

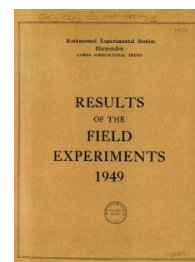
Thank you for using eradoc, a platform to publish electronic copies of the Rothamsted Documents. Your requested document has been scanned from original documents. If you find this document is not readable, or you suspect there are some problems, please let us know and we will correct that.



ROTHAMSTED  
RESEARCH

# Yields of the Field Experiments 1949

[Full Table of Content](#)



---

## Short-term

*Short-term*, Rothamsted Research (1950) Yields Of The Field Experiments 1949, pp 64 - 90

WHEAT

49/Ca/1.1

Control of "Eyespot"

The effects of rates and times of application of sulphate of ammonia, of rates of sowing and of spraying, with sulphuric acid.

RW - Little Knott 1949

System of replication: 4 x 3 x 3 x 2 design in 6 blocks of 12 plots each, certain three factor interactions and the effect of spraying being confounded with block differences.

Area of each plot: 0.0146 acre

Treatments:

Sulphate of ammonia: Rates, None,  $1\frac{3}{4}$ ,  $3\frac{1}{2}$ ,  $5\frac{1}{4}$  cwt per acre ( $N_0, N_1, N_2, N_3$ ).  
Times of application, March, April, May, ( $T_0, T_1, T_2$ ).  
Rates of sowing:  $1\frac{1}{2}$ ,  $2\frac{1}{2}$ ,  $3\frac{1}{2}$  bushels per acre ( $R_0, R_1, R_2$ ).  
Spraying: 3 blocks sprayed with sulphuric acid (12% by volume).  
B.O.V. at 100 gallons per acre in March.

Basal Manuring: 2 cwt superphosphate and  $\frac{1}{2}$  cwt muriate of potash drilled across the plots.

Cultivations, etc.: Ploughed: Sept 30. Disc harrowed: Oct 11. Harrowed: Oct 12. Seed drilled: Oct 13. Basal manures drilled: Oct 15. Harrowed in: Oct 21. Sprayed 3 blocks with sulphuric acid Mar 2. 1st application of sulphate of ammonia: Mar 5. 2nd application of sulphate of ammonia: Apr 5. Ring rolled: Apr 13. 3rd application of sulphate of ammonia: May 4. Sprayed whole experiment with Denocate to kill weeds: May 12. Harvested: Aug 3. Variety: Squareheads Master 13/4. Previous crop: Kale.

Standard errors per plot:

Grain: unsprayed blocks: 3.46 cwt per acre or 22.5% (12 d.f.)  
          sprayed blocks: 6.26 cwt per acre or 32.8% (12 d.f.)  
Straw: unsprayed blocks: 6.42 cwt per acre or 18.0% (12 d.f.)  
          sprayed blocks: 10.04 cwt per acre or 29.4% (12 d.f.)

Note: No counts of 'Eyespot' or 'Take-all' were made.

49/Ca/1.2

Grain: cwt per acre

	Unsprayed				Mean	Sprayed				Mean	Effect of Spraying
	R <sub>0</sub>	R <sub>1</sub>	R <sub>2</sub>			R <sub>0</sub>	R <sub>1</sub>	R <sub>2</sub>			
				(±1.76)	(±1.00)				(±3.18)	(±1.81)	(±2.06) <sup>(1)</sup>
T <sub>0</sub>	14.5	14.3	15.7		14.9	22.3	16.0	21.1		19.8	4.9
T <sub>1</sub>	19.0	15.6	15.4		16.7	21.1	22.4	19.8		21.1	4.4
T <sub>2</sub>	14.1	15.2	14.6		14.6	14.7	16.5	17.8		16.3	1.7
Mean	15.9	15.1	15.2	(±1.00)	15.4	19.4	18.3	19.5	(±1.81)	19.1	
	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>		N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>		
				(±2.00)					(±3.61)		
T <sub>0</sub>		13.9	15.3	17.0			20.9	20.9	22.0		
T <sub>1</sub>		16.3	17.9	20.8			17.9	23.7	22.7		
T <sub>2</sub>		19.0	14.1	13.0			24.0	15.8	16.9		
				(±2.00)					(±3.61)		
R <sub>0</sub>	15.7	15.8	15.5	16.5	15.9	15.4	23.3	17.3	21.6	19.4	3.5
R <sub>1</sub>	11.8	19.1	15.0	14.4	15.1	14.5	11.5	23.1	24.0	18.3	3.2
R <sub>2</sub>	10.1	14.3	16.7	19.9	15.2	14.0	28.1	20.2	16.0	19.5	4.3
Mean	12.6	16.4	15.7	16.9	15.4	14.6	20.9	20.2	20.6	19.1	
		(±1.15)					(±2.09)				
Effect of Spraying					(±2.38) <sup>(1)</sup>	2.0	4.5	4.5	3.7		

(1) Standard error for comparisons between main effects only.

