ROTHAMSTED RESEARCH

Yields of the Field Experiments 1966

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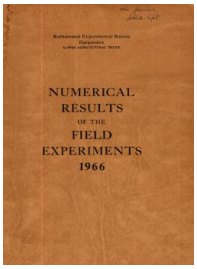

Rotation Experiments

Rothamsted Research

Rothamsted Research (1967) *Rotation Experiments ;* Yields Of The Field Experiments 1966, pp 39 - 119 **- DOI: https://doi.org/10.23637/ERADOC-1-158**

66/B/1.1

LEY AND ARABLE ROTATIONS

(HLA and FLA)

Highfield and Fosters Field 1966, the 18th year.

For details of treatments, rotations etc., see 'Details' and 'Results' 63/B/1.1, 64/B/1.1, 65/B/1.1.

Winter wheat: Sulphate of ammonia is now used for the autumn N test. The basal PK is now applied at 0.45 cwt P2O5 and 0.90 cwt K2O ploughed in and 0.45 cwt P2O5 and 0.90 cwt K2O broadcast before sowing (all as (0:14:28)).

All-grass leys and clover-grass leys (2nd and 3rd years), and all-grass and clover-grass permanent and reseeded grass plots: Fertiliser is now applied to these plots in spring before cutting as follows:-

All-grass sub plots and all-grass leys: 0.6 cwt N and 0.6 cwt K2O as (16:0:16).

Clover-grass sub plots and clover-grass leys: 0.6 cwt K2O as muriate of potash.

Potatoes: Fertilisers are now as follows:-

Sub-plots with dung: 1.2 cwt N, 1.8 cwt P2O5, 1.8 cwt K2O broadcast before ridging as 15:15:15 plus 0:20:20.

Sub-plots without dung: 1.5 cwt N, 2.5 cwt P2O5, 2.5 cwt K2O broadcast before ridging as 15:15:15 plus 0:20:20.

Former reseeded grass plots ploughed up for wheat 1963, 1964, 1965: These are now put through the arable sequence of treatment crops and were sown with ryegrass in spring 1966 on the plots which carried the barley test crop in 1965. These hay plots receive the same manurial treatment as those in the permanent arable sequence (but in 1966 the former were sown in spring, the latter in autumn).

Reseeded grass plots: Further ploughing up of these plots is discontinued.

ERRATUM to 'Results' 65/B/1.1. The first line (excluding headings) should read 'Highfield and Fosters Field 1965, the 17th year'.

HIGHFIELD

1st year Treatment Crops:

All-grass ley: Ploughed: Sept 27, 1965. Basal PK compound applied: Mar 22, 1966. 'Nitro-Chalk' applied, seeds sown at 30 lb: Mar 23. Sprayed with dicamba at 0.08 lb and MCPA at

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1.13 lb in 40 gals: June 1. Cut four times: July 1, Aug 8, Sept 13, Oct 13. NK compound applied after first three cuts.

Clover-grass ley: Ploughed: Sept 27, 1965. Basal PK compound applied: Mar 22, 1966. Seeds sown at 33 lb: Mar 23. Sprayed with MCPB/MCPA (Tropotox Plus at 5 pints in 40 gals): June 1. Cut three times: July 13, Sept 2, Oct 13. Muriate of potash applied after first two cuts.

Lucerne: Ploughed: Sept 27, 1965. Basal PK compound applied: Mar 22, 1966. Seed drilled at 20 lb: Apr 29. Cut three times: July 13, Aug 31, Nov 8.

Hay: Ploughed: Sept 27, 1965. Basal PK compound applied: Sept 29. Seeds sown at 38.5 lb: Oct 5. 'Nitro-Chalk' applied: Mar 22, 1966. Cut twice: June 1 and July 1. NK compound applied after first cut.

Hay (after reseeded grass till 1962): Ploughed: Sept 27, 1965. Basal NPK compound applied: Mar 17, 1966. Seeds sown at 40 lb: Mar 18. Sprayed with dicamba at 0.08 lb and MCPA at 1.13 lb in 40 gals: June 1. Cut twice: June 29, July 22. NK compound applied after first cut. Variety: S22 Italian ryegrass.

2nd year Treatment Crops:

All-grass ley: Basal PK compound applied: Dec 21, 1965. NK compound applied: Mar 22, 1966. Cut five times: May 19, June 28, Aug 8, Sept 13, Oct 13. NK compound applied after first four cuts.

Clover-grass ley: Basal PK compound applied: Dec 21, 1965. Muriate of potash applied: Mar 22, 1966. Cut five times: May 19, June 28, Aug 8, Sept 13, Oct 13. Muriate of potash applied after first four cuts.

Lucerne: Basal PK compound applied: Dec 21, 1965. Sprayed with paraquat at 2 lb ion in 40 gals: Mar 1, 1966. Cut four times: June 1, July 7, Sept 1, Nov 8.

Sugar beet: Ploughed: Aug 12, 1965. Ploughed second time: Oct 27. Muriate of potash applied: Feb 8, 1966. Basal NPK compound applied: Mar 22. 'Nitro-Chalk' applied: Mar 28. Seed drilled at 10 lb: Mar 30. Singled: May 23. Sprayed with demeton-s-methyl (Metasystox at 12 fluid oz in 37 gals): June 14. Lifted: Nov 17.

3rd year Treatment Crops:

All-grass ley: Basal PK compound applied: Dec 21, 1965. NK compound applied: Mar 22, 1966. Cut four times: May 19, June 28, Aug 8, Sept 13. NK compound applied after first three cuts.

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Clover-grass ley: Basal PK compound applied: Dec 2, 1965. Muriate of potash applied: Mar 22, 1966. Cut four times: May 19, June 28, Aug 8, Sept 13. Muriate of potash applied after first three cuts.
Lucerne: Basal PK compound applied: Dec 21, 1965. Sprayed with paraquat at 2 lb ion in 40 gals: Mar 1, 1966. Cut three times: June 1, July 7, Sept 1.
Oats: Ploughed: Jan 7, 1966. Seed combine drilled at 160 lb: Mar 7. 'Nitro-Chalk' applied: Mar 9. Sprayed with mecoprop at 2.25 lb a.e. in 40 gals: May 10. Combine harvested: Sept 3.

1st Test Crop, Wheat:-
Basal PK compound applied: Sept 13, 1965. Sulphate of ammonia applied: Sept 14. Ploughed: Sept 16. Basal PK compound applied: Oct 26. Seed drilled at 170 lb: Nov 2. 'Nitro-Chalk' applied: Apr 25, 1966. Sprayed with mecoprop at 2.25 lb a.e. in 40 gals: Apr 29. Combine harvested: Aug 23.

2nd Test Crop, Potatoes:-
Dung applied, plots ploughed: Oct 1, 1965. NPK fertilisers applied: Mar 29 - Apr 1, 1966. Rotary cultivated, potatoes machine planted: Apr 4. Sprayed with linuron at 1 lb and paraquat at 0.75 lb in 37 gals: May 16. Rotary ridged: June 17. Sprayed three times with mancozeb at 1.2 lb in 37 gals: June 30, July 22, Aug 5. Sprayed with undiluted BOV at 15 gals: Sept 16. Haulm destroyed mechanically: Sept 21. Lifted: Sept 27.

3rd Test Crop, Barley:-
Ground chalk applied, plots ploughed: Oct 27, 1965. Seed combine drilled at 140 lb: Mar 7, 1966. 'Nitro-Chalk' applied: Mar 9. Sprayed with mecoprop at 2.25 lb a.e. in 40 gals: May 10. Combine harvested: Aug 20.
Permanent grasses: 16th, 17th and 18th experimental years permanent (old) grass, all blocks, 16th, 17th and 18th years reseeded grass, blocks 1, 4, 6, 7, 9 and 12. Ground chalk applied to blocks 2 and 3, basal PK compound applied: Dec 20, 1965. 'Nitro-Chalk' applied to 'all grass' half plots, muriate of potash to 'clover-grass' half plots: Mar 22, 1966. Cut five times: May 19, June 28, Aug 8, Sept 13. Muriate of potash and NK compound applied to appropriate half plots after each cut.

FOSTERS

1st year Treatment Crop:-
All-grass ley: Ploughed: Sept 27, 1965. Basal PK compound applied: Mar 22, 1966. 'Nitro-Chalk' applied, seeds sown at 30 lb:

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Mar 23. Sprayed with dicamba at 0.08 lb and MCPA at 1.13 lb in 40 gals: June 1. Cut four times: July 1, Aug 8, Sept 12, Oct 13. NK compound applied after first three cuts.

Clover-grass ley: Ploughed: Sept 27, 1965. Basal PK compound applied: Mar 22, 1966. Seed sown at 33 lb: Mar 23. Sprayed with MCPB/MCPA (Tropotox Plus at 5 pints in 40 gals): June 1. Cut three times: July 13, Sept 2, Oct 13. Muriate of potash applied after first two cuts.

Lucerne: Ploughed: Sept 27, 1965. Basal PK compound applied: Mar 22, 1966. Seed sown at 20 lb: Apr 29. Cut three times: July 13, Aug 31, Nov 8.

Hay: Ploughed: Sept 27, 1965. Basal PK compound applied: Sept 29. Seed sown at 38.5 lb: Oct 5. 'Nitro-Chalk' applied: Mar 22, 1966. Cut twice: June 1, July 1. NK compound applied after first cut.

Hay (after reseeded grass till 1962): Ploughed: Sept 27, 1965. Basal NPK compound applied: Mar 17, 1966. Seed drilled at 40 lb: Mar 18. Sprayed with dicamba at 0.08 lb and MCPA at 1.13 lb in 40 gals: June 1. Cut twice: June 29, July 22. NK compound applied after first cut. Variety: S22 Italian Ryegrass.

2nd year Treatment Crops:-

All-grass ley: Basal PK compound applied: Dec 21, 1965. NK compound applied: Mar 22, 1966. Cut five times: May 18, June 28, Aug 8, Sept 12, Oct 13. NK compound applied after first four cuts.

Clover-grass ley: Basal PK compound applied: Dec 21, 1965. Muriate of potash applied: Mar 22, 1966. Cut five times: May 18, June 28, Aug 8, Sept 12, Oct 13. Muriate of potash applied after first four cuts.

Lucerne: Basal PK compound applied: Dec 21, 1965. Sprayed with paraquat at 2 lb ion in 40 gals: Mar 1, 1966. Cut four times: June 1, July 7, Aug 31, Nov 8.

Sugar beet: Ploughed twice: Aug 12 and Oct 27, 1965. Muriate of potash applied: Feb 8, 1966. Basal NPK compound applied: Mar 22. 'Nitro-Chalk' applied: Mar 28. Seed drilled at 10 lb: Mar 30. Singled: May 25. Sprayed with demeton-s-methyl (Metasystox at 12 fluid oz in 37 gals): June 14. Lifted: Nov 17.

3rd year Treatment Crops:-

All-grass leys: Basal PK compound applied: Dec 21, 1965. NK compound applied: Mar 22, 1966. Cut four times: May 18, June 28, Aug 8, Sept 12. NK compound applied after first three cuts.

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Clover-grass ley: Basal PK compound applied: Dec 21, 1965. Muriate of potash applied: Mar 22, 1966. Cut four times: May 18, June 28, Aug 8, Sept 12. Muriate of potash applied after first three cuts.
Lucerne: Basal PK compound applied: Dec 21, 1965. Sprayed with paraquat at 2 lb ion in 40 gals: Mar 1, 1966. Cut three times: June 1, July 7, Sept 1.
Oats: Ploughed: Jan 7, 1966. Seed drilled at 160 lb: May 7. 'Nitro-chalk' applied: May 9. Sprayed with mecoprop at 2.25 lb a.e. in 40 gals: May 10. Combine harvested: Sept 3.

1st Test Crop, Wheat:-
Basal PK compound and sulphate of ammonia applied, plots ploughed: Sept 13, 1965. Basal PK compound applied: Oct 26. Seed drilled at 170 lb: Nov 2. 'Nitro-Chalk' applied: Apr 25, 1966. Sprayed with mecoprop at 2.25 lb a.e. in 40 gals: Apr 29. Combine harvested: Aug 23.

2nd Test Crop, Potatoes:-
Dung applied, plots ploughed: Oct 1, 1965. NPK fertilisers applied: Mar 29 - Apr 1, 1966. Rotary cultivated, potatoes machine planted: Apr 4. Sprayed with linuron at 1 lb and paraquat at 0.75 lb in 37 gals: May 16. Rotary ridged: June 16. Sprayed three times with mancozeb at 1.2 lb in 37 gals: June 30, July 22, Aug 5. Sprayed with undiluted BCV at 15 gals: Sept 16. Haulm destroyed mechanically: Sept 22. Lifted: Sept 26.

