ROTHAMSTED RESEARCH

Yields of the Field Experiments 1962

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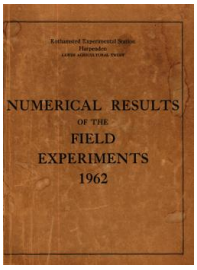

Crop Sequence Experiments - Crops in 1962

Rothamsted Research

Rothamsted Research (1963) *Crop Sequence Experiments - Crops in 1962 ;* Yields Of The Field Experiments 1962, pp 100 - 123 **- DOI: https://doi.org/10.23637/ERADOC-1-164**

62/C/1.1

CEREALS AND BEANS ROTATIONS

The effect of crop sequences on the incidence of cereal foot and root rot diseases - Great Field I 1962 - the 6th and last year.

Design: Three series each of 3 randomised blocks of 6 plots, starting in each of the years 1957, 1958 and 1959.

Area of each plot: 0.0305 acres. Area harvested (sub plot): 0.0096 acres.

Treatments:

Crop sequences for each series:

1st year:	WW	SW	0	WW	B	WW
2nd year:	WW	WW	WW	0	WW	0
3rd year:	SW	SW	SW	SW	B	Be

WW = Winter wheat, SW = Spring wheat, 0 = Oats, B = Barley, Be = Beans.

In the 4th year the plots are split for N and all cropped with winter wheat, the series starting in 1959 falling due for this treatment this year, and receiving N at 0.5, 1.0 cwt per acre in 2 doses, in March and May, as 'Nitro-Chalk'.

Basal dressing: 1.6 cwt compound fertiliser (20% P_2O_5, 20% K_2O) per acre combine drilled; all blocks received 23 cwt ground chalk per acre in Nov 1956 and 54 cwt per acre in Oct 1960.

Cultivations, etc.: Ploughed: Sept 14, 1961. Seed drilled at 2½ bushels per acre: Oct 10. 'Nitro-Chalk' applied: Mar 2 and May 4, 1962. Sprayed with CMPP/2,4-D at 7 pints in 40 gallons per acre: Apr 25. Combine harvested: Sept 3. Variety: Cappelle.

Note: Estimates of plant height, % area lodged, incidence of Eyespot (Cercosporella herpotrichoides) and Take-all (Ophiobolus graminis) and counts of plants and shoots were made.

Standard errors per plot, Grain (at 85% dry matter):
Whole plot: 2.44 cwt per acre or 5.9% (10 d.f.)
Sub plot: 3.78 cwt per acre or 9.1% (12 d.f.)

https://doi.org/10.23637/ERADOC-1-164

62/C/1.2

Summary of Results

Winter Wheat. Grain (at 85% dry matter): cwt per acre

Crop in 1959 1960 1961	WW WW SW	SW WW SW	0 WW SW	WW 0 SW	B WW B	WW 0 Be	Mean
N cwt per acre			(±2.09)*				
0.5	41.0	37.7	31.9	29.5	38.6	52.9	38.6
1.0	48.8	42.1	39.8	36.5	40.6	56.1	44.0
Mean (±1.40)	44.9	39.9	35.8	33.0	39.6	54.5	41.2
Diff.(±3.09)	7.8	4.4	7.9	7.0	2.0	3.2	5.4 (±1.26)

Mean dry matter % as harvested: 84.2

*For use only in horizontal and diagonal comparisons.

Crops

WW = Winter wheat
SW = Spring wheat
0 = Oats
B = Barley
Be = Beans

https://doi.org/10.23637/ERADOC-1-164

62/C/2.1

WINTER WHEAT

The comparison of different one year leys as a preparation for wheat - Stackyard 1962 - the 2nd year.

Design: 4 randomised blocks of 18 plots each, each plot split into 3 for the application of nitrogen.

Area of each sub plot: 0.0053 acres. Area harvested: 0.0046 acres.

Treatments. All combinations of:-

Whole plots:

Leys undersown 1960 and cut 1961, with nitrogen as follows:-
Clover: None (Co).
Ryegrass: None (Ro); 1 cwt (R1); 2 cwt (R2) N per acre.
Clover-ryegrass: None (CRo); 1 cwt (CR1) N per acre.

Potassium to wheat: None; 1.2; 2.4 cwt K_2O per acre, half ploughed in as muriate of potash, half combine drilled as compound fertilisers (16% P_2O_5, 16% K_2O or 14% P_2O_5, 28% K_2O) - in order to include basal P_2O_5 described below.

Sub plots:

Nitrogen to wheat: None; 0.5; 1.0 cwt N per acre as 'Nitro-Chalk' applied in 2 equal dressings.

Basal dressings per acre:

To barley nurse crop 1960: 3 cwt compound fertiliser (16% N, 9% P_2O_5, 9% K_2O) combine drilled.

To leys, combine drilled in seedbed 1960: 1½ cwt superphosphate.

