

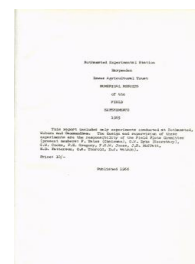
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# Yields of the Field Experiments 1965

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## Rotation Experiments

### Rothamsted Research

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65/B/1.1

## LEY AND ARABLE ROTATIONS

(HIA and FIA)

Highfield and Fosters Field 1964, the 17th year.

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

Winter wheat: A further test of 0 v 0.6 N (T0 v T1) is now applied as 'Nitro-Chalk' in December or early January. The 1965 crop received additional K2O at 0.6 cwt on the plough furrow, as muriate of potash.

Potatoes: All fertiliser tests on potatoes are discontinued, except the comparison of dung and PK (0.5 cwt P2O5, 1.0 cwt K2O as (0:14:28)) on quarter plots. The basal compound is now (15:15:15) applied at 1.2 cwt N, 1.2 cwt P2O5 and 1.2 cwt K2O.

Sugar beet: The N test is discontinued. The basal nitrogen is 1.5 cwt N, partly applied in the basal compound (now 15:15:15) and partly as 'Nitro-Chalk'.

Hay: This is no longer undersown. Italian ryegrass is sown in autumn or spring. The manuring remains the same but the basal NPK is applied in the seedbed (for spring sowing) or in early spring (for autumn sowing).

Lucerne: An infestation with stem eelworm (*Ditylenchus dipsaci*) made it necessary to plough out one whole plot of third year lucerne on each field.

NOTES: (1) The wheat following ryegrass (replacing 3rd year 'all-grass' ley) on Fosters was badly thinned in spring by stem-boring larvae.

(2) Weather prevented the last cutting planned for 1st and 2nd year all-grass and clover-grass leys, also permanent and reseeded grasses.

Cultivations, etc.:

### HIGHFIELD

1st year Treatment Crops:

All-grass ley: Ploughed: Oct 16, 1964. Basal PK compound applied: Apr 5, 1965. Seeds sown at 30 lb, 'Nitro-Chalk' applied: Apr 6. Sprayed with 2,4-D butoxyethylester at 0.44 lb a.e. in 40 gals: June 2. Cut 3 times: July 2, Aug 5, Sept 9. NK compound applied after each cut.

Clover-grass ley: Ploughed: Oct 16, 1964. Basal PK compound applied: Apr 5, 1965. Seeds sown at 33 lb: Apr 6. Sprayed



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with MCPA/MCPB (Tropotox Plus at 4 pints in 40 gals): June 2.  
Cut 3 times: July 2, Aug 5, Sept 9. Muriate of potash applied after each cut.

Lucerne: Ploughed: Oct 16, 1964. Basal PK compound applied: Apr 5, 1965. Seed drilled at 20 lb: Apr 6. Cut 3 times: July 9, Sept 7, Nov 3.

Hay: Ploughed (undersown seeds having failed): Oct 22, 1964. Basal NPK compound applied, seeds sown at 38.5 lb: Apr 6, 1965. Sprayed with 2,4-D butoxyethylester at 0.44 lb a.e. in 40 gals: June 2. Cut twice: July 2, Aug 5. NK compound applied after first cut.

2nd year Treatment Crops:-

All-grass ley: Basal PK compound applied: Nov 26, 1964. 'Nitro-Chalk' applied: Apr 9, 1965. Cut 4 times: May 20, July 1, Aug 5, Sept 9. NK compound applied after each cut.

Clover-grass ley: Basal PK compound applied: Nov 26, 1964. Cut 4 times: May 21, July 1, Aug 5, Sept 9. Muriate of potash applied after each cut.

Lucerne: Basal PK compound applied: Nov 26, 1964. Sprayed with paraquat at 2 lb ion in 44 gals: Feb 25, 1965. Cut four times: May 25, July 9, Sept 7, Nov 3.

Sugar beet: Ploughed: July 27, 1964. Muriate of potash applied: Feb 11, 1965. Basal NPK compound applied: Apr 1. 'Nitro-Chalk' applied, plots rotary cultivated, seed drilled at 5.25 lb: Apr 2. Singled: May 20. Sprayed with menazon (Saphicol at 0.75 pints in 37 gals): July 1. Lifted: Nov 16.

3rd year Treatment Crops:-

All-grass ley: Basal PK compound applied: Nov 26, 1964. 'Nitro-Chalk' applied: Apr 9, 1965. Cut 4 times: May 21, July 1, Aug 5, Sept 9. NK compound applied after first 3 cuts.

Clover-grass ley: Basal PK compound applied: Nov 26, 1964. Cut 4 times: May 21, July 1, Aug 5, Sept 9, 1965. Muriate of potash applied after first 3 cuts.

Lucerne: Basal PK compound applied: Nov 26, 1964. Sprayed with paraquat at 2 lb ion in 44 gals: Feb 25, 1965. Plots 107 and 108 cut and ploughed up (no yields taken): May 6 and reploughed: July 21. Cut 3 times: May 25, July 9, Sept 6.

Oats: Ploughed: Nov 30, 1964. Seed combine drilled at 170 lb, 'Nitro-Chalk' applied: Mar 15, 1965. Sprayed with MCPA at 1.13 lb and dicamba at 0.08 lb in 40 gals: May 19. Combine harvested: Aug 28.

1st Test Crop, Wheat:-

Ploughed: Oct 21, 1964. Additional K fertiliser applied: Oct 28. Seed combine drilled at 170 lb: Oct 30. 'Nitro-Chalk' applied: Dec 18, spring dressing: Apr 14, 1965. Sprayed with mecoprop/2,4-D (Methoxone Extra at 7 pints in 40 gals): Apr 23. Combine



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harvested: Sept 12.

2nd Test Crop, Potatoes:-

Dung applied, plots ploughed: Nov 5, 1964. Fertilisers applied: Apr 21, 1965. Plots rotary cultivated, potatoes machine planted: Apr 23. Earthed up: June 14. Sprayed 3 times with mancozeb at 1.2 lb in 37 gals: June 30, July 27, Aug 10. Sprayed with diquat (Reglone at 4 pints in 40 gals): Sept 6. Haulm destroyed mechanically: Sept 14. Lifted: Oct 20.

3rd Test Crop, Barley:-

Ground chalk applied: Sept 28, 1964. Additional ('balancing') P and K applied: Oct 5. Ploughed: Oct 8. 'Nitro-Chalk' applied: Feb 18, 1965. Seed combine drilled at 140 lb: Mar 15. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): May 11. Combine harvested: Sept 6.

Permanent grasses: 15th, 16th and 17th experimental years permanent (old) grass, all blocks, 15th, 16th and 17th years reseeded grass, blocks 1, 4, 6, 7, 9 and 12. Ground chalk applied to blocks 10 and 11: Nov 11, 1964. Basal PK compound applied: Nov 26. 'Nitro-Chalk' applied to 'all-grass' half plots: Apr 9, 1965. Cut four times: May 21, July 2, Aug 5, Sept 10 (reseeded), Sept 27 (old). Muriate of potash and NK compound applied to appropriate half plots after each cut.

FESTERS

1st year Treatment Crops:-

All-grass ley: Ploughed: Oct 15, 1964. Basal PK compound applied: Apr 5, 1965. Seed sown at 30 lb, 'Nitro-Chalk' applied: Apr 6. Sprayed with 2,4-D butoxyethylester at 0.44 lb a.e. in 40 gals: June 2. Cut 3 times: July 6, Aug 4, Sept 9. NK compound applied after each cut.

Clover-grass ley: Ploughed: Oct 15, 1964. Basal PK compound applied: Apr 5, 1965. Seed sown at 33 lb: Apr 6. Sprayed with MCPB/MCPA (Tropotox plus at 4 pints in 40 gals): June 2. Cut 3 times: July 6, Aug 4, Sept 9. Muriate of potash applied after each cut.

Lucerne: Ploughed: Oct 15, 1964. Basal PK compound applied: Apr 5, 1965. Seed sown at 20 lb: Apr 6. Cut 3 times: July 9, Sept 6, Nov 2.

Hay: Ploughed (undersown seeds having failed): Oct 22, 1964. Basal NPK compound applied, seed sown at 38.5 lb: Apr 6, 1965. Sprayed with 2,4-D butoxyethylester at 0.44 lb in 40 gals: June 2. Cut twice: July 1, Aug 6. NK compound applied after first cut.



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2nd year Treatment Crops:-

All-grass ley: Basal PK compound applied: Nov 26, 1964. 'Nitro-Chalk' applied: Apr 9, 1965. Cut 4 times: May 20, July 1, Aug 4, Sept 9. NK compound applied after each cut.  
Clover-grass ley: Basal PK compound applied: Nov 26, 1964. Cut 4 times: May 20, July 1, Aug 4, Sept 9, 1965. Muriate of potash applied after each cut.  
Lucerne: Basal PK compound applied: Nov 26, 1964. Sprayed with paraquat at 2 lb ion in 44 gals: Feb 25, 1965. Cut 4 times: May 25, July 9, Sept 6, Nov 2.  
Sugar beet: Ploughed: July 27, 1964. Muriate of potash applied: Feb 11, 1965. Basal NPK compound applied: Apr 1. 'Nitro-Chalk' applied, plots rotary cultivated, seed drilled at 5.25 lb: Apr 2. Singled: May 25. Sprayed with menazon (Saphicol at 0.75 pints in 37 gals): July 1. Lifted: Nov 16.

