

# FORAGE FOCUS

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PGG Wrightson Seeds

## Lucerne Best Practice

Lucerne is a perennial legume species with an extended taproot that allows the plant access to water and nutrients deep in the soil profile and which therefore affords it superior drought tolerance in comparison to grass pastures in lower rainfall areas.

Lucerne's unique growing characteristics, and a limited understanding of how to successfully grow and graze lucerne, means the full potential of lucerne as an alternative pasture species is often not recognised.

Lucerne is a multi-purpose plant that can either be grazed *in situ* or conserved as hay/silage for use during times of the year when pasture quality or diet protein levels are low. Lucerne has excellent stock acceptance and produces impressive yields of high quality feed.

## How to grow lucerne (checklist)

- The area designated for lucerne should be well drained, as there is a risk of Phytophthora root rot and other fungal diseases in waterlogged conditions or under irrigation.
- Soil test 6 months prior to planting. Apply lime to correct pH (the optimum for lucerne is 5.8-6.0). Note: Most New Zealand soils have a low pH, therefore liming is usually necessary. Address any major nutrient deficiencies, aiming to apply base fertiliser 1-2 weeks before planting.
- Weeds should be eliminated prior to sowing using repeated cultivation and herbicides. A suitable pre-emergent herbicide can aid establishment.
- The seedbed should be fine and firm, with seeds sown 5-15 mm deep. (NB. Seed can be sown up to 25 mm where soil moisture stress is likely.)
- Sowing is best in early spring when moisture is available and mean soil temperature is around 10°C. In a very dry environment an autumn sowing can give seedlings extra time to become established before the onset of the following summer's moisture stress.
- Untreated seed requires inoculation with nitrogen fixing rhizobia before sowing. A pre-inoculated seed treatment such as SUPERSTRIKE® lucerne is the preferred option.
- Lucerne should be sown at a rate of 6-10 kg/ha, or 12-14 kg/ha when using SUPERSTRIKE® treated seed.
- Establishing stands must be monitored for pests and diseases and controlled with appropriate herbicides and insecticides as needed.

- Care is required as lucerne seedlings are less tolerant to some herbicides than established stands. Major insect pests include: Sitona Weevil, Springtail, Lucerne Flea, Grass Grub and Argentine Stem Weevil.
- When establishing in spring allow the lucerne to reach 50% flowering prior to grazing/cutting.
- If growing under irrigation, use minimal irrigation during establishment to encourage root growth. Once lucerne is ready to be grazed, delay irrigation until 10-14 days after grazing as this will discourage weed seed germination. Avoid sitting water during irrigation as this can cause root rot.

## Grazing management

Lucerne has the potential to be a multi-purpose plant that can be either grazed *in situ* or conserved as hay and/or silage. See below for 'Best Practice' recommendations on how to maximize the yield of your lucerne crop.

- Lucerne's growing point is located at the tip of the stem, unlike grass species where the growth centres are at the base of the tiller. Therefore growing points can be easily removed by cutting and grazing; hence care is needed when cutting or grazing to ensure the cut or grazed level is above the new growth.
- Lucerne must regenerate new stems, therefore vegetative recovery maybe a lot slower compared with grass. However, regeneration of new stems occurs progressively beneath the canopy as the stand matures meaning stand recovery is a lot faster when grazed under long rotations (25-40 day period between defoliations is recommended). This is because as the canopy develops and closes, carbohydrates are directed into the roots allowing for replenishment of root reserves to aid rapid initial bud growth after defoliation. Failure to allow these reserves to build up will reduce yield and adversely affect stand persistence.

### Pre-grazing



## Post-grazing



Basal shoots at ground level. (Photos courtesy of Derick Moot, Lincoln University).

- The development of basal shoots (buds) can be used as an indication for grazing, however care should be taken when grazing to ensure these buds are not removed (see photos above).
- A grazing duration of 7-10 days is recommended to reduce the incidence of damage to the plant crowns and potential removal of new growth shoots. Grazing is best with a large amount of stock for a short period of time to reduce trampling. Furthermore, in large paddocks, break feeding will improve utilisation. As the leaves have the highest nutritive value, priority stock should have the first access to the stand.

