

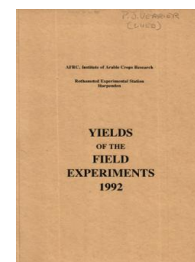
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92/R/CS/309 and 92/W/CS/309 Long-term Straw Incorporation - W. Oilseed Rape

Rothamsted Research

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92/R/CS/309 and 92/W/CS/309

LONG-TERM STRAW INCORPORATION

Object: To study the effects of mixing and depths of incorporation of straw on straw decomposition, soil nitrogen content, soil physical condition, pests, diseases and on the establishment, growth and yield of w. wheat - Rothamsted (R) Great Knott III and Woburn (W) Far Field I.

Sponsors: R.D. Prew, A.D. Todd, B.R. Kerry, D.G. Christian, E.T.G. Bacon, J.F. Jenkyn, R.J. Gutteridge, W. Powell.

Associate sponsor: D.S. Powlson.

The eighth year, w. rape.

For previous years see 85-91/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, applied cumulatively in successive years: All combinations of:-

1. **STRAW** Treatments to straw from previous wheat:

BURNT Burnt
CHOPPED Chopped and spread (duplicated)

2. **CULTIVTN** Cultivations:

TINE 10 Cultivated to 10 cm depth
TN10PL20 Cultivated to 10 cm depth, ploughed to 20 cm
TN10TN20 Cultivated to 10 cm depth and again to 20 cm
PLOUGH20 Ploughed to 20 cm depth

Experimental diary:

Great Knott III (R):

28-Aug-91 : T : **STRAW CHOPPED:** Straw chopped and spread.

30-Aug-91 : T : **STRAW BURNT:** Straw burnt.

31-Aug-91 : T : **STRAW BURNT:** Disced to 10 cm.

04-Sep-91 : T : **CULTIVTN TINE 10:** Cultivated by rotary grubber to 10 cm.

: T : **CULTIVTN TN10PL20:** Cultivated by rotary grubber to 10 cm
and ploughed to 20 cm.

: T : **CULTIVTN TN10TN20:** Cultivated by rotary grubber to 10 cm
and chisel ploughed to 20 cm.

: T : **CULTIVTN PLOUGH20:** Ploughed to 20 cm.

05-Sep-91 : B : Rotary harrowed, Falcon, dressed Lindex-Plus FS,
drilled at 8.0 kg, rolled.

06-Sep-91 : B : Butisan S at 2.5 l in 200 l.

13-Oct-91 : B : Pilot at 0.15 l with Cropspray 11 E at 2.5 l in 200 l.

19-Feb-92 : B : 34.5% N at 220 kg.

25-Mar-92 : B : 34.5% N at 290 kg.

92/R/CS/309 and 92/W/CS/309

Experimental diary:

Great Knott III (R):

- 09-Apr-92 : B : Sportak 45 at 1.1 l in 200 l.
- 15-Jul-92 : B : Reglone at 3.0 l with Farmon Blue at 0.26 l in 260 l.
- 22-Jul-92 : B : Combine harvested.

Far Field I (W):

- 25-Aug-91 : T : **STRAW CHOPPED**: Straw chopped and spread.
- 30-Aug-91 : T : **STRAW BURNT** : Straw burnt.
- : T : **CULTIVTN** TINE 10: Heavy spring-tine cultivated to 10 cm.
- : T : **CULTIVTN** TN10PL20: Heavy spring-tine cultivated to 10 cm and ploughed to 20 cm.
- : T : **CULTIVTN** TN10TN20: Heavy spring-tine cultivated to 10 cm and again to 20 cm.
- : T : **CULTIVTN** PLOUGH20: Ploughed to 20 cm.
- 02-Sep-91 : T : **CULTIVTN** TINE 10, TN10TN20: Disced to 10 cm.
- 02-Sep-91 : B : Rolled.
- 05-Sep-91 : B : Rotary harrowed, Falcon, dressed Lindex-Plus FS, drilled at 7.0 kg.
- 12-Oct-91 : B : Pilot at 0.15 l with Cropspray 11 E at 2.0 l in 200 l.
- 06-Jan-92 : B : PK as (0:16:36) at 740 kg.
- 15-Jan-92 : B : Benazolox at 1.0 kg in 200 l.
- 16-Jan-92 : B : PK as (0:16:36) at 300 kg.
- 21-Feb-92 : B : 34.5% N at 220 kg.
- 31-Mar-92 : B : 34.5% N at 290 kg.
- 03-May-92 : B : Sportak at 1.25 l in 200 l.
- 16-Jul-92 : B : Reglone at 3.0 l with Agral at 0.40 l in 400 l.
- 26-Jul-92 : B : Combine harvested.

- NOTES:** (1) From 1985 to 1991 effects were tested on w. wheat. In 1992 w. rape was grown in order to control grass weeds.
- (2) Number of plants and dry weights were estimated in autumn and spring. Individual seed weight and oil content were measured at harvest.

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

GRAIN TONNES/HECTARE

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

CULTIVTN STRAW	TINE 10	TN10PL20	TN10TN20	PLOUGH20	Mean
BURNT	3.86	3.72	3.78	3.64	3.75
CHOPPED	4.07	3.96	4.21	3.83	4.02
Mean	4.00	3.88	4.07	3.76	3.93

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

STRAW	CULTIVTN	STRAW CULTIVTN	
		0.189	min.rep
0.082	0.109	0.164	max-min
		0.134	max.rep

STRAW
min.rep BURNT only
max-min BURNT v CHOPPED
max.rep CHOPPED only

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	37	0.267	6.8
GRAIN MEAN DM%	87.0		
PLOT AREA HARVESTED	0.00644		

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

GRAIN TONNES/HECTARE

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

CULTIVTN	TINE 10	TN10PL20	TN10TN20	PLOUGH20	Mean
STRAW					
BURNT	2.55	2.21	2.75	2.75	2.56
CHOPPED	2.14	2.58	2.02	2.90	2.41
Mean	2.28	2.45	2.26	2.85	2.46

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

STRAW	CULTIVTN	STRAW CULTIVTN	
		0.579	min.rep
0.251	0.334	0.501	max-min
		0.409	max.rep

STRAW

min.rep BURNT only
 max-min BURNT v CHOPPED
 max.rep CHOPPED only

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	15	0.579	23.5
GRAIN MEAN DM%	87.5		
PLOT AREA HARVESTED	0.00638		