New herbage plant cultivars

B. Legumes

21. Arachis

(a) *Arachis pintoi* Krap. et Greg. *nom. nud.* (Pinto peanut) cv. Amarillo

Reg. No. B-21a-1. Registered on December 5, 1989.

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Origin

Collected by G.C.P. Pinto in April 1954 near the coast in Brazil, between the mouth of the Jequitinhonha River and Belmonte City (15°52'S, 39°6'W) (Gregory *et al.* 1973) altitude 5 m; wet season (Oct.–May) rainfall 1800 mm, dry season (Jun.–Sep.) rainfall 200 mm; growing in low fertility reddish sand to loamy sand with high aluminium saturation, under low forest with trees to 5 metres; may have originated near Aracuai and been carried downstream (Valls 1983). Transferred in turn to Cruz das Almas (Brazil), Corrientes (Argentina), Experiment (Georgia, USA) and Brisbane, (Australia). Further collections were made recently in the valleys of the Jequitinhonha, Sao Francisco and Tocantins Rivers (C.E. Simpson, pers. comm.).

Evaluation has been carried out by CSIRO at Beerwah, Samford and Pittsworth, the Queensland Department of Primary Industries at Brisbane, Gympie, Rockhampton and Mackay, and the New South Wales Department of Agriculture and Fisheries at Grafton and Alstonville.

Submitted by Queensland Department of Primary Industries, New South Wales Department of Agriculture and Fisheries and CSIRO Division of Tropical Crops and Pastures, and recommended for registration by the Queensland and New South Wales Herbage Plant Liaison Committees. Breeders' seed will be maintained by the Queensland Department of Primary Industries.

Morphological description

Prostrate stoloniferous perennial herb. Stems hairy, hairs appressed with a few long (2 mm), spreading. Stipules to 30 mm long, acute, somewhat falcate, the lower half to two thirds adnate to the petiole between petiole base and pulvinus, hairs appressed with a few long hairs close to line of fusion with petiole. Leaves with 2 pairs of leaflets; petiole hairy, grooved above, free part to 65 mm long; distal leaflets obovate, proximal leaflets oblong-obovate, obtuse at apex, slightly cordate at base, to 45 mm long × 35 mm wide, 12–18 lateral nerves on each side of midrib; upper surface glabrous, pale green in full sun, dark green with paler midrib in shaded situations, rarely variegated; lower surface paler, with sparse appressed hairs on all leaflets and scattered long tubercle-based spreading hairs on proximal, rarely on distal leaflets. Flowers in short axillary racemes, sessile, arising from linear, stipuliform bracts; pea-shaped, yellow with deep orange striations on the standard; lower calyx fused to form greyish-red pilose, filiform tube to 130 mm long, upper calyx membranous 5-lobed to 8 mm long, pilose with occasional stiff tubercle-based hairs, the upper 4 lobes united for much of their length,

the lower free, linear; standard rounded, 15 mm wide, obtuse wings to 10 mm long, keel beaked, the beak 5 mm long; anthers 8; ovary with 2–3 ovules. Pegs from 1 to 27 cm long penetrating the soil obliquely mostly to a depth of less than 7 cm, producing mostly a single pod with 1 seed (rarely 2), but occasionally 2 and rarely 3 pods separated by varying lengths of peg. 6000 to 8000 seed in pod per kg. Chromosome number 2 n = 20.

Agronomic characters

Amarillo has proven persistent and productive in sub-tropical (B.G. Cook, R.J. Williams and G.P.M. Wilson, unpublished data) and tropical (Grof 1985) environments, on strongly acid to neutral soils with textures ranging from sand to heavy clay. It grows well in soils of only moderate fertility, and is tolerant of high aluminium saturation of the exchange complex (Grof *op. cit.*).

Although Amarillo can survive long dry periods, best dry matter yields are obtained under warm moist conditions. Growth appears to be markedly reduced under highly evaporative conditions even when soil moisture is adequate. Leaves and some stolons are killed by frost, but plants mostly survive, and recover quickly with the onset of better growing conditions. Annual dry matter yields of 5.2 to 9.6 t/ha have been recorded from Amarillo growing with *Brachiaria* spp. producing 10.8 to 20.1 t/ha in the tropics (Grof *op. cit.*), while 7.3 and 6.5 t/ha have been obtained in irrigated and unirrigated pure stands in the subtropics (B.G. Cook, unpublished data). Amarillo has grown in association with Kikuyu (*Pennisetum clandestinum* Hochst. ex Chiov.), narrowleaf carpet grass (*Axonopus affinis* Chase), Rhodes grass (*Chloris gayana* Kunth.), blue couch (*Digitaria didactyla* Willd.), paspalum (*Paspalum dilatum* Poiret) and Bahia grass (*P. notatum* Fluegge.) in sub-tropical Australia, but grows more vigorously in pure swards. It colonizes bare soil rapidly forming a dense mat up to 20 cm deep, with stolons held down by roots and fruiting pegs. It is tolerant of low rates of phenoxy and glyphosate weedicides.

Amarillo is highly specific in its rhizobial requirement, with strain QA 1091 (CIAT 3101) *Bradyrhizobium* (Jordan 1981, 137) being the most effective available. It has proven resistant to peanut rust (*Puccinia arachidis* Speg.) and leaf spot (*Mycosphaerella* spp.) (K.J. Middleton, pers. comm.) and possesses moderate to high field resistance to the various root knot nematodes (*Meloidogyne* spp.) but is susceptible to root-lesion nematode (*Pratylenchus brachyurus* (Godfrey 1929) Filipjev & Schuurmans-Stekhoven 1941) (R.W. McLeod and P.C. O'Brien, pers. comm.). Dark stem lesions from which *Colletotrichum gloeosporioides* (Penzig) Penzig & Sacc. has been isolated (J.L. Alcorn, pers. comm.) have been recorded, but have little adverse effect on plant vigour. No virus particles were observed in the sap of variegated material using electron microscopy (J.E. Thomas, pers. comm.).

Flowering commences 3 to 4 weeks after emergence, and continues until late in the growing season, with flushes often developing following rain. In sandy and clay loam soils, 90–95% of the seed develops in the top 5 cm. Yields of seed-in-pod up to 2 t/ha have been obtained in experiments (D.S. Loch and G.P.M. Wilson, pers. comm.), and about 1 t/ha from larger areas. Burrowing rodents have eaten most of the seed set in pots at Alstonville.

Amarillo is readily eaten by stock. *In vitro* dry matter digestibility of 6 week regrowth in a trial near Gympie averaged 73% (P.R. Martin, pers. comm.), and crude protein level 19%. Heifers grazing Amarillo-*Brachiaria* spp. pasture at 2.4 b/ha in Colombia gained an average of 515 g/head/day over a 594 day period (Grof *op. cit.*). Amarillo has also found application as a ground cover in orchards and banana plantations by virtue of its low mat forming growth habit coupled with a high degree of shade tolerance.

Acknowledgments

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References

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