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## Yields of the Field Experiments 1990

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### 90/W/RN/13 Intensive Cereals - W. Beans

#### Rothamsted Research

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90/W/RN/13

### INTENSIVE CEREALS

**Object:** To study the effects of leys of different duration, following prolonged intensive cereal cropping, on a sequence of arable crops - Woburn Stackyard I.

**Sponsor:** J. McEwen.

The 25th year, w. beans.

For previous years see 'Details' 1973 and 74-89/W/RN/13.

**Design:** 4 randomised blocks of 6 plots split into 6.

**Treatments:** Until 1977 the experiment tested all phases of the five-course rotation: ley, potatoes, cereal, cereal, cereal and continuous cereal. From 1977 to 1980 all phases were cropped with cereal. The experiment was in two halves, one in which the cereal was w. wheat, sown on part of the site of the classical continuous wheat experiment 1877-1954 and one in which the cereal was s. barley, sown on part of the site of the classical continuous barley experiment 1877-1954. From 1981 the experiment was used to establish grass/clover leys of different durations for tests on w. wheat in 1987. Plots not in ley were sown to w. wheat on both halves of the experiment. All leys were ploughed for 1987 and the site sown to w. wheat. This was followed by potatoes in 1988, w. wheat in 1989, and by w. beans in 1990, testing all combinations of the following treatments:

Whole plots

1. **LEY AGE** Length of ley (until ploughing in summer 1986):

- 1 YEAR
- 2 YEARS
- 3 YEARS
- 4 YEARS
- 5 YEARS
- 6 YEARS

Sub plots

2. **N RES** Residues of nitrogen fertilizer to w. wheat in 1989 (kg N):

- (0)
- (50)
- (100)
- (150)
- (200)
- (250)

**Basal applications:** Manures: (0:24:24) at 420 kg. Muriate of potash at 170 kg. Manganese at 0.19 kg in 220 l. Weedkillers: Paraquat at 0.80 kg ion in 220 l. Propyzamide at 0.85 kg with simazine at 0.85 kg in 220 l. Fungicide: Fenpropimorph at 0.75 kg in 220 l. Insecticide: Deltamethrin at 7.5 g in 220 l applied on two occasions.

90/W/RN/13

Seed: Banner sown at 18 seeds per square metre.

**Cultivations, etc.:-** Subsoiled with tines 50 cm apart and 40 cm deep:  
 15 Sept, 1989. PK and K applied: 19 Sept. Paraquat applied: 10 Oct.  
 Discd: 11 Oct. Seed broadcast by drill, ploughed in and rolled:  
 12 Oct. Propyzamide and simazine applied: 15 Oct. Mn applied:  
 5 Apr, 1990. Deltamethrin applied: 23 Apr and 18 May. Fenpropimorph  
 applied: 11 July. Combine harvested: 11 Aug.

**GRAIN TONNES/HECTARE**

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

N RES	(0)	(50)	(100)	(150)	(200)	(250)	Mean
<b>LEY AGE</b>							
1 YEAR	4.41	4.12	4.26	3.80	3.42	4.35	4.06
2 YEARS	4.96	4.17	4.48	4.03	4.87	5.06	4.60
3 YEARS	5.11	4.41	4.46	4.81	4.51	4.35	4.61
4 YEARS	5.02	4.11	4.62	4.51	4.31	4.51	4.51
5 YEARS	5.33	5.09	4.81	5.18	4.50	4.68	4.93
6 YEARS	4.83	4.58	4.55	4.47	4.23	4.41	4.51
Mean	4.94	4.41	4.53	4.47	4.31	4.56	4.54

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

	LEY AGE	N RES	LEY AGE
			N RES
	0.270	0.148	0.428
Except when comparing means with the same level(s) of			
LEY AGE			0.364

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	15	0.382	8.4
BLOCK.WP.SP	90	0.514	11.3

GRAIN MEAN DM% 89.9

SUB PLOT AREA HARVESTED 0.00132