3rd Test Crop, Barley:-
Ploughed: Oct 27, 1965. Seed combine drilled at 140 lb: Mar 7, 1966. 'Nitro-Chalk' applied: Mar 9. Sprayed with mecoprop at 2.25 lb a.e. in 40 gals: May 10. Combine harvested: Aug 20.

Permanent grasses:-
16th, 17th and 18th years reseeded grass, blocks 1, 3, 6, 8, 9 and 11. Basal PK compound applied: Dec 21, 1965. NK compound applied to 'all-grass' half plots and muriate of potash to 'clover-grass' half plots: Mar 22, 1966. Cut five times: May 18, June 28, Aug 8, Sept 12, Oct 12. Muriate of potash and NK compound applied to appropriate half plots after first four cuts.

Standard errors per sub plot. Test crops.
Potatoes. Total tubers:

Highfield:	Whole plot:	1.572 or 6.9% (4 d.f.)
	Sub plot:	1.540 or 6.8% (15 d.f.)
Fosters:	Whole plot:	1.014 or 4.9% (4 d.f.)
	Sub plot:	1.536 or 7.4% (15 d.f.)

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SUMMARY OF RESULTS

WHEAT 1ST TEST CROP

1963 - 1965

	Lu	LC	LN	AH	Mean
GRAIN					
HIGHFIELD					
Mean	44.5	46.0	43.9	43.4	44.5
To test crop					
N0	51.2	45.2	36.5	31.9	
N1	42.1	51.7	44.8	44.6	
N2	50.3	45.1	46.2	50.1	
N3	34.3	41.9	48.1	47.2	
T0	46.4	46.9	44.7	41.9	45.0
T1	42.6	45.1	43.1	45.0	43.9
FOSTERS					
Mean.	56.4	53.1	54.0	49.2	53.2
To test crop					
N0	51.4	46.3	49.4	31.9	
N1	59.0	54.4	55.8	50.2	
N2	58.8	57.3	55.9	57.7	
N3	56.3	54.3	54.9	56.9	
T0	56.5	51.8	52.2	47.3	51.9
T1	56.2	54.4	55.8	51.1	54.4

Mean D.M. %: Highfield 82.0
Fosters 80.8

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WHEAT 1ST TEST CROP

1963 - 1965

	Lu	LC	LN	AH	Mean
STRAW					
HIGHFIELD					
Mean	52.4	42.4	38.0	44.2	44.2
To test crop					
N0	48.7	35.4	31.2	27.4	
N1	51.7	43.6	38.1	46.5	
N2	53.5	41.1	44.1	51.8	
N3	55.5	49.5	38.6	51.0	
T0	51.8	40.5	37.6	40.8	42.7
T1	52.9	44.4	38.4	47.6	45.8
FOSTERS					
Mean	52.4	46.4	47.8	37.6	46.1
To test crop					
N0	42.5	36.4	37.6	21.8	
N1	52.2	45.0	44.1	39.5	
N2	55.6	52.9	51.1	43.2	
N3	59.4	51.1	58.6	45.8	
T0	52.4	43.0	46.2	37.4	44.8
T1	52.5	49.7	49.5	37.8	47.4

Mean D.M. %: Highfield 63.3
Fosters 65.3

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POTATOES 2ND TEST CROP. TOTAL TUBERS

1962 - 1964

	Lu	LC	LN	AH	R	Mean
			HIGHFIELD			
			(1) and (2)			(±0.344)
F	22.35	21.57	22.77	21.13	25.76	22.72
D	21.93	22.95	23.83	21.38	24.06	22.83
Mean (±1.112)	22.14	22.26	23.30	21.26	24.91	22.77
			FOSTERS			
			(1) and (2)			(±0.343)
F	21.52	21.07	20.87	19.84	22.11	21.08
D	20.90	19.79	20.58	19.89	21.65	20.56
Mean (±0.717)	21.21	20.43	20.72	19.87	21.88	20.82

Highfield	(1) (±1.238)	For use in horizontal and diagonal comparisons
	(2) (±0.770)	For use in vertical and interaction comparisons
Fosters	(1) (±0.899)	For use in horizontal and diagonal comparisons
	(2) (±0.768)	For use in vertical and interaction comparisons

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POTATOES 2ND TEST CROP. % WARE

1962 - 1964

	Lu	LC	LN	AH	R	Mean
			HIGHFIELD			
F	97.8	97.7	98.0	97.9	98.4	98.0
D	97.7	97.8	97.9	97.6	97.7	97.7
Mean	97.8	97.7	98.0	97.7	98.0	97.8
			FOSTERS			
F	97.9	98.3	97.7	97.5	97.8	97.8
D	98.2	97.7	98.0	97.7	97.7	97.9
Mean	98.1	98.0	97.9	97.6	97.7	97.9

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BARLEY 3RD TEST CROP

GRAIN

1961 - 1963

	Lu	Ley	CG	AH	R	Mean
			HIGHFIELD			
Mean	49.9	53.2	51.1	49.9	52.3	51.3
1966						
N0	43.4	49.5	44.2	45.1	52.8	47.0
N1	50.0	54.8	51.5	48.7	53.7	51.7
N2	52.4	54.2	52.5	52.2	53.1	52.9
N3	54.0	54.5	56.2	53.9	49.6	53.6
1965						
F	50.8	52.4	51.0	49.0	54.0	51.6
D	49.0	54.1	51.2	50.9	50.5	51.1

Excluding AH

1966

1965	N0	N1	N2	N3	Mean
F	47.8	52.4	54.0	54.0	52.0
D	47.1	52.6	52.0	53.2	51.2

Mean D.M. %: 82.3

66/B/1.11

BARLEY 3RD TEST CROP

GRAIN

1961 - 1963

	Lu	Ley	CG	AH	R	Mean
			FOSTERS			
Mean	50.8	53.7	51.9	51.2	54.1	52.4
1966						
N0	42.5	49.9	45.3	43.6	53.6	47.0
N1	50.9	56.9	51.0	-	58.0	-
N2	54.2	55.6	55.1	52.2	53.2	54.1
N3	55.6	52.5	56.4	55.0	51.8	54.3
N4	-	-	-	53.8	-	-
1965						
F	47.9	52.2	50.4	51.3	53.5	51.1
D	53.7	55.3	53.4	51.0	54.8	53.6

Excluding AH

1966

1965	N0	N1	N2	N3	Mean
F	43.8	51.8	54.5	54.0	51.0
D	51.9	56.6	54.5	54.3	54.3

Mean D.M. %: 81.6

66/B/1.12

TREATMENT CROPS ARABLE AND HAY ROTATION

HAY: DRY MATTER (Total of 2 cuts)

After arable crop			After reseeded grass ploughed 1962 - 63		
F	D	Mean	F	D	Mean
HIGHFIELD					
71.6	72.9	72.2	54.0	53.9	54.0
FOSTERS					
75.2	80.5	77.8	46.2	49.9	48.0

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TREATMENT CROPS ARABLE AND HAY ROTATION

HIGHFIELD Mean		FOSTERS Mean
	SUGAR BEET	
	ROOTS	
23.69		20.77
	SUGAR %	
16.2		17.0
	TOTAL SUGAR	
76.7		70.8
	TOPS	
22.12		18.99
	OATS	
	GRAIN	
32.9		50.4

Oats, grain, mean D.M. %: Highfield 81.0
Fosters 79.4

LUCERNE: DRY MATTER

	HIGHFIELD 1964			FOSTERS 1964		
	F	D	Mean	F	D	Mean
1st year (3 cuts)	50.1	49.6	49.8	57.3	60.8	59.0
2nd year (4 cuts)			77.3			81.0
3rd year (3 cuts)			54.3			73.3

ALL-GRASS LEY: DRY MATTER

	HIGHFIELD 1964			FOSTERS 1964		
	F	D	Mean	F	D	Mean
1st year (4 cuts)	79.4	78.7	79.1	67.7	68.9	68.3
2nd year (5 cuts)			115.0			111.2
3rd year (4 cuts)			95.1			99.2

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CLOVER-GRASS LEY: DRY MATTER

	HIGHFIELD 1964			FOSTERS 1964		
	F	D	Mean	F	D	Mean
1st year (3 cuts)	41.5	45.4	43.4	33.6	32.3	33.0
2nd year (5 cuts)			90.0			92.2
3rd year (4 cuts)			78.7			75.2

PERMANENT GRASS: DRY MATTER

	N0	N1	Mean
	HIGHFIELD		
16th exptl year			
Blocks 9 and 12	55.4	105.8	80.6
Blocks 10 and 11	50.6	108.8	79.7
17th exptl year			
Blocks 5 and 8	58.8	104.6	81.7
Blocks 6 and 7	56.6	115.0	85.8
18th exptl year			
Blocks 1 and 4	59.0	110.5	84.7
Blocks 2 and 3	77.7	105.4	91.6

(N0) Clover-grass management
(N1) All-grass management

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RESEEDED GRASS: DRY MATTER

	HIGHFIELD			FOSTERS		
	N0	N1	Mean	N0	N1	Mean
16th exptl year	59.0	113.4	86.2	79.0	112.0	95.5
17th exptl year	59.1	114.7	86.9	76.2	116.8	96.5
18th exptl year	57.4	105.8	81.6	82.7	106.0	94.4

(N0) Clover-grass management
(N1) All-grass management

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REFERENCE PLOTS

ROTHAMSTED (R) GREAT FIELD IV AND HIGHFIELD IX

AND

WOBURN (W) STACKYARD SERIES C, 1966

(RA, RG, WRA and WRF)

For details of previous year's results and for rates of fertilisers, etc., see 'Results' 58/Bc/1, 59/Bc/1, 60/B/3, 61/B/2, 62/B/2, 63/B/2, 64/B/2, 64/B/11 and 65/B/2. For conifer seedbeds and transplants see 63/B/2, 64/B/2 and 65/B/2.

Great Field IV:
Variety of wheat now Champlein and variety of barley Deba Abed on all plots.

Highfield IX:
P is now applied as granular superphosphate on all blocks.

Woburn:
Variety of oats now Maris Quest and variety of barley Maris Badger. Each plot of sugar beet was split for a test of 0 v 2 cwt sulphate of magnesia applied in May (with 2 cwt v 0 applied after lifting to balance the total dressings).

Woburn Forestry Reference Plots:
Bed 1: All plots with N received 4 topdressings of 4.5g.N as 'Nitro-Chalk', i.e. one more topdressing than in previous years. No formalin was applied.
Bed 2: All manured plots received 4 topdressings of 'Nitro-Chalk' (4.5g.N per occasion for seedbeds, 3g.N per occasion for transplants) compared with only 3 topdressings in 1965.

Cultivations, etc.:-
Great Field IV (R):-
Winter wheat: Dug by hand: Oct 6, 1965. P,K,Mg, Ca and S applied, seed drilled: Oct 8. First N dressings applied (excluding additional plots): Mar 7, 1966. Second N dressings applied, all N applied to additional plots: Apr 30. Trace element spray applied: May 9. Harvested: Aug 18.
Kale: Dung applied, plots dug by hand: Nov 4, 1965. P,K, Mg, Ca and S applied: Mar 7, 1966. First N dressings applied to additional plots, all N to remainder, plots rotary cultivated, seed drilled: Mar 17. Plots resown because of poor take: Apr 28. Second N dressing applied to additional plots: May 31. Trace element spray applied: June 10. Harvested: Oct 26.

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Barley: Plots dug by hand: Nov 12, 1965. P, K, Mg, Ca and S applied: Mar 7, 1966. All N applied, plots rotary cultivated, seed drilled: Mar 15. Trace element spray applied: May 31. Harvested: Aug 19.

Grass-clover ley: Undersown in barley: Mar 1, 1965. P and K applied (excluding additional plots): Feb 23, 1966. P, K, Mg, Ca and S applied to additional plots: Mar 7, All N applied: Mar 17. Trace element spray applied: May 9. Cut four times: Oct 20, 1965, May 27, 1966, July 8, Sept 16.

Potatoes: Dung applied, plots dug by hand: Nov 10, 1965. P, K, Mg, Ca and S applied: Mar 7, 1966. First N dressings applied to additional plots, all N applied to remaining plots, plots rotary cultivated, potatoes planted: Mar 23. Trace element spray applied: June 10. Earthed up: June 13. Sprayed four times with triphenyltin acetate at 6 oz in 120 gals: June 29, July 13, July 28, Aug 12. Lifted: Plots with neither K nor dung (where haulm died early): Aug 5, remainder: Sept 14.

Permanent grass: Dung applied: Feb 15, 1966. P and K applied: Feb 23. N applied - first dressing: Mar 14, second: May 5, third: July 8. Cut 3 times: May 5, July 8 and Sept 28.

NOTES: (1) Yields of dry matter were obtained from each crop.
(2) The percentages of N, P and K were measured in each crop.

Stackyard Series C (W):-

Oats: Plots dug by hand: Sept 27, 1965. P and K applied, seed drilled: Oct 19. First N dressing applied: Mar 8, 1966. Second N dressing applied: May 2. Harvested: Aug 17.

