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

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89/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 fifth year, w. wheat.

For previous years see 85-88/R/CS/311.

Design: Single replicate of 3 x a half replicate of 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 on 6 Sept, 1988
BALED	Baled and removed on 30 Aug
CHOPPED	Chopped on 6 Sept

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

EARLY	Cultivated by rotary grubber on 13 Sept, 1988
LATER	Cultivated by rotary grubber on 29 Sept

Sub plots

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

0	None
50	50 kg N on 13 Sept, 1988 (CULTTIME EARLY), 29 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 15 Apr, 1989 Propiconazole at 0.125 kg in 200 l on 24 May Propiconazole at 0.125 kg with carbendazim at 0.25 kg and maneb at 1.6 kg in 200 l on 13 June

5. **INSCTCDE** Insecticides:

0	None
FON+PIR	Fonofos at 1.4 kg in 200 l on 26 Jan, 1989 and pirimicarb at 0.14 kg in 200 l on 13 June

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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: Magnesian limestone at 5.0 t. (0:18:36) at 920 kg. 'Nitram' at 120 kg and later at 580 kg. Weedkillers: Paraquat at 0.60 kg ion in 200 l. Chlortoluron at 3.5 kg in 200 l. Metsulfuron-methyl at 6.0 g with fluroxypyr at 0.20 kg in 200 l.

Seed: Mission, sown at 160 kg.

Cultivations, etc.:- Magnesian limestone applied: 7 Sept, 1988. PK applied: 29 Sept. Paraquat applied: 18 Oct. Rotary harrowed, seed sown: 19 Oct. Chlortoluron applied: 22 Oct. First N applied: 23 Feb, 1989. Second N applied: 15 Apr. Metsulfuron-methyl with fluroxypyr applied: 26 Apr. Combine harvested: 8 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	7.05	6.95	7.00
BALED	6.76	6.80	6.78
CHOPPED	6.65	6.82	6.74
Mean	6.82	6.86	6.84
AUT N	0	50	Mean
STRAW			
BURNT	7.28	6.72	7.00
BALED	6.88	6.68	6.78
CHOPPED	6.80	6.67	6.74
Mean	6.99	6.69	6.84
AUT N	0	50	Mean
CULTTIME			
EARLY	6.97	6.67	6.82
LATER	7.01	6.70	6.86
Mean	6.99	6.69	6.84
FUNGCIDE	0	FULL	Mean
STRAW			
BURNT	6.89	7.12	7.00
BALED	6.67	6.89	6.78
CHOPPED	6.44	7.03	6.74
Mean	6.67	7.01	6.84

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GRAIN TONNES/HECTARE

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

FUNGCIDE	0	FULL	Mean
CULTTIME			
EARLY	6.67	6.98	6.82
LATER	6.67	7.04	6.86
Mean	6.67	7.01	6.84
FUNGCIDE	0	FULL	Mean
AUT N			
0	6.80	7.17	6.99
50	6.53	6.85	6.69
Mean	6.67	7.01	6.84
INSCTCDE	0	FON+PIR	Mean
STRAW			
BURNT	6.87	7.14	7.00
BALED	6.59	6.97	6.78
CHOPPED	6.54	6.93	6.74
Mean	6.67	7.01	6.84
INSCTCDE	0	FON+PIR	Mean
CULTTIME			
EARLY	6.70	6.95	6.82
LATER	6.63	7.08	6.86
Mean	6.67	7.01	6.84
INSCTCDE	0	FON+PIR	Mean
AUT N			
0	6.78	7.20	6.99
50	6.55	6.83	6.69
Mean	6.67	7.01	6.84
INSCTCDE	0	FON+PIR	Mean
FUNGCIDE			
0	6.49	6.84	6.67
FULL	6.84	7.18	7.01
Mean	6.67	7.01	6.84
MOLLCIDE	0	METHCARB	Mean
STRAW			
BURNT	7.05	6.95	7.00
BALED	6.72	6.83	6.78
CHOPPED	6.84	6.63	6.74
Mean	6.87	6.81	6.84

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GRAIN TONNES/HECTARE

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

MOLLCIDE	O	METHCARB	Mean
CULTTIME			
EARLY	6.78	6.86	6.82
LATER	6.96	6.75	6.86
Mean	6.87	6.81	6.84

MOLLCIDE	O	METHCARB	Mean
AUT N			
0	7.00	6.97	6.99
50	6.74	6.64	6.69
Mean	6.87	6.81	6.84

MOLLCIDE	O	METHCARB	Mean
FUNGCIDE			
0	6.66	6.67	6.67
FULL	7.08	6.94	7.01
Mean	6.87	6.81	6.84

MOLLCIDE	O	METHCARB	Mean
INSCTCDE			
0	6.73	6.61	6.67
FON+PIR	7.02	7.01	7.01
Mean	6.87	6.81	6.84

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

AUT N	FUNGCIDE	INSCTCDE	MOLLCIDE
0.117	0.117	0.117	0.117
STRAW*	CULTTIME*	STRAW*	CULTTIME*
AUT N	AUT N	FUNGCIDE	FUNGCIDE
0.203	0.166	0.203	0.166
AUT N	STRAW*	CULTTIME*	AUT N
FUNGCIDE	INSCTCDE	INSCTCDE	INSCTCDE
0.166	0.203	0.166	0.166
FUNGCIDE	STRAW*	CULTTIME*	AUT N
INSCTCDE	MOLLCIDE	MOLLCIDE	MOLLCIDE
0.166	0.203	0.166	0.166
FUNGCIDE	INSCTCDE		
MOLLCIDE	MOLLCIDE		
0.166	0.166		

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

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GRAIN TONNES/HECTARE

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

Stratum	d.f.	s.e.	cv%
WP.SP	20	0.407	5.9

GRAIN MEAN DM% 89.9

SUB PLOT AREA HARVESTED 0.00276