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

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94/R/CS/331

TAKE-ALL INOCULATION

Object: To compare a range of methods of artificially inoculating take-all (*Gaeumannomyces graminis*), to assess the residual effects of a seed treatment 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 sixth year, w. wheat, w. oats.

For previous years see 89-93/R/CS/331

Design: 4 randomised blocks of 9 plots.

Whole plot dimensions: 3.0 x 22.0.

Treatments:

| | |
|-----------------|---|
| INOC+SDT | Methods of inoculating take-all to w. wheat in the first year (1989), none since, plus levels of seed treatment in the fifth year (1993) to control take-all: |
| NONE O W | None (w. oats 1994, alternating with w. wheat) |
| NONE W O | None (w. wheat 1994, alternating with w. oats) |
| NONE W W | None (continuous w. wheat) |
| I PRE PL | 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 |
| I CD | Infective inoculum drilled with the seed |
| SEEDTR 0 | No seed treatment |
| SEEDTR 1 | Seed treatment at 100 g a.i. |
| SEEDTR 2 | Seed treatment at 150 g a.i. |

NOTE: Experimental seed treatment was applied at a.i. rates per 100 kg w. wheat (cv. Riband) seed drilled.

Experimental diary:

13-Sep-93 : B : Ploughed.
21-Oct-93 : B : Heavy spring-tine cultivated.
22-Oct-93 : T : **INOC+SDT** NONE O W: Image, dressed Panoctine Plus, drilled at 350 seeds per m².
 : T : **INOC+SDT** All plots except NONE O W: Mercia, dressed Cerevax, drilled at 380 seeds per m².
26-Oct-93 : T : **INOC+SDT** NONE O W: Glytex at 2.25 kg in 200 l.
21-Dec-93 : B : Draza at 5.5 kg.
09-Mar-94 : B : 34.5% N at 118 kg.
19-Apr-94 : B : 34.5% N at 448 kg.
09-May-94 : T : **INOC+SDT** All plots except NONE O W: Ally at 30 g with Cheetah Super at 3.0 l and Starane 2 at 0.75 l in 200 l.
 : B : Halo at 2.0 l with New 5C Cycocel at 2.5 l in 200 l.
20-May-94 : B : 34.5% N at 100 kg.

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Experimental diary:

17-Jun-94 : B : Hostathion at 840 ml in 200 l.
23-Jun-94 : B : Cyclone at 1.0 l with Mallard 750 EC at 0.5 l in 200 l.
15-Aug-94 : T : **INOC+SDT** All plots except NONE O W: Combine harvested.
23-Aug-94 : T : **INOC+SDT** NONE O W: Combine harvested.

NOTE: Plant samples were taken in July for take-all assessments.

GRAIN TONNES/HECTARE

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

INOC+SDT

| | |
|----------|------|
| NONE W O | 8.71 |
| NONE W W | 8.29 |
| I PRE PL | 8.48 |
| I PRE SO | 8.56 |
| I CD | 8.02 |
| SEEDTR 0 | 8.51 |
| SEEDTR 1 | 8.19 |
| SEEDTR 2 | 8.40 |

Mean 8.40

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

INOC+SDT

0.295

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

| Stratum | d.f. | s.e. | cv% |
|---------------------|---------|-------|-----|
| BLOCK.WP | 21 | 0.418 | 5.0 |
| GRAIN MEAN DM% | 84.9 | | |
| PLOT AREA HARVESTED | 0.00506 | | |