ROTHAMSTED RESEARCH

Yields of the Field Experiments 1959

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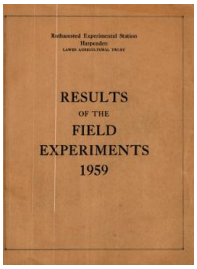

Short-term Experiments

Rothamsted Research

Rothamsted Research (1960) *Short-term Experiments ;* Yields Of The Field Experiments 1959, pp 67 - 108 **- DOI: https://doi.org/10.23637/ERADOC-1-179**

59/Ca/1.2

Summary of Results

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

Seed rate: bushels per acre	Date of sowing: Oct 16th	Nov 21st	Jan 8th	N: cwt per acre (including basal) 0.6	1.1	Diff.	Mean
	(±1.43)			(±1.15)*		(±1.59)	(±0.83)
2	52.8	52.0	48.2	50.5	51.5	+1.0	51.0
3	49.4	51.7	48.3	51.1	48.4	-2.7	49.8
4	49.7	50.0	53.8	53.0	49.3	-3.7	51.1
			Date of sowing	(±1.15)*		(±1.59)	(±0.83)
			Oct 16th	51.6	49.6	-2.0	50.6
			Nov 21st	53.2	49.3	-3.9	51.3
			Jan 8th	49.8	50.3	+0.5	50.1
			Mean	51.5	49.7	-1.8 (±0.92)	50.6

*For use in vertical and diagonal comparisons.

Mean dry matter % as harvested: 85.6

59/Ca/2.1

WINTER WHEAT

Seed rates, sowing dates and levels of nitrogen (after cereal crop) - Great Knott III 1959.

Design: 3 randomized blocks of 8 plots each, plots being split into 2 for the application of nitrogen.

Area of each sub plot: 0.0148 acres. Area harvested: 0.0096 acres.

Treatments. All combinations of:-

Whole plots. Seed rates: 2; 4 bushels per acre.
Sowing dates: Oct 21; Nov 11; Nov 25, 1958; Jan 8, 1959.

Sub plots. Nitrogen (in addition to basal): 0.47; 0.93 cwt N per acre applied as 'Nitro-Chalk' in two equal parts in February and April.

Basal dressing: 3 cwt compound fertilizer (10% P_2O_5, 20% K_2O) per acre broadcast in seed bed, 3 cwt compound fertilizer (5% N, 12½% P_2O_5, 12½% K_2O) per acre combine drilled with seed.

Cultivations, etc.: Ploughed: Sept 20, 1958. Compound fertilizer applied: First sowing - Oct 20; second sowing - Nov 11; third sowing - Nov 25; fourth sowing - Jan 8, 1959. Nitrogen dressings applied: Feb 17 and Apr 22. Sprayed with 2-4D at ¾ pint in 40 gallons per acre: Apr 23. Combine harvested: Aug 12. Variety: Cappelle. Previous crop: Barley.

Note. Counts of plant shoot and ear number, estimates of plant height and incidence of Eyespot (*Cercosporella herpotrichoides*) and Take-All (*Ophiobolus graminis*) were made. There was no lodging.

Standard errors per plot, Grain (at 85% dry matter):
Whole plot: 2.60 cwt per acre or 6.4% (14 d.f.)
Sub plot: 1.49 cwt per acre or 3.7% (16 d.f.)

https://doi.org/10.23637/ERADOC-1-179

Summary of Results

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

Seed rate: bushels per acre	Date of sowing: Oct 21st	Nov 11th	Nov 25th	Jan 8th	N: cwt per acre (including basal) 0.6	1.1	Diff.	Mean
	(±1.50)				(±0.81)*		(±0.61)	(±0.75)
2	40.0	41.6	42.4	35.3	36.1	43.6	+7.5	39.8
4	43.1	42.4	43.4	37.3	38.0	45.1	+7.1	41.6
					(±1.14)*		(±0.86)	(±1.06)
Date of sowing								
Oct 21st					37.7	45.3	+7.6	41.6
Nov 11th					38.5	45.5	+7.0	42.0
Nov 25th					39.8	46.0	+6.2	42.9
Jan 8th					32.1	40.4	+8.3	36.3
Mean					37.1	44.3	+7.2 (±0.43)	40.7

*For use in vertical and diagonal comparisons.

Mean dry matter % as harvested: 78.4

https://doi.org/10.23637/ERADOC-1-179

59/Ca/3.1

SPRING WHEAT

Row spacing, seed rates and nitrogen - Long Hoos I, II and III 1959.

Design: 2 randomized blocks of 10 plots each, plots being split into 2 for the application of nitrogen.

Area of each sub plot (acres): 0.0148. Area harvested: 0.01 acre approximately (varying with row spacing).

Treatments. All combinations of:-
Whole plots. Row spacing, inches/seed rate, bushels per acre: 7/2; 7/4; 14/1; 14/2; 7B/3, where B = every 4th row blank.
Types of drill: Standard; precision.
Sub plots. Nitrogen: 0.6; 1.2 cwt N per acre as 'Nitra-Shell' in seed bed.

Basal dressing: None.

Cultivations, etc.: Ploughed: Oct 21, 1958. 'Nitra-Shell' applied, seed drilled: Mar 2, 1959. Sprayed with TCB/MCPA at 4 pints in 40 gallons per acre: May 14 and 27. Combine harvested: Aug 22.
Variety: Koga II. Previous crop: Oats.

Standard error per plot, Grain (at 85% dry matter):
Whole plot: 1.35 cwt per acre or 4.3% (9 d.f.)
Sub plot: 2.68 cwt per acre or 8.5% (10 d.f.)

https://doi.org/10.23637/ERADOC-1-179

59/Ca/3.2

Summary of Results

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

Row spacing: inches	7	7	14	14	7B	
Seed rate: bushels per acre	2	4	1	2	3	Mean
Mean (±0.68)	33.0	33.6	29.9	30.0	31.8	31.7
Drill						
Standard (±0.95)	33.1	32.7	29.6	27.7	33.1	31.2
Precision	33.0	34.5	30.3	32.4	30.5	32.1
Difference (±1.35)	-0.1	+1.8	+0.7	+4.7	-2.6	±0.9 (±0.60)
N cwt per acre						
0.6 (±1.16)*	31.2	31.7	29.0	29.6	31.9	30.7
1.2	34.9	35.5	30.8	30.5	31.7	32.7
Difference (±1.90)	+3.7	+3.8	+1.8	+0.9	-0.2	+2.0 (±0.85)

	Drill		Difference
	Standard	Precision	
	(±0.74)**		(±1.04)
N cwt per acre			
0.6	30.6	30.7	+0.1
1.2	31.9	33.5	+1.6
Difference (±1.20)	+1.3	+2.8	+1.5 (±1.69)

*For use only in horizontal and diagonal comparisons.

**For use only in diagonal comparisons.

B = every 4th row blank.

https://doi.org/10.23637/ERADOC-1-179

SPRING WHEAT

Combine drilling of nitrogen - Rothamsted (R) Deacons Field and Woburn (W) Lansome Field 1959.

Design (each field): 4 randomized blocks of 7 plots each.

Area of each plot:
Deacons Field (R): 0.0212 acres. Area harvested: 0.0141 acres.
Lansome Field (W): 0.0186 acres. Area harvested: 0.0124 acres.

Treatments: None and all combinations of:-
Nitrogen: 0.2; 0.5; 0.8 cwt N per acre.
Method of application: Broadcast as sulphate of ammonia; combine drilled as compound fertilizer:

N_1: 6% N, 15% P_2O_5, 15% K_2O.
N_2: 8% N, 8% P_2O_5, 8% K_2O.
N_3: 12% N, 9% P_2O_5, 9% K_2O.

Basal dressing per acre (each field): 0.54 cwt P_2O_5 and 0.54 cwt K_2O combine drilled
(a) as compound 16% P_2O_5, 16% K_2O on the no nitrogen and broadcast nitrogen plots;
(b) as compounds N_1, N_2, N_3 on the plots receiving drilled nitrogen.

