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88/W/RN/13 Intensive Cereals - Potatoes

Rothamsted Research

Rothamsted Research (1989) *88/W/RN/13 Intensive Cereals - Potatoes* ; Yields Of The Field Experiments 1988, pp 65 - 67 - DOI: <https://doi.org/10.23637/ERADOC-1-43>

88/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.

Sponsors: A.E. Johnston, J. McEwen.

The 23rd year, potatoes.

For previous years see 'Details' 1973 and 74-87/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 in 1988 by potatoes 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** Nitrogen fertilizer in 1988 (kg N) as 'Nitro-Chalk':

- 0
- 70
- 140
- 210
- 280
- 350

Basal applications: Manures: (0:18:36) at 1400 kg. Mg at 100 kg as kieserite. Weedkillers: Glyphosate at 1.4 kg in 200 l. Linuron at 1.5 kg in 220 l. Fungicides: Mancozeb at 1.4 kg in 220 l on five occasions, applied with the pirimicarb on the first, second and fifth. Fentin hydroxide at 0.28 kg in 220 l. Nematicide: Oxamyl at 5.0 kg. Insecticide: Pirimicarb at 0.14 kg on three occasions. Desiccant: Diquat at 0.80 kg ion in 400 l.

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Seed: Pentland Crown.

Cultivations, etc.:- Glyphosate applied: 22 Sept, 1987. Ploughed: 22 Feb, 1988. Heavy spring-tine cultivated: 5 Apr. PK applied: 8 Apr. N treatments applied, oxamyl applied, spring-tine cultivated: 20 Apr. Mg applied, rotary harrowed, potatoes planted: 21 Apr. Rotary ridged, linuron applied: 13 May. Mancozeb applied: 15 July and 1 Aug. Mancozeb applied with pirimicarb: 14 June, 5 July and 15 Aug. Fentin hydroxide applied: 30 Aug. Desiccant applied: 15 Sept. Haulm mechanically destroyed: 29 Sept. Potatoes lifted: 26 Oct.

TOTAL TUBERS TONNES/HECTARE

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

	N	0	70	140	210	280	350	Mean
LEY AGE								
1 YEAR		37.5	52.6	64.6	60.4	59.4	62.9	56.2
2 YEARS		41.9	57.8	66.2	59.9	64.5	63.3	58.9
3 YEARS		44.9	59.9	64.7	67.6	65.8	63.4	61.0
4 YEARS		46.8	58.1	66.0	67.6	67.9	62.9	61.5
5 YEARS		43.6	61.1	68.6	75.8	69.1	64.9	63.9
6 YEARS		47.5	66.5	64.2	71.1	65.8	67.9	63.8
Mean		43.7	59.3	65.7	67.1	65.4	64.2	60.9

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

	LEY AGE	N	LEY AGE
			N
	2.08	1.73	4.40
Except when comparing means with the same level(s) of			
LEY AGE			4.25

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	15	2.94	4.8
BLOCK.WP.SP	90	6.01	9.9

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PERCENTAGE WARE 3.81 CM (1.5 INCH) RIDDLE

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

N	0	70	140	210	280	350	Mean
LEY AGE							
1 YEAR	94.2	96.5	97.5	96.9	96.9	97.3	96.6
2 YEARS	96.0	97.8	98.0	98.2	98.3	97.5	97.6
3 YEARS	96.7	97.4	98.1	97.3	98.4	97.3	97.5
4 YEARS	95.5	96.9	98.1	97.5	97.5	96.6	97.0
5 YEARS	95.4	97.6	97.9	98.0	98.0	97.5	97.4
6 YEARS	96.1	98.0	97.7	97.7	97.9	97.4	97.5
Mean	95.7	97.4	97.9	97.6	97.8	97.3	97.3

SUB PLOT AREA HARVESTED 0.00090