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

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85/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 first year, w. wheat.

Design: Single replicate 3 x 2 split 2 x 2 x 2.

Whole plot dimensions: 9.0 x 51.0.

Treatments: All combinations of:-

Whole plots

1. STRAW Treatments to straw of previous wheat:

 BURNT Burnt on 21 Aug, 1984, ash disced in on 22 Aug
 BALED Baled and removed on 15 Aug
 CHOPPED Chopped on 17 Aug
2. CULTTIME Time of cultivation, to 10 cm depth:

 EARLY Heavy spring-tine cultivated twice on 24 Aug, disced
 twice on 27 Aug
 LATER Heavy spring-tine cultivated twice and disced twice on
 2 Oct

Sub plots

3. AUT N Autumn N as 'Nitro-Chalk' (26% N) applied just before
 cultivation:

 0 None
 50 50 kg N on 24 Aug (CULTTIME EARLY), 1 Oct
 (CULTTIME LATER)
4. FUNGCIDE Fungicides:

 0 None
 FULL Full programme:-
 Prochloraz at 0.40 kg and carbendazim at 0.15 kg in
 500 l on 17 Apr, 1985
 Propiconazole at 0.25 kg in 500 l on 4 June
 Propiconazole at 0.12 kg with carbendazim and maneb (as
 'Septal' at 2.5 kg) in 200 l on 2 July
5. INSECTCDE Insecticide:

 0 None
 PIRIMICA Pirimicarb at 0.14 kg in 500 l on 8 July

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Basal applications: Manures: 'Nitro-Chalk' (27.5% N) at 140 kg followed by 730 kg. Weedkillers: Paraquat at 0.60 kg ion in 500 l. Isoproturon at 2.0 kg, with mecoprop at 1.6 kg, bromoxynil at 0.20 kg and ioxynil at 0.20 kg in 200 l.

Seed: Avalon, sown at 220 kg.

Cultivations, etc.: Paraquat applied: 28 Aug, 1984. Rotary harrowed: 11 Oct. Seed sown: 12 Oct. Spring-time cultivated: 13 Oct. First N applied: 28 Feb, 1985. Remaining weedkillers applied: 10 Apr. Second N applied: 12 Apr. Combine harvested: 30 Aug. Previous crops: Potatoes 1983, w. wheat 1984.

NOTE: Growth was measured and incidence of pests and diseases assessed at intervals during the season. Components of yield were measured.

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

CULTTIME	EARLY	LATER	MEAN
STRAW			
BURNT	7.95	8.61	8.28
BALED	8.13	8.33	8.23
CHOPPED	8.47	8.25	8.36
MEAN	8.18	8.39	8.29
AUT N	0	50	MEAN
STRAW			
BURNT	8.19	8.37	8.28
BALED	8.11	8.34	8.23
CHOPPED	8.18	8.54	8.36
MEAN	8.16	8.42	8.29
AUT N	0	50	MEAN
CULTTIME			
EARLY	8.10	8.26	8.18
LATER	8.22	8.57	8.39
MEAN	8.16	8.42	8.29
FUNGICIDE	0	FULL	MEAN
STRAW			
BURNT	7.50	9.06	8.28
BALED	7.40	9.05	8.23
CHOPPED	7.66	9.06	8.36
MEAN	7.52	9.06	8.29
FUNGICIDE	0	FULL	MEAN
CULTTIME			
EARLY	7.44	8.93	8.18
LATER	7.60	9.19	8.39
MEAN	7.52	9.06	8.29

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GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

FUNGCIDE	0	FULL	MEAN
AUT N			
0	7.46	8.86	8.16
50	7.58	9.25	8.42
MEAN	7.52	9.06	8.29

INSC TCDE	0	PIRIMICA	MEAN
STRAW			
BURNT	8.11	8.45	8.28
BALED	8.14	8.31	8.23
CHOPPED	8.19	8.53	8.36
MEAN	8.15	8.43	8.29

INSC TCDE	0	PIRIMICA	MEAN
CULTTIME			
EARLY	7.94	8.42	8.18
LATER	8.35	8.43	8.39
MEAN	8.15	8.43	8.29

INSC TCDE	0	PIRIMICA	MEAN
AUT N			
0	7.97	8.35	8.16
50	8.33	8.50	8.42
MEAN	8.15	8.43	8.29

INSC TCDE	0	PIRIMICA	MEAN
FUNGCIDE			
0	7.47	7.57	7.52
FULL	8.83	9.29	9.06
MEAN	8.15	8.43	8.29

CULTTIME	EARLY		LATER	
AUT N	0	50	0	50
STRAW				
BURNT	7.90	8.01	8.48	8.73
BALED	8.04	8.21	8.19	8.46
CHOPPED	8.37	8.56	7.98	8.51

