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## Yields of the Field Experiments 1990

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### 90/R/CS/331 Take-all Inoculation - W. Wheat, W. Oats

#### Rothamsted Research

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90/R/CS/331

**TAKE-ALL INOCULATION**

**Object:** To compare a range of methods of artificially inoculating take-all (*Gaeumannomyces graminis*) and to relate amounts of disease established to the yield and grain quality of w. wheat - Great Harpenden I.

**Sponsors:** D. Hornby, G.L. Bateman, R.J. Gutteridge.

The second year, w. wheat.

For previous year see 89/R/CS/331

**Design:** 4 randomised blocks of 9 plots.

**Whole plot dimensions:** 3.0 x 22.0.

**Treatments:**

<b>INOCMETH</b>	Methods of inoculating take-all to w. wheat in the first year, none to w. wheat in 1990:
NONE (O)	None (w. oats in the first year)
NONE (W)	None (w. wheat in the first year)
I PRE PL	Infective inoculum applied to soil surface pre-ploughing
N PRE PL	Non-infective inoculum applied to soil surface pre-ploughing
I PRE SO	Infective inoculum applied by fertilizer drill to 10 cm depth before rotary harrowing and sowing wheat
N PRE SO	Non-infective inoculum applied as above
I CD	Infective inoculum combine drilled with the seed
N CD	Non-infective inoculum combine drilled with the seed

- NOTES:** (1) Inoculum was prepared on autoclaved oat seed.  
(2) The sequence of cultivations in the first year was identical for all treatments: Plough to 23 cm, cultivate to level, traverse with fertilizer drill to 10 cm, rotary harrow to 10 cm and sow wheat with combine drill. In the second year the cultivations, all basal, were: Ploughed on 31 Aug, 1989, rotary harrowed twice on 2 Oct and rotary harrowed and seed sown, 4 Oct.  
(3) An additional treatment, required for comparisons in future years, was sown with w. oats.

**Basal applications:** Manure: 'Nitram' at 580 kg. Weedkillers: Isoproturon at 1.7 kg in 200 l (wheat only). Fluroxypyr at 0.15 kg with bromoxynil at 0.24 kg, clopyralid at 0.05 kg applied with the prochloraz in 200 l. Fungicides: Prochloraz at 0.40 kg. Propiconazole at 0.12 kg with carbendazim at 0.25 kg and maneb at 1.6 kg in 200 l. Insecticide: Deltamethrin at 6.2 g in 200 l.

**Seed:** W. wheat: Mercia, sown at 180 kg.  
W. oats: Image, sown at 190 kg.

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**Cultivations, etc.:-** Isoproturon (wheat only) applied: 20 Nov, 1989.  
Deltamethrin applied: 22 Feb, 1990. N applied: 12 Apr. Remaining  
weedkillers with prochloraz applied: 25 Apr. Remaining fungicides  
applied: 14 June. Combine harvested: 11 Aug.

**NOTE:** Plants were sampled on six occasions between mid-March and mid-  
July to assess take-all. Quality assessments were made on the  
grain. Soil cores were taken after harvest to assess take-all  
infectivity.

**W.WHEAT**

**GRAIN TONNES/HECTARE**

\*\*\*\*\* Tables of means \*\*\*\*\*

INOCMETH	
NONE (O)	8.02
NONE (W)	7.48
I PRE PL	6.98
N PRE PL	7.50
I PRE SO	6.85
N PRE SO	7.87
I CD	7.59
N CD	7.39
Mean	7.46

\*\*\* Standard errors of differences of means \*\*\*

INOCMETH  
0.413

\*\*\*\*\* Stratum standard errors and coefficients of variation \*\*\*\*\*

Stratum	d.f.	s.e.	cv%
BLOCK.WP	21	0.583	7.8
GRAIN MEAN DM%	88.9		
PLOT AREA HARVESTED	0.00500		

**W.OATS**

**GRAIN TONNES/HECTARE** 7.37

MEAN DM% 88.0

PLOT AREA HARVESTED 0.00506