3rd year Treatment Crops:-

All-grass ley: Basal PK compound applied: Nov 26, 1964. 'Nitro-Chalk' applied: Apr 9, 1965. Cut 4 times: May 20, July 1, Aug 5, Sept 9. NK compound applied after first 3 cuts.  
Clover-grass ley: Basal PK compound applied: Nov 26, 1964. Cut 4 times: May 20, July 1, Aug 5, Sept 9, 1965. Muriate of potash applied after first 3 cuts.  
Lucerne: Basal PK compound applied: Nov 26, 1964. Sprayed with paraquat at 2 lb ion in 44 gals: Feb 25, 1965. Plots 51 and 52 cut and ploughed up (no yields taken): May 6 and reploughed: July 21. Cut 3 times: May 25, July 9, Sept 6.  
Oats: Ploughed: Nov 30, 1964. Seed drilled at 170 lb: Mar 15, 1965. 'Nitro-Chalk' applied: Mar 16. Sprayed with MCPA at 1.13 lb and dicamba at 0.08 lb in 40 gals: May 19. Combine harvested: Aug 28.

1st Test Crop, Wheat:-

Ploughed: Oct 21, 1964. Additional K fertiliser applied: Oct 27. Seed combine drilled at 170 lb: Oct 30. 'Nitro-Chalk' applied: Dec 18, spring dressing: Apr 14, 1965. Sprayed with mecoprop/2,4-D (Methoxone Extra at 7 pints in 40 gals): Apr 23. Combine harvested: Sept 12.

2nd Test Crop, Potatoes:-

Dung applied, plots ploughed: Nov 4, 1964. Fertilisers applied: Apr 21, 1965. Rotary cultivated, potatoes machine planted: Apr 22. Earthed up: June 14. Sprayed 3 times with mancozeb at 1.2 lb in 37 gals: July 1, July 27, Aug 10. Sprayed with diquat (Reglone at 4 pints in 40 gals): Sept 6. Haulm destroyed mechanically: Sept 14. Lifted: Oct 19.

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3rd Test Crop, Barley:-

Additional ('balancing') P and K applied: Oct 5, 1964. Ploughed: Oct 8. 'Nitro-Chalk' applied: Feb 18, 1965. Seed combine drilled at 140 lb: Mar 15. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): May 11. Combine harvested: Sept 2.

Permanent grasses:-

15th, 16th and 17th years reseeded grass, blocks 1, 3, 6, 8, 9 and 11. Basal PK compound applied: Nov 26, 1964. 'Nitro-Chalk' applied to 'all-grass' half plots: Apr 9, 1965. Cut 4 times: May 20, July 1, Aug 4, Sept 10. Muriate of potash and NK compound applied to appropriate half plots after each cut.

Standard errors, per sub plot. Test crops.

Potatoes. Total tubers:

Highfield:	Whole plot:	1.309	or	6.2%	(4 d.f.)
	Sub plot:	1.783	or	8.4%	(15 d.f.)
Fosters:	Whole plot:	0.921	or	4.6%	(4 d.f.)
	Sub plot:	1.818	or	9.2%	(15 d.f.)



65/B/1.6

SUMMARY OF RESULTS

WHEAT 1ST TEST CROP

1962 - 1964

	Lu	LC	LN	AH	R	Mean
GRAIN						
HIGHFIELD						
Mean	43.5	46.5	48.9	47.1	49.6	47.1
To test crop						
NO	43.6	44.9	47.7	40.9	50.3	
N1	45.9	48.1	51.5	50.2	49.2	
N2	42.2	46.4	48.4	49.1	48.7	
N3	42.4	46.8	48.1	48.0	50.0	
TO	47.6	46.1	49.5	47.3	50.0	48.1
T1	39.5	47.0	48.4	46.8	49.1	46.1
FOSTERS						
Mean	50.2	48.0	43.2	46.0	47.4	47.0
To test crop						
NO	48.4	46.1	42.4	36.5	47.6	
N1	53.0	50.8	44.5	46.9	48.9	
N2	49.7	48.6	43.6	50.0	45.7	
N3	49.6	46.6	42.3	50.6	47.4	
TO	50.3	48.1	42.1	43.5	46.8	46.2
T1	50.0	48.0	44.2	48.5	48.0	47.7

Mean D.M. %: Highfield 74.2  
 Fosters 75.9

NOTES: (1) In the 1964 tables wheat only, the order of rotations is different from that above. In future the order will be as above i.e. Lu LC LN AH R.

(2) N levels are different on AH from remainder see 64/B/1.23.

65/B/1.7

WHEAT 1ST TEST CROP

1962 - 1964

	Lu	LC	LN	AH	R	Mean
STRAW						
HIGHFIELD						
Mean	48.1	43.5	48.4	39.9	54.3	46.8
To test crop						
NO	49.0	37.8	42.4	34.3	51.9	
N1	49.9	45.7	52.6	43.5	57.6	
N2	46.7	42.9	51.1	40.5	53.3	
N3	47.0	47.5	47.4	41.2	54.5	
TO	47.7	39.9	47.0	37.6	52.0	44.8
T1	48.6	47.1	49.8	42.2	56.7	48.9
FOSTERS						
Mean	45.4	44.3	37.5	40.0	40.5	41.5
To test crop						
NO	44.9	40.0	38.0	30.0	44.1	
N1	48.5	46.0	37.5	43.6	38.2	
N2	46.4	44.8	36.2	42.3	42.7	
N3	41.7	46.3	38.5	44.0	37.1	
TO	44.4	42.1	35.1	36.1	38.7	39.3
T1	46.3	46.4	40.0	43.8	42.4	43.8
Mean D.M. %:	Highfield 80.3		Fosters 81.9			

NOTES: (1) In the 1964 tables wheat only, the order of rotations is different from that above. In future the order will be as above i.e. Lu LC LN AH R.

(2) N levels are different on AH from remainder see 64/B/1.23.



65/B/1.8

POTATOES 2ND TEST CROP. TOTAL TUBERS

1961 - 1963

	Lu	Ley	CG	AH	R	Mean
HIGHFIELD						
	(1) and (2)					(±0.399)
F	20.64	21.72	20.67	20.35	21.96	21.07
D	23.28	20.92	19.56	22.53	21.02	21.46
Mean (±0.925)	21.96	21.32	20.11	21.44	21.49	21.26
FOSTERS						
	(1) and (2)					(±0.407)
F	18.48	20.15	18.32	18.16	20.50	19.12
D	20.52	21.55	19.72	19.73	21.33	20.57
Mean (±0.651)	19.50	20.85	19.02	18.94	20.91	19.85

Highfield (1) (±1.120) For use in horizontal and diagonal comparisons  
 (2) (±0.892) For use in vertical and interaction comparisons

Fosters (1) (±0.915) For use in horizontal and diagonal comparisons  
 (2) (±0.909) For use in vertical and interaction comparisons

65/B/1.9

POTATOES 2ND TEST CROP. % WARE

1961 - 1963

	Lu	Ley	CG	AH	R	Mean
HIGHFIELD						
F	96.7	97.3	97.3	96.9	97.2	97.1
D	97.4	97.0	96.5	97.6	97.0	97.1
Mean	97.1	97.1	96.9	97.3	97.1	97.1
FOSTERS						
F	97.3	97.3	97.5	97.3	97.3	97.3
D	97.7	97.6	97.6	97.7	97.5	97.6
Mean	97.5	97.5	97.5	97.5	97.4	97.5



65/B/1.10

BARLEY 3RD TEST CROP

GRAIN

1960 - 1962

	Lu	Ley	CG	AH	R	Mean
HIGHFIELD						
Mean	43.8	44.8	48.1	47.0	42.9	45.3
1965						
N0	44.3	45.2	46.5	50.5	45.2	46.3
N1	44.3	45.4	48.3	48.5	42.0	45.7
N2	43.4	44.2	48.4	47.7	42.4	45.2
N3	43.1	44.2	49.0	41.4	42.0	43.9
1964						
F	43.8	45.5	47.9	46.0	43.4	45.3
D	43.7	44.0	48.2	48.1	42.4	45.3

Excluding AH

1965

1964	N0	N1	N2	N3	Mean
F	45.4	44.7	45.8	44.6	45.1
D	45.2	45.3	43.4	44.4	44.6

Mean D.M. %: 74.4

65/B/1.11

BARLEY 3RD TEST CROP

GRAIN

1960 - 1962

	Lu	Ley	CG	AH	R	Mean
FOSTERS						
Mean	46.7	45.7	45.3	47.6	44.0	45.9
1965						
NO	47.0	46.3	48.1	46.4	45.5	46.7
N1	47.2	45.7	46.0	-	43.6	-
N2	46.8	44.7	43.1	46.7	43.1	44.9
N3	45.8	46.1	44.2	50.2	43.7	46.0
N4	-	-	-	47.1	-	-
1964						
F	46.9	46.5	44.3	47.2	45.2	46.0
D	46.5	44.9	46.4	48.0	42.8	45.7

Excluding AH

1965

1964	NO	N1	N2	N3	Mean
F	46.6	46.4	45.0	45.0	45.7
D	46.9	44.8	43.9	45.0	45.1

Mean D.M. %: 74.8



65/B/1.12

TREATMENT CROPS ARABLE AND HAY ROTATION

HAY: DRY MATTER (Total 2 cuts)

