

Dolichos – *Lablab purpureus*

Dolichos is a prostrate, twining, herbaceous annual/ biennial crop. It is a summer legume crop with a well-developed taproot system. It is a dual purpose crop; pulse grains (human food) or forage (animal food) utilized by grazing it or in a cut-and-carry system. It can also be used as a cover crop/ green manuring. The minimum annual rainfall requirements for Dolichos are 450 mm, but production greatly increases in higher rainfall areas.



Strengths

- Grain: 1 - 3 t/ha/season
- Forage: 4 - 12 t DM/ha/season
Depending on environmental conditions and management
- Fixes atmospheric Nitrogen
- Dual purpose legume
- High forage quality
- Green manure and cover crop application
- Drought tolerant

Limitations

- Annual or biennial
- Can cause bloat
- Frost sensitive

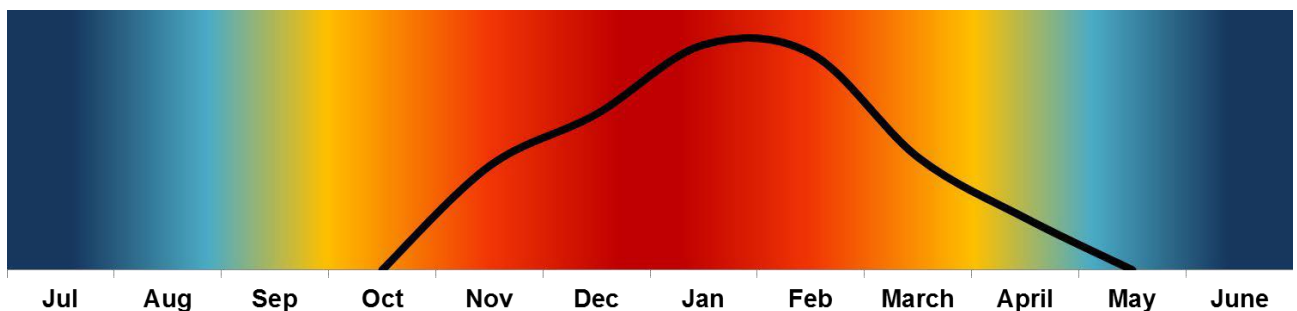
What can it be used for?

Grazing: As much as three grazing opportunities can be achieved per season. Graze before the onset of flowering to ensure regrowth.

Silage: It can be planted with maize, forage sorghum or babala in alternating rows. Dolichos creeps and twines itself into the upright companion crops. The legume adds quality to the silage in terms of protein.

Cover Crop: Dolichos is a legume and fixes atmospheric N. It also improves soil quality by adding organic material, prevents erosion, conserving soil moisture and recycling nutrients. Disc and plough material into soil before flowering is initiated. It builds soil aggregate stability and improve the water infiltration rate. It is also a habitat for beneficial insects, such as pollinators.

Production potential: The expected production is 4 t DM/ha/season but a sharp increase in production of up to 12 t DM/ha/season is possible under high annual rainfall conditions or irrigation. Production is influenced by soil fertility, climatic conditions and frequency of utilisation ^(1, 2).



Relative growth curve of a Dolichos stand - one year cycle



Metabolic disturbances in animals on cultivated pastures:

Frothy Bloat: Build-up of gas in the rumen due to stable foam forming, causing animals to suffocate.

Establishment

Climate: Adapted to tropical and sub-tropical climates. It is very frost sensitive.

Moisture: Under dryland conditions it requires at least 650mm per annum for good production, but it can grow at rainfall levels as low as 450mm/annum if good moisture conservation is practised and it is grown on deep soils with good water retention capability.

Soil: Does well on a wide range of soils as long as it is well drained. Soil pH (KCl) levels > 5.5 is recommended for optimum performance, however, it can survive pH (KCl) <4.5. Dolichos has a low salinity tolerance.

Fertilization: It can tolerate poor soil fertility, but reacts well to Phosphorus (P) and Sulphur (S) applications. Liming will always be beneficial if soil is acid. A soil analysis before establishment is essential ^(1, 2, 3).

	N (kg/ha)	P (mg/kg soil)	K (mg/kg soil)
Requirement for establishment*	0	25	120
Seasonal application (kg/ha)	0**	Use removal rates	
Production - Removal rates (kg/ton):			
Good quality fodder	39	5.5	35.4
Average quality fodder	29	2.9	22.9
Poor quality fodder	20	1.9	10.4

* Determined by production potential

**Fixed from atmospheric-N in symbiosis with *Rhizobium*





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 ⁽⁵⁾. It is however necessary to do annual soil analysis to determine the level to which recycling occurred. The difference should be fertilized.

Methods: Establish on a firm, fine, weed free seed bed. Plant seed 3-10cm deep. Can be sown and lightly worked into the soil (7-10cm deep) and consolidated thereafter. Seed can be inoculated with suitable bacteria (cowpea type) before planting. It is compatible with various native *Rhizobium* bacteria species. Inoculating seed prior to planting can be beneficial but not necessary.

Our prescribed seeding rate:	Rows (80-120cm) ^(1,2)	Broadcast ^(1,2)
	12-20 kg/ha	35-60 kg/ha

Planting density is influenced by cultivar type, purpose of use and row width.

Planting time: The best time to establish Dolichos is in October and November.

Management

Utilisation: Graze at a vegetative stage. Cut for silage at soft dough stage or when ensiled with Forage Sorghum or maize, use the latter as indicator. Disc and plough material into soil before flowers are initiated or 8-10 weeks after planting if used as green manure.





Resources

1. Tropical Forages: http://www.tropicalforages.info/key/Forages/Media/Html/Lablab_purpureus.htm
2. Fodder Legumes in the summer rainfall areas of Southern Africa- Editor Dr. CS Dannhauser- SANSOR
3. Feedipedia - Animal feed resources information system – Lablab (*Lablab purpureus*) - <http://www.feedipedia.org/node/297>
4. USDA-NRCS - Plant fact sheet- Dolichos - <http://plants.usda.gov/core/profile?symbol=LAPU6>
5. Dannhauser CS. 1991. Die bestuur van aangeplante weiding in die somerreëvaldele, vol. 1. Warmbad
6. Truter, WF. Dannhauser, CS, Smith, H. and Trytsman, G. 2014. *Lablab purpureus / Dolichos lablab* (Dolichos / Lalab). Integrated Crop and Pasture-based livestock production systems. Conservation Agriculture – Part 16. SA Grain. ISSN 1814-1676. Page 62-64.