49/Ca/1.3

Straw: cwt per acre

	Unsprayed				Mean	Sprayed				Mean	Effect of Spraying
	R <sub>0</sub>	R <sub>1</sub>	R <sub>2</sub>			R <sub>0</sub>	R <sub>1</sub>	R <sub>2</sub>			
		(±3.26)			(±1.85)		(±5.10)			(±2.90)	(±3.44) <sup>(1)</sup>
T <sub>0</sub>	32.2	35.4	38.3		35.3	39.9	32.9	40.6	37.8	2.5	
T <sub>1</sub>	37.8	33.0	35.4		35.4	38.9	42.5	39.4	40.3	4.9	
T <sub>2</sub>	29.8	31.1	34.4		31.8	25.3	29.5	31.2	28.7	-3.1	
Mean	33.3	33.2	36.0		34.2	34.7	35.0	37.1	35.6		
		(±1.85)					(±2.90)				
	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>		N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>		
		(±3.71)					(±5.80)				
T <sub>0</sub>		32.1	38.5	41.3		39.3	42.5	42.8			
T <sub>1</sub>		33.4	42.1	42.5		34.2	47.4	44.0			
T <sub>2</sub>		39.5	29.6	28.7		37.3	31.1	30.6			
		(±3.71)					(±5.80)			(±2.90)	
R <sub>0</sub>	31.1	32.4	35.6	34.0	33.3	27.3	38.1	33.6	39.8	34.7	1.4
R <sub>1</sub>	26.2	40.4	34.1	32.0	33.2	27.2	22.2	43.4	47.1	35.0	1.8
R <sub>2</sub>	25.1	32.1	40.4	46.4	36.0	23.3	50.5	44.1	30.4	37.1	1.3
Mean	27.5	35.0	36.7	37.5	34.2	25.9	36.9	40.4	39.1	35.6	
		(±2.14)					(±3.35)				
	Effect of Spraying (±3.97) <sup>(1)</sup>					-1.6	1.9	3.7	1.6		

(1) Standard error for comparisons between main effects only.

49/Ca/2.1

## WHEAT

The residual effects of various dungs, of additional straw to dungs, of rotted bracken.

RP - Sawyers II 1949

System of replication: Three 5x5 lattice squares.

Area of each plot: 0.0225 acre.

Treatments: Applied in 1948 to potatoes.

Of the 25 plots in each replicate, 3 received no organic manures, and the remaining 22 were treated with the following organic manures, applied at two rates: rotted bracken (B) and ten dungs: from bullock boxes:- fresh, made with normal and heavy litter (W and X), and stored (12 months under cover) made with normal and heavy litter (R and S); from straw bale yards:- fresh, made with normal and heavy litter (Y and Z), stored (12 months in open) made with normal and heavy litter (A and K) and stored (12 months in open) low ration, and low ration plus sulphate of ammonia to straw (T and V).

Rates of application: The rotted bracken (B) and the fresh normal dung from boxes (W) at 8 and 16 tons per acre, dungs X, Y, Z, R, S, A and K at weights produced by the same quantity of feeding stuffs as 8 and 16 tons of fresh normal dung from boxes, and dungs T and V at the same rates as Z.

49/Ca/2.2

		Actual rates of application		Litter Straw
		Tons per acre		(lb/head/day)
		Level 1	Level 2	
Dungs	W	8.00	16.00	10.6
	X	6.90	13.81	20.3
	Y	8.74	17.49	10.4
	Z	8.21	16.42	20.9
	R	2.65	5.31	9.1
	S	2.74	5.49	18.3
	A	3.04	6.09	9.3
	K	3.66	7.33	17.3
	T and V	3.66	7.33	16.2

Basal Manuring: 2 cwt per acre sulphate of ammonia as top dressing.

Cultivations etc.: Ploughed: Oct 27. Harrowed, seed drilled and harrowed in: Oct 29. Harrowed: Apr 13. Rolled: Apr 14. Sulphate of ammonia applied: Apr 28. Harvested: July 29. Variety: Bersee. Previous crop: Potatoes.

Standard error per plot: Grain, 2.04 cwt per acre or 4.66% (24 a.f.)

Organic Manure	Grain: cwt per acre		Straw: cwt per acre		Mean
	Level of organic 1	Level of organic 2	Level of organic 1	Level of organic 2	
None		(±1.18)	(±0.83)		
Dung:					
Fresh (boxes)	43.4	47.3	53.8	61.9	49.5
Fresh (boxes)	44.4	46.2	57.7	63.5	57.6
Fresh (yards)	45.1	47.2	54.4	60.9	60.6
Fresh (yards)	42.8	45.4	53.7	62.5	58.1
Stored (boxes)	42.0	44.0	53.0	54.9	54.0
Stored (boxes)	40.8	44.7	52.3	57.3	54.8
Stored (yards)	42.9	43.2	51.8	53.2	52.5
Stored (yards)	40.7	45.0	51.7	54.1	52.9
Stored (yards)	43.1	43.4	54.7	55.9	55.3
As above with Sulphate of Ammonia	43.6	43.8	50.8	56.4	53.6
Rotted bracken	43.1	46.5	55.8	64.4	60.1
Mean	42.9	45.1	53.6	58.6	55.3
Standard error (1): ±0.68					

49/Ca/2.3

49/Ga/3

WHEAT

Wireworm Experiment (1)

The residual effects of various insecticides, and their methods of application.

