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00/R/CS/309 and 00/W/CS/309 Long-term Straw Incorporation - S. Wheat

Rothamsted Research

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00/R/CS/309 and 00/W/CS/309

LONG-TERM STRAW INCORPORATION

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

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The 16th year, s. wheat.

For previous years see 85-99/R & W/CS/309.

Design: 4 randomised blocks of 12 plots (R).
2 randomised blocks of 12 plots (W).

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

Treatments: All combinations of:-

STRAWCUL Treatment of straw of previous crops and type of cultivation up to 1994 (before the space) and subsequently (after the space), and the 2000 treatments:

Old codes	2000 codes
(BT1 BTTTTT)	BAT
(BT1T2 CTTTTT)	CT
(BP2 BPPPPPP)	BAP
(BT1P2 CPPPPPP)	CP
(CT1 CTTTTT)	CT
(CT1 CPTTPTT)	BAT
(CT1T2 CTPTTPT)	BAT
(CT1T2 CTTPTTP)	CT
(CP2 CPPPPPP)	CP
(CP2 CPTTPTT)	BAP
(CT1P2 CTPTTPT)	BAP
(CT1P2 CTTPTTP)	CP

NOTE: 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
BA	Straw baled and removed
C	Straw chopped
T	Soil tined
P	Soil ploughed

00/R/CS/309 and 00/W/CS/309

Experimental diary:

Great Knott III (R):

21-Aug-99 : T : C : Straw chopped.
23-Aug-99 : T : BA : Straw baled.
21-Sep-99 : B : : tm)PDQ at 3.0 l in 200 l.
: B : : tm)Enhance Low Foam at 100 ml in 200 l.
30-Sep-99 : T : T : Flexitined.
16-Nov-99 : B : : tm)PDQ at 3.0 l in 200 l.
: B : : tm)Enhance Low Foam at 40 ml in 200 l.
03-Dec-99 : T : P : Ploughed to 20cm
08-Mar-00 : B : : Rotary harrowed. Drilled, Axona, tr. Sibutol, at 350
seeds/m² with the Accord drill.
09-Mar-00 : B : : Rolled.
10-May-00 : B : : 34.5% N at 435 kg.
03-Jun-00 : B : : tm)Ally at 30 g in 200 l.
: B : : tm)BASF MCPA Amine 50 at 1.5 l in 200 l.
14-Jun-00 : T : : Mon 37500 at 25 g in 200 l, plots 4, 5, 7, 10, 13, 16,
19, 21, 22, 27, 28, 30, 31, 33, 37, 38, 43, 45 & 46.
24-Jun-00 : B : : Folicur at 1.0 l in 200 l.
23-Aug-00 : T : : Combine harvested.

Far Field I (W):

20-Aug-99 : T : C : Straw chopped.
24-Aug-99 : T : BA : Straw baled.
13-Oct-99 : B : : tm)PDQ at 3.0 l in 200 l.
: B : : tm)Enhance Low Foam at 100 ml in 200 l.
31-Dec-99 : B : : PDQ at 4.0 l in 200 l.
25-Jan-00 : T : P : Ploughed.
: T : T : Flexitined, twice.
27-Jan-00 : B : : Rotary harrowed. Drilled, Axona, tr. Sibutol, at 462
seeds/m² with the Accord drill.
27-Apr-00 : B : : Sulphan (30.0% N, 7.6% S) at 500 kg.
31-May-00 : B : : Harmony M at 75 g in 200 l.
26-Jun-00 : B : : Opus at 0.75 l in 200 l.
21-Aug-00 : B : : Combine harvested.

NOTE: Mon 37500 is an experimental herbicide for the control of brome grass.

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

GRAIN TONNES/HECTARE

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

STRAWCUL

(BT1 BTTTTTT) BAT	4.71
(BT1T2 CTTTTTT) CT	5.76
(BP2 BPPPPPP) BAP	5.30
(BT1P2 CPPPPPP) CP	5.59
(CT1 CTTTTTT) CT	5.65
(CT1 CPTTPTT) BAT	5.25
(CT1T2 CPTTPTT) BAT	5.31
(CT1T2 CTTPTTP) CT	4.85
(CP2 CPPPPPP) CP	5.26
(CP2 CPTTPTT) BAP	5.89
(CT1P2 CPTTPTT) BAP	5.61
(CT1P2 CTTPTTP) CP	5.63

Mean 5.40

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

STRAWCUL

0.377

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	33	0.533	9.9

GRAIN MEAN DM% 84.2

PLOT AREA HARVESTED 0.00672

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

GRAIN TONNES/HECTARE

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

STRAWCUL		
(BT1 BTTTTTT) BAT		2.10
(BT1T2 CTTTTTT) CT		1.22
(BP2 BPPPPPP) BAP		4.90
(BT1P2 CPPPPPP) CP		4.07
(CT1 CTTTTTT) CT		0.61
(CT1 CPTTPTT) BAT		0.54
(CT1T2 CPTTPTT) BAT		3.39
(CT1T2 CTTPTTP) CT		3.36
(CP2 CPPPPPP) CP		4.73
(CP2 CPTTPTT) BAP		4.51
(CT1P2 CPTTPTT) BAP		3.72
(CT1P2 CTTPTTP) CP		4.63
Mean		3.15

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

STRAWCUL
0.573

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	11	0.573	18.2
GRAIN MEAN DM%	84.8		
SUB-PLOT AREA HARVESTED	0.00720		