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Yields of the Field Experiments 1959

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59/W/BE/1 Ley and Arable Rotations

Rothamsted Research

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59/Be/1.2

Seeds hay 3rd course. Seeds undersown at 30 lb per acre in rye:
 Apr 19, 1958. Potash and nitrogen fertilizer applied:
 Mar 17, 1959. Cut once: May 29. 'Nitra-Shell' applied:
 June 2. Seeds mixture: 19 lb S24 Perennial Ryegrass, 9 lb
 Late Flowering Red Clover, 2 lb Alsike American per acre.
 Carrots 3rd course. Ploughed twice: Sept 15 and Nov 21, 1958.
 Potash and nitrogen fertilizers applied: Apr 7, 1959. Seed
 drilled at 5 lb per acre: Apr 14. Sprayed with dieldrin
 against carrot fly at 2 pints in 40 gallons per acre: June 4
 and June 26. Lifted (2 rows per plot): Oct 28. Variety:
 Scarlet Intermediate.

Test crops

Sugar beet 1st test crop. Dung applied: Nov 19, 1958.
 Ploughed: Nov 20. Treatment fertilizers applied: Apr 3, 1959.
 Basal compound fertilizers applied, seed drilled at 12 lb per
 acre: Apr 6. Sprayed with dieldrin against mangold fly at
 2 pints in 40 gallons per acre: May 26. Sprayed with demeton
 methyl against virus yellow at 12 fluid oz (50% active
 ingredients) in 40 gallons per acre: June 3 and June 20.
 Singled: May 26. Lifted: Nov 4. Variety: Klein E.
 Barley 2nd test crop. Ground chalk applied at 18 cwt per acre:
 Dec 24, 1958. Ploughed: Jan 5 - Jan 23, 1959. Muriate of
 potash applied to sub plots to equalize treatment dressings
 to 1958 sugar beet test crop; 'Nitra-Shell' applied: Mar 1.
 Seed drilled at 3 bushels per acre: Mar 13. Combine
 harvested: Aug 5. Variety: Herta.

Standard errors per plot.		Test crops.	
Sugar beet.	Total sugar.	Whole plot:	10.10 cwt per acre or 21.0% (4 d.f.)
		$\frac{1}{2}$ plot:	6.70 cwt per acre or 14.0% (4 d.f.)
		$\frac{1}{8}$ plot:	3.68 cwt per acre or 7.7% (24 d.f.)
	Tops	Whole plot:	1.614 tons per acre or 19.9% (4 d.f.)
		$\frac{1}{2}$ plot:	1.453 tons per acre or 17.9% (4 d.f.)
		$\frac{1}{8}$ plot:	0.834 tons per acre or 10.3% (24 d.f.)
Barley.	Grain (at 85% dry matter)	Whole plot:	0.78 cwt per acre or 2.2% (4 d.f.)
		$\frac{1}{2}$ plot:	2.05 cwt per acre or 5.9% (4 d.f.)

Summary of Results

Treatment crops

Ley, sheep days of grazing per acre

1st year	2nd year	3rd year
566	1066	1253

Lucerne, yield of hay (at 85% dry matter): cwt per acre

	1st cut	2nd cut	3rd cut	Total
<u>1st year</u>				
Dung in 1957: tons per acre				
None	9.8	25.8		35.6
15	13.7	29.0		42.7
Difference	+3.9	+3.2		+7.1
Previous rotation				
Lucerne	10.8	28.6		39.4
Arable with roots	12.6	26.1		38.7
Mean	11.7	27.4		39.1
<u>2nd year</u>				
Dung in 1956: tons per acre				
None	21.3	6.6	11.0	38.9
15	32.8	10.4	13.8	57.0
Difference	+11.5	+3.8	+2.8	+18.1
Previous rotation				
Lucerne	22.2	6.3	10.0	38.5
Arable with hay	32.0	10.7	14.7	57.4
Mean	27.1	8.5	12.4	48.0

59/Be/1.4

Treatment crops

	Potatoes		Rye	
	Total tubers: tons per acre	Percentage ware ($1\frac{5}{8}$ " riddle)	Grain: (at 85% D.M.) cwt per acre	Straw: cwt per acre
Dung: tons per acre				
None	11.91	79.0	32.6	34.0
15*	12.49	81.4	35.7	36.4
Difference	+0.58	+2.4	+3.1	+2.4
Previous rotation				
Ley	14.57	84.5	34.8	36.4
Lucerne	12.68	83.9	36.2	36.2
Arable with hay	10.90	76.2	34.2	34.5
Arable with roots	10.64	76.2	31.4	33.8
Mean	12.20	80.2	34.1	35.2

