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97/R/CS/309 and 97/W/CS/309 Long-term Straw Incorporation - W. Wheat

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97/R/CS/309 and 97/W/CS/309

LONG-TERM STRAW INCORPORATION

Object: To study the effects of rotational ploughing and time of sowing after the incorporation or burning of straw on soil conditions and pests, diseases, weeds and yield of w. wheat - Rothamsted (R) Great Knott III and Woburn (W) Far Field I.

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The 13th year, w. wheat.

For previous years see 85-96/R & W/CS/309.

Design: 4 randomised blocks of 12 plots split into 2 sub-plots (R).
2 randomised blocks of 12 plots split into 2 sub-plots (W).

Whole plot dimensions: 9.0 x 28.0 (R).
9.0 x 30.0 (W).

Treatments: All combinations of:-

Whole plots

1. **STRAWCUL** Treatment of straw of previous crop and type of cultivation up to 1994 (before the space) and subsequently (after the space):

BT1 BTTTT
BT1T2 CTTTT
BP2 BPPPP
BT1P2 CPPPP
CT1 CTTTT
CT1 CPTTP
CT1T2 CTPTT
CT1T2 CTTPT
CP2 CPPPP
CP2 CPTTP
CT1P2 CTPTT
CT1P2 CTTPT

Sub-plots

2. **SOW DATE** Date of sowing:

E Early
L Late

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NOTES: (1) The following codes are used:

- B Straw burnt
 - C Straw chopped and spread
 - T1 Cultivated to 10 cm depth
 - T1P2 Cultivated to 10 cm depth, ploughed to 20 cm
 - T1T2 Cultivated to 10 cm depth and again to 20 cm
 - P2 Ploughed to 20 cm depth
- (2) From 1994 T plots were cultivated to 10 cm and P plots were ploughed to 20 cm depth.
- (3) In the experimental diary only the code after the space is used. i.e. BTTTT, CTTTT, BPPPP, CPPPP, etc.

Experimental diary:

Great Knott III (R):

- 08-Aug-96 : B : Straw chopped.
- 20-Aug-96 : T : STRAWCUL BTTTT, BPPPP: Straw burnt, ash incorporated with discs.
- 23-Sep-96 : B : Sting CT at 2.0 l in 200 l.
- 30-Sep-96 : T : STRAWCUL BTTTT, CTTTT, CTPTT, CTTPT: Heavy spring-tine cultivated.
- : T : STRAWCUL BPPPP, CPPPP, CPTTP: Ploughed.
- 01-Oct-96 : B : Heavy spring-tine cultivated.
- 02-Oct-96 : T : STRAWCUL BTTTT, CTTTT, CTPTT, CTTPT: Rotary harrowed.
- 02-Oct-96 : T : SOW DATE E: Rotary harrowed, Hereward, dressed Beret Gold, drilled at 380 seeds per m².
- 03-Oct-96 : T : SOW DATE E: Rolled.
- 09-Oct-96 : B : Draza at 5.5 kg.
- 23-Oct-96 : T : SOW DATE L: Rotary harrowed, Hereward, dressed Beret Gold, drilled at 380 seeds per m².
- 14-Nov-96 : B : Avadex BW Granular at 22.1 kg.
- 16-Dec-96 : B : Isoproturon 500 at 4.2 l with Stomp 400 SC at 3.1 l in 200 l.
- 10-Mar-97 : B : 34.5% N at 118 kg.
- 07-Apr-97 : B : 34.5% N at 463 kg.
- 18-Apr-97 : B : Starane 2 at 0.75 l with Barclay Holdup at 2.3 l in 300 l.
- 04-Jun-97 : B : Folicur at 0.3 l with Pointer at 0.5 l in 300 l.
- 19-Aug-97 : B : Combine harvested.

