

Register of Australian Herbage Plant Cultivars

A. Grasses

19. Eragrostis

Eragrostis curvula (Schrad.) Nees (African lovegrass; Agronomic type: *conferta*)
cv. **Consol**

Reg. No. A-19a-1
Registered May 1982

Published in the Journal of the Australian Institute of Agricultural Science 48(3): 186-88 (1982).

Origin

Derived from seed received from Wagga Wagga Soil Conservation Research Centre, N.S.W., in September 1975 bearing the South African Identification of Introduction B/53/52, Register No. 119. The seed originated from Pniel, Cape Province, Republic of South Africa, and was supplied by the Plant Introduction Officer, Department of Agricultural Technical Services, Pretoria.

The seed was allotted the Soil Conservation Service of N.S.W. accession number S.C.S. 4663. Submitted by the Soil Conservation Service of New South Wales. Breeders' seed held by the Soil Conservation Research Centre at Wagga Wagga. Registered May 1982.

Morphological description (4,5,6,11,13,15,16,18,20)

Eragrostis curvula is a highly variable intergrading complex, including forms which have been regarded as separate species (13,15,16); apomixis is common, so subspecies have doubtful validity. Six agronomic types within the species have been recognised (11,13), namely, *Curvula*, *Robusta Blue*, *Robusta Green*, *Robusta Intermediate*, *Tall Chloromelas* and *Short Chloromelas*. Incorporation of *E. lehmanniana* into *E. curvula* as another form may be justified (15).

Individuals of the *E. curvula* complex are densely tufted perennials; basal leaf sheaths strongly striate with nerves forming prominent ridges, often hard and yellowish, appressed silky hairy below; culms 30 – 120cm high, slender or robust, usually erect. Leaf blades narrow, up to ± 30cm long, 3mm wide, usually rolled or filiform. Panicle very variable, loose and spreading to narrow and contracted, 6 – 30cm long, the lowest branches often whorled and hairy in the axils. Spikelets 3 – 14 flowered, linear, 4 – 10mm long, 1 – 1.5mm wide, grey-green, breaking up from the base, the rachilla persistent below but fragile above; lower glume lanceolate, 1 – 1.8mm long, 0.33 – 0.75 as long as the lowest floret; upper glume narrowly ovate, 1.5 – 2.2mm long; lemmas ovate elliptic, 1.8 – 2.6mm long, appressed to the rachilla; palea smooth or minutely scaberulous on the keels, persistent; anthers 3, 0.8 – 1.1mm long. Caryopsis ellipsoid, 0.7mm long (4). Chromosome numbers 20,40,50,60,70,80 and aneuploids. There is little doubt that the basic chromosome number of the genus is $n = 10$ (15).

Consol has extravaginal shoots, densely tufted, erect. Basal leaf sheaths purple, striate, nerves somewhat indistinct, yellowish; tomentose below, glabrous above. Culms up to 60cm tall, robust up to 3mm diameter at the base, erect, glabrous, glaucous, light blue-green to grey-green, three noded; nodes long exserted, purple to olive green, lower nodes purple. Leaves mostly basal, blades glaucous, blue-green, 15 – 25cm long, up to 7mm wide, usually not rolled or filiform; ligule about 1mm long, ciliate on the summit, long hairy laterally. Panicle olive-green, up to 15cm long, narrow, contracted, with stiff lateral branches, usually less than 5cm long, lowest branches may be whorled, not hairy in the axils. Spikelets 8 – 10 flowered, slightly flattened, 5 – 8mm long, leaden-green, clustered on lateral branches, pedicels up to 2cm long. Glumes unequal, lower glume about 1mm long, upper about 1.5mm long; palea 2-keeled, as long as lemma. Seed orange to dark brown, approximately twice as long as broad, acute, smooth; embryo about 0.33 as long as the seed (6). About 5.2 million seeds/kg.

Variation between progeny plants of *Consol* grown in close association with other *E. curvula* types has not been detected, indicating a predominantly apomictic mode of reproduction. The mechanism is postulated to be diplospory followed by pseudogamy (15). *Consol* is a tetraploid with $2n = 40$ (14).

Consol is agronomically and morphologically similar to the American cultivar Catalina, which is classified as *E. curvula* (20), but also referred to as Boer or Conferta lovegrass, *E. curvula* var. *conferta* (16,18). A set of 63 *E. curvula* accessions representing all agronomic types was grown at Wagga Wagga, and classified on the basis of 19 morphological characters. The Conferta type could be distinguished from the remainder of the species (5,6). Conferta is thus regarded here, not as a variety, but as a seventh agronomic type within the species (13).

Agronomic characters

Consol is a long-lived warm season perennial native to the winter rainfall region of South Africa. Consol's persistence in the drier areas of New South Wales has equaled or exceeded that of other *E. curvula* accessions. *E. curvula* has been found to be persistent, productive and very drought tolerant (7,10,19), but could not be recommended for pasture because of low levels of acceptability to stock. *E. curvula* has been the only warm season grass species tested in central western New South Wales with adequate persistence and drought tolerance for summer soil erosion control (9,10).

