

## The effect of grazing on the seed production of a range of annual medic species

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Burr Medic (*Medicago polymorpha* var *brevispina*) is well adapted to hardsetting grey-clay soils with neutral to slightly acid pH reaction in the Great Southern region of Western Australia. The ability of pasture legume species to set seed under grazing is an important factor in their long-term persistence. This paper describes the seed yield response of a range of pasture legume species to grazing.

### Methods

A total of nineteen varieties of nine pasture legume species were sown in 27m x 1.4m plots on a grey-clay soil type and replicated three times. All seed was inoculated and lime-pelleted and sown at 10 kg/ha with 150 kg/ha of single superphosphate (9.1% P). The plots were fenced into three equal sections during the growing season and grazed as part of a whole paddock at 16 sheep/ha. The grazing treatments employed were ungrazed (G1), grazed for 60 days, starting 33 days after cowing (G2) and continuous grazing for 165 days, starting 33 days after sowing to seed harvest (G3). Spring pasture production (5 x 0.1m<sup>2</sup> quadrats/section) and seed yields (5 x 0.2m<sup>2</sup> quadrats/ section) were measured, with burrs being collected from the surface for all varieties except Dalkeith which was sampled to 4 cm.

### Results

Serena burr medic was the earliest maturing line tested, being 9-10 days earlier than four intermediate lines and 27 days earlier than Circle Valley. All other lines tested were of similar maturity to Circle Valley (Table 1). Total dry matter and seed yields were reduced by extending the grazing period. The intermediate lines of *M. polymorpha* set more seed under continuous grazing than either Circle Valley or Serena and as a group the burr medics set more seed than all other species under all grazing conditions (Table 1). In terms of dry matter production *T. cherleri* appeared to best tolerate heavy grazing, however, seed production was severely reduced by continuous grazing beyond flowering.

This data shows that there is scope to select medic lines with higher seed production under conditions of hard grazing.

**Table 1. Total dry matter and seed yields of nineteen pasture legume varieties under grazing.**

Species	Variety	Days to Flowering	Dry Matter (t/ha)			Seed Yield(kg/ha)		
			G1	G2	G3	G1	G2	G3
<u>M. polymorpha</u>	Circle Valley	98	8.6	4.2	0.7	517	426	107
	Serena	71	5.7	2.5	0.6	889	431	131
	4980	79	7.6	3.7	1.0	872	639	156
	4970	80	5.6	3.8	0.9	870	599	225
	4991	79	7.5	3.4	0.7	777	773	214
	3146	79	7.8	2.7	1.3	1007	604	245
<u>M. rugosa</u>	Sapo	96	7.4	4.7	1.3	443	232	19
	Paraponto	94	6.4	1.8	0.7	646	107	4
	Paragosa	99	6.7	3.6	0.9	566	245	13
<u>M. truncatula</u>	Paraggio	100	9.5	4.3	1.3	558	384	18
	Cyprus	107	5.5	4.1	1.3	566	388	72
	Jemalong	90	7.4	4.7	1.4	322	286	23
	Parabinga	101	8.4	5.3	2.0	354	360	10
<u>M. murex</u>	5320	97	6.0	4.2	1.0	82	80	4
<u>M. scutellata</u>	Sava	89	8.6	4.4	0.8	638	126	30
<u>M. littoralis</u>	Harbinger	92	5.0	3.7	0.8	325	205	28
<u>M. tornata</u>	Tornafield	97	5.5	2.7	1.0	459	272	53
<u>T. cherleri</u>	Beenong	106	7.0	3.9	2.9	361	351	26
<u>T. subterraneum</u>	Dalkeith	100	4.5	4.2	1.3	101	141	20
LSD (P<0.05)		2.4	2.4	1.3	0.4	231	185	54