



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

Lotononis

Scientific name(s)

Lotononis bainesii

Strengths

- Adapted to infertile soils
- Moderate to good frost tolerance
- Good cool season growth
- Tolerant of waterlogging
- Tolerant of heavy grazing
- Very palatable, and good nutritive value
- Drought tolerant
- Unaffected by amnemus weevil.

Limitations

- Susceptible to leaf and stem diseases
- Inconsistent presence in the pasture
- Low seed yields lead to expensive seed
- Small seed difficult to establish
- Initial seedling growth slow
- Does not compete well in dense grass

Plant description

Plant: A creeping, soft-stemmed, tap rooted perennial legume, usually growing to about 20cm deep under lenient grazing, or a dense low mat under heavy grazing.

Stems: Stolons spreading along the ground and rooting at the nodes, and fine ascending side shoots.

Leaves: Comprise three (rarely with 4 or 5) fleshy, largely hairless leaflets of varying shapes and sizes, but mostly 3 or 4cm long and 1 or 2cm wide.

Flowers: Yellow, 8 - 10 mm long, borne in often clover-like groups of 8 - 25 on stems up to 15cm long.

Pods: Sausage-shaped, 8 - 12 mm long, 2 mm diameter, many seeded, shattering at the base to release seed.

Seeds: Cream-yellow to light brown or magenta-rose, roughly heart-shaped, 0.5 mm diameter; 3 - 4 million seeds per kg.

Pasture type and use

Mostly used in grazed pastures on poorer soils in the subtropics, especially as an adjunct to native pastures. Useful standover in cool areas due to frost tolerance. Although capable of forming a dense mat, its value for soil conservation is usually limited by its inconsistency of cover.

Where it grows

Rainfall

Moderately drought tolerant, particularly if kept as a low stand. It is grown in areas with annual rainfall as low as 600 mm and up to about 1,500 mm, but most commonly between 700 and 1,200 mm. It is best on well-drained soils but survives short periods of waterlogging and short-term flooding.

Soils

It is adapted to a wide range of well-drained soils (not heavy cracking clays) with pH(water) from pH 4 - 8.5 (best between pH 5 and 6), provided there is bare ground available. It grows well on infertile soils, with low levels of P and Mo, usually performing poorly on more fertile soils where competition is greater. Tolerant of high available soil manganese and aluminium, but very low tolerance of salinity.

Temperature

In the subtropics, it makes its best growth in spring and autumn, if moisture is adequate. More frost tolerant than most warm season legumes, with mature growth surviving grass temperature down to -6.5°C, and only killed at -9°C. Immature growth is killed at -1°C.

Establishment

Companion species

Grasses: black spear grass*, digit grass*, forest bluegrass*, paspalum, rhodes grass*, setaria*

Legumes: Fine stem stylo, siratro*, Wynn cassia*.

* if grazing pressure maintained.

Sowing/planting rates as single species

Normally not sown as a single species, except into native grass stands, when the sowing rate for mixtures (below) should be used.

Sowing/planting rates in mixtures

Seed should be sown at 0.3 - 0.5 kg/ha onto the surface of a fine, firm, clean seedbed, and rolled. Many plantings fail because seed is sown too deeply, so seed must be placed no more than 0.5 cm deep. Seedlings are small and initially slow growing.

Sowing time

Since the plant does not grow well in summer, but is fairly cold tolerant, it is often best sown in autumn.

Inoculation

Lotononis is highly specific in its inoculum requirements, and seed should be inoculated with "Lotononis" inoculum prior to sowing.

Fertiliser

A planting dressing equivalent to 200 kg superphosphate/ha may be required on less fertile soils.

Management

Maintenance fertiliser

Lotononis responds to an occasional low to moderate application of superphosphate every 2 or 3 years.

Grazing/cutting

Under lenient grazing, lotononis forms a deep sward, but the growth habit is altered to a low mat under heavier grazing pressure. It is best kept fairly closely grazed to encourage the runners to root down and to reduce damage by disease. Close grazing also reduces the adverse effect of shading from companion species. A rotation of two weeks' grazing, four weeks' rest, or a system maintaining stands around 10 cm high has been found to be successful. Lighter grazing during flowering and seeding in spring could assist development of a soil seed-bank, which is important for long-term persistence. If it dies out during dry periods, stands recover with the onset of moist conditions, from high levels of soil seed.

Seed production

Commercial seed is machine harvested by direct heading or mowing, windrowing and threshing, usually yielding 25 - 55 kg/ha (and up to 110 kg/ha). Crops are harvested when about 80% of the crop has purple seed.

Ability to spread

It spreads rapidly by seed and stolons if bare soil and suitable inoculum are available. Seed is spread by runoff water, and also in the dung of grazing animals and by road graders.

Weed potential

It is not an aggressive species, despite its ability to spread.

Major pests

Heliothis and various pod-sucking bugs can be a problem in seed crops. It is not attacked by amnemus weevil.

Major diseases

Leaf spot, root and stolon rots, and flower blight can lead to the sudden collapse of bulkier stands in warm, humid conditions. It is also susceptible to legume little-leaf disease, bean yellow mosaic virus and various nematodes, and is a very common host to the small, yellow-stemmed plant parasite, dodder. The incidence of leaf and stem disease is minimised by regular grazing, particularly in summer.

Herbicide susceptibility

Susceptible to 2,4-D and 2,4-DB.

Animal production

Feeding value

Comparable with that of lucerne. Crude protein values range from about 9 - 26%, depending on time of year (flowering, etc.), age of regrowth and vigour of the plant, but is commonly in the high end of the range. Levels can be improved through application of superphosphate. IVDMD is about 60%. Sodium content is higher than that in many tropical legumes. Calcium levels in a well fertilised stand range from 0.6 - 0.7% of the DM, and P levels from 0.3 - 0.4%.

Palatability

Very palatable

Production potential

DM yields of pure stands are of the order of 5 - 8 t/ha under good conditions, and 1 - 3 t/ha in association with grass. Main growth is produced in the early and latter part of the season if moisture is adequate.

Livestock disorders/toxicity

No toxicity reported. Can cause minor milk taint.

Cultivars

Cultivar	Seed source/Information
Miles	Australian Herbage Plant Cultivars

Further information

Tropical Forages database (SoFT) - Lotononis

Acknowledgements

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Author and date

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