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EXPERIMENTAL RESULTS 1973

M.W. Perry

MINERAL NUTRIENT LEVELS IN LUPIN CROPS

AFFECTED BY "SPLIT SEED".

- Table 1. Survey of Nutrient Levels in Whole Seed.
- Table 2. Nutrient Levels in Tests and Embryo.
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Table 1.

	SURVEY	NUTRIENT LEVELS IN WHOLE SEED				IN	%						Notes
		Mn	Fe	Zn	Cu		B	Ca	Mg	K	P	N	
Badly affected crops													
Badgingara	UC	9.2	49	37	2.6	24.9	25	17	79	24	5.2	26	R Priest Grey gravelly sand
Dandaganan	UH	6.6	35	40	4.3	27.3	19	21	92	32	4.9	27	S Richardson yellow sand
Moondah		9.7	78	56	4.3								
Lancelin	UH	5.0	52	40	4.7		26	19	10	26		23	Deep yellow silicious sand
Green Range	ULW	5.9	37	37	4.0								Warrup Rd Deep grey sand
Moora 11 M West		4.6	76	51	4.6								Bright orange coarse sand
Moora 18 M West		8.2	34	36	3.0								Coarse yellow sand
Mean		7.1	52	42	3.9		23	19	90	27		25	
Unaffected crops													
Gidgegannup	UH	7	44	34	3.2		27	20	95	28		28	Experimental seed ex Dr J S Gladstone
Manjimup (i)	UH	32	55	34	5.0		21	20	135	25		14	Seed certification sample (1973) (195)
(ii)	UH	18.1	23	30	4.8		23	17	73	22		22	Commercial 1972
Bridgetown	UH	15.1	38	30	4.5		23	18	83	24		24	
Kojanup	UH	21.3	66	30	5.0		17	19	83	22		21	Seed certification sample 1973 (202)
Mt. Barker	UH	15	62	41	5.2		21	23	105	40		25	(3997)
Cranbrook	UH	10	38	32	4.2		17	20	87	25		15	(9)
Geraldton	UH	53	50	39	4.7		22	23	122	38		26	(4553)
Boyup Brook	UH	12	40	27	4.2		16	23	97	26		17	(202)
North Bannister	UH	17.3	33	31	3.6								Dent trial Gravelly loam
Moora	UH	20	37	35	3.5		19	20	97	30		18	Seed Certification sample 1973 (4534)
		20.1	44	33	4.4		21	20	98	27		21	

TABLE 2. NUTRIENT LEVELS IN TESTA AND EMBRYO.

	Mn	Fe	Zn	Cu	B	Ca	Mg	K	P	N	S
EMBRYO											
Normal Badgingarra	6.88	59.38	37	2.5		11	19	.88	.30	6.59	
Dandaragin	4.67	42.5	43	4.69		.08	.23	1.06	.41	6.23	
Extruded Badgingarra	5.94	93.13	67.5	2.81		.38	.39	1.63	.88	2.05	
Dandaragin	8.75	96.88	87.5	2.91		.34	.55	1.56	.99	10.15	
Mean of Four Unaffected Crops	14.25	46	35.5	5.31		.087	.187	.978	.29		.295
TESTA											
Normal Badgingarra	17.34	11.98	29.5	1.88		.72	.11	.50	.05	.56	
Dandaragin	13.44	10.63	30	2.97		.59	.14	.43	.019	.53	
Extruded Badgingarra	9.38	56.88	33.5	2.19		.73	.22	.95	.088	2.00	
Dandaragin	8.13	51.88	34	2.5		.81	.20	1.00	.588	2.05	
Mean of Four unaffected crops	19.5	42	36.75			.72	.196	.353	.02		.04

Notes
 Samples from R Priest, Badgingarra (UC)
 and S Richardson Dandaragin (UH)
 Normal: Whole non-split seed
 Extruded: Seed from the same area but with
 shrivelled, partly or wholly extruded embryo

TABLE 3 EFFECT OF SPRAYS

(Richardson Dandaragin)

Control	Pod	4.2	45	14	3.2
	Testa	6.2	66	37	2.7
	Embryo	11.7	-	60	2.4
+ Mn	Pod	4.9	27	7	1.8
	Testa	13.2	13	24	1.9
	Embryo	4.8	36	38	3.2

Notes

S Richardson, Dandaragin (UH): Mn SO_4
 applied with a mister at following rate of
 application uncertain. Seed yield was
 apparently increased by the treatment
 Vagaries of sampling and/or analysis may
 be responsible for the lack of effect on Mn levels

TABLE 4. NUTRIENT LEVELS IN VEGETATIVE MATERIAL.