To wheat 1962: 0.6 cwt P_2O_5 combine drilled, either as granular superphosphate, or as compound fertilisers (16% P_2O_5, 16% K_2O or 14% P_2O_5, 28% K_2O).

Cultivations, etc.: Ploughed: Sept 28, 1961. Seed drilled at 150 lb per acre: Oct 4. 1st dressing of 'Nitro-Chalk' applied: Mar 23, 1962. Sprayed with CMPP at 6 pints in 40 gallons per acre: Apr 24. 2nd dressing of 'Nitro-Chalk' applied: May 1. Green crop samples taken: June 13. Combine harvested: Sept 10. Variety: Cappelle.

Note: For details of the previous year's results see 'The Numerical Results of the Field Experiments' 61/C/2.

Standard errors per plot. Grain (at 85% dry matter):
Whole plot: 2.38 cwt per acre or 5.1% (51 d.f.)
Sub plot: 3.08 cwt per acre or 6.6% (108 d.f.)

https://doi.org/10.23637/ERADOC-1-164

62/C/2.2

Summary of Results

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

N to leys 1961

	C_o	R_o	R_1	R_2	CR_o	CR_1	Mean
K_2O: cwt per acre 1962			(±1.19)				(±0.49)
None	53.5	42.5	43.0	39.1	45.0	44.8	44.6
1.2	53.0	46.2	45.2	44.9	49.6	45.9	47.5
2.4	54.3	44.8	44.5	45.0	47.8	47.4	47.3
N: cwt per acre 1962			(±0.89)(1)	(±1.00)(2)			(±0.36)
None	47.3	31.2	33.3	33.6	38.4	35.8	36.6
0.5	55.9	46.3	45.7	43.6	49.7	47.4	48.1
1.0	57.6	56.0	53.8	51.7	54.3	55.0	54.7
Mean (±0.69)	53.6	44.5	44.2	43.0	47.5	46.0	46.5

	K_2O: cwt per acre 1962		
	None	1.2	2.4
N: cwt per acre 1962	(±0.63)(1)	(±0.71)(2)	
None	35.1	37.9	36.8
0.5	45.9	49.5	48.9
1.0	52.9	55.0	56.2

(1) For use in vertical and interaction comparisons
(2) For use in horizontal and diagonal comparisons

Mean dry matter % as harvested: 73.9

Ley 1961	N: cwt per acre 1961
C_o = Clover	None
R_o = Ryegrass	None
R_1 = "	1
R_2 = "	2
CR_o = Clover-ryegrass	None
CR_1 = " "	1

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62/C/3.1

BARLEY

Residues of grass species and nitrogen - Harwoods Piece 1962, the 5th year.

Design: 4 × 3 × 4 in 4 blocks of 12 plots each, with certain high order interactions confounded with block differences.

Area of each plot: 0.0087 acres. Area harvested: 0.0077 acres.

Treatments. All combinations of:-

Grass species sown in spring 1958:

S37 Cocksfoot at 30 lb per acre	(C)
S215 Meadow Fescue at 30 lb per acre	(M)
S24 Perennial Ryegrass at 25 lb per acre	(R)
Timothy "Scotia" at 20 lb per acre	(T)

Nitrogen (applied 1958-1960): None; 0.3; 0.6 cwt N per acre as 'Nitro-Chalk', applied for each cut.

Nitrogen applied to barley 1962: None; 0.3; 0.6; 0.9 cwt N per acre as 'Nitro-Chalk'.

Note: The 1962 treatments were so arranged as to render negligible the effects of the 1961 K treatments, which are therefore ignored.

Basal dressing: 2 cwt compound fertiliser (14% P_2O_5, 28% K_2O) per acre combine drilled.

Cultivations, etc.: Sprayed with dalapon at 8 lb in 40 gallons per acre: Sept 7, 1961 and again at 4 lb in 40 gallons per acre: Sept 27. Ploughed: Nov 8. Seed drilled at $2\frac{1}{2}$ bushels per acre: Feb 23, 1962. 'Nitro-Chalk' applied: Mar 20. Sprayed with MCPA/TBA at 4 pints in 40 gallons per acre: May 14. Combine harvested: Aug 29. Variety: Proctor.

Note: For details of the previous years' results see 'Results of the Field Experiments' 58/Cg/3, 59/Cg/3, 60/Ci/2 and 61/C/3.

Standard error per plot.