Sugar beet: Dung applied, plots dug by hand: Dec 7, 1965. P and K applied: Feb 28, 1966. First N dressing applied, plots rotary cultivated, seed drilled: Mar 22. Sprayed with 3 oz DDT in 40 gals: May 2. Mg fertiliser applied to half plots: May 26. Singled, second N dressing applied: June 2. Sprayed 4 times with dimethoate and DDT mixture at 1 pt in 40 gals: June 2, June 21, July 7, July 26. Harvested: Oct 10. Mg applied to other half plots: Oct 10.

Barley: Plots dug by hand: Dec 7, 1965. P and K applied: Feb 28, 1966. First N dressing applied, rotary cultivated, seed drilled: Mar 8. Second N dressing applied: May 2. Harvested: Aug 17.

Grass-clover ley: Undersown in barley: Mar 25, 1965. P and K applied: Feb 28, 1966. All N applied: Mar 8. Cut four times: Oct 19, 1965, May 8, 1966, July 6, Sept 13.

Potatoes: Dung applied, plots dug by hand: Dec 14, 1965. P and K applied: Feb 28, 1966. First N dressing applied, plots rotary cultivated, setts planted: Mar 31. Second N dressing applied: May 26. Earthed up: June 2. Sprayed twice with

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Bordeaux mixture at 5 lb in 40 gals: June 30, July 26. Sprayed with triphenyltin acetate at 6 oz in 124 gals: July 13. Lifted: Plots with neither K nor dung: Aug 4. Remaining plots: Sept 13.

Permanent grass: Dung, P and K applied: Feb 28, 1966. First N dressing applied: Mar 8. Second N dressing applied: May 9. Third N dressing applied: June 21. Cut four times: May 9, June 21, Aug 22, Oct 17.

NOTES: (1) Samples were taken for determination of dry matter for each crop, and the percentage N, P and K.
(2) A determination of the percentage of sugar in sugar beet, and the percentage of Mg leaves of sugar beet was carried out.
(3) Surface soil samples were taken from each block for a determination of soil pH.

Errata: To 'Results' 61/B/2 N1, N2 to potatoes 0.75, 1.50 cwt N per acre (formerly 0.6, 1.2), N1, N2 to permanent grass 1.5, 3.0 cwt N per acre (formerly 1.0, 2.0).
To 'Results' 63/B/2 N1, N2 to ley 0.25, 0.5 cwt N per acre (formerly 0.15, 0.3), to oats 0.5, 1.0 cwt N per acre (formerly 0.3, 0.6), to barley 0.5, 1.0 cwt N per acre (formerly 0.45, 0.9), to fruit 0.5, 1.0 cwt N per acre (formerly 0.6, 1.2). The potash rates for all crops, nil, 2.0 cwt K_2O per acre (formerly nil, 1.0).

Grazed Reference Plots (Highfield IX (R)):-
Cultivations, etc.: P and K fertilisers applied, ground chalk applied to appropriate plots: Dec 20, 1965. First N dressings applied: Mar 4, 1966. Sample cuts taken 4 times: May 3, June 27, Aug 25, Oct 31. Sampling cages moved after each cut. N dressing applied after each cut except the last.

NOTES: (1) The percentage of N, P and K in the dry grass were measured.
(2) Visual estimates were made of the percentage surface area covered by clover leaves.

Conifer seedbeds and transplants:
Bed 1: All manures (other than N) dug in: Mar 17, 1966. Seed sown: Mar 23. T.V.O. pre-emergent spray: Apr 21. N topdressed: June 22, July 12, Aug 10, Sept 9.
Bed 2: Seedbeds as for Bed 1. Transplant plots lined out: Mar 28. All manures (other than N) as for seedbeds. N topdressed on transplants: May 10, June 22, July 12, Aug 10.

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NOTES: (1) Height assessments and samples for analysis as in 1965.
(2) Plots lacking N, K and Mg had typical deficiency symptoms.

Standard errors per plot.

Highfield IX (R), Dry Matter:

1st cut:	3.31 or 22.8% (39 d.f.)
2nd cut:	5.06 or 10.3% (39 d.f.)
3rd cut:	3.96 or 10.1% (39 d.f.)
4th cut:	3.77 or 16.0% (38 d.f.)
Total of 4 cuts:	9.08 or 7.2% (38 d.f.)

Stackyard Series C (W), Sitka Spruce Bed 1:

Mean height:	0.219 or 8.8% (11 d.f.)
Plant number:	168.4 or 16.5% (11 d.f.)

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SUMMARY OF RESULTS

GREAT FIELD IV (R): ORIGINAL PLOTS

Treatment	Winter wheat: GRAIN	STRAW	Kale: TOTAL WEIGHT	Barley: GRAIN	STRAW	Ley: DRY MATTER 1st cut	2nd cut	3rd cut	4th cut	Total of 4 cuts	Potatoes: TOTAL TUBERS	Permanent grass: DRY MATTER 1st cut	2nd cut	3rd cut	Total of 3 cuts
None	33.3	37.5	11.64	29.9	26.2	8.0	19.0	18.3	15.2	60.5	3.79	3.4	21.3	18.6	43.3
N1	28.4	32.9	14.58	38.8	31.5	5.1	17.9	16.0	14.9	53.9	3.90	8.4	21.6	24.0	54.0
P	33.5	40.6	14.93	34.9	25.8	5.8	16.4	11.9	10.2	44.3	6.78	3.0	16.9	14.8	34.7
N1P	22.1	36.1	19.10	35.2	30.8	3.2	23.0	10.1	6.5	42.8	3.60	9.3	23.4	24.4	57.1
K	33.4	37.8	6.94	29.6	23.5	10.7	24.5	26.3	23.7	85.2	15.88	2.9	15.7	19.2	37.8
N1K	38.9	45.2	10.59	33.8	28.1	10.6	28.1	31.5	23.1	93.3	17.80	8.2	29.6	32.9	70.7
PK	40.7	56.9	9.55	38.5	28.5	14.5	34.1	33.8	23.1	105.5	17.45	4.2	20.5	20.2	44.9
N1PK	53.2	75.4	15.62	51.2	40.5	11.6	36.7	31.9	24.2	104.4	16.76	10.0	30.9	27.1	68.0
N2PK	55.1	71.9	20.32	54.9	47.8	9.9	39.3	26.9	25.9	102.0	21.27	19.7	30.4	31.2	81.3
D	44.7	56.8	13.37	50.0	41.5	16.6	31.8	31.6	21.6	101.6	19.36	23.0	26.9	31.4	81.3
N1PKD	54.2	84.7	20.84	57.4	51.4	14.0	40.4	37.3	34.7	126.4	25.87	25.8	38.3	32.4	96.5
N2PKD	51.2	80.7	21.53	61.8	54.5	11.0	39.7	31.9	26.8	109.4	26.74	29.5	29.3	37.4	96.2
Mean D.M.%:	83.6	67.8		76.8	50.9	19.2	17.0	17.3	19.6	18.3		21.7	23.4	25.4	23.5

66/B/2.5

GREAT FIELD (R): ADDITIONAL PLOTS

Treatment	Winter wheat GRAIN	Winter wheat STRAW	Kale: TOTAL WEIGHT	Barley GRAIN	Barley STRAW	Ley: DRY MATTER 1st cut	Ley: DRY MATTER 2nd cut	Ley: DRY MATTER 3rd cut	Ley: DRY MATTER 4th cut	Total of 4 cuts	Potatoes TOTAL TUBERS
None	35.8	39.8	17.71	41.2	31.1	7.0	20.5	15.2	15.9	58.6	3.26
N2PK	46.8	62.9	30.90	56.8	54.1	10.8	35.3	15.7	22.9	84.7	20.23
N2 PK Mg Ca	51.5	72.2	27.26	56.0	53.5	9.7	35.9	14.2	22.2	82.0	19.54
N2 PK Mg S	54.4	74.6	30.56	55.8	44.6	8.8	37.6	10.6	27.4	84.4	21.10
N2 PK Ca S	49.9	73.5	29.00	55.2	51.9	10.0	39.2	17.3	26.1	92.6	16.41
N2 PK Mg Ca S	54.1	77.8	30.38	56.2	52.9	10.5	37.0	19.7	24.6	91.8	19.36
N2 PK Mg Ca S TE	49.6	64.2	30.38	57.2	48.8	9.2	37.4	16.2	21.6	84.4	20.06
Mean D.M. %:	85.3	69.2		84.1	65.4	19.4	19.1	19.2	19.0	19.2	

66/B/2.6

STACKYARD SERIES C (W)

Treatment	Oats GRAIN	Oats STRAW	Sugar beet ROOTS	Sugar %	Total sugar: cwt per acre	Barley GRAIN	Barley STRAW	Ley: DRY MATTER 1st cut	Ley: DRY MATTER 2nd cut	Ley: DRY MATTER 3rd cut	Ley: DRY MATTER 4th cut	Total of 4 cuts	Potatoes TOTAL TUBERS	Permanent grass: DRY MATTER 1st cut	Permanent grass: DRY MATTER 2nd cut	Permanent grass: DRY MATTER 3rd cut	Permanent grass: DRY MATTER 4th cut	Total of 4 cuts
None	16.2	15.1	9.41	14.5	27.3	10.2	8.2	6.5	14.4	23.6	17.2	61.7	4.22	9.0	11.3	10.6	4.7	35.6
N1	30.4	33.1	13.58	14.2	38.7	21.3	17.4	5.2	19.4	21.5	15.5	61.6	5.56	9.7	18.0	19.2	5.3	52.2
P	15.9	15.2	9.72	14.3	27.8	12.7	9.5	8.6	14.7	18.8	13.9	56.0	4.64	7.9	9.5	9.5	4.0	30.9
N1P	28.0	28.5	11.11	14.1	31.4	21.3	19.5	7.0	21.2	20.0	14.8	63.0	5.50	10.7	19.9	19.3	5.0	54.9
K	15.6	18.4	12.66	15.0	38.0	10.4	8.2	10.0	8.1	26.6	20.3	65.0	7.18	9.1	13.9	13.5	6.5	43.0
N1K	32.0	36.7	16.52	14.9	49.4	31.3	29.4	8.0	22.7	23.6	19.9	74.2	8.56	13.3	21.9	22.5	5.6	63.3
PK	17.1	17.8	11.88	14.9	35.4	9.6	7.8	10.8	6.0	32.2	21.1	70.1	6.56	10.6	14.2	13.1	7.1	45.0
N1PK	31.5	40.4	16.05	14.9	48.0	28.4	25.4	10.2	19.6	32.2	27.7	89.7	10.42	16.4	21.7	24.9	6.0	69.0
N2PK	36.6	53.6	16.98	14.7	50.0	35.2	39.8	5.8	27.4	21.3	17.3	71.8	14.12	9.4	22.2	30.3	9.4	71.3
D	19.2	20.2	18.52	15.2	56.2	11.1	8.8	10.1	10.6	30.1	22.4	73.2	14.12	12.4	15.1	13.7	7.6	48.8
N1PKD	35.4	47.2	23.30	15.1	70.5	35.1	34.0	8.6	23.5	22.8	20.3	75.2	17.20	12.3	21.0	25.3	7.9	66.5
N2PKD	37.4	54.5	22.07	14.6	64.6	39.6	44.7	7.0	28.3	26.1	21.2	82.6	19.91	12.0	23.8	30.4	10.9	77.1
Mean D.M.%:	83.1	63.5				81.4	57.3	17.9	18.9	23.9	23.2	21.0		20.4	23.8	20.0	21.6	21.4

66/B/2.7

66/B/2.8

STACKYARD C (W). Bed 1

SITKA SPRUCE

Treatment	MEAN HEIGHT: INCHES	PLANT NUMBER: PER SQ YARD
	(±0.155)	(±119.0)
None	1.83 (1)	960 (2)
PK Mg	1.72	1119
NK Mg	2.04	1008
NP Mg	2.45	654
NPK	2.66	1044
NPK Mg	2.76 (1)	1054 (2)
NPK Mg F	2.71	1248
C	2.65	939
C NPK Mg	3.37	1266
L NPK Mg	3.12	963
Mean	2.49	1023

(1) (±0.110) (2) (±84.2)

Bed 2 PLOTS 1 - 6

	O	A	B	Mean
	MEAN HEIGHT: INCHES			
SS	8.38	12.31	13.02	11.24
NS	6.41	8.36	8.39	7.72

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Bed 2 PLOTS 7 - 12

	C	A	B	Mean
	MEAN HEIGHT: INCHES			
SS	1.00	2.80	3.39	2.39
NS	1.35	2.42	2.59	2.12
	PLANT NUMBER: PER SQ YD			
SS	1374	1134	1284	1264
NS	1128	1122	1122	1124

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66/B/2.10

HIGHFIELD IX (R)

GRASS: DRY MATTER

	1st cut	2nd cut	3rd cut	4th cut	Total of 4 cuts
PK	(±1.65)	(±2.53)	(±1.98)	(±1.88)	(±4.54)
N0 00	7.7	33.6	32.8	18.9	93.1
N1 00	13.8	47.9	37.9	22.4	122.0
A1 00	15.4	46.8	37.4	25.9	125.5
N0 10	10.2	43.0	33.5	16.9	103.6
N1 10	16.0	50.0	40.9	24.1	128.7
A1 10	17.8	50.7	36.8	26.2	131.6
N0 01	10.1	39.0	36.9	16.9	103.0
N1 01	17.5	52.2	40.3	28.4	138.3
A1 01	15.3	50.8	38.2	22.2	126.6
N0 11	8.6	41.6	38.2	18.8	107.2
N1 11	19.8	56.3	44.1	28.8	149.0
A1 11	20.3	55.0	38.9	25.9	140.1
N2 11	15.0	60.4	48.8	28.1	152.3
A2 11	15.6	62.4	44.4	25.3	147.7
Mean	14.5	49.3	39.2	23.5	126.3

Mean D.M. %: 1st cut: 18.6
2nd cut: 18.1
3rd cut: 20.4
4th cut: 18.8
Total of 4 cuts: 19.0

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66/B/3.1

GREEN MANURING EXPERIMENT

(WGM)

Woburn Stackyard 1966.