RW - Little Hoos 1949

System of replication: 3 randomized blocks of 9 plots each.

Area of each plot: 0.0289 acre.

Treatments - applied 1948.

None

D.D. injected 400 lb per acre

Ethylene Dibromide 4.1% solution, injected 15 gallons per acre

D.D.T. dust combine drilled  $\frac{3}{4}$  cwt per acre

Gammexane; broadcast 2 cwt per acre, combine drilled  $\frac{3}{4}$  cwt per acre, or applied as seed dusting.

Basal manuring:  $2\frac{1}{2}$  cwt. per acre sulphate of ammonia as top dressing, 1 cwt per acre superphosphate.

Cultivations, etc.: Floughed: Sept 27-29. Springtined: Oct 22. Harrowed: Oct 28. Seed drilled with superphosphate, harrowed in: Oct 30. Ring rolled: Apr 19. Sulphate of ammonia applied: Apr 26. Harvested: July 28. Variety: Bercse. Previous crop: Wheat.

Standard errors per plot:

Grain, 2.30 cwt per acre or 7.19% (18 d.f.)

Straw, 2.66 cwt per acre or 7.23% (18 d.f.)

	Un-treated	DD In-jected	Ethylene Dibromide Injected	DDT Dust Drilled	Broad-cast	Gammexane Drilled	Dusted seed	Mean
Grain: cwt per acre								
Mean Yield ( $\pm 1.33$ )	28.4 <sup>(1)</sup>	31.8	34.1	36.4	39.6	37.3	24.2	32.1
Increase ( $\pm 1.54$ )		3.4	5.7	8.0	11.2	8.9	-4.2	
Straw: cwt per acre								
Mean Yield ( $\pm 1.54$ )	33.5 <sup>(2)</sup>	35.8	37.4	41.5	46.1	42.2	28.5	36.9
Increase ( $\pm 1.77$ )		2.3	3.9	8.0	12.6	8.7	-5.0	

Standard errors (1)  $\pm 0.77$   
 (2)  $\pm 0.89$



49/Ca/4.1

## WHEAT

### Wireworm Experiment (2)

The direct and residual effects of treatment of seed with Gammexane, and of the residual effects of three strengths of Gammexane dust.

RW - Little Hoos 1949

System of replication: 3 incomplete randomized blocks of 6 plots each.

Area of each plot: 0.0289 acre.

#### Treatments:

1949: None

Seed dusted with Gammexane dressing.

1948: None

Seed dusted with Gammexane dressing.

Gammexane dust,  $\frac{1}{4}$ ,  $\frac{1}{2}$ , and 1 cwt per acre, combine drilled with seed (filler added where necessary to make total dressing of 1 cwt per acre).

Basal Manuring:  $2\frac{1}{2}$  cwt per acre sulphate of ammonia as top dressing, 1 cwt per acre superphosphate.

#### Cultivations etc.:

Ploughed: Sept 27-29. Springtined: Oct 22. Harrowed: Oct 28.

Seed drilled with superphosphate, harrowed in: Oct 30.

Ring rolled: Apr 19. Sulphate of ammonia applied: Apr 26.

Harvested: July 28. Variety: Bersee.

Previous crop: Wheat.

#### Standard errors per plot:

Grain, 1.85 cwt per acre or 6.37% (9 d.f.)

Straw, 2.22 cwt per acre or 6.72% (9 d.f.)

Mean Yields: cwt per acre

	Dusted seed		Untreated	Dusted seed		Gammaxane dust per acre		Mean
	Untreated	Dusted seed		Untreated	Dusted seed	$\frac{1}{4}$ cwt	$\frac{1}{2}$ cwt	
1948								
1949	Untreated	Dusted seed	Untreated	Dusted seed	Untreated	Untreated		
	27.1	28.6	( $\pm 1.07$ ) 23.8	25.3	32.5	( $\pm 1.37$ ) 35.6	36.5	
Mean ( $\pm 0.927$ )		26.2				34.9		29.1
				Straw				
					30.7	( $\pm 1.64$ ) 38.2	40.5	
Mean ( $\pm 1.11$ )	30.0	32.6	( $\pm 1.28$ ) 28.4		36.6	38.4		33.1

49/Cb/1.1

### SPRING SOWN CEREAL EXPERIMENT

Comparison of barley, oats and two varieties of wheat, and of the effects on them of four levels of sulphate of ammonia, of superphosphate, and of muriate of potash.

RV - Fosters, 1949

System of replication: 4 randomized blocks of 4 plots each, each plot being split into 4, certain first order interactions of artificials being confounded with whole plots.

Area of each sub-plot: 0.0197 acre.

#### Treatments:

Whole plots: Crops:- Oats (S.84), wheat (Atle and Bersee), and barley (Plumage Archer).

Sub-plots: Sulphate of ammonia: None, 0.3, 0.6, 0.9, cwt N per acre.  
Superphosphate: None, 0.6 cwt.  $P_2O_5$  per acre.  
Muriate of potash: None, 0.6 cwt  $K_2O$  per acre.

