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## Yields of the Field Experiments 1989

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

#### **Rothamsted Research**

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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
<b>STRAW</b>			
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
<b>AUT N</b>	0	50	Mean
<b>STRAW</b>			
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
<b>AUT N</b>	0	50	Mean
<b>CULTTIME</b>			
EARLY	6.97	6.67	6.82
LATER	7.01	6.70	6.86
Mean	6.99	6.69	6.84
<b>FUNGCIDE</b>	0	FULL	Mean
<b>STRAW</b>			
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
<b>CULTTIME</b>			
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
<b>AUT N</b>			
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
<b>STRAW</b>			
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
<b>CULTTIME</b>			
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
<b>AUT N</b>			
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
<b>FUNGCIDE</b>			
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
<b>STRAW</b>			
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	0	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	0	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	0	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	0	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