours soil biology, especially earthworms. (See Organic Update No. 14, Holistic Grazing Management.)

This information was presented by Dr Tim Jenkins at the Soil Health Seminar. Tim can be contacted at tje@donaghys.co.nz