Basal Manuring: None.

Cultivations, etc.: Ploughed: during Dec. Springtime harrowed: Feb 23.  
Artificials applied: Mar 5. Harrowed, seed drilled and harrowed in: Mar 14. Ring rolled: Apr 19. "Agroxone" applied to kill off weeds: June 1. Harvested: Aug 9. Previous crop: Barley.

#### Standard errors: (grain):

per whole plot, 1.68 cwt per acre or 8.0% (6 d.f.)  
per sub-plot, 1.60 cwt per acre or 7.6% (24 d.f.).

49/Cb/1.2

	Grain: cwt per acre			Straw: cwt per acre			
	Oats	Wheat (Atlc)	Wheat (Bersce)	Oats	Wheat (Atlc)	Wheat (Bersce)	Barley
Mean	17.2	20.2 ( $\pm 0.84$ )	23.2	30.2	31.0	29.0	30.6
Sulphate of ammonia		(a) and (b)					
None	14.0	18.5	20.4	24.0	25.8	23.8	24.4
0.3 cwt N per acre	17.8	21.5	24.6	29.9	32.1	30.0	30.1
0.6 cwt N per acre	17.8	21.3	23.0	31.4	33.1	29.7	33.6
0.9 cwt N per acre	19.1	19.7	24.6	35.6	32.8	32.3	34.1
Superphosphate		( $\pm 0.93$ )					
Absent	16.3	20.0	24.2	29.6	30.4	29.5	30.4
Present	18.0	20.4	22.1	30.9	31.5	28.4	30.7
Response	1.7	0.4	-2.1	1.3	1.1	-1.1	0.3
Muriate of Potash		( $\pm 0.93$ )*					
Absent	17.2	20.1	23.0	30.5	30.9	29.1	30.3
Present	17.1	20.4	23.3	30.0	31.1	28.8	30.8
Response	-0.1	0.3	0.3	-0.5	0.2	-0.3	0.5

Standard errors: (a)  $\pm 0.80$  for vertical comparisons only  
 (b)  $\pm 1.09$  for all other comparisons

\* Standard error for use in all comparisons other than vertical.

SPRING BEANS

49/Cc/1.1

The effects of methods of placement of a compound fertilizer at two rates of application.

RE - Long Hoos V 1949

System of replication: 4 randomized blocks of 8 plots each, a high order interaction being confounded with block differences.

Area of each plot: 0.0173 acre. Area harvested: 0.0154 acre.

Treatments:

Levels of fertilizer: None, 3.5, 7.0 cwt per acre granulated compound fertilizer (13.1%  $P_2O_5$  13.4%  $K_2O$ ).  
Methods of placement: Drilled 3" below 2" to side of seed (duplicate plots); broadcast early (after last ploughing); broadcast late (in seed bed and harrowed in); half broadcast early, half drilled beside seed; half broadcast late, half drilled beside seed.

Basal manuring: None.

Cultivations, etc: Ploughed: Sept 24-25. Applied "early" fertilizers, springtined: Feb 26. Applied "late" fertilizers, drilled seed and fertilizer: Mar 19. Harrowed in: Mar 21. Harrowed across the rows: Mar 31.  
Hood: May 11, June 1, 7 and 9. Sprayed: June 24.  
Harvested: Aug 13. Previous crop: Barley.

Standard errors per plot

Yield, dry matter: 1.01 cwt per acre or 13.3% (18 d.f.)  
Plant number: 2.23 tens of thousands per acre or 7.3% (18 d.f.)

49/00/1.2

Compound fertilizer cwt per acre	Drilled	Broad-cast Early	Broad-cast Late	Broad-cast Early and Drilled	Broad-cast Late and Drilled	Mean
Yield, dry matter: cwt per acre						
None	(±0.51)	(±0.76)				7.8(±0.36)
3.5	7.7	7.6	6.6	6.8	8.3	7.5
7.0	8.3	6.0	8.5	7.8	6.8	7.6 (±0.29)
Mean (±0.51)	8.0 <sup>(1)</sup>	6.8	7.6	7.3	7.6	7.6

Standard error (1) ±0.36

Plant number: tons of thousands per acre

None	(±1.11)	(±1.67)				30.2(±0.79)
3.5	31.0	30.8	29.3	28.3	32.8	30.5
7.0	31.2	29.4	32.9	31.6	29.3	30.9 (±0.64)
Mean (±1.11)	31.1 <sup>(2)</sup>	30.1	31.1	29.9	31.1	30.6

Standard error (2) ±0.79

49/Cc/2.1

SPRING BEANS

The comparison of nine varieties of spring beans sown at three rates.

RE - Long Hoos V 1949

System of replication: 3 x 3 x 3 cubic lattice.

Area of each plot: 0.00775 acres.