Cultivations, etc.:
Deacons Field (R): Ploughed: Nov 17, 1958. Seed combine drilled at 3 bushels per acre; balance of compound fertilizer (16% P_2O_5, 16% K_2O) and sulphate of ammonia applied: Mar 19, 1959. Sprayed with TCB/MCPA at 4 pints in 40 gallons per acre: May 6. Combine harvested: Aug 21. Variety: Koga II. Previous crop: Winter wheat.
Lansome Field (W): Ploughed: Nov 5, 1958. Seed combine drilled at 3⅓ bushels per acre: Mar 21, 1959. Sulphate of ammonia applied: Mar 23. Combine harvested: Aug 21. Variety: Peko. Previous crop: Spring Wheat.

Standard errors per plot, Grain (at 85% dry matter):
Deacons Field (R): 0.90 cwt per acre or 3.8% (18 d.f.)
Lansome Field (W): 1.31 cwt per acre or 5.9% (18 d.f.)

Note: Plant counts at germination were made.

https://doi.org/10.23637/ERADOC-1-179

Summary of Results

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

N: cwt per acre							
	Broadcast			Combine drilled			
None	0.2	0.5	0.8	0.2	0.5	0.8	Mean
Deacons Field, Rothamsted							
13.1	18.8	25.5	29.7 (±0.45)	20.0	26.3	31.2	23.5

Mean dry matter % as harvested: 86.5

Lansome Field, Woburn							
9.9	19.3	25.9	28.3 (±0.65)	19.4	24.8	27.5	22.2

Mean dry matter % as harvested: 85.9

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59/Ca/5.1

WHEAT

Times of sowing and forms of N - Roadpiece Woburn 1959.

Design: 4 randomized blocks of 5 plots each with 2 blocks sown in winter and 2 in spring.

Area of each plot: 0.0289 acres. Area harvested: 0.0129 acres.

Treatments:
Blocks. Time of sowing: Autumn; spring.
Plots. Fertilizers: None and all combinations of:-
Forms of nitrogen: Calcium nitrate; sulphate of ammonia, each at 100 lb N per acre.
Times of application of N: In autumn; in spring.

Basal dressing: 5 cwt compound fertilizer (10% P_2O_5, 20% K_2O) per acre broadcast.

Cultivations, etc.: Ploughed: Oct 17, 1958. Autumn nitrogen applied: Oct 23. Compound fertilizer applied to all plots, winter wheat drilled at 3 bushels per acre: Oct 24. Spring wheat drilled at 3 bushels per acre: Mar 17, 1959. Spring nitrogen applied: Mar 20. Sprayed with TCB/MCPA at 4 pints in 40 gallons per acre - winter wheat: Apr 29; spring wheat: May 11. Combine harvested: Aug 17. Varieties: Winter wheat - Cappelle; spring wheat - Peko. Previous crop: Potatoes.

Standard error per plot.
Grain (at 85% dry matter): 2.88 cwt per acre or 18.3% (8 d.f.)

Note. The mineral content of the soil and the total nitrogen content of the plants were determined at various stages of growth.

https://doi.org/10.23637/ERADOC-1-179

Summary of Results

Time of sowing	N: fertilizer applied					
		Autumn		Spring		
	None	C	S	C	S	Mean
Grain (at 85% dry matter): cwt per acre						
			(±2.04)*			
Winter	11.5	16.7	20.4	19.4	24.8	18.6
Spring	13.7	10.8	13.2	15.4	11.5	12.9
Mean (±1.44)	12.6	13.8	16.8	17.4	18.1	15.7
Diff.(±2.88)**	+2.2	-5.9	-7.2	-4.0	-13.3	-5.7

*For use in horizontal comparisons only.

**For use only in testing the difference of two differences.

Mean dry matter % as harvested: 86.2

Straw (at 85% dry matter): cwt per acre						
Winter	10.3	12.3	18.7	23.4	24.1	17.7
Spring	13.3	12.3	16.0	26.9	22.1	18.1
Mean	11.8	12.3	17.3	25.1	23.1	17.9
Diff.	+3.0	0.0	-2.7	+3.5	-2.0	+0.4

Mean dry matter % as harvested: 76.3

C = 100 lb N per acre as calcium nitrate
S = 100 lb N per acre as sulphate of ammonia.

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59/Cb/1.1

BARLEY

Combine drilling of nitrogen - Rothamsted (R) Deacons Field and Woburn (W) Lansome Field 1959.

Design: 4 randomized blocks of 7 plots each.

Area of each plot:
Deacons Field (R): 0.0212 acres. Area harvested: 0.0141 acres.
Lansome Field (W): 0.0186 acres. Area harvested: 0.0124 acres.

Treatments: None and all combinations of:-
Nitrogen: 0.2; 0.5; 0.8 (0.7 - Lansome Field) cwt N per acre.
Methods of application: Broadcast as sulphate of ammonia; combine drilled as compound fertilizer:

N_1: 6% N; 15% P_2O_5; 15% K_2O.
N_2: 8% N; 8% P_2O_5; 8% K_2O.
N_3: 12% N; 9% P_2O_5; 9% K_2O.

Basal dressing per acre:-
Deacons Field (R): 0.57 cwt P_2O_5 and 0.57 cwt K_2O
Lansome Field (W): 0.54 cwt P_2O_5 and 0.54 cwt K_2O.
combine drilled
(a) as compound (16% P_2O_5, 16% K_2O) on the no nitrogen and broadcast nitrogen plots,
(b) as compounds N_1, N_2, N_3 on the plots receiving drilled nitrogen.

Cultivations, etc.:
Deacons Field (R): Ploughed: Nov 17-24, 1958. Seed combine drilled at 2 bushels per acre: Mar 19, 1959. Sulphate of ammonia and balance of compound fertilizer (16% P_2O_5, 16% K_2O) broadcast: Mar 20. Sprayed with TCB/MCPA at 4 pints in 40 gallons per acre: May 6. Combine harvested: Aug 6. Variety: Proctor. Previous crop: Winter wheat.
Lansome Field (W): Ploughed: Nov 5, 1958. Seed combine drilled at 3 bushels per acre: Mar 20, 1959. Sulphate of ammonia broadcast: Mar 23. Combine harvested: Aug 17. Variety: Herta. Previous crop: Barley.

Standard errors per plot, Grain (at 85% dry matter):
Deacons Field (R): 1.69 cwt per acre or 6.0% (18 d.f.)
Lansome Field (W): 1.70 cwt per acre or 6.4% (18 d.f.)

Note: Plant counts at germination were made.

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59/Cb/1.2

Summary of Results

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

	N: cwt per acre						
	Broadcast			Combine drilled			
None	0.2	0.5	0.8*	0.2	0.5	0.8*	Mean
	Deacons Field, Rothamsted						
14.1	22.2	28.9	37.8 (±0.84)	21.9	33.3	39.6	28.3

Mean dry matter % as harvested: 84.3

	Lansome Field, Woburn						
12.7	22.4	29.4	32.5 (±0.85)	23.0	31.2	35.9	26.7

Mean dry matter % as harvested: 85.6

*0.7 on Lansome Field, Woburn.

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BARLEY

Concentrated fertilizers - Rothamsted (R) Deacons Field and Woburn (W) Lansome Field 1959.

Design (each field): 4 randomized blocks of 5 plots each.

Area of each plot:
Deacons Field (R): 0.0212 acres. Area harvested: 0.0141 acres.
Lansome Field (W): 0.0186 acres. Area harvested: 0.0124 acres.