Hay

Yield (at 85% dry matter): cwt per acre

Dung in 1955: tons per acre	
None	58.2
15	61.5
Difference	+3.3
Previous rotation	
Ley	69.3
Arable with hay	50.4
Mean	59.8

Carrots

	Roots washed: tons per acre	Tops tons per acre
Dung in 1955: tons per acre		
None	5.84	2.36
15	6.28	2.42
Difference	0.44	0.06
Previous rotation		
Lucerne	6.91	2.83
Arable with roots	5.22	1.96
Mean	6.06	2.39

*Dung applied: Potatoes for test crop sugar beet in 1957.
Rye - for test crop sugar beet in 1956.

59/Be/1.5

1st Test crop

Sugar beet

Previous rotation

	Ley	Lucerne	Arable with hay	Arable with roots	Mean
<u>Roots (washed): tons per acre</u>					
Mean	15.88	13.56	12.12	13.00	13.64
Dung: tons per acre					
None	15.43	12.62	10.24	12.04	12.58
15	16.33	14.50	14.01	13.96	14.70
Difference	+0.90	+1.88	+3.77	+1.92	+2.12
Response to additional 0.72 cwt N per acre					
No dung	-2.88	-0.81	-0.70	-1.12	-1.38
Dung 15 tons per acre	-0.14	-0.38	-0.69	+0.01	-0.30
Response to additional 0.9 cwt K ₂ O per acre					
No dung	+0.88	+1.62	+0.12	+0.74	+0.84
Dung 15 tons per acre	+1.59	+0.58	+0.81	+0.92	+0.97
<u>Sugar Percentage</u>					
Mean	17.4	17.4	17.6	17.8	17.5
Dung: tons per acre					
None	17.6	17.4	17.6	17.7	17.6
15	17.2	17.4	17.5	18.0	17.5
Difference	-0.4	0.0	-0.1	+0.3	-0.1
Response to additional 0.72 cwt N per acre					
No dung	-1.2	-1.2	-1.2	-0.9	-1.1
Dung 15 tons per acre	-0.8	-0.6	-0.6	-0.5	-0.6
Response to additional 0.9 cwt K ₂ O per acre					
No dung	+0.4	+0.6	0.0	+0.9	+0.5
Dung 15 tons per acre	-0.2	+0.2	+0.2	+0.1	+0.1

59/Be/1.6

		1st Test Crop				
		Sugar beet				
		Previous rotation				
		Ley	Lucerne	Arable with hay	Arable with roots	Mean
		<u>Total sugar: cwt per acre</u>				
Mean	(±7.14)	55.4	47.4	42.5	46.5	48.0
Dung: tons per acre						
None	(±7.89)*	54.6	44.3	36.1	42.8	44.5
15		56.2	50.5	49.0	50.2	51.5
Difference	(±6.70)	+1.6	+6.2	+12.9	+7.4	+7.0
Response to additional						(±3.35)
0.72 cwt N per acre		(±2.60)				(±1.30)
No dung		-13.8	-5.9	-4.9	-6.0	-7.7
Dung 15 tons per acre		-3.4	-3.2	-4.2	-1.6	-3.1
Response to additional						(±1.30)
0.9 cwt K ₂ O per acre		(±2.60)				(±1.30)
No dung		+4.2	+7.2	+0.4	+4.6	+4.1
Dung 15 tons per acre		+5.0	+2.4	+3.2	+3.8	+3.6
		<u>Tops: tons per acre</u>				
Mean	(±1.142)	8.64	8.46	7.69	7.69	8.12
Dung: tons per acre						
None	(±1.353)*	8.75	8.54	7.27	8.17	8.18
15		8.54	8.37	8.10	7.20	8.05
Difference	(±1.453)	-0.21	-0.17	+0.83	-0.97	-0.13
Response to additional						(±0.726)
0.72 cwt N per acre		(±0.590)				(±0.295)
No dung		-0.26	+1.70	+0.54	+0.38	+0.59
Dung 15 tons per acre		+1.12	-0.23	+0.34	+0.21	+0.36
Response to additional						(±0.295)
0.9 cwt K ₂ O per acre		(±0.590)				(±0.295)
No dung		+1.08	+1.58	+0.60	+0.63	+0.97
Dung 15 tons per acre		+0.65	+0.95	+0.46	-0.53	+0.38

*For use in horizontal and diagonal comparisons only.

