

The growth and development of exotic medicago spy. at Roseworthy, south Australia

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Annual species of the genus *Medicago* are an integral component of many pastures in the South Australian dryland farming systems. This project investigated the potential of *Medicago* spp. not normally grown in South Australia, to ascertain if any had winter or spring dry matter production significantly greater than the commonly grown barrel medic. *M.truncatula* cultivar Paraggio.

Methods

Single accessions of 12 *Medicago* species were selected from the Australian Medicago Genetic Resource Centre Collection on the basis of flowering date and herbage production and compared to *M.truncatula*, cv. Paraggio (Table 1). The experiment was conducted at The University of Adelaide's Roseworthy Campus, 50 km north of Adelaide. The soils are alkaline solonised brown loams (malice). The average annual rainfall is 440 mm predominantly of winter incidence. The field trial consisted of a randomised block design with six replicates. Seedlings were established in peat jiffy pellets on 15 May. All lines were inoculated with a mix of *Rhizobium melloti* cultures at the time germinated seeds were being transplanted into peat pellets. 25 medic seedlings of each line were hand planted on 12 June at 0.15 m intervals within 3.8 m long rows. Rows were spaced 1.5 m apart. Dry matter production was measured as total shoot weight of five plants from each row, one set of five to assess winter growth to 27 August, and another set for growth to 20 October.

Results and discussion

Table 1. Mean dry matter production of medic plants over winter and over the winter-spring period.

Pairs of means with no common letters following are significantly different (P = 0.05).

		27.8.92 g/plant	20.10.92 g/plant			27.8.92 g/plant	20.10.92 g/plant
<i>M.arabica</i>	(SA10205)	11a	166a	<i>M.blancheana</i>	(SA2340)	8bc	64d
<i>M.turbinata</i>	(SA2141)	10ab	117b	<i>M.doliata</i>	(SA8457)	10ab	46c
<i>M.aculeata</i>	(SA8944)	10ab	93c	<i>M.rotata</i>	(SA15030)	7cd	39e
<i>M.truncatula</i> cv Paraggio		11a	93c	<i>M.praecox</i>	(SA23513)	5de	22f
<i>M.orbicularis</i>	(SA8450)	6cd	85c	<i>M.minima</i>	(SA4974)	3ef	20f
<i>M.constricta</i>	(SA8933)	7cd	82c	<i>M.rigidula</i>	(SA14022)	1f	6g
l.s.d. (P = 0.05)		2	12	l.s.d. (P = 0.05)		2	12

M.arabica produced 78.5% more and *M.turbinata* 26% more dry matter than *M.truncatula* cv. Paraggio up to 20 October. These two species were as productive as Paraggio up to 27 August. Whilst all lines were inoculated with *Rhizobium*, the poor performance of *M.rigidula* contrasts with earlier results from Parafield and is most likely to be attributed to a lack of adaptation to light textured soils and to poor nodulation resulting from the absence of a suitable *Rhizobium* strain.