Treatments:

9 varieties at 3 seed rates as under:

Seed rates: cwt per acre

Varieties	1	2	3
Dutch Pigeon	0.75	1.2	1.6
Dutch Horse	1.6	2.5	3.3
Dutch Broad	2.5	3.9	5.3
Dutch Sheep	1.7	2.7	3.7
Ben 33 Essex Strain	1.4	2.2	3.0
Ben 35 English Green	1.6	2.5	3.4
Ben 39 (Ex. K.I.A.B.)	1.4	2.2	3.0
Tic.	1.0	1.6	2.2
Scotch Mazagan	1.8	2.9	4.0

These three seed rates are the equivalent of about 90, 140 and 190 thousand seeds per acre.

Basal Manuring: 2 cwt nitrate of soda per acre.  
3 cwt super per acre.  
2 cwt muriate of potash per acre.

Cultivations etc.: Ploughed: Sept 24 and again Dec 28.  
Springtime harrowed: Feb 26. Basal fertilizer drilled: Mar 9.  
Beans ploughed in: Mar 10-12. Harrowed in: Mar 21.  
Ring rolled: Mar 31. Hood: May 11, 12, June 1, 3-9.  
Sprayed with nicotine: June 22 and again July 11.  
Harvested: Aug 5. Previous crop: Barley.

Standard error per plot: Grain 1.98 cwt per acre or 19.7%  
(28 d.f.)

Grain: cwt per acre

Variety

Seed Rate	Variety										Mean (±0.33)
	Dutch Pigeon	Dutch Horse	Dutch Broad	Dutch Sheep	Ben 33 Essex Strain	Ben 35 English Green	Ben 39 (Ex NIAB)	Tic	Scotch Mazagon	Mean	
1	4.4	7.7	10.1	7.2	10.7	7.4	9.6	7.5	10.2	8.3	
2	5.3	10.5	10.5	10.3	12.4	11.9	10.2	9.0	12.0	10.2	
3	6.3	12.8	11.6	11.1	14.5	11.1	13.2	11.8	12.8	11.7	
Mean (±0.66)	5.3	10.3	10.7	9.5	12.5	10.1	11.0	9.4	11.7	10.1	

(±1.15)

49/Cc/2.2



49/Ca/1.1

PEAS

The effects of methods of placement of a compound fertilizer at two rates of application.

RP - Long Hoos V 1949

System of replication: 4 randomized blocks of 8 plots each, a high order interaction being confounded with block differences.

Area of each plot: 0.0173 acre. Area harvested: 0.0154 acre.

Treatments:

Levels of fertilizer: None, 3.5, 7.0 cwt per acre granulated compound fertilizer (13.1%  $P_{2}O_{5}$ , 13.4%  $K_{2}O$ ).

Methods of placement: Drilled 3" below 2" to side of seed (duplicate plots), broadcast early (after last ploughing), broadcast late (in seed bed and harrowed in), half broadcast early, half drilled beside seed, half broadcast late, half drilled beside seed.

Basal manuring: None.

Cultivations, etc: Ploughed: Sept 24-25. Applied "early" fertilizers, springtined: Feb 26. Applied "late" fertilizers drilled seed and fertilizer: Mar 19. Harrowed in: Mar 21. Harrowed across the rows: Mar 31. Hoed: May 11, 30, June 3, 4 and 7. Harvested: July 26. Variety: Harrison's Glory. Previous crop: Barley.

Standard errors per plot.

Yield, dry matter: 1.60 cwt per acre or 10.9% (18 d.f.)

Plant number: 1.28 tons of thousands per acre or 5.6% (18 d.f.)

49/Ca/1.2

Compound fertilizer: cwt per acre	Drilled	Broad-cast early	Broad-cast late	Broad-cast early and Drilled	Broad-cast late and Drilled	Mean
-----------------------------------	---------	------------------	-----------------	------------------------------	-----------------------------	------

Yield, dry matter: cwt per acre

None	(±0.80)	(±1.20)				14.3 (±0.57)
3.5	16.4	11.5	13.6	16.1	15.7	15.0 (±0.46)
7.0	15.7	13.6	14.5	14.3	15.6	14.9
Mean (±0.80)	16.0 <sup>(1)</sup>	12.6	14.1	15.2	15.7	14.8

Standard error (1) ±0.57

Plant number: tens of thousands per acre

None	(±0.64)	(±0.96)				22.8 (±0.45)
3.5	22.9	21.9	23.0	23.7	23.3	23.0 (±0.37)
7.0	23.0	22.0	21.6	23.7	24.7	23.0
Mean (±0.64)	23.0 <sup>(2)</sup>	22.0	22.3	23.7	24.0	23.0

Standard error (2) ±0.45

49/Ce/1.1

## POTATOES

The effects of three methods of applying dung at three levels, of sulphate of ammonia, of superphosphate and of muriate of potash.

R.P. - Sawyers III 1949

System of replication: 4 randomized blocks of 12 plots each, plots being split into 2 for NPK, certain high order interactions being confounded with block differences.

Area of each sub plot: 0.021 acres. Area harvested 0.0175 acres.

### Treatments:

#### Whole plots.

Dung: None, 5, 10 or 15 cwt FYM per acre.  
Method of application: Ploughed in in winter (W), ploughed in in spring (S), or placed in the bouts (B).

