

Register of Australian Herbage Plant Cultivars

B. Legumes

1. Clover

Trifolium ambiguum M. Bieb. (Caucasian clover) cv. **Prairie**

Reg. No. B-1g-3

Registered January 1977

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Origin (2,4,5)

Developed over a number of years from hexaploid material received from the N.I. Vavilov All Union Institute of Plant Industry, Leningrad, U.S.S.R., (K22021) in 1947 (CPI 10803), this introduction is an ecotype from lower medium elevations (c. 1000 m) in the northern Caucasus region.

In Australia this material was originally late-and shy-flowering as well as having very low seed production per raceme. Selection by F.W. Hely over seven generations has resulted in plentiful mid-season blooming and reduced blockages to compatibility between plants in cross fertilization; seed production investigations were conducted in south-eastern Australia to increase substantially the numbers of seeds produced per head. It is a distinct 6x form, with relatively small flowers for a hexaploid and an inability to cross with eight other 6x ecotypes of *T. ambiguum* used in crossing studies. It is most likely an allopolyploid. Breeders' seed is maintained by the Division of Plant Industry, CSIRO, Canberra, A.C.T. Submitted for registration by the Division of Plant Industry, CSIRO. Recommended for registration by the New South Wales Herbage Plant Liaison Committee. Registered January 1977.

Morphological description (1,2,4)

A hexaploid form of Caucasian clover, this cultivar differs from cvv. Summit, Forest and Treeline in the following characteristics. (a) Bigger overall and generally more robust plants. (b) The growth habit of 1-2 year-old plants is different in that they are vigorously productive and compact to moderately spreading. (c) Leaflets are clearly marked on all plants with a distinct U (as compared with a V or no marking), having a band width of 3-5 mm. (d) Leaflets are at least twice as long and twice as broad as those of cvv. Summit, Forest and Treeline under good growing conditions, being c. 56 mm long, and c. 37 mm wide. (e) The leaflets are ovate-elliptic to broadly elliptic, obtuse to distinctly rounded at the apex. (f) Flowers are larger (corolla 13-15 mm) and a definite pink at maturity, producing heads which are superficially similar to those of *Trifolium pratense* L. under some conditions. (g) Racemes are broader, being c. 28-30 mm wide and 30-35 mm long. (h) Peduncles are shorter (c. 55 mm mean length). (i) Seeds are very much larger than those of cvv. Summit, Forest and Treeline, with about 25% reddish brown seeds and 15-20% hard seed. Approximately 420,000 to 450,000 seeds per kg. (j) Chromosome number 6x = 48.

Agronomic characters (2,3,4,5,6,7)

This mainly cool-temperate, continental-type Caucasian clover is tall growing and very productive under favourable conditions. Spaced plants have spread 1-3 feet in the first season under good growing conditions at Canberra, A.C.T., and at Rangiora (coastal plain, 43° 26'S.), New Zealand. (Nordmeyer, personal communication). It is substantially a continental type, surviving a long, hard winter, normally under snow cover, and growing vigorously through a long snow-free season generally favourable for plant growth (e.g. cool-temperate prairie and deciduous forest environments of the northern hemisphere). This plant line has shown a capacity to survive periods (up to 6 weeks) submerged under water even during its early spring inundation (5). However, the foliage of this line has been shown to be sensitive to prolonged hot, dry weather in Australia, even under irrigation. It is more sensitive to high night temperature than is *Trifolium repens* L. but substantially less sensitive than cvv. Summit and Treeline. Once firmly established in a normally suitable environment, with underground reserves built up, it survives summer with ease by reducing petiole length, and maintaining a foliage cover close to the ground.

Prairie needs to be kept closely grazed in spring when it makes its main vegetative contribution. It has persisted in dominant stands at an elevation of 800 m as far north as 34° 50'S. on the Southern Tablelands of New South Wales. In the Canberra region (35° 15'S.), at an elevation of 600 m, it persists in open stands on fine-textured soils of moderate fertility where weed competition is not strong. Canberra appears to be a marginal habitat for the wholly self-supporting survival of this clover. Prairie can form a basic leguminous element in high elevation pastures in Australia, with a capacity to produce forage evenly between spring, summer and early autumn when mean monthly rainfall occurs. Having substantial roots reserves, it is easy to manage under grazing.

This material is considered to be most useful for revegetation at moist, medium elevations (e.g. 800-1600 m in the Snowy Mountains region of New South Wales) or in eroded stream valleys and on dam walls. It has also performed well in winter-cold, lower elevation continental country. A less domesticated form of this clover was studied and found to be the most productive Caucasian clover in southern Michigan, U.S.A. (4).

In Australia there are no problems of nodulation or symbiotic nitrogen fixation. The most suitable strains of *Rhizobium trifolii* for use with this clover are CC283b and CC286a (6,7). In Australia small-scale seed production has indicated a rate in excess of 200 kg/ha is possible in the marginal environment of the A.C.T. However, preliminary seed increase is being undertaken in New Zealand by the New Zealand Forest Service, Forest Research Institute at Rangiora. Best flowering and seed production have been obtained at c. 44°S in New Zealand where this cultivar begins flowering in October, with a second flowering generally possible in February (Nordmeyer, personal communication).

Like all other cultivars of Caucasian clover Prairie is non-oestrogenic and hence it could be considered a valuable pasture component for the high country of south-eastern Australia.

References

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