Grain (at 85% dry matter): 2.21 cwt per acre or 6.1% (15 d.f.)

https://doi.org/10.23637/ERADOC-1-164

62/C/3.2

Summary of Results

Species of grass, 1958 - 60

	C	M	R	T	Mean
	Grain (at 85% dry matter): cwt per acre				
N: cwt per acre 1958 - 60*		(±1.10)			(±0.55)
None	34.7	38.5	35.3	34.9	35.8
0.3	35.2	35.8	38.1	34.9	36.0
0.6	38.2	37.3	36.0	37.9	37.4
N: cwt per acre 1962		(±1.28)			(±0.64)
None	28.4	29.3	27.9	27.8	28.3
0.3	34.5	35.9	33.9	34.6	34.7
0.6	39.4	41.2	40.5	38.6	39.9
0.9	41.9	42.4	43.6	42.6	42.6
Mean (±0.64)	36.0	37.2	36.5	35.9	36.4

	N: cwt per acre 1958 - 60*		
	None	0.3	0.6
N: cwt per acre 1962	(±1.10)		
None	28.0	28.6	28.4
0.3	34.0	33.5	36.6
0.6	38.9	39.4	41.5
0.9	42.5	42.4	43.0

Mean dry matter % as harvested: 83.3

Grass species

C = S37 Cocksfoot at 30 lb per acre
M = S215 Meadow Fescue at 30 lb per acre
R = S24 Perennial Ryegrass at 25 lb per acre
T = Timothy "Scotia" at 20 lb per acre

*For each cut of grass

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62/C/3.3

Species of grass, 1958 - 60

	C	M	R	T	Mean
	Straw (at 85% dry matter): cwt per acre				
N: cwt per acre 1958 - 60*					
None	28.5	30.9	27.9	26.7	28.5
0.3	27.7	29.6	28.8	29.0	28.8
0.6	30.6	30.7	28.1	30.3	29.9
N: cwt per acre 1962					
None	19.2	19.6	16.2	17.4	18.1
0.3	26.5	28.5	25.2	27.0	26.8
0.6	33.0	36.2	32.6	32.8	33.6
0.9	37.2	37.4	39.0	37.5	37.8
Mean	29.0	30.4	28.3	28.7	29.1

N: cwt per acre 1958 - 60*

	None	0.3	0.6
N: cwt per acre 1962			
None	17.9	18.2	18.0
0.3	25.0	26.2	29.2
0.6	33.6	32.3	34.9
0.9	37.5	38.3	37.5

Mean dry matter % as harvested: 85.9

Grass species

C = S37 Cocksfoot at 30 lb per acre
M = S215 Meadow Fescue at 30 lb per acre
R = S24 Perennial Ryegrass at 25 lb per acre
T = Timothy "Scotia" at 20 lb per acre

*For each cut of grass

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BARLEY

Effects of green manures, N and straw - Stackyard 1962, the 3rd year.

Design: 2 replicates of a 3 × 3 × 3 in 6 randomised blocks of 9 plots each, certain high order interactions being confounded with block differences.

Area of each plot: 0.0212 acres. Area harvested: 0.0140 acres.

Treatments. All combinations of:-
Nitrogen to barley 1962: None; 0.3; 0.6 cwt N per acre applied as 'Nitro-Chalk'.
Nitrogen to barley 1960 and 1961: None; 0.3; 0.6 cwt N per acre applied as 'Nitro-Chalk'.
Green manures and straw: None; ryegrass undersown 1960 and 1961; ryegrass undersown 1960 and 1961 plus straw left on the plot after harvest 1960 and 1961. (0; R; RS)

Basal dressing: 2 cwt compound fertiliser (20% P_2O_5, 20% K_2O) per acre combine drilled.

Cultivations, etc.: Straw spread on "S" plots: 21 Aug, 1961. All plots ploughed: 14 Dec. 'Nitro-Chalk' applied: 21 Feb, 1962. Seed combine drilled at 2½ bushels per acre with basal fertiliser: 22 Feb. Sprayed with 2,4-DP/MCPA at 8 pints in 40 gallons per acre: 24 May. Combine harvested: 27 Aug. Variety: Proctor.

Note: (1) For the previous years' results see "Results of the Field Experiments" 60/Cb/2 and 61/C/4.
(2) Samples were taken for the estimation of the incidence of Take-all (Ophiobolus graminus)

Standard error per plot.
Grain (at 85% dry matter): 1.40 cwt per acre or 4.5% (22 d.f.)

Erratum to "Numerical Results of Field Experiments" 1961 page 61/C/4.1.
The area of each plot should be 0.0212 acres and not 0.0114 as given.

https://doi.org/10.23637/ERADOC-1-164

Summary of Results

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

Green manure and straw 1960 & 1961	N: cwt per acre 1962 None	0.3	0.6	Green manure and straw 1960 & 1961 0	R	RS	Mean
		(±0.57)					
0	21.9	32.4	38.0				
R	22.5	32.7	37.9				
RS	22.3	31.9	38.4				
N: cwt per acre 1960 & 1961							
		(±0.57)			(±0.57)		(±0.33)
None	21.8	31.7	37.8	30.0	31.5	29.7	30.4
0.3	21.8	32.3	37.8	30.4	30.5	31.0	30.6
0.6	23.2	33.0	38.7	31.9	31.1	31.8	31.6
Mean (±0.33)	22.2	32.3	38.1	30.8	31.0	30.8	30.9

Mean dry matter % as harvested: 81.2

Green manure and straw

0 = None
R = Ryegrass
RS = Ryegrass and straw

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62/C/5.1

SUGAR BEET

Effects of trefoil and ryegrass green manures and N - Woburn Lansome Field 1962.

