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***Mucuna pruriens* (L.) DC var. *utilis* (Wight) Burck.**

Leguminosae

Synonyms

Stizolobium deeringianum Bort.; *S. aterrimum* Piper and Tracey; *S. niveum* Kuntze.

Common names

Velvet bean (Australia, United States, southern Africa), pica-pica (Venezuela), frijol terciopelo (Latin America), Bengal bean (India).

Description

Vigorously growing, trailing vine (grown mostly for green manuring or temporary pasture), slender, slightly ridged, and extending over 6 m in length (grown on supports, they may grow to over 10 m). Leaves large and smooth, the terminal leaf being rhomboidal-ovate and the lateral ones oblique, 20 to 25 cm long and 7.5 to 12.5 cm wide. Flowers borne in long racemes, white with purple tinge. Pods, 10 to 14 in a duster, are borne singly, 10 to 12.5 cm long, curved, with a greyish-white pubescence of short, silky hairs. Seeds are black (Mauritius bean) and glossy when mature, 1.2 to 1.5 cm long and 0.9 to 1.1 cm broad with raised white hilum half as long as the seed. Each pod contains three to five seeds (Paul, 1951). Velvet bean seeds are commonly mottled.

Distribution

Probably native to southern Asia and Malaysia, now widely distributed in the tropics.

Characteristics

Velvet beans require a hot moist climate for maximum growth, and are usually used as cover crops where there is a long frost-free growing season during the wet months. They grow from sea level to 2 100 m in Kenya—apparently the altitude limit. Rainfall range of the species is from 650 to 2 500 mm. Tolerates a wide range of soils, from sands to clays, and will grow on soils of appreciable acidity. Non-specific in its *Rhizobium* requirements. Mes (1959) found that a low night temperature of 10°C was more harmful to the growth of the plants when they were dependent on *Rhizobium* than when nitrogen was applied. Nitrogen fixation, increased with increasing night temperatures, was poor below 18°C.

Velvet beans will grow in roughly prepared land, provided the seed is covered or rain falls soon after seeding. Better results are obtained by sowing into a prepared seed bed. For a green manure crop, the seed is usually broadcast onto ploughed land following the ploughing out of the previous crop. It can be sown in furrows or dibbled in at 1 x 1 m spacings with two seeds per hill. It can also be sod-seeded into existing pastures (Doherty, 1963b). Seed is sown in early summer at 22 kg. seed/ha. About 1 000 seeds weigh 1 kg. The crop is usually grown alone for green manure and for silage, because sown with maize or sorghum it tends to pull the crop down, making harvesting difficult.

Velvet beans are slow to start and, if drill-sown, one or two interrow cultivations improve early development. When established, the crop smothers weeds effectively. King, Mungomery and Hughes (1965) stated that a crop of velvet beans yielded 17.4 tonnes of green material per hectare in north Queensland, and that its nitrogen content was 331 kg./ha,

equivalent to 1 615 kg. sulphate of ammonia per hectare. Doherty (1963b) obtained a yield of 11 176 kg./ha of green matter from velvet beans sod-sown into a Rhodes grass/ green panic pasture at a seed rate of 22 kg./ha and fertilized with 264 kg./ha molybdenized superphosphate in coastal Queensland, Australia.

When grazing the crop, the animals are turned in after the pods are mature, some 170 to 220 days in Hawaii (Takahashi and Ripperton, 1949). These authors obtained 19 tonnes green forage and 3.85 tonnes seed per hectare in Hawaii with a variety named Lyon. Because of its dense matted growth, velvet bean is difficult to harvest and cure for hay. French (1935, 1937) made small quantities for experimental feeding of sheep at Mpwapwa, Tanzania. It is grown fairly extensively as a silage crop, but as it is hard to harvest, flailtype harvesters do a better job than mowing machines. It is better to grow velvet beans and the companion crop separately and mix them when ensiling.

Axtmayer, Hernandez and Cook (1938) had the plant analysed when in flower together with the pods. The plant contained 15.65 percent crude protein, 34.47 percent crude fibre, 1.21 percent calcium and 0.16 percent phosphorus. Pods contained 16.36 percent crude protein, 27.95 percent crude fibre, 1.02 percent calcium, and 0.18 percent phosphorus. French (1935, 1937) found that velvet-bean hays contained 17.87 and 12.95 percent crude protein and 10.88 and 7.12 percent digestible protein, respectively. Krause (1911) stated that velvet bean was the least palatable of the forage legumes he had tested. Crops are harvested by hand-picking the pods or mowing the crop, drying and subsequently threshing.

Numerous cultivars are in use. The Mauritius bean is a black-seeded type used in green manuring, while the Australian velvet bean has a large mottled seed. A variety J52 yielded 1 980 kg. DM/ha in Tanzania, followed by 'Somerset' with a yield of 1 780 kg./ha. The cultivar Somerset has been found useful in South Africa, Tanzania, and Queensland, where it has superseded 'Mauritius'. Other cultivars include 'Stringless', 'Osceola', and 'Bunch' (Queensland), J54, J77, 'Local White' and 'Local Black' in Tanzania. The latter produces green foliage long after 'Somerset' and others have died.

In north Queensland, Sturgess and Egan (1960) isolated the fungus *Phytophthora dreschleri* from wilt-affected crops (it had come from southern Africa in seed contaminants). All velvet bean varieties are affected, but cowpeas are resistant.

The main attribute of velvet beans is their long growing season in frost-free environments, which enables them to protect the soil throughout the wet monsoonal season.

Links

- [Mucuna pruriens](#) in Ecoport (ID 2350)
- [Tropical Plant Database](#)
- [Purdue University](#)
- [Pacific Island Ecosystems at Risk \(PIER\)](#)