## Seasonal Management

### Spring

- If harvesting the crop for hay or silage the best time to cut the stand is late morning to mid-afternoon after the dew has lifted as this is when the concentration of sugars and starches is highest.

### Summer

- In summer plant development is a lot faster due to higher temperatures and longer photoperiod; therefore there can be less time between grazing, however moisture can restrict this. During summer 10% flowering is a good indication that reserves are over 50% replenished. The longer grazing is delayed until this point the faster the regrowth will be in the next regrowth period.

### Autumn

- Autumn is the 'crunch period' for lucerne management, as this depicts the following season production. To increase stand persistence and speed of growth in the spring the crop should be allowed to reach 50% flowering at least once in autumn to maximise root reserves.
- Following autumn flowering, a final clean up graze in early winter can be effective in removing any cover for overwintering pests and disease. Lucerne growth ceases with the first hard frosts, which remove the growing point so it is best to graze the crop before this occurs.

### Winter

- The final graze can be followed by a herbicide application 7-10 days later to control any weed infestations while the crop is dormant. Spraying should not be delayed until late winter as this can burn off nodes that have developed over winter and compromise spring yields.

## Performance and Persistence

Lucerne is a highly productive crop, however due to winter dormancy lucerne production is very seasonal. Under irrigation high yields of over 20 t/DM/ha/yr are common. Under dryland conditions (areas receiving <500mm of rainfall per annum) a lucerne crop can produce up to 40% more dry matter than pasture, with yields of up to 14-15t/DM/ha/year.

A lucerne stand can persist for 15 years in lower rainfall areas where there is less competition from grasses however; management and pest and disease pressure are critical factors in determining persistence.

## Animal Performance

Lucerne provides a high quality feed during spring, summer and autumn with excellent stock acceptance and growth rates (over 350g/hd/day in lambs).

As the proportion of stem increases with regrowth, whole plant digestibility decreases. However, within a regrowth period the quality of the leaf remains similar meaning animal performance will not be compromised as long as stock are not forced to eat the stem. Once the plant reaches flowering, leaf senescence (ageing) means dry matter digestibility drops significantly.



## Animal Management Considerations for Lucerne

- Red gut though uncommon in New Zealand, can be caused by large amounts of high quality forage; therefore care should be taken when grazing high quality young stands in the spring. Feeding lucerne with fibre sources such as straw or pasture can prevent this.
- Bloat is possible when grazing lucerne in late winter/early spring, with cattle more susceptible than sheep. Use anti-bloat techniques to overcome this problem.
- Mature stands with leaf diseases or aphids can have high oestrogen levels and should not be grazed by ewes during mating. However, healthy young stands are safe during mating.
- Lucerne is low in sodium, therefore salt blocks maybe required by stock.

## PGG Wrightson Seeds Lucerne Cultivars

Kaituna Lucerne and clover should be SUPERSTRIKE® treated.

PGG Wrightson Seeds currently has one lucerne cultivar available:



Grasslands Kaituna is a New Zealand developed lucerne selected for improved resistance to the range of pests and diseases in our environment. Kaituna is highly productive in spring and summer, with later autumn and earlier spring growth than Wairau. High annual dry matter production combined with its fine stemmed characteristics affording it better quality and palatability means Kaituna is a versatile lucerne which is suitable for both grazing, hay/silage or mixed regimes.



## Recommended Lucerne Mixes

Lucerne can be grown as part of a dryland pasture mix in areas receiving less than 500 mm rain per annum.

### Option 1: Spring / Autumn Sown

- 8 kg Kaituna Lucerne
- 2 kg Tekapo Cocksfoot  
or 8 kg SUPERSTRIKE® Quantum II Max P Tall Fescue
- 1 kg Maru Phalaris (optional)

### Option 2: Autumn Sown

- 3kg Kaituna Lucerne
- 8 kg Leura Subclover
- 2 kg Tahora White Clover
- 1 kg Tekapo Cocksfoot  
or 8 kg SUPERSTRIKE® Quantum II MaxP® Tall Fescue
- 1 kg Maru Phalaris (optional)