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# Numerical Results of the Field Experiments 1968

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## 68/B/2 Woburn Ley Arable Rotations

### Rothamsted Research

Rothamsted Research (1970) *68/B/2 Woburn Ley Arable Rotations* ; Numerical Results Of The Field Experiments 1968, pp 73 - 82 - DOI: <https://doi.org/10.23637/ERADOC-1-58>

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## LEY AND ARABLE ROTATIONS

(WLA)

Woburn Stackyard 1968 - the 31st year.

For history, treatments etc., see 'Details' 1967 and 'Results' 63/B/4, 64/B/4, 65/B/4, 66/B/4 and 67/B/4.

First test crop: Barley replaced sugar beet and received a basal application of 280 lb (0:20:20) combine drilled.

Corrective K dressings (in cwt K<sub>2</sub>O) as muriate of potash

	No FYM half plots	FYM half plots
Continuous rotations		
Ley	0	1
Sainfoin	3	3
Arable with hay	5	4
Arable	2	2
Alternating rotations		
Arable with hay/ley	0	0.5
Arable/sainfoin	5	3
Ley/arable with hay	5	3
Lucerne/arable	5	3

Nitrogen test on eighth plots: After arable rotations:  
0.4 (N1), 0.8 (N2), 1.2 (N3), 1.6 (N4) cwt N as 'Nitro-Chalk' 21.  
After ley and sainfoin:  
None (N0), 0.4 (N1), 0.8 (N2), 1.2 (N3) cwt N as 'Nitro-Chalk' 21.

First treatment crops: All plots received a basal application of 92 lb MgO as Epsom salts.

- Potatoes: 1. Fumigant on quarter plots: None (0), 400 lb (F) chloropicrin.  
2. Nitrogen on twelfth plots: 1.0 (N1), 1.5 (N2), 2.0 (N3).  
3. Fungicide seed dressing on strips of 6 twenty-fourth plots: None (0), thiram (T) (about 15 lb per acre of dust (50% a.i.) applied to tubers before planting).

NOTE: The thiram dressed seed was chitted and the undressed seed was not chitted because of an error.

Cultivations, etc.:

Treatment crops.

Ley 1st year: Ploughed: 18 Sept, 1967. NPK applied:  
29 Mar, 1968. Mg applied: 3 Apr. Seed sown at 40 lb:  
11 Apr. NK applied: 9 July. Grazed 7 circuits: 17 June -  
15 Oct.

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Ley 2nd year: NK applied: 26 Mar, 1968, 26 June. Grazed 9 circuits: 28 Apr - 15 Oct.

Ley 3rd year: NK applied: 26 Mar, 1968, 17 June. Grazed 10 circuits: 19 Apr - 23 Oct.

Sainfoin 1st year: Ploughed: 18 Sept, 1967. N and K applied: 28 Mar, 1968. P applied: 29 Mar. Mg applied: 3 Apr. Seed drilled at 70 lb: 11 Apr. Cut once: 6 Aug.

Sainfoin 2nd year: N and K applied: 26 Mar, 1968. First cut: 6 June. Sprayed with paraquat at 0.38 lb ion in 30 gals: 10 June. Second cut: 12 Aug. Sprayed with paraquat at 0.38 lb ion in 30 gals: 14 Aug.

Sainfoin 3rd year: N and K applied: 26 Mar, 1968. First cut: 6 June. Sprayed with paraquat at 0.38 lb ion in 30 gals: 10 June. Rotary cultivated to kill having failed after first cut: 19 July. Sprayed with paraquat at 0.38 lb ion in 30 gals: Aug 14,

Potatoes: Ploughed: 18 Sept, 1967. Fumigant applied: 10 Nov. Mg applied: 3 Apr, 1968. PK applied: 4 Apr. Test nitrogen applied: 8 Apr. Rotary cultivated, potatoes planted: 10 Apr. Sprayed with linuron at 0.5 lb plus paraquat at 0.38 lb in 50 gals: 3 May. Grubbed: 1 June. Ridged: 14 June. Sprayed with mancozeb at 1.2 lb plus demeton-s-methyl at 3.5 oz in 38 gals: 12 July. Sprayed with mancozeb at 1.2 lb in 38 gals: 30 July, 6 Aug. Sprayed with undiluted BOV at 15 gals: 4 Sept. Lifted: 2 Oct.

Rye: Ploughed: 18 Sept, 1967. Seed combine drilled at 150 lb: 13 Oct. Seeds undersown (AH plots): 29 Mar, 1968. 'Nitro-Chalk' applied: 8 Apr. Combine harvested: 23 Aug.

Seeds hay: Seeds undersown in rye at 30 lb: 24 Apr, 1967. NPK applied: 26 Mar, 1968. NK applied: 18 June. Cut twice: 6 June, 12 Aug.

Carrots: Ploughed: 12 Oct, 1967. NPK applied: 5 Apr, 1968. Seed drilled at 3.5 lb: 11 Apr. Sprayed with linuron at 0.5 lb in 50 gals: 28 May. Sprayed with DDT at 0.5 pints in 20 gals: 30 May. Sprayed with menazon at 0.25 lb in 50 gals: 18 June. Lifted: 12 - 13 Nov.

#### Test crops.

Barley, 1st test crop: Half corrective K applied: 25 Oct, 1967. Ploughed: 13 Nov. Remaining corrective K applied: 13 Feb, 1968. Seed combine drilled at 140 lb: 6 Mar. Test 'Nitro-Chalk'



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applied: 14 Mar. Sprayed with ioxynil/mecoprop (Actril C at 5 pints in 25 gals): 26 Apr. Combine harvested: 21 Aug.

