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## The effect of seed origin and seed phosphorus on the growth of lupins

M. M. Riley

M. D. Bolland

K. Adcock

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Experiment 89SC20. The effect of seed origin and seed phosphorus on the growth of lupins.

M. Riley, M.D.A. Bolland and K. Adcock.

Location

South Carrabin Research Station, Hayden paddock.

Treatments

1. Soil P - 0, 300 kg superphosphate/ha drilled with seed.

2. Seed source and P concentration:

- ° South Carrabin (88SC23) - 0.19, 0.22% P
- ° Badgingarra (88BA37) - 0.19, 0.25% P
- ° Northam (88NO73) - 0.25, 0.29% P
- ° Esperance (88E54) - 0.29, 0.38% P

3. Replicates - 4.

Sowing details

Lupin cv. Danja sieved to uniform size and sown at 80 kg/ha with lime pelleting and inoculation. Basal Cu fertilizers applied at 1 kg/ha.

Sown on 17/5/89.

Harvested on 28/11/89.

Table 7. Effects of fertilizer P level, seed P concentration, and seed source on plant counts at 5 weeks, shoot dry matter at 12 and 21 weeks and seed dry matter at maturity of lupins cv. Gungurru sown at South Carrabin Research Station in 1989. Values are means of four replicates

Fertilizer P (kg super/ha)	Seed P (%)	Seed source	Plant counts/ m <sup>2</sup>	Shoot DM (kg/ha)		Seed DM (kg/ha)	
				12 wks	21 wks		
0	0.19	S. Carrabin	51	95	417	32	
			48	105	513	37	
	0.19	Badgingarra	45	68	387	30	
			42	94	454	36	
	0.25	Northam	51	82	375	27	
			50	103	529	36	
	0.29	Esperance	46	111	471	28	
			56	102	478	23	
300	0.19	S. Carrabin	40	164	1586	240	
			47	179	1706	308	
	0.19	Badgingarra	32	114	1272	152	
			40	142	1384	190	
	0.25	Northam	39	139	1469	200	
			45	160	1380	202	
	0.29	Esperance	45	167	1408	234	
			45	125	1493	225	
	Fertilizer P			**	**	**	**
	Seed P			*	NS	NS	*
Seed source			**	**	NS	**	
Fertilizer P x seed P			NS	NS	NS	NS	
Fertilizer P x seed source			NS	NS	NS	***	
Seed P x seed source			NS	*	NS	NS	
Fertilizer P x seed P x seed source			*	NS	NS	NS	

#### Comments

1. Superphosphate at 300 kg/ha depressed plant counts at five weeks after sowing. However, by 12 weeks after sowing and at 21 weeks after sowing, superphosphate markedly increased shoot DM. Treatment of soils with superphosphate also markedly increased seed DM at maturity notwithstanding the fact that maximum seed DM was extremely low (200-300 kg/ha): Low seed DM was attributed to severe brown leaf spot infection soon after emergence, and to late sowing.
2. By contrast with fertilizer P treatment, increasing seed P slightly increased plant counts at five weeks and had no effect on DM of shoots at 12 and 21 weeks.

In the seed from South Carrabin and Badgingarra which also had the lower P concentrations, increasing seed P concentration appeared to increase final seed DM by 40-70 kg/ha in the soils treated with superphosphate.