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88/R/CS/311 Effects of Shallow Straw Incorporation - W. Wheat

Rothamsted Research

Rothamsted Research (1989) *88/R/CS/311 Effects of Shallow Straw Incorporation - W. Wheat* ; Yields Of The Field Experiments 1988, pp 114 - 118 - DOI: <https://doi.org/10.23637/ERADOC-1-43>

88/R/CS/311

EFFECTS OF SHALLOW STRAW INCORPORATION

Object: To study the effects of shallow straw incorporation on straw decomposition, toxin production, pests and diseases and on the establishment, growth and yield of winter wheat - West Barnfield I.

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The fourth year, w. wheat.

For previous years see 85-87/R/CS/311.

Design: Single replicate of 3 x a half replicate of 2 x 2 x 2 x 2 x 2.

Whole plot dimensions: 9.0 x 57.0.

Treatments: Combinations of:-

Whole plots

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

BURNT	Burnt and then disced on 21 Aug, 1987
BALED	Baled and removed on 20 Aug
CHOPPED	Chopped on 21 Aug

2. **CULTTIME** Time of cultivation, to 10 cm depth:

EARLY	Cultivated by rotary grubber on 1 Sept, 1987
LATER	Cultivated by rotary grubber on 16 Sept

Sub plots

3. **AUT N** Autumn N as 'Nitram' applied just before cultivation:

0	None
50	50 kg N on 29 Aug, 1987 (CULTTIME EARLY), 16 Sept (CULTTIME LATER)

4. **FUNGCIDE** Fungicides:

0	None
FULL	Full programme:- Prochloraz at 0.40 kg and carbendazim at 0.15 kg in 200 l on 21 Apr, 1988 Propiconazole at 0.125 kg in 260 l on 25 May Propiconazole at 0.125 kg with carbendazim at 0.25 kg and maneb at 1.6 kg in 260 l on 20 June

5. **INSCTCDE** Insecticides:

0	None
FON+PIR	Fonofos at 1.4 kg in 200 l on 21 Jan, 1988 and pirimicarb at 0.14 kg in 260 l on 20 June, 1988

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6. **MOLLCIDE** Residual effects of molluscicide applied for 1987 crop:

0 None
 METHCARB Methiocarb at 0.22 kg in autumn 1986

Basal applications: Manures: 'Nitram' at 120 kg and later at 580 kg.
 Weedkillers: Glyphosate at 0.27 kg in 200 l and later at 1.1 kg in 200 l. Tri-allate at 2.2 kg. Isoproturon at 2.1 kg in 200 l. Fluroxypyr at 0.20 kg in 200 l.

Seed: Mission, sown at 180 kg.

Cultivations, etc.:- First glyphosate applied: 30 Sept, 1987. Spring-tine cultivated, seed sown: 26 Oct. Tri-allate applied: 9 Dec. First N applied: 24 Feb, 1988. Isoproturon applied: 17 Mar. Second N applied: 22 Apr. Fluroxypyr applied: 6 May. Second glyphosate applied: 9 Aug. Combine harvested: 25 Aug.

NOTE: Growth was measured and incidence of pests and diseases was assessed at intervals during the season. Ears of volunteers were counted prior to harvest and components of yield were measured.

GRAIN TONNES/HECTARE

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

CULTTIME	EARLY	LATER	Mean
STRAW			
BURNT	7.03	7.15	7.09
BALED	6.42	6.55	6.49
CHOPPED	5.79	6.44	6.12
Mean	6.41	6.71	6.56
AUT N	0	50	Mean
STRAW			
BURNT	7.11	7.07	7.09
BALED	6.31	6.66	6.49
CHOPPED	5.88	6.36	6.12
Mean	6.43	6.69	6.56
AUT N	0	50	Mean
CULTTIME			
EARLY	6.26	6.57	6.41
LATER	6.61	6.82	6.71
Mean	6.43	6.69	6.56
MOLLCIDE	0	METHCARB	Mean
STRAW			
BURNT	7.12	7.06	7.09
BALED	6.58	6.39	6.49
CHOPPED	5.97	6.26	6.12
Mean	6.56	6.57	6.56

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GRAIN TONNES/HECTARE

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

MOLLCIDE	0	METHCARB	Mean
CULTTIME			
EARLY	6.34	6.49	6.41
LATER	6.77	6.65	6.71
Mean	6.56	6.57	6.56

MOLLCIDE	0	METHCARB	Mean
AUT N			
0	6.46	6.41	6.43
50	6.65	6.74	6.69
Mean	6.56	6.57	6.56

FUNGCIDE	0	FULL	Mean
STRAW			
BURNT	6.32	7.86	7.09
BALED	5.94	7.04	6.49
CHOPPED	5.46	6.77	6.12
Mean	5.91	7.22	6.56

FUNGCIDE	0	FULL	Mean
CULTTIME			
EARLY	5.72	7.11	6.41
LATER	6.10	7.33	6.71
Mean	5.91	7.22	6.56

FUNGCIDE	0	FULL	Mean
AUT N			
0	5.77	7.10	6.43
50	6.05	7.34	6.69
Mean	5.91	7.22	6.56

FUNGCIDE	0	FULL	Mean
MOLLCIDE			
0	5.84	7.28	6.56
METHCARB	5.98	7.16	6.57
Mean	5.91	7.22	6.56

INSCTCDE	0	FON+PIR	Mean
STRAW			
BURNT	6.84	7.34	7.09
BALED	6.30	6.67	6.49
CHOPPED	5.84	6.40	6.12
Mean	6.32	6.80	6.56

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GRAIN TONNES/HECTARE

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

INSCTCDE	O	FON+PIR	Mean
CULTTIME			
EARLY	6.15	6.68	6.41
LATER	6.49	6.93	6.71
Mean	6.32	6.80	6.56

INSCTCDE	O	FON+PIR	Mean
AUT N			
0	6.14	6.72	6.43
50	6.51	6.88	6.69
Mean	6.32	6.80	6.56

INSCTCDE	O	FON+PIR	Mean
MOLLCIDE			
O	6.30	6.82	6.56
METHCARB	6.35	6.79	6.57
Mean	6.32	6.80	6.56

INSCTCDE	O	FON+PIR	Mean
FUNGCIDE			
O	5.65	6.17	5.91
FULL	7.00	7.44	7.22
Mean	6.32	6.80	6.56

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GRAIN TONNES/HECTARE

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

AUT N	FUNGCIDE	INSCTCDE	MOLLCIDE
0.110	0.110	0.110	0.110
STRAW*	CULTTIME*	STRAW*	CULTTIME*
AUT N	AUT N	FUNGCIDE	FUNGCIDE
0.191	0.156	0.191	0.156
AUT N	STRAW*	CULTTIME*	AUT N
FUNGCIDE	INSCTCDE	INSCTCDE	INSCTCDE
0.156	0.191	0.156	0.156
FUNGCIDE	STRAW*	CULTTIME*	AUT N
INSCTCDE	MOLLCIDE	MOLLCIDE	MOLLCIDE
0.156	0.191	0.156	0.156
FUNGCIDE	INSCTCDE		
MOLLCIDE	MOLLCIDE		
0.156	0.156		

* Within the same level of STRAW, CULTTIME or STRAW.CULTTIME only

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

Stratum	d.f.	s.e.	cv%
WP.SP	20	0.383	5.8

GRAIN MEAN DM% 78.7

SUB PLOT AREA HARVESTED 0.00276