Register of Australian Herbage Plant Cultivars

B. Legumes
1. Clover
Trifolium ambiguum M. Bieb. (Caucasian clover) cv. Summit

Reg. No. B-1g-1
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Origin

Derived from seed sample of diploid material received in 1931 (C.P.I.2264) from Botanic Gardens, Tiflis, Georgia, U.S.S.R., with advice that it was a form native to high fields and lower alpine slopes of mountains of the Caucasus region and Armenia (2,3). In the first two Australian generations there was a possible accession of genes from several other diploid introductions of this species. Selected continuously from third to sixth Australian generations by Hely (4,5,6) for (a) compatibility with available strains of nodule bacteria introduced from habitat, (b) seedling vigour, (c) survival in most severe parts of Australian alpine environment, and (d) flowering and seed production. Field work done by F.W. Hely in cooperation with Soil Conservation Service of New South Wales (especially W.G. Bryant, Cooma) and CSIRO colleagues A.B. Costin and D.J. Wimbush. Nodulation investigations, diallele crossing of selected plants, and compatibility studies done by F.W. Hely (6,7). Finally derived from polycross of 30 carefully chosen plants. Breeder's seed maintained by the Soil Conservation Service. N.S.W., Cooma.

Submitted for registration by the CSIRO Division of Plant Industry, Canberra, and the Soil Conservation Service of New South Wales. Recommended for registration by the New South Wales Herbage Plant Liaison Committee. Registered May 1970.

Morphological description (2,4,8)

Stout procumbent to ascending herbaceous perennial with extensive, much-branched, moderately deep root system and strongly deep-rhizomatous growth; producing multi-tufted habit, with plants arising progressively further out from parent until whole soils mass is occupied with robust roots and rhizomes. The growth habit of 1-2-yr old plants is generally compact, hemisperical when ungrazed, and of medium height (to approx. 20 cm). Stems solid, elliptical in cross-section, sparsely hairy or becoming glabrous. Leaves petiolate, leaf stalks very variable in length. Leaflet glabrous, soft; usually ovate sometimes ovate to elliptical; strongly veined, veins numerous, bifurcated, thickened at ends, produced into numerous fine marginal teeth; approximately 85% with pale green distinct inverted V on lower half or two-thirds, others plain dark green. Leaflets 20-30 mm long, 13-25 mm wide; length/width ratio 1.16-1.50 (mean 1.34). Petioles green, sparsely pubescent. Stipules pale, membranous, 7-9 branching nerves, entire, adnate, cuspidate.

Heads capitate, usually solitary, terminal or axillary, dense spheroid to ovoid; 28-35 mm in length, 25-30 mm in width, becoming more oblong-ovate in fruit. Peduncles 40-110 mm long. Bracts at base of flower stalks (pedicels) linear-lanceolate, membranous with prominent excurrent midrib, longer or much longer than pedicels. Pedicels one-fourth to one-half the length of the calyx tube, sparingly hairy, reflexed in fruit. Calyx tube usually glabrous except for sparsely hairy base and rim of tube; length 2.5 mm; calyx teeth lanceolate-subulate, with membranous margins, widely spreading to reflexed in fruit, subequal, 2.5-3.0 mm long. Corolla 8-12 mm long persistently white or turning faint pink at maturity. Flowers sweet-smelling with good nectar content. Pods ovoid to oblong, brown, enclosed in calyx, glabrous, 1-2 seeded. Seeds broad reniform mostly dull yellowish (few reddish) brown. Approx. 771,000-882,000 per kg. Chromosome number 2n = 16.

Agronomic characters (1,4-9)

An alpine form, adapted to survival at the highest elevations in Australia, where it persists much better than *Trifolium repens* L. at low pH and restricted phosphate levels. It is not nodulated by volunteer strains of bacteria and requires special strains of *Rhizobium trifolii*: strains recommended for

inoculation are CC227 and CC231 together (4,5). Nodules persistent from one season to the next. Strongly rhizomatous; deep winter dormancy; survives under ice sheets and in frozen soil. Resistant to seasonally waterlogged conditions.

Responds markedly to improved phosphate nutrition and provides effective ground cover within a few years even where snow cover persists for up to 7 months per annum (1). Self-sterile, with considerable cross-incompatibility. Free-flowering under suitable conditions; very attractive to honey bees; seed production good when bees abundant. Hard seed 40-60%. Compatible with grasses used in revegetation. Agronomically not very productive, it is highly regarded as a potential soil conservation plant for areas above the tree-line.

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