Design: 3 randomised blocks of 16 plots each.

Area of each plot: 0.0169 acres. Area harvested: 0.0121 acres.

Treatments. All combinations of:-

Nitrogen: None (0); 0.5; 1.0; 1.5 cwt N per acre as 'Nitro-Chalk'.

Green manures undersown in barley 1961: None; trefoil; ryegrass; ryegrass with 0.6 cwt N per acre as 'Nitro-Chalk'.

Basal dressings per acre:

To barley:- 2 cwt compound fertiliser (16% N, 9% P_2O_5, 9% K_2O) combine drilled.

To sugar beet:- 5 cwt salt; 2¼ cwt compound fertiliser (20% P_2O_5, 20% K_2O).

Cultivations, etc.: Ploughed: Jan 25, 1961. Barley drilled at 2¼ bushels per acre: Mar 8. Trefoil undersown at 30 lb and ryegrass at 40 lb per acre: Apr 21. Barley combine harvested: Aug 20. 'Nitro-Chalk' treatment applied to ryegrass: Aug 21. "Fallow" plots ploughed twice: Sept 4 and Dec 22. All plots ploughed: Feb 2, 1962. Salt applied: Feb 15. 'Nitro-Chalk' treatments and basal dressing applied: Mar 23. Seed drilled at 8 lb per acre: Mar 26. Singled: May 23. Lifted: Oct 23. Varieties: Ryegrass - S22 Italian; barley - Proctor; sugar beet - Klein E. Previous crops: Spring wheat 1959, potatoes 1960.

Standard errors per plot.

Roots (washed): 1.473 tons per acre or 8.3% (30 d.f.)

Total sugar: 5.93 cwt per acre or 9.1% (30 d.f.)

Note: Estimates were made of dry matter and N per acre in green manures just before ploughing.

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Summary of Results

N: cwt per acre

Green manure undersown 1961	None	0.5	1.0	1.5	Mean
	Roots (washed): tons per acre				
		(±0.850)			(±0.425)
None	10.78	17.25	21.15	19.08	17.07
Trefoil	12.80	19.46	20.92	21.33	18.63
Ryegrass	10.46	17.78	19.42	20.37	17.01
Ryegrass + N	14.16	18.52	18.99	22.28	18.49
Mean (±0.425)	12.05	18.25	20.12	20.77	17.79
	Sugar percentage				
None	17.7	18.7	18.5	17.5	18.1
Trefoil	18.6	18.5	18.5	18.1	18.4
Ryegrass	18.8	18.7	18.3	17.9	18.4
Ryegrass + N	18.7	18.0	18.8	17.6	18.3
Mean	18.4	18.5	18.5	17.8	18.3
	Total sugar: cwt per acre				
		(±3.43)			(±1.71)
None	38.1	64.4	78.5	66.7	61.9
Trefoil	47.7	72.2	77.4	77.0	68.6
Ryegrass	39.5	66.6	71.1	73.1	62.6
Ryegrass + N	52.9	66.6	71.3	78.3	67.3
Mean (±1.71)	44.5	67.4	74.6	73.8	65.0

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CLOVER

K and Mg - Woburn Stackyard Series C 1962 the third year.

Design: 4 randomised blocks of 9 plots each.

Area of each plot: 0.0011 acres. Area harvested: 0.0005 acres.

Treatments. All combinations of:-
Mg: None; 29; 58 lb Mg per acre applied as kieserite.
K: None; 95; 190 lb K per acre (approximately 1; 2 cwt K_2O per acre) applied as sulphate of potash.

Basal dressings per acre: 1.0 cwt P_2O_5 as triple superphosphate, 0.2 cwt N as ammonium nitrate in seedbed.

Cultivations, etc.: Magnesium-free calcium carbonate applied at 50 cwt per acre: Dec 13, 1961. Rotary cultivated: Mar 2, 1962. Magnesium-free calcium carbonate applied at 50 cwt per acre: Mar 9. Rotary cultivated: Mar 26. Rotary cultivated, treatments and basal dressings applied, seed sown at 30 lb per acre: Apr 12. Cut twice: Aug 16, Oct 5. Variety: Dorset Marl Red Clover.

Standard errors per plot. Clover dry matter

1st cut:	1.00 cwt per acre or 8.6%	(24 d.f.)
2nd cut:	0.78 cwt per acre or 7.4%	(24 d.f.)
Total of 2 cuts:	1.53 cwt per acre or 6.9%	(24 d.f.)