CULTTIME	EARLY		LATER	
FUNGCIDE	0	FULL	0	FULL
STRAW				
BURNT	7.29	8.62	7.72	9.50
BALED	7.25	9.00	7.55	9.11
CHOPPED	7.78	9.16	7.54	8.96

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GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

AUT N	0		50	
FUNGCIDE	0	FULL	0	FULL
STRAW				
BURNT	7.38	9.00	7.63	9.12
BALED	7.50	8.73	7.30	9.37
CHOPPED	7.51	8.85	7.81	9.27
AUT N	0		50	
FUNGCIDE	0	FULL	0	FULL
CULTTIME				
EARLY	7.44	8.77	7.44	9.08
LATER	7.49	8.95	7.71	9.43
CULTTIME	EARLY		LATER	
INSCDCDE	0 PIRIMICA		0 PIRIMICA	
STRAW				
BURNT	7.71	8.20	8.51	8.70
BALED	7.86	8.39	8.42	8.23
CHOPPED	8.25	8.69	8.13	8.37
AUT N	0		50	
INSCDCDE	0 PIRIMICA		0 PIRIMICA	
STRAW				
BURNT	8.00	8.37	8.22	8.53
BALED	7.91	8.32	8.37	8.30
CHOPPED	7.99	8.37	8.39	8.68
AUT N	0		50	
INSCDCDE	0 PIRIMICA		0 PIRIMICA	
CULTTIME				
EARLY	7.81	8.40	8.07	8.45
LATER	8.12	8.31	8.58	8.56
FUNGCIDE	0		FULL	
INSCDCDE	0 PIRIMICA		0 PIRIMICA	
STRAW				
BURNT	7.49	7.51	8.73	9.39
BALED	7.38	7.41	8.90	9.20
CHOPPED	7.53	7.79	8.85	9.26
FUNGCIDE	0		FULL	
INSCDCDE	0 PIRIMICA		0 PIRIMICA	
CULTTIME				
EARLY	7.41	7.47	8.47	9.38
LATER	7.52	7.68	9.18	9.19
FUNGCIDE	0		FULL	
INSCDCDE	0 PIRIMICA		0 PIRIMICA	
AUT N				
0	7.39	7.54	8.55	9.17
50	7.55	7.61	9.11	9.40

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GRAIN TONNES/HECTARE

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

TABLE	AUT N	FUNGCIDE	INSCDCDE	STRAW* AUT N
SED	0.112	0.112	0.112	0.194
TABLE	CULTTIME* AUT N	STRAW* FUNGCIDE	CULTTIME* FUNGCIDE	AUT N FUNGCIDE
SED	0.159	0.194	0.159	0.159
TABLE	STRAW* INSCDCDE	CULTTIME* INSCDCDE	AUT N INSCDCDE	FUNGCIDE INSCDCDE
SED	0.194	0.159	0.159	0.159
TABLE	STRAW* CULTTIME AUT N	STRAW* CULTTIME FUNGCIDE	STRAW* AUT N FUNGCIDE	CULTTIME* AUT N FUNGCIDE
SED	0.275	0.275	0.275	0.224
TABLE	STRAW* CULTTIME INSCDCDE	STRAW* AUT N INSCDCDE	CULTTIME* AUT N INSCDCDE	STRAW* FUNGCIDE INSCDCDE
SED	0.275	0.275	0.224	0.275
TABLE	CULTTIME* FUNGCIDE INSCDCDE	AUT N FUNGCIDE INSCDCDE		
SED	0.224	0.224		

* WITHIN THE SAME LEVEL OF STRAW, CULTTIME OR STRAW.CULTTIME ONLY

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

STRATUM	DF	SE	CV%
WP.SP	11	0.388	4.7

GRAIN MEAN DM% 86.0

SUB PLOT AREA HARVESTED 0.00280