



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

Butterfly pea

Scientific name(s)

Clitoria ternatea

Strengths

- Easy to establish.
- Persistent in areas with a long dry season.
- High forage and seed production.
- Some tolerance to salinity and sodicity.
- Very palatable, high digestibility and protein content and does not cause bloat.
- No major pests or diseases.
- Improves soil fertility.
- Easily killed with herbicide in crop land.

Limitations

- Adapted to soils with high fertility and high water holding capacity.
- No winter growth in the sub-tropics.
- Does not tolerate prolonged heavy grazing.

Plant description

Plant: Perennial herbaceous legume with fine twining or climbing stems from 0.5 to 3m long.

Stems: Older stems are woody and light (usually grey) in colour. Young stems are green and when actively growing have fine twining new growth.

Leaves: Pinnate with 5 or 7 leaflets. Leaflets are elliptic to narrowly lanceolate 1.5 to 5 cm long and 0.3 to 3 cm wide.

Flowers: Usually single and range in colour from white, mauve, light blue to dark blue.

Pods: Flattened 4 to 13 cm long and 0.8 to 1.2 cm wide with margins thickened, sparse hair when mature and pale brown.

Seeds: Olive brown to black, shiny and often mottled, 8 to 11/pod 4.5 to 7 mm long and 3 to 4 mm wide, 23,000 seeds/kg.

Pasture type and use

Used as a ley legume in cropping systems planted either as a forage crop or with grasses and in perennial grass legume pastures. Persistence can be compromised under continuous heavy grazing. Makes high quality hay if cut when actively growing before pods form. Also used in mine site revegetation in central Queensland.

Where it grows

Rainfall

Best adapted to areas with 650 to 1250 mm but can persist with summer rainfall of 500 mm.

Soils

Adapted to a wide range of soil types provided fertility and water-holding capacity is high. Prefers medium to high pH and is well adapted to alkaline heavy clay soils.

Temperature

Highest growth occurs in summer when temperatures are > 27°C. Tolerates average daily temperatures as low as 15°C but growth is slow in spring. Not suited to areas with severe or frequent frosts.

Establishment

Companion species

Grasses: Buffel grass, green and Gatton panic, Bambatsi panic, rhodes grass, Floren bluegrass, purple pigeon grass, Queensland bluegrass.

Sowing/planting rates as single species

7 to 10 kg/ha; plant density target should be 10 to 15 plants/m².

Sowing/planting rates in mixtures

2 to 4 kg/ha; plant density should be not less than 5 plants/m².

Sowing time

Late spring to summer. Planting following rain in January to March is the most reliable time in central Queensland when there is a high probability of follow-up rain for the emerging seedlings.

Inoculation

Tropical group M (Siratro)

Fertiliser

Not normally required when planted on suitable soils but could respond to P and S on less fertile soils.

Management

Maintenance fertiliser

Not normally required when planted on fertile soils but could respond to P and S on less fertile soils.

Grazing/cutting

In the first season grazing should be delayed until plants have set seed (14 to 20 weeks). This provides seed for regeneration which is necessary to maintain legume density and allows it to develop a woody frame. Subsequently it can be grazed heavily in a rotation but continuous heavy grazing will reduce legume density.

For hay making butterfly pea should be cut when 50 to 60 cm high and before pods are formed. Cutting should not be lower than 7 to 10 cm to allow plants to regrow from the woody frames.

Seed production

Butterfly seed crops are high yielding. Seed yields usually range from 200 to 500kg/ha but can be up to 900kg/ha. Because it is indeterminate in growth habit it is common to have mature seed, green pods and flowers at the same time. Desiccation prior to harvesting can be beneficial. The aim is to harvest when 90% of the seed is hard and black.

Ability to spread

Very limited ability to spread in grazed pastures.

Weed potential

Very low. In grazed pasture it is unlikely to spread because palatability is high and seedlings do not compete well with established plants. Herbicides used to control broadleaf weeds in crops are effective against butterfly pea.

Major pests

None. It is tolerant of most insects but leaf-eating caterpillars and grasshoppers can be a minor problem.

Major diseases

No serious disease in CQ but can be infected with fungal leaf diseases in wetter areas.

Herbicide susceptibility

Susceptible to glyphosate at low (<800ml/ha) rates. Susceptible to metsulfuron methyl (Ally) fluroxypyr (Starane), MCPA and 2,4-D.

Animal production

Feeding value

Leaf protein and digestibility is very high and as high as or higher than for other legumes. Nitrogen concentrations can be > 4% for leaf and 2% for stem.

Palatability

Generally very palatable and selectively grazed.

Production potential

Annual yields of legume and legume/grass pastures when grown in dryland areas can be up to 6 tonnes/ha. Cattle grazing butterfly pea pastures can gain rapidly in summer (> 1kg/head/day) but over a full year of grazing liveweight gains of 220kg/head/year (0.6 kg/head/day) attainable.

Livestock disorders/toxicity

None known

Cultivars

Cultivar	Seed source/Information
Milgarra	Southedge seeds Heritage Seeds Australian Herbage Plant Cultivars

Further information

Tropical Forages database (SoFT) - Butterfly pea

The butterfly pea book – a guide to establishing and managing butterfly pea pastures in central Queensland (Eds Rodney Collins and Tonia Grundy), Department of Primary Industries and Fisheries, Queensland, 2005.

Acknowledgements

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Author and date

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December 2008