Note: For details of the previous year's results see "Results of the Field Experiments" 60/Ci/3 and 61/C/7. No yields were taken from the similar experiment on Sawyers Rothamsted as the growth was poor.

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62/C/6.2

Summary of Results

Clover. Dry matter: cwt per acre

K: lb per acre	Mg: lb per acre None	29	58	Mean	Mg: lb per acre None	29	58	Mean
		1st cut				2nd cut		
		(±0.50)		(±0.29)		(±0.39)		(±0.21)
None	5.0	5.5	5.2	5.2	4.0	5.3	4.7	4.6
95	12.9	14.1	14.4	13.8	12.1	13.1	12.6	12.6
190	15.1	16.1	16.1	15.8	13.5	14.9	14.3	14.3
Mean	11.0	11.9 (±0.29)	11.9	11.5	9.9	11.1 (±0.21)	10.5	10.4

Total of 2 cuts

		(±0.76)		(±0.44)
None	9.0	10.8	9.8	9.9
95	25.0	27.1	27.0	26.4
190	28.7	31.0	30.4	30.0
Mean	20.9	23.0 (±0.44)	22.4	22.0

Mean dry matter % as cut: 1st cut 14.8
2nd cut 15.7
Total of 2 cuts 15.2

https://doi.org/10.23637/ERADOC-1-164

62/C/7.1

INTENSIVE BARLEY GROWING EXPERIMENT

Little Knott I - 1962, the second year

For treatments etc., see "The Numerical Results of the Field Experiments" 61/C/8.

Area of each plot (acres): 0.0212. Area harvested: 0.0140.

Cultivations, etc.: Ploughed: Sept 16, 1961.

Spring beans: Seed placement drilled at 200 lb per acre: Feb 21, 1962. Combine harvested: Sept 21. Variety: Tick 30B.

Oats: 'Nitro-Chalk' applied: Feb 23, 1962. Seed combine drilled at 4 bushels per acre: Mar 2. Sprayed with MCPA/TBA at 4 pints in 40 gallons per acre: May 24. Combine harvested: Aug 25. Variety: Condor.

Spring wheat: 'Nitro-Chalk' applied: Feb 23, 1962. Seed combine drilled at 3 bushels per acre: Mar 2. Sprayed with MCPA/TBA at 4 pints in 40 gallons per acre: May 24. Combine harvested: Sept 13. Variety: Jufy I.

Barley: 'Nitro-Chalk' applied, seed combine drilled at $2\frac{1}{2}$ bushels per acre: Feb 22, 1962. Sprayed with MCPA/TBA at 4 pints in 40 gallons per acre: May 24. Combine harvested: Aug 27. Variety: Proctor.

Winter wheat: Seed combine drilled at $2\frac{1}{2}$ bushels per acre: Oct 11, 1961. 'Nitro-Chalk' applied: Feb 23, 1962. Sprayed with MCPA/TBA at 4 pints in 40 gallons per acre: Apr 24. Combine harvested: Sept 3. Variety: Cappelle.

Note: (1) One plot (non-continuous spring wheat preceding beans), which should have received 0.45 cwt N per acre, received 0.9 by mistake.
(2) Yields were only taken for sequences 3, 6, 7, 8, 9 and 10

Standard errors per plot. Grain (at 85% dry matter):
Winter wheat (9 and 10): 4.53 cwt per acre or 11.9% (7 d.f.)
Spring wheat (3,6 and 8): 2.44 cwt per acre or 8.7% (14 d.f.)

https://doi.org/10.23637/ERADOC-1-164

Summary of Results

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

Winter wheat (9 and 10)

N: cwt per acre

Crop in 1961	None	0.3	0.6	0.9	Mean
		(±3.20)			(±1.60)
Spring wheat	23.9	24.2	35.6	39.2	30.7
Beans	39.0	45.5	46.1	51.3	45.5
Mean (±2.26)	31.4	34.9	40.8	45.2	38.0

Mean dry matter % as harvested: 83.6

Spring wheat (3, 6, 8)

Previous crop	Spring wheat					Oats	
N: cwt per acre	None	0.3	0.45*+	0.6	0.9	0.45*	Mean
	19.3	21.7	26.2	29.7	26.6	33.2	27.9
	(±1.72)		(±0.86)	(±1.72)		(±0.86)	

Mean dry matter % as harvested: 73.8

Barley 7

N: cwt per acre

None	0.3	0.6	0.9	Mean
33.0	42.9	42.9	46.8	41.4

Mean dry matter % as harvested: 82.6

*mean of 8 - others mean of 2

+includes 1 estimated value

62/0/8.1

LONG TERM LIMING EXPERIMENT - SPRING BEANS 1962

The effect of lime on the yield and composition of crops and on the status of P and K in soils - Rothamsted (R) Sawyers I and Woburn (W) Stackyard Series C 1962, the first year.

Design (each field): 2 blocks of 16 plots each, columns of 4 plots being split for uninoculated v. inoculated seed.