1964

	NO	N1	N2	N3	Mean
HIGHFIELD					
1963					
F	57.6	55.4	55.6	57.5	56.5
D	58.3	54.7	56.4	55.6	56.2
Mean	58.0	55.0	56.0	56.6	56.4
FOSTERS					
F	53.1	56.4	54.9	60.4	56.2
D	63.4	58.0	60.4	56.3	59.5
Mean	58.3	57.2	57.6	58.3	57.9

65/B/1.13

TREATMENT CROPS ARABLE AND HAY ROTATION

HIGHFIELD		FOSTERS
Mean		Mean
	SUGAR BEET	
	ROOTS	
20.53		17.92
	SUGAR %	
17.8		18.5
	TOTAL SUGAR	
72.9		66.4
	TOPS	
22.59		20.14
	OATS	
	GRAIN	
51.0		54.3

Oats, grain, mean D.M. %: Highfield 68.9  
 Fosters 68.9



65/B/1.14

LUCERNE: DRY MATTER

	HIGHFIELD 1963			FOSTERS 1963		
	F	D	Mean	F	D	Mean
1st year (3 cuts)	40.6	46.8	43.7	49.2	55.3	52.3
2nd year (4 cuts)			105.2			99.0
3rd year (3 cuts)			74.8*			71.1*

\* Based on one whole plot only.

ALL-GRASS LEY: DRY MATTER

	HIGHFIELD 1963			FOSTERS 1963		
	F	D	Mean	F	D	Mean
1st year (3 cuts)	55.5	56.8	56.1	55.6	58.8	57.2
2nd year (4 cuts)			98.9			100.1
3rd year (4 cuts)			78.6			78.3

65/B/1.15

CLOVER-GRASS LEY: DRY MATTER

	HIGHFIELD			FOSTERS		
	F	D	Mean	F	D	Mean
1st year (3 cuts)	39.0	40.5	39.7	31.7	35.4	33.6
2nd year (4 cuts)			60.5			69.0
3rd year (4 cuts)			56.5			60.5

PERMANENT GRASS: DRY MATTER

	NO	N1	Mean
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HIGHFIELD

15th exptl year			
Blocks 9 and 12	44.4	102.2	73.3
Blocks 10 and 11	46.3	100.3	73.3
16th exptl year			
Blocks 5 and 8	41.4	103.8	72.6
Blocks 6 and 7	36.0	101.9	69.0
17th exptl year			
Blocks 1 and 4	40.0	103.6	71.8
Block 2	47.1	101.3	74.2

(NO) Clover-grass management  
(N1) All-grass management

65/B/1.16

RESEEDED GRASS: DRY MATTER

	HIGHFIELD			FOSTERS		
	NO	N1	Mean	NO	N1	Mean
15th exptl year	42.5	98.2	70.4	52.4	94.6	73.5
16th exptl year	38.1	97.1	67.6	55.0	99.0	77.0
17th exptl year	47.7	96.8	72.2	58.7	95.9	77.3

(NO) Clover-grass management  
 (N1) All-grass management



65/B/2.1

REFERENCE PLOTS

ROTHAMSTED (R) GREAT FIELD IV AND HIGHFIELD IX

AND

WOBURN (W) STACKYARD SERIES C, 1965

(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 and 64/B/11. For Sitka spruce see 63/B/2 and 64/B/2.

The grass-clover ley (additional plots only) on Great Field IV (R) received 0.45 cwt N, an increase of 0.15 cwt on previous years.

Cultivations, etc.:-

Great Field IV (R)

Winter wheat: Dug by hand: Sept 21, 1964. P, K, Mg, Ca and S applied: Sept 24. Seed drilled: Oct 6. First N dressings applied (excluding additional plots), additional plots sprayed with mecoprop (Iso-Cornox at 6 pints in 100 gals): Mar 31, 1965. Second N dressings applied, all N applied to the additional plots: May 4. Trace element spray applied: May 5. Harvested: Aug 27.

Kale: Dung applied, plots dug by hand: Nov 9, 1964. P, K, Mg, Ca and S applied: Feb 9 - 18, 1965. First N dressings applied to additional plots, all N to remainder, seed drilled: Apr 4. Second N dressings applied to additional plots: May 26. Magnesium-free calcium carbonate applied to additional plots at 48 cwt: May 27. Trace element spray applied: June 10. Harvested: Oct 22.

Barley: Plots dug by hand: Nov 19, 1964. P, K, Mg, Ca and S applied: Feb 9, 1965. All N applied, seed drilled: Mar 1. Trace element spray applied: May 25. Harvested: Aug 13. Variety: Proctor, Deba Abed on additional plots.

Grass-clover ley: Undersown in barley: Mar 10, 1964. P, K, Mg, Ca and S applied: Feb 9 - 18, 1965. All N applied: Feb 23. Trace element spray applied: May 5. Magnesium-free calcium carbonate applied to additional plots at 48 cwt: May 27. Additional plots cut 3 times: May 26, July 22, Oct 8, 1965, remainder 4 times: Oct 29, 1964, May 26, July 22, Oct 8, 1965.

65/B/2.2

Potatoes: Dung applied, plots dug by hand: Nov 10, 1964.  
P, K, Mg, Ca and S applied: Feb 9 - 18, 1965. First N dressing applied to additional plots, all N applied to remainder: Apr 14. All plots rotary cultivated, setts planted: Apr 23. Second N dressing applied to additional plots: May 26. Trace element spray applied: June 10. Earthed up: June 11. Sprayed twice with triphenyltin acetate at 9.8 oz in 120 gals: July 5 and 27. Harvested: Plots with neither K nor dung (where haulm died early): Aug 13, remainder: Sept 27.

Permanent grass: Dung, P and K applied: Feb 9, 1965. N applied - first dressing: Feb 23, second: May 20, third: July 22. Cut 3 times: May 20, July 22 and Oct 8.

Stackyard Series C (W):-

Oats: P and K applied: Feb 10, 1965. First N dressing applied, seed drilled: Mar 17. Sprayed with 17.5 lb DDT in 355 gals: Apr 30. Second N dressing applied: May 14. Harvested: Aug 23.

Sugar Beet: Dung applied, plots dug by hand: Nov 23, 1964. P and K applied: Feb 10, 1965. First N dressing applied, plots rotary cultivated, seed drilled: Apr 9. Sprayed with DDT at 15 oz in 40 gals: May 14. Sprayed with dimethoate at 6 oz in 40 gals: May 21. Singled: June 1. Sprayed four times with malathion and DDT (Kil at 12 fluid oz in 50 gals): June 21, July 5, July 16, Aug 2. Harvested: Oct 14.

Barley: P and K applied: Feb 10, 1965. First N dressing applied: Mar 17. Seed drilled: Mar 25. Second N dressing applied: May 14. Harvested: Aug 23.

Grass-clover ley: Undersown in barley: Mar 9, 1964. P and K applied: Feb 10, 1965. All N applied: Mar 16. Cut four times: Oct 30, 1964, May 24, July 27, Oct 11, 1965.

Potatoes: Dung applied, plots dug by hand: Nov 25, 1964. P and K applied: Feb 10, 1965. First N dressing applied, plots rotary cultivated, setts planted: Apr 9. Second N dressing applied: May 25. Earthed up: June 2. Sprayed 3 times with malathion and DDT (Kil at 12 fluid oz in 50 gals): June 21, July 5, July 16. Sprayed 3 times with Bordeaux mixture at 7 lb in 40 gals: July 5, July 16 and July 28. Sprayed with malathion and DDT (Kil at 12 fluid oz in 50 gals): Aug 2. Harvested: Sept 23.

Permanent grass: Dung, P and K applied: Feb 10, 1965. N applied - first dressing: May 16, second: May 25, third: July 27. Cut three times: May 25, July 27, Oct 11.

Soft fruit: Dung and PK applied: Feb 10, 1965. N dressing applied: Mar 16.



65/B/2.3

Bed 1. For details of previous year's results see 63/B/2 and 64/B/2.

Cultivations, etc.:-

Formalin applied: Dec 8, 1964 in 4 l. per sq.yd. water. All manures (other than N) dug in: Apr 1, 1965. Seed sown: Apr 7. T.V.O. pre-emergent spray: Apr 29. N top dressed: July 7, July 30, Aug 24.

Bed 2.

Comparison of soluble and slow-release NPK Mg fertiliser applied to one-year seedbeds and transplant beds of Sitka spruce (*Picea sitchensis*) and Norway spruce (*Picea abies*).

Bed 2, which is alongside Bed 1, has had a similar history except that grass was not removed until winter 1962/63. The bed remained fallow until the spring of 1965 when Plots 1 to 6 were lined out with one-year seedlings and Plots 7 to 12 were sown. All twelve plots were split for Sitka spruce (S) v. Norway spruce (N).

Design: Seedbeds. 2 blocks of 3 plots split into 2 (unrandomised)  
Transplants. 2 blocks of 3 plots split into 2 (unrandomised)

Area of each plot: 0.0002 acre (1 square yard).

No. of viable seeds per plot: Sitka spruce 1800  
Norway spruce 1500

No. of transplants per species per plot: 54.

