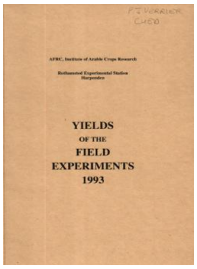
ROTHAMSTED RESEARCH

Yields of the Field Experiments 1993

Full Table of Content



Annuals Winter and Spring Wheat

Rothamsted Research

Rothamsted Research (1994) *Annuals Winter and Spring Wheat ;* Yields Of The Field Experiments 1993, pp 107 - 115 **- DOI: https://doi.org/10.23637/ERADOC-1-48**

93/R/WW/1

WINTER WHEAT

APHID IMMIGRATION

Object: To determine the role of immigration of cereal aphids in relation to forecasting outbreaks in summer - Highfield VI.

Sponsors: J. Mann, N. Carter.

Design: 4 blocks of 4 plots with external dummy plots and arranged to allow estimation of the effects of neighbouring plots.

Plot dimensions: 9.0 x 9.0.

Treatments:

INSCTCDE	Time of insecticide application:
NONE	None
MAR	Late March or early April
MARIMME	Late March or early April and at 10 day intervals from start of immigration until early growth stage
MARIMML	Late March or early April and at 10 day intervals from start of immigration until late growth stage

Experimental diary:

14-Sep-92	B	Scythe at 3.0 l in 200 l.
16-Sep-92	B	Disced.
22-Sep-92	B	Ploughed.
07-Oct-92	B	Disced.
08-Oct-92	B	Disced.
09-Oct-92	B	Rotary harrowed, Mercia, dressed Cerevax, drilled at 380 seeds per square metre.
14-Apr-93	B	34.5% N at 370 kg.
	T	**INSCTCDE** MAR, MARIMME, MARIMML: Aphox at 280 g in 200 l.
30-Apr-93	B	Cheetah R at 1.0 l and Starane 2 at 1.0 l in 200 l.
13-May-93	**T**	**INSCTCDE** MARIMME, MARIMML: Aphox at 280 g in 200 l.
14-May-93	B	34.5% N at 120 kg.
28-May-93	**T**	**INSCTCDE** MARIMME, MARIMML: Aphox at 280 g in 200 l.
04-Jun-93	B	Halo at 2.0 l and Mistral at 0.50 l in 200 l.
	T	**INSCTCDE** MARIMME, MARIMML: Aphox at 280 g in 200 l.
22-Jun-93	**T**	**INSCTCDE** MARIMML: Aphox at 280 g in 200 l.
08-Jul-93	**T**	**INSCTCDE** MARIMML: Aphox at 280 g in 200 l.
18-Aug-93	**T**	Combine harvested.

Previous crops: S. beans 1991, w. oats 1992.

NOTE: Samples were taken between April and July to assess aphid populations. Ear numbers were estimated before harvest.

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93/R/WW/1

GRAIN TONNES/HECTARE

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

INSCTCDE	
NONE	7.86
MAR	8.10
MARIMME	8.39
MARIMML	7.97
Mean	8.08

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

INSCTCDE
0.353

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	9	0.499	6.2

GRAIN MEAN DM% 83.7

PLOT AREA HARVESTED 0.00207

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93/R/WW/3

WINTER WHEAT

SOWING DATE AND N

Object: To study the effects of a range of amounts of nitrogen fertilizer applied in different ways to w. wheat sown on different dates - Fosters Corner.

Sponsors: R.J. Darby.

Design: 3 blocks of 2 x 8 plots.

Plot dimensions: 3.0 x 18.0.