Area of each sub plot: 0.0145 acres. Area harvested: 0.0093 acres.

Treatments. All combinations of:-

Ground chalk: None; 2; 4; 6 tons $CaCO_3$ per acre applied in March 1962.

P: None; 0.5 cwt P_2O_5 per acre as superphosphate.

K: None; 1.0 cwt K_2O per acre as muriate of potash.

Inoculation of seed: None; Inoculated with Rhizobium leguminosarum.

The maximum pH range between plots was 4.8 - 5.6 on Sawyers I (R) and 5.6 - 6.3 on Stackyard Series C (W).

Basal dressing: None.

Cultivations, etc.:-

Sawyers I (R): Ploughed: Nov 17, 1961. Ground chalk applied: Mar 5, 1962. Rotary cultivated: Mar 14. Superphosphate and muriate of potash applied: Mar 15. Seed drilled at 200 lb per acre: Mar 16. Sprayed with simazine at 1 lb in 40 gallons per acre: Apr 11. Sprayed with demeton methyl at 6 fluid oz in 60 gallons per acre: July 6. Combine harvested: Sept 20. Variety: Tick 30B. Previous crops: Potatoes and fallow 1960, potatoes and fallow 1961.

Stackyard Series C (W): Ploughed: Nov 24, 1961. Ground chalk applied: Mar 9, 1962. Superphosphate and muriate of potash applied: Mar 15. Seed drilled at 200 lb per acre: Mar 19. Sprayed with simazine at 1 lb in 40 gallons per acre: Apr 12. Sprayed with demeton methyl at 6 fluid oz in 60 gallons per acre: July 12. Combine harvested: Sept 20. Variety: Tick 30B. Previous crops: Barley 1960, sugar beet 1961.

Note: Samples were taken for counts of pods and beans.

Standard errors per plot. Grain (at 85% dry matter):

Sawyers I (R)	Whole plot:	4.26 cwt per acre or 25.4% (15 d.f.)
	Sub plot:	1.42 cwt per acre or 8.4% (16 d.f.)
Stackyard Series C (W)	Whole plot:	2.44 cwt per acre or 13.1% (15 d.f.)
	Sub plot:	2.79 cwt per acre or 14.9% (16 d.f.)

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Summary of Results

Sawyers I (R)

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

	Ground chalk: tons per acre				
	None	2	4	6	Mean
Mean (±1.51)	12.3	16.0	20.3	18.6	16.8
P_2O_5: cwt per acre			(±2.13)		
None	12.7	17.2	21.2	17.5	17.2
0.5	12.0	14.7	19.5	19.7	16.5
Diff. (±3.01)	-0.7	-2.5	-1.7	+2.2	-0.7 (±1.51)
K_2O: cwt per acre					
None	13.8	15.2	19.1	18.7	16.7
1.0	10.9	16.8	21.6	18.5	16.9
Diff. (±3.01)	-2.9	+1.6	+2.5	-0.2	+0.2 (±1.51)
Inoculation of seed			(±1.55)[1]		
None	12.1	15.9	19.7	18.4	16.5
Inoculated	12.5	16.1	20.9	18.8	17.1
Diff. (±0.71)[2]	+0.4	+0.2	+1.2	+0.4	+0.6

	P_2O_5: cwt per acre		K_2O: cwt per acre	
	None	0.5	None	1.0
K_2O: cwt per acre	(±1.51)			
None	16.7	16.7		
1.0	17.6	16.3		
Inoculation of seed	(±1.10)[1]		(±1.10)[1]	
None	17.0	16.1	16.5	16.6
Inoculated	17.3	16.8	16.9	17.3

Mean dry matter % as harvested: 76.2

(1) For use only in horizontal comparisons.
(2) For use only in testing the difference of 2 differences.

62/C/8.3

Stackyard Series C (W)

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

	Ground chalk: tons per acre				
	None	2	4	6	Mean
Mean (±0.86)	14.8	19.0	19.1	22.0	18.7
P_2O_5: cwt per acre		(±1.22)			
None	13.1	19.2	19.4	21.7	18.3
0.5	16.6	18.8	18.8	22.3	19.1
Diff. (±1.73)	+3.5	-0.4	-0.6	+0.6	+0.8 (±0.86)
K_2O: cwt per acre					
None	14.9	19.1	20.2	23.8	19.5
1.0	14.8	19.0	18.0	20.2	18.0
Diff. (±1.73)	-0.1	-0.1	-2.2	-3.6	-1.5 (±0.86)
Inoculation of seed		(±1.11)[1]			
None	14.7	20.2	18.0	21.6	18.6
Inoculated	14.9	17.9	20.2	22.4	18.8
Diff. (±1.40)[2]	+0.2	-2.3	+2.2	+0.8	+0.2

	P_2O_5: cwt per acre		K_2O: cwt per acre	
	None	0.5	None	1.0
K_2O: cwt per acre	(±0.86)			
None	20.2	18.8		
1.0	16.5	19.4		
Inoculation of seed	(±0.79)[1]		(±0.79)[1]	
None	18.7	18.5	18.8	18.4
Inoculated	18.0	19.7	20.2	17.5

Mean dry matter % as harvested: 77.6

(1) For use only in horizontal comparisons
(2) For use only in testing the differences of 2 differences

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62/C/9.1

POTATOES

Methods of application of fertiliser - Great Knott I 1962, the first year.

