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NEW PASTURE PLANT RELEASES*

LEGUME

Lucerne

Medicago sativa L.

cv. **Aurora**
(Reg. No. B-8a-19)

Origin

Aurora was bred by the New South Wales Department of Agriculture at Yanco Agricultural Institute. The breeding team comprised G. G. Drummond, D. B. Waterhouse, P. G. H. Nichols, I. A. Cole, M. M. Say, A. J. Milvain, G. R. Travers, R. D. Johnston, M. E. Lattimore and T. M. O'Brien. The Australian Meat Research Committee partially funded its development.

Aurora originated in 1979 from an initial polycross involving 140 Falkiner (3), 51 Siriver (4) and 31 WL318 (1) plants. The Falkiner and Siriver plants had been screened in the greenhouse for resistance to the blue green aphid (*Acyrtosiphon kondoi* Shinji) while the WL 318 plants had been selected in the field at Gloucester and Maitland, N.S.W. for resistance to leaf diseases. Siriver was included in the polycross only to donate genes for winter-activity and blue-green aphid resistance; seed from the Siriver plants was not harvested.

To produce Aurora, progenies from the initial polycross underwent 3 generations of sequential selection in the greenhouse for resistance to the blue green aphid, the spotted alfalfa aphid (*Therioaphis trifolii* (Monell) f. *maculata*), and to the diseases phytophthora root rot (*Phytophthora megasperma* Drechs. f. sp. *medicaginis* Kuan et Erwin) and colletotrichum crown rot (*Colletotrichum trifolii* Bain et Essary). In the first 2 generations, selection for resistance was practised chiefly within half-sib families while the third (prebreeders) generation was derived mainly from a bulk screening of

*Extracted from the Register of Australian Herbage Plant Cultivars published in the Journal of the Australian Institute of Agricultural Science.

the second. Large plant numbers were used in each crossing cycle to avoid inbreeding depression. Aurora is based on 158 plants from the final generation of selection.

Submitted for registration by the New South Wales Department of Agriculture, which will produce and maintain breeders' seed. Recommended for registration by the New South Wales Herbage Plant Liaison Committee. Registered June, 1986.

Morphological description

Aurora is intermediate in appearance to Falkiner and Siriver. Its growth habit is slightly more erect than that of Falkiner and its stems are not as fine. Its flower colour is predominantly purple to mauve with a low proportion of variegation.

Agronomic characters

Aurora was bred to incorporate resistance to the spotted alfalfa aphid, the blue green aphid, phytophthora root rot and colletotrichum crown rot into a cultivar adapted to the major lucerne growing areas of New South Wales. Phytophthora root rot has been shown to be the major cause of stand decline in many irrigated soils of New South Wales (5, 6, 8) while colletotrichum crown rot is an important disease of coastal and high summer rainfall areas of the state (7). Spotted alfalfa and blue green aphids have been shown to cause substantial yield losses in susceptible cultivars throughout New South Wales (2, 9, 10).

Aurora has greater resistance to the spotted alfalfa aphid than Nova and much greater resistance than CUF101. In greenhouse seedling tests Aurora had 96% survivors compared to Nova with 88%, CUF101 with 58%, Falkiner with 43% and Hunter River with 1%. Its tolerance of the blue green aphid is greater than that of Siriver and much greater than that of CUF101; greenhouse seedling survival test ratings for Aurora, Siriver, CUF101, and Hunter River were 80%, 63%, 50% and 15%, respectively. The phytophthora root rot resistance of Aurora is equal to that of Baron, Trifecta and CUF101 but greater than that of Hunter River. A greenhouse seedling trial for phytophthora root rot resistance gave survival rates for Aurora, Baron, Trifecta, CUF101 and Hunter River of 39%, 37%, 32%, 31% and 25%, respectively. The colletotrichum crown rot resistance of Aurora is inferior to that of Trifecta but greater than that of Cimarron and Hunter River; seedling survival test ratings for Aurora, Trifecta, Cimarron and Hunter River were 32%, 38%, 15% and 7%, respectively.

Aurora is a general purpose variety suited to both haymaking and grazing situations. Its winter activity is greater than that of Falkiner but much less than that of Siriver. Preliminary field evaluation has been conducted at 14 sites throughout New South Wales. In trials where diseases have been found to reduce productivity, Aurora has consistently outyielded CUF101, Siriver and Sequel and shown superior or equal persistence to all cultivars tested.

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GRASSES

Ryegrass

a. *Lolium perenne* L. (perennial ryegrass)

cv. Martlet

(Reg. No. A-2a-10)

Origin

Martlet was bred from Tasmanian No. 1 by recurrent selection for mid-season maturity, high tiller density, good autumn and winter production, freedom from crown rust (*Puccinia coronata* Corda) infection and persistence under grazing in Tasmanian agricultural environments. Several thousand plants, grown as spaced plants from seedheads collected at random from the base population of Tasmanian No. 1, were selected on a maternal line basis, most emphasis being on high autumn to early spring productivity. Progenies of 60 selected plants that had been crossed in various combinations were examined as spaced plants and the 15 best mother plants entered into a polycross. The polycross progenies were examined as close spaced plants for productivity, disease freedom and time of flowering over two years.

Eight plants were selected phenotypically from the best families as parental plants for a second polycross, the progenies being tested for 3 years in mixed grass/clover swards under rotational grazing by sheep at high and medium rainfall sites (Elliott Research Station and Cressy Research Station, respectively). Six progenies displayed satisfactory production, rust freedom and persistence. The final comparisons were of 4 synthetic populations, based on combinations of 4 mother plants and 2 half-sib progenies of the second polycross and one plant selected phenotypically from the previous generation on the basis of its ideal plant habit. The synthetic on which Martlet is based used all 7 sources.

The initial breeding work was conducted by G. J. Martin and the final selection of mother plants to establish the synthetic population to produce breeders' seed was done by J. A. Carpenter, both of the Department of Agriculture of Tasmania.

The name of this cultivar alludes to the breeder, Mr. G. J. Martin, Martlet being the fourth herbage cultivar selected by him and also being a heraldic charge used as a mark of cadency for a fourth son.

Submitted by the Department of Agriculture of Tasmania, which will maintain breeders' seed. Recommended for registration by the Tasmanian Herbage Plant Liaison Committee. Registered November 1986.

Morphological description

Martlet is of mid-season maturity, flowering 4 days later than Tasdale. Tillers are more prostrate, leaves of vegetative tillers are narrower but the blades of the flag leaves are 0.5 mm broader than those of Tasdale and Tasmanian No 1. Individual plants are more highly tillered than those of Tasmanian No. 1. Martlet has more tillers, is less prostrate and has fewer reproductive tillers at maturity than Victorian. Approximately 490 000 seeds per kilogram; the radicles of seedlings do not fluoresce under ultraviolet light.

Agronomic characters

Comparisons of Martlet with cultivars recommended for use in Tasmania has been carried out at the 2 sites used to test polycross progenies as well as at 7 low rainfall sites in Tasmania. Martlet has persisted as well as Tasdale, Grasslands Nui, Ellett and Victorian under grazing at medium to high rainfall sites but was not as persistent as