Consol is considered to have greatest potential for soil erosion control and grazing on lighter soil types, including infertile sands, throughout north-western, central and south-western New South Wales. It was selected primarily on the basis of palatability to sheep from a wide range of *E. curvula* accessions and strains. The American cultivars Morpha and Catalina (17,18,20), and other types reported to be more acceptable to stock than the South African cultivar, Ermelo (12), were found to be less palatable than Consol (8).

Unpalatability of naturalised populations of *E. curvula* in New South Wales, which are mainly of the Curvula and Chloromela types, has caused concern in some areas (2). Consol is both distinguishable from these types (5,6) as well as being more palatable (1). In south-western New South Wales, Consol is considered to be superior in drought tolerance, persistence, frost hardiness and herbage production to all warm season perennial grass species available commercially at present.

Consol regenerates in the early spring and may flower and set seed by early summer. Periods of most active growth are spring and autumn. It is particularly responsive to summer rainfall. Summer is the season with least reliable rainfall in southern New South Wales (3). Consol's growth rhythm complements that of cool season annual and perennial pasture species. There are presently no commercially recommended warm season pasture grasses for area where Consol is seen to have the greatest potential use.

References

1. Anon. (1980) Annu. Res. Rep. Wagga Soil Conservation Research Centre. Soil Conserv. Serv. N.S.W. Sydney.
2. Auld, B.A., and Scarsbrick, B.D. (1970). Chloromelas lovegrass in the Tenterfield area of N.S.W. *J. Aust. Inst. Agric. Sci.* **36**, 296-7.
3. Edwards, K., and Johnston, W.H. (1978). Agricultural climatology of the Upper Murrumbidgee River Valley, N.S.W. *Aust. J. Agric. Res.* **29**, 851-62.
4. Clayton, W.D. (1974). 'Flora of Tropical East Africa. Part 2. Gramineae'. (Crown Agents of Overseas Govts. and Admins., London).
5. Jacobs, S.W.L. (1981). Classification in the *Eragrostis curvula* complex in Australia. Unpubl. rep., R. Bot. Gdns., Sydney.
6. Jacobs, S.W.L. (1981). Personal communication. R. Bot. Gdns., Sydney.
7. Johnston, W.H. (1974). African lovegrass (*Eragrostis curvula* (Schrad.) Nees) – potential for soil conservation in south western New South Wales. *J. Soil Conserv. N.S.W.* **30**, 213-28.
8. Johnston, W.H., and Aveyard, J.M. (1977). Testing and selection of African lovegrass (*Eragrostis curvula*) for soil conservation in south-western New South Wales. *Aust. Plant Intro. Rev.* **12**, 27-39.
9. Johnston, W.H., and Cregan, P.D. (1979). The pastoral and soil conservation potential of *Eragrostis curvula* in semi-arid New South Wales. Proc. 17th Asian-Pacific Weed Sci. Soc. Conf., Sydney, pp. 161-4.
10. Lang, R.D. (1977). Species trials for revegetation – Lachlin district New South Wales. *J. Soil Conserv. N.S.W.* **33**, 60-75.
11. Leigh, J.H. (1961). Leaf anatomy in certain strains of *Eragrostis* Beauv. *S.Afr. J. Bot.* **27**, 41-6.
12. Leigh, J.H. (1961). The relative palatability of various varieties of weeping lovegrass (*Eragrostis curvula* (Schrad.) Nees). *J. Brit. Grassl. Soc.* **16**, 135-40.
13. Leigh, J.H., and Davidson, R.C. (1968). *Eragrostis curvula* (Schrad.) Nees and some other African lovegrasses. *Aust. Plant Intro. Rev.* **5**, 21-44.
14. May, C.E. (1941). Personal communication. Agric. Res. Inst. Wagga Wagga, N.S.W.
15. Streetman, L.J. (1970) Cytogenetics of *Eragrostis* In. Proc. First Weeping Lovegrass Symp., ed. R.L. Dalrymple. (Agric. Div.: The Samuel Roberts Noble Foundation Inc., Ardmore, Oklahoma.).

16. Voigt, P.W. (1970). New varieties of weeping lovegrass through plant evaluation and selection. *In*. Proc. First Weeping Lovegrass Symp., ed. R.L. Dalrymple. (Agric. Div.: The Samuel Roberts Noble Foundation Inc., Ardmore, Oklahoma.)
17. Voigt, P.W. (1971). Registration of Morpa weeping lovegrass. *Crop. Sci.* **11**, 312-13.
18. Voigt, P.W. and Kneebone, W.R. (1970). Palatability, chemical composition and animal gains from selection of weeping lovegrass, *Eragrostis curvula* (Schrad.) Nees. *Agron. J.* **62**, 673-6.
19. Watt, L.A. (1975). Evaluation of pasture plants for soil conservation, upper Horton Valley, north-western New South Wales. *J. Soil Conserv. N.S.W.* **31**, 59-63.
20. Wright, L.N. (1971). Registration of Catalina weeping lovegrass. . *Crop. Sci.* **11**, 939.