For history, treatments, etc., see 'Details' 1962 and 'Results' 64/B/3 and 65/B/3.

Area of each sub plot: 0.0195. Area harvested: 0.0146.

Treatments:

A new arrangement of the N levels was used on both halves in 1966, allowing the estimation of the residual effects of N applied in 1965.

Levels of N: None (N0), 0.3 (N1), 0.6 (N2), 0.9 (N3), 1.2 cwt N (N4), as 'Nitro-Chalk'.

Plots were grouped according to their previous treatment:-

A: no green manures since 1936
B: green manures 1936 - 63
C: green manures 1936 - 65
(dates are of crops testing direct effects)

Upper Half

Plots fallow under old scheme: N1, N2, N3, N4 (A).
Remainder: N0, N1, N2, N3 (B and C).
No green manures were undersown and this part of the experiment ended at harvest 1966.

Lower Half

A new arrangement of the green manuring treatments was begun in 1966.

1966 treatments

A plots: All combinations of:-
1. Green manures undersown 1966: Trefoil (T), ryegrass (R).
2. Nitrogen: N1, N3.

B plots:
1. Green manures undersown 1966: None (0), trefoil (T), ryegrass (R).
2. Nitrogen: to plots undersown: N1, N3.
to plots not undersown: N0, N1, N2, N3.

C plots:
(No green manures undersown 1966)
Nitrogen: N0, N1, N2, N3.

NOTE: On the B plots the green manures undersown in 1966 were applied as a new factor in all combinations with those applied in 1963.

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Cultivations, etc.: Ground chalk applied at 18 cwt: Sept 13, 1965. Ploughed (plots not undersown): Oct 19. Green manure plots ploughed: Feb 2, 1966. Basal PK and seed at 140 lb combine drilled: Mar 8. 'Nitro-Chalk' applied: Mar 10. Upper Half sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 35 gals): May 10. Lower Half sprayed with Morfamquat at 1 lb in 35 gals: May 11. Trefoil sown at 30 lb, ryegrass at 40 lb: May 13. Lower half sprayed with MCPB/MCPA (Tropotox plus at 5 pints in 35 gals): June 10. Combine harvested: Aug 23. Variety: Maris Badger.

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66/B/3.3

SUMMARY OF RESULTS

ESTIMATES OF PRODUCE (ROOTS AND TOPS) OF GREEN MANURE CROPS: CWT PER ACRE TO BARLEY 1965

	N0	N1	N2	N3	Mean
UPPER HALF					
DRY MATTER					
T	15.6	9.6	8.2	4.2	9.4
R	24.2	21.6	25.6	23.0	23.6
Mean	19.9	15.6	16.9	13.6	16.5
NITROGEN					
T	0.481	0.279	0.244	0.106	0.278
R	0.230	0.207	0.264	0.322	0.256
Mean	0.356	0.243	0.254	0.214	0.267
LOWER HALF					
DRY MATTER					
T	15.9	14.8	6.5	4.4	10.4
R	34.4	19.9	26.6	21.4	25.6
Mean	25.2	17.3	16.6	12.9	18.0
NITROGEN					
T	0.492	0.474	0.200	0.140	0.327
R	0.358	0.214	0.298	0.260	0.283
Mean	0.425	0.344	0.249	0.200	0.305

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66/B/3.4

UPPER HALF

BARLEY, GRAIN

A PLOTS

1966

	N1	N2	N3	N4	Mean
1965					
N1	18.0	32.0	33.7	40.2	31.0
N2	17.1	29.0	29.9	35.0	27.8
N3	14.1	32.6	34.4	38.3	29.8
N4	16.5	18.0	29.7	40.8	26.2
Mean	16.4	27.9	31.9	38.6	28.7

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66/B/3.5

UPPER HALF

BARLEY, GRAIN

B PLOTS

	N0	N1	N2	N3
		1966		
1965				
N0	10.2	22.3	33.2	41.0
N1	11.6	19.0	33.6	38.8
N2	13.2	19.7	33.6	38.2
N3	11.2	19.9	33.3	36.9
Green manure 1955 - 63				
T	13.4	15.0	33.8	36.5
R	9.7	21.8	32.9	39.2
TU	13.2	20.2	33.9	39.9
RU	10.0	23.9	33.0	39.1
Mean	11.5	20.2	33.4	38.7

1965

	N0	N1	N2	N3	Mean
T	23.5	26.1	23.7	25.5	24.7
R	31.6	20.9	29.5	21.7	25.9
TU	31.7	24.3	28.4	22.8	26.8
RU	19.8	31.8	23.1	31.3	26.5
Mean	26.7	25.8	26.2	25.3	26.0

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65/B/3.6

UPPER HALF

BARLEY, GRAIN

C PLOT

	N0	N1	N2	N3
Undersown 1964 - 65		1966		
T	22.7	30.8	37.8	42.4
R	12.5	22.6	32.6	40.8

	Undersown 1964 - 65 T	R	Mean
1965			
N0	36.3	28.2	32.2
N1	34.1	24.4	29.3
N2	33.0	27.6	30.3
N3	30.4	28.4	29.4
Mean	33.5	27.2	30.3

1965

	N0	N1	N2	N3	Mean
1966					
N0	21.0	15.7	19.3	14.6	17.6
N1	26.9	27.3	23.8	28.9	26.7
N2	38.9	33.6	36.4	32.1	35.2
N3	42.2	40.5	41.8	42.0	41.6

Mean D.M. %: 79.1

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66/B/3.7

LOWER HALF

BARLEY, GRAIN

A PLOTS

1966

	N1	N3
Undersown 1966		
T	14.6	34.2
R	14.1	31.1

1965

	N1	N2	N3	N4	Mean
Undersown 1966					
T	25.9	25.0	23.8	22.9	24.4
R	25.0	21.2	21.0	23.2	22.6
1966					
N1	15.2	12.4	15.8	13.8	14.3
N3	35.6	33.7	29.0	32.3	32.7
Mean	25.4	23.1	22.4	23.1	23.5

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66/B/3.8

LOWER HALF

BARLEY, GRAIN

B PLOTS WITH T & R

1966

	N1	N3
Undersown 1966		
T	17.0	33.6
R	16.8	34.7

1965

	N0	N1	N2	N3	Mean
Undersown 1966					
T	28.3	25.7	20.3	27.0	25.3
R	26.0	25.8	23.0	28.2	25.8
1966					
N1	18.2	18.6	13.6	17.3	16.9
N3	36.2	32.9	29.7	37.8	34.2
Mean	27.2	25.7	21.7	27.6	25.5

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LOWER HALF

BARLEY, GRAIN

B PLOTS WITHOUT T & R

1966

	N0	N1	N2	N3	Mean
1965					
N0	9.4	23.7	27.1	40.9	25.3
N1	9.2	12.4	24.5	31.5	19.4
N2	11.7	14.8	33.7	41.7	25.5
N3	7.3	12.6	24.0	33.2	19.3
Mean	9.4	15.9	27.3	36.8	22.4

C PLOTS

1966

	N0	N1	N2	N3
Undersown 1964 - 65				
T	22.5	29.8	38.9	39.0
R	11.7	20.9	31.7	35.1

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66/B/3.10

LOWER HALF

BARLEY, GRAIN

C PLOTS

Undersown 1964 - 65

	T	R	Mean
1965			
N0	38.6	23.7	31.1
N1	33.0	25.3	29.2
N2	31.3	24.3	27.8
N3	27.1	26.1	26.6
Mean	32.5	24.8	28.7

1966

	N0	N1	N2	N3
1965				
N0	20.7	31.4	37.2	35.3
N1	18.6	24.8	34.6	38.6
N2	15.1	24.1	34.1	37.9
N3	14.0	20.9	35.3	36.1
Mean	17.1	25.3	35.3	37.0

Mean D.M. %: 78.7

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LEY AND ARABLE ROTATIONS

(WLA)

Woburn Stackyard 1966 - the 29th year.

For history, treatments etc., see 'Details' 1962 and 'Results' 63/B/4, 64/B/4 and 65/B/4.

Potatoes: The variety is now Maris Piper.
Sainfoin: The third year sainfoin failed and was resown after receiving a basal dressing of 0.5 cwt P_2O_5 and 0.5 cwt K_2O as (0:20:20) The normal spring dressings of N and K were not applied.

Corrective K dressings (in cwt K_2O) as muriate of potash, and the K equivalent of FYM for Block 3 (sugar beet 1966).

Continuous rotations	No dung plots	Dung plots
Rotation		
Ley	2	0
Lucerne+	5	5
Arable with hay	6	6
Arable	5	5
Alternating rotations		
Last 2 rotations in order		
Arable*/ley	4	0
Arable with hay*/lucerne+	5	4
Ley/arable with hay	5	5
Lucerne/arable	6	5

* These are actual rotations - they should have been reversed.
\+ 3 yr lucerne replaced by sainfoin in 1965.

K equivalent of dung: In 1966 plots not receiving dung received 4.8 cwt K_2O as muriate of potash, the K equivalent of the dung used.

Cultivations, etc.:
Treatment crops.
Ley 1st year: Ground chalk applied at 35 cwt: Sept 14, 1965. Ploughed: Sept 27. Fertilisers applied: Mar 22, 1966. Seed sown at 40 lb: Mar 29. NK fertiliser applied: July 5. Grazed 12 circuits: June 22 - Oct 24.
Ley 2nd year: NK fertiliser applied: Mar 17, 1966, June 17, Aug 5. Grazed 10 circuits: May 4 - Nov 1.
Ley 3rd year: NK fertiliser applied: Mar 17, 1966, June 7, Aug 5. Grazed 11 circuits: Apr 13 - Oct 16.
Sainfoin 1st year: Ground chalk applied at 35 cwt: Sept 14, 1965. Ploughed: Sept 27. Fertilisers applied: Mar 22, 1966. Seed drilled at 60 lb: May 10. Cut twice:

https://doi.org/10.23637/ERADOC-1-158

Aug 12, Oct 24.

Sainfoin 2nd year: Sprayed with paraquat at 1 lb ion in 40 gals: Feb 14, 1966. N and K fertilisers applied: Apr 13. Sprayed with paraquat at 1 lb ion in 35 gals: June 10. Cut three times: June 8, Aug 15, Oct 24.

Sainfoin 3rd year: Sprayed with MCPB at 2.5 lb a.e. in 40 gals: Oct 11, 1965. Sprayed with paraquat at 1 lb ion in 40 gals: Feb 14, 1966. PK fertiliser applied: May 2. Re-drilled at 60 lb: May 10. Cut twice: Aug 15, Oct 24.

Arable rotations.

Potatoes: Ground chalk applied at 35 cwt: Sept 14, 1965. Ploughed: Sept 27. Fertiliser applied: Mar 23, 1966. Rotary cultivated and machine planted: Mar 29. Earthed up: June 8. Sprayed with mancozeb at 1.2 lb in 33 gals: June 29, July 15, Aug 4. Haulm mechanically destroyed: Sept 3. Lifted: Sept 5.

Rye: Deep-tine cultivated: Sept 7, 1965. Seed combine drilled at 160 lb: Nov 2. 'Nitro-Chalk' applied: Apr 12, 1966. Combine harvested: Aug 24.

Seeds hay: Seeds undersown in rye at 30 lb: Mar 31, 1965. 'Nitro-Chalk', and PK compound applied: Mar 17, 1966. NK fertiliser applied: June 2, cut twice: May 26, July 13.