#### Sub-plots.

Sulphate of ammonia: None, 0.6 cwt N per acre.  
Superphosphate: None, 0.6 cwt P<sub>2</sub>O<sub>5</sub> per acre.  
Muriate of potash: None, 1.0 cwt K<sub>2</sub>O per acre.

Basal Manuring: None

Cultivations etc.: Ploughed: Sept 14-15. Dung applied to "W" plots: Dec 20. Ploughed all plots: Dec 20-22. Dung applied to "S" plots: Mar 22-23. Ploughed all plots: Mar 22-24. Bouted: Apr 19. Dung applied to "B" plots: Apr 20. Artificials applied planted and covered in: Apr 21-22. Rolled down ridges: Apr 22. Chain harrowed twice: May 18. Hoed: July 1-2. Earthed up: July 13. Sprayed to kill off haulm: Sept 16. Lifted: Sept 23-24. Variety: Majestic Scotch A. Previous crop: Wheat.

Standard errors per plot: Total tubers.

Whole plot: 0.547 tons per acre or 8.64%

Sub-plot: 0.499 tons per acre or 7.88%

49/CA/1.2

Total tubers: tons per acre

Dung: tons per acre

	0	5	10	15	Mean
Method of application		(±0.273)			(±0.158)
Ploughed in, in winter		5.86	6.63	6.85	6.44
" " " " spring		6.43	6.55	7.18	6.72
Placed in bouts		6.04	6.54	7.33	6.64
Sulphate of ammonia		(±0.188)*			(±0.072)
None	5.20	5.82	6.30	6.94	6.06
0.6 cwt per acre N	5.80	6.39	6.85	7.30	6.58
Response to N (±0.204)	0.60	0.57	0.55	0.36	0.52(1)
Superphosphate		(±0.188)*			(±0.072)
None	5.49	6.07	6.54	7.09	6.30
0.6 cwt per acre P	5.51	6.14	6.61	7.14	6.35
Response to P (±0.204)	0.02	0.07	0.07	0.05	0.05(1)
Muriate of potash		(±0.188)*			(±0.072)
None	5.01	5.78	6.37	7.04	6.05
1.0 cwt per acre K	5.98	6.43	6.78	7.20	6.60
Response to K (±0.204)	0.97	0.65	0.41	0.16	0.55(1)
Mean (±0.158)	5.50	6.11	6.57	7.12	6.32

Standard error (1)±0.102

\* Standard error for comparisons other than vertical

49/0e/1.3

Total tubers: tons per acre

	Method of application of dung		
	Ploughed in in winter	Ploughed in in spring	Placed in bouts
Sulphate of ammonia		$\pm 0.188^*$	
None	6.27	6.38	6.42
0.6 cwt per acre N	6.62	7.05	6.86
Response to N ( $\pm 0.204$ )	0.35	0.67	0.44
Superphosphate		$\pm 0.188^*$	
None	6.53	6.83	6.35
0.6 cwt per acre P	6.36	6.61	6.93
Response to P ( $\pm 0.204$ )	-0.17	-0.22	0.58
Muriate of potash		$\pm 0.188^*$	
None	6.20	6.53	6.46
1.0 cwt per acre K	6.69	6.91	6.81
Response to K ( $\pm 0.204$ )	0.49	0.38	0.35

\*Standard error for comparisons other than vertical

Responses to treatments ( $\pm 0.188$ )\*\*

Response to:	Sulphate of ammonia		Superphosphate		Muriate of potash	
	Abs.	Pres.	Abs.	Pres.	Abs.	Pres.
Sulphate of ammonia	-	-	0.56	0.48	0.20	0.84
Superphosphate	0.09	0.01	-	-	-0.37	0.47
Muriate of potash	0.23	0.87	0.13	0.97	-	-

\*\* Standard error of horizontal difference between two responses  $\pm 0.316$ .

49/Ce/2.1

## POTATOES

The effects of four times of planting, of dung, sulphate of ammonia, superphosphate and muriate of potash.

RP - Sawyers III 1949

System of replication: 4 randomized blocks of 16 plots each, certain high order interactions being confounded with block differences.

Area of each plot: 0.0146 acre.

### Treatments:

Time of planting: March 29th, April 20th, May 10th, May 30th.

Dung: None, 15 tons F.Y.M. per acre

Sulphate of ammonia: None, 0.6 cwt N per acre

Superphosphate: None, 0.6 cwt  $P_2O_5$  per acre

Muriate of potash: None, 1.0 cwt  $K_2O$  per acre.

Cultivations: Whole experiment; Ploughed: Sept 14-15 and again Dec 20-22.

Dung applied: Mar 22-23. Ploughed across: Mar 23-24. Sprayed with 20% B.O.V. to kill off haulm: Sept 16. Lifted: Sept 26-27.

1st planting; Bouted, artificials applied, planted, and covered in: Mar 28-29. Rolled ridges: Apr 2. Re-ridged: May 9. Harrowed twice: May 19. Grubbed: June 2. Hoed and weeded: June 14-16. Grubbed and earthed up: June 28. Hoed: July 4.

2nd planting; Bouted and artificials applied: Apr 19. Planted and covered in: Apr 20. Rolled ridges: Apr 21. Harrowed twice: May 19. Grubbed: June 29. Hoed: July 4. Earthed up: July 13.

