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Yields of the Field Experiments 1981

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81/R/CS/203 Species Mixtures and Phialophora - W. Wheat

Rothamsted Research

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81/R/CS/203

SPECIES MIXTURES AND PHIALOPHORA

Object: To study the effects of lucerne, grass and clover, singly and in mixtures, and of soil inoculation on populations of *Phialophora radiculicola graminicola* (Prg) and on take-all (*Gaeumannomyces graminis*) and yield of following w. wheat crops - Stubbings.

Sponsors: E. Lester, D.B. Slope, R.J. Gutteridge.

The fifth year, w. wheat.

For previous years see 79-80/R/CS/203.

Design: 4 randomised blocks of 9 plots, split into 4.

Whole plot dimensions: 4.27 x 27.1.

Treatments: All combinations of:-

1. Whole plots

CRP INOC	Crops in 1977 and 1978 (all w. wheat 1979 to 1981) and inoculation:-	
	1977	1978
C C	White clover	White clover
G G	Ryegrass	Ryegrass
GC GC	Ryegrass/white clover mixture	Ryegrass/white clover
LU LU	Lucerne	Lucerne
LU LU I	Lucerne	Lucerne + Prg inoculum to 1979 wheat
GLU GLU	Ryegrass/lucerne in alternate rows	Ryegrass/lucerne
W G	Spring wheat	Ryegrass, sown into spring wheat stubble
WG G	Spring wheat undersown with ryegrass	Ryegrass
WGI G	Spring wheat, inoculated Prg, undersown with ryegrass	Ryegrass

2. Sub plots

N	Nitrogen fertiliser (kg N) from 1979 to 1981, cumulative:
0	
50	
100	
150	

NOTE: The inoculum used for the I treatments was an agar culture of Prg mixed with sand. It was broadcast and power harrowed into the soil before sowing.

81/R/CS/203

Basal applications: Manures: (0:20:20) at 250 kg, combine drilled.
 Weedkillers: Chlortoluron at 5.6 l in 250 l. Mecoprop with bromoxynil and ioxynil (as 'Brittox' at 3.7 l) in 250 l. Fungicide: Prochloraz at 0.4 l in 250 l.

Seed: Flanders, sown at 200 kg.

Cultivations, etc.: - Ploughed: 29 Aug, 1980. Spring-tine cultivated: 30 Sept. Rotary harrowed: 1 Oct. Seed sown: 2 Oct. Chlortoluron applied: 3 Oct. N and 'Brittox' applied: 17 Apr, 1981. Fungicide applied: 3 June. Combine harvested: 25 Aug.

NOTE: Take-all was assessed in April and July. Bio-assays of soils for take-all were made after harvest.

GRAIN TONNES/HECTARE

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

	N	0	50	100	150	MEAN
CRP INOC						
C C		1.87	2.93	3.82	3.86	3.12
G G		3.16	4.97	4.86	4.64	4.41
GC GC		2.86	5.06	5.61	5.16	4.67
LU LU		1.94	3.06	3.20	3.12	2.83
LU LU I		1.83	2.89	3.50	3.74	2.99
GLU GLU		2.91	3.73	4.65	4.24	3.88
W G		2.83	4.15	3.92	4.41	3.83
WG G		2.90	4.43	4.70	4.64	4.17
WGI G		2.86	4.04	4.98	4.65	4.13
MEAN		2.57	3.92	4.36	4.27	3.78

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

TABLE	CRP INOC	N	CRP INOC
			N
SED	0.246	0.136	0.432
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:			
CRP INOC			0.409

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

STRATUM	DF	SE	CV%
BLOCK.WP	24	0.349	9.2
BLOCK.WP.SP	81	0.579	15.3

GRAIN MEAN DM% 82.2

SUB PLOT AREA HARVESTED 0.00127