	PPM							%			Notes	
	Mn	Fe	Zn	Cu	B	Ca	Mg	K	P	N		S
"Regreened material"												
Badgingarra (UC)	6.25	105.63	37.5	2.17	60	1.28	47	1.78			37	Priest's } Bulk samples of "regreened" material, Richardson's } stem, leaf and flowers.
Dandaragan (UH)	4.22	55.63	38.5	2.5	53.5	1.13	47	1.56			42	
Kancelin 73PER (UH)												
(a) 14 th August	Stem + Petiole		20.7	80	28.5	3.4						Successive samples from 1 replicate of the experiment
	Leaf lamina		70	27.2	28.0	5.7						
(b) 25 Sept	Primary fls		26.7	75	41.2	3.8						Location: J.M. Woods "Karakin" Soil: Deep yellow sand, or siliceous.
	1 st Stem, Pod		16.3	106	31.6	2.9						
	1 st Leaf lamina		55.0	48.7	31.5	4.6						
(c) 23 Oct	Stem		27.8	11.5	8.45	1.87						Mature seed samples: 17% shrivelled and embryo extruded, 59% Seed coat split. 14 August: Vegetative 25 Sept: 50% Flowering on primary 23 October: Almost mature, all flowering finished
	1 st Stem		10.4	29.2	4.7	2.12						
	2 nd Stem		14.5	66	21.7	3.0						
	Leaf lamina		14.6	271	25.6	3.1						
	1 st "		11.2	234	28.4	3.5						
	2 nd "		87.5	188	25.5	3.72						
	Primary Pod		6.0	64.3	24.4	3.0						
	1 st "		9.0	59.2	25.5	2.7						
	Primary Seed		14.2	78.6	43.5	4.0						
	1 st "		17.5	85	50	4.4						

TABLE 5

NUTRIENT LEVELS IN VEGETATIVE MATERIAL (Soil type comparisons at paired adjacent sites)

Moora 11m West	Mn (ppm)		Fe (ppm)		Zn (ppm)		Cu (ppm)		
	N*	S*	N	S	N	S	N	S	
	Stem	16.2	3.1	23	38	7.3	10.9	2.0	
1° Lat	22.3	5.0	30	63	6.3	17.5	1.9	3.2	
2° Lat	5.5	-	91	-	9.8	-	2.4	-	
Leaf lamina	31.8	30.7	637	316	35	33.8	3.0	2.7	
Pr Pod	14.7	3.3	58	21	4.8	17.3	2.3	2.8	
1° Pod	19.5	3.65	51	96	6.4	20.6	2.1	3.0	
2° Pod	16.0	-	52.5	-	12.5	-	2.05	-	
Pr Seed	16.7	4.55	57	76	33.4	51.2	3.5	4.6	
1° Seed	24.0	5.85	54	113	30	4.9	3.15	4.4	
2° Seed	21.2	-	62.2	-	28	-	2.77	-	

* N: Non affected area
S: Split area

Dandaragan 6a & 6b	Mn		Fe		Zn		Cu		
	N*	S*	N	S	N	S	N	S	
	Leaf	1300	55.2	953	581	75	51.3	7.4	
Stem	50.5	6.1	36	59	7.85	9.1	3.4	2.22	
1° hat	67.2	5.2	81.5	51	12	11.1	3.8	2.55	
2° hat	185	9.4	150	111	19.5	18.5	3.9	2.65	

Moora 18m West	Mn		Fe		Zn		Cu		
	N*	S*	N	S	N	S	N	S	
	Whole seed	29.2	8.2	82	34	32.5	36.5	2.55	