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Clover scorch: Summary of 1974 experiments

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CLOVER SCORCH

SUMMARY OF 1974 EXPERIMENTS

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Experiments reported in this summary were
conducted jointly with C. M. Francis.

1. VARIETY SCREENING

During 1974, two hundred and fifty-four varieties were screened for resistance to Kabatiella caulivora in small plots at Denmark. The test varieties included 49 that showed up as promising in previous years. The remainder included all the untested accessions for which sufficient seed was available. There were 239 sub. sp. Subterranean, 14 sub. sp. Yanninicum and 1 Brachycalycinum.

The subspecies Subterraneum clovers originated from Spain and Portugal, 33; Europe, 3; U.K., 2; Greece, 65; Yugoslavia, 1; Turkey, 4; Iran, 2; Rhodes, 1; Scilly Is., 2; Mediterranean, 8; Cyprus, 5; Israel-Palestine, 5; Morocco, 3; North Africa, 10; France, 2; New Zealand, 1; East Australia, 2; and Western Australia, 32.

The plots were periodically inoculated with infected debris and rated for disease severity on a number of occasions. Lists of the most and least resistant clovers are shown in Tables 1 and 2 respectively. Most of the more promising ones were clovers that had proved most tolerant in earlier tests.

2. CLOVER PRODUCTION and KABATIELLA

In 1973 an experiment at Denmark Research Station showed that the herbage production and particularly seed production of susceptible varieties was greatly reduced by clover scorch. The seed production of the more resistant varieties was not greatly affected.

The trial was repeated in 1974 on a better drained soil using a wider range of clovers (Table 3).

There was a herbage yield reduction in all varieties irrespective of disease "resistance" when the disease was not excluded by spraying with benlate. There was considerable damage on the "Kabatiella free" plots due to clover rust (Uromyces trifolii) and some root rot damage, which might explain some of the variety similarities. Also Kabatiella was very slow in developing on the plots during 1974. It was not until late October that high disease ratings were obtained on even the most susceptible varieties; although yield reductions were apparent by early September with Yarloop, Woogenellup, 39313Y, Y26 and Y47.

The disease greatly affected the seed production of Yarloop and Woogenellup and had very little effect on Y26 and Mt. Barker (Table 3).

3. DISEASE INCIDENCE SURVEY

Overall the disease was more severe in 1973 than 1972. The Margaret River is the most severely affected area. (Table 4)

Table 1.

The most resistant Clovers in the 1974 screening trials
 (Rated 0 = no disease to 10 = death)

Variety	Disease Rating	Variety	Disease Rating
Daliak	0.5	47299 E	3
Guildford D	1	15264	"
14218	1.25	47278 A	"
47308 D	1.5	47299 D	"
47308 C	"	Toodyay D	"
18243 B	2	47300 C	"
N2674 (S8)	2.25	47283	"
26225	"	47300 A	"
Toodyay C	"	47309 D	"
Williams D	"	19476 Y	"
Toodyay E	"	47298	"
47267 F	"	47300 D	"
39327 YB	"	47271 B	"
47267 A	"	A.C.D. 2	"
47299 B	"	47302 B	3.25
47309 A	"	Marradong	"
Williams C	"	Parkerville B	"
108b (14205A)	"	Boyup Brook	"
39339	2.75	47277 B	"
47299 A	"	14198	"
47308 B	"	117a (14209B)	"
14217 A	"	47284	"
47278 B	"		

Table 2

The least resistant Clovers in the 1974 screening trials
 (Rated 0 = no disease to 10 = death)

Variety	Disease Rating	Variety	Disease Rating
19458 A	10	19459 C	9
Gillingarra	"	87a (12870)	"
33255	"	39313	"
241a (19459)	"	15076 A O.T.B.	"
N2787 (S7)	"	19448	"
19447 B	"	139a (14326D)	"
Wooroloo (2)	"	142a (14326G)	"
19459	"	145a (14326J)	"
New Norcia B	"	63a (12711D)	8.75
87b (12870)	"	38962	"
Shenton Park C	"	Mogumber B	"
469 C.D.S. (N1620)	"	New Norcia A	"
19459 B	"	39311 B	8.5
19448 O.T.B.	"	19467A	"
N2673 (S5)	"	15167	"
19459 A	"	19447A	"
179b (15076A)	"	15269 A	"
386a (39306)	"	Madrid	"
33263	9.5	N3704 C	"
15076 A O.T.C.	"	19447 C	"
Neuchatel	"	24422	"
Uniwager	"	Yarloop	"
47287	"	407b (39320)	8.25
Mogumber A	9	Sicily (N2726)	"
39363	"		

