Register of Australian Herbage Plant Cultivars

A. Grasses
17. Bothriochloa
(b) *Bothriochloa insculpta* (Hochst. ex A. Rich) A. Camus (creeping bluegrass) cv. Bisset

Reg. No. A-17a-2

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Origin

Bisset is a composite of 2 apparently identical accessions collected by R. W. Strickland: CPI 59584 from 1ºS., altitude 1667 m in Kenya; CPI 59585 from 3ºS., altitude 1273 m in Tanzania. Soils at the collection sites were near neutral loams to sandy loams, and rainfall was 850 and 625 mm, respectively.

These 2 components were selected following agronomic evaluation at 11 sites in southern inland Queensland (W. J. Scattini, B. Johnson and M. J. Conway unpublished data). Initial seed increase was carried out at Queensland Department of Primary Industries, Toowoomba, and, subsequently, at Cinnabar near Kilkivan.

It has been submitted by the Queensland Department of Primary Industries and recommended for registration by the Queensland Herbage Plant Liaison Committee. Breeders' seed will be maintained by the Queensland Department of Primary Industries. The cultivar has been protected by Plant Variety Rights (Anon. 1990).

Morphological description

Bisset is a weakly tufted perennial with erect and geniculately ascending culms to 1.4 m, and numerous prostrate culms with a strong tendency to produce plantlets and roots at the nodes. Both the prostrate and erect culms are finer than those of Hatch. Culms channelled on 1 side with exposed portions often pigmented reddish pink to mauve. Erect culms often branched at the nodes. Nodes yellowish with a ring of erect white hairs 3–4 mm long. Leaf sheaths are largely glabrous, except for hairs to 2 mm long along the whole, or part, of the margin, sometimes flushed with purple. Ligule a fibrous papery membrane 1–1.5 mm long and 4–5 mm broad. Leaf blades generally longer than, but the same width as, those of Hatch, light green with purple, finely serrate margins, with a hairy, yellow transverse band, narrowing towards the midrib, on both surfaces at the blade–sheath junction above the ligule. Leaves and stems often not as glaucous as in Hatch. Inflorescence of few to 15 racemes, 4–6.5 cm long, on a central axis 1.5–3 cm long. Spikelets borne in pairs, 1 sessile, the other pedicelled, except for a terminal triad of 1 sessile and 2 pedicelled spikelets. Sessile spikelets with a ring of white hairs to 2 mm long arising from the callus at the base of 2 florets enclosed by 2 glumes. Lower glume, 11–13-nerved, glabrous, light green flushed with purple, 3.5–4 mm long, with a row of bristles on the marginal keels in the apical quarter and a single deep pit (concave gland) quarter of the glume length from the apex. Upper glume 3-nerved, about 3.5 mm long, softly hairy on the margins and with a row of bristles on the keel in the apical quarter. Lower floret sterile, reduced to a membranous, nerveless lemma 3–3.5 mm long. Upper floret fertile; lemma linear, about 2 mm long, extending to a 2-tone brown, scabrid, hygroscopically active awn 20–25 mm long. Pedicelled spikelet sterile or rarely staminate, slightly larger than the sessile spikelet. Lower glume 4–5 mm long, multinerved, with 2 (sometimes 1 or 3) shallow pits and a row of bristles on the margins that become smaller towards the base, and on the median keel at the apex. Upper glume 3–3.5 mm long, 3-nerved, membranous. Glumes enclose a membranous lemma 1.5 mm long when floret is sterile and a second membranous lemma when floret is staminate. Pedicel and rachis internodes about 2.5 mm long, with white hairs that are longer towards the apices, and a translucent longitudinal groove. The diaspore comprises the sessile and pedicelled spikelets and the rachis internode, giving about 750 000 units/kg in a sample of diaspores each containing a caryopsis. *Bothriochloa insculpta* has a chromosome number of $2n = 60$ (Celarier and Harlan 1957; Bodgan 1977).

The most reliable morphological distinction between Bisset and Hatch is the presence of small elliptic glands on the sheath keel and nerves in Hatch, and of long spreading hairs at the blade–sheath junction in Bisset, each being absent in the other cultivar (Anon. 1990).

Agronomic characteristics

In most respects, Bisset is agronomically similar to Hatch. In the above comparison, carried out in a semi-arid environment on soils ranging from coarse, granitic sands to heavy, cracking clays, it proved equal, or superior, to Hatch in persistence and vigour after 4 years at 9 of the 11 sites. Both failed on the coarse sand, and although Hatch was superior to Bisset on a hard-setting loam, both performed poorly (W. J. Scattini, B. Johnson and M. J. Conway unpublished data).

A more recent comparison spanning only 2 years and covering 12 sites, from Roma and Mutdapilly in the south to South Johnstone in the north, showed that the 2 cultivars behave similarly in most environments. Sites were located over a more diverse range of soils of average annual rainfall from 600 to 3850 mm (I. B. Staples unpublished data). The main difference between cultivars is the earlier and stronger development of stolons and rooted nodal plantlets in Bisset. In frosted situations, many of these plantlets survive, giving a more stable ground cover, and providing better soil protection and a better base for spring growth than Hatch, which tends to be frosted back repeatedly to original crowns. In a comparative growing trial under ideal moisture conditions, stolon development commenced in Bisset within 5 weeks of sowing, but more than a week later in Hatch. By 8 weeks from sowing, Bisset plants had twice as many stolons as Hatch, the longest being, on average, 1.7 times as long as, but finer than, those of Hatch. Roots had developed on 55% of Bisset stolon nodes and only on 11% of those on Hatch (D. S. Loch and B. G. Cook unpublished data).

Although the breeding mechanism of Bisset has not been determined, the high level of uniformity between and within generations suggests apomixis, which is in accordance with the findings of Celarier and Harlan (1957). In southern Queensland, Bisset commences flowering in early May and Hatch in late April, leading to main seed crops in late June–early July and mid–late May, respectively. Low temperatures delay seed ripening, and frosts may destroy immature seed crops (D. S. Loch pers. comm.). In northern Queensland, Bisset seed crops have been harvested between mid May and mid June and Hatch between late April and mid May, about 4 weeks after head emergence. In this environment in the absence of frosts, a follow-up crop of Bisset has proven possible in August (J. M. Hopkinson pers. comm.). Seed yields are similar to those of Hatch, usually ranging from 50 to 100 kg/ha, although yields in excess of 130 kg/ha have been achieved (J. M. Hopkinson pers. comm.).

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References

Anon. (1990). Creeping bluegrass (*Bothriochloa insculpta*). *Plant Varieties Journal* **3**, 9.

Bogdan, A. V. (1977). 'Tropical Pasture and Fodder Plants (Grasses and Legumes).' p. 50. (Longmans: London.)

Celarier, R. P., and Harlan, J. R. (1957). Apomixis in *Bothriochloa, Dichanthium* and *Capillipedium*. *Phytomorphology* **7**, 93–102.