beef+lamb new zealand

FACT SHEET

DECEMBER 2019

PASTURE MIXES FOR DRYLAND FARMING SYSTEMS

Lincoln University's Dryland Pastures Research Team has drawn together evidence from long-term grazing experiments. This fact sheet uses the information to give recommendations for legume choices on four Dryland Pasture environments.

INTRODUCTION

Beef + Lamb New Zealand fact sheets 106 and 109 established animal production is driven by total dry matter grown, which is strongly related to the legume content of the pasture.

For dryland farming systems, spring is a critical time for the production of live weight in stock.

Pasture persistence requires the interaction and complementary traits of plant species, and the use of legumes is crucial. When selecting legumes, however, on-farm factors need to be considered. These include the duration of drought periods in relation to rainfall distribution, evapotranspiration, soil depth, the potential for flooding and soil fertility.

Using existing knowledge about paddocks to assess the average duration and frequency of summer dry over several years is invaluable. For instance, when does a paddock normally dry out? Will it stay dry and unproductive for at least four months, in four out of five years?

KEY MESSAGES

- Legumes are the most important component of pasture mixes.
- The duration and frequency of summer/autumn drought provides the basis for selection of the best legume.
- Adopt a Landscape Farming approach, separating your property into zones (dry, moist, north/south facing etc.). Select the appropriate legume to optimise production in each zone. Learn the appropriate grazing management for that legume to thrive and persist.
- Lucerne and subterranean clover should be considered wherever possible.

FOUR DRYLAND PASTURE ZONES

1) LUCERNE ZONE

Grow lucerne for high yields and animal production. Sow lucerne in the deepest soils. Shallower-rooted species are unable to reach the stored water in deeper soils.

For an optimal six paddock rotation, sub-divide an area of 20-30 ha into six paddocks. Sow in October at 10 kg bare seed/ha using modern pest and disease resistant cultivars. Inoculate seed to ensure N fixation.

Figure 1: ***Ewes grazing on a lucerne monoculture.***

2) DRY ZONE

In this zone, pasture growth is compromised for about 4–5 months in an average year (November–March). These areas have less than 700 mm annual rainfall and often have shallow, stony soils with low soil-water holding capacity. Use sub clover as the primary legume in grass-based pastures in the Dry Zone (Figure 2) to complement lucerne on deeper soils.

The basic Dry Zone mix comprises:

- 10 kg bare seed/ha sub clover (5 kg/ha mid flowering and 5 kg/ha late flowering) plus
- 2 kg/ha cocksfoot.

3) INTERMEDIATE ZONE

In this zone, growth is compromised by a lack of water for about 3–4 months in an average year (December–March). These areas have 620–900 mm rain/yr. In the lower rainfall areas (620–700 mm/yr), soils hold at least 150 mm water in the top metre. Use a combination of ryegrass, cocksfoot and sub clover on the sunny faces. The shady faces can have some white clover added to the mix. Although white clover may survive in most summers, sub clover generally out yields white clover.

The basic Intermediate Zone mix comprises:

- 10 kg bare seed/ha sub clover (5 kg/ha mid flowering and 5 kg/ha late flowering) plus
- 2 kg/ha cocksfoot OR 5–10 kg/ha perennial ryegrass plus
- 2 kg/ha small leaf white clover for south hill faces and areas holding more soil water. Some water is drained from the soil.

Figure 2: Ewes and lambs grazing clover/grass pastures at Ashley Dene, Canterbury.

4) MOIST ZONE

In the moist zone, water stress seldom exceeds three months and usually occurs from January to March. Total production from white clover may be similar to or higher than sub clover, but the cool season production advantages of sub clover may provide opportunities for more flexible livestock production systems, particularly in early spring.

The basic Moist Zone mix is the same as the Intermediate Zone mix but white clover is used in all areas:

- 10 kg bare seed/ha sub clover (5 kg/ha mid flowering and 5 kg/ha late flowering) plus
- 2 kg/ha cocksfoot OR 5–10 kg/ha perennial ryegrass plus
- 2 kg/ha small leaf white clover.

ADDITIONAL FACTORS

- In areas that saturate/flood in winter use 5 kg/ha of a yannicum type sub clover (e.g. 'Napier' or 'Monti'), which tolerates wet soils, plus 5 kg/ha of the standard sub clover varieties such as 'Denmark' or 'Woogenellup'
- Add herbs (chicory/plantain) to base mixes if desired
- Soil test before sowing legumes , particularly for P
- Apply P fertilisers and/or use lime to ensure soil fertility meets the requirements for optimum legume growth
- Prior to renewal, assess existing pastures. The presence of volunteer annual clovers (e.g. cluster clover), or the lack of white clover.

MORE INFORMATION

B+LNZ Fact sheet 106
B+LNZ Fact sheet 109

B+LNZ Lucerne: Summary papers for establishing and managing lucerne.

Lucerne texting service—available from B+LNZ via subscription. Phone 0800BEEFLAMB for details.

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