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81/R/CS/234 Septoria Study - W. Wheat

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81/R/CS/234

SEPTORIA STUDY

Object: To study the effects of preceding grass and of stubble persisting in grass on the epidemiology of *Septoria nodorum* and on the yield of a subsequent w. wheat crop - Whittlocks.

Sponsors: J.F. Jenkyn, J. King (M.A.F.F.).

The third year w. wheat, the first year of yields.

Design: 3 randomised blocks of 18 plots.

Whole plot dimensions: 4.27 x 9.14.

Treatments: All combinations of:-

1. CROP TRT(80) Crops and treatments 1979 & 1980:

GF GF	Ryegrass sown in spring 1979, continued in 1980, sprayed captafol fungicide in both years
GI G	Ryegrass sown in spring 1979, continued in 1980, inoculated with <i>Septoria nodorum</i> in 1979 only
W/GF GF	Ryegrass undersown in s. wheat in 1979, grass continued in 1980, sprayed captafol fungicide in both years
W/GI G	Ryegrass undersown in s. wheat in 1979, grass continued in 1980, inoculated with <i>Septoria nodorum</i> in 1979 only.

2. TREATMNT(81) Weedkiller and cultivations to grass in autumn 1980, drilling method to w. wheat:

OO PL CN	No weedkiller to grass, ploughed, conventionally drilled
PQ OO DD	Paraquat to grass, no cultivation, direct drilled
PQ PL CN	Paraquat to grass, ploughed, conventionally drilled
PQ RV CN	Paraquat to grass, rotary cultivated, conventionally drilled

plus one extra treatment (duplicated):

EXTRA

FA PL CN	Fallow in 1979 and 1980, ploughed autumn 1981, w. wheat conventionally drilled.
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NOTES: (1) Captafol was applied at 1.41 kg in 340 l on 18 June, 1979, 23 July, 1979 and 9 June, 1980. Paraquat was applied at 0.84 kg in 250 l.

- (2) Cultivations in autumn 1980 for TREATMNT(81) were as follows:
- | | |
|-----------|---|
| OO PL CN: | Ploughed: 9 Sept, 1980. Disc harrowed twice: 10 Sept. Rotary harrowed, seed sown, spring-tine cultivated: 18 Sept |
| PQ OO DD: | Paraquat applied: 24 Aug. Seed sown, disc harrowed: 19 Sept |
| PQ PL CN: | Paraquat applied: 24 Aug. Ploughed: 9 Sept. Disc harrowed twice: 10 Sept. Rotary harrowed, seed sown, spring-tine cultivated: 18 Sept |

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PQ RV CN: Paraquat applied: 24 Aug. Chisel ploughed twice: 9 Sept. Spike rotary cultivated: 10 Sept. Rotary cultivated, rotary harrowed, seed sown, spring-tine cultivated: 18 Sept.

(3) *Septoria nodorum* was inoculated by spraying a suspension of spores in 128 l on 1 June, 1979 and 18 July.

(4) Plot sides were separated by 4.27 m and plot ends by 10.7 m sown to s. oats 1979, fallow 1980 and w. barley 1981.

Basal applications, 1979: Manures: (20:14:14) at 380 kg. Weedkillers: Bromoxynil and ioxynil (as 'Oxytril CM' at 1.4 l) with mecoprop at 1.7 l in 220 l.

Seed 1979: Highbury, sown at 190 kg
Manod, sown at 170 kg
S23, sown at 22 kg

Cultivations, etc., 1979:- Chisel ploughed: 31 Oct, 1978, 2 Nov. Spring-tine cultivated twice, NPK applied: 20 Apr, 1979. Seed sown: 21 Apr. Weedkillers applied: 4 June. Combine harvested cereals: 6 Sept. Cut grass: 27 Sept. Previous crops: W. oats 1977, potatoes 1978.

Basal applications, 1980: Manures: (25:0:16) at 440 kg in spring and at 220 kg after each cut except the last.

Cultivations, etc., 1980:- First NK applied: 13 Mar, 1980. Fallow plots rotary cultivated: 23 Apr and 6 Aug. Grass cut twice: 5 June, 6 Aug. NK applied: 6 June.

Basal applications, 1981: Manures: Chalk at 7.5 t. Kieserite at 330 kg. (10:23:23) at 250 kg, combine drilled, 'Nitro-Chalk' at 580 kg. Weedkillers: Chlortoluron at 5.6 l in 250 l. Isoproturon at 2.1 l with mecoprop at 3.2 l in 250 l.

Seed, 1981: Flanders, sown at 200 kg.

Cultivations, etc., 1981:- Chalk applied: 2 Sept, 1980. Kieserite applied: 5 Sept. Chlortoluron applied: 13 Oct. N applied: 10 Apr, 1981. Isoproturon and mecoprop applied: 22 Apr. Combine harvested: 24 Aug.

NOTE: *Septoria* was assessed at intervals between February and July 1981.

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GRAIN TONNES/HECTARE

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

TREATMNT(81) CROP TRT(80)	00 PL CN	PQ 00 DD	PQ PL CN	PQ RV CN	MEAN
GF GF	7.27	5.53	7.80	7.34	6.98
GI G	7.56	4.89	7.21	7.39	6.76
W/GF GF	7.29	5.74	7.79	7.42	7.06
W/GI G	7.64	5.17	7.70	7.68	7.05
MEAN	7.44	5.33	7.62	7.46	6.96

FA PL CN 8.31

GRAND MEAN 7.11

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

TABLE	CROP TRT(80)	TREATMNT(81)	CROP TRT(80) TREATMNT(81)
SED	0.169	0.169	0.338

SED FOR COMPARING FA PL CN WITH ANY ITEM IN CROP TRT(80).TREATMNT(81)
TABLE IS 0.292

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

STRATUM	DF	SE	CV%
BLOCK.WP	35	0.414	5.8

MEAN DM% 80.8

PLOT AREA HARVESTED 0.00195