Carrots: Ploughed: Oct 21, 1965. Fertilisers applied: May 2, 1966. Seed drilled at 5.1 lb: May 10. Sprayed with linuron at 1 lb in 35 gals: May 11. Sprayed with menazon (saphicol at 0.5 pints in 47 gals): June 16, July 15, and (saphicol at 0.5 pints in 50 gals): June 29. Lifted: Sept 29.

Test crops.

Sugar beet: Dung equivalent K and half corrective K, dung applied, ploughed: Jan 10 - 26, 1966. Remaining corrective K, basal muriate of potash, and half basal superphosphate applied: Feb 7. Remaining basal superphosphate, basal magnesium sulphate, and test 'Nitro-Chalk' and muriate of potash applied: Mar 25. Seed drilled at 9 lb: Apr 1. Singled: May 23. Sprayed demeton methyl at 12 fluid oz in 33 gals: June 14. Lifted: Oct 12.

Barley: Ground chalk applied at 35 cwt: Dec 14, 1965. Ploughed: Jan 7, 1966. Balancing muriate of potash, basal superphosphate, 'Nitro-Chalk' applied and seed drilled at 140 lb: Mar 9. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 35 gals): May 11. Combine harvested: Aug 18.

NOTES: Chalk was applied in error to Block 2 (1st year treatment crops 1966) as well as to Block 1 (Barley 1966).

Erratum to 'Results' 1965

p. 65/B/4.1. The K equivalent of dung for plots not receiving dung was 3.3 cwt K2O as muriate of potash and not 3.7 cwt K2O as stated.

https://doi.org/10.23637/ERADOC-1-158

Standard errors per plot.

Sugar beet 1/8 plot:		
Roots:	1.042 or 4.4%	(21 d.f.)
Total sugar:	3.54 or 4.7%	(21 d.f.)
Tops:	2.039 or 9.2%	(21 d.f.)
Barley grain:		
Whole plot:	2.68 or 6.3%	(4 d.f.)
1/2 plot:	2.31 or 5.4%	(4 d.f.)

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66/B/4.4

SUMMARY OF RESULTS

TREATMENT CROPS

LEY, SHEEP DAYS OF GRAZING

1st year	2nd year	3rd year
1843	2650	2277

SAINFOIN, DRY MATTER

	1st cut	2nd cut	3rd cut	Total
		1ST YEAR		
1964				
D0	13.8	8.6		22.4
D1	15.4	9.5		24.9
Lu	16.0	9.7		25.7
AH	13.2	8.4		21.6
Mean	14.6	9.0		23.6
		2ND YEAR		
1963				
D0	43.4	17.8	2.2	63.4
D1	41.1	19.7	3.4	64.2
Lu	41.3	18.6	2.2	62.1
AH	43.2	18.9	3.3	65.4
Mean	42.2	18.8	2.8	63.8

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SAINFOIN, DRY MATTER

	1st cut	2nd cut	3rd cut	Total
		3RD YEAR		
1962				
D0	25.0	9.9		34.9
D1	24.0	10.4		34.4
Lu	24.4	9.6		34.0
AH	24.6	10.8		35.4
Mean	24.5	10.2		34.7

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TREATMENT CROPS

	POTATOES		RYE	
	TOTAL TUBERS	% WARE	GRAIN	STRAW
D0	9.14	80.1	34.1	44.9
D1*	12.89	88.4	33.2	44.5
Ley	18.42	94.5	33.2	47.4
Lu	10.28	89.6	35.6	39.0
AH	7.78	72.2	32.0	48.2
AR	7.56	80.8	33.6	44.2
Mean	11.01	84.3	33.6	44.7

HAY

DRY MATTER

	1st cut	2nd cut	Total
1962			
D0	65.0	31.6	96.6
D1*	67.4	33.4	100.8
Lu	66.4	32.5	98.9
AH	66.0	32.4	98.4
Mean	66.2	32.5	98.7

* Dung applied: Potatoes - for test crop sugar beet in 1964
Rye - for test crop sugar beet in 1963
Hay - for test crop sugar beet in 1962

Mean D.M. %: Rye, grain: 80.8
straw: 78.4

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CARROTS

	Roots	Tops
1962		
D0	17.80	11.11
D1*	21.34	12.88
Ley	19.26	13.00
AR	19.89	10.98
Mean	19.57	12.00

* Dung applied for test crop sugar beet in 1962

https://doi.org/10.23637/ERADOC-1-158

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1ST TEST CROP

SUGAR BEET

ROOTS

		N1	N2	N3	N4	N5	N6
				(1)			
DO	Ley	20.79	21.68	22.52	22.58	-	-
	Lu	21.38	23.77	24.95	24.91	-	-
	AH	-	-	22.16	23.37	22.65	24.51
	AR	-	18.17	20.45	22.90	22.63	-
D1	Ley	21.44	22.88	22.22	23.41	-	-
	Lu	24.84	25.73	26.37	25.63	-	-
	AH	-	-	24.70	25.01	25.37	24.95
	AR	-	23.39	25.58	26.15	25.50	-

	Ley	Lu	AH	AR	Mean
CON	22.91	25.10	23.69	22.39	23.52
ALT	21.47	24.29	24.49	23.80	23.51
			(2)		
DO KO	21.91	23.90	23.89	20.61	22.58
DO K1	21.88	23.60	22.45	21.46	22.35
D1 KO	22.69	25.58	25.14	25.12	24.63
D1 K1	22.29	25.70	24.88	25.19	24.51
Mean	22.19	24.70	24.09	23.10	23.52

(1) (±0.521) For use in horizontal and interaction comparisons
(2) (±0.368) For use in vertical and interaction comparisons

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1ST TEST CROP

SUGAR BEET

SUGAR %

		N1	N2	N3	N4	N5	N6
D0	Ley	16.1	15.9	15.5	15.3	-	-
	Lu	16.6	16.4	16.1	16.4	-	-
	AH	-	-	16.8	16.6	16.2	15.8
	AR	-	16.7	16.6	16.4	16.1	-
D1	Ley	15.8	15.4	15.3	15.4	-	-
	Lu	16.5	16.2	16.1	15.5	-	-
	AH	-	-	15.9	15.3	15.2	15.1
	AR	-	16.1	15.8	15.8	15.5	-

	Ley	Lu	AH	AR	Mean
CON	15.6	16.6	15.8	16.1	16.0
ALT	15.6	15.9	15.9	16.1	15.9
D0 K0	15.6	16.3	16.3	16.4	16.2
D0 K1	15.8	16.4	16.4	16.4	16.3
D1 K0	15.4	16.1	15.4	15.9	15.7
D1 K1	15.6	16.0	15.3	15.7	15.7
Mean	15.6	16.2	15.9	16.1	15.9

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1ST TEST CROP

SUGAR BEET

TOTAL SUGAR

	N1	N2	N3	N4	N5	N6
			(1)			
Ley	66.8	68.8	69.8	69.3	-	-
D0 Lu	71.0	78.0	80.4	81.3	-	-
AH	-	-	74.6	77.4	73.5	77.6
AR	-	60.6	67.8	75.0	72.8	-
Ley	67.5	70.5	67.8	72.3	-	-
D1 Lu	81.8	83.1	84.9	79.7	-	-
AH	-	-	78.6	76.8	77.0	75.3
AR	-	75.4	81.1	82.5	79.2	-

	Ley	Lu	AH	AR	Mean
CON	71.3	83.2	74.9	72.0	75.3
ALT	66.9	76.9	77.8	76.6	74.6
			(2)		
D0 K0	68.2	77.9	77.8	67.6	72.9
D0 K1	69.1	77.5	73.7	70.5	72.7
D1 K0	69.7	82.3	77.5	79.9	77.3
D1 K1	69.4	82.5	76.3	79.2	76.9
Mean	69.1	80.0	76.3	74.3	74.9

(1) (±1.77) For use in horizontal and interaction comparisons
(2) (±1.25) For use in vertical and interaction comparisons

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1ST TEST CROP

SUGAR BEET

TOPS

		N1	N2	N3	N4	N5	N6
				(1)			
D0	Ley	20.83	21.97	25.39	26.11	-	-
	Lu	13.56	18.17	20.70	21.08	-	-
	AH	-	-	16.44	19.44	20.07	24.76
	AR	-	11.75	15.04	19.44	19.65	-
D1	Ley	22.69	27.00	27.29	28.52	-	-
	Lu	18.21	21.04	23.58	24.93	-	-
	AH	-	-	23.24	27.21	27.42	30.04
	AR	-	18.25	22.90	24.76	26.75	-

	Ley	Lu	AH	AR	Mean
CON	25.53	18.39	23.24	19.19	21.59
ALT	24.42	21.93	23.91	20.44	22.68
		(2)			
D0 K0	22.82	18.68	21.10	15.68	19.57
D0 K1	24.34	18.08	19.25	17.26	19.73
D1 K0	26.60	22.25	26.81	22.75	24.60
D1 K1	26.15	21.63	27.15	23.58	24.63
Mean	24.98	20.16	23.58	19.82	22.13

(1) (±1.020) For use in horizontal and interaction comparisons
(2) (±0.721) For use in vertical and interaction comparisons

66/B/4.12

2ND TEST CROP

BARLEY

	Ley	Lu	AH	AR	Mean
		GRAIN			
		(1) and (2)			(±0.82)
D0	44.6	45.0	40.3	39.1	42.2
D1	45.1	46.1	43.1	39.0	43.3
Mean (±1.90)	44.8	45.5	41.7	39.1	42.8
		STRAW			
D0	30.2	30.7	23.9	26.7	27.9
D1	27.8	32.5	23.9	21.9	26.5
Mean	29.0	31.6	23.9	24.3	27.2

Mean D.M. %: Grain: 84.0
Straw: 69.0

(1) (±2.22) For use in horizontal and diagonal comparisons
(2) (±1.63) For use in vertical and interaction comparisons

66/B/5.1

WOBURN MARKET GARDEN EXPERIMENT

(WMG)

Organic manures, N, P, and K - Lansome Field 1966, the sixth year with revised treatments.

For history, (treatments) etc., see 'Details 1962' and 'Results' 63/B/5, 64/B/5 and 65/B/5.

Area of each sub-plot (globe beet): 0.0031. Area harvested: 0.0006.
Area of each microplot (carrots): 0.0008. Area harvested: 0.0006.

Treatment symbols:
Dung: None (D0), 10 (D1), 20 tons (D2).
PK compound (0:20:20): None (P0K0), 1.5 P_2O_5, 1.5 K_2O (P1K1), 3.0 P_2O_5, 3.0 cwt K_2O (P2K2).
Superphosphate: None (SP0), 1.5 (SP1), 3.0 cwt P_2O_5 (SP2).
Peat: None (0), 12.5 tons (PT).

Treatments: All combinations of:-
Series A (globe beet)
Dung plots: Whole plots: Dung: D1, D2 as previously.
PK: P0K0, P1K1, the latter on plots that received NPK in 1965.
Quarter plots: Nitrogen: None (N0), 0.9 (N1), 1.8 (N2), 2.7 cwt N (N3) as 'Nitro-Chalk' with (N3-N2+N1-N0) on half plots.
Fertiliser plots: Whole plots: PK: P1K1 as previously, P2K2 on plots that received P1K2 in 1965.
Quarter plots: Nitrogen: 0.9 (N1), 1.8 (N2), 2.7 (N3), 3.6 cwt N (N4) as 'Nitro-Chalk' with (N4-N3+N2-N1) on half plots.
Series B, microplots (carrots)
Dung plots: Whole plots: PK: P0K0, P1K1 as in 1965.
Half plots: Dung: D0, D1, D2 as in 1965. (D0, D1 on old D1 plots, D0, D2 on old D2 plots).
Quarter plots: Phosphate: SP0, SP1.
Eighth plots: Nitrogen: None (N0), 0.45 cwt N (N1) as 'Nitro-Chalk'.

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Fertiliser plots: Whole plots: PK: P1K1, P2K2 as in 1965.
Half plots: Peat: 0, PT as in 1965.
Quarter plots: Phosphate: SP0, SP1 on plots that received P1K1. SP0, SP2 on plots that received P2K2.
Eighth plots: Nitrogen: 0.45 (N1), 0.90 cwt N (N2) as 'Nitro-Chalk'.

Basal applications: Series B, microplots (carrots): Weedkiller: Linuron at 1 lb in 50 gals. Insecticide: Rogor at 0.37 lb in 40 gals, on two occasions.

Cultivations, etc.:-

Globe beet Series A: Ploughed: Aug 12, 1965. Ground chalk applied at 18 cwt: Sept 13. Dung applied, all plots ploughed: Feb 3, 1966. Fertilizers applied: Mar 31. Seed drilled at 14 lb: May 10. Singled: June 13. Harvested: July 26, Aug 16. Variety: Detroit.