Treatments

None (D)  
NPK Mg soluble (A)  
NPK Mg slow-release + 'Nitro-Chalk' top dressed (B).

Symbols, rates and forms of materials applied (per sq.yd).

NPK Mg soluble

N: 'Nitro-Chalk 21' applied in three summer top dressings at 4.5 g.N per occasion for seedbeds, and 3 g.N per occasion for transplants.

PK: Potassic superphosphate (20% P<sub>2</sub>O<sub>5</sub>, 10% K<sub>2</sub>O) at 9 g.P, 9 g.K.

NPK Mg slow-release + 'Nitro-Chalk'

N (part): 'Nitro-Chalk 21' applied in three summer top dressings at 4.5 g.N per occasion for seedbeds and 3 g.N per occasion for transplants.

NPK Mg: Magnesium ammonium phosphate supplying 2 g.N, 4.5 g.P, 3.5 g.Mg

Potassium metaphosphate supplying 4.5 g.P, 6 g.K.

Cultivations, etc.:- All manures (other than N) dug in: Apr 1, 1965. Seed sown: Apr 7. T.V.O. pre-emergent spray: Apr 29. N top dressed: July 7, July 30, Aug 24.



65/B/2.4

- NOTES: (1) Height assessments  
Seedbeds: Three 2-inch grids (i.e. one-sixth) measured and counted per plot or half-plot.  
Transplants: Two inside lines (i.e. 36 trees) per species measured.
- (2) Samples were taken for the determination of dry matter of tops and roots separately and for N, P, K, Ca, Mg in total crop.
- (3) During second half of October nearly all seedlings on 'no K' plots in Bed 1 had dead needle tips. A few plants were also affected in other plots. Later the whole of the 'no K' plots became severely discoloured. The symptoms resemble those attributable to frost damage on no-K or low-K plots at Wareham and Kennington, but it is possible that at Woburn smog was a contributory factor.

Grazed Reference Plots (Highfield IX (R)):-

Cultivations, etc.: P and K fertilisers applied: Nov 20, 1964.  
Ground chalk applied to appropriate plots: Nov 30. First N dressings applied: Feb 26, 1965. Sample cuts taken 4 times: May 6, June 17, Aug 20, Oct 25. N dressings applied after first 3 cuts. Sampling cages moved after each cut.

Standard errors per plot.

Highfield IX (R), Dry Matter:

1st cut: 3.73 or 24.9% (26 d.f.)  
2nd cut: 4.09 or 11.0% (26 d.f.)  
3rd cut: 4.48 or 10.6% (26 d.f.)  
4th cut: 2.84 or 11.7% (26 d.f.)  
Total of 4 cuts: 7.66 or 6.4% (26 d.f.)

Stackyard Series C (W) Sitka spruce Bed 1:

Mean height: 0.201 or 7.6% (13 d.f.)  
Plant number: 167.32 or 11.4% (13 d.f.)

SUMMARY OF RESULTS

GREAT FIELD IV (R): ORIGINAL PLOTS

Treatment	Winter wheat		Kale:		Barley		Ley: DRY MATTER				Potatoes:		Permanent grass:		
	GRAIN	STRAW	TOTAL WEIGHT	GRAIN	STRAW	1st cut	2nd cut	3rd cut	4th cut	Total of 4 cuts	TOTAL TUBERS	1st cut	2nd cut	3rd cut	Total of 3 cuts
None	30.9	35.8	7.12	15.2	13.2	0.6	16.4	15.0	10.8	42.8	3.48	7.0	20.1	14.9	42.0
N1	40.9	44.9	11.80	15.9	16.1	0.9	18.8	15.0	10.3	45.0	3.48	15.1	20.5	19.0	54.6
P	38.5	50.4	16.84	17.8	15.3	3.6	20.0	13.8	8.7	46.1	3.68	8.2	15.1	10.0	33.3
N1P	32.2	45.9	22.57	26.4	27.2	0.4	19.1	8.7	5.9	34.1	3.56	20.1	20.4	19.1	59.6
K	41.8	45.3	6.60	17.1	12.9	6.0	26.0	25.0	14.4	71.4	11.64	7.3	15.0	12.6	34.9
N1K	48.0	55.4	3.12	20.9	20.9	4.1	30.0	26.3	14.7	75.1	12.59	20.9	27.1	23.8	71.8
PK	39.1	58.2	13.72	17.1	15.8	5.1	34.1	23.1	21.2	83.5	13.02	8.0	20.1	13.2	41.3
N1PK	50.7	69.1	27.08	26.8	30.8	3.5	35.9	26.1	22.1	87.6	17.71	24.0	25.7	21.4	71.1
N2PK	44.9	68.2	32.82	28.6	40.7	2.0	43.2	26.5	22.1	93.8	17.97	45.6	30.6	28.0	104.2
D	50.0	67.8	26.22	24.7	22.2	6.7	32.4	25.7	20.6	85.4	20.92	34.2	24.0	25.8	84.0
N1PKD	46.1	72.9	32.99	22.6	36.2	9.4	37.8	28.7	22.6	98.5	25.87	42.7	26.5	30.0	99.2
N2PKD	44.4	84.7	43.06	26.9	47.1	1.3	45.9	28.6	26.1	101.9	26.22	58.0	29.0	25.5	112.5
Mean D.M.%	83.6	67.2		81.0	57.7		22.6	19.2	17.5	16.0		21.8	19.1	16.7	19.2

65/B/2.5



65/B/2.6

GREAT FIELD IV (R): ADDITIONAL PLOTS

Treatment	Winter wheat		Kale:		Barley		Ley: DRY MATTER			Total Potatoes of TOTAL TUBERS
	GRAIN	STRAW	TOTAL WEIGHT	GRAIN	STRAW	1st cut	2nd cut	3rd cut	3 cuts	
None	35.5	46.0	14.24	9.3	8.0	19.1	18.0	12.1	49.2	5.16
N2 PK	44.0	68.6	36.64	29.8*	29.4	40.9	15.7	19.2	75.8	16.14
N2 PK Mg Ca	42.0	70.2	38.20	30.7	30.9	41.9	16.0	17.3	75.2	18.75
N2 PK Mg S	46.4	69.8	35.07	31.4	29.6	39.6	12.9	14.9	67.4	18.66
N2 PK Ca S	46.5	67.8	35.42	33.6	31.4	42.0	23.7	19.7	85.4	19.88
N2 PK Mg Ca S	40.8	71.3	36.46	28.4*	28.0	43.0	20.9	17.7	81.6	17.71
N2 PK Mg Ca S TE	38.4	67.5	35.76	34.1	36.2	47.4	14.9	15.5	77.8	15.88
Mean D.M. %:	84.1	73.5		83.6	61.2	20.9	17.9	15.9	18.2	

\* Yields estimated from grain:straw ratios.



65/B/2.7

STACKYARD SERIES C (W)

Treatment	Oats	Sugar beet ROOTS	Barley GRAIN STRAW	Ley: DRY MATTER			Total of 4 cuts	Potatoes: TOTAL TUBERS	Permanent grass:			Total of 3 cuts
	GRAIN STRAW			1st cut	2nd cut	3rd cut			1st cut	2nd cut	3rd cut	
None	34.7	5.64	15.8	4.1	21.1	15.9	52.6	2.93	18.0	10.3	7.7	36.0
N1	50.6	8.07	29.9	2.2	29.8	13.4	53.4	4.48	24.0	18.4	15.9	58.3
P	37.3	7.09	13.3	5.3	23.2	16.9	57.3	4.48	16.3	7.3	6.3	29.9
N1P	52.1	8.12	30.5	2.0	27.4	11.9	48.1	3.78	23.8	17.2	14.9	55.9
K	40.9	7.58	14.1	9.3	26.2	25.4	85.6	5.64	24.1	14.8	9.8	48.7
N1K	49.9	11.94	30.9	6.2	32.9	22.8	83.0	9.03	34.6	21.1	20.4	76.1
PK	35.1	7.18	16.7	13.9	28.6	26.0	91.6	5.32	26.4	16.4	12.0	54.8
N1PK	53.6	10.78	34.4	6.2	32.6	22.9	83.8	8.88	33.0	21.3	21.9	76.2
N2PK	57.5	16.11	40.7	2.6	38.0	21.1	82.6	11.19	36.0	25.1	28.0	89.1
D	46.7	14.50	24.1	11.2	23.0	22.8	81.6	9.96	28.4	12.7	11.2	52.3
N1PKD	55.1	19.12	36.0	5.3	37.2	21.2	88.1	17.06	26.2	22.4	23.8	72.4
N2PKD	56.4	22.06	41.8	4.2	36.2	24.6	87.3	22.61	36.7	26.3	27.4	90.4
Mean D.M. %:	72.7		77.0	20.6	19.9	25.3	21.6		21.1	24.8	24.1	23.3

65/B/2.8

STACKYARD C (W). Bed 1

SITKA SPRUCE

Treatment	MEAN HEIGHT: INCHES	PLANT NUMBER: PER SQ YARD
	(±0.142)	(±118.3)
None	1.56 (1)	1552 (2)
PK Mg	1.52	1404
NK Mg	2.67	1416
NP Mg	2.67	1497
NPK	2.90	1578
NPK Mg	2.92 (1)	1443 (2)
NPK Mg F	3.23	1416
C	2.93	1464
C NPK Mg	3.57	1425
L NPK Mg	3.46	1353
Mean	2.66	1462
(1) (±0.101)	(2) (±83.7)	

Bed 2 PLOTS 1 - 6

	O	A	B	Mean
	MEAN HEIGHT: INCHES			
SS	6.94	7.43	8.98	7.78
NS	6.18	6.78	7.60	6.85
Mean	6.56	7.10	8.29	7.32

65/B/2.9

STACKYARD C (W)

Bed 2 PLOTS 7 - 12

	O	A	B	Mean
MEAN HEIGHT: INCHES				
SS	0.66	2.50	2.94	2.03
NS	0.95	2.10	2.52	1.86
Mean	0.80	2.30	2.73	1.94
PLANT NUMBER: SQ YD				
SS	14.04	13.68	16.74	14.82
NS	11.52	12.84	12.84	12.40
Mean	12.78	13.26	14.79	13.61

Erratum to Results 65/B/2.9

Plant number: square yard

Multiply all figures by 100 (i.e. delete decimal points).



