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## Cucumber Mosaic virus in lupins.

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Survey: Cucumber Mosaic Virus in Lupins

Details: A testing service for lupin growers was provided by the Seed Testing Station. The level of CMV in seed was determined in a 1000 seed sample using the ELISA (enzyme linked immunosorbent assay) technique developed by Dr R C Jones. To speed up processing of samples levels greater than 1.2% were not determined - to do so would have required repeating the test at a different level of grouping. Growers were charged \$114 per sample tested. The service was advertised as being available for samples received up until 28 February.

Results: Distribution of CMV infection levels (%) in district office regions, 1990/91.  
Number of samples and distribution of CMV test results (%basis) on grower samples, 1989-91.  
Number of grower samples received and tested per month, 1990/91.

- Comment:
1. A total of 1178 samples was received and tested. In the final two weeks of February 268 samples were received - only 257 were tested in the whole of the previous year.
  2. For the districts of Lake Grace and Katanning few samples had CMV levels above 0.5% - less than 10%. Over 75% of the samples tested zero. Those districts have the lowest average maximum July temperatures in the south west.
  3. The districts of Albany, Esperance and Northam had the lowest proportion of samples (each less than 30%) testing zero.
  4. In contrast to the previous year, there was a marked increase in higher levels of CMV at Merredin and a marked decrease at Geraldton and Three Springs. For Merredin this was associated with aphids being present early in the season following an unseasonal early germination in February 1990.
  5. Some samples of seed which tested free of CMV were produced in all districts.

CMV TESTING OF LUPIN SEED FROM GROWERS 1990/91

NUMBER OF SAMPLES AT NINE CMV % LEVELS IN DISTRICT OFFICE REGIONS

District	Zero	0.1%	0.2%	0.4%	0.5%	0.7%	0.9%	1.2%	1.2%	Total
Albany	11	5	4	4	3	3	1	2	10	43
Bridgetown	1	1								2
Esperance	21	5	3	4	3		3	3	35	77
Geraldton	79	8	8	10	3	2	3	4	13	130
Jerramungup	11	3	2			4			5	25
Katanning	80	9	4	1	3	2	3	1	1	104
Lake Grace	52	7	4	1	2		1		1	68
Merredin	37	7	5	6	5	3	1	1	18	83
Moorra	110	28	19	15	8	8	8	11	26	233
Narrogin	42	8	5	4	2	2	2	2	29	96
Northam	57	15	15	9	9	11	7	6	85	214
Three Springs	35	8	8	7	5	4	1	6	12	86
"Others"	5		1	2		3	2		4	17
Total	541	104	78	63	43	42	32	36	239	1178
Percentage(%)	46	9	6	5	4	4	3	3	20	100

CMV TESTING OF LUPIN SEED FROM GROWERS, 1989-1991.

NUMBER OF SAMPLES AND DISTRIBUTION OF RESULTS (%basis)

	1989 -90				1990 - 91			
	No.	Zero	0.1-0.5%	>0.5%	No.	Zero	0.1-0.5%	>0.5%
Albany	6	66	17	17	43	26	37	37
Bridgetown	0				2			
Esperance	15	7	27	66	77	27	20	53
Geraldton	39	26	36	38	130	61	22	17
Jerremungup	5	100			25	44	20	36
Katanning	15	73	27		104	77	16	7
Lake Grace	11	73	18	9	68	76	21	3
Merredin	15	93	7		83	44	28	28
Moora	64	42	31	27	233	47	30	23
Narrogin	13	69	23	8	96	44	20	36
Northam	52	15	39	46	214	27	22	51
Three Springs	22		23	77	86	41	32	27
"Others"	0				17	29	18	53
Overall	257	38	29	33	1178	46	24	30

CMV TESTING OF LUPIN SEED 1990/91

NUMBER OF GROWER SAMPLES RECEIVED AND TESTED PER MONTH

	No. Received	No. Tested
November, 1990	169	6
December, 1990	234	223
January, 1991	313	263
February, 1991	417	162
March, 1991	36	319
April, 1991	9	205
Total	1178	1178

Trial: 90STS1

Title: Development of a test to estimate field planting value of Atriplex species.

Aim: To compare germination of three Atriplex species at three placement heights in a paper roll against the standard laboratory weighed replicate test.

Details: In investigations by Albert Badia (Resource Management Division) germination of Atriplex sps was improved when the fruits (=utricles) were subject to a degree of water tension rather than placed on top of moist filter paper. The method used required specialised equipment. Proposed to adapt the method by distributing fruits at different levels on rolled paper rolls and standing the rolls in water.

Treatments: Three species - A. amnicola, A. lentiformis, A. undulata.  
Height of fruits in paper roll - 5, 10, 15, 20 cm above water surface. Also standard test on top of moist filter paper.  
Temperature - 15-25 degrees C.

Results: Germination at 7,14,21,28,35 days.

Comment: 1. The pattern of germination differed between treatments. Germination of A. lentiformis and A. undulata was initially faster (7days) at 15cm than at the surface. However in the following 7 days there was a higher germination at the surface for the three species.

2. At 14 to 35 days the standard test was as good or better than the modified test procedure.

GERMINATION % OF THREE ATRIPLEX SPECIES TESTED UNDER FOUR MOISTURE TENSIONS

SPECIES	HEIGHT mm	LOT G	SEEDS USED	GERM% DAY7	GERM% DAY14	GERM% DAY21	GERM% DAY28	GERM% DAY35	TOTAL GERM%
A. amnicola	0	0.2968	77	31	38	4	3	0	76
	5	0.5428	140	26	22	7	4	0	59
	10	0.5449	141	24	22	2	2	1	51
	15	0.5239	136	30	17	2	2	0	51
	Average	0.4771	123	28	25	4	3	0	59
A. lentiformis	0	0.1168	96	27	57	1	2	0	86
	5	0.1358	111	37	47	1	1	0	86
	10	0.1353	111	51	29	1	0	0	82
	15	0.1371	112	66	14	0	1	0	81
	Average	0.1312	107	46	37	1	1	0	84
A. undulata	0	0.0854	95	11	37	2	2	0	51
	5	0.1107	124	15	35	2	0	0	52
	10	0.1055	118	14	21	1	1	1	38
	15	0.1142	128	24	19	0	1	0	44
	Average	0.1040	116	16	28	1	1	0	46
Overall Average		0.2374	116	30	30	2	2	0	63

Note: LOT = Sample size used - For HT = 0, 100 fruits  
 - For others weight calculated to contain 100 seeds.  
 Seeds Used = LOT  $\div$  WT of 100 fruits x seed fill.

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