



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

Shrubby stylo

Scientific name(s)

Stylosanthes scabra

Strengths

- Widely adapted.
- Very drought tolerant.
- Well suited to soils low in phosphorus.
- Tolerant of heavy grazing.
- Well suited to extensive grazing systems.

Limitations

- Threat of anthracnose.
- Low palatability (may also be an advantage).
- Not adapted to heavy clay soils.
- Can become dominant if not managed.
- Mature plants killed by fire.
- Poor quality forage in low phosphorus soils.
- Value restricted to low-fertility soils and extensive land-use situations.
- Susceptible to violet root rot with winter rain.

Plant description

Plant: Perennial, shrubby legume, usually to less than 1m tall, but capable of taller growth. Under heavy grazing, plants can adopt a low, almost prostrate growth habit, to 5 to 10cm high. Large tap root to 4 m deep.

Stems: Young stems vary from green to reddish in colour, usually with dense hairs and sticky bristles, becoming woodier with age. Older stems are often more than 1 cm thick.

Leaves: Comprising three dark green, hairy, elliptical to oblong leaflets, to about 2.5cm long and 1cm wide. 1.5 to 2.5cm long.

Flowers: Small (4 -5mm wide), yellow, pea-like flowers with red markings, borne in small groups.

Pods: Pods break into two sections, the upper section about 4mm long carrying a small beak or hook, and the lower section 2 - 3 mm long, without a hook.

Seeds: Seeds are kidney-shaped, less than 2 mm long, pale to light brown in colour; about 450,000 seeds-in pod/kg or 700,000 dehulled seeds/kg.

Pasture type and use

Shrubby stylo is used in perennial pasture, in grassland or open woodland. Although sometimes sown with introduced grasses, it is most commonly sown into native grassland.

Where it grows

Rainfall

In cultivation, shrubby stylo is mainly used in areas with a fairly low, summer-dominant annual rainfall (between 600 and 1000mm, but can be successful in areas with rainfall to about 2,000 mm. Cool season rainfall can lead to stand decline caused by violet root rot.

Soils

It is well-adapted to infertile, acid, friable or hard-setting, sandy-surfaced soil, but not as well-adapted to heavier textured, less acid soils, and not suited at all to heavy clays. It is tolerant of drought and temporary waterlogging but not of flooding.

Temperature

Tops of mature plants are burnt by frost, but plants recover with the onset of warmer conditions. Seedlings may be killed by frost.

Establishment

Companion species

Grasses: bluegrass (Indian, forest), buffel grass, sabi grass, spear grass (native), tall finger grass.

Legumes: american jointvetch, cassia, lotononis, siratro, stylo (caatinga, caribbean, fine stem).

Sowing/planting rates as single species

2 - 4 kg/ha

Sowing/planting rates in mixtures

1 - 2 kg/ha

Sowing time

Since seedlings are slow to develop, it is best to sow at the end of the dry season or early in the wet season to allow plants to develop sufficiently before the next dry season or the onset of frost.

Inoculation

Inoculation is not essential since shrubby stylo nodulates readily with many types of native rhizobium, but use of the general stylo inoculum, strain CB 82, provides a measure of insurance.

Fertiliser

Although shrubby stylo is adapted to soils low in available soil phosphorus, both stylo plants and the animals grazing them will respond to phosphorus fertiliser on very infertile soils. Generally, seed should be sown with 50 - 100 kg/ha superphosphate or its equivalent on such soils.

Management

Maintenance fertiliser

Maintenance dressings of 25 - 50 kg/ha superphosphate should be applied annually on infertile soils, or sufficient to maintain soil phosphorus levels at 8 - 10 ppm available P.

Grazing/cutting

While seedlings are very slow growing for the first season, they are particularly hardy and able to establish unless grass competition is strong. In the establishment year, grazing pressure should be managed to minimise grass competition, but the stand should not be heavily grazed once plants start to flower, to encourage seed-set and stand thickening. In subsequent years, it is best to avoid heavy grazing in the early part of the season, since stock select the grass leading to grass decline and stylo dominance. This can lead to weedy pastures and soil acidification. However, it may be advantageous to graze heavily following burning and oversowing to reduce competition for the developing seedlings from established perennial grasses.

Seed production

Shrubby stylos flower from mid-January to mid-May, although this may be more restricted in the far north. Because of the span of flowering time, peak seed yields can span a period of 3 - 4 weeks. For machine harvest, seed recovery is favoured by using a machine with a small front, high horsepower, slow groundspeed and large sieve area. It is also best to harvest during low humidity conditions when seed is less sticky, and when seed in the head has not been

dislodged by recent strong winds. Seed is normally harvested during the dry season. Irrigated crops are harvested in August-September, and rain-grown crops, a month earlier. Yields of seed-in-pod vary from 100-700 kg/ha, mostly 300-400 kg/ha.

Ability to spread

Shrubby stylo spreads fairly readily, the seed being moved by livestock and water flow.

Weed potential

While generally considered to pose little weed risk, it has caused concern through the acidification of certain soils following stylo dominance caused by overgrazing.

Major pests

Shrubby stylo truckborer can cause significant damage in pastures and seed crops.

Major diseases

The main diseases of stylos generally are anthracnose and botrytis head blight. The current commercially available cultivars of shrubby stylo are resistant to anthracnose, although seed crops are reduced by head blight in wet years. Seed crops are also badly affected by a leafhopper-spread disease known as "reversion", (reverts from reproductive to vegetative state) caused by a phytoplasma. Violet root rot has led to stand reduction of epidemic proportions in the sub-humid subtropics during cool, wet conditions.

Herbicide susceptibility

Shrubby stylo is tolerant of Trifluralin and 2,4-D at establishment, and bentazone (e.g. Basagran®), and fluzafop-butyl (e.g. Fusilade®) post-emergence, but not acifluorfen (e.g. Blazer®).

Animal production

Feeding value

The nutritive value of shrubby stylo declines with age, even in the leaf where crude protein ranges from 20 in young leaves to 10% in older leaves, phosphorus from 0.3 to 0.1% and in-vitro dry matter digestibility from 70 to 50%. Acid detergent fibre values may be about 30 % in the leaf, and over 40% in the stem. A phosphorus supplement may be necessary to achieve best animal performance. Sodium levels are much higher than those for many other tropical legumes and may be 1 - 2 % of DM in leaf and stem. Proportion of stem increases with age, from about 20% early in the growing season to 75% at the end of the season (and higher in grazed pastures), so edible dry matter yields are often only 20 to 25% of the total yield.

Palatability

Palatability of shrubby stylos is fairly low, and in the early part of the growing season, the grass is grazed preferentially.

Production potential

In mature grass/legume pastures, shrubby stylo can contribute 2 - 7 t/ha DM/yr, and result in annual liveweight gains of 140 - 160 kg/hd.

Livestock disorders/toxicity

There is no record of any toxicity or disorder caused by this legume.

Cultivars

Cultivar	Seed source/Information
Seca	Australian Herbage Plant Cultivars Southedge Seeds Progressive seeds
Siran	Heritage Seeds

Further information

Tropical Forages database (SoFT) - Shrubby stylo

Acknowledgements

Arthur Cameron, DPIFM, NT "Shrubby Stylos" Agnote E4

Author and date

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November 2007