



A collaboration between AWI, GRDC, MLA, RIRDC and Dairy Australia

Blue lupin

Scientific name(s)

Lupinus consentinii

Strengths

- Productive legume for infertile sands
- Provides quality lupin seed for stock feed in summer
- Provides nitrogen for companion plants
- Good tolerance to false breaks of season on sands
- Suitable rhizobium is wide spread in WA

Limitations

- Animal health risks due to lupinosis and high alkaloids
- Can exacerbate non wetting problems on sands
- Can shade out other pasture species if left dense and ungrazed
- Frost and waterlogging susceptible (i.e. only suited to sandy soils in coastal districts)
- Very susceptible to anthracnose

Plant description

Plant: Blue lupin is a deep rooted (2.5 m) and erect plant with strong stems growing up to 1.6 m in height. They are a self regenerating annual legume. The stems and seed are bitter due the presence of alkaloids.

Stems: Robust hairy stems.

Leaves: Leaves with up to seven leaflets, hairy.

Flowers: Blue pea flowers formed along a spikelet. Regarded as self pollinating.

Pods: Large pods that shatter readily once mature making it difficult to direct harvest. Pods are susceptible to bud worm (*Heliothis*) damage when green.

Seeds: Produces 'hard' seeds due to an impervious seedcoat and can remain viable in the soil for up to 20 years. This means it is almost impossible to eradicate Blue lupins from a paddock. Seed size is around 230 mg.

Pasture type and use

Self regenerating annual pasture used for both winter and summer grazing

Where it grows

Rainfall

300 to 700 mm annual rainfall

Soils

Deep (> 0.5 m) sands

Temperature

Can be killed by frost

Establishment

Companion species

Any annual pasture plant suitable for infertile sands.

Inoculation

Naturalised lupin rhizobia

Fertiliser

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Management

Maintenance fertiliser

Modest rates of phosphate (~ 10 kg P/ha) annually. Poorer sands may require some potassium fertiliser (e.g. 40 kg K/ha) for several years to build up levels. On white sands lupins will be manganese deficient. This deficiency is alleviated once a total of 40 kg/ha MnSO₄ has been applied.

Grazing/cutting

Dense stands should be hard grazed after the break of season to thin the blue lupins to less than 5 plants /m² to prevent monocultures of Blue lupins. Blue lupins can be grazed at modest stocking rates through winter as stock will largely avoid green Blue lupin plants. During flowering the flowers and green pods become palatable to stock but have high levels of alkaloids that can be toxic to stock. Generally avoid grazing at this stage.

After pods have shattered Blue lupin seed becomes a valuable source of quality summer feed for sheep. Sheep can pick up 50% of the seed off the ground (the other 50% is buried by hooves). Blue lupin paddocks grazed too hard by sheep over summer will become prone to wind erosion.

Cattle can not use the shattered seed as well as sheep but will get valuable summer grazing from the other species in a Blue lupin paddock.

When Blue lupin stubbles become wet in summer the stock will eat stems that are often toxic due to lupinosis. Remove stock from Blue lupin paddocks in summer when stems are moist.

Seed production

Ability to spread

Spreads readily within a paddock. There can be a limited spread of seed between paddocks through a small percentage of seed surviving digestion by cattle.

Weed potential

Blue lupins are considered a weed in a white lupin crop as the bitter seed can contaminate the sample.

Major pests

Bud worm (*Heliothis*) in spring.

Major diseases

A range of root diseases, *Phomopsis* (causes *lupinosis*)

Herbicide susceptibility

Knockdown and selective broad leaf herbicides

Animal production

Feeding value

Lupin seed is a high quality legume grain.

Blue lupins can provide high stocking rates and weight gain in sheep during summer. Bud worm attack in spring can decimate the seed set resulting in little summer grazing value despite large amounts of lupin trash in the paddock.

Green lupin plants can be high digestibility and energy, but intake will be low due to alkaloids

Palatability

Low when green, flowers and green may become palatable at a time when they have excessive alkaloids. Dry stems are relatively unpalatable.

Production potential

Livestock disorders/toxicity

Alkaloid toxicity when green, lupinosis in summer when stems are wet.

Cultivars

Naturalised species. No commercial cultivars registered.

Further information

P Nelson & R Delane (1990) 'Producing lupins in Western Australia', WA Department of Agriculture, Bulletin 4179.

Acknowledgements

West Midlands sand plain farmers

Author and date

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