

Register of Australian Herbage Plant Cultivars

B. Legumes

9. Annual Medics

(a) *Medicago truncatula* Gaertn. (barrel medic) cv. Mogul

Reg. No. B-9a-12

Registered 16 March 1993

Originators: A. W. H. Lake and Staff

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Origin

Mogul (Borong AR) was selected from a backcrossing program designed to produce a barrel medic with field performance very similar to the barrel medic cultivar, Borung, but with good resistance to both spotted alfalfa aphid [*Therioaphis trifolii* (Monell) f. *maculata*, SAA] and blue-green aphid (*Acyrtosiphon kondoi* Shinji, BGA).

The backcrossing program used Borung as the recurrent parent, while the aphid-resistance donor parent was itself a hybrid selection. The ultimate source of the aphid-resistance genes in this hybrid was the barrel medic SA10419, a relative of Sephi barrel medic, while the other parent of the aphid-resistance donor line was Harbinger strand medic. Original seed of SA10419 was supplied and is maintained by the Australian Medicago Genetic Resource Centre. Dual aphid-resistant plants in each backcross generation were hybridised with Borung.

At the second backcross stage, about 50 F₂ plants with resistance to both SAA and BGA were selected. These were individually harvested and progeny-tested for aphid-resistance segregation. Seven non-segregating lines were isolated, and these were then seed-increased for further selection and testing. Field testing was centred on medium- and heavy-textured soils in South Australia (J. H. Howie) and western Victoria (R. Latta), with some data being supplied by other National Annual Medic Improvement Program (NAMIP) collaborators. While all 7 lines bear a close morphological resemblance to Borung, 1 line, Z-451, was selected on its agronomic superiority to constitute Mogul.

Submitted by the South Australian Research and Development Institute and recommended for registration by the South Australian Herbage Liaison Committee. Breeders'

seed will be maintained by the South Australian Research and Development Institute. Protection for this cultivar under Plant Variety Rights legislation is being sought (Anon. 1993).

Morphological description

Mogul is very similar to its recurrent parent, Borung. There are no morphological differences between the 2 that would enable their ready or accurate distinction. The morphological description of Borung contained in the Register of Australian Herbage Plant Cultivars (Oram 1990) is, therefore, directly applicable to Mogul.

Agronomic characters

The principal distinctive feature of Mogul compared with Borung is its excellent resistance to SAA and BGA; Borung is susceptible to both aphid species. In comparative glasshouse trials in which 3-week-old seedlings of Mogul and Borung were infested with SAA, all Borung seedlings died within 2 weeks. In contrast, Mogul seedlings suffered only minor damage, with plant losses being rare and attributable to other factors. Experiments with BGA on Mogul and Borung also show resistant and susceptible reactions, respectively. The level of resistance to both aphids expressed in Mogul is similar to that of the resistance donor parent SA10419, as well as Sephi and the strand medic Harbinger AR. The effect of this resistance in the field is readily observed in comparison with Borung and other susceptible cultivars. In a trial at Wanbi, South Australia, which had a moderate infestation of BGA, Mogul's seed yield was more than double that of Borung. In a similar trial at Jamestown, which had damaging numbers of SAA as well as some BGA present late in the season, Borung's seed yield was only about 30% of that of Mogul.

Mogul is susceptible to redlegged earthmite (*Halotydeus destructor* Tucker), lucerne flea (*Sminthurus viridis* L.), and cow pea aphid (CPA) (*Aphis craccivora* Koch), as are Borung and all other barrel medics currently available.

The flowering characteristics of Mogul are similar to those of Borung. Data from several sites show that time to first flowering of Mogul is within 1–2 days of Borung, or generally 5–10 days earlier than Paraggio barrel medic and about 1–2 weeks later than Cyprus. In these experiments, Mogul flowered at about 95–100 days after an early June sowing.

Field trial results with Mogul have demonstrated its adaptability to heavier neutral-alkaline soils, reflecting its Borung parentage. In comparisons with Paraggio, Mogul has frequently shown superior early season growth across a range

of soil types. On medium and lighter textured soils, total season productivity of the 2 is generally similar, but distinct superiority of Mogul has been shown on heavy alkaline soils, for example, at Wolseley (black cracking clay) and Northfield (red-brown earth) in South Australia. On these sites Mogul outyielded Paraggio by 10–20% in total season production, while pod yield was nearly 30% greater.

Acknowledgments

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References

- Anon. (1993). Barrel medic, *Medicago truncatula*, variety 'Mogul'. *Australian Plant Varieties Journal* **6**, 23–4.
- Oram, R. N. (Ed.) (1990). Borung barrel medic. In 'Register of Australian Herbage Plant Cultivars.' 3rd Edn. p. 213. (CSIRO: East Melbourne.)