Treatments: None and all combinations of:-
Compound fertilizers: (A) 12% N; 6% P_2O_5; 6% K_2O;
(B) 20% N; 10% P_2O_5; 10% K_2O.
Rates of application in cwt per acre:
Deacons Field (R): (1) 0.3 N; 0.15 P_2O_5; 0.15 K_2O;
(2) 0.6 N; 0.30 P_2O_5; 0.30 K_2O.
Lansome Field (W): (1) 0.35 N; 0.18 P_2O_5; 0.18 K_2O;
(2) 0.66 N; 0.33 P_2O_5; 0.33 K_2O.

Note: All fertilizers were combine drilled with the seed.

Basal dressing: None.

Cultivations, etc.:-
Deacons Field (R): Ploughed: Nov 17-24, 1958. Seed combine drilled at 2 bushels per acre: Mar 20, 1959. Sprayed with TCB/MCPA at 4 pints in 40 gallons per acre: May 6. Combine harvested: Aug 6. Variety: Proctor. Previous crop: Winter wheat.
Lansome Field (W): Ploughed: Nov 5, 1958. Seed combine drilled at 3 bushels per acre: Mar 20, 1959. Combine harvested: Aug 17. Variety: Herta. Previous crop: Barley.

Standard errors per plot, Grain (at 85% dry matter):
Deacons Field (R): 1.51 cwt per acre or 5.2% (12 d.f.)
Lansome Field (W): 1.36 cwt per acre or 5.4% (12 d.f.)

Note: Plant counts at germination were made.

https://doi.org/10.23637/ERADOC-1-179

59/Cb/2.2

Summary of Results

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

Compound fertilizer					
None	A_1	A_2	B_1	B_2	Mean
Deacons Field, Rothamsted					
14.4	27.6	37.7 (±0.75)	27.6	37.5	29.0

Mean dry matter % as harvested: 84.2

Lansome Field, Woburn					
13.8	24.9	30.8 (±0.68)	24.4	33.0	25.3

Mean dry matter % as harvested: 86.2

Compound fertilizers: (A) 12% N; 6% P_2O_5; 6% K_2O;
(B) 20% N; 10% P_2O_5; 10% K_2O.

Rates of application in cwt per acre:
Deacons Field (R): (1) 0.3 N; 0.15 P_2O_5; 0.15 K_2O;
(2) 0.6 N; 0.30 P_2O_5; 0.30 K_2O.
Lansome Field (W): (1) 0.35 N; 0.18 P_2O_5; 0.18 K_2O;
(2) 0.66 N; 0.33 P_2O_5; 0.33 K_2O.

https://doi.org/10.23637/ERADOC-1-179

SPRING OATS

Varieties and levels of nitrogen - Little Knott I 1959.

Design: 3 randomized blocks of 5 plots each, plots being split into 2 for the application of nitrogen.

Area of each sub plot: 0.0151 acres. Area harvested: 0.0101 acres.

Treatments: All combinations of:-
Whole plots. Varieties: Condor (1); Palu (2); Silva II (3); Sun II (4); Vollbringer (5).
Sub plots. Nitrogen (in addition to basal): None; 0.36 cwt N per acre applied as sulphate of ammonia.

Basal dressing: 3 cwt compound fertilizer (12% N, 9% P_2O_5, 9% K_2O) per acre combine drilled with seed.

Cultivations, etc.: Ploughed: Jan 8, 1959. Seed combine drilled at $3\frac{1}{2}$ bushels per acre: Mar 14. Sulphate of ammonia applied: Mar 23. Sprayed with CMPP at 4 pints in 40 gallons per acre: May 12. Combine harvested: Aug 5. Previous crop: Beans.

Standard errors per plot, Grain (at 85% dry matter):
Whole plot: 1.51 cwt per acre or 3.6% (8 d.f.)
Sub plot: 2.50 cwt per acre or 5.9% (10 d.f.)

Summary of Results

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

N: cwt per acre (including basal)	Variety 1	2	3	4	5	Mean
			(±1.34)*			
0.36	43.3	38.7	39.3	41.8	42.6	41.1
0.72	45.1	43.6	38.7	44.7	42.5	42.9
Mean (±0.88)	44.2	41.1	39.0	43.2	42.6	42.0
Difference (±2.04)	+1.8	+4.9	-0.6	+2.9	-0.1	+1.8 (±0.91)

*for use in horizontal and diagonal comparisons only.

Mean dry matter % as harvested: 81.0

https://doi.org/10.23637/ERADOC-1-179

SPRING OATS

Frit fly study (sowing dates) - Long Hoos V 1959.

Design: 2 randomized blocks of 3 plots each.

Area of each plot: 0.425 acres. Area harvested: 0.0675 acres.

Treatments:- Sowing dates: Mar 13; Apr 10; Apr 22, 1959.

Basal dressing:- 390 lb compound fertilizer (12% N, 9% P_2O_5, 9% K_2O) per acre combine drilled with seed.

Cultivations, etc.: Ploughed: Sept 22, 1958. Seed combine drilled at 3 bushels per acre: Mar 13, Apr 10 and Apr 22, 1959. Sprayed with TCB/MCPA at 4 pints in 40 gallons per acre: first and second sowing - May 12; third sowing - May 26. Combine harvested: first sowing - Aug 5; second and third sowing - Aug 17. Variety: Blenda. Previous crop: Winter wheat.

Note. Counts of frit fly and egg numbers, and estimates of grain and tiller damage, and of growth rates were made at frequent intervals.

Summary of Results

Date of sowing

Mar 13	Apr 10	Apr 22	Mean
	Grain (at 85% dry matter): cwt per acre		
20.9	19.2	16.7	18.9
	Straw (at 85% dry matter): cwt per acre		
18.2	16.6	16.3	17.0

Mean dry matter % as harvested

	First sowing	Second and third sowings
Grain	81.4	81.3
Straw	71.5	86.9

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59/Cd/1.1

CEREALS AND BEANS ROTATIONS

The effect of crop sequences on the incidence of cereal foot and root rot diseases - Great Field I 1959 - the 3rd year.

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

Area of each plot: 0.0305 acres. Area harvested: 0.0201 acres.

Treatments:

Crop sequences for each series:

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

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

In the 4th year the plots will be split for N, and all cropped with winter wheat.

Basal dressing: 2 cwt compound fertilizer (16% P_2O_5, 16% K_2O) per acre combine drilled with seed; all blocks received 23 cwt ground chalk per acre in Nov 1956.

Nitrogen for cereals: 2.3 cwt 'Nitra-Shell' (20.5% N) per acre to spring wheat and 1.5 cwt 'Nitra-Shell' per acre to oats and barley, all in seedbed. 4.6 cwt 'Nitra-Shell' per acre to winter wheat as spring top dressing, half applied in March and half in May.

Cultivations, etc.: Ploughed: Oct 24, 1958. Beans combine drilled at 275 lb per acre: Nov 26. Winter wheat combine drilled at 2½ bushels per acre: Jan 23, 1959. Oats combine drilled at 4 bushels per acre: Mar 13. 'Nitra-Shell' applied to oats; barley combine drilled at 2 bushels per acre: Mar 14. 'Nitra-Shell' applied to barley and winter wheat: Mar 16. Spring wheat combine drilled at 3 bushels per acre: Mar 17. 'Nitra-Shell' applied to spring wheat: Mar 18. 2nd application of 'Nitra-Shell' to winter wheat, winter wheat, beans and oats sprayed with TCB/MCPA at 4 pints in 40 gallons per acre: May 7. Beans sprayed with demeton methyl at 12 fluid oz (50% active ingredient) in 60 gallons per acre: June 3. Combine harvested: Oats: Aug 5; barley: Aug 7; winter wheat: Aug 12; spring wheat: Aug 21. Varieties: Beans - S.Q; winter wheat - Cappelle; spring wheat - Koga II; barley - Proctor; oats - Sun II. Previous crop: Series starting in 1959; winter beans.

Note. The stand of winter beans was poor and irregular and yields were not recorded.

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

For details of the previous year's results etc. see 'Results of the Field Experiments' 57/Cd/1 and 58/Cd/1.

