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94/R/CS/309 and 94/W/CS/309 Long-term Straw Incorporation - W. Wheat

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94/R/CS/309 and 94/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 tenth year, w. wheat.

For previous years see 85-93/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 BT
BT1T2 CT
BP2 BP
BT1P2 CP
CT1 CT
CT1 CP
CT1T2 CT (duplicated)
CP2 CP (duplicated)
CT1P2 CT (duplicated)

Sub-plots

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

E Early
L Late

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

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- NOTES:** (2) In 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. BT, CT, BP, CP.

Experimental diary:

Great Knott III (R).

- 19-Aug-93 : T : STRAWCUL CT, CP: Straw chopped.
27-Aug-93 : T : STRAWCUL BT, BP: Straw burnt, ash incorporated with discs.
18-Sep-93 : B : Sting CT at 2.0 l in 200 l.
27-Sep-93 : T : STRAWCUL BT, CT: Heavy spring-tine cultivated to 10 cm.
: T : STRAWCUL BP, CP: Ploughed to 20 cm.
19-Oct-93 : B : Disced, spring-tine cultivated.
20-Oct-93 : T : SOW DATE E: Rotary harrowed, Soissons, dressed Cerevax, drilled at 380 seeds per m².
08-Nov-93 : T : SOW DATE L: Rotary harrowed, Soissons, dressed Cerevax, drilled at 380 seeds per m².
17-Nov-93 : B : Optimol at 15 kg.
09-Mar-94 : B : 34.5% N at 118 kg.
12-Apr-94 : B : 34.5% N at 448 kg.
: B : Starane 2 at 0.75 l with Wildcat at 1.25 l in 200 l.
01-May-94 : B : Halo at 2.0 l with Tripart Brevis at 2.5 l in 200 l.
19-May-94 : B : Ally at 30 g with Cheetah Super at 3.0 l and Starane 2 at 0.75 l in 200 l.
31-May-94 : B : Bombardier at 1.0 l with Cyclone at 1.0 l in 200 l.
05-Aug-94 : B : Combine harvested.

Far Field I (W).

- 27-Aug-93 : T : STRAWCUL BT, BP: Straw burnt.
22-Sep-93 : T : STRAWCUL BT, CT: Heavy spring-tine cultivated to 10 cm.
22-Sep-93 : T : STRAWCUL BP, CP: Ploughed to 20 cm.
19-Oct-93 : B : Scythe at 4.0 l in 200 l.
20-Oct-93 : T : SOW DATE E: Rotary harrowed, Soissons, dressed Panoctine, drilled at 350 seeds per m².
08-Nov-93 : T : SOW DATE L: Rotary harrowed, Soissons, dressed Panoctine, drilled at 350 seeds per m².
28-Feb-94 : B : Draza at 5.5 kg.
14-Mar-94 : B : 34.5% N at 116 kg.
17-Mar-94 : T : SOW DATE L: Rotary harrowed, Soissons, dressed Rappor, drilled at 500 seeds per m².
04-May-94 : B : 34.5% N at 348 kg.
06-May-94 : B : Ally at 30 g with Oxytril CM at 1.0 l and Halo at 1.5 l in 200 l.
30-May-94 : B : Cyclone at 1.0 l with Bravo 500 at 1.0 l in 200 l.
14-Jun-94 : B : Hostathion at 0.84 l in 200 l.
28-Jun-94 : B : Halo at 2.0 l in 200 l.
16-Aug-94 : B : Combine harvested.

- NOTES:** (1) At Woburn the late sowing failed owing to poor establishment and subsequent damage by birds. These plots were re-drilled to w. wheat in spring.

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NOTES: (2) Establishment counts were made in winter, shoot numbers and total DM were measured in spring and components of yield were measured in summer. Numbers of grass weeds were counted in March and numbers of ears of grass weeds were counted in July. Crops were sampled in June or July to measure diseases affecting the stem bases and roots.

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

GRAIN TONNES/HECTARE

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

SOW DATE	E	L	Mean
STRAWCUL			
BT1 BT	8.40	9.30	8.85
BT1T2 CT	7.66	8.74	8.20
BP2 BP	9.72	9.86	9.79
BT1P2 CP	9.71	9.83	9.77
CT1 CT	6.97	7.85	7.41
CT1 CP	9.95	9.78	9.86
CT1T2 CT	6.60	7.80	7.20
CP2 CP	9.58	9.69	9.64
CT1P2 CT	8.42	9.26	8.84
Mean	8.47	9.07	8.77

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

	STRAWCUL	SOW DATE	STRAWCUL	SOW DATE
	0.394		0.523	min.rep
	0.341	0.140	0.453	max-min
	0.279		0.370	max.rep
Except when comparing means with the same level(s) of				
STRAWCUL			0.486	min.rep
			0.421	max-min
			0.344	max.rep

STRAWCUL
 min.rep Any of the remainder
 max-min CT1T2 CT or CP2 CP or CT1P2 CT v any of the remainder
 max.rep CT1T2 CT or CP2 CP or CT1P2 CT

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	36	0.557	6.4
BLOCK.WP.SP	39	0.688	7.8

GRAIN MEAN DM% 84.9

SUB PLOT AREA HARVESTED 0.00644

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

GRAIN TONNES/HECTARE

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

SOW DATE	E	L	Mean
STRAWCUL			
BT1 BT	3.37	3.12	3.25
BT1T2 CT	2.34	3.11	2.73
BP2 BP	5.94	4.06	5.00
BT1P2 CP	5.22	3.13	4.17
CT1 CT	4.58	3.34	3.96
CT1 CP	8.02	4.12	6.07
CT1T2 CT	3.07	3.14	3.11
CP2 CP	5.35	3.65	4.50
CT1P2 CT	3.68	3.06	3.37
Mean	4.47	3.38	3.93

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

STRAWCUL	SOW DATE	STRAWCUL	SOW DATE
0.712		0.974	min.rep
0.617	0.271	0.843	max-min
0.504		0.689	max.rep
Except when comparing means with the same level(s) of			
STRAWCUL		0.939	min.rep
		0.813	max-min
		0.664	max.rep

STRAWCUL
 min.rep Any of the remainder
 max-min CT1T2 CT or CP2 CP or CT1P2 CT v any of the remainder
 max.rep CT1T2 CT or CP2 CP or CT1P2 CT

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	14	0.712	18.1
BLOCK.WP.SP	15	0.939	23.9

GRAIN MEAN DM% 84.6

SUB PLOT AREA HARVESTED 0.00638