Table 3

THE EFFECT OF CLOVER SCORCH ON HERBAGE AND SEED PRODUCTION
OF SUBTERRANEAN CLOVER (DENMARK RESEARCH STATION 1974)

HOST	Mean day to flowering	Disease ^a	Plant Density	DRY MATTER PRODUCTION Kg/ha ^b					Total	Yield + as % of -	Disease ^c Rating ^b		Seed per Burr	Seed wt Mgm	Seed ^d Yield kg/ha
				June 12 1	July 24 2	Sept 4 3	Oct 8 4	Nov 6 5			Oct7	Nov 5			
YARLOOP	111	+	48	1419	1594	1298	1292	0	5603	86	7.3	S	2.06	9.64	280 (46)
		-	50	1261	1472	2008	1740	51	6532		0	S	2.35	8.11	609
MT BARKER	139	+	92	1095	987	1053	1514	751	5400	84	3.4	5.0	3.08	6.34	445 (93)
		-	92	1258	1153	1175	2097	782	6465		0	0	2.95	6.34	477
WOOGENELLUP	132	+	85	1623	1238	1045	1612	321	5839	80	4	7.2	2.68	6.50	202 (4)
		-	82	1457	1308	1664	2250	587	7266		0	0	3.12	7.74	475
TOODYAY C	132	+	48	611	631	872	1825	581	4520	85	1.2	1.4	2.73	7.60	517 (80)
		-	50	535	745	1010	2338	718	5346		0	0	2.97	7.37	648
GUILDFORD D	120	+	64	1113	1068	1220	1675	197	5273	82	1.2	0.5	2.66	5.48	384 (72)
		-	70	1243	1195	1524	1907	563	6432		0	0	2.73	6.21	536
39313 Y(Larisa)	145	+	69	867	1116	1407	1735	670	5795	77	4.0	5.0	2.76	7.69	339 (69)
		-	76	854	1215	1908	2525	991	7493		0	0	2.64	8.97	492
38327 YB	136	+	19	405	1042	1164	1775	643	5029	85	2.5	3.1	2.50	8.79	400 (76)
		-	24	260	960	1454	2153	062	5889		0	0	2.66	9.02	528
Y 26 (Trikkala)	121	+	63	1027	1328	1429	1582	88	5454	85	3.7	S	2.40	9.21	596 (95)
		-	52	866	1468	1862	2138	101	6435		0	S	2.36	9.24	629
Y 47	132	+	51	1093	1129	1253	1481	331	5287	74	5.8	7.0	2.45	7.92	353 (65)
		-	57	1114	1454	1653	2151	772	7144		0	0	2.44	9.69	544

a. + = treatments on which clover scorch was encouraged—sprayed with benlate (150 g/ha a.i. at time of each assessment of herbage production.)—

b. cut 5 cm above ground

c. S = Senesced

d. Figures in parentheses are seed yield on plots with scorch expressed as a % of those without scorch.

Table 4

INCIDENCE OF CLOVER SCORCH DISEASE IN WESTERN AUSTRALIA DURING 1973

District Office	No farms surveyed	Disease Rating *					
		1	2	3	4	5	6
Esperance	30	4 (12)	14 (47)	8 (27)	3 (10)	1 (3)	0
Denmark	10	1 (10)	4 (40)	2 (20)	2 (20)	1 (10)	0
Manjimup	30	3 (10)	14 (47)	8 (27)	4 (13)	1 (3)	
Busselton	26	9 (35)	7 (27)	4 (15)	6 (23)	0	0
Margaret River	27	10 (37)	3 (11)	4 (15)	8 (30)	2 (7)	0
Bunbury	35	14 (40)	13 (37)	4 (11)	3 (9)	1 (3)	0
Harvey	25	20 (80)	4 (16)	1 (4)	0	0	0
Total	183	61 (33)	59 (32)	31 (18)	26 (14)	6 (3)	0

(Figures in parentheses are percentages)

- * 1. No clover scorch.
 2. Trace of scorch. Insignificant.
 3. One or two paddocks affected.
 4. Most clover killed in some paddocks - but only traces in most paddocks.
 5. Scorch bad in most paddocks.
 6. Clover completely killed in most pasture paddocks.

(N.B. This survey was conducted by officers of the Dairying and Wheat & Sheep Division)