

Register of Australian Herbage Plant Cultivars

B. Legumes

8. Lucerne

a. *Medicago sativa* L. (lucerne)

cv. Aurora

Reg. No. B-8a-19

Registered June 1986

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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 WL 318 (1) plants. The Falkiner and Siriver plants had been screened in the glasshouse 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 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 (5, 7, 10)

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 CUF 101. In the greenhouse seedling tests Aurora had 96% survivors compared to Nova with 88%, CUF 101 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 CUF 101; greenhouse seedling survival test ratings for Aurora, Siriver, CUF 101 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 CUF 101 but greater than that of Hunter River. A greenhouse seedling trial for phytophthora root rot resistance gave survival rates for Aurora, Baron, Trifecta, CUF 101 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 CUF 101, Siriver and Sequel and shown superior or equal persistence to all cultivars tested.

References

1. Beard, D.F. and Kawaguchi, I.I. (1978). Registration of WL 311 and WL 318 alfalfa cultivars. *Crop Sci.* **18**, 523.
1. Bishop, A.L., Walters, R.J., Holtkamp, R.H. and Dominiak, B.C. (1982). Relationships between *Acyrthosiphon kondoi* and damage in three varieties of alfalfa. *J. Econ. Entomol.* **75**, 118-122.
2. Mackay, J.H.E (1976). Register of Australia Herbage Plant Cultivars. B. Legumes. a. Lucerne. *Medicago sativa* L. (Lucerne) cv. Falkiner. *J. Aust. Inst. Agric. Sci.* **42**, 199-200.
3. Oram, R.N. (1980). Register of Australian Herbage Plant Cultivars. B. Legumes. 8. Lucerne. a. *Medicago sativa* L. (lucerne) cv. Siriver. *J. Aust. Inst. Agric. Sci.* **46**, 200-201.
4. Rogers, V.E. (1981). Comparison of lucernes when grown on a heavy clay soil infected with *Phytophthora*, and their response to attack by spotted alfalfa aphid (*Therioaphis trifolii* f. *maculata*). *Aust. J. Exp. Agric. Anim. Husb.* **21**, 63-67.
5. Rogers, V.E., Irwin, J.A.G. and Stovold, G.E. (1978). The development of lucerne with resistance to root rot in poorly aerated soils. *Aust. J. Exp. Agric. Anim. Husb.* **18**, 434-441.
6. Stovold, G.E. (1983). Diseases of lucerne. Agfact P2.AB.1 (1st ed.). N.S.W. Dep. Agric. Publication.
7. Stovold, G.E. and Carratt, D.E. (1978). Occurrence of *Phytophthora megasperma* in alfalfa growing soils of New South Wales. *Plant Dis. Rptr.* **62**, 742-744.
8. Walters, P.J. (1978). Coming to grips with aphids. *Agric. Gaz. N.S.W.* **89**, 15-17.
9. Walters, P.J. and Holtkamp, R.H. (1984). The monitoring of lucerne aphids in the major lucerne growing areas of New South Wales (1977-80). *Science Bulletin* **90**. N.S.W. Dep. Agric., Sydney.