

Register of Australian Herbage Plant Cultivars

B. Legumes

2. Desmodium

Desmodium heterophyllum DC. (hetero) cv. Johnstone

Reg. No. B-2c-1

Registered prior to February 1973

Published in the Journal of the Australian Institute of Agricultural Science 39(2), 1973.

Origin

Vegetative material was first introduced from New Guinea by the Queensland Department of Primary Industries in 1945. It is a native of the tropics occurring in Mauritius, Indochina, Malaysia, and Indonesia. Its potential as a legume capable of associating with a stoloniferous grass (*Brachiaria miliiformis*) was recognized shortly after introduction (1) but low seed recovery precluded wide use in subsequent years (3,4).

In investigations at the South Johnstone Research Station in the late 1960s cv. Johnstone was the only legume, of a range tested, which was capable of maintaining a stable productive association in the wet tropics with the vigorous stoloniferous grasses *Brachiaria decumbens* (signal grass) and *Digitaria decumbens* (pangola grass). It was released by the Queensland Herbage Plant Liaison Committee in 1971 under the common name, hetero. Submitted for registration by the Queensland Department of Primary Industries and recommended for registration by the Queensland Herbage Plant Liaison Committee. Registered February 1973.

Morphological description (3,5)

Perennial, prostrate, strongly stoloniferous, rooting freely from stolons and lower nodes of aerial stems. Height rarely exceeds 15-20 cm. Leaves trifoliolate, stalk of the terminal leaflet (4-5 mm long) four to five times longer than those of lateral leaflets. Terminal leaflet (15-20 mm long and 10-15 mm wide) larger than lateral leaflets (12-15 mm long and 8-10 mm wide). Leaves stipulate, the stipules long (4-6 mm), tapering, hairy margins, and parallel venation. Leaflets subtended by four inconspicuous stipules, obovate, entire margins, apex slightly emarginate, reticulate venation, densely pubescent (hairs whitish coloured) on both dorsal and ventral surface. Petioles angular, 10-15 mm long, reddish-brown, and covered with brown hairs.

Stems angular, reddish-brown, tomentose, the brown hairs 1.5-2.0 mm long. Stolons become woody with age and practically glabrous.

Flowers small (3-5 mm long), pink, giving rise to a 3-6 jointed, undulate (on dorsal edge) pod which fractures at the joints on maturity. Pods 12-25 mm long, 4-5 mm wide, finely pubescent. Seeds kidney shaped 2.25-2.50 mm long and 1.50-1.75 mm wide, yellowish brown turning dark brown with age; seed coat glabrous.

Agronomic characters (1,2,3,4,5)

The main attribute of cv. Johnstone is its ability to form a productive and persistent association with sward-forming grasses like pangola and signal grasses which are normally incompatible with trailing/climbing legumes such as Stylo and Centro. Grazing experiments over a two-year period at South Johnstone Research Station have shown that pangola/hetero and signal/hetero stocked at 1.66 beast/acre can produce in excess of 700 lb liveweight/acre/annum. Heavy grazing is necessary to prevent suppression by grasses in the wet summer period. Johnstone is well accepted by stock and has a mean crude protein content of about 17-18%. It spreads readily by seed and rapidly colonizes shortly cropped pastures.

Johnstone is adapted to the wet tropical coastal areas of north Queensland where annual rainfall exceeds 60 in. It grows on a wide range of soil types varying from the fertile alluvials and basalt derivatives to the less fertile metamorphic and granitic soils supporting open forest.

Establishment can be effected either with seed at rates as low as 1/4 - 1/2 lb/ac or vegetatively using rooted stolons and aerial stems. It is strain specific in its rhizobium requirements effectively nodulating with strain No. QA982. It is an efficient fixer of nitrogen.

The main disadvantage with cv. Johnstone is difficulty in seed recovery. The inflorescence is indeterminate, flowering occurs over a lengthy period (May-September), the pods are produced within the foliage of the plant, and the segmented pods fracture and fall after maturity. Seed yields of 35 lb/ac have been achieved. It is susceptible to legume little leaf virus but this does not cause significant damage in vigorous, well-grazed swards.

References

1. Graham, T.G. (1948). Activities of the Bureau of Tropical Agriculture. *Qd. Agric. J.* **66**: 69-81.
2. Graham, T.G. (1951). Tropical pasture investigations. *Qd. Agric. J.* **73**: 311-26.
3. Harding, W.A.T., and Cameron, D.G. (1972). New pasture legumes for the wet tropics. *Qd. Agric. J.* **98**: 394-406.
4. Harding, W.A.T. (1972). The contribution of plant introduction to pasture development in the wet tropics of Queensland. *Trop. Grassld.* (in press).
5. Middleton, C.H. (1972). Personal communication. South Johnstone Research Station, Department of Primary Industries, Queensland.