Register of Australian Herbage Plant Cultivars

B. Legumes
14. Vigna
b. *Vigna parkeri* Bak. ssp. *maranguënsis* (Taub.) Verdc. (creeping vigna)

cv. Shaw
Reg. No. B-14b-1
Registered December 1985

Published in the Journal of the Australian Institute of Agricultural Science 52(2):115-18. 1986.

Origin

Derived from stands of *Vigna parkeri* ssp. *maranguënisi*, formerly incorrectly identified as *V. gracilis*, growing on Beerwah Research Station, south-east Queensland (5, 6). It was first noticed in 1970 when it was collected as CQ948 but only became prominent from 1975 onwards and was recollected as CQ1374 in 1977 (5). It has since spread widely over Beerwah Research Station but no differences have been noted among plants of the station and therefore all *V. parkeri* at Beerwah is considered to be CQ1374 (7).

There is no known record of *V. parkeri* being sown at Beerwah so it is not possible to unequivocally identify CQ1374 with any specific introduction. However, in a detailed comparison of all 16 *V. parkeri* accessions for which seed is available, CQ1374 appeared morphologically and phenologically identical to CPI 25378 introduced from Uganda (2). All other accessions had one or more features, primarily leaf marking and seed size, that consistently differentiate them from CQ 1374. One introduction, CPI 37951, was not tested as no viable seed remained. CPI 25378 was introduced by N.H. Shaw from the Veterinary Farm, Entabbe, Uganda, and was registered in Canberra on 3rd December 1958. Seed was initially collected in Uganda by K.W. Harker in 1955. In Shaw's collection notes, it is described as being palatable, very common in grazed and ungrazed areas, invading grazed pastures carrying about 1 beast to 2 acres, and even invading *Paspalum notatum* in paths (9).

Jointly submitted for registration by the CSIRO Division of Tropical Crops and Pastures and the Queensland Department of Primary Industries. Recommended for registration by the Queensland Herbage Plant Liaison Committee. Breeders' seed has been produced at Beerwah Research Station and will be maintained by CSRIO Division of Tropical Crops and Pastures and the Queensland Department of Primary Industries. Registered December, 1985.

Morphological description (2, 3, 6, 10)

Vigna parkeri is a perennial herb, with both twining and prostrate stems, the latter often developing nodal roots and forming dense mats. Young stems are slender and sparsely to densely covered with mostly spreading hairs. Leaves are trifoliate, with leaflets ovate to ovate lanceolate, 10 to 88 mm long and 8 to 54 mm wide, rounded to acuminate at the apex and rounded to subacute at the base. Inflorescences are axillary racemes with mostly 2-5 (up to 10) flower per raceme. Flowers are blue, yellow or white in colour and occur in alternate pairs which are inserted on either side of a glandular node. Pods are linear-oblong, compressed, mostly 13 to 20 mm (but varying from 9 to 30 mm) long and 4.5 to 5.5 mm wide, containing 1-5 seeds. Seeds are grey to brown with black mottling, sometimes entirely black, with variable aril development.

The two major subspecies, *acutifolia and maranguënsis* may be differentiated on leaf and seed characters, the former having larger acute or acuminate leaflets and mostly less aril development, the latter smaller more rounded leaflets and a well developed aril; intermediates also exist. Compared with other *V. parkeri* accessions evaluated in Australia, Shaw has more vigorous stolon development and less pronounced twining habit (2). Lamina up to 40 mm long and 30 mm wide, darker green than in most accessions, and frequently with a pale green crescnet. Shaw is among the earliest of the late flowering types, reaching peak flowering 2 to 3 weeks before others in the group. Flowers are blue changing to mauve or purple. Shaw, with about 75 000 seeds/kg, has smaller seeds than other accessions. A chromosome number 2n = 22 has been reported for CPI 25378 and CPI 28281, a yellow flowering form of *Vigna parkeri* (8).