Carrots Series B, microplots: Peat applied and all plots rotary cultivated: Mar 24, 1966. Fertilisers and dung applied, all plots dug by hand: Mar 29 - 31, Apr 1. Seedbed fertilisers and peat applied, seedbed worked with drags and levelled with rakes: Apr 5 - 6. Seed drilled at 10 lb: Apr 26. Sprayed weedkiller: Apr 27. Fallow area rotary cultivated: June 1. Singled: June 3, 6, 8. Sprayed insecticide: June 9, June 21. Fallow areas rotary cultivated: June 21. Lifted: Aug 8 - 10. Variety: Cluseed New Stump-rooted.

NOTE: Soil samples were taken Aug 16. Crop samples were taken for determination of dry matter, and samples retained for chemical analysis.

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Standard errors per plot.

Globe beet. Dung and fertiliser plots:

Marketable roots.	1st Harvest,	whole plot:	1.220 or 22.5% (10 d.f.)
		1/2 plot:	0.589 or 10.9% (14 d.f.)
		1/4 plot:	1.149 or 21.2% (28 d.f.)
	2nd Harvest,	whole plot:	2.063 or 16.5% (10 d.f.)
		1/2 plot:	1.078 or 8.6% (14 d.f.)
		1/4 plot:	2.148 or 17.1% (28 d.f.)
	Mean of 2 harvests,	whole plot:	1.579 or 17.6% (10 d.f.)
		1/2 plot:	0.688 or 7.7% (14 d.f.)
		1/4 plot:	1.495 or 16.6% (28 d.f.)
Total produce.	1st Harvest,	whole plot:	1.915 or 15.4% (10 d.f.)
		1/2 plot:	0.874 or 7.0% (14 d.f.)
		1/4 plot:	1.609 or 12.9% (28 d.f.)
	2nd Harvest,	whole plot:	2.921 or 14.9% (10 d.f.)
		1/2 plot:	1.602 or 8.2% (14 d.f.)
		1/4 plot:	2.803 or 14.3% (28 d.f.)
	Mean of 2 harvests,	whole plot:	2.314 or 14.4% (10 d.f.)
		1/2 plot:	1.025 or 6.4% (14 d.f.)
		1/4 plot:	1.946 or 12.1% (28 d.f.)

Carrots.

Dung plots.	Roots,	1/2 plot:	0.496 or 2.3% (4 d.f.)
		1/4 plot:	0.900 or 4.1% (8 d.f.)
		1/8 plot:	0.840 or 3.8% (16 d.f.)
	Tops,	1/2 plot:	0.907 or 9.4% (4 d.f.)
		1/4 plot:	0.806 or 8.3% (8 d.f.)
		1/8 plot:	0.763 or 7.9% (16 d.f.)
Fertiliser plots.	Roots,	1/2 plot:	1.843 or 10.2% (6 d.f.)
		1/4 plot:	1.846 or 10.2% (12 d.f.)
		1/8 plot:	1.248 or 6.9% (24 d.f.)
	Tops,	1/2 plot:	1.021 or 16.0% (6 d.f.)
		1/4 plot:	0.989 or 15.5% (12 d.f.)
		1/8 plot:	0.788 or 12.3% (24 d.f.)

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66/B/5.4

SUMMARY OF RESULTS

GLOBE BEET

DUNG PLOTS

MARKETABLE ROOTS

Dung Organic manure applied 1942 - 61*	D1 D1	D2 D2	D1 C1	D2 C2	D1+C1	D2+C2	Mean
			1ST HARVEST				
			(±0.610)			(±0.431)	
Mean	3.66	8.18	5.32	7.14	4.49	7.66	6.08
Fertiliser			(±0.863)			(±0.610)	(±0.431)
POKO	2.25	7.29	3.97	5.68	3.11	6.48	4.80
P1K1	5.07	9.08	6.67	8.61	5.87	8.84	7.36
		(1) and (2)			(3) and (4)		(±0.251)
N0	0.95	5.27	1.76	4.01	1.36	4.64	3.00
N1	2.54	8.47	5.21	7.40	3.88	7.94	5.91
N2	4.94	9.57	7.31	8.66	6.12	9.12	7.62
N3	6.20	9.42	7.00	8.49	6.60	8.95	7.78

(1) (±0.933) For use in horizontal and diagonal comparisons
(2) (±0.502) For use in vertical and interaction comparisons
(3) (±0.660) For use in horizontal and diagonal comparisons
(4) (±0.354) For use in vertical and interaction comparisons

* Last applied to Leeks 1961/62

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66/B/5.5

GLOBE BEET

DUNG PLOTS

MARKETABLE ROOTS

Dung Organic manure applied 1942 - 61*	D1 D1	D2 D2	D1 C1	D2 C2	D1+C1	D2+C2	Mean
			2ND HARVEST				
			(1.031)		(±0.729)		
Mean	10.04	16.60	11.39	15.99	10.72	16.29	13.50
Fertiliser			(±1.459)		(±1.031)		(±0.729)
P0K0	8.28	16.07	10.09	13.95	9.18	15.01	12.10
P1K1	11.81	17.13	12.69	18.02	12.25	17.57	14.91
			(1) and (2)		(3) and (4)		(±0.466)
N0	4.38	12.13	4.05	9.69	4.22	10.91	7.56
N1	7.60	15.91	10.68	16.16	9.14	16.04	12.59
N2	12.06	19.54	14.48	18.24	13.27	18.89	16.08
N3	16.15	18.82	16.34	19.85	16.24	19.33	17.79

(1) (±1.600) For use in horizontal and diagonal comparisons
(2) (±0.931) For use in vertical and interaction comparisons
(3) (±1.132) For use in horizontal and diagonal comparisons
(4) (±0.658) For use in vertical and interaction comparisons

* Last applied to Leeks 1961/62

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66/B/5.6

GLOBE BEET

DUNG PLOTS

MARKETABLE ROOTS

Dung Organic manure applied 1942 - 61*	D1 D1	D2 D2	D1 C1	D2 C2	D1+C1	D2+C2	Mean
		MEAN OF 2 HARVESTS					
		(±0.790)			(±0.558)		
Mean	6.85	12.39	8.35	11.56	7.60	11.98	9.79
Fertiliser		(±1.117)			(±0.790)		(±0.558)
POKO	5.26	11.68	7.03	9.82	6.15	10.75	8.45
P1K1	8.44	13.11	9.68	13.31	9.06	13.21	11.13
		(1) and (2)			(3) and (4)		(±0.315)
N0	2.67	8.70	2.91	6.85	2.79	7.78	5.28
N1	5.07	12.19	7.95	11.78	6.51	11.99	9.25
N2	8.50	14.56	10.89	13.45	9.70	14.00	11.85
N3	11.17	14.12	11.67	14.17	11.42	14.14	12.78

(1) (±1.203) For use in horizontal and diagonal comparisons
(2) (±0.631) For use in vertical and interaction comparisons
(3) (±0.850) For use in horizontal and diagonal comparisons
(4) (±0.446) For use in vertical and interaction comparisons

* Last applied to Leeks 1961/62

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66/B/5.7

GLOBE BEET

DUNG PLOTS

TOTAL PRODUCE

Dung Organic manure applied 1942 - 61*	D1 D1	D2 D2	D1 C1	D2 C2	D1+C1	D2+C2	Mean
			1ST HARVEST				
		(±0.958)			(±0.677)		
Mean	9.51	16.89	11.89	15.33	10.70	16.11	13.40
Fertiliser		(±1.354)			(±0.958)		(±0.677)
POKO	7.25	15.52	10.01	13.90	8.63	14.71	11.67
PlK1	11.76	18.26	13.76	16.76	12.76	17.51	15.13
		(1) and (2)			(3) and (4)		(±0.359)
N0	4.28	11.75	6.51	10.02	5.40	10.88	8.14
N1	8.18	16.59	11.32	15.35	9.75	15.97	12.86
N2	11.96	19.03	14.63	17.00	13.30	18.02	15.66
N3	13.61	20.20	15.08	18.94	14.34	19.57	16.95

(1) (±1.446) For use in horizontal and diagonal comparisons
(2) (±0.717) For use in vertical and interaction comparisons
(3) (±1.023) For use in horizontal and diagonal comparisons
(4) (±0.507) For use in vertical and interaction comparisons

* Last applied to Leeks 1961/62

https://doi.org/10.23637/ERADOC-1-158

66/B/5.8

GLOBE BEET

DUNG PLOTS

TOTAL PRODUCE

Dung Organic manure applied 1942 - 61*	D1 D1	D2 D2	D1 C1	D2 C2	D1+C1	D2+C2	Mean
			2ND HARVEST				
		(±1.461)			(±1.033)		
Mean	16.31	25.55	18.20	25.01	17.26	25.28	21.27
Fertiliser		(±2.066)			(±1.461)		(±1.033)
P0K0	14.24	25.60	16.77	23.01	15.51	24.30	19.91
P1K1	18.39	25.49	19.62	27.01	19.01	26.25	22.63
		(1) and (2)			(3) and (4)		(±0.638)
N0	8.53	19.23	8.43	15.18	8.48	17.20	12.84
N1	13.04	24.13	16.98	25.22	15.01	24.67	19.84
N2	18.96	29.38	22.46	28.10	20.71	28.74	24.73
N3	24.73	29.44	24.93	31.53	24.83	30.49	27.66

(1) (±2.254) For use in horizontal and diagonal comparisons
(2) (±1.275) For use in vertical and interaction comparisons
(3) (±1.594) For use in horizontal and diagonal comparisons
(4) (±0.901) For use in vertical and interaction comparisons

* Last applied to Leeks 1961/62

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66/B/5.9

GLOBE BEET

DUNG PLOTS

TOTAL PRODUCE

Dung Organic manure applied 1942 - 61*	D1 D1	D2 D2	D1 C1	D2 C2	D1+C1	D2+C2	Mean
	MEAN OF 2 HARVESTS						
		(±1.157)			(±0.818)		
Mean	12.91	21.22	15.04	20.17	13.98	20.69	17.33
Fertiliser		(±1.636)			(±1.157)		(±0.818)
POKO	10.74	20.56	13.39	18.45	12.07	19.51	15.79
P1K1	15.08	21.87	16.69	21.88	15.89	21.88	18.88
		(1) and (2)			(3) and (4)		(±0.423)
NO	6.41	15.49	7.47	12.60	6.94	14.04	10.49
N1	10.61	20.36	14.15	20.28	12.38	20.32	16.35
N2	15.46	24.21	18.55	22.55	17.00	23.38	20.19
N3	19.17	24.82	20.00	25.24	19.59	25.03	22.31

(1) (±1.745) For use in horizontal and diagonal comparisons
(2) (±0.858) For use in vertical and interaction comparisons
(3) (±1.234) For use in horizontal and diagonal comparisons
(4) (±0.607) For use in vertical and interaction comparisons

* Last applied to Leeks 1961/62

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66/B/5.10

GLOBE BEET

FERTILISER PLOTS

MARKETABLE ROOTS

	N1	N2	N3	N4	Mean
		1ST HARVEST			
		(1) and (2)			(±0.610)
P1K1	2.25	4.01	5.29	5.21	4.19
P2K2	3.49	5.54	6.43	6.01	5.37
Mean	2.87	4.78	5.86	5.61	4.78
			(±0.354)		
		2ND HARVEST			
		(1) and (2)			(±1.031)
P1K1	6.03	10.50	12.68	14.25	10.86
P2K2	6.92	11.90	14.83	15.45	12.27
Mean	6.47	11.20	13.75	14.85	11.57
			(±0.658)		

	1st harvest	2nd harvest	
(1)	(±0.933)	(±1.600)	For use in vertical and diagonal comparisons
(2)	(±0.502)	(±0.931)	For use in horizontal and interaction comparisons

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66/B/5.11

GLOBE BEET

FERTILISER PLOTS

	N1	N2	N3	N4	Mean
		MARKETABLE ROOTS			
		MEAN OF 2 HARVESTS			
		(1) and (2)			(±0.790)
P1K1	4.14	7.26	8.98	9.73	7.53
P2K2	5.20	8.72	10.63	10.73	8.82
Mean	4.67	7.99	9.81	10.23	8.17
			(±0.446)		

TOTAL PRODUCE

1ST HARVEST

			(1) and (2)		(±0.958)
P1K1	7.09	10.80	12.33	12.64	10.71
P2K2	8.84	12.58	13.82	13.94	12.29
Mean	7.97	11.69	13.07	13.29	11.50
			(±0.507)		

	Marketable roots	Total produce	
(1)	(±1.203)	(±1.446)	For use in vertical and diagonal comparisons
(2)	(±0.631)	(±0.717)	For use in horizontal and interaction comparisons

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66/B/5.12

GLOBE BEET

FERTILISER PLOTS

TOTAL PRODUCE

	N1	N2	N3	N4	Mean
		2ND HARVEST			
		(1) and (2)			(±1.461)
P1K1	10.45	16.53	19.65	21.92	17.14
P2K2	11.63	17.89	22.27	23.59	18.84
Mean	11.04	17.21 (±0.901)	20.96	22.75	17.99

