

Velvet bean – *Mucuna pruriens*

Velvet bean is a leguminous vine that is fast growing and can trail or climb to heights of 6-18 m. Velvet beans have three main uses: food, feed (forage and seeds) and as a cover crop.

As Velvet beans fix Nitrogen and produce high amounts of biomass, they are a popular warm-season cover crop. Their thick canopy is highly effective in suppressing weeds and protecting the soil from erosion and surface evaporation. Some species can take between 150 to 180 days to flower providing soil cover for the entire period.



Strengths

- 5-13t DM/ha/season dryland
Depending on environmental conditions and management
- Nitrogen fixation
- Improves soil fertility
- Provides protection against soil erosion
- Controls weeds

Limitations

- Intolerant of waterlogged soils
- Susceptible to burning during the dry season of the year
- Defoliated by rodents.
- It can attract sap sucking insects



What can it be used for?

- Cover Crop:** Velvet bean is a fast-growing legume and has a long growing season. It produces high levels of organic matter and Nitrogen.
- Grazing:** Animals can enter the pasture after the pods have matured.
- Forage:** When velvet bean is intended for forage, it may be harvested when the pods are still young, usually between 90-120 days after sowing.
- Silage:** Velvet beans may be cultivated for silage, but they are hard to harvest. Velvet bean can be grown in a mixture and ensiled in combination with a grain crop, or with grasses. It is also recommended to grow velvet beans and the companion crop separately and then mixing when ensiling.

Production potential: Yields of 5-13t DM/ha/season can be achieved. This depends on soil fertility, environmental conditions and frequency of utilisation.

Metabolic disturbances in animals on cultivated pastures:

Despite Velvet bean being such a useful forage crop, the seeds can often be toxic to mammals, with reported cases in pigs. Fodder can be eaten by most livestock, except pigs and chickens, as the seeds contain an anti-nutritional factor that will retard the growth of non-ruminants.

Establishment

- Climate:** Velvet bean cannot tolerate temperatures below 5°C. Annual temperatures of 20°C - 30°C are recommended during the growing season





Moisture: Velvet bean can tolerate a wide annual rainfall range of 400 to 1200 mm.

Soil: An ideal soil pH for the successful establishment of Velvet bean is between 5 - 6,5 on light, sandy loam soils. It is intolerant to waterlogged soils.

Fertilization: Despite its ability to grow on soils with low available soil Velvet beans respond to Phosphorus applications. Application of 500-700 kg/ha lime (dolomitic lime) is recommended to encourage nodulation.

	N (kg/ha)	P (mg/kg soil)	K (mg/kg soil)
Requirement for establishment***	40	20	0
Seasonal application (kg/ha)		Use removal rates	

*Fertilizer just after establishment (kg/ha)

**Selected rate should maximise profit (150 kg/ha preferably under irrigation)

***Determined by production potential

Phosphorus (P) and Potassium (K) can be recycled back to pastures when grazed by animals. This is dependent on the grazing system and the type of animals used. Up to 40% of P and 90% of K can be recycled. It is however necessary to do annual soil analysis to determine the level to which recycling occurred. The difference should be fertilized.

Methods: The large seeds germinate slowly if not planted correctly. Optimum depth is 5cm. Inoculation will enhance nodulation.

Seeding rate: Seeding rate can vary from 20kg / ha (rows) to 50 kg / ha (broadcasted).





Planting time: Velvet bean planting should take place in spring and summer, after all chance of frost has passed.

Management

Utilisation: Animals can enter the pasture after the pods have matured, this is usually 120 days after planting. When Velvet bean is intended for forage, it may be harvested when the pods are still young which varies according to cultivar.

Resources

1. Heuzé V., Tran G., Hassoun P., Renaudeau D., Bastianelli D., 2015. *Velvet bean (Mucuna pruriens)*. Feedipedia, a programme by INRA, CIRAD, AFZ and FAO. <https://www.feedipedia.org/node/270> Last updated on October 13, 2015, 13:42. (Access date 23 April 2020).
2. Echo community. n.d. Velvet Bean. <https://www.echocommunity.org/en/resources/398d94f4-59aa-4500-b535-a08e67f8d78b> (Access date 23 April 2020).
3. Truter, W., Dannhauser, C., Smith, H and Trytsman, G. 2015 ARC-Animal Production Institute Integrated crop and pasture-based livestock production systems https://www.grainsa.co.za/conservation-agriculture:-part-21_ (Access date 23 April 2020).