Agronomic characters (1, 2, 4, 5, 7, 9, 10, 11)

Vigna parkeri is indigenous to Uganda, Kenya and Tanzania, being found between 270 m and 2700 m, but mostly 1050 m to 2460 m. It occurs in grassland, and grassland with scattered trees, thicket or forest, and as a weed of cultivation (3, 10). It often forms natural mixtures with grasses in moist ground, producing excellent grazing (1). Shaw is a persistent legume with a long warm season growth pattern. Preliminary evidence suggests it is more suited to moist areas in the subtropics (and possibly the elevated tropics) than the lowland tropics, giving it a similar distribution to *Desmodium intortum* cv. Greenleaf. In the subtropics it differs from Greenleaf in being more tolerant of heavy grazing. In an experiment at Beerwah where Shaw was an invading species, autumn presentation yields as high as 1650 kg/ha were obtained at a stocking rate of 2.2 beasts/ha (2, 3, 4, 5). Although Shaw is frost tender, its primary limitation is susceptibility to soil moisture stress. It cannot withstand long dry periods when most, or even all, stolons can die. However, it regenerates well from soil seed reserves which have ranged from about 50/m^2 (under very close grazing) to over 1 000/m^2, with a mean value from eight sites of 450/m^2. Under suitable conditions in coastal south-east Queensland, Shaw has shown a marked ability to spread in farm pastures (2, 4, 5).

Although best adapted to moist yet well drained soils, Shaw can tolerate temporary inundation and prolonged waterlogging, as evidenced by its spread in humic gley soils at Beerwah. However, other filed experience and experiments with simulated flooding suggest plants are not adapted to sustained flooding (2, 5, 11). Little is known of its nutrient requirements. Shaw has become naturalised in soils with analyses as low as pH 5.0, 13 ppm bicarbonate extractable phosphorus and 0.9 meq./100 g exchangeable potassium, but is also performing well on less acid soil with over 100 ppm bicarbonate extractable potassium. It has combined successfully with *Setaria sphacelata* var. *sericea, Pennisetum clandestinum, Axonopus affinis, Paspalum dilatatum, Digitaria decumbens* and *Paspalum notatum* (2, 5). Preliminary measurements suggest that is has a higher green leaf: green stem ratio, nitrogen percentage and digestibility than most other tropical legumes, with an uncorrected *in vivo* dry matter digestibility of approximately 65% (leaf) and 55% (stem) (5).

Flowering can commence in February, ensuring some seed set before frosts. However, peak flowering about May leading to June-July seed harvest presents problems for seed production in frosted areas. Pods shatter on maturity, but less readily than *Macroptilium atropurpureum* cv. Siratro or *Cassia rotundifolia* cv. Wynn. Seed yields of above 400 kg/ha have been obtained from a single harvest of a small plot of *V. parkeri* under good conditions, and yields above 100 kg/ha have been obtained from opportunist single harvest within farm pastures (2, 5). A high proportion of seed is hard until scarified; seed has an optimum temperature for germination of 25°C (7).

No serious pest or disease problems have been encountered. Damage from a leaf miner (*Acrocercops* sp.) and leaf eating beetles (*Rhyparida* spp.) have been noted but, for a Vigna species, Shaw is relatively free of insect damage. *Cercospora* leaf spot, *Sclerotium rolfsii* and root-knot nematode (*Meloidogyne javanica*) have been identified on Shaw but have not been of any widespread agronomic consequence (2, 5).

Although Shaw spreads readily under grazing , it can be slow to establish and may not flower in the year of sowing unless conditions are favourable following early sowing (2, 5). This characteristic extends the period over which it is very vulnerable to moisture stress, as there may be no seed bank until 15-18 months after sowing. Shaw nodulates effectively with standard cowpea inoculum (7). Most of the experience with Shaw has been obtained on the sandy soils of the coastal lowlands of south-east Queensland (2, 4, 5). However more recent sowings on a range of soil types, and consideration of its distribution in the moist elevated areas of East Africa (1, 3), suggest it will be more widely adaptable within the moist subtropics and elevated tropics.

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