Summary of Results

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

Series starting in 1957

Crop in 1957	WW	SW	0	WW	B	WW
1958	WW	WW	WW	0	WW	0
1959	SW	SW	SW	SW	B	Be
	32.0	32.4	29.2	32.0	33.3	*
Mean dry matter % as harvested	85.0				85.1	

Series starting in 1958

Crop in 1958	WW	SW	B	0	WW
1959	WW	WW	WW	WW	0
	37.4	37.5	31.9	41.9	34.7
Mean dry matter % as harvested	76.4				83.7

Series starting in 1959

Crop in 1959	WW	SW	B	0
	41.3	36.3	42.3	37.9
Mean dry matter % as harvested	74.9	85.6	86.1	83.3

*Yields not recorded.

SPRING BEANS

Effect of seed rates and spraying on aphids (Aphis fabae) - Great Knott I 1959.

Design: 4 randomized blocks of 7 plots each, blocks and plots being split into 2 strips for the application of spray.

Area of each sub plot: 0.0135 acres.

Treatments. All combinations of:-
Seed rate, lb per acre: 50; 100; 200; *300; 400; 600; all at 22 inch row spacing and 600 at 11 inch.
Spray: None; demeton-methyl at 12 fluid oz (50% active ingredients) in 60 gallons per acre.

*Note. The basal dressing was applied to this treatment at double rate.

Basal dressing: 5 cwt compound fertilizer (10% P_2O_5, 20% K_2O) per acre placement drilled with the seed.

Cultivations, etc.: Ploughed: Sept 22 and Oct 28, 1958. Seed drilled: Mar 18, 1959. Appropriate sub-plots sprayed with demeton-methyl: June 2. Combine harvested: Aug 24.
Variety: Garton's Spring Tic. Previous crop: Wheat.

Note: On 15 of the 28 unsprayed plots the crop was so poor that it had to be harvested by hand. The standard error was estimated from the sprayed plots only.

Standard error per plot.
Grain (at 85% dry matter): 1.34 cwt per acre or 6.6% (18 d.f.)

Note: Periodic counts of plant stem and aphid numbers were made.

Summary of Results

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

Seed rate: lb per acre							
50	100	200	300	400	600	600*	Mean
Sprayed with demeton-methyl							
12.4	17.7	19.8	21.6 (±0.66)	23.5	22.5	23.9	20.2
Unsprayed							
3.0	1.6	2.0	3.4	3.0	5.9	9.2	4.0

Mean dry matter % as harvested:
Sprayed plots: 81.5
Unsprayed plots: 76.2**

*at 11 inch row spacing, remainder at 22 inch.

** estimated from combine harvested plots only.

59/Ce/2.1

SPRING BEANS

Control of weeds (Triazine sprays) - Rothamsted (R) Great Knott I and Woburn (W) Broad Mead I 1959.

Design: Great Knott I (R); 3 randomized blocks of 6 plots each.
Broad Mead I (W): 3 randomized blocks of 5 plots each.

Area of each plot (both fields): 0.0318 acres. Area harvested: 0.0139 acres.

Treatments: Pre-emergence sprays:- None: Great Knott I (R) - two plots per block, Broad Mead I (W) - one plot per block.
2-chloro-4-6-bis-ethylamino-s-triazine (Simazine)(S):
at 1 lb in 40 gallons per acre (1);
2 lb in 80 gallons per acre (2);
3 lb in 120 gallons per acre (3);
50% active material
2-chloro-4-ethylamino-6-isopropylamino-s-triazine (Atrazine):
at 2 lb in 80 gallons per acre (A2)

Basal dressing: 5 cwt compound fertilizer (10% P_2O_5, 20% K_2O) per acre placement drilled with seed.

Cultivations, etc.:
Great Knott I (R): Ploughed: Sept 22 - Oct 28, 1958. Seed placement drilled at 200 lb per acre, with basal fertilizer: Mar 17, 1959. Weedkillers applied: Mar 26. Sprayed with demeton-methyl at 12 fluid oz of 50% active ingredients in 40 gallons per acre: June 2. Combine harvested: Aug 24. Variety: Spring Tick. Previous crop: Winter wheat.
Broad Mead I (W): Ploughed: Feb 13 - 17, 1959. Seed placement drilled at 200 lb per acre, with basal fertilizer: Feb 27. Weedkillers applied: Mar 14. Combine harvested: Aug 6. Variety: Spring Tick. Previous crop: Spring wheat.

Standard errors per plot, Grain (at 85% dry matter):
Great Knott I (R): 2.04 cwt per acre or 10.9% (11 d.f.)
Broad Mead I (W): 1.60 cwt per acre or 9.9% (8 d.f.)

Note: Weed counts were made early in the growing period. Observations were made on winter beans sprayed after emergence with the same materials.

https://doi.org/10.23637/ERADOC-1-179

59/Ce/2.2

Summary of Results

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

		Spray					
		None	S_1	S_2	S_3	A_2	Mean
Great Knott I (R)							
Mean	(±1.18)	17.9(1)	21.1	19.6	18.5	17.7	18.8
Increase	(±1.44)		+3.2	+1.7	+0.6	-0.2	
Broad Mead I (W)							
Mean	(±0.93)	13.5	17.3	19.1	16.0	15.2	16.2
Increase	(±1.31)		+3.8	+5.6	+2.5	+1.7	

(1) ±0.83

Sprays

S = Simazine
A = Atrazine

Levels

1 = 1 lb in 40 gallons per acre
2 = 2 lb in 80 gallons per acre
3 = 3 lb in 120 gallons per acre

50% active material

59/Ce/3.1

BEANS

Time of sowing, spraying, P and K - Rothamsted (R) Great Knott III and Woburn (W) Mill Dam Close 1959.

Design: 3 blocks of 4 whole plots each, plots being split into 3 for P and K with spraying on pairs of whole plots, time of sowing on whole plots, and PK partially confounded.

Area of each sub plot: 0.0337 acres. Area harvested: 0.0105 acres.

Treatments. All combinations of:-
Time of sowing: Autumn; spring.
Spray: None; demeton-methyl at 12 fluid oz (50% active ingredients) in 60* gallons per acre.
Phosphate: None; 0.5; 1.0 cwt P_2O_5 per acre as superphosphate.
Potash: None; 1.0; 2.0 cwt K_2O per acre as muriate of potash.

*Note: 40 gallons at Woburn.

Basal dressing: None.

Cultivations, etc.:
Great Knott III (R): Ploughed: Sept 20 - Oct 17, 1958. Fertilizers applied for autumn beans: Oct 23. Seed drilled at 275 lb per acre: Oct 24. Fertilizers applied for spring beans: Feb 17, 1959. Seed drilled at 200 lb per acre: Feb 21. Appropriate plots sprayed with demeton-methyl: June 2. Combine harvested: Aug 7. Variety: Winter beans - S.Q.Giant, spring beans - Granton. Previous crop: Spring wheat and barley.
Mill Dam Close (W): Ploughed: Sept 23 - Oct 20, 1958. Seed drilled at 275 lb per acre, fertilizers applied for autumn beans: Oct 22. Fertilizers applied for spring beans, seed drilled at 275 lb per acre: Feb 26, 1959. Appropriate plots sprayed with demeton-methyl: May 30. Combine harvested: Aug 6 - 22. Variety: Winter beans - S.Q.Giant, spring beans - Granton. Previous crop: Spring wheat.

Standard errors per plot, Grain (at 85% dry matter):
Great Knott III (R)
Whole plot: 2.04 cwt per acre or 9.3% (4 d.f.)
Sub plot: 1.63 cwt per acre or 7.4% (12 d.f.)