Treatments:

1. **SOW DATE**	Date of sowing:	
	EARLY	Second week in September
	LATE	Third week in October
2. **SPRING N**	Rate, form and timing of nitrogen fertilizer applied in spring to achieve different green area indices (GAI):	
	N0	None
	CONV S	GAI6. Solid conventional split application, 60 plus 160 kg N
	G3 S	GAI3. Solid multiple applications of 30 kg N from mid-March
	G5-S	GAI5. Solid multiple applications of 30 kg N from mid-March
	G5 F	GAI5. Foliar multiple applications of 30 kg N from mid-March
	G5 S2F3	GAI5. Multiple applications of solid and foliar, each 30 kg N
	G5 S3F2	GAI5. Multiple applications of solid and foliar, each 30 kg N
	G5 S1F2	GAI5. Single application of solid at stem elongation, 90 kg, foliar applications from mid May, each 30 kg N

NOTES: (1) Solid fertilizer applied as 'Nitro-Chalk' (27% N), foliar nitrogen as urea (46% N) in 450 l water.
(2) **SPRING N** codes refer to the N required to produce an equivalent green area index (e.g. G5 S3F2 to give GAI5, three from solid, two from foliar N).

Experimental diary:

02-Oct-92 : B : Ploughed.
07-Oct-92 : T : **SOW DATE** EARLY: Rotary harrowed, Mercia, dressed Cerevax, drilled at 380 seeds per square metre.
31-Oct-92 : T : **SOW DATE** LATE: Rotary harrowed, Mercia, dressed Cerevax, drilled at 380 seeds per square metre.

https://doi.org/10.23637/ERADOC-1-48

93/R/WW/3

Experimental diary:

25-Mar-93 : **T** : **SPRING N**: CONV S, G3 S, G5 S, G5 F, G5 S2F3, G5 S3F2: N applied.
06-Apr-93 : **T** : **SPRING N**: G5 S, G5 F, G5 S2F3, G5 S3F2: N applied.
16-Apr-93 : B : Ally at 30 g and Starane 2 at 1.0 l in 300 l.
20-Apr-93 : **T** : **SPRING N**: CONV S, G5 S, G5 F, G5 S2F3, G5 S3F2, G5 S1F2: N applied.
05-May-93 : **T** : **SPRING N**: G3 S, G5 S, G5 F, G5 S2F3, G5 S3F2: N applied.
19-May-93 : **T** : **SPRING N**: G5 S, G5 F, G5 S2F3, G5 S3F2, G5 S1F2: N applied.
28-May-93 : B : Corbel at 1.0 l and Halo at 2.0 l in 300 l.
02-Jun-93 : **T** : **SPRING N** G5 S1F2: N applied.
02-Jul-93 : B : Bombardier at 2.0 l and Radar at 0.50 l in 300 l.
18-Aug-93 : B : Combine harvested.

Previous crops: S. beans 1991, linseed 1992.

NOTE: Soils were sampled to 90 cm depth for ammonium and nitrate contents on three occasions between early November and late February. Stem nitrate concentrations were measured at fortnightly intervals from early December until early July. Plants were sampled for growth and N content and soil samples taken at regular intervals between March and August. Components of yield were measured after hand harvesting in mid-August.

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93/R/WW/3

GRAIN TONNES/HECTARE

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

SOW DATE	EARLY	LATE	Mean
SPRING N			
N0	6.20	5.14	5.67
CONV S	10.17	10.32	10.24
G3 S	7.95	7.98	7.96
G5 S	9.80	10.07	9.94
G5 F	9.74	9.71	9.73
G5 S2F3	9.55	9.91	9.73
G5 S3F2	9.54	9.79	9.67
G5 S1F2	9.42	9.79	9.61
Mean	9.05	9.09	9.07

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

SOW DATE	**SPRING N**	**SOW DATE SPRING N**
0.099	0.198	0.281

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	30	0.344	3.8

GRAIN MEAN DM% 85.6

PLOT AREA HARVESTED 0.00230

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93/R/WW/5

WINTER WHEAT

SEED TREATMENT AND TAKE-ALL

Object: To test different rates of a seed treatment fungicide against take-all - Little Knott I.

Sponsors: D. Hornby, G.L. Bateman, R.J. Gutteridge.

