

New herbage plant cultivar

B. Legumes

17. Jointvetch

(b) *Aeschynomene americana* L. (American jointvetch) cv. Lee

Reg. No. B-17b-2. Registered on March 30, 1994.

Originators: BISHOP, H.G.¹, COOK, B.G.², HOPKINSON, J.M.³ and HILDER, T.B.¹

¹Department of Primary Industries, PO Box 668, Mackay, Qld 4740, Australia.

²Department of Primary Industries, PO Box 395, Gympie, Qld 4570, Australia.

³Department of Primary Industries, Walkamin, Qld 4872, Australia.

Registrar: Oram, R.N.

CSIRO Division of Plant Industry, GPO Box 1600, Canberra, ACT 2601, Australia.

Released by Queensland Department of Primary Industries.

Published in the Australian Journal of Experimental Agriculture 1995, **35**, 122–123.

Origin

Derived from CPI 93574, collected as CIAT 7026 by R. Schultze-Kraft, C. Ortega and B. Castillo on January 27, 1978 at the roadside entering the village Rio Sereno of the State of Chiriqui in Panama (8°48'N, 82°52'W, altitude 850 m, 3320 mm annual rainfall). It was growing in clay soil with moderate drainage and intermediate fertility. CPI 93574 came to Australia in 1981 as part of A.E. Kretschmer's Florida *Aeschynomene* collection (IRFL 2823) when representative accessions were sent to R.J. Williams of CSIRO Cunningham Laboratory, Brisbane. All accessions of *A. americana* in Australia were grown at Mackay, Queensland, in 1983 and classified into 4 groups (Bishop *et al.* 1988). CPI 93574 was selected for further evaluation as a perennial but having many favourable attributes similar to the annual *A. americana* cv. Glenn. Evaluation continued under the DPI/CSIRO coordinated plant evaluation (COPE) project and

in large grazed swards at various sites in tropical coastal Queensland.

Lee was submitted by the Department of Primary Industries for release as a cultivar protected by Plant Variety Rights and was recommended for registration by the Queensland Herbage Plant Liaison Committee in August 1990. Breeders' seed will be maintained by the Department of Primary Industries and commercial seed will be produced under the Department of Primary Industries' seed certification scheme.

Morphological description

Lee has orange coloured flowers, distinguishing it from Glenn which originally had mauve flowers. Commercial seed of Glenn now contains a small proportion of off-types with orange or light pink flowers.

Lee flowers are larger than Glenn flowers [7.6 mm long compared with 6.5 mm at Gympie (Anon. 1994) and 8.5 mm *cf.* 7.5 mm at Mackay (S. Reynolds, personal communication)]. Seed pods have more glandular hairs than Glenn and on average contain an extra article (6–8 per pod *cf.* 4–7) (S. Reynolds, personal communication). Naked seeds of Lee are slightly smaller than those of Glenn (476 000 *cf.* 341 000 per kg).

Lee has a more compact, semi-erect growth habit than Glenn, with profuse basal branching. This difference in habit is more obvious in spaced plants which develop an almost prostrate habit. The lead shoot in Glenn is more erect and branched in the upper part than in Lee. In dense swards, Lee plants grow more erect but maintain stronger basal branching and do not grow as tall as Glenn. Lee is 4–6 weeks later flowering than Glenn, i.e. late May *cf.* mid-April at Gympie (Anon. 1994) and mid-May *cf.* early April at Mackay (H.G. Bishop, unpublished data). Perennating plants flower and produce seed in spring–early summer when moisture is available.

Most *A. americana* flowers are self-pollinating but recent field studies in Florida, USA, indicate out-crossing can occur (McKellar *et al.* 1991). Chromosome number for *A. americana* is $2n = 20$ (Shaofu *et al.* 1987).

Agronomic characters

Lee is predominantly perennial, Glenn annual. Lee plants in grazed plots at Proserpine and Mackay have lived for longer than 4 years with crowns >20 m diameter at ground level. Spaced nursery plants at Gympie had 88% survival after winter while only 2% of Glenn plants regrew (Anon. 1994). The percentage of plants which perennate depends on the length of dry season, frost and grazing pressure. In the DPI/CSIRO COPE project, Lee received a higher third season performance rating than Glenn at sites near Mareeba, South Johnstone, Tully, Mackay, Calliope and Gympie (Bishop and Hilder 1994). Seedling development in Lee is slower than in Glenn over the first 6 weeks (H. G. Bishop and J. Rains, unpublished data; Anon. 1994).