59/Be/1.7

1st Test Crop

Sugar beet

Plots receiving no additional N or K

Previous rotation

Dung: tons per acre	Ley	Lucerne	Arable with hay	Arable with roots	Mean
<u>Roots (washed): tons per acre</u>					
Mean	15.98	13.16	12.48	13.50	13.78
None	16.52	12.44	10.54	12.98	13.12
15	15.44	13.89	14.42	14.01	14.44
Difference	-1.08	+1.45	+3.88	+1.03	+1.32
<u>Sugar percentage</u>					
Mean	17.9	17.8	18.0	18.2	18.0
None	18.0	17.8	18.1	18.0	18.0
15	17.7	17.9	17.9	18.4	18.0
Difference	-0.3	+0.1	-0.2	+0.4	0.0
<u>Total sugar: cwt per acre</u>					
Mean (±5.80)	57.3	47.1	44.8	49.2	49.6
None (±7.73)*	59.7	44.6	38.1	46.7	47.3
15	54.8	49.6	51.6	51.6	51.9
Difference (±7.42)	-4.9	+5.0	+13.5	+4.9	+4.6
<u>Tops: tons per acre</u>					
Mean (±1.023)	7.96	7.15	7.24	7.80	7.54
None (±1.363)*	8.23	7.01	6.76	8.00	7.50
15	7.70	7.29	7.73	7.61	7.58
Difference (±1.622)	-0.53	+0.28	+0.97	-0.39	+0.08

*For use in horizontal and diagonal comparisons only.

59/Be/1.8

		2nd Test Crop				
		Barley				
		Previous rotation				
Dung in 1958: tons per acre		Ley	Lucerne	Arable with hay	Arable with roots	Mean
<u>Grain (at 85% dry matter): cwt per acre</u>						
None	(±1.17)*	36.1	33.9	36.0	33.6	34.9
15		34.2	31.5	36.5	36.5	34.7
Mean	(±0.55)	35.2	32.7	36.2	35.0	34.8
Difference	(±2.05)	-1.9	-2.4	+0.5	+2.9	-0.2 (±1.02)
<u>Straw (at 85% dry matter): cwt per acre</u>						
None		26.7	24.2	22.9	22.3	24.0
15		30.0	28.9	27.9	28.1	28.7
Mean		28.4	26.5	25.4	25.2	26.3
Difference		+3.3	+4.7	+5.0	+5.8	+4.7

* For use in horizontal and diagonal comparisons only.

59/Bf/1.1

WOBURN MARKET GARDEN EXPERIMENT

Organic manures and nitrogen - Lansome Field 1959, the 18th year.

For treatments etc., see "Details of the Classical and Long Term Experiments" 1956.

Note: The results for the 1959-60 leeks will be included in the 1960 report.

Area of each plot (acres): 0.0125. Area harvested: Leeks - 0.0104; globe beet - 0.0104; early potatoes - 0.0084.

Cultivations, etc.:

Leeks 1958-59. Organic manures applied: July 25, 1958. Ploughed: July 28. 'Nitro-Chalk' and basal fertilizers applied: July 30. Planted: Aug 1. Second dressing of 'Nitro-Chalk' applied: Sept 18. Harvested: Mar 4 - Apr 15, 1959. Variety: Musselburgh.

Early potatoes. Ploughed: Sept 24 and Nov 27, 1958. Organic manures applied: Nov 27. Fertilizers applied on the flat: Mar 24, 1959. Machine planted: Mar 27. Earthed up: June 3. Lifted: July 14. Variety: Arran Pilot.

Globe beet. Ground chalk at 18 cwt per acre applied: Apr 16, 1959. Organic manures applied, ploughed: Apr 20. 'Nitro-Shell' and basal fertilizers applied: Apr 29. Seed drilled at 14 lb per acre: May 6. Sprayed with dieldrin at 2 pints in 40 gallons per acre: May 14. Singled: June 8 - 17. Second dressing of 'Nitro-Shell' applied: June 19. Harvested: July 22 - Sept 3. Variety: Detroit.

Standard errors per plot:

Leeks 1958-59.	Saleable produce:	0.552 tons per acre or 10.0%
		(17 d.f.)
Early potatoes.	Total tubers:	0.560 tons per acre or 10.2%
		(17 d.f.)
Globe beet.	Saleable bulbs:	1.112 tons per acre or 14.2%
		(17 d.f.)