New herbage plant cultivars

B. Legumes

8. Lucerne

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

Reg. No. B-8a-22. Registered on 30 June, 1993.
Originator: DOWNES, R.W.
CSIRO Division of Plant Industry, GPO Box 1600, Canberra, ACT 2601, Australia.
Registrar: Oram, R.N.
CSIRO Division of Plant Industry, GPO Box 1600, Canberra, ACT 2601, Australia.
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 the spotted alfalfa aphid [SAA, *Therioaphis trifolii* (Monell) f. *maculata*] and the blue green aphid (BGA, *Acyrthosiphon kondoi* Shinji) into cv. Hunter River. Alfanafa was developed by intercrossing 77 genotypes derived from the following sources:

(1) 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 200 mM NaCl solutions.
(2) 39 genotypes were selected from Siriver seedlings exposed to 2 cycles of selection in 220 mM NaCl solutions.
(3) 12 genotypes were selected by exposing seedlings from a polycross of elite genotypes of cv. Siriver, Sirotasman and Falkiner (Oram 1990) to 2 cycles of selection in 220 mM NaCl solutions.

In each cycle of selection, about 100 of the most vigorous seedlings, usually the tallest, were selected out of about 75 000 seedlings (0.13%). Alfanafa thus is 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 needed to prove its salt tolerance have not yet been completed. The name Sirosal may be retained in some overseas countries.

Alfanafa was submitted for registration jointly by CSIRO Division of Plant Industry and the South Australian Seedgrowers Co-operative Ltd.: the latter will maintain breeders' seed. It was 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. The stems are finer than those of Siriver and Hunter River, and the leaf:stem ratio is higher than in cv. Hunterfield. The flower colour ranges from purple to blue; the seed size is larger than in current commercial cultivars (G.P. Flavel, personal communication).

Agronomic characters

Alfanafa is a highly winter-active cultivar with winter-vigour ratings equal to those of CUF101 and Siriver, and higher than those of Aurora and Trifecta (I.D. Kaehne, personal communication). 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 CUF101 and Siriver. In these trials, Alfanafa was slightly less persistent than CUF101 and more persistent than Siriver in the absence of Phytophthora root rot; in its prescence these cultivars are much less persistent than Aurora and Cimarron (E. Kobelt, I.D. Kaehne and J.C. Drake, personal communication). At Tatura, Victoria, Alfanafa yielded 12% less than Southern Special, 5% less than Validor, and was equal to Aurora and 7% higher yielding than CUF101 and Trifecta over 3 cuts in the second summer (S.G. Clark, personal communication). In Argentina, Alfanafa has yielded more than Siriver and Trifecta, less than WL605 and the same as CUF101 and Aurora. Alfanafa

is as productive as and more uniform than competing cultivars in Saudi Arabia (M. Jongebloed, personal communication).

Alfanafa has been bred from parent material having high levels of resistance to the blue green, spotted alfalfa and pea [*Acyrthosiphon pisum* (Harris)] aphids. The levels of resistance in Alfanafa are equal to or better than those in current commercial cultivars (T. Busbice, Great Plains Research Co. Inc., USA, personal communication). Alfanafa has particularly good resistance to pea aphid. Busbice 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 in CUF101 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, CUF101, WL605 and Southern Special (T. Busbice, personal communication).

Seed size is 8% larger in Alfanafa than in Siriver, which in turn is 11% larger than in Hunter River. Hard-seededness 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, personal communication).

Reference

ORAM, R.N. 1990 *Register of Australian Herbage Plant Cultivars*. 3rd Edn. pp. 193–197. (CSIRO: Melbourne).

Editor's Note

In the paper entitled *The effect of phosphorus as fertiliser or supplement on pasture and cattle productivity in the semi-arid tropics of north Queensland* (*TROPICAL GRASSLANDS*, **28**, 90–108), no acknowledgement was made of the financial support of INCITEC, who donated all fertiliser applied during the study, 1981–1990. Mr David Coates, the author, apologises for this oversight and thanks INCITEC for their significant contribution.