65/B/2.10

HIGHFIELD IX (R)

DRY MATTER  
GRASS

	Granular	Triple	Mean
1ST CUT			
PK	(±2.64)*		(±1.87)
NO 00	6.5	7.5	7.0
N1 00	13.3	9.1	11.2
A1 00	14.9	13.4	14.2
NO 10	9.4	7.6	8.5
N1 10	15.6	16.5	16.1
A1 10	17.0	15.6	16.3
NO 01	13.2	10.5	11.9
N1 01	15.4	16.1	15.7
A1 01	16.5	14.4	15.4
NO 11	10.8	7.1	8.9
N1 11	27.3	24.5	25.9
A1 11	22.5	17.9	20.2
N2 11	15.2	21.6	18.4
A2 11	21.8	19.1	20.5
Mean	15.7	14.4	15.0
2ND CUT			
	(±2.89)*		(±2.04)
NO 00	22.9	25.9	24.4
N1 00	38.1	35.8	36.9
A1 00	34.2	33.6	33.9
NO 10	32.4	18.8	25.6
N1 10	44.2	42.9	43.6
A1 10	40.2	38.8	39.5
NO 01	24.3	26.8	25.6
N1 01	45.1	37.5	41.3
A1 01	34.8	39.3	37.0
NO 11	28.2	31.3	29.8
N1 11	45.2	46.8	46.0
A1 11	40.6	40.1	40.3
N2 11	48.1	49.5	48.8
A2 11	48.6	46.5	47.6
Mean	37.6	36.7	37.2

Mean D.M. %: 1st cut: 17.5  
2nd cut: 18.0

\* For use in vertical and interaction comparisons only.

65/B/2.11

HIGHFIELD IX (R)

DRY MATTER  
GRASS

	Granular	Triple	Mean
3RD CUT			
PK	(±3.17)*		(±2.24)
NO 00	23.4	37.1	30.3
N1 00	37.6	45.1	41.4
A1 00	42.1	42.9	42.5
NO 10	30.4	28.2	29.3
N1 10	43.2	42.6	42.9
A1 10	48.0	44.7	46.3
NO 01	31.4	34.6	33.0
N1 01	49.6	48.5	49.0
A1 01	40.5	51.3	45.9
NO 11	33.5	35.2	34.3
N1 11	39.8	50.0	44.9
A1 11	45.6	47.5	46.5
N2 11	55.0	49.0	52.0
A2 11	51.3	58.0	54.7
Mean	40.8	43.9	42.4
4TH CUT			
	(±2.01)*		(±1.42)
NO 00	20.9	21.1	21.0
N1 00	25.4	28.9	27.2
A1 00	24.0	21.1	22.5
NO 10	20.4	22.1	21.3
N1 10	26.2	21.4	23.8
A1 10	24.7	21.0	22.8
NO 01	22.2	20.7	21.5
N1 01	24.5	30.4	27.5
A1 01	24.3	24.8	24.5
NO 11	21.6	23.5	22.6
N1 11	26.8	27.4	27.1
A1 11	25.4	21.9	23.7
N2 11	27.9	30.2	29.0
A2 11	26.8	27.6	27.2
Mean	24.4	24.4	24.4

Mean D.M. %: 3rd cut: 16.5  
4th cut: 18.1

\* For use in vertical and interaction comparisons only.

65/B/2.12

HIGHFIELD IX (R)

DRY MATTER  
GRASS

	Granular	Triple	Mean
TOTAL OF 4 CUTS			
PK	(±5.42)*		(±3.83)
NO 00	73.6	91.6	82.6
N1 00	114.4	119.0	116.7
A1 00	115.2	110.9	113.0
NO 10	92.7	76.7	84.7
N1 10	129.2	123.4	126.3
A1 10	129.9	119.9	124.9
NO 01	91.2	92.7	92.0
N1 01	134.6	132.4	133.5
A1 01	116.1	129.8	123.0
NO 11	94.0	97.2	95.6
N1 11	139.2	148.7	143.9
A1 11	134.2	127.4	130.8
N2 11	146.1	150.3	148.2
A2 11	148.6	151.2	149.9
Mean	118.5	119.4	118.9

Mean D.M. %: 17.5

\* For use in vertical and interaction comparisons only.



65/B/3.1

GREEN MANURING EXPERIMENT

(WGM)

Woburn Stackyard 1965, the second year with revised treatments.

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

Area of each sub-plot: 0.0195. Area harvested: 0.0145.

Cultivations, etc.: Ploughed (plots not undersown):

Oct 28, 1964. Green manure plots ploughed: Feb 4, 1965.

'Nitro-Chalk' applied: Lower Half - Mar 12, Upper Half -

Mar 17. Seed drilled at 2.5 bushels, trefoil sown

at 30 lb, ryegrass at 40 lb: Mar 29. Sprayed with

MCPB at 2 lb a.e. in 40 gals: May 11. Combine

harvested: Aug 26.

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

1965

UPPER HALF

TO BARLEY 1964

	NO	N1	N2	N3	Mean
DRY MATTER					
T	14.9	10.7	7.8	5.2	9.6
R	5.6	4.3	4.1	3.0	4.2
Mean	10.2	7.5	5.9	4.1	6.9
NITROGEN					
T	0.414	0.280	0.161	0.126	0.245
R	0.077	0.061	0.064	0.051	0.063
Mean	0.246	0.170	0.112	0.088	0.154

65/B/3.2

1965

LOWER HALF

TO BARLEY 1964

	NO	N1	N2	N3	Mean
DRY MATTER					
T	15.8	12.6	8.2	5.8	10.6
R	6.8	6.5	5.6	3.6	5.7
Mean	11.3	9.6	6.9	4.7	8.1
NITROGEN					
T	0.449	0.320	0.184	0.131	0.271
R	0.075	0.073	0.069	0.053	0.068
Mean	0.262	0.196	0.126	0.092	0.169

1964

N TO BARLEY 1963

	NO	N1	N2	N3	Mean
DRY MATTER					
T	20.7	24.4	17.9	15.3	19.6
R	27.3	21.8	19.9	17.3	21.6
Mean	24.0	23.1	18.9	16.3	20.6
Mean N %: T 3.40					
R 1.66					

65/B/3.3

SUMMARY OF RESULTS

LOWER HALF

BARLEY (2nd crop)

GRAIN

EXCLUDING PLOTS FALLOW UNDER OLD SCHEME

N 1964 - 65

	NO	N1	N2	N3	Mean
Mean	17.8	26.2	36.2	39.2	29.9
N 1963*					
NO	19.8	26.5	36.2	39.1	30.4
N1	17.7	24.5	36.4	39.6	29.6
N2	17.1	28.2	37.3	38.4	30.2
N3	16.8	25.6	34.7	39.8	29.2
Undersown 1964-65					
O	12.8	24.2	35.2	38.4	27.7
T	36.4	34.6	41.6	40.9	38.4
R	9.4	21.8	32.6	39.1	25.7
Green manures+					
1955 - 63					
T	16.3	26.1	34.4	39.8	29.1
R	19.0	24.4	38.1	38.1	29.9
TU	17.9	25.7	37.2	39.2	30.0
RU	18.3	28.7	35.0	39.7	30.4
Dung last applied					
1953					
O	17.7	26.0	36.4	39.4	29.9
D	18.0	26.4	35.9	39.1	29.8

+

T = Trefoil grown as a green manure after early potatoes

R = Ryegrass grown after early potatoes

TU = as T, but with trefoil undersown in the barley

RU = as R, but with ryegrass undersown in the barley.

\*N to sugar beet 1963 at 0, 0.67, 1.33, 2.00 cwt N.



65/B/3.4

BARLEY (2nd crop)

LOWER HALF

GRAIN

EXCLUDING PLOTS FALLOW UNDER OLD SCHEME

GREEN MANURES 1955 - 63

Dung last applied 1953	T	R	TU	RU
O	27.8	31.7	31.3	28.8
D	30.5	28.1	28.7	32.0

PLOTS FALLOW UNDER OLD SCHEME

N 1964 - 65

	N1	N2	N3	N4	Mean
Mean	20.1	34.2	40.7	40.6	33.9
N 1963*					
NO	21.0	34.4	41.6	42.5	34.9
N1	21.6	34.5	39.5	40.1	33.9
N2	18.4	34.9	40.1	40.3	33.4
N3	19.6	33.0	41.5	39.6	33.4
Dung last applied 1953					
O	20.6	34.6	40.5	41.4	34.3
D	19.7	33.7	40.9	39.8	33.5

\*N to sugar beet 1963 at 0, 0.67, 1.33, 2.00 cwt N.

