

Register of Australian Herbage Plant Cultivars

B. Legumes

8. Lucerne

(a) *Medicago sativa* L. (lucerne) cv. Sequel HR

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Origin

Sequel HR ('Highly Resistant') is a highly winter active lucerne derived from the cultivar Sequel by selection for high levels of resistance to anthracnose (*Colletotrichum trifolii* Bain. et Essary). Seedlings of a population known as SS2 (derived by selection from Sequel for resistance to *Stemphylium vesicarium* Simmonds) were selected under controlled conditions for resistance to *C. trifolii* (seedling inoculation) and *Phytophthora medicaginis* Hansen et Maxwell (stem inoculation; Irwin et al. 1980). About 100 seedlings that met the selection criteria were selected and intercrossed under glasshouse conditions. The progeny were subjected to further selection for the 2 diseases on a maternal line basis (one selection from each line where possible) and 80 selections were intercrossed to form the population tested as CS93-1. This provided the breeders seed for Sequel HR. CSIRO Tropical Agriculture will maintain breeders seed. Release of Sequel HR was endorsed by the Queensland Herbage Plant Liaison Committee in August 1996. Sequel HR has provisional protection under Plant Breeders Rights legislation (application no. 95/142).

Morphological description

Sequel HR is a highly winter-active cultivar (dormancy group 9); it is similar in appearance to Sequel (Oram 1990) and taller than Aquarius, CUF 101 and Sceptre (all dormancy group 9). Flowers are purple and time to commencement of flowering in spring is similar to Sequel and slightly earlier than Aquarius, CUF 101 and Sceptre. Seed size of Sequel HR (about 430 000 seeds/kg) is similar to Sceptre and Aquarius and smaller than Sequel and CUF 101.

Agronomic characters

Sequel HR was developed as a replacement for Sequel in the Queensland subtropics. Sequel HR has a very high level of anthracnose resistance (70–80% resistant plants), significantly greater than that of Sequel, Aquarius, Sceptre, CUF 101 and Trifecta, but similar to Pioneer L69. Sequel HR is resistant to *Phytophthora* (40% resistant plants) with a level similar to that of Sequel and Sceptre but not as high as Aquarius.

Sequel HR was included in 3 trials conducted by Dr Rex Williams of NSW Agriculture, Yanco, to evaluate resistance to spotted alfalfa aphid [*Therioaphis trifolii* (Monell) f. *maculata*]. Sequel HR was rated as resistant in the 3 tests, with a mean of 35% resistant plants compared with 40% for Sceptre, 30% for Aquarius and 5% for Hunter River (R. W. Williams unpublished data).

Having been derived from Sequel by selection while maintaining a broad genetic base, Sequel HR is expected to retain the broad adaptation to Australian lucerne growing areas exhibited by Sequel. Like Sequel, Sequel HR should be well suited to a range of situations from hay production through to use as a ley legume in cereal rotations. It was one of the highest yielding cultivars in an irrigated trial conducted at Gatton Research Station by Mr K. F. Lowe on ground known to be heavily infested with *Phytophthora medicaginis*. Over the 3 years of the trial (1993–96), first generation Sequel HR gave yields similar to Sequel, Aquarius and Sceptre and outyielded Trifecta by 12% and Hunter River by 46%. In another trial at Gatton Research Station established in 1995, Sequel HR was also among the group of highest yielding cultivars (K. F. Lowe unpublished data). Due to drought conditions, anthracnose was not a problem in these trials. In more normal years the extra anthracnose resistance possessed by Sequel HR over Sequel should provide a yield advantage.

Acknowledgments

Technical assistance was provided by L. Hart and J. Mackie. Data from the Gatton trial were supplied by K. F. Lowe, Queensland Department of Primary Industries and data on resistance to spotted alfalfa aphid were provided by Dr R. W. Williams, NSW Agriculture.

References

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