

Register of Australian Herbage Plant Cultivars

B. Legumes

8. Lucerne

a. *Medicago sativa* L. (lucerne)

cv. Sheffield

Reg. No. B-8a-13

Registered April 1980

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Origin

Bred by I.D. Kaehne of the Northfield Research Laboratories, South Australian Department of Agriculture, by selection of resistance to spotted alfalfa aphid (*Therioaphis trifolii* (Monell) *f. maculata*) in hybrids between aphid-resistant clones selected from crosses of Afghan and Spanish ecotypes with non-dormant cultivars. The clones, which were traced to Afghan parentage, were selected from the first cycle of aphid screening in the breeding of Wakefield. A second group of 20 clones was selected for seedling resistance to spotted alfalfa aphid from the F₂ progeny of hybrids between the wild-growing Spanish accessions C.P.I. 43492 to 43501, 46697, 46699, 46701, 50177 to 50179, 53083, 5313 and 53123 and the same array of non-dormant cultivars used as parents in the breeding of Wakefield. The two groups of 20 plants selected in the first cycle of screening from the populations with Afghan and Spanish parentages were combined by crossing each plant with as many as possible from the alternate parent group. Some 3000 hybrid seedlings were screened for resistance to spotted aphids and 200 highly resistant plants were selected, transplanted and interpollinated to produce breeders' seed.

Submitted by the South Australian Department of Agriculture and recommended for registration by the South Australian Herbage Plant Liaison Committee. Breeders' seed will be maintained at the Northfield Laboratories, South Australian Department of Agriculture. Registered, April 1980.

Morphological description (1)

Sheffield develops broad prolific crowns, producing semi-procumbent to erect stems which are more strongly branched and leafier than Hunter River, Falkiner, Wakefield or Springfield. The crowns are not exposed and in older plants are much broader than Hunter River crowns of the same age. Flowering commences earlier than in Paravivo and continues profusely owing to strong floral initiations on secondary stems. Flowers are blue to purple. Seedlings are moderately vigorous and express early tillering. The regrowth rate immediately after harvest is comparable to Hunter River. In winter the appearance of stems and regrowth is similar to Hunter River.

Agronomic characters (2)

Sheffield is resistant to the spotted alfalfa aphid. The tolerance of Sheffield to blue green aphid (*Acyrtosiphon kondoi* Shinjii) is low, being equivalent to Hunter River. The unselected second-generation populations from which Sheffield was derived are persistent under continuous intense grazing pressure by sheep (2). The urgent need for aphid-resistant cultivars has precluded the long-term field testing of Sheffield before registration. However, the general characteristics of the populations from which it was derived are unlikely to have been changed by selection for aphid resistance.

Observations of the parent clones at Northfield, S.A., and of winter activity in field trials of Sheffield rank its winter activity equivalent to Hunter River. In the spring and summer of the first year of an irrigated trial at Mannum, S.A., Sheffield had a yield equivalent to most introduced aphid-resistant cultivars and higher than Hunter River, but significantly less than that of Wakefield or Springfield. In dry land trials Sheffield has expressed excellent persistence in a prolonged summer drought. Its seedling vigour and regrowth are equivalent to Hunter River. Sheffield is a spotted aphid resistant alternative to Hunter River for grazing and hay production. It may be used for irrigated hay-production on well-drained soils that are not severely affected with root-rotting pathogens.

References

1. Kaehne, I.D. (1979). Personal communicatio. S.A. Dep. Agric., Adeladie.
2. Kaehne, I.D. (1978). The performance under intensive continuous grazing of second generation bulk populations derived from crosses between wild and exotic alfalfas and cultivated non-hardly varieties. Report of the 26th Alfalfa Improvement Conf. S. Dak. State Univ. pp. 47-8.