Mill Dam Close (W)
Whole plot: 2.83 cwt per acre or 11.5% (4 d.f.)
Sub plot: 5.04 cwt per acre or 17.4% (12 d.f.)

https://doi.org/10.23637/ERADOC-1-179

Summary of Results

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

	Sown			P_2O_5: cwt per acre			K_2O: cwt per acre			
	Autumn	Spring	Diff.	None	0.5	1.0	None	1.0	2.0	Mean
Great Knott III, Rothamsted										
Spray					(±0.66)*			(±0.66)*		
None	26.6	13.9	-12.7	19.8	20.0	20.8	20.1	19.8	20.8	20.2
Demeton-methyl	28.8	18.8	-10.0	23.7	23.4	24.3	24.2	24.5	22.7	23.8
Diff.	+2.2	+4.9	+2.7	+3.9	+3.4	+3.5	+4.1	+4.7	+1.9	+3.6
			(±2.36)		(±0.94)**			(±0.94)**		
Sown				(1) and (2)			(1) and (2)			
Autumn				26.8	27.9	28.4	27.4	27.9	27.9	27.7
Spring				16.7	15.5	16.8	16.9	16.5	15.6	16.3
Mean (±0.47)				21.8	21.7	22.6	22.1	22.2	21.7	22.0
Diff.(±1.41)				-10.1	-12.4	-11.6	-10.5	-11.4	-12.3	-11.4 (±1.18)

(1) ±0.99 for use in diagonal comparisons only.
(2) ±0.66 for use in horizontal and interaction comparisons only.

*For use in horizontal comparisons only.

**For use only in testing the difference of two differences.

Mean dry matter % as harvested: Autumn sown, 85.2; spring sown, 85.1.

https://doi.org/10.23637/ERADOC-1-179

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

	Sown Autumn	Sown Spring	Diff.	P_2O_5: cwt per acre None	0.5	1.0	K_2O: cwt per acre None	1.0	2.0	Mean
Mill Dam Close, Woburn										
				(±2.06)*			(±2.06)*			
Spray										
None	27.4	23.3	-4.1	24.4	27.9	23.8	25.8	24.3	25.9	25.4
Demeton-methyl	30.0	17.8	-12.2	25.6	26.2	19.9	19.5	24.9	27.2	23.9
Diff.	+2.6	-5.5	-8.1	+1.2	-1.7	-3.9	-6.3	+0.6	+1.3	-1.5
			(±3.26)	(±2.91)**			(±2.91)**			
Sown				(1) and (2)			(1) and (2)			
Autumn				27.4	34.7	24.1	27.3	28.1	30.8	28.7
Spring				22.6	19.4	19.7	18.1	21.2	22.3	20.5
Mean (±1.46)				25.0	27.0	21.9	22.7	24.6	26.6	24.6
Diff. (±2.88)				-4.8	-15.3	-4.4	-9.2	-6.9	-8.5	-8.2 (±1.63)

(1) ±2.04 for use in diagonal comparisons only.
(2) ±2.06 for use in horizontal and interaction comparisons only.

*For use in horizontal comparisons only.

**For use only in testing the difference of two differences.

Mean dry matter % as harvested: Autumn sown, 75.5; spring sown, 82.9.

https://doi.org/10.23637/ERADOC-1-179

59/Cf/1.1

POTATOES

Forms and levels of K - Rothamsted (R) Sawyers I and Woburn (W) Lansome Field 1959.

Design (each field): 4 blocks of 8 plots with certain high order interactions partially confounded with block differences.

Area of each plot: 0.0141 acres. Area harvested: 0.0071 acres.

Treatments: No potash (2 plots per block) and all combinations of:-
Forms of K: Potassium bi-carbonate, $KHCO_3$ (C);
Potassium sulphate, K_2SO_4 (S);
Potassium chloride, KCl (M);
Levels of K: 1.25; 2.50 cwt K_2O per acre.
All the above in combination with:-
Levels of N: 0.75; 1.50 cwt N per acre as sulphate of ammonia.

Basal dressing (each field): 1.0 cwt P_2O_5 per acre as superphosphate.

Cultivations, etc.:
Sawyers I (R): Ploughed: Feb 19, 1959. Ridged, fertilizers applied by hand: Apr 20. Potatoes hand planted: Apr 21. Earthed up: July 6. Sprayed with copper fungicide, 5 lb in 40 gallons per acre: Aug 24. Sprayed with sulphuric acid at 15% BOV in 100 gallons per acre: Sept 29. Lifted: Oct 12. Variety: Majestic. Previous crop: Barley.
Lansome Field (W): Sprayed with dalapon at 10 lb and 5 lb in 40 gallons per acre: Nov 8, 1958 and Nov 22 respectively. Ploughed: Jan 23 - Feb 2, 1959. Ridged: Apr 4. Fertilizers applied and potatoes hand planted: Apr 10. Earthed up: June 22. Sprayed with zineb at 2 lb and demeton methyl (against aphids) at 12 fluid oz (50% active ingredients) in 40 gallons per acre: Aug 15. Tops destroyed mechanically: Sept 22. Lifted: Sept 29. Variety: Majestic. Previous crop: Barley.

Standard errors per plot. Total tubers:
Sawyers I (R): 1.215 tons per acre or 12.5% (14 d.f.)
Lansome (W): 1.076 tons per acre or 16.4% (13 d.f.)

Note (1): Chemical analyses were made of % N, P, K, Cl and S on haulm and tubers at Rothamsted and on tubers at Woburn.

Note (2): At Woburn the plant was poor and irregular and the yields were adjusted for plant number.

https://doi.org/10.23637/ERADOC-1-179

Summary of Results

Total tubers: tons per acre

	Form of K				
	0	C	S	M	Mean
Rothamsted					
Mean (±0.430)	7.23	10.75	10.65	10.26	9.72
K: cwt per acre					
1.25 (±0.608)	-	10.55	9.86	9.12	9.84 (±0.351)
2.50	-	10.95	11.44	11.40	11.26
Diff. (±0.859)	-	+0.40	+1.58	+2.28	+1.42 (±0.496)
N: cwt per acre					
0.75 (±0.608)	7.33	10.46	11.01	10.47	9.82
1.50	7.12	11.04	10.28	10.05	9.62
Diff. (±0.859)	-0.21	+0.58	-0.73	-0.42	-0.20 (±0.430)
Woburn					
Mean (±0.380)	6.29	6.69	6.58	6.72	6.57
K: cwt per acre					
1.25 (±0.538)	-	6.05	6.93	5.34	6.11 (±0.334)
2.50	-	7.34	6.16	8.10	7.20
Diff. (±0.818)	-	+1.29	-0.77	+2.76	+1.09 (±0.472)
N: cwt per acre					
0.75 (±0.538)	6.07	6.43	6.92	7.28	6.68
1.50	6.50	6.97	6.19	6.16	6.46
Diff. (±0.818)	+0.43	+0.54	-0.73	-1.12	-0.22 (±0.409)

Forms of K

0 = No potash
C = Potassium bi-carbonate, $KHCO_3$
S = Potassium sulphate, K_2SO_4
M = Potassium chloride, KCl.

https://doi.org/10.23637/ERADOC-1-179

POTATOES

Concentrated fertilizers - Rothamsted (R) Great Field I and Woburn (W) Lansome Field 1959.

Design (each field): 4 randomized blocks of 5 plots each.

Area of each plot (each field): 0.0212 acres. Area harvested: 0.0141 acres.

Treatments: None and all combinations of:-
Types of fertilizer: A mixture of sulphate of ammonia, superphosphate and muriate of potash (A); concentrated compound fertilizer (15% N, 10% P_2O_5, 20% K_2O) (B).
Rates of application: cwt per acre
(1) 0.75 N; 0.5 P_2O_5; 1.0 K_2O.
(2) 1.5 N; 1.0 P_2O_5; 2.0 K_2O.

Basal dressing: None.

