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Winter and Spring Barley

Rothamsted Research

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93/R/BW/1

WINTER BARLEY

COMPANION CROPPING

Object: To measure the effect of companion cropping on pests, diseases, growth, yield and nutrient uptake of cereals - Great Harpenden I.

Sponsor: D.G. Christian.

Design: 3 blocks of 8 plots.

Whole plot dimensions: 6.0 x 10.0.

Treatments:

COMPCROP	Companion crops, broadcast before drilling w. barley:
NONE	None (quadruplicated)
MUST 1.5	White mustard at 1.5 kg
MUST 3.0	White mustard at 3.0 kg
MUST 6.0	White mustard at 6.0 kg
RADISH	Oil radish at 3.0 kg

Experimental diary:

29-Aug-92 : B : Straw baled.
16-Sep-92 : B : Scythe at 2.0 l with Farmon Blue at 0.20 l in 200 l.
21-Sep-92 : B : Ploughed, furrow pressed.
28-Sep-92 : B : Rotary harrowed.
01-Oct-92 : B : Puffin, dressed Cerevax, drilled at 350 seeds per square metre.
 : T : COMPCROP MUST 1.5: White mustard (cv. Tilney) broadcast at 1.5 kg.
 : T : COMPCROP MUST 3.0: White mustard (cv. Tilney) broadcast at 3.0 kg.
 : T : COMPCROP MUST 6.0: White mustard (cv. Tilney) broadcast at 6.0 kg.
 : T : COMPCROP RADISH: Oil radish (cv. Trick) broadcast at 3.0 kg.
08-Mar-93 : B : 34.5% N at 120 kg.
15-Apr-93 : B : Tigress at 2.5 l in 200 l.
21-Apr-93 : B : Ally at 30 g and Starane 2 at 1.0 l in 200 l.
18-May-93 : B : Calirus at 2.0 l and Corbel at 0.50 l in 200 l.
02-Aug-93 : B : Combine harvested.

Previous crops: Potatoes 1991, w. wheat 1992.

NOTE: Plant samples were taken in December and April for dry weight, plant population and nitrogen uptake measurements, and in July to measure ear numbers, dry weights, nitrogen uptake and thousand grain weights.

93/R/BW/1

GRAIN TONNES/HECTARE

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

COMPCROP	
NONE	7.11
MUST 1.5	6.93
MUST 3.0	6.54
MUST 6.0	6.81
RADISH	7.26
Mean	6.99

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

COMPCROP	
0.322	min.rep
0.255	max-min

COMPCROP	
max-min	None v any of the remainder
min.rep	Any of the remainder

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	17	0.395	5.6
GRAIN MEAN DM%	85.2		
PLOT AREA HARVESTED	0.00230		

93/R/BW/2

Experimental diary:

14-Apr-93 : B : 34.5% N at 370 kg.
 21-Apr-93 : B : Ally at 30 g and Starane 2 at 1.0 l in 200 l.
 18-May-93 : B : Calirus at 2.0 kg and Corbel at 0.50 l in 200 l.
 02-Aug-93 : B : Combine harvested.

Previous crops: W. barley 1991 and 1992.

NOTE: Visual assessments were made for BYDV infection from late March to late May and leaf samples taken during March and April for subsequent enzyme-linked immunosorbent assay to determine levels of BYDV infection and isolates present. Numbers of ears, grains per ear and thousand grain weights were measured at harvest.

GRAIN TONNES/HECTARE

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

APHICIDE	NONE	CYPERMET	Mean
SOWDATE			
ERLYSEPT	4.98	5.57	5.28
MIDSEPT	5.14	5.53	5.33
LATESEPT	5.90	6.05	5.97
ERLYOCT	5.87	5.82	5.85
LATEOCT	5.67	5.55	5.61
Mean	5.51	5.70	5.61

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

SOWDATE	APHICIDE	SOWDATE APHICIDE
0.239	0.151	0.338

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	27	0.479	8.5
GRAIN MEAN DM%	86.0		
PLOT AREA HARVESTED	0.00204		

93/W/BS/1

SPRING BARLEY

SULPHUR AND SPRING BARLEY

Object: To measure the uptake of sulphur and effect of fertilizer sulphur on the yield of s. barley on light soil - Woburn, Lansome II.

Sponsors: S.P. McGrath, F. Zhao.

Design: 5 blocks of 2 plots, systematically arranged.

Whole plot dimensions: 5.0 x 10.0.

Treatments:

SULPHUR	Rates of sulphur (kg S):
S0	0
S4	40

NOTE: Sulphur was applied as K_2SO_4 , plots not given sulphur were given KCl to balance the potassium applied.

Experimental diary:

- 12-Mar-93 : B : Rotary harrowed.
- : B : Alexis dressed Cerevax Extra, drilled at 350 seeds per square metre, harrowed.
- 30-Mar-93 : T : **SULPHUR** S4: 40 kg S as K_2SO_4 .
- : T : **SULPHUR** S0: 97.4 kg K as KCl.
- : B : 34.5% N at 350 kg.
- 18-May-93 : B : Deloxil at 1.5 l and Astix at 2.0 l in 200 l.
- 22-Jun-93 : B : Dorin at 1.0 l in 200 l.
- 16-Aug-93 : B : Combine harvested.

NOTE: Soil samples were taken in autumn and spring for sulphate measurements, plant samples were taken throughout the season to monitor nitrogen and sulphur levels. Grain and straw samples were analysed for N and S concentrations.

93/W/BS/1

GRAIN TONNES/HECTARE

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

SULPHUR

S0	5.82
S4	5.85
Mean	5.83

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

SULPHUR

0.203

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	4	0.321	5.5
GRAIN MEAN DM%			88.9

STRAW TONNES/HECTARE

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

SULPHUR

S0	5.23
S4	5.33
Mean	5.28

STRAW MEAN DM% 82.7

PLOT AREA HARVESTED 0.00040