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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 *Septoria nodorum* 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 *Septoria nodorum* 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.

- 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 ion 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		