Cultivations, etc.:
Great Field I (R): Ploughed: Oct 23, 1958. Ridged: Apr 14, 1959. Fertilizers applied in the furrows, potatoes hand planted: Apr 20. Earthed up: June 30. Sprayed with copper fungicide at 5 lb in 40 gallons per acre: Aug 15. Sprayed with sulphuric acid, 15% BOV in 100 gallons per acre: Sept 21. Lifted: Oct 8. Variety: Ulster Supreme. Previous crop: Wheat.
Lansome Field (W): Sprayed with dalapon at 10 lb in 40 gallons per acre: Nov 8, 1958, and at 5 lb in 40 gallons per acre: Nov 22. Ploughed: Jan 23, 1959. Ridged, fertilizers applied in the furrows, potatoes hand planted: Apr 9. Earthed up: June 22. Sprayed with zineb at 2 lb and demeton methyl at 12 fluid oz (50% active ingredients) in 40 gallons per acre: Aug 15. Haulm destroyed mechanically: Sept 22. Lifted: Sept 29. Variety: Majestic. Previous crop: Barley.

Note: At Woburn the plant was poor and irregular. There was no evidence of association between yield and plant number and the yields were not adjusted.

Standard errors per plot. Total tubers:
Great Field I (R): 0.839 tons per acre or 7.2% (12 d.f.)
Lansome Field (W): 0.683 tons per acre or 10.5% (12 d.f.)

https://doi.org/10.23637/ERADOC-1-179

Summary of Results

Fertilizer					
	Mixture		Concentrated		
None	A_1	A_2	B_1	B_2	Mean
Total tubers: tons per acre					
Great Field I (R)					
8.46	11.47	13.41	11.49	13.68	11.70
		(±0.419)			
Lansome Field (W)					
4.03	6.74	7.06	6.64	8.01	6.49
		(±0.341)			
Percentage ware*					
Great Field I (R)					
90.6	90.7	91.6	88.2	89.1	90.0
Lansome Field (W)					
48.3	51.6	42.7	59.6	57.3	51.9

*Riddle size (R) $1\frac{1}{2}$"
(W) $1\frac{3}{8}$".

Treatments

Fertilizer. (A) a mixture of sulphate of ammonia, superphosphate and muriate of potash.
(B) concentrated compound fertilizer (15% N, 10% P_2O_5, 20% K_2O).

Rates of application: cwt per acre
(1) 0.75 N; 0.5 P_2O_5; 1.0 K_2O.
(2) 1.5 N; 1.0 P_2O_5; 2.0 K_2O.

POTATOES

Control of blight (*Phytophthora infestans*) by copper and zinc fungicide sprays and times of spraying - Great Field I 1959.

Design: 4 x 4 Latin square.

Area of each plot: 0.127 acres. Area harvested: 0.0141 acres.

Treatments:-
Sprays: None (0); copper oxychloride (15% copper) at 5 lb in 40 gallons per acre after issue of blight forecast (1); Zineb (zinc ethylene bis dithiocarbamate - 65% active ingredient) at 2 lb in 40 gallons per acre after issue of blight forecast plus copper oxychloride when the previous deposit had been removed (2); Zineb after closure of leaf canopy plus copper oxychloride after issue of blight forecast (3).

Basal dressing: 10 cwt compound fertilizer (10% N, 10% P_2O_5, 18% K_2O) per acre.

Cultivations, etc.: Ploughed: Oct 24, 1958. Basal dressing applied: Mar 31, 1959. Potatoes machine planted: Apr 2. Earthed up: June 18. Appropriate plots sprayed with zineb: July 22 and Aug 14, and with copper fungicide: Aug 14 and Sept 4. Sprayed with sulphuric acid at 15% BOV in 100 gallons per acre: Sept 30. Lifted: Oct 13. Variety: Majestic. Previous crop: Barley.

Standard error per plot.
Total tubers: 1.049 tons per acre or 8.8% (6 d.f.)

Note: Commencing mid July, fortnightly samples of yield, and estimates of foliage destroyed by blight, and of amounts of blight on the tubers at time of sampling and after storage were made.

Summary of Results

	Spray 0	1	2	3	Mean
Total tubers: tons per acre					
Mean (±0.525)	11.81	10.91	11.94	12.97	11.91
Increase (±0.742)		-0.90	+0.13	+1.16	
Percentage ware (1½" riddle)					
Mean	85.5	84.3	84.8	84.2	84.7
Increase		-1.2	-0.7	-1.3	

https://doi.org/10.23637/ERADOC-1-179

59/Cf/4

POTATOES

The control of blight (*Phytophthora infestans*) by copper and tin fungicides - Great Field II 1959.

Design: 3 randomized blocks of 5 plots each.

Area of each plot: 0.0096 acres. Area harvested: 0.0013 acres.

Treatments.
Unsprayed (0).
Sprayed twice with white oil formulation of copper oxychloride at 120 fluid oz in 60 gallons per acre (1).
Sprayed twice with 0.1% (2); 0.3% (3); 0.6% (4) triphenyltin acetate at 60 gallons per acre.

Basal dressing: 10 cwt compound fertilizer (10% N, 10% P_2O_5, 18% K_2O) per acre.

Cultivations, etc.: Ploughed twice: Oct 27, 1958 and Feb 20, 1959. Basal fertilizer applied: Mar 31. Ridged, potatoes machine planted: Apr 1. Earthed up: June 18. Fungicide treatments applied twice: Aug 11 and Sept 2. Sprayed with sulphuric acid, 15% BOV, 100 gallons per acre: Sept 30. Lifted: Oct 13. Variety: Ulster Supreme. Previous crop: Barley.

Standard error per plot.
Total tubers: 1.940 tons per acre or 20.2% (8 d.f.)

Note: Commencing in August estimates were made at 10 day intervals of incidence of blight and of defoliation.

Summary of Results

Spray 0	1	2	3	4	Mean
		Total tubers: tons per acre			
9.58	8.10	9.87 (±1.120)	10.30	10.21	9.61
		Percentage ware (1½" riddle)			
83.3	87.5	83.2	89.2	91.6	87.0

https://doi.org/10.23637/ERADOC-1-179

59/Cf/5.1

POTATOES

The control of weeds by triazine sprays - Rothamsted (R) Great Field I and Woburn (W) Great Hill 1959.

Design (each field): 3 randomized blocks of 4 plots each.

Area of each plot (acres): 0.0318. Area harvested: Great Field I (R) - 0.0141; Great Hill (W) - 0.0182.

Treatments: Pre-emergence sprays:- None;
2-chloro-4-6-bis-ethylamino-s-triazine (Simazine) (S):
at 1 lb in 40 gallons per acre (1);
2 lb in 80 gallons per acre (2);
3 lb in 120 gallons per acre (3).

Basal dressing: 10 cwt compound fertilizer (10% N, 10% P_2O_5, 18% K_2O) per acre.

Cultivations, etc.:
Great Field I (R). Ploughed: Sept 9, 1958. Basal dressing applied: Mar 26, 1959. Potatoes machine planted: Apr 1. Sprays applied to appropriate plots: Apr 14. Sprayed with copper fungicide at 5 lb in 40 gallons per acre: Aug 15. Sprayed with sulphuric acid, 15% BOV in 100 gallons per acre: Sept 21. Tops destroyed mechanically: Oct 3. Lifted: Oct 8. Variety: Ulster Supreme. Previous crop: Barley.
Great Hill (W). Ploughed: Jan 24 - Feb 11, 1959. Basal dressing applied: Apr 23. Potatoes machine planted: Apr 28. Sprays applied to appropriate plots: Apr 29. Lifted: Oct 1. Variety: King Edward. Previous crop: Barley.

Standard error per plot: Total tubers.
Great Field I (R): 1.630 tons per acre or 16.5% (6 d.f.)
Great Hill (W): 1.249 tons per acre or 32.7% (6 d.f.)