Mean D.M. %: 75.7

65/B/3.5

BARLEY (3rd crop)

GRAIN

EXCLUDING PLOTS FALLOW UNDER OLD SCHEME

N 1964 - 65

	NO	N1	N2	N3	Mean
Mean	16.5	26.6	34.4	36.6	28.5
N 1963					
NO	19.3	28.1	34.4	37.5	29.8
N1	13.4	24.6	36.1	37.1	27.8
N2	15.2	27.4	34.4	37.3	28.6
N3	18.2	26.2	32.7	34.3	27.9
Undersown 1964-65					
O	13.7	25.4	34.3	36.4	27.4
T	27.6	35.0	35.1	36.7	33.6
R	11.2	20.4	33.9	36.8	25.6
Green manures+					
1955 - 64					
T	16.0	26.2	34.0	36.0	28.1
R	17.2	24.0	34.2	37.2	28.2
TU	13.7	29.5	33.7	36.5	28.4
RU	19.2	26.6	35.7	36.4	29.5
Dung last					
applied 1952					
O	16.3	26.2	34.4	36.1	28.2
D	16.7	26.9	34.5	37.1	28.8

+  
 T = Trefoil grown as a green manure after early potatoes  
 R = Ryegrass grown after early potatoes  
 TU = as T, but with trefoil undersown in the barley  
 RU = as R, but with ryegrass undersown in the barley.

65/B/3.6

BARLEY (3rd crop)

GRAIN

EXCLUDING PLOTS FALLOW UNDER OLD SCHEME

GREEN MANURES 1955 - 64

Dung last applied 1952	T	R	TU	RU
O	27.1	26.4	30.0	29.5
D	29.0	29.9	26.7	29.5

PLOTS FALLOW UNDER OLD SCHEME

N 1964 - 65

	N1	N2	N3	N4	Mean
Mean	21.0	31.7	37.4	38.0	32.0
N 1963					
NO	16.0	36.8	36.1	41.9	32.7
N1	24.0	33.4	36.3	30.5	31.1
N2	22.5	31.0	35.6	38.9	32.0
N3	21.4	25.5	41.5	40.8	32.3
Dung last applied 1952					
O	19.2	29.5	35.9	35.7	30.1
D	22.7	33.9	38.9	40.4	34.0

Mean D.M. %: 77.6



65/B/4.1

LEY AND ARABLE ROTATIONS

(WIA)

Woburn Stackyard 1965 - the 28th year.

For history, treatments etc., see 'Details' 1962.

Sugar Beet: Fertilisers are now as follows:-

Test fertilisers: All combinations of:-

1. Nitrogen: Ley and lucerne rotations: 0.35, 0.70, 1.05, 1.40 cwt N.  
Arable with roots rotation: 0.70, 1.05, 1.40, 1.75 cwt N.  
Arable with hay rotation: 1.05, 1.40, 1.75, 2.10 cwt N.  
All N as 'Nitro-Chalk'.

2. Potash: 0.0, 0.9 cwt K<sub>2</sub>O as muriate of potash.

Basal fertilisers: 2.0 cwt P<sub>2</sub>O<sub>5</sub> as superphosphate, 0.9 cwt K<sub>2</sub>O as muriate of potash and magnesium sulphate at 500 lb MgSO<sub>4</sub> 7H<sub>2</sub>O.

Corrective K dressings (in cwt K<sub>2</sub>O) as muriate of potash:

Continuous rotations	No dung plots	Dung plots
Rotation		
Arable	3	2
Arable with hay	4	3
Lucerne	3	3
Grazed ley	0	0
Alternating rotations		
Last 2 rotations in order		
Arable/ley	3	1
Lucerne/arable with hay	3	3
Arable with hay/lucerne	3	3
Ley/arable	3	2

K equivalent of dung: In 1965 plots not receiving dung received 3.7 cwt K<sub>2</sub>O as muriate of potash, the K equivalent of the dung used.

The 1962 dressing was omitted from the 'Results' for that year and was 3.0 cwt K<sub>2</sub>O.

Sainfoin: The third-year lucerne failed and was replaced by sainfoin, which received a basal dressing of 0.5 cwt N as 'Nitro-Chalk', 0.5 cwt P<sub>2</sub>O<sub>5</sub> as superphosphate and 1.5 cwt K<sub>2</sub>O as muriate of potash. The second-year sainfoin failed and was resown with a basal fertiliser in the seedbed of 0.5 cwt P<sub>2</sub>O<sub>5</sub> and 0.5 cwt K<sub>2</sub>O as (0:20:20). The potatoes were lifted early because of damage by eelworm (*Heterodera rostochiensis*).

65/B/4.2

Cultivations, etc.:

Treatment crops.

Ley 1st year: Ploughed: Aug 24, 1964. Seedbed fertilisers applied and seed sown: Apr 1, 1965. Compound fertiliser applied: June 16, Sept 9 - 21. Grazed 8 circuits: June 2 - Nov 7.

Ley 2nd year: Compound fertiliser applied: Mar 19, June 2, Sept 1. Grazed 10 circuits: Apr 22 - Nov 3.

Ley 3rd year: Compound fertiliser applied: Mar 19, June 22, Aug 23. Grazed 9 circuits: Apr 30 - Oct 26.

Sainfoin 1st year: Ploughed: Aug 24, 1964. Fertilisers applied: Apr 5, 1965. Seed drilled at 60 lb: Apr 7. Cut twice: Aug 11, Oct 20.

Sainfoin 2nd year: NK fertiliser applied: Mar 19, 1965. Cut twice: May 31, Aug 4. Sprayed with paraquat at 0.5 lb ion in 40 gals: Aug 12. Rotary cultivated: Aug 16. Basal PK applied: Aug 18. Re-drilled at 56 lb: Aug 19.

Sainfoin 3rd year: Ploughed: Nov 9, 1964. Fertilisers applied: Apr 5, 1965. Seed drilled at 60 lb: Apr 7. Cut twice: Aug 11, Oct 20.

Arable rotations.

Potatoes: Ploughed: Aug 24, 1964. Fertilisers applied, plots rotary cultivated: Apr 6, 1965. Potatoes machine planted: Apr 7.

Earthed up: June 14. Sprayed with mancozeb at 1.2 lb in 37 gals: July 5, July 16 and Aug 4. Sprayed with diquat (Reglone at 4 pints in 40 gals): Aug 12. Lifted: Aug 31.

Rye: Ploughed: Sept 29 - Oct 21, 1964. Seed combine drilled at 150 lb: Oct 22. 'Nitro-Chalk' applied: Mar 31, 1965. Combine harvested: Sept 14.

Seeds hay: Seeds undersown in rye at 30 lb: Apr 8, 1964. 'Nitro-Chalk' and PK compound applied: Mar 19, 1965. NK fertiliser applied: June 2. Cut twice: May 31, Aug 5.

Carrots: Ploughed: Sept 29, 1964. Fertilisers applied: Apr 8, 1965. Rotary cultivated, seed drilled at 3.5 lb: Apr 13. Sprayed with menazon (Saphicol at 0.5 pints in 40 gals): June 2, June 21. Lifted: Aug 27.

Test crops.

Sugar beet: Dung equivalent K and half corrective K (including all corrective K for plot 8 - arable/ley with dung applied: Nov 23, 1964. Dung applied: Nov 24. All plots ploughed: Nov 25. Part of basal superphosphate applied, basal muriate of potash and second half of corrective K applied: Feb 2, 1965. Remaining basal superphosphate applied, magnesium



65/B/4.3

sulphate applied: Apr 1. Test 'Nitro-Chalk' and muriate of potash applied: Apr 2. Seed drilled at 5 lb: Apr 3. Singled: May 19. Lifted: Oct 26.

Barley: Ground chalk applied at 40 cwt: Nov 13, 1964. Ploughed: Nov 16. Balancing muriate of potash and basal superphosphate applied: Feb 16. 'Nitro-Chalk' applied: Feb 18. Seed drilled at 155 lb: Mar 12. Spring-tine cultivated and re-drilled at 140 lb because of bird damage: Apr 8. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): May 11. Combine harvested: Sept 1.

Standard errors per plot.

Sugar beet 1/8 plot:

Roots:	2.146	or	10.6%	(21 d.f.)
Total sugar:	6.97	or	9.9%	(21 d.f.)
Tops:	2.081	or	12.1%	(21 d.f.)

Barley grain:

Whole plot:	1.71	or	4.1%	(4 d.f.)
1/2 plot:	0.80	or	1.9%	(4 d.f.)