Barley, 2nd test crop: Magnesian limestone applied at 45 cwt. Ploughed: 17 Nov, 1967. Seed combine drilled at 140 lb: 9 Mar, 1968. 'Nitro-Chalk' applied: 11 Mar. Sprayed with ioxynil/mecoprop (Actril C at 5 pints in 25 gals): 26 Apr. Combine harvested: 20 Aug.

Standard errors per plot.

Barley, 2nd test crop, grain:

Whole plot: 1.86 or 6.4% (4 d.f.)

Sub plot: 1.32 or 4.5% (4 d.f.)

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SUMMARY OF RESULTS

TREATMENT CROPS

SAINFOIN, DRY MATTER

	1st cut	2nd cut	Total
1ST YEAR			
DO	22.8		
D1	20.0		
LU*	22.6		
AH	20.2		
Mean	21.4		
Mean D.M. %:	15.3		
2ND YEAR			
DO	45.3	16.8	62.1
D1	46.0	14.7	60.7
LU	42.6	13.7	56.3
AR	48.7	17.8	66.5
Mean	45.6	15.8	61.4
Mean D.M. %:	14.0	25.8	19.9
3RD YEAR			
DO	46.8		
D1	44.8		
LU	44.6		
AH	46.9		
Mean	45.8		
Mean D.M. %:	14.0		

\* Lucerne 1963 - 64, sainfoin 1965.

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TREATMENT CROPS					
POTATOES					
	LE	LU**	AH	AR	Mean
TOTAL TUBERS					
DO	19.76	20.16	12.97	14.83	16.93
D1*	19.05	19.99	14.74	15.55	17.33
O	17.78	18.12	8.53	9.05	13.37
F	21.02	22.02	19.18	21.33	20.89
N2	18.87	18.60	13.64	15.20	16.58
N3	18.98	20.99	14.40	15.46	17.46
N4	20.35	20.63	13.53	14.90	17.35
O	19.10	20.75	14.33	14.13	17.08
T	19.70	19.40	13.37	16.25	17.18
Mean	19.40	20.07	13.85	15.19	17.13
% WARE					
DO	96.8	97.0	95.8	95.3	96.2
D1*	96.4	96.8	96.8	96.0	96.5
O	96.7	97.2	95.0	94.2	95.8
F	96.6	96.6	97.6	97.1	97.0
N2	96.6	96.5	96.0	95.7	96.2
N3	96.4	96.8	96.4	95.8	96.4
N4	96.9	97.3	96.4	95.6	96.5
O	96.7	97.2	96.7	95.0	96.4
T	96.6	96.6	95.8	96.3	96.3
Mean	96.6	96.9	96.3	95.7	96.4

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TREATMENT CROPS

RYE

GRAIN

DO	29.7
D1*	33.0
Ley	32.2
LU**	26.9
AH	36.0
AR	30.4
Mean	31.4

HAY

DRY MATTER

	1st cut	2nd cut	Total
1964			
DO	64.1	37.7	101.8
D1*	63.4	39.1	102.5
AH	64.3	37.8	102.1
LU	63.2	39.0	102.2
Mean	63.7	38.4	102.1

Mean D.M. %: Rye, Grain: 84.1

\* FYM applied: Potatoes - for test crop sugar beet in 1966  
 Rye - for test crop sugar beet in 1965  
 Hay - for test crop sugar beet in 1963

\*\* Lucerne 1963 - 64, sainfoin 1965.

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CARROTS

	ROOTS	TOPS
1964		
DO	33.97	4.69
D1*	34.57	5.04
AR	34.06	4.09
Ley	34.48	5.64
Mean	34.27	4.86

\* FYM applied for test crop sugar beet in 1964



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1ST TEST CROP

BARLEY

GRAIN

	NO	N1	N2	N3	N4
D0 Ley	31.7	28.0	25.8	23.1	-
SA	30.7	30.1	28.0	23.0	-
AH	-	31.5	27.3	22.9	24.2
AR	-	32.9	31.0	30.0	23.1
D1 Ley	34.4	29.1	20.8	22.8	-
SA	32.7	27.1	26.6	23.1	-
AH	-	32.0	27.6	22.7	23.9
AR	-	33.7	31.5	27.9	23.1
	Ley	SA	AH	AR	Mean
CON	26.4	28.0	26.8	29.4	27.7
ALT	27.5	27.4	26.2	28.9	27.5
Mean	27.0	27.7	26.5	29.2	27.6

Mean D.M. %: 80.4

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1ST TEST CROP

BARLEY

STRAW

	NO	N1	N2	N3	N4
DO Ley	37.5	36.5	31.5	38.5	-
SA	39.1	37.6	43.0	30.4	-
AH	-	33.0	36.6	38.2	31.5
AR	-	30.9	39.4	39.5	35.7
D1 Ley	30.8	39.7	42.0	25.0	-
SA	31.5	36.0	36.8	32.7	-
AH	-	40.5	40.5	27.4	31.4
AR	-	32.3	43.7	38.4	28.4
	Ley	SA	AH	AR	Mean
CON	36.1	36.4	35.1	34.9	35.6
ALT	34.2	35.4	34.7	37.2	35.4
Mean	35.2	35.9	34.9	36.0	35.5

Mean D.M. %: 79.5

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2ND TEST CROP

BARLEY

GRAIN

	Ley	SA	AH	AR	Mean
		(1) and (2)			(±0.47)
1967					
D0	29.1	28.8	31.1	30.4	29.9
D1	27.9	27.7	30.3	27.7	28.4
Mean (±1.32)	28.5	28.3	30.7	29.0	29.1

Mean D.M. %: 79.2

- (1) (±1.47) For use in horizontal and diagonal comparisons only  
 (2) (±0.93) For use in vertical and interaction comparisons only