Note: On Great Hill (W) about half the tubers which would normally have been included in ware were severely shrivelled: the means of percentage ware given in the summary do not include these shrivelled tubers.

https://doi.org/10.23637/ERADOC-1-179

Summary of Results

0	Spray S_1	S_2	S_3	Mean
		Total tubers: tons per acre		
		Great Field I (R)		
4.55	11.91	11.81 (±0.941)	11.16	9.86
		Great Hill (W)		
3.16	3.96	4.57 (±0.721)	3.60	3.82
		Percentage ware*		
		Great Field I (R)		
86.8	90.8	93.2	91.5	90.6
		Great Hill (W)		
19.4	26.3	22.8	23.4	23.0
		Percentage shrivelled tubers		
		Great Hill (W)		
54.6	50.0	54.1	48.0	51.7

*Riddle size (R) $1\frac{1}{2}$"; (W) $1\frac{5}{8}$".

Note: On both fields treated strips outside the experimental area gave the following results.

	Total tubers: tons per acre	% ware ($1\frac{1}{2}$" riddle)	% shrivelled tubers
Great Field I (R); 2-chloro-4-ethylamino-6-isopropylamino-s-triazine (Atrazine) at 2 lb in 80 gallons per acre	12.40	91.1	
Normal mechanical weed control	13.66	91.0	
	Total tubers: tons per acre	% ware ($1\frac{5}{8}$" riddle)	% shrivelled tubers
Great Hill (W) Atrazine	3.64	25.8	43.6
Normal mechanical weed control	9.59	57.1	16.7
Simazine at 4 lb in 160 gallons per acre	4.80	47.8	25.1

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GRASS

Slow acting nitrogenous fertilizers - Harwoods Piece 1959, the second year.

Design: 4 randomized blocks of 16 plots each.

Area of each plot: 0.0087 acres. Area harvested: 0.0035 acres.

Treatments: None (2 plots per block) and all combinations of:-

Materials and methods of application

Ureaformaldehyde (37.2% N) applied: in 1958; in 1959; in 1958 and 1959.

'Nitro-Chalk' (15.5% N) applied: in spring 1959.

'Nitro-Chalk' applied $\frac{1}{3}$ in spring; $\frac{1}{3}$ after each of 1st and 2nd cuts: in 1958; in 1959; in 1958 and 1959.

Rates of application

1.0; 2.0 cwt N per acre

Basal dressing: 5 cwt compound fertilizer (10% P_2O_5, 20% K_2O) per acre.

Cultivations, etc.: Basal fertilizer applied: Feb 12, 1959. Ureaformaldehyde and 'Nitro-Chalk' applied: Mar 10. 2nd and 3rd dressings of 'Nitro-Chalk' applied: Apr 28 and June 22. Cut 3 times: Apr 28, June 18 and Aug 24. Variety: S22 Italian Ryegrass.

Standard errors per plot. Dry matter:

1st cut:	1.74 cwt per acre or 9.6%	(46 d.f.)
2nd cut:	2.83 cwt per acre or 13.5%	(46 d.f.)
3rd cut:	1.26 cwt per acre or 11.8%	(46 d.f.)
Total of 3 cuts:	4.94 cwt per acre or 9.9%	(46 d.f.)

Note: For details of the previous years results see "Results of the Field Experiments" 58/Cg/1. On page 58/Cg/1.1 the % of K_2O in the basal dressing should read '20' not '10'.

https://doi.org/10.23637/ERADOC-1-179

Summary of Results

Dry matter: cwt per acre

Rate of application of N: cwt per acre	None	Fertilizer: Ureaformaldehyde applied 1958	Ureaformaldehyde applied 1959	Ureaformaldehyde applied 1958 & 1959	'Nitro-Chalk' applied: As single dressing spring 1959	'Nitro-Chalk' applied: As divided dressing 1958	As divided dressing 1959	As divided dressing 1958 & 1959	Mean
1st cut					(±0.87)				
1.0		8.6	13.1	16.9	30.2	9.6	18.6	22.7	17.1 (±0.33)
2.0		9.7	16.7	24.5	33.7	15.3	26.7	32.1	22.7
Mean (±0.62)	6.2	9.2	14.9	20.7	32.0	12.4	22.6	27.4	18.1
Diff. (±1.23)		+1.1	+3.6	+7.6	+3.5	+5.7	+8.1	+9.4	+5.6 (±0.47)
2nd cut					(±1.42)				
1.0		13.1	17.2	14.3	19.5	12.8	26.4	30.6	19.1 (±0.53)
2.0		13.5	22.5	23.1	34.6	13.1	36.7	36.5	25.7
Mean (±1.00)	10.9	13.3	19.8	18.7	27.0	12.9	31.5	33.5	20.9
Diff. (±2.00)		+0.4	+5.3	+8.8	+15.1	+0.3	+10.3	+5.9	+6.6 (±0.76)

Mean dry matter % as cut:
1st cut: 17.3
2nd cut: 32.5

59/Cg/1.2

Dry matter: cwt per acre

Rate of application of N: cwt per acre	None	Fertilizer: Ureaformaldehyde applied 1958	Ureaformaldehyde applied 1959	Ureaformaldehyde applied 1958 & 1959	'Nitro-Chalk' applied: As single dressing spring 1959	'Nitro-Chalk' applied: As divided dressing 1958	As divided dressing 1959	As divided dressing 1958 & 1959	Mean
3rd cut									
					(±0.63)				
1.0		6.9	7.9	9.0	7.3	6.0	14.1	15.3	9.5 (±0.24) (~~±0.17~~)
2.0		8.4	10.7	13.2	11.0	7.2	22.0	22.2	13.5
Mean (±0.45)	5.3	7.7	9.3	11.1	9.2	6.6	18.0	18.7	10.7
Diff. (±0.89)		+1.5	+2.8	+4.2	+3.7	+1.2	+7.9	+6.9	+4.0 (±0.34)
Total of 3 cuts									
					(±2.47)				
1.0		28.6	38.2	40.2	57.0	28.3	59.0	68.6	45.7 (±0.93) (~~±0.66~~)
2.0		31.6	49.8	60.9	79.3	35.6	85.3	90.8	61.9
Mean (±1.75)	22.3	30.1	44.0	50.5	68.1	31.9	72.2	79.7	49.8
Diff. (±3.49)		+3.0	+11.6	+20.7	+22.3	+7.3	+26.3	+22.2	+16.2 (±1.32)

Mean dry matter % as cut:
3rd cut: 33.4
Total of 3 cuts: 27.7

59/Cg/1.3

GRASS

Levels of N and K - Harwoods Piece 1959 - the 2nd year.

Design: 4 randomized blocks of 12 plots each.

Area of each plot: 0.0087 acres. Area harvested: 0.0035 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 treatments in the presence of 0.6 cwt P_2O_5 per acre as superphosphate.
In addition 2 plots per block, receiving 0.9 N and 0.6 K, 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.

Basal dressing: None.

Cultivations, etc.: 1st dressing of fertilizers applied: Mar 10. 2nd and 3rd dressings of N and K applied: Apr 28 and June 22. Cut 3 times: Apr 27, June 17 and Aug 18. Variety: S22 Italian Ryegrass.

Standard errors per plot. Dry matter:

1st cut:	1.48 cwt per acre or 5.8%	(33 d.f.)
2nd cut:	2.38 cwt per acre or 6.2%	(33 d.f.)
3rd cut:	2.48 cwt per acre or 12.3%	(33 d.f.)
Total of 3 cuts:	5.26 cwt per acre or 6.3%	(33 d.f.)

Note (2): For details of the previous year's results see 'Results of the Field Experiments' 58/Cg/2 to which should be added note (1) and the asterisks and footnote in the summary.

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59/Cg/2.2

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 (±0.74)	6.1	20.4	21.0	19.8	29.8	29.9	28.6	31.1	30.6	29.4	28.8	30.6	25.5
2nd cut (±1.19)	13.7	31.5	31.3	33.4	39.4	40.0	42.9	44.4	44.9	46.8	43.7	45.0	38.1
3rd cut (±1.24)	5.4	15.8	14.4	16.1	21.1	23.3	24.4	24.4	24.1	24.7	23.2	24.5	20.1
Total of 3 cuts (±2.63)	25.2	67.7	66.7	69.2	90.3	93.2	95.9	99.8	99.6	100.8	95.7	100.1	83.7

*For each cut.