Design: 3 randomised blocks of 12 plots each.

Area of each plot: 0.0199 acres. Area harvested: 0.0133 acres.

Treatments: None (0) (3 plots per block); and all combinations of:-
Levels of compound fertiliser (13% N, 13% P_2O_5, 20% K_2O) to supply (cwt per acre):-

N	P_2O_5	K_2O	
0.66	0.66	1.02	(1)
1.32	1.32	2.03	(2)
2.00	2.00	3.07	(3)

Methods of application: Broadcast (B); placed (P); broadcast and rotary cultivated in (BR).

Note: The experiment is designed to include an additional factor applied to the 1963 wheat crop, viz. compound fertiliser (14% P_2O_5, 28% K_2O) and superphosphate broadcast on seedbed and 'Nitro-Chalk' as spring top dressing to supply:-

N, P_2O_5 and K_2O at levels as (0), (1), (2) above.

Basal dressing: None.

Cultivations, etc.: Ploughed: Oct 26, 1961. 'BR' treatments applied, all plots rotary cultivated, 'B' treatments applied: Apr 16, 1962. Potatoes planted with 'P' treatments: Apr 17. Earthed up: July 6. Sprayed with maneb at 1½ lb in 18 gallons per acre: July 18. Sprayed with copper oxychloride fungicide at 2.3 lb Cu in 20 gallons per acre: Aug 9. Sprayed with undiluted BOV at 18 gallons per acre: Sept 18. Haulm destroyed mechanically, crop lifted: Oct 9. Variety: Majestic. Previous crops: Winter wheat 1960, barley 1961.

Standard error per plot.
Total tubers: 0.942 tons per acre or 7.4% (24 d.f.)

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Summary of Results

Method of application of fertiliser	Level of compound fertiliser 0	1	2	3	Mean
	Total tubers: tons per acre (±0.544)				(±0.314)
Broadcast		13.05	14.04	14.37	13.82
Placed		14.48	13.63	11.15	13.09
Broadcast and rotovated in		13.19	14.24	15.23	14.22
Mean (±0.314)	9.52	13.57	13.97	13.58	12.65* (±0.181)
	Percentage ware ($1\frac{1}{2}$" riddle)				
Broadcast		94.9	95.2	95.4	95.2
Placed		95.8	95.4	94.7	95.3
Broadcast and rotovated in		95.7	96.1	95.6	95.8
Mean	94.3	95.5	95.6	95.2	95.1*

Level of compound fertiliser

	cwt per acre N	P_2O_5	K_2O
(0)	None		
(1)	0.66	0.66	1.02
(2)	1.32	1.32	2.03
(3)	2.00	2.00	3.07

*General mean

62/C/10.1

EFFECT OF SUBSOILING

Woburn Roadpiece and Great Hill. Test crops: Sugar beet, spring wheat and barley - the 1st year 1962.

Design: 3 randomised blocks of 2 plots each, with three crops grown in strips across the plots.

Area of each plot (acres):		Area harvested (acres):	
Sugar beet:	0.0068	0.0051	
Spring wheat:	0.0290	Roadpiece - 0.0138	Great Hill - 0.0119
Barley:	0.0290	Roadpiece - 0.0138	Great Hill - 0.0130

Treatments: None; subsoiled, 7 strokes per plot, 3 feet apart, 18 inches deep.

Basal dressings:-

Sugar beet: 8 cwt per acre compound fertiliser (17% N, 11% P_2O_5, 22% K_2O).

Spring wheat and barley: $3\frac{1}{2}$ cwt per acre compound fertiliser (16% N, 9% P_2O_5, 9% K_2O) combine drilled.

Cultivations, etc. (both fields except where stated): - Subsoiled: Oct 25, 1961. Ploughed: Roadpiece - Nov 1 - 11, Great Hill - Oct 31 - Nov 6, 1961.

Sugar beet: Basal dressing applied, seed drilled at 7 lb per acre: Mar 20, 1962. Singled: May 11. Lifted: Oct 3. Variety: Klein E.

Spring wheat: Seed drilled at $2\frac{3}{4}$ bushels per acre: Mar 2, 1962. Roadpiece sprayed with MCPA/TBA at 4 pints in 40 gallons per acre: May 9. Great Hill sprayed with MCPA/MBA at 4 pints in 40 gallons per acre: May 14. Combine harvested: Aug 31. Variety: Jufy I.