Far Field I (W):

- 15-Aug-96 : T : STRAWCUL BTTTT, BPPPP: Straw burnt, ash incorporated with spring-tines.
- 30-Aug-96 : T : STRAWCUL BTTTT, CTTTT, CTPTT, CTTPT: Heavy spring-tine cultivated.
- 18-Sep-96 : T : STRAWCUL BTTTT, CTTTT, CTPTT, CTTPT: Heavy spring-tine cultivated.
- 20-Sep-96 : T : STRAWCUL BPPPP, CPPPP, CPTTP: Ploughed and rolled.
- 02-Oct-96 : B : Scythe LC at 3.0 l in 200 l.
- 03-Oct-96 : B : Rotary harrowed.
- : T : SOW DATE E: Hereward, dressed Sibutol, drilled at 325 seeds per m².
- 24-Oct-96 : T : SOW DATE L: Hereward, dressed Sibutol, drilled at 350 seeds per m².
- 22-Nov-96 : B : Avadex Excel 15G at 15 kg.

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Experimental diary:

Far Field I (W):

12-Dec-96 : B : Stomp 400 SC at 2.5 l with Isoproturon 500 at 1.0 l in 200 l.
 07-Mar-97 : B : 34.5% N at 116 kg.
 15-Apr-97 : B : 34.5% N at 464 kg.
 16-May-97 : B : Halo at 2.0 l in 300 l.
 08-Aug-97 : B : Barclay Gallup at 2.0 l in 300 l.
 15-Aug-97 : B : Combine harvested.

NOTE: Plant samples were taken in July to assess root and stem base diseases.

97/R/CS/309 GREAT KNOTT III (R)

GRAIN TONNES/HECTARE

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

SOW DATE	E	L	Mean
STRAWCUL			
BT1 BT1TT	7.69	8.21	7.95
BT1T2 CT1TT	5.02	4.43	4.73
BP2 BPPPP	7.62	7.86	7.74
BT1P2 CPPPP	6.89	7.70	7.30
CT1 CT1TT	5.50	4.86	5.18
CT1 CPTTP	5.96	7.57	6.76
CT1T2 CTPTT	6.42	5.29	5.85
CT1T2 CTTPPT	7.63	6.92	7.28
CP2 CPPPP	7.00	7.75	7.38
CP2 CPTTP	6.10	7.51	6.80
CT1P2 CTPTT	6.11	6.25	6.18
CT1P2 CTTPPT	6.49	6.46	6.48
Mean	6.54	6.73	6.63

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

STRAWCUL	SOW DATE	STRAWCUL SOW DATE
0.321	0.140	0.470
Except when comparing means with the same level(s) of		
STRAWCUL		0.485

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	33	0.454	6.8
BLOCK.WP.SP	36	0.686	10.3
GRAIN MEAN DM%	89.1	SUB-PLOT AREA HARVESTED 0.00672	

97/W/CS/309 FAR FIELD I (W)

GRAIN TONNES/HECTARE

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

SOW DATE	E	L	Mean
STRAWCUL			
BT1 BTTTT	6.98	5.76	6.37
BT1T2 CTTTT	6.25	5.88	6.06
BP2 BPPPP	7.32	6.46	6.89
BT1P2 CPPPP	5.14	5.15	5.15
CT1 CTTTT	6.75	5.19	5.97
CT1 CPTTP	5.78	6.83	6.31
CT1T2 CTPPT	6.26	6.13	6.19
CT1T2 CTTPT	7.50	4.85	6.17
CP2 CPPPP	6.17	6.07	6.12
CP2 CPTTP	6.89	7.06	6.98
CT1P2 CTPPT	5.15	4.61	4.88
CT1P2 CTTPT	6.72	5.92	6.32
Mean	6.41	5.82	6.12

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

STRAWCUL	SOW DATE	STRAWCUL SOW DATE
0.578	0.179	0.725
Except when comparing means with the same level(s) of		
STRAWCUL		0.619

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	11	0.578	9.4
BLOCK.WP.SP	12	0.619	10.1

GRAIN MEAN DM% 90.3

SUB-PLOT AREA HARVESTED 0.00660