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Yields of the Field Experiments 1974

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74/W/CS/49 Resistance to Cyst Nematode - Spring Wheat

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74/W/CS/49

RESISTANCE TO CYST NEMATODE

Object: To study the residual effects of formalin, applied at different times to winter and spring sown wheat 1970-72, and of previous cropping with resistant and susceptible winter oats on yield and incidence of cereal cyst nematode on spring wheat.

Sponsor: T.D. Williams.

The fifth year, spring wheat.

For previous years see 70/W/CS/49(t), 71/W/CS/49(t), 72/W/CS/49(t) and 73/W/CS/49. (Until 1972 the title of the experiment was 'Fumigant and N'.)

Design: A single replicate of 4 blocks of 4 plots, split into 8.

Whole plot dimensions: 2.16 x 21.0. Sub plot area harvested: 0.00041.

Treatments: All combinations of:-

Whole plots:

- | | |
|--|---------|
| 1. Crops, sowing dates and times of applying formalin in the period 1970-1972: | CROPETC |
| Winter wheat sown in autumn, formalin in early autumn | WWA |
| Winter wheat sown in spring, formalin in early autumn | WWS |
| Spring wheat sown in spring, formalin in early autumn | WSS |
| Spring wheat sown in spring, formalin in early spring | WSS* |

Quarter plots (broadways):

- | | |
|---|--------|
| 2. Residues of nitrogen fertiliser (kg N) applied annually 1970-1972, basal N in 1973 and 1974: | NRESID |
|---|--------|

75	75
125	125
176	176
226	226

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3. Formalin in 1970-1972:

FORMALIN

1970	1971	1972	
None	None	None	OOO
None	Formalin	None	OFO
Formalin	None	Formalin	FOF
Formalin	Formalin	Formalin	FFF

Half plots (lengthways):

4. Varieties of oats in 1973:

VARIETY(73)

Peniarth - susceptible to cereal cyst nematode	SUSCEPT
Peniarth x Avena sterilis - resistant to cereal cyst nematode	RESISTANT

Basal applications: Manures: (20:15:15) at 450 kg combine drilled.
Weedkiller: Paraquat applied at 0.56 kg ion in 370 l, ioxynil at
0.63 kg plus mecoprop at 1.96 kg in 340 l.

Seed: Kleiber sown at 190 kg.

Cultivations, etc.: Paraquat applied: 12 Sept, 1973. Sub soiled, tines
140 cm apart and 50 cm deep: 24 Sept. Rotary cultivated: 18 Oct.
Ploughed: 14 Nov. Spring-tine cultivated with crumbler, seed sown:
28 Mar, 1974. Ioxynil with mecoprop applied: 8 May. Combine
harvested: 29 Aug.

- NOTES: 1. Soil samples were taken before sowing and after harvest for
counts of *Heterodera avenae* eggs.
2. Plant samples were taken in May for counts of root invasion
by *Heterodera avenae*.
3. Due to a combine harvester fault the yields from 4 plots
were not taken. Estimated values were used in the analysis.

Standard errors per plot. Grain, tonnes/hectare:

Whole plot: 0.412 or 17.9% (6 d.f.)
Pooled half and quarter plot: 0.409 or 17.8% (68 d.f.)

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TABLES OF MEANS

GRAIN: TONNES/HECTARE

	N-RESID				FORMALIN				VARIETY(73)		Mean
	75	125	176	226	OOO	OFO	FOF	FFF	SUSCEPT	RESISTANT	
CROPETC											
WWA	2.44	2.27	2.33	1.86	2.19	2.21	2.42	2.08	2.13	2.32	2.23
WWS	2.06	2.33	2.21	2.43	2.12	2.55	2.27	2.09	2.15	2.37	2.26
WSS	2.50	2.55	2.57	2.36	2.71	2.35	2.55	2.36	2.31	2.68	2.50
WSS*	2.02	2.23	2.43	2.18	2.13	2.20	2.27	2.25	2.06	2.37	2.21
	N-RESID										
			75		2.57	2.18	2.22	2.06	2.21	2.31	2.26
			125		2.38	2.11	2.29	2.62	2.12	2.58	2.35
			176		2.20	2.99	2.34	2.00	2.23	2.54	2.38
			226		2.01	2.04	2.67	2.11	2.10	2.31	2.21
					FORMALIN						
							OOO		2.24	2.34	2.29
							OFO		2.15	2.51	2.33
							FOF		2.23	2.52	2.38
							FFF		2.03	2.36	2.20
Mean									2.16	2.43	2.30

STANDARD ERRORS OF DIFFERENCES

CROPETC	NRESID	FORMALIN	VARIETY(73)	CROPETC NRESID	CROPETC FORMALIN	CROPETC VARIETY(73)
0.291	0.102	0.102	0.072	0.281	0.281	0.199
Unless same level of CROPETC				0.205	0.205	0.145
NRESID	NRESID	FORMALIN				
FORMALIN	VARIETY(73)	VARIETY(73)				
0.205	0.145	0.145				

Mean D.M. % 80.5