

Comparison of the effects of synthetic, mineral and organic fertilisers on medic production

B.S. Nietschke, C.M. Penfold and H.A. Reimers

Department of Agricultural Technology,
The University of Adelaide, Roseworthy Campus, Roseworthy SA 537 1

Synthetic fertilisers have been the traditional means of supplying nutrients to crops and pastures. In more recent times there has been a movement towards the use of non-conventional mineral and organic fertilisers. In 1990 a field experiment was initiated at Roseworthy to compare the response of Galleon barley, *Hordeum vulgare* to various synthetic, mineral and organic fertilisers (I). Commercially available fertilisers were utilised and applied at recommended rates.

Methods

In 1991 Paraggio medic, *Medicago truncanda*, was sown onto the existing barley site at 18kg/ha (380 seeds/m²) using the identical fertilisers (and rates) as the previous year. A comprehensive agronomic study was conducted, including the measurement of plant and weed densities, winter and spring dry matter yield, spring dry matter nutrient levels (N, P, K, S, Ca, Mg, Fe, Mn, Cu, Zn, B, Na), seed yield and weight, seed numbers per pod and medic hard seededness. All data was subjected to an analysis of variance.

Results and discussion

Analysis of the data demonstrated no significant difference, irrespective of fertiliser type for all agronomic parameters measured (including seed yield), apart from winter dry matter production (Table I). The Diammonium Phosphate/Sulphate of Ammonia treatment produced a significantly greater yield than the Control treatment. The other eight treatments did not differ significantly from these two in their production.

Table 1. The effect of fertiliser type on winter dry matter production and seed yield on Paraggio medic.

	Fertiliser treatment ^a										L.s.d. p=0.05
	A	B	C	D	E	F	G	H	I	J	
Winter DM (kg/ha) ^b	247 ^{ab}	245 ^{ab}	278 ^{ab}	306 ^{ab}	304 ^{ab}	293 ^{ab}	267 ^{ab}	330 ^a	226 ^{ab}	211 ^b	106
Seed yield (kg/ha)	704	568	614	608	626	670	655	717	653	616	-

^aA–Pelletized Chicken Manure, B–Complete Organic Cropping Fertiliser; C=Cropping Mix; D=Base Product; E=Biophosphate; F–Alkaphos Extra; G–Triple Super; H–Diammonium Phosphate/Sulphate of Ammonia; I=Composite Mix; J=Control (nil fertiliser).

^bValues in row not followed by the same letter differ significantly (P<0.05).

The experimental results were not unexpected as the high phosphorus status of the soil (34 mg/kg Colwell) has presumably masked the effects of each fertiliser and contributed to the uniform results between treatments. Further research has been directed toward conducting an out of phase trial in rotation with Galleon barley on the existing site and a similar experiment on a low fertility site.

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Reference

1. I. Nietschke, B.S.. Penfold, C.M. and Reimers, H.A. 1992. Proc. 6th Aust. Agron. Conf., Armidale. pp. 485.