Errata to 'Results' 1963 and 1964

p. 63/B/4.4	Lucerne 1st year	year dung applied	should read 1961 not 1958
p. 64/B/4.4	Sanfoin 1st year	year dung applied	should read 1962 not 1959
	Lucerne 2nd year	year dung applied	should read 1961 not 1958



65/B/4.4

SUMMARY OF RESULTS

TREATMENT CROPS

LEY, SHEEP DAYS OF GRAZING

1st year	2nd year	3rd year
2168	3541	2915

SAINFOIN, DRY MATTER

	1st cut	2nd cut	Total
1ST YEAR			
Dung in 1963			
DO	24.6	7.4	32.0
DI	25.4	8.2	33.6
Lu	24.6	6.8	31.4
AH	25.4	8.6	34.0
Mean	25.0	7.7	32.7
2ND YEAR			
Dung in 1962			
DO	43.8	5.0	48.8
DI	43.0	4.2	47.2
Lu	42.4	4.2	46.6
AH	44.4	5.0	49.4
Mean	43.4	4.6	48.0

65/B/4.5

SAINFOIN, DRY MATTER

	1st cut	2nd cut	Total
3RD YEAR (resown Spring 1965)			
Dung in 1961			
DO	26.7	4.3	31.0
DL	31.9	5.6	37.5
Lu	29.2	3.2	32.4
AH	29.4	6.8	36.2
Mean	29.3	5.0	34.3

65/B/4.6

TREATMENT CROPS

	POTATOES		RYE	
	TOTAL TUBERS	% WARE	GRAIN	STRAW
DO	9.44	82.0	35.0	44.3
DI*	10.89	87.6	32.8	46.8
Ley	17.07	95.6	36.4	43.6
Lu	14.40	95.4	35.0	46.9
AH	4.05	69.6	29.8	48.7
AR	5.14	78.8	34.4	43.0
Mean	10.16	84.8	33.9	45.6

HAY

YIELD, DRY MATTER

	1st cut	2nd cut	Total
1961			
DO	57.6	39.0	96.6
DI	61.8	37.8	99.6
Ley	60.6	39.6	100.2
AH	58.8	37.2	96.0
Mean	59.7	38.4	98.1

\* Dung applied: Potatoes for test crop sugar beet in 1963  
Rye for test crop sugar beet in 1962

Mean D.M. %: Rye, grain: 68.4  
straw: 72.6



65/B/4.7

	CARROTS	
	Roots	Tops
1961		
DO	30.96	13.31
DI	30.86	13.12
Lu	32.00	13.50
AR	29.82	12.93
Mean	30.91	13.22

65/B/4.8

1ST TEST CROP

SUGAR BEET

ROOTS

	N1	N2	N3	N4	N5	N6
			(1)			
DO Ley	17.37	19.13	20.03	19.56	-	-
DO Lu	19.66	21.85	20.76	21.94	-	-
DO AH	-	-	17.10	18.52	19.50	19.61
DO AR	-	17.19	19.27	20.48	20.87	-
D1 Ley	20.13	18.56	21.36	17.97	-	-
D1 Lu	22.79	22.78	22.85	24.03	-	-
D1 AH	-	-	19.11	21.11	20.97	20.36
D1 AR	-	18.53	21.76	21.50	21.99	-
	Ley	Lu	AH	AR	Mean	
CCN	18.69	22.12	19.95	19.32	20.02	
AIT	19.84	22.05	19.13	21.08	20.52	
		(2)				
DO KO	18.35	21.69	18.22	19.12	19.35	
DO KI	19.69	20.42	19.15	19.79	19.76	
D1 KO	19.92	22.05	20.00	21.77	20.93	
D1 KI	19.09	24.18	20.78	20.11	21.04	
Mean	19.26	22.08	19.54	20.20	20.27	

(1) ( $\pm 1.073$ ) For use in horizontal and interaction comparisons

(2) ( $\pm 0.759$ ) For use in vertical and interaction comparisons

Symbols:

DO = No dung

D1 = Dung

CCN = Continuous rotation

AIT = Alternating rotation

65/B/4.9

1ST TEST CRCP

SUGAR BEET

SUGAR %

	N1	N2	N3	N4	N5	N6
Ley	17.4	17.5	17.1	17.2	-	-
DO Lu	17.8	18.2	17.5	17.7	-	-
AH	-	-	18.0	17.4	17.4	16.7
AR	-	17.8	18.0	17.5	17.2	-
Ley	17.4	17.0	17.1	16.6	-	-
DI Lu	17.4	17.7	17.4	16.7	-	-
AH	-	-	17.5	17.3	17.1	16.9
AR	-	17.7	17.4	17.2	17.1	-
	Ley	Lu	AH	AR	Mean	
CCN	17.3	17.5	17.3	17.3	17.3	
AIF	17.0	17.6	17.3	17.6	17.4	
DO KD	17.5	17.7	17.7	17.7	17.6	
DO K1	17.2	17.9	17.0	17.6	17.4	
DI KO	16.8	17.4	17.1	17.5	17.2	
DI K1	17.2	17.2	17.2	17.2	17.2	
Mean	17.1	17.5	17.3	17.5	17.4	



65/E/4.10

1ST TEST CROP

SUGAR BEET

TOTAL SUGAR

	N1	N2	N3	N4	N5	N6
			(1)			
DO Ley	60.4	66.8	68.5	67.4	-	-
DO Lu	69.8	79.4	72.6	77.7	-	-
DO AH	-	-	61.7	64.2	67.8	65.3
DO AR	-	61.2	69.5	71.6	71.7	-
D1 Ley	69.8	62.8	72.8	59.3	-	-
D1 Lu	78.9	80.4	79.8	80.4	-	-
D1 AH	-	-	66.7	72.9	71.9	68.7
D1 AR	-	65.5	75.4	74.1	75.5	-
	Ley	Lu	AH	AR	Mean	
CCN	64.6	77.1	68.9	66.9	69.4	
AIF	67.4	77.6	66.0	74.2	71.3	
		(2)				
DO KO	64.1	76.6	64.4	67.6	68.2	
DO K1	67.5	73.1	65.1	69.5	68.8	
D1 KO	66.9	76.7	68.5	76.0	72.0	
D1 K1	65.4	83.1	71.7	69.2	72.4	
Mean	66.0	77.4	67.4	70.6	70.3	

(1) ( $\pm 3.48$ ) For use in horizontal and interaction comparisons

(2) ( $\pm 2.46$ ) For use in vertical and interaction comparisons

65/B/4.11

LST TEST CROP

SUGAR BEET

TOFS

		N1	N2	N3	N4	N5	N6	
		(1)						
DO	Ley	16.68	18.33	20.68	20.16	-	-	
	Lu	13.21	15.14	16.44	17.86	-	-	
	AH	-	-	14.92	15.31	17.82	20.09	
	AR	-	10.61	12.67	13.79	17.37	-	
D1	Ley	18.65	17.56	22.36	19.92	-	-	
	Lu	18.89	19.92	19.18	19.89	-	-	
	AH	-	-	15.80	19.04	20.36	21.55	
	AR	-	11.14	15.01	15.47	16.61	-	
		Ley	Lu	AH	AR	Mean		
CON		18.09	17.93	18.90	13.04	16.99		
AIT		20.49	17.20	17.32	15.13	17.54		
		(2)						
DO	KO	18.27	16.53	16.41	13.43	16.16		
DO	KI	19.66	14.79	17.65	13.78	16.47		
D1	KO	20.23	19.11	19.65	15.02	18.50		
D1	KI	19.01	19.83	18.73	14.10	17.92		
Mean		19.29	17.57	18.11	14.08	17.26		

(1) ( $\pm 1.040$ ) For use in horizontal and interaction comparisons

(2) ( $\pm 0.736$ ) For use in vertical and interaction comparisons

65/B/4.12

2ND TEST CROP

BARLEY

1964	Ley	Lu	AH	AR	Mean
GRAIN					
(1) and (2)					
					( $\pm 0.28$ )
DO	38.5	42.4	41.4	41.1	40.9
DI	36.6	44.9	42.8	43.2	41.9
Mean ( $\pm 1.21$ )	37.5	43.7	42.1	42.2	41.4
STRAW					
DO	52.8	33.2	32.4	34.2	38.2
DI	48.9	37.0	29.6	40.9	39.1
Mean	50.9	35.1	31.0	37.6	38.6

Mean D.M. %: Grain: 75.2  
 Straw: 76.6

(1) ( $\pm 1.27$ ) For use in horizontal and diagonal comparisons

(2) ( $\pm 0.56$ ) For use in vertical and interaction comparisons



65/B/5.1

WOBURN MARKET GARDEN EXPERIMENT

(WMC)

Organic manures, N, P and K - Iansome Field 1965, the fifth year with revised treatments.

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

Globe beet (Series B, 1965): Fertiliser and dung plots were used for a microplot experiment. Remaining plots were fallowed.

Treatments: All combinations of:-

1. Whole plots: Fertiliser plots: 1.5 cwt P2O5, 1.5 cwt K2O (P1K1), 3.0 cwt P2O5, 3.0 cwt K2O (P2K2), 3/4 dug in, 1/4 to seedbed.  
Dung plots: No P or K (P0K0), (P1K1).
2. Half plots: Fertiliser plots: Peat: None (0), 250 cwt peat dry matter (P1) 3/4 dug in, 1/4 to seedbed.  
Dung plots: Dung: None (D0), 10 (D1), 20 tons (D2), dug in.
3. Quarter plots: N: None (N0), 0.6 (N1), 1.2 (N2), 1.8 cwt N (N3) as 'Nitro-Chalk' 3/4 dug in, 1/4 to seedbed.
4. Eighth plots: Plant spacing: Singling to 3 inch (S3), 4 inch (S4).

Area of each sub-plot (Carrots): 0.0063. Area harvested: 0.0017.

Area of each microplot (Globe Beet): 0.0016. Area harvested: 0.0007.