3rd planting; Thistles cut: Apr 27. Bouted, artificials applied: May 9. Planted and covered in: May 10. Rolled ridges: May 12. Chain harrowed twice: May 18. Rolled ridges and grubbed: June 7. Grubbed: June 29. Hoed: July 5. Earthed up: July 13.

4th planting; Thistles cut: Apr 27. Bouted, artificials applied, planted and covered in: May 30. Chain harrowed: June 14. Grubbed: June 29. Hoed: July 6. Variety: Majestic. Previous crop: Wheat.

Standard error per plot: Total tubers, 0.572 tons per acre or 11.5% (35 d.f.)

49/Ce/2.2

Total tubers: tons per acre

	Time of Planting				Mean
	March 29th	April 20th	May 10th	May 30th	
Mean ( $\pm 0.143$ )	5.38	5.02	5.07	4.48	4.99
No Dung ( $\pm 0.202$ )	4.43	3.96	4.19	3.47	4.01
Dung	6.33	6.07	5.96	5.50	5.97
Response to Dung ( $\pm 0.286$ )	1.90	2.11	1.77	2.03	1.96 <sup>(1)</sup>
No Nitrogen ( $\pm 0.202$ )	4.78	4.70	4.88	4.28	4.66
Nitrogen	5.98	5.34	5.26	4.68	5.32
Response to Nitrogen ( $\pm 0.286$ )	1.20	0.64	0.38	0.40	0.66 <sup>(1)</sup>
No Superphosphate ( $\pm 0.202$ )	5.13	4.99	4.88	4.30	4.82
Superphosphate	5.63	5.05	5.26	4.66	5.15
Response to Superphosphate ( $\pm 0.286$ )	0.50	0.06	0.38	0.36	0.33 <sup>(1)</sup>
No Potash ( $\pm 0.202$ )	4.99	4.79	4.86	4.31	4.74
Potash	5.77	5.25	5.29	4.65	5.24
Response to Potash ( $\pm 0.286$ )	0.78	0.46	0.43	0.34	0.50 <sup>(1)</sup>
Standard Error (1) $\pm 0.143$					

Responses to Treatments ( $\pm 0.202$ )

Response to	Dung		Sulphate of Ammonia		Super-phosphate		Muriate of Potash	
	Abs.	Pres.	Abs.	Pres.	Abs.	Pres.	Abs.	Pres.
Dung	-	-	1.93	1.98	1.88	2.03	2.32	1.59
Sulphate of ammonia	0.64	0.68	-	-	0.55	0.77	0.62	0.70
Superphosphate	0.25	0.40	0.22	0.44	-	-	0.42	0.24
Muriate of Potash	0.87	0.14	0.47	0.54	0.59	0.42	-	-

49/Co/2.3

Percentage Ware

	Time of Planting				Mean
	March 29th	April 20th	May 10th	May 30th	
Mean ( $\pm 0.165$ )	96.89	96.49	96.54	97.90	96.96
No Dung ( $\pm 0.233$ )	96.38	95.60	95.68	97.52	96.29
Dung	97.41	97.39	97.41	98.28	97.62
Response to Dung ( $\pm 0.330$ )	1.03	1.79	1.73	0.76	1.33 <sup>(1)</sup>
No Nitrogen ( $\pm 0.233$ )	96.56	96.53	96.51	97.78	96.84
Nitrogen	97.23	96.46	96.58	98.02	97.07
Response to Nitrogen ( $\pm 0.330$ )	0.67	-0.07	0.07	0.24	0.23 <sup>(1)</sup>
No Superphosphate ( $\pm 0.233$ )	97.54	97.36	97.54	98.10	97.63
Superphosphate	96.25	95.63	95.55	97.70	96.28
Response to Superphosphate ( $\pm 0.330$ )	-1.29	-1.73	-1.99	-0.40	-1.35 <sup>(1)</sup>
No Potash ( $\pm 0.233$ )	96.76	96.16	96.21	97.66	96.70
Potash	97.02	96.83	96.88	98.14	97.22
Response to Potash ( $\pm 0.330$ )	0.26	0.67	0.67	0.48	0.52 <sup>(1)</sup>
Standard error (1) ( $\pm 0.165$ )					

Responses to Treatments ( $\pm 0.233$ )

Response to	Dung		Sulphate of Ammonia		Super-phosphate		Muriate of Potash	
	Abs.	Pres.	Abs.	Pres.	Abs.	Pres.	Abs.	Pres.
Dung	-	-	1.10	1.56	1.06	1.60	1.66	0.99
Sulphate of Ammonia	0.52	-0.07	-	-	0.04	0.41	0.28	0.18
Superphosphate	-1.62	-1.08	-1.54	-1.17	-	-	-1.39	-1.32
Muriate of Potash	0.85	0.18	0.56	0.47	0.48	0.55	-	-



49/Ce/3.1

## POTATOES

The effects of four methods of planting and of three levels of a compound fertilizer.

RP - Great Knott III 1949

System of replication: 4 randomized blocks of 12 plots each.