Barley: Seed drilled at $2\frac{1}{4}$ bushels per acre: Feb 23, 1962. Roadpiece sprayed with MCPA/TBA at 4 pints in 40 gallons per acre: May 9. Great Hill sprayed with MCPA/MBA at 4 pints in 40 gallons per acre: May 14. Combine harvested: Aug 22. Variety: Proctor.

Previous crops:-

Roadpiece: sugar beet 1960, spring wheat 1961.

Great Hill: potatoes 1960, barley 1961, except barley 1962 which followed potatoes 1960, spring wheat 1961.

Note: The spring wheat on Great Hill was severely and irregularly infected with Fusarium.

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62/C/10.2

Summary of Results

	Treatment: None	Treatment: Subsoiled	Mean
Sugar beet. Roots (washed): tons per acre			
Roadpiece	16.63	15.95	16.29
Great Hill	14.61	15.38	14.99
Sugar beet. Sugar percentage			
Roadpiece	17.2	17.3	17.2
Great Hill	17.8	17.7	17.7
Sugar beet. Total sugar: cwt per acre			
Roadpiece	57.4	55.1	56.2
Great Hill	51.9	54.3	53.1
Sugar beet. Tops: tons per acre			
Roadpiece	17.49	17.78	17.63
Great Hill	10.37	10.49	10.43
Spring wheat. Grain (at 85% dry matter): cwt per acre			
Roadpiece	15.7	19.2	17.5
Great Hill	10.2	8.8	9.5

Mean dry matter % as harvested: Roadpiece 81.3
Great Hill 80.9

Barley. Grain (at 85% dry matter): cwt per acre			
Roadpiece	23.1	29.3	26.2
Great Hill	15.6	18.1	16.8

Mean dry matter % as harvested: Roadpiece 84.3
Great Hill 83.8

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GRASS

Levels of N and K - Harwoods Piece 1962 - the 5th year.

Design: 4 randomised blocks of 12 plots each.

Area of each plot: 0.0087 acres. Area harvested: 0.0059 acres.

Treatments: None and all combinations of:-
Nitrogen: 0.3; 0.6; 0.9 cwt N per acre as 'Nitro-Chalk'.
Potash: None; 0.3; 0.6 cwt K_2O per acre as muriate of potash.
All the above in the presence of 0.6 cwt P_2O_5 per acre as superphosphate.
In addition 2 plots per block, receiving 0.9 cwt N and 0.6 cwt K_2O per acre, also received phosphate at either None or 1.2 cwt P_2O_5 per acre as superphosphate.

Note: (1) N and K dressings are applied for each cut. All P dressings are applied once annually.
(2) All treatments were applied to the same plots as in the previous seasons.

Basal dressing: None.

Cultivations, etc.: Ryegrass sprayed with dalapon at 8 lb in 40 gallons per acre: Sept 7, 1961 and again at 4 lb in 40 gallons per acre: Sept 27. Ploughed: Nov 8. Ground chalk at 3 tons per acre applied to plots 1 - 24: Feb 21, 1962. Rotary cultivated: Apr 13. 1st dressing of fertilisers applied: Apr 16. Seed drilled at 40 lb per acre: Apr 24. Sprayed with MCPB/MCPA at 5 pints in 40 gallons per acre: June 5. Cut twice: Aug 13 and Oct 3. Variety: S37 Cocksfoot.

Note: (3) For details of the previous years' results see "Results of the Field Experiments" 58/Cg/2, 59/Cg/2, 60/Ci/1 and 61/Dg/1.

Standard errors per plot. Dry matter:

1st cut:	1.44 cwt per acre or 8.7%	(33 d.f.)
2nd cut:	2.51 cwt per acre or 9.5%	(33 d.f.)
Total of 2 cuts:	3.34 cwt per acre or 7.8%	(33 d.f.)

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62/C/11.2

Summary of Results

Dry matter: cwt per acre

cwt per acre													
N*	0.0	0.3	0.3	0.3	0.6	0.6	0.6	0.9	0.9	0.9	0.9	0.9	
P_2O_5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.0	1.2	
K_2O*	0.0	0.0	0.3	0.6	0.0	0.3	0.6	0.0	0.3	0.6	0.6	0.6	Mean
1st cut (±0.71)	8.5	14.1	17.5	18.0	14.2	18.3	20.1	13.5	18.0	19.8	17.6	19.4	16.6
2nd cut (±1.25)	7.0	22.9	23.8	22.2	28.2	30.4	29.3	29.9	30.4	30.2	31.1	31.1	26.4
Total of 2 cuts (±1.66)	15.5	37.1	41.2	40.2	42.4	48.7	49.3	43.4	48.4	50.0	48.8	50.6	42.9

*For each cut.

Mean dry matter % as cut:

1st cut:	18.3
2nd cut:	14.5
Total of 2 cuts:	16.4