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88/R/CS/312 Straw Decomposition - W. Wheat

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88/R/CS/312

STRAW DECOMPOSITION

Object: To test the effects of two basidiomycetes on the decomposition of wheat straw from a preceding crop and on the establishment and yield of a following crop - West Barnfield I.

Sponsor: S.H.T. Harper.

The fourth year, w. wheat.

For previous years see 85-87/R/CS/312.

Design: 4 randomised blocks of 4 plots.

Whole plot area: 4.5 x 12.0.

Treatments: All combinations of treatments applied to chopped straw in the field, cumulative to applications in the previous years:

1. **TREATMNT[1]** Treatment one:

| | |
|---------|---|
| NONE | None |
| BASID 1 | Basidiomycete 1, cumulative to this treatment in 1987 and to whey at 15 kg in 1985 and 1986 |

2. **TREATMNT[2]** Treatment two:

| | |
|---------|--|
| NONE | None |
| BASID 2 | Basidiomycete 2, cumulative to this treatment in 1987 and to a fungal accelerator in 1985 and 1986 |

- NOTES:**
- (1) Basidiomycetes 1 and 2 were naturally occurring fungi found in soil at Rothamsted and Woburn respectively.
 - (2) The basidiomycete fungus was colonised on wheat seed and this was spread on the surface at 1 seed per square cm on 18 Sept, 1987.
 - (3) Straw was chopped by a trailed straw chopper and incorporated to a depth of about 10 cm by a rotary grubber.

Basal applications: Manures: 'Nitram' at 120 kg followed by 580 kg. Weedkillers: Glyphosate at 0.27 kg in 200 l followed by 1.1 kg in 200 l. Tri-allate at 2.2 kg. Isoproturon at 2.1 kg in 200 l. Fluroxypyr at 0.20 kg in 200 l. Fungicides: Prochloraz at 0.40 kg and carbendazim at 0.15 kg in 200 l. Propiconazole at 0.12 kg in 260 l. Carbendazim at 0.25 kg and maneb at 1.6 kg with propiconazole at 0.12 kg in 260 l. Insecticides: Fonofos at 1.4 kg in 200 l. Pirimicarb at 0.14 kg in 260 l. Molluscicide: Methiocarb at 0.22 kg.

Seed: Mission, sown at 180 kg.

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Cultivations, etc.:- Straw chopped: 21 Aug, 1987. Cultivated with rotary grubber: 16 Sept. First glyphosate applied: 30 Sept. Methiocarb applied, spring-tine cultivated, seed sown: 26 Oct. Triallate applied: 9 Dec. Fonofos applied: 21 Jan, 1988. First N applied: 24 Feb. Isoproturon applied: 17 Mar. Prochloraz and carbendazim applied: 21 Apr. Second N applied: 22 Apr. Fluroxypyr applied: 6 May. Propiconazole applied: 25 May. Propiconazole with carbendazim and maneb applied, pirimicarb applied separately: 20 June. Second glyphosate applied: 9 Aug. Combine harvested: 25 Aug.

NOTE: Samples of straw were taken throughout the season for observations on the rate of decomposition.

GRAIN TONNES/HECTARE

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

| TREATMNT [2] | NONE | BASID 2 | Mean |
|--------------|------|---------|------|
| TREATMNT [1] | | | |
| NONE | 7.83 | 7.95 | 7.89 |
| BASID 1 | 7.45 | 7.68 | 7.57 |
| Mean | 7.64 | 7.81 | 7.73 |

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

| TREATMNT [1] | TREATMNT [2] | TREATMNT [1] | TREATMNT [2] |
|--------------|--------------|--------------|--------------|
| 0.264 | 0.264 | 0.374 | |

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

| Stratum | d.f. | s.e. | cv% |
|----------|------|-------|-----|
| BLOCK.WP | 9 | 0.529 | 6.8 |

GRAIN MEAN DM% 78.7

PLOT AREA HARVESTED 0.00276