Area of each plot: 0.014 acres.

Area Harvested: 0.007 acres.

### Treatments:

Methods of planting: Broadcast fertilizer on the flat, ridge, plant in ridges by planting machine (A); broadcast fertilizer on the flat, plant on flat by planting machine (B); ridge, broadcast fertilizer over ridge, plant in furrow by hand (standard method) (C); plant seed and fertilizer with combined seed/fertilizer planting machine (D).

Fertilizer: 0, 8, 16 cwt per acre granular fertilizer containing 7% N, 7% P<sub>2</sub>O<sub>5</sub>, 10½% K<sub>2</sub>O.

Basal Manuring: None.

Cultivations, etc.: Ploughed: Oct 4-7 and Jan 13-15.

Cultivated: Mar 30-31. Harrowed and ring rolled: Apr 1-2.

Harrowed: Apr 20. Applied artificials to A and B, ridged

A and C plots: Apr 29. Applied artificials to C, planted

A, B and C plots: Apr 30. Planted and applied artificials

to D plots: May 2. Re-ridged: May 5. Grubbed: June 3,

7 and 29. Hood: July 5-6. Earthed up: July 14.

Sprayed with 20% B.O.V. solution to kill off haulm: Sept 23.

Lifted: Sept 29. Variety: Majestic. Previous crop: Wheat.

Standard errors per plot:

Total tubers: 0.868 tons per acre or 16.4% {33 d.f.}

Percentage ware: 1.12 {33 d.f.}

49/Ce/3.2

Granular fertilizer cwt per acre	Method of Planting				Mean
	A	B	C*	D	
Total tubers: tons per acre					
			(±0.434)		(±0.217)
0	5.10	5.64	4.23	4.79	4.94
8	5.53	6.05	4.33	6.13	5.51
16	5.81	5.88	5.35	4.72	5.44
Mean (±0.250)	5.48	5.86	4.64	5.21	5.30
Percentage ware					
			(±0.56)		(±0.28)
0	94.2	94.1	94.7	94.5	94.4
8	95.0	95.4	96.4	96.4	95.8
16	94.8	95.8	97.1	97.2	96.2
Mean (±0.32)	94.6	95.1	96.1	96.0	95.5

- A Broadcast fertilizer on the flat, ridge, plant in ridges by planting machines.
- B Broadcast fertilizer on the flat, plant on flat by planting machine.
- C Ridge, broadcast fertilizer over ridges, plant in furrows by hand (present standard method).
- D Plant seed and fertilizer with combined seed/fertilizer planting machine.

\* About half of each C plot suffered mechanical damage during cultivation. No correction has been made for this.

49/Cf/1.1

## LINSEED

The effect of sulphate of ammonia and of rates and methods of application of two types of a PK compound fertilizer.

R/JL Great Knott I, 1949

System of replication: 2 replicates of 2 randomized blocks of 8 plots each, the third order interaction being confounded with block differences. To each block were added 4 plots without compound fertilizer, 2 of these receiving sulphate of ammonia and 2 being untreated.

Area of each plot: 0.0212 acre.

Treatments: All combinations of  
Sulphate of ammonia: none, 0.3 cwt N per acre.  
PK compound fertilizer: Granular (13%  $P_2O_5$ , 13%  $K_2O$ ) or equivalent powder of superphosphate and muriate of potash.  
Rate 1,  $P_2O_5$  and  $K_2O$  each 0.3 cwt per acre or Rate 2,  $P_2O_5$  and  $K_2O$  each 0.6 cwt per acre.  
Broadcast or drilled.

Basal manuring: None.

Cultivations, etc.: Ploughed: Oct. Reploughed: Jan 14.  
Springtined: Mar 2. Thistle barred: Mar 28. Seed and fertilizer drilled: Apr 11. Sulphate of ammonia and broadcast fertilizers applied, harrowed and rolled in: Apr 12. Sprayed with "Agroxone" to kill weeds: June 2.  
Harvested: Aug 11.

Standard error per plot: Grain, 0.615 cwt per acre or 15.0%

Responses to Treatments

Response to	Mean	Sulphate of ammonia Abs.	Pres.	Granular Powder	PK mixture Rate 1	Rate 2	Broad-cast	Drilled
	(±0.218)	Grain: mean yield 4.11 cwt per acre (±0.308)						
Sulphate of ammonia Powder-Granular Rate 2-Drilled	0.26 0.07 -0.31 -0.66	-	0.14	0.19	0.33	-0.02 0.29	0.25 -0.02 0.23	0.27 0.16 -0.85
		Straw: mean yield 6.84 cwt per acre						
Sulphate of ammonia Powder-Granular Rate 2-Drilled	0.03 0.46 -0.85 -1.68	-	0.68	-0.19	0.25	0.02 0.71	-0.01 0.63 0.48	0.07 0.29 -2.18

Plots without PK mixture

Sulphate of ammonia Abs.	Pres.	Response	Mean
Grain: cwt per acre (±0.308)			
4.24	4.39	0.15	4.31
Straw: cwt per acre			
8.31	7.64	-0.67	7.98

49/0r/1.2