MEAN OF 2 HARVESTS

		(1) and (2)			(±1.157)
P1K1	8.77	13.66	15.99	17.28	13.93
P2K2	10.23	15.23	18.04	18.76	15.57
Mean	9.50	14.45 (±0.607)	17.02	18.02	14.75

	2nd harvest	Mean of 2 harvests	
(1)	(±2.254)	(±1.745)	For use in vertical and diagonal comparisons
(2)	(±1.275)	(±0.858)	For use in horizontal and interaction comparisons

66/B/5.13

CARROTS

FERTILISER PLOTS P1K1

	SP0	SP1	N1	N2	Mean
			ROOTS		
	(1) and (2)		(3) and (4)		(±0.921)
0	15.55	16.18	14.36	17.38	15.87
PT	17.17	16.79	15.42	18.55	16.98
			(5) and (6)		(±0.653)
		SP0	15.10	17.62	16.36
		SP1	14.67	18.30	16.49
		Mean (±0.312)	14.89	17.96	16.42

	SP0	SP1	N1	N2	Mean
			TOPS		
0	4.60	5.32	4.41	5.50	4.96
PT	5.92	5.60	4.85	6.67	5.76
		SP0	4.66	5.86	5.26
		SP1	4.60	6.32	5.46
		Mean	4.63	6.09	5.36

(1) (±1.129) (3) (±0.973) (5) (±0.723) For use in vertical and diagonal comparisons

(2) (±0.923) (4) (±0.441) (6) (±0.441) For use in horizontal and interaction comparisons

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66/B/5.14

CARROTS

FERTILISER PLOTS P2K2

	SP0	SP2	N1	N2	Mean
			ROOTS		
	(1) and (2)		(3) and (4)		(±0.921)
0	19.72	19.56	17.83	21.45	19.64
PT	20.21	19.24	18.30	21.16	19.73
			(5) and (6)		(±0.653)
		SP0	18.57	21.36	19.96
		SP2	17.56	21.25	19.40
		Mean (±0.312)	18.06	21.30	19.68

	SP0	SP2	N1	N2	Mean
			TOPS		
0	7.03	6.92	6.00	7.95	6.98
PT	8.31	7.33	6.88	8.75	7.82
		SP0	6.81	8.52	7.67
		SP2	6.07	8.18	7.12
		Mean	6.44	8.35	7.40

(1) (±1.129) (3) (±0.973) (5) (±0.723) For use in vertical and diagonal comparisons

(2) (±0.923) (4) (±0.441) (6) (±0.441) For use in horizontal and interaction comparisons

https://doi.org/10.23637/ERADOC-1-158

66/E/5.15

CARROTS

OLD D1 PLOTS

ROOTS

	D0	D1	SP0	SP1	N0	N1	Mean
	(±0.351)*		(±0.450)*		(±0.297)*		
P0K0	19.54	23.12	20.64	22.01	20.68	21.97	21.33
P1K1	19.09	23.05	20.26	21.88	20.62	21.52	21.07
			(1) and (2)		(3) and (4)		(±0.248)
		D0	18.41	20.21	18.39	20.23	19.31
		D1	22.48	23.68	22.91	23.25	23.08
					(5) and (6)		(±0.318)
				SP0	19.92	20.98	20.45
				SP1	21.38	22.51	21.94
				Mean (±0.210)	20.65	21.74	21.20

(1) (±0.403) (3) (±0.325) (5) (±0.381) For use in vertical and diagonal comparisons

(2) (±0.450) (4) (±0.297) (6) (±0.297) For use in horizontal and interaction comparisons

* For use in horizontal and interaction comparisons

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66/B/5.16

CARROTS

OLD D1 PLOTS

TOPS

	D0	D1	SP0	SP1	N0	N1	Mean
P0K0	6.75	9.80	8.25	8.29	7.67	8.88	8.27
P1K1	7.43	11.36	8.87	9.93	8.86	9.94	9.40
		D0	6.78	7.40	6.17	8.02	7.09
		D2	10.34	10.81	10.36	10.80	10.58
				SP0	7.96	9.16	8.56
				SP1	8.56	9.66	9.11
				Mean	8.26	9.41	8.84

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66/B/5.17

CARROTS

OLD D2 PLOTS

ROOTS

	D0	D2	SP0	SP1	N0	N1	Mean
	(±0.351)*		(±0.450)*		(±0.297)*		
P0K0	19.31	25.03	22.17	22.17	21.52	22.82	22.17
P1K1	21.22	24.42	23.09	22.55	22.01	23.63	22.82
			(1) and (2)		(3) and (4)		(±0.248)
		D0	20.28	20.26	19.24	21.29	20.27
		D2	24.98	24.47	24.29	25.16	24.72
					(5) and (6)		(±0.318)
				SP0	21.58	23.68	22.63
				SP1	21.94	22.78	22.36
				Mean (±0.210)	21.76	23.23	22.50

(1) (±0.403) (3) (±0.325) (5) (±0.381) For use in vertical and diagonal comparisons

(2) (±0.450) (4) (±0.297) (6) (±0.297) For use in horizontal and interaction comparisons

*For use in horizontal and interaction comparisons

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66/B/5.18

CARROTS

OLD D2 PLOTS

TOPS

	D0	D2	SP0	SP1	N0	N1	Mean
P0K0	8.27	13.38	10.78	10.86	10.18	11.46	10.82
P1K1	7.69	12.68	10.37	9.99	9.55	10.81	10.18
		D0	7.91	8.04	7.06	8.89	7.98
		D2	13.24	12.81	12.67	13.39	13.03
				SP0	9.82	11.33	10.58
				SP1	9.90	10.95	10.43
				Mean	9.86	11.14	10.50

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66/B/6

RESIDUAL PHOSPHATE ROTATION

(RP)

The long term and residual effects of a number of phosphate fertilisers compared with superphosphate - Great Field IV and Sawyers I 1966, the seventh year.

For treatments and rotation, etc. see 'Results 63/B/8 and previous years' results see 60/B/9, 61/B/8, 62/B/8, 63/B/8, 64/B/7 and 65/B/7.

In 1966 the experiments were fallowed.

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66/B/7.1

CULTIVATION - WEEDKILLER ROTATION

(CW)

Great Harpenden 1966 - the 6th year

A comparison of weed control by various cultivation methods and by pre-emergence weedkillers.

For previous history, rotations, treatments etc., see 'Results' 61/B/10, 62/B/10, 63/B/10, 64/B/9 and 65/B/8.

Area harvested: Beans - 0.0100, wheat, potatoes and barley - 0.0107.

Minimum cultivation plots: One plot per block (treatment B) receives minimum cultivations. (The remaining reserve plots will in future be described as treatment C). Details will vary according to conditions of soil etc. Paraquat may be used at any stage in this rotation, and special machinery maybe used for drilling these treatments if it is more suitable. In 1966 the cultivations were:-

Beans: Deep-tine cultivated, disc-harrowed, spring-tine cultivated, sprayed with simazine after drilling.

Wheat: Deep-tine cultivated, disc-harrowed, spring-tine cultivated, sprayed with the same selective weedkiller as used on H sub-plots.

Potatoes: Rotary cultivated, treated with herbicide as on X and Y plots.

Barley: Minimum cultivations necessary to produce a seedbed, sprayed with the same selective weedkiller as used on the H sub-plots.

In 1966 beans on both X and Y plots received the same treatment (simazine at 1 lb in 40 gals in spring) - these plots are denoted by S.

Potatoes on the X and Y plots received the same spray (1 lb linuron plus 0.75 lb ion paraquat in 37 gals), denoted by S. The Y plots received an additional cultivation by 'rotary ridger', which was also applied to the M plots.

Operations in 1966

Cultivations, etc.:-

Spring beans: T plots deep-tine cultivated twice and B plots once: Oct 21, 1965. P, A and C plots ploughed: Oct 22. T plots deep-tine cultivated 3rd time and B plots 2nd time, P, T, A, B and C plots disced: Oct 26. P, T, A, B and C plots disced: Oct 30.

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P, T, A and C plots spring-tine cultivated twice and B plots once, R plots rotary cultivated: Mar 8, 1966. R plots rotary cultivated 2nd time, seed drilled at 200 lb: Mar 9. S plots sprayed: Mar 15. M and C plots tractor hoed 3 times: May 16, June 3 and June 13. Combine harvested: Sept 16. Variety: Pedigree Tick.

Spring wheat: T plots deep-tine cultivated twice: Oct 21, 1965. P, A and C plots ploughed: Oct 22. T plots deep-tine cultivated 3rd time, B plots deep-tine cultivated twice, P, T, A, B and C plots disced: Oct 26. P, T, A, B and C plots disced: Oct 30. P, T, A, B, and C plots spring-tine cultivated twice: Mar 8, 1966. P plots rotary cultivated: Mar 9. R plots rotary cultivated 2nd time, P, T, A, B and C plots spring-tine cultivated 3rd time: Mar 14. Seed drilled at 180 lb: Mar 15. All plots rolled: Mar 21. H sub-plots and B plots sprayed with mecoprop/2,4-D (Methoxane Extra at 6 pints in 40 gals): May 13. Combine harvested: Sept 7. Variety: Kloka.

Potatoes: T plots deep-tine cultivated twice, P and C plot ploughed: Dec 21, 1965. R, A and B plots rotary cultivated: Mar 23, 1966. P and C plots spring-tine cultivated, T plots deep-tine cultivated 3rd time: Mar 24. Basal compound fertiliser applied: Mar 31. R, A and B plots rotary cultivated, T, P and C plots spring-tine cultivated twice: Apr 4. Potatoes machine planted: Apr 5. S plots sprayed: May 10. M and C plots chain-harrowed: May 14. M and C plots grubbed: May 14. M, Y and C plots rotary ridged: June 16. Sprayed 3 times with mancozeb at 1.2 lb in 37 gals: June 30, July 22 and Aug 5. Sprayed with undiluted BOV at 15 gals: Sept 8. Lifted: Sept 20. Variety: Pentland Dell.

Barley: All plots sprayed with sodium trichloroacetate at 18 lb in 40 gals: Oct 20, 1965. All plots spring-tine cultivated: Oct 28. All plots sprayed 2nd time with sodium trichloro-acetate at 18 lb in 40 gals: Dec 7. All plots spring-tine cultivated: Dec 22. T plots deep-tine cultivated: Feb 2, 1966. P and C plots ploughed: Feb 3. P, T and C plots spring-tine cultivated twice, B plots once: Mar 7. R and A plots rotary cultivated, seed drilled at 155 lb: Mar 8. All plots rolled: Mar 21. H sub-plots and B plots sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): May 13. Combine harvested: Aug 20.

Standard errors per plot.

Spring beans.	Grain, whole plot:	6.76 or 22.2% (8 d.f.)
Wheat.	Grain, whole plot:	2.97 or 8.6% (8 d.f.)
	sub plot:	3.24 or 9.4% (9 d.f.)
Potatoes.	Total tubers, whole plot:	1.782 or 11.1% (8 d.f.)
Barley.	Grain, whole plot:	2.04 or 4.7% (8 d.f.)
	sub plot:	2.79 or 6.4% (9 d.f.)

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66/B/7.5

BARLEY

GRAIN

	P	R	T	Mean
Mean (±0.83)	42.3	44.1	43.4	43.3
		(±1.45)		(±0.83)
1965				
M	41.2	43.8	44.3	43.1
X	40.2	45.3	43.4	43.0
Y	45.6	43.1	42.5	43.7
		(1) and (2)		(±0.66)
O	42.0	44.1	44.2	43.4
H	42.6	44.0	42.6	43.1
	A-	AH	BH	C
	43.9	41.8	42.4	39.4

General mean: 42.8

Mean D.M. %: 84.2

(1) (±1.16) For use in horizontal and diagonal comparisons
(2) (±1.14) For use in vertical and interaction comparisons

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CULTIVATION - WEEDKILLER ROTATION

(WCW)

A comparison of weed control by various cultivation methods and by a pre-emergence weedkiller - Woburn Great Hill I and II 1966, the seventh year.

For history, rotation, treatments etc., to barley, see 'Results' 60/B/11, 61/B/11, 62/B/11, 63/B/11, 64/B/10 and 65/B/9.

Area of each plot: 0.0482. Area harvested: Potatoes - 0.0069, barley - 0.0230.

Potatoes.
Treatments: All combinations of:-

1. Primary cultivations: Ploughed (P), rotary cultivated (R), deep-tine cultivated (T).
2. Weedkiller: None, normal cultivations (M), linuron 2 lb, plus paraquat 0.75 lb ion in 40 gals, with no cultivations (X), linuron, plus paraquat, with rotary ridging (Y).

Basal applications:
Barley: 340 lb (20:10:10) combine drilled. Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 6 pints in 35 gals).
Potatoes: 10 cwt (17:11:22). Fungicide: Mancozeb 1.2 lb in 33 gals. Haulm destroyer: Diquat (Reglone at 4 pints in 33 gals).