Mean dry matter % as cut:

1st cut:	15.3	3rd cut:	30.5
2nd cut:	32.1	Total of 3 cuts:	26.0

GRASS

Species and levels of nitrogen - Harwood's Piece.1959, the 2nd year.

Design: 4 randomized blocks of 12 plots each.

Area of each plot: 0.0087 acres. Area harvested: 0.0035 acres.

Treatments. All combinations of:-

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)

Levels of nitrogen: None; 0.3; 0.6 cwt N per acre as 'Nitro-Chalk', applied for each cut.

Basal dressing: 5 cwt compound fertilizer (10% P_2O_5, 20% K_2O) per acre.

Cultivations, etc.: Basal fertilizer applied: Feb 12, 1959. Nitrogen dressings applied: Mar 11, May 14, July 17. Cut 3 times: May 13, July 15, Nov 4.

Standard errors per plot. Dry matter:

1st cut:	1.71 cwt per acre or 5.9%	(33 d.f.)
2nd cut:	2.98 cwt per acre or 16.9%	(33 d.f.)
3rd cut:	2.03 cwt per acre or 19.1%	(33 d.f.)
Total of 3 cuts:	4.35 cwt per acre or 7.6%	(33 d.f.)

Note: For details of the previous years results see "Results of the Field Experiments" 58/Cg.3.

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Summary of Results

Dry matter: cwt per acre

N: cwt per acre*	Species C	M	R	T	Mean
1st cut					
		(±0.85)			(±0.43)
None	9.1	19.6	20.7	12.9	15.5
0.3	25.1	34.8	39.9	30.1	32.5
0.6	34.0	40.8	45.2	36.0	39.0
Mean (±0.49)	22.7	31.7	35.2	26.3	28.9
2nd cut					
		(±1.49)			(±0.74)
None	6.2	5.5	1.7	10.8	6.0
0.3	24.0	15.3	12.2	27.9	19.9
0.6	31.4	21.5	21.0	33.6	26.8
Mean (±0.85)	20.6	14.1	11.6	24.1	17.5
3rd cut					
		(±1.01)			(±0.50)
None	2.0	1.9	1.3	1.6	1.7
0.3	17.4	9.8	4.2	13.0	11.1
0.6	30.1	17.5	7.8	21.1	19.1
Mean (±0.59)	16.5	9.7	4.4	11.9	10.6
Total of 3 cuts					
		(±2.18)			(±1.09)
None	17.2	26.9	23.6	25.2	23.2
0.3	66.5	59.8	56.3	71.1	63.4
0.6	95.5	79.7	73.9	90.7	84.9
Mean (±1.25)	59.7	55.5	51.2	62.3	57.1

Mean dry matter % as cut:

1st cut:	22.7
2nd cut:	36.7
3rd cut:	30.5
Total of 3 cuts:	30.0

Species

C	S37 Cocksfoot
M	S215 Meadow Fescue
R	S24 Perennial Ryegrass
T	Timothy "Scotia"

*Applied for each cut.

59/Cg/4.1

CLOVER AND GRASS LEYS

The comparison of clover and grass leys as a preparation for wheat - West Barnfield II, 1959.

Design: 4 randomized blocks of 16 plots each.

Area of each plot: 0.0159 acreas. Area harvested: 0.0068 acres.

Treatments:

Nitrogen to Leys 1959:-

To clover: none(4 plots per block)
To ryegrass: none, R1 and R2 (4 plots per block in each case)
Where R1 = 0.6 cwt N in spring, 0.15 cwt N after 1st hay cut.
R2 = 1.2 cwt N in spring, 0.30 cwt N after 1st hay cut.

The Nitrogen was applied as 'Nitro-chalk'

Note: the experiment is designed to include four rates of N applied to wheat in 1960/61.

Basal Dressings per acre:

To barley nurse crop 1958: 3 cwt compound fertilizer (10% P_2O_5, 20% K_2O) combine drilled; 2 cwt sulphate of ammonia in seedbed.
To leys combine drilled in seedbed 1958: 1 cwt superphosphate.

Cultivations, etc., barley drilled March 25th, 1958: superphosphate applied, leys undersown in barley, ryegrass at 30 lb. and clover at 20 lb. per acre: April 22nd.
'Nitro-chalk' dressings applied: March 12th and May 25th, 1959.
Cut twice for hay: May 20th and July 20th. Varieties: Italian ryegrass S22 and Double cut red clover S151.

Standard errors per plot:

Ryegrass. Dry matter:

1st cut:	3.41 cwt per acre or 7.5%	(42 d.f.)
2nd cut:	0.97 cwt per acre or 7.5%	(42 d.f.)
Total of 2 cuts:	3.78 cwt per acre or 6.5%	(42 d.f.)

Summary of Results

Clover. Dry matter cwt per acre

mean 49.1

Ryegrass. Dry matter cwt per acre

N to leys 1959

0	R1	R2	Mean
	1st cut		
23.4	54.8 (±0.98)	58.9	45.7
	2nd cut		
7.2	13.7 (±0.28)	17.7	12.9
	Total of 2 cuts		
30.6	68.5 (±1.09)	76.6	58.6

Mean dry matter % as cut

Clover		38.2
Ryegrass	1st cut	25.2
	2nd cut	46.3
	Total of 2 cuts	35.8

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METEOROLOGICAL RECORDS 1959 - ROTHAMSTED

(Departure from long period means in brackets)

Month	Total sunshine: hours	Mean temperature: °F Air[1]	Dew point	In ground 1 ft.	In ground 4 ft.	Ground[2] frosts	Total rainfall: in. 1/1000 acre gauge	Rain[3] days	Drainage through 20 in. soil: in.	Wind[4] m.p.h.
Jan.	79 (+27)	33.6 (-3.7)	30.3	36.4	43.4	24	3.30 (+0.78)	19	2.98	4.6
Feb.	62 (-8)	38.1 (-0.1)	34.6	36.9	40.8	15	0.09 (-1.85)	8	0.09	3.6
Mar.	89 (-29)	44.0 (+2.7)	40.7	43.2	42.9	11	2.63 (+0.74)	16	1.25	4.9
Apr.	135 (-21)	48.7 (+2.9)	42.8	48.5	45.7	3	2.47 (+0.56)	16	0.56	5.1
May	219 (+23)	53.7 (+1.8)	46.1	54.0	49.2	5	1.28 (-0.87)	5	0.26	4.9
June	233 (+31)	58.9 (+1.6)	50.3	59.2	52.8	0	1.15 (-1.06)	13	0.00	4.1
July	277 (+83)	63.3 (+2.6)	54.7	63.5	57.2	0	4.51 (+1.97)	10	2.00	4.1
Aug.	229 (+46)	63.1 (+2.9)	56.2	63.8	59.4	0	1.65 (-0.96)	8	0.08	3.5
Sept.	208 (+63)	59.3 (+3.2)	52.4	59.5	58.9	0	0.16 (-2.23)	3	0.00	3.5
Oct.	150 (+46)	53.6 (+4.7)	48.5	53.9	56.2	1	2.39 (-0.58)	19	0.47	4.2
Nov.	65 (+4)	43.1 (+0.7)	41.1	45.2	51.0	12	2.39 (-0.41)	24	1.82	3.4
Dec.	31 (-14)	40.9 (+2.2)	38.6	42.0	47.2	11	4.68 (+2.10)	26	4.17	6.2
Year*	1777 (+251)	50.0 (+1.8)	44.7	50.5	50.4	82	26.70 (-1.81)	167	13.68	4.3

(1) Mean of maximum and minimum.
(2) Number of nights grass minimum was 30°F or less.
(3) Number of days rainfall was 0.01 in. or more.
(4) At 2 metres above ground level.

*Mean or total.

59/E/1.1