Flowering in Lee is less well synchronised owing to the terminal shoot showing some dominance and hence precociousness (J.M. Hopkinson, personal communication). Seed yield potential, though high, is lower than for Glenn. Ripe seed holds well on the standing crop and is readily direct-headed. Direct harvest from a 1000 m² seed-increase area at Walkamin yielded 600 kg/ha while the 1992–93 commercial crop yielded 700 kg/ha. Suction harvesting increased this to more than 1000 kg/ha. Southedge Seeds, Mareeba, has exclusive seed production rights to the variety under licence.

Lee, like Glenn, is well adapted to environments receiving more than 1000 mm annual rainfall, but it will grow on fertile soils receiving less than 900 mm. It produces adventitious roots from stems touching moist soil and is very suited to low-lying waterlogged soils. Glenn and Lee will also grow in clay soils receiving sufficient moisture. Several successful stands of Glenn have been reported in brigalow melonhole country (H.G. Bishop, unpublished data) and in other clay-soil environments (Peacock and Smith 1992).

Good liveweight gains have been recorded from Lee pastures at “Tedlands”, south of Mackay. In a grazing demonstration comparing Lee and Glenn, each sown with Seca stylo and Callide rhodes grass in January 1992, both groups of steers gained 0.8 kg/hd/d for a 90-day period in April–June 1993. In a 40-day period in July and August, 1993, the steers on Lee gained 0.5 kg/hd/d while the steers on Glenn gained 0.1 kg/hd/d.

Lee is less affected by powdery mildew than is Glenn, but seed crops may require treatment with a fungicide. *Botrytis* spp. was present on seed crops at Mareeba but was not damaging (J.M. Hopkinson, personal communication). Root nodulation, nitrogen fixation, leaf protein content, response to phosphorus and forage palatability are similar to Glenn.

Glenn is tolerant of 2,4-D and a range of other herbicides for management of weeds in seed crops but can be eradicated by an application of Blaser at 2 L/ha (Loch and Harvey 1990). Experience with commercial seed growing at Mareeba indicates Lee has similar tolerance of 2,4-D to that of Glenn (J. Rains, personal communication).

Lee will complement Glenn as a pasture legume and will extend the period of weight gain from animals, particularly in more extensive grazing areas where Glenn may mature and die before cattle can graze it.

References

- ANON. (1994) American jointvetch (*Aeschynomene americana*) var. Lee, application No. 92/126. *Australian Plant Varieties Journal*, **6**, (in press).
- BISHOP, H.G. and HILDER, T.B. (1994) The *Aeschynomene* genus as a source of pasture legumes for tropical and subtropical Australia. *Proceedings of the XVII International Grassland Congress, New Zealand/Rockhampton, February 1993*. (in press).
- BISHOP, H.G., PENGELLY, B.C. and LUDKE, D.H. (1988) Classification and description of a collection of the legume genus *Aeschynomene*. *Tropical Grasslands*, **22**, 160–175.
- LOCH, D.S. and HARVEY, G.L. (1990) Weed control in pasture seed crops in southern Queensland. In: ‘Proceedings of DPI Weeds Research Workshop, Toowoomba, January 1990’. Session 2, pp. 34–42.
- McKELLAR, M.A., DEREN, C.W. and QUESENBERRY, K.H. (1991) Outcrossing in *Aeschynomene*. *Crop Science*, **31**, 476–478.
- PEACOCK, A. and SMITH, F.T. (1992) Evaluation of pasture legumes on a seasonally flooded heavy clay soil in south-east Queensland. *Australian Plant Introduction Review*, **23**(1), 20–31.
- SHAOFU HUANG, ZHIFEN ZHAO, DEXING GU, ZHONGYI CHEN and XIANGXU HUANG. (1987) Report on chromosome numbers of