

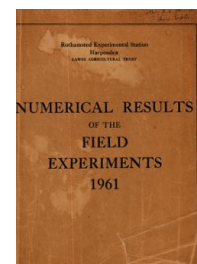
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Yields of the Field Experiments 1961

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61/R/A/4 Agdell - Grass and Multiple Crops

Rothamsted Research

Rothamsted Research (1962) *61/R/A/4 Agdell - Grass and Multiple Crops* ; Yields Of The Field Experiments 1961, pp 10 - 14 - DOI: <https://doi.org/10.23637/ERADOC-1-182>

61/A/4.1

GRASS AND MULTIPLE CROPPING AND DIRECT AND RESIDUAL P

AGDELL 1961

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

Multiple cropping 1961

In order to investigate further the residues of past treatments by testing methods of incorporating P fertiliser in the soil, the crop strips on 3 of the old rotation plots (numbers 1, 3 and 5) were split lengthways to give two sub plots for each of the three 1959 treatments. The new sub plots carry the treatments described below. The areas carrying strip crops in 1960 on plots numbers 2, 4 and 6 were bare fallowed. Yields were taken from the cocksfoot ley sown in 1960.

Rotation (commencing 1959): barley, potatoes, sugar beet.

Area of each sub plot (acres): 0.0050. Area harvested: 0.0035.

Treatments per acre: None; 0.75; 1.50 cwt $P_{2}O_{5}$ either ploughed in or applied in seedbed; also 0.75 cwt $P_{2}O_{5}$ ploughed in plus 0.75 cwt $P_{2}O_{5}$ in seedbed; 1.5 cwt $P_{2}O_{5}$ ploughed in plus 1.5 cwt $P_{2}O_{5}$ in seedbed. $P_{2}O_{5}$ as superphosphate; for potatoes "seedbed" P was applied in bouts.

Basal dressings per acre. To grass: as 1959.

To barley: 0.3 cwt $K_{2}O$ ploughed in, and 0.6 cwt N, 0.6 cwt $K_{2}O$ broadcast in seedbed as compound fertiliser, 16% N, 16% $K_{2}O$.

To potatoes: 0.6 cwt $K_{2}O$ ploughed in, 0.6 cwt $K_{2}O$ after ploughing, 1.2 cwt N and 1.2 cwt $K_{2}O$ as compound fertiliser, 16% N, 16% $K_{2}O$ applied to ridged land before planting.

To sugar beet: 1.0 cwt $K_{2}O$ ploughed in, 1.0 cwt $K_{2}O$ after ploughing, 1.0 cwt N and 1.0 cwt $K_{2}O$ as compound fertiliser, 16% N, 16% $K_{2}O$ broadcast in seedbed.

Note: Apart from the NK compound fertiliser, $K_{2}O$ was applied as sulphate of potash.

Cultivations, etc.:

Grass. 'Nitro-Chalk' applied: Mar 9, 1961. Cut 3 times: May 17, July 18, Sept 15. 'Nitro-Chalk' applied after 2nd cut.

Fallow areas. Ploughed: Jan 17, 1961. Rotary cultivated: May 11, June 3.

Microplots. Fertilisers applied for ploughing in: Dec 5, 1960. Ploughed: Jan 17, 1961.

Barley: Seedbed fertilisers applied, seed drilled at 3 bushels per acre: Mar 16, 1961. Harvested: Aug 9. Variety: Proctor.

Potatoes: K applied after ploughing: Mar 7, 1961. Rotary cultivated and ridged, fertilisers applied in the bouts: Apr 25. Potatoes planted: May 1.

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Sprayed 3 times with demeton methyl at 12 fluid oz in 40 gallons per acre: June 7 and 16, July 11. Sprayed twice with copper fungicide at 5 lb in 40 gallons per acre: Aug 15, Sept 1. Lifted: Sept 25. Variety: Majestic (chitted).

Sugar beet. K applied after ploughing: Mar 7, 1961. Seedbed fertilisers applied, seed drilled at 20 lb per acre: Mar 23. Singled: May 29. Sprayed 3 times with demeton methyl at 12 fluid oz in 40 gallons per acre: June 7 and 16, July 11. Lifted: Oct 10. Variety: Klein E.

Summary of Results

Manure to turnips until 1948 Plot Rotation	Mineral manure*				Mineral* and nitrogenous manure ⁺		Mean
	None since 1848	6	3	4	1	2	
	Fallow	Clover	Fallow	Clover	Fallow	Clover	

Grass dry matter: cwt per acre

1st cut	17.2	13.2	31.5	31.4	34.3	26.9	25.8
2nd cut	11.3	12.5	16.7	17.8	19.1	17.8	15.9
3rd cut	9.1	7.8	14.6	13.4	17.8	14.9	13.0
Total of 3 cuts	37.7	33.6	62.8	62.6	71.3	59.6	54.6

Mean dry matter % as cut:	1st cut	22.8
	2nd cut	27.0
	3rd cut	25.2
	Total of 3 cuts	25.0

*P, K, Na, Mg.

⁺Rape dust (or castor meal + ammonium sulphate).

