

Register of Australian Herbage Plant Cultivars

B. Legumes

8. Lucerne

(a) *Medicago sativa* L. (lucerne) cv. **Alfanafa** (syn. **Sirosal**)

Reg. No. B-8a-22

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Originator: R. W. Downes

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Released by The Licensee, South Australian Seedgrowers Cooperative Ltd, GPO Box 461, Adelaide, SA 5001, Australia.

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Origin

Alfanafa was bred by R. W. Downes by selection for increased tolerance to salinity in a population derived mainly from cv. Siriver, which in turn resulted from a program to incorporate resistance to both spotted alfalfa aphid [SAA, *Therioaphis trifolii* (Monell) f. *maculata*] and blue-green aphid (BGA, *Acyrtosiphon kondoi* Shinji) into cv. Hunter River. Alfanafa was developed by intercrossing 77 genotypes derived from the following sources: (i) 15 vigorous genotypes selected from salt-affected fields of Siriver at Tarago (13) and Forbes (2), New South Wales (selected plants were polycrossed and the progeny exposed to 2 cycles of selection in about 220 mmol NaCl/L); (ii) 39 genotypes selected from Siriver seedlings exposed to 2 cycles of selection in 220 mmol NaCl/L; (iii) 12 genotypes selected by exposing seedlings from a polycross of elite genotypes of cvv. Siriver, Sirotasman, and Falkiner (Oram 1990) to 2 cycles of selection in 220 mmol NaCl/L.

In each cycle of selection, about 100 of the most vigorous seedlings, usually the tallest, were selected out of about 75 000 (0.13%). Alfanafa is therefore a synthetic cultivar containing about 93% Siriver, 5% Sirotasman, and 2% Falkiner germplasm. The population has been tested under the tentative name of Sirosal, but the long-term field trials to prove its salt tolerance have not yet been completed. The name Sirosal may be retained in some overseas countries.

Submitted for registration jointly by CSIRO Division of Plant Industry and the South Australian Seedgrowers Cooperative Ltd; the latter will maintain breeders' seed. Recommended for registration by the South Australian Herbage Plant Liaison Committee.

Morphological description

Alfanafa is similar morphologically to cv. Siriver in having

a low, broad crown, with strong stem growth from across the crown. Stems are finer than those of Siriver and Hunter River, and leaf to stem ratio is higher than in cv. Hunterfield. Flower colour ranges from purple to blue. Seed size is larger than in current commercial cultivars (G. P. Flavel unpublished data).

Agronomic characters

Alfanafa is a highly winter-active cultivar with winter vigour ratings equal to those of CUF 101 and Siriver, and higher than those of Aurora and Trifecta (I. D. Kaehne unpublished data). Seedling vigour is higher than in most cultivars. In trials at 4 South Australian sites, herbage production was equal to, and in some cases better than, that of CUF 101 and Siriver. In these trials, Alfanafa was slightly less persistent than CUF 101 and more persistent than Siriver in the absence of phytophthora root rot; in its presence these cultivars are much less persistent than Aurora and Cimarron (E. Kobelt, I. D. Kaehne and J. C. Drake unpublished data). At Tatura, Victoria, Alfanafa yielded 12% less than Southern Special, 5% less than Validor, equal to Aurora, and 7% more than CUF 101 and Trifecta over 3 cuts in the second summer (S. G. Clark pers. comm.). In Argentina, Alfanafa has yielded more than Siriver and Trifecta, less than WL605, and equal to CUF 101 and Aurora. Alfanafa is as productive as, and more uniform than, competing cultivars in Saudi Arabia (M. Jongebloed pers. comm.).

Alfanafa has been bred from parent material having high levels of resistance to blue-green, spotted alfalfa, and pea [*Acyrtosiphon pisum* (Harris)] aphids. Levels of resistance in Alfanafa are equal to, or better than, those in current commercial cultivars (T. Busbice, Great Plains Research Co. Inc., U.S.A., unpublished data). Alfanafa has particularly good resistance to pea aphid. T. Busbice (unpublished data) also found that the resistance of Alfanafa to the root-rot pathogen, *Phytophthora megasperma* Drechs. f. sp. *medicaginis* Kuan et Erwin, was comparable to that of CUF 101 and Siriver and not significantly better than that of Trifecta. Anthracnose, caused by *Colletotrichum trifolii* Bain et Essary, affected Alfanafa to the same extent as cvv. Siriver, CUF 101, WL605, and Southern Special (T. Busbice unpublished data).

Seed size in Alfanafa is 8% greater than in Siriver, which, in turn, is 11% greater than in Hunter River. Hardseededness levels are low in Alfanafa. Producers of sprouts for human consumption prefer Alfanafa seed to that of other cultivars because of its even and vigorous germination. Alfanafa is expected to complement Siriver for short-term grazing and hay-cutting stands in the Middle East and South America, and for sprouting in Australia and overseas (M. Jongebloed pers. comm.).

Reference

Oram, R. N. (Ed.). 1990. 'Register of Australian Herbage Plant Cultivars'. 3rd Edn. pp. 193-7. (CSIRO: East Melbourne.)