Register of Australian Herbage Plant Cultivars

B. Legumes
22. Lotus
(a) *Lotus pedunculatus* Cav. (greater lotus) cv. Sharnae

Reg. No. B-22a-1

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Originator: G. P. M. Wilson

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Released by NSW Agriculture

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Origin

Developed from accession CPI 67677 collected in 1974 by Mr A. D. O'Brien, formerly with NSW Agriculture, in Algarve, southern Portugal, between Caldas de Monchique (37º9'N.) and Monchique (37º11'N.). The site is a rugged, but protected, 30º slope with an easterly aspect and a gravelly soil, derived from granite (pH 6.0) and kept wet by spring fed soakages. Average annual rainfall was about 850 mm (O'Brien 1974).

CPI 67677 was originally combined with 2 similar accessions, CPI 67676 and CPI 67678, and evaluated as composite line P15303, which performed well in trials at Kempsey and Grafton, in north-eastern New South Wales (Wilson 1980), and near Gympie in south-eastern Queensland (Cook 1984, 1985). P15303 had an extended flowering period (June–February), which complicated management for seed production. To overcome the problem, seed produced from the original accession CPI 67677 was sown under isolation in 1984. Very early flowering plants were eliminated from the population to produce cv. Sharnae, which has a more restricted flowering period.

Submitted by NSW Agriculture and recommended for registration by the New South Wales Herbage Plant Liaison Committee. NSW Agriculture will maintain breeders' seed.

Morphological description

Stoloniferous, rhizomatous perennial, upright (in dense stands) or decumbent. Stems hollow, glabrous, up to 1 m long. Leaflets 5, the lower pair almost sessile at the base of the rachis; the upper 3 sub-sessile (or the middle leaflet having a petiolule 1–2 mm long) at the apex. Leaflets 1–3 cm long, the lower pair ovate–elliptic with the midvein to one side, the upper leaflets obovate with an acute, obtuse or apiculate apex; margins entire; the leaflets on flowering stems are more elongate with some narrowly elliptic; underside of main veins and margins with soft, white, tubercle-based hairs, occasional hairs on upper side of leaflets. Flowers 5–12, in umbels subtended by leaf-like bracts, at the ends of axillary peduncles 2–4 times as long as the leaves, often a few hairs on the peduncle tip. Individual flowers 1–1.8 cm long; pedicels 1–2 mm long, glabrous; calyx 5–8 mm long, with 5 spreading, hairy teeth about half as long as the tube; corolla bright yellow with red veining at the base of the standard, the keel a paler yellow. Pods cylindrical, brown, 2 mm wide and up to 4 cm long, widely spreading. Seeds globular, pale, <1 mm in diameter, 25–40 per pod (D. J. B. Wheeler pers. comm.).

Sharnae is morphologically similar to Grasslands Maku; however, Sharnae is a less hairy plant. At flowering, the buds of Grasslands Maku are densely hairy, the matted hairs almost obscuring the calyx teeth. There are fewer hairs on the calyx of Sharnae and the outlines of the spreading teeth are clearly visible. The peduncle tip of Sharnae is also much less hairy than that of Grasslands Maku and the leaves are less hairy (D. J. B. Wheeler pers. comm.). Sharnae produced fewer crown stems (4.4 per plant) than Grasslands Maku (5.05 per plant) in a glasshouse study of 200 one-month-old plants. Similarly, in a study of 17 one-month-old plants grown on low fertility podsolic soil at Grafton, Sharnae produced slightly fewer rhizomes (1.03/plant) than Grasslands Maku (1.40/plant). Seeds of Sharnae are much smaller (0.70–0.95 mm; 1 640 000–1 995 000/kg) than those of Grasslands Maku (0.85–1.20 mm average 1 250 000/kg), and there are over 20/pod compared with an average of 12/pod for Grasslands Maku (G. P. M. Wilson unpublished data). Sharnae is a diploid with $2n = 12$ (W. M. Kelman pers. comm.), whereas Grasslands Maku is a tetraploid (Armstrong 1974).

Sharnae is more robust and bulkier but forms a less dense sward than Grasslands Maku.

Agronomic characteristics

On the North Coast of New South Wales, Sharnae commences flowering in mid September, reaching a first peak by mid October, and waves of flowering continue until late summer. In contrast, Grasslands Maku rarely flowers before early–mid December. Mature seed has been collected from predominantly raingrown Sharnae during each month from mid November to mid April (G. P. M. Wilson unpublished data). In subtropical regions of New South Wales and Queensland, ability to mature seed before the summer–autumn wet season could enhance survival through seedling recruitment following flooding of the coastal lowlands. Grasslands Maku is usually killed or its population seriously diminished by summer–autumn inundation.

In trials on 2 soil types at Grafton, Sharnae has given higher forage yields during late spring and early summer than Grasslands Maku, and in continuously grazed trials on 2 sites with contrasting moisture regimes at Fineflower, in the Upper Clarence valley, Sharnae persisted better, spread further, and produced more dry matter than Grasslands Maku on the driest

site. Conversely, Grasslands Maku had markedly superior persistence, spread, and yield on the moist site (G. P. M. Wilson unpublished data).

The concentration of condensed tannins in Sharnae varies between sites (Canberra, Armidale) and seasons, in each situation, is about double that of Grasslands Maku (M. J. Hill and W. M. Kelman pers. comm.).

Limited observations suggest that Sharnae has resistance to root knot nematode, whereas Grasslands Maku is susceptible. This may be an important consideration affecting the choice of lotus cultivars for use as permanent groundcover in subtropical orchards and plantation crops, and for pastures on acid sandy soils (G. P. M. Wilson unpublished data).

There has been no specific evaluation of the seed production potential of Sharnae, but an irrigated plot harvested at Grafton in early February 1985 yielded 314 kg seed/ha. The hard seed content of untreated samples tested for germination has varied from 38 to 45%.

At Gympie, Sharnae has been screened for tolerance to a wide range of post-emergence herbicides, including some unregistered chemicals. It tolerated the full range of selective grass herbicides when applied at recommended rates but failed to tolerate any of the standard range of broadleaf herbicides (Lock and Harvey 1990).

Acknowledgments

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