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Manure to turnips until 1948 Plot	Fallow rotation only			Mean
	None since 1848 5	Mineral* manure no nitrogen 3	Mineral* and nitrogen [†] manure [†] 1	
<u>Barley, Grain (at 85% dry matter): cwt per acre</u>				
<u>P₂O₅ cwt per acre</u>				
None	19.0	27.7	13.7	20.1
Ploughed in				
0.75	16.4	30.9	7.8	18.4
1.50	24.1	23.4	32.4	26.6
Broadcast				
0.75	25.5	32.5	27.9	28.6
1.50	18.7	32.6	22.6	24.6
$\frac{1}{2}$ Ploughed in $\frac{1}{2}$ Broadcast				
1.50	22.5	31.8	24.5	26.3
3.00	31.2	29.6	31.8	30.9
Mean	22.0	29.5	21.8	24.5

<u>Barley, Straw (at 85% dry matter): cwt per acre</u>				
<u>P₂O₅ cwt per acre</u>				
None	33.8	46.5	32.8	37.7
Ploughed in				
0.75	31.8	55.7	28.8	38.8
1.50	40.1	49.6	57.3	49.0
Broadcast				
0.75	42.7	62.7	48.6	51.3
1.50	38.4	57.7	42.3	46.1
$\frac{1}{2}$ Ploughed in $\frac{1}{2}$ Broadcast				
1.50	44.5	54.2	45.8	48.2
3.00	51.4	53.5	56.9	53.9
Mean	39.6	53.3	43.2	45.3

Mean dry matter % as harvested: Grain 78.7
Straw 52.9

*P, K, Na, Mg.

[†]Rape dust (or castor meal + ammonium sulphate).

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Fallow rotation only

Manure to turnips until 1948 Plot.	None since 1848 5	Mineral* manure no nitrogen 3	Mineral* and nitrogenous manure 1	Mean
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Potatoes, total tubers: tons per acre

<u>P₂O₅</u> cwt per acre				
None	8.26	12.04	8.76	9.69
Ploughed in				
0.75	9.71	11.05	11.03	10.60
1.50	9.23	12.58	11.79	11.20
Broadcast				
0.75	9.54	11.36	11.79	10.90
1.50	9.47	11.86	12.21	11.18
$\frac{1}{2}$ Ploughed in $\frac{1}{2}$ Broadcast				
1.50	9.93	12.96	10.48	11.12
3.00	9.90	12.02	12.48	11.47
Mean	9.29	11.99	10.91	10.73

Sugar beet, Roots (washed): tons per acre

<u>P₂O₅</u> cwt per acre				
None	15.14	19.64	17.06	17.28
Ploughed in				
0.75	17.32	25.03	15.43	19.26
1.50	15.46	20.47	15.66	17.20
Broadcast				
0.75	15.19	17.91	16.24	16.45
1.50	17.53	20.32	18.47	18.78
$\frac{1}{2}$ Ploughed in $\frac{1}{2}$ Broadcast				
1.50	18.17	21.80	20.08	20.02
3.00	17.66	24.63	20.72	21.00
Mean	16.45	21.18	17.59	18.41

Sugar beet, Sugar percentage

<u>P₂O₅</u> cwt per acre				
None	15.7	15.9	15.9	15.8
Ploughed in				
0.75	16.4	15.4	15.8	15.9
1.50	16.1	16.0	16.2	16.1
Broadcast				
0.75	15.7	16.2	15.7	15.9
1.50	15.3	16.4	15.7	15.8
$\frac{1}{2}$ Ploughed in $\frac{1}{2}$ Broadcast				
1.50	15.8	16.4	16.0	16.1
3.00	16.2	16.5	16.1	16.3
Mean	15.9	16.1	15.9	16.0

*P, K, Na, Mg.

†Rape dust (or castor meal + ammonium sulphate).

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Fallow rotation only

Manure to turnips until 1948 Plot	None since 1848 5	Mineral* manure no nitrogen 3	Mineral* and nitrogenous manure 1	Mean
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Sugar beet, Total sugar: cwt per acre

<u>P₂O₅ cwt per acre</u>				
None	46.9	62.0	53.8	54.2
Ploughed in				
0.75	56.0	76.4	48.0	60.1
1.50	49.4	64.2	49.5	54.4
Broadcast				
0.75	46.8	57.5	49.9	51.4
1.50	53.6	66.0	57.0	58.9
$\frac{1}{2}$ Ploughed in $\frac{1}{2}$ Broadcast				
1.50	57.1	70.7	63.2	63.7
3.00	56.5	80.7	65.7	67.7
Mean	51.7	67.5	55.1	58.1

Sugar beet, Tops: tons per acre

<u>P₂O₅ cwt per acre</u>				
None	11.48	12.72	12.64	12.28
Ploughed in				
0.75	11.35	16.74	10.66	12.92
1.50	10.55	12.28	11.05	11.29
Broadcast				
0.75	10.80	11.23	14.11	12.05
1.50	13.70	15.43	14.17	14.44
$\frac{1}{2}$ Ploughed in $\frac{1}{2}$ Broadcast				
1.50	13.29	11.99	13.06	12.78
3.00	13.16	16.68	14.47	14.77
Mean	11.98	13.73	12.85	12.85

*P, K, Na, Mg.

†Rape dust (or castor meal + ammonium sulphate).