Design: 4 blocks of 3 plots.

Whole Plot dimensions: 3.0 x 10.0.

Treatments:

SEED TRT	Rate of fungicidal seed treatment (g a.i. per 100 kg seed):
NONE	None applied
100	100
150	150

Experimental diary:

02-Sep-92 : B : Ploughed and furrow pressed.
01-Oct-92 : **T** : **SEED TRT** NONE, 100, 150: Rotary harrowed, Riband drilled at 380 seeds per square metre.
11-Mar-93 : B : Hytane 500 FW at 3.0 l and Stomp 400 at 2.6 l in 200 l.
15-Mar-93 : B : PK as (0:18:36) at 1250 kg.
20-Apr-93 : B : 34.5% N at 460 kg.
03-Jun-93 : B : Cheetah R at 2.5 l and Calixin at 0.70 l in 200 l.
08-Jun-93 : B : Halo at 2.0 l in 200 l.
17-Aug-93 : B : Combine harvested.

Previous crops: W. wheat 1991 and 1992.

NOTE: Plant samples were taken in November, April and July for take-all assessment.

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93/R/WW/5

GRAIN TONNES/HECTARE

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

SEED TRT	NONE	100	150	Mean
	6.59	7.26	7.60	7.15

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

SEED TRT
0.209

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	6	0.296	4.1

GRAIN MEAN DM% 87.0

PLOT AREA HARVESTED 0.00227

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93/R/WS/1

SPRING WHEAT

WEED SOWING DATE AND DENSITY

Object: To investigate the response of spring wheat to competition from white mustard (*Sinapsis alba*) sown on two different dates - Great Harpenden II.

Sponsors: P.J.W. Lutman.

Design: 3 randomised blocks of 2 x 5 plots.

Plot dimensions: 3.0 x 10.0.

Treatments: All combinations of:-

1. **WEED SD** Date of sowing weeds:

   ASCROP — Same day as drilling wheat
   CROP+10 — 10 days after drilling wheat

2. **WEED DEN** Density of sown white mustard (plants per square metre):

	ASCROP	CROP+10
D0	0	0
D1	19	110
D2	44	206
D4	98	387
D8	315	672

NOTES: (1) Target weed densities (plants per square metre):

WEED DEN	D0	D1	D2	D4	D8
WEED SD ASCROP:	0,	25,	50,	100,	200
CROP+10:	0,	50,	100,	200,	400

(2) Winter wheat, sown autumn 1992, failed and was replaced by spring wheat.

Experimental diary:

21-Jan-93 : B : Chisel ploughed.
15-Mar-93 : B : Heavy spring-tine cultivated, rotary harrowed.
16-Mar-93 : B : **WEED SD** ASCROP: White mustard broadcast by hand.
: B : Rotary harrowed, Canon, dressed Cerevax, drilled at 330 seeds per square metre.
29-Mar-93 : **T** : **WEED SD** CROP+10: White mustard broadcast by hand, raked in.
23-Apr-93 : B : 34.5% N at 290 kg.
02-Jul-93 : B : Radar at 0.50 l in 200 l.
26-Aug-93 : B : Combine harvested.

Previous crops: W. barley 1991, w. rape 1992.

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93/R/WS/1

NOTE: Emergence counts were made and samples of weed and crop taken on four occasions throughout the season for observations, counts and growth estimations.

GRAIN TONNES/HECTARE

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

WEED DEN / **WEED SD**	D0	D1	D2	D4	D8	Mean
ASCROP	6.06	4.29	2.16	1.60	0.78	2.98
CROP+10	6.32	2.09	0.73	0.43	0.44	2.00
Mean	6.19	3.19	1.44	1.01	0.61	2.49

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

WEED SD	**WEED DEN**	**WEED SD** **WEED DEN**
0.205	0.324	0.458

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	18	0.560	22.5

GRAIN MEAN DM% 87.0

PLOT AREA HARVESTED 0.00020

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