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79/W/CS/99 Effects of Breaks on Take-all - Barley, Oats, Beans

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79/W/CS/99

EFFECTS OF BREAKS ON TAKE-ALL

Object: To study factors affecting the incidence of take-all (*Gaeumannomyces graminis*) and effects on yields of barley - Woburn, Butt Furlong.

Sponsor: D. Hornby.

The seventh year, barley, beans, oats.

For previous years see 72/W/CS/99(t) and 73-78/W/CS/99.

Design: 2 blocks of 9 plots.

Whole plot dimensions: 5.33 x 15.2.

Treatments: Crop sequences, soil sterilant and inoculum:-

TREATMNT	1968-71	72	73	74	75	76	77	78	79
B 12	B	B	B	B	B	B	B	B	B
	B	F	B	B	B	B	B	B	F
B 6+S	B	F	BE	B	B	B	B	B	B(S)
B 5	B	B	F	BE	B	B	B	B	B
B 4	B	B	B	F	BE	B	B	B	B
B 3+S+I	B	B	B	B	F	BE	B	B	B(SI)
B 2+I	B	B	B	B	B	F	BE	B	B(I)
	B	B	B	B	B	B	F	BE	O
	B	B	B	B	B	B	B	F	BE

B = Barley, BE = Beans, F = Fallow, O = Oats

S = Soil sterilant: Formalin at 1190 l in 54,200 l

I = Inoculum of take-all applied on colonised autoclaved oats and combine drilled in the ratio of three oats to one barley seed, mixture sown at 310 kg.

Standard applications:

Barley and Oats: Manures: (20:14:14) at 450 kg.

Spring beans: Manures: (0:14:28) at 400 kg. Insecticide: Pirimicarb at 0.14 kg in 220 l.

Seed: Barley: Porthos, dressed with ethirimol, sown at 160 kg.

Oats: Panama, sown at 180 kg.

Spring beans: Minden, sown at 220 kg.

Cultivations, etc.:-

All plots: Ploughed: 17 Nov, 1978. Spring-tine cultivated with crumbler attached: 14 Apr, 1979.

Fallow: Spring-tine cultivated with crumbler attached: 8 May, 1979. Rotary cultivated: 8 June.

Barley: Formalin applied: 18 Apr, 1979. NPK applied, spring-tine cultivated with crumbler attached, seed sown and seed with inoculum combine drilled: 8 May. Combine harvested: 28 Aug.

Oats: NPK applied, spring-tine cultivated, seed sown: 8 May. Harvested by hand: 4 Oct.

Spring beans: Spring-tine cultivated with crumbler attached, PK applied, seed sown: 8 May. Insecticide applied: 11 July. Combine harvested: 10 Sept.

79/W/CS/99

NOTES: (1) Soil samples were taken before treatments were applied for estimates of *Heterodera avenae* cysts and eggs and incidence of microflora.
(2) Plant samples were taken in July for incidence of 'take-all'.

BARLEY

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

TREATMNT	B 12	B 6+S	B 5	B 4	B 3+S+I	B 2+I	MEAN
	1.97	2.36	2.48	2.34	1.24	1.56	1.99

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

TABLE	TREATMNT
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SED	0.183

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

STRATUM	DF	SE	CV%
BLOCK.WP	5	0.183	9.2

GRAIN MEAN DM% 82.3

PLOT AREA HARVESTED 0.00434