

## New herbage plant cultivars

### B. Legumes

#### 8. Lucerne

##### (a) *Medicago sativa* L. (lucerne) cv. Hallmark

Reg. No. B-8a-25. Registered on April 1, 1999.

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#### Origin

Hallmark is a winter-active lucerne cultivar derived from a polycross by selection for high levels of resistance to *Colletotrichum trifolii* Bain. et Essary, *Phytophthora medicaginis* Hansen et Maxwell (syn *P. megasperma*), *Stemphylium vesicarium* Simmonds, and other leaf diseases. Approximately 350 clones, predominantly from 'Trifecta' and 'Sequel', with resistance to one or more of the following pathogens (*C. trifolii*, *P. medicaginis*, *Acrocalymma medicaginis* [Alcorn et Irwin], *Leptosphaerulina trifolii* [Rostr.], *S. vesicarium* and *Stagonospora melilotii* [(Lasch) Petrak]), were intercrossed with S1 plants from 'M193' and 'WAPRS', both sources of dominant resistance to *Phytophthora* (Irwin *et al.* 1981). The material went through 2 cycles of half-sib family selection, with glass-house selection for resistance to *C. trifolii*, *P. medicaginis* and *S. vesicarium* and field selection for resistance to leaf diseases. A maximum of one plant was selected from each half-sib family, with 97 clones from the second cycle of half-sib family selection being intercrossed for the production of breeders seed. CSIRO Tropical Agriculture will maintain breeders and pre-basic seed. Release of Hallmark was endorsed by the

Queensland Herbage Plant Liaison Committee in August 1998. Hallmark has provisional protection under Plant Breeders Rights legislation (application no. 96/239).

#### Morphological description

Hallmark is a winter-active cultivar (dormancy group 8); in appearance it is intermediate between Sequel HR and Trifecta (Oram 1990), not as tall as Sequel HR in spring and of similar height to Aquarius, Pioneer Brand L69 and WL516. Flowers are purple and time to commencement of flowering in autumn is similar to Aquarius and PL69 and later than Sequel HR and WL516.

#### Agronomic characters

Hallmark combines high levels of resistance to *C. trifolii* and *P. medicaginis* with high levels of resistance to spotted alfalfa aphid and stem nematode. The proportion of its plants resistant to *C. trifolii* (42%) is significantly higher than that of Aquarius or WL516 but not as high as Sequel HR (70%) and PL69 (66%). The high resistance of Hallmark to *P. medicaginis* (45%) is not significantly different from Aquarius, Sequel HR, PL69 or WL516; the proportion of plants resistant to spotted alfalfa aphid (61.5%) is significantly higher than that of Aquarius and Sequel HR; the proportion of plants resistant to blue green aphid (33%) is not significantly different from Sequel HR, Sequel and Trifecta; and the proportion of plants resistant to stem nematode is significantly higher than for PL69. Hallmark is the only cultivar with high levels of resistance to all 5 of these pathogens/pests.

Two irrigated trials have been conducted by Mr Kevin Lowe of QDPI at Gatton from 1993–1996 (34 cuts) and 1995–1998 (33 cuts). Hallmark was one of the highest yielding cultivars in the trials, with similar yields to Aquarius and PL69; Hallmark significantly outyielded

Trifecta and Hunter River by 12 and 45%, respectively, in Trial 1; in Trial 2, Hallmark significantly outyielded Sequel HR and Hunter River by 7 and 32%, respectively.

Hallmark has been developed from a broad genetic base, tracing to Trifecta, Sequel and North American-derived material with additional disease and pest resistances. It is expected to retain the broad adaptation of Trifecta, but to outperform it in a variety of situations, including hay-making and grazing, because of its superior disease and pest resistance.

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#### **References**

- IRWIN, J.A.G., MAXWELL, D.P. and BINGHAM, E.T. (1981) Inheritance of resistance to *Phytophthora megasperma* in tetraploid alfalfa. *Crop Science*, **21**, 277–283.
- ORAM, R.N. (1990) Trifecta lucerne. In: Oram, R.N. (ed.) *Register of Australian Herbage Plant Cultivars*. 3rd Edn. pp. 202–204. (CSIRO: Melbourne).
- ORAM, R. N. (1990) Sequel lucerne. In: Oram, R.N. (ed.) *Register of Australian Herbage Plant Cultivars*. 3rd Edn. pp. 204–205. (CSIRO: Melbourne).