Cultivations, etc.:
Potatoes: T plots deep-tine cultivated (two strokes): Nov 26, 1965. P plots ploughed: Dec 14. P and T plots spring-tine cultivated, R plots rotary cultivated: Mar 23, 1966. T plots deep-tine cultivated (one stroke): Mar 24. Basal NPK applied: Mar 25. P and T plots spring-tine cultivated (twice), R plots rotary cultivated (twice), potatoes machine planted: Mar 31. All plots earthed up: Apr 1. M plots harrowed with weeder: Apr 26. M plots re-ridged: May 3. M plots ridges harrowed, X and Y plots sprayed with weedkiller: May 4. M plots harrowed with weeder: May 17. M plots grubbed: June 2. M and Y plots earthed up with rotary ridger: June 4. Fungicide applied: June 29, July 15 and Aug 4. Reglone applied: Sept 13. Haulm destroyed mechanically: Sept 16. Lifted: Sept 22. Variety: Maris Piper.

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Barley: All plots spring-tine cultivated: Dec 14, 1965. T plots deep-tine cultivated: Dec 15. P plots ploughed: Jan 7, 1966. P and T plots spring-tine cultivated: Mar 9. R plots rotary cultivated, all plots harrowed, seed drilled at 150 lb: Mar 10. 'Nitro-Chalk' applied: Mar 14. Weedkiller applied: May 10. Combine harvested: Aug 19. Variety: Maris Badger.

Standard errors per plot.

Potatoes.	Total tubers:	2.634 or 14.8%	(8 d.f.)
Barley.	Grain:	3.27 or 11.5%	(8 d.f.)

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SUMMARY OF RESULTS

POTATOES

	M	X	Y	Mean
		TOTAL TUBERS		
		(±1.862)		(±1.075)
P	16.92	20.25	19.11	18.76
R	17.57	16.46	18.52	17.52
T	17.45	17.87	16.19	17.17
Mean (±1.075)	17.31	18.19	17.94	17.81
		% WARE		
P	94.7	93.2	95.5	94.5
R	95.9	95.8	92.8	94.8
T	94.9	93.1	92.4	93.5
Mean	95.2	94.0	93.6	94.3

BARLEY

GRAIN

	N1	N2	N3	Mean
		(±2.31)		(±1.34)
P	21.2	27.8	34.4	27.8
R	17.9	30.4	34.2	27.5
T	24.1	31.1	35.4	30.2
Mean (±1.34)	21.1	29.7	34.7	28.5

Mean D.M. %: 83.3

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66/B/9.1

INTENSIVE CEREALS

(WIC)

Woburn Stackyard Classical Site 1966 - the first year

To investigate the growing of continuous winter wheat in comparison with a five course rotation, both with heavy dressings of fertilisers. There is a similar experiment involving spring barley.

These experiments are respectively, wheat on part of the site of the Continuous Wheat Experiment 1877 - 1954 and the barley on part of the site of the continuous barley. As well as crop yields, soil carbon and nitrogen will be studied, and the incidence of soil-borne diseases.

Design: For each cereal: 2 randomised blocks of 6 plots, split for N.

Area of each sub-plot: 0.0103. Area harvested: Wheat and barley - 0.0067, potatoes - 0.0069. Area of each whole plot: 0.0431. Area harvested: Ley - 0.0411.

Treatments: Wheat blocks: All combinations of:-

1. Whole plots: cropping:
   Continuous wheat: Five course rotation, in all phases:
   1 year ley, potatoes, wheat, wheat, wheat.
2. Sub-plots: Nitrogen to wheat:
   0.5 (N1), 1.0 (N2), 1.5 (N3), 2.0 (N4) cwt N as 'Nitro-Chalk' as spring top-dressing.

Treatments: Barley blocks: All combinations of:-

1. Whole plots: cropping:
   Continuous barley: Five course rotation, in all phases:
   1 year ley, potatoes, barley, barley, barley.
2. Sub-plots: Nitrogen to barley:
   0.4 (N1), 0.8 (N2), 1.2 (N3), 1.6 (N4) cwt N as 'Nitro-Chalk' applied in the seedbed.

Varieties:	Potatoes:	Pentland Dell
	Wheat:	Cappelle
	Barley:	Maris Badger
	Ley:	1 lb English Italian ryegrass, 2 lb Danish Italian ryegrass, 1.5 lb English Broad Red clover, 0.5 lb Canadian Alsike Clover. Mixture sown at 29 lb.

Other applications:

All crops: 1.0 cwt P_2O_5, 2.0 cwt K_2O, half ploughed in, half worked into the seedbed.

Ley: 0.4 cwt N as 'Nitro-Chalk'.

Potatoes: 1.2 cwt N as 'Nitro-Chalk'.

NOTE: The whole area carried spring beans without manure in 1964, and was bare fallowed in 1965. To lessen the risk of damage due to Wheat-Bulb Fly mustard was broadcast with 0.42 cwt N as 'Nitro-Chalk' on June 28, 1965. The mustard was destroyed mechanically on Oct 7, and ploughed in on Oct 13.

Cultivations, etc.:

Ley: Half basal PK applied: Oct 26, 1965. Remaining basal PK applied: Mar 22, 1966. 'Nitro-Chalk' applied, seed sown at 29 lb: Mar 30. Cut twice for hay: July 4, Aug 26.

Potatoes: Half basal PK applied: Oct 26, 1965. Remaining basal PK, and 'Nitro-Chalk' applied: Mar 23, 1966. Rotary cultivated, potatoes machine planted: Mar 29. Earthed up: June 8. Sprayed with mancozeb 1.2 lb in 33 gals: June 29, July 15, Aug 4. Haulm mechanically destroyed: Sept 3. Lifted: Sept 13.

Wheat: Half basal PK applied: Oct 26, 1965. Remaining basal PK applied: Oct 29. Seed drilled 160 lb: Nov 2. 'Nitro-Chalk' applied: Apr 12, 1966. Combine harvested: Aug 25.

Barley: Half basal PK applied: Oct 26, 1965. Remaining basal PK applied: Mar 7, 1966. Seed drilled 140 lb, and 'Nitro-Chalk' applied: Mar 8. Combine harvested: Aug 18.

Standard errors per sub plot. Grain:

Wheat: 2.23 or 5.7% (21 d.f.)

Barley: 2.15 or 4.6% (21 d.f.)

https://doi.org/10.23637/ERADOC-1-158

66/B/9.3

SUMMARY OF RESULTS

WHEAT GRAIN

N1	N2	N3	N4	Mean
36.2	42.8 (±0.79)	39.9	38.0	39.2

BARLEY GRAIN

38.1	48.4 (±0.76)	51.4	49.0	46.7

POTATOES

	Permanent wheat block	Permanent barley block
Total tubers	7.65	13.45
% ware	89.5	94.6

CLOVER RYEGRASS LEY

	Permanent wheat block		Permanent barley block	
	Mean	Mean D.M. %	Mean	Mean D.M. %
1st cut	16.8	38.5	21.9	32.0
2nd cut	22.6	16.8	25.2	17.8
Total of 2 cuts	39.4	27.6	47.2	24.9

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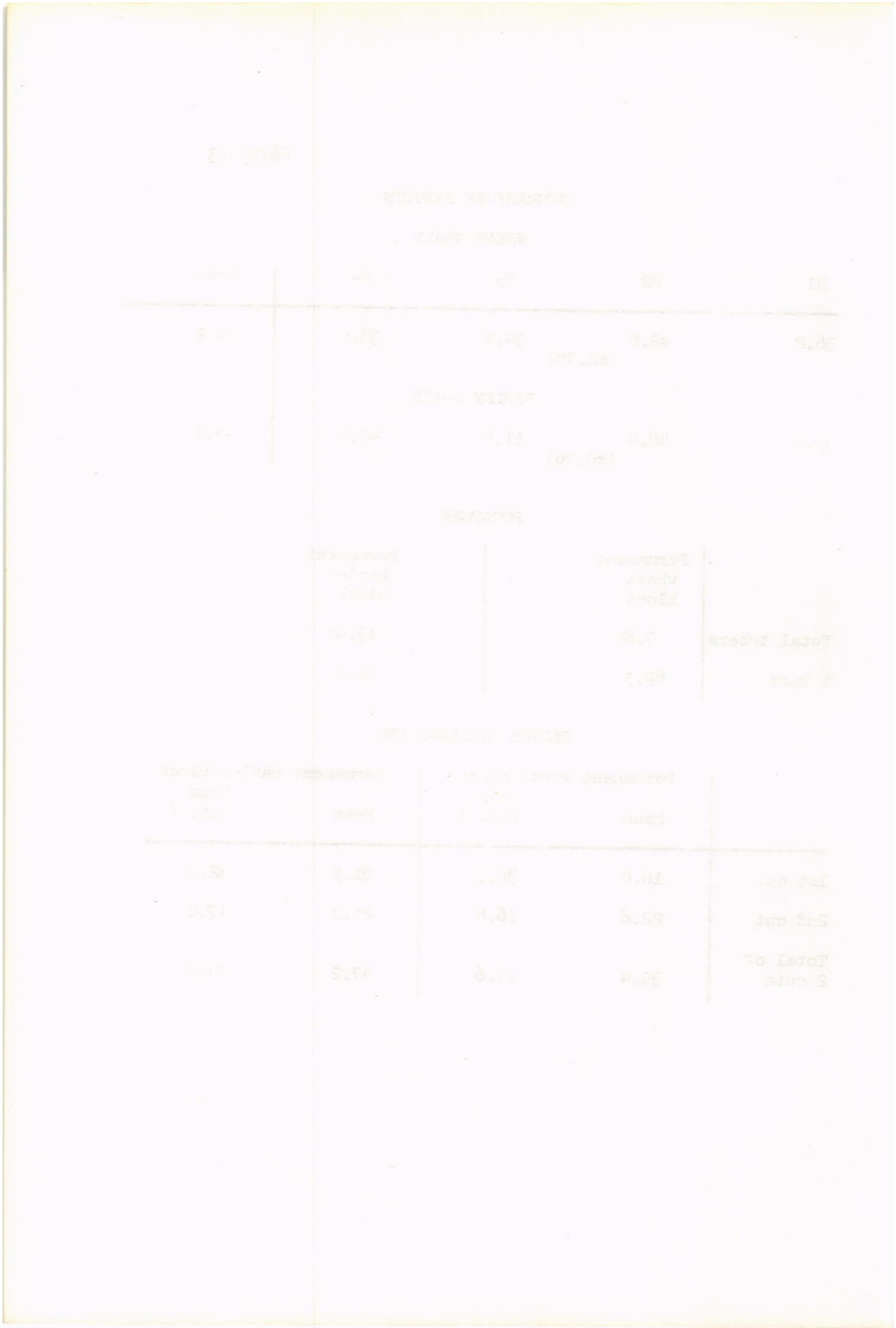

66/C/1.1

LEVELS OF K AND Mg

(LM)

K and Mg - Rothamsted Sawyers I - the 8th year, kale.

Design: 3 x 3 x 3 arrangement in 6 blocks of 9 plots, with 3 blocks (1 replicate) at each of 2 levels of Ca.
In addition a 3 x 3 arrangement in 2 blocks of 9 (1 at each level of Ca).

Area of each plot: 0.0212. Area harvested: 0.0045.

Treatments:
Blocks receiving sodium treatments. All combinations of:-
1. (To blocks). Magnesium free calcium carbonate in 1959 and 1962 as follows:
   1959 10, 40 cwt (Ca1, Ca2)
   1962 38, 76 cwt (Ca1, Ca2)
2. Mg applied each year: None (Mg0), 29 (Mg1), 58 (Mg2) lb Mg applied as magnesium sulphate.
3. K applied each year: (In lb K, as sulphate of potash). None (K0), 68 (K1), 136 (K2).
4. Na (1966 only): None (Na0), 130 lb. Na as sodium chloride (Cl), 130 lb as sodium carbonate (C).

Blocks not receiving sodium treatment. All combinations of (1), (2), (3) as above.

Basal applications: 0.5 cwt P_2O_5 as triple superphosphate in seedbed, 1.0 cwt N as 'Nitro-Chalk' in seedbed, 1.0 cwt N as 'Nitro-Chalk' top-dressed.

Cultivations, etc.:
Ploughed: Oct 19, 1965. Basal P applied: Mar 18, 1966. Fertilisers applied: Apr 26. 'Nitro-Chalk' applied, seed drilled at 1.5 lb: Apr 28. 'Nitro-Chalk' top-dressed: June 23. Harvested: Dec 5. Variety: Thousand Head.

NOTES: (1) The percentages of Na, Mg and K in the crop were determined.
(2) For previous years' results see 'Results' 60/Ci/3, 61/C/7, 62/C/6, 63/C/1, 64/C/1, 65/C/1.

Standard errors per plot (pooled). Kale fresh weight:
1.703 or 6.8% (34 d.f.)