

New 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 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 additional data being supplied by other National Annual Medic Improvement Program collaborators. While all 7 lines

bear a close morphological resemblance to Borung, one line, Z-451, was selected on its agronomic superiority to constitute Mogul.

Mogul was submitted by the South Australian Department of Agriculture and recommended for registration by the South Australian Herbage Liaison Committee. Breeders' seed will be maintained by the South Australian Department of Agriculture. Protection for this cultivar under Plant Variety Rights legislation is being sought.

Morphological description

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

Agronomic characters

The principal distinctive feature of Mogul compared with Borung is Mogul's 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 show similarly contrasting 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 to Borung and other susceptible cultivars. In a trial at Wanbi, SA 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 was only about 30% that of Mogul.

However, as for Borung and all other barrel medics currently available, Mogul is susceptible to red-legged earthmite (*Halotydeus destructor* Tucker), lucerne flea (*Sminthurus viridis* L.) and cowpea aphid (*Aphis craccivora* Koch).

The flowering characteristics of Mogul are similar to those of Borung. Data from several sites show that the time to first flowering of the cultivar 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 about 95–100 days after an early June sowing.

Field trial results with Mogul have demonstrated its adaptability to heavier neutral to 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 two is generally similar, but distinct superiority of Mogul on heavy alkaline soils for

example at Wolseley (black cracking clay) and Northfield (red-brown earth) South Australia has been shown. On these sites Mogul out-yielded Paraggio by 10–20% in total season production, while pod yield was nearly 30% greater.

Acknowledgements

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References

- ORAM, R.N. (1990) Borung barrel medic. In: Oram, R.N. (ed.) *Register of Australian Herbage Plant Cultivars*. 3rd Edn. p. 213. (CSIRO Melbourne).