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72/R/CS/49 and 72/W/CS/49 Fumigant and N - W. Wheat, S. Wheat

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72/R/CS/49 and 72/W/CS/49

FUMIGANT AND N

Object: To study the direct and residual effects of formalin applied at different times on the development of take-all (*Gaeumannomyces graminis**) on winter and spring sown wheat - Rothamsted (R) Furzeffield and Woburn (W) Butt Close.

* Formerly known as *Ophiobolus graminis*.

Sponsor: G.A. Salt.

The third year, winter and spring wheat.

For previous years see 70/R&W/CS/49(t) and 71/R&W/CS/49(t).

Design (each field): A single replicate of 4 x 4 x 2 x 2 in 4 blocks of 4 plots split into 4.

Whole plot dimensions: 2.16 x 21.0. Sub plot area harvested: C.00064.

Treatments: All combinations of:-

Whole plots:

1. Crops, sowing dates and times of application of formalin (C): Maris Ranger winter wheat sown in autumn, formalin applied in early autumn (WWA), Maris Ranger sown in spring, formalin applied early autumn (WWS), Kolibri spring wheat sown in spring, formalin applied early autumn (WSS) or in early spring (WSS*).

Sub plots:

2. Nitrogen cumulative on 1970 and 1971 (N): 75, 125, 176, 226 kg N as 'Nitro-Chalk'.
3. Formalin in 1970 and 1972 (F02): None (O), formalin (F).
4. Formalin in 1971 (F1): None (O), formalin (F).
The formalin was applied at 3000 l of 38% formaldehyde in all years. The dilution in 1972 was to 36000 l.

Basal applications: 340 kg (0:20:20) combine drilled. Weedkiller: Ioxynil at 0.63 kg and mecoprop at 1.9 kg in 340 l on both fields but spring sown plots on Furzeffield (R) received instead bromoxynil, ioxynil, dichlorprop and MCPA ('Tetroxone' at 5.6 l in 340 l) and on Butt Close (W) all plots also received paraquat at 0.56 kg ion in 280 l.

Seed: All sown at 190 kg.

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Cultivations, etc.:

Furzefield (R): Ploughed: 11 Oct, 1971. Formalin applied (WWA, WWS and WSS): 25 Oct. Winter wheat combine drilled: 5 Nov. Formalin applied (WSS*): 14 Mar, 1972. Spring sown wheat combine drilled: 29 Mar. N applied: 1 Apr. Weedkiller applied: 26 Apr (WWA plots) remainder: 17 May. Combine harvested: 5 Sept.

Butt Close (W): Paraquat applied: 9 Sept, 1971. Ploughed: 30 Oct. Formalin applied (WWA, WWS, WSS): 18 Oct. Winter wheat combine drilled: 1 Nov. Formalin applied (WSS*): 14 Mar, 1972. Spring sown wheat combine drilled: 17 Apr. Ioxynil and mecoprop applied to WWA plots: 26 Apr. N applied: 4 May. Ioxynil and mecoprop applied to WWS, WSS and WSS* plots: 22 May. Combine harvested: 1 Sept.

NOTE: Incidence of root pathogens was recorded in spring and at harvest.

Standard errors per plot. Grain, tonnes/hectare:

Furzefield (R): Whole plot: 0.644 or 15.6% (7 d.f.)
Sub plot: 0.447 or 10.8% (23 d.f.)
Butt Close (W): Whole plot: 0.190 or 10.1% (7 d.f.)
Sub plot: 0.385 or 20.5% (23 d.f.)

72/R/CS/49 and 72/W/CS/49

TABLES OF MEANS

FURZEFIELD (R)

GRAIN: TONNES/HECTARE

	N: KG/HA				FO2		F1		Mean
	75	125	176	276	O	F	O	F	
C									
WWA	4.73	5.08	4.77	4.26	4.57	4.84	4.82	4.59	4.71
WWS	3.78	3.60	3.30	3.53	3.51	3.59	3.50	3.60	3.55
WSS	3.76	4.01	4.20	4.35	3.82	4.34	4.05	4.11	4.08
WSS*	4.26	4.16	4.05	4.21	4.05	4.28	4.25	4.09	4.17
	N: KG/HA								
			75		4.05	4.22	4.40	3.87	4.13
			125		3.92	4.51	3.99	4.43	4.21
			176		4.19	3.97	3.92	4.24	4.08
			276		3.81	4.36	4.32	3.85	4.09
					FO2				
					O		4.11	3.87	3.99
					F		4.21	4.32	4.26
Mean							4.16	4.10	4.13

STANDARD ERRORS OF DIFFERENCES

C	N	FO2	F1	C	C	C	N	N	FO2
				N	FO2	F1	FO2	F1	F1
0.455	0.158	0.112	0.112	0.531	0.482	0.482	0.223	0.223	0.158
Unless same level of									
C				0.316	0.223	0.223			

Mean D.M. %: 83.0

72/R/CS/49 and 72/W/CS/49

BUTT CLOSE (W)

GRAIN: TONNES/HECTARE

	N: KG/HA				FO2		F1		Mean
	75	125	176	276	O	F	O	F	
C									
WWA	2.14	2.80	2.83	2.75	1.96	3.29	2.96	2.29	2.63
WWS	1.86	1.91	1.49	1.32	1.51	1.78	1.66	1.63	1.64
WSS	2.00	1.73	1.73	1.34	1.63	1.77	1.82	1.57	1.70
WSS*	1.64	1.71	1.42	1.43	1.61	1.49	1.55	1.55	1.55
		N: KG/HA							
			75		1.55	2.26	1.93	1.89	1.91
			125		1.87	2.20	2.14	1.92	2.03
			176		1.76	1.98	2.05	1.69	1.87
			276		1.54	1.88	1.88	1.54	1.71
					FO2				
					O		1.73	1.63	1.68
					F		2.27	1.89	2.08
Mean							2.00	1.76	1.88

STANDARD ERRORS OF DIFFERENCES

C	N	FO2	F1	C	C	C	N	N	FO2
				N	FO2	F1	FO2	F1	F1
0.134	0.136	0.096	0.096	0.271	0.191	0.191	0.192	0.192	0.136
Unless same level of									
C				0.273	0.193	0.193			

Mean D.M. %: 83.1