Cultivations, etc.:-

Leeks 1964-65 Series B: The crop was harvested early, without weighing, in preparation for microplot experiment.

Carrots Series A: Dung applied, plots ploughed: Jan 19, 1965.

Fertilisers applied: Apr 6. Seed drilled at 2.5 lb: Apr 9.

Sprayed with menazon at 4 oz plus linuron at 10 oz in 40 gals:

June 3. Sprayed with menazon at 4 oz in 40 gals: June 21.

Lifted: 1st harvest: July 21, 2nd harvest: Aug 2.

Globe beet Series B microplots: Plots ploughed: Jan 14, 1965.

Peat for digging in applied and all plots rotary cultivated:

Mar 15. Fertilisers and dung applied, all plots dug by hand:

Apr 5. Fallow area rotavated: Apr 22. Seedbed peat applied

and lightly worked in: Apr 27. Seedbed fertilisers applied:

May 6. Seedbed worked with drags and levelled with rakes,

rubbed and graded seed drilled at 30 lb: May 10. Fallow area

rotary cultivated: May 12. Singled: June 1. Hoed: June 15.

Sprayed with a mixture of menazon, DDT, gamma BHC at 1.5 pints

in 40 gals: June 21. Hoed: June 29. Fallow weeded and

rotavated: July 30. Lifted: Aug 3.

65/B/5.2

NOTE: Soil samples taken Aug 13. Crop samples taken for determination of dry matter and samples retained for chemical analysis.

Standard errors per plot.

Carrots: Saleable roots: 1st harvest: 0.739 or 12.6% (12 d.f.)

2nd harvest: 1.393 or 12.7% (12 d.f.)

Mean of 2 harvests: 0.968 or 11.5% (12 d.f.)

Tops from saleable roots: 1st harvest: 1.476 or 20.7% (12 d.f.)

2nd harvest: 1.696 or 16.5% (12 d.f.)

Mean of 2 harvests: 1.394 or 16.0% (12 d.f.)

Globe beet: Fertiliser plots:

Saleable bulbs Pooled 1/2 and 1/4 plots:

1.531 or 13.5% (12 d.f.)

1/8 plots: 0.822 or 7.2% (16 d.f.)

Total produce Pooled 1/2 and 1/4 plots:

2.379 or 10.8% (12 d.f.)

1/8 plots: 1.717 or 7.8% (16 d.f.)

65/B/5.3

CARRIOTS: SALEABLE ROOTS

Dung	Organic manure applied	Mean	Fertiliser	
			None	N1P1K1
1ST HARVEST				
10	D1	(±0.370) 5.94	4.91	(±0.523) 6.98
20	D2	7.00	7.69	6.30
10	C1	6.78	6.59	6.98
20	C2	6.74	7.33	6.14
	D1+C1	(±0.261) 6.36	5.75	(±0.370) 6.98
	D2+C2	6.86	7.51	6.22
Mean		6.62	6.63	(±0.261) 6.60
NPK				
111	6.14			
211	3.84			
112	4.10	(±0.523)		
212	3.49			
Mean	4.39	(±0.261)		



65/B/5.4

CARROTS: SALEABLE ROOTS

Dung	Organic manure applied	Mean	Fertiliser	
			None	N1P1K1
2ND HARVEST				
10	D1	(±0.696) 11.92	(±0.985) 11.05	12.79
20	D2	12.55	13.60	11.50
10	C1	12.42	12.44	12.40
20	C2	12.03	12.79	11.27
	D1+C1	(±0.492) 12.17	(±0.696) 11.74	12.60
	D2+C2	12.29	13.20	11.38
Mean		12.23	12.47 (±0.492)	11.99
NPK				
111		11.24		
211		6.49		
112		8.75	(±0.985)	
212		6.98		
Mean		8.36	(±0.492)	

65/B/5.5

CARROTS: SALEABLE ROOTS

Dung	Organic manure applied	Mean	None	Fertiliser N1P1K1
MEAN OF 2 HARVESTS				
		(±0.484)		(±0.684)
10	D1	8.93	7.98	9.88
20	D2	9.77	10.64	8.90
10	C1	9.60	9.51	9.69
20	C2	9.38	10.06	8.71
		(±0.342)		(±0.484)
	D1+C1	9.26	8.74	9.78
	D2+C2	9.58	10.35	8.80
Mean		9.42	9.55	9.30
			(±0.342)	
NPK				
111		8.69		
211		5.17		
112		6.43	(±0.684)	
212		5.23		
Mean		6.38	(±0.342)	

65/B/5.6

CARRIOTS: TOPS FROM SALEABLE ROOTS

Dung	Organic manure applied	Mean	Fertiliser	
			None	N1P1K1
1ST HARVEST				
10	D1	(±0.738) 6.98	4.78	9.17
20	D2	9.27	10.50	8.04
10	C1	7.61	6.30	8.92
20	C2	8.92	9.72	8.11
	D1+C1	(±0.522) 7.30	5.54	9.04
	D2+C2	9.10	10.11	8.08
Mean		8.20	7.82	8.56
			(±0.522)	
NPK				
111		6.69		
211		4.43		
112		4.62	(±1.044)	
212		4.26		
Mean		5.00	(±0.522)	



65/B/5.7

CARROTS: TOPS FROM SALEABLE ROOTS

Dung	Organic manure applied	Mean	Fertiliser	
			None	N1P1K1
2ND HARVEST				
10	D1	(±0.848) 10.77	8.62	(±1.199) 12.92
20	D2	12.97	13.63	12.31
10	C1	10.84	8.95	12.73
20	C2	12.98	14.05	11.92
	D1+C1	(±0.600) 10.80	8.78	(±0.848) 12.82
	D2+C2	12.98	13.84	12.12
Mean		11.89	11.31	(±0.600) 12.47
NPK				
111	8.40			
211	5.91			
112	7.07	(±1.199)		
212	6.75			
Mean	7.03	(±0.600)		

65/B/5.8

CARROTS: TONS FROM SALEABLE ROOTS

Dung	Organic manure applied	Mean	Fertiliser	
			None	N1P1K1
MEAN OF 2 HARVESTS				
10	D1	(±0.697) 8.88	6.70	(±0.986) 11.05
20	D2	11.12	12.07	10.18
10	C1	9.22	7.62	10.82
20	C2	10.95	11.89	10.01
	D1+C1	(±0.493) 9.05	7.16	(±0.697) 10.94
	D2+C2	11.04	11.98	10.10
Mean		10.04	9.57	(±0.493) 10.52
NPK				
111		7.54		
211		5.17		
112		5.85	(±0.986)	
212		5.51		
Mean		6.02	(±0.493)	

65/B/5.9

GLOBE BEET

FERTILISER PLOTS

	NO	N1	N2	N3	Mean
SALEABLE BULBS					
Mean	5.80	11.76	13.70	14.15	11.35
		( $\pm 0.541$ )			
F1K1	4.36	10.86	12.82	13.53	10.39
F2K2	7.23	12.66	14.56	14.77	12.31
		( $\pm 0.766$ )*			
O	5.02	10.66	13.37	13.25	10.57
PT	6.56	12.86	14.02	15.05	12.12
		( $\pm 0.766$ )			( $\pm 0.383$ )
S3	5.98	12.30	13.96	14.20	11.61
S4	5.61	11.22	13.43	14.10	11.09
		(1) and (2)			( $\pm 0.145$ )

\* For use in horizontal and interaction comparisons only.

(1) ( $\pm 0.579$ ) For use in vertical and diagonal comparisons

(2) ( $\pm 0.291$ ) For use in horizontal and interaction comparisons



65/B/5.10

GLOBE BEET

FERTILISER PLOTS

	NO	N1	N2	N3	Mean
TOTAL PRODUCE					
Mean	11.60	21.64	26.24	28.50	22.00
		( $\pm 0.841$ )			
P1K1	8.87	19.85	23.84	26.52	19.77
P2K2	14.32	23.44	28.64	30.47	24.22
		( $\pm 1.190$ )*			
O	10.32	20.06	25.58	27.32	20.82
PT	12.87	23.23	26.90	29.67	23.17
		( $\pm 0.595$ )			
S3	12.13	22.81	27.02	29.29	22.81
S4	11.06	20.48	25.46	27.70	21.18
		(1) and (2)			( $\pm 0.304$ )

\* For use in horizontal and interaction comparisons only.

(1) ( $\pm 0.944$ ) For use in vertical and diagonal comparisons

(2) ( $\pm 0.607$ ) For use in horizontal and interaction comparisons

65/B/5.11

GLOBE BEET

DUNG PLOTS

	NO	N1	N2	N3	Mean
SALEABLE BULBS					
Mean	12.33	14.55	15.78	16.70	14.84
POKO	12.15	13.86	15.29	16.69	14.50
FLKL	12.50	15.25	16.27	16.71	15.18
D0	10.80	14.20	14.95	16.34	14.07
D1	12.11	12.88	15.44	15.80	14.06
D2	15.60	16.93	17.79	18.31	17.16
S3	12.52	15.01	15.80	16.89	15.06
S4	12.13	14.10	15.76	16.51	14.63
TOTAL PRODUCE					
Mean	23.40	29.32	33.17	35.79	30.42
POKO	22.60	27.16	31.86	34.56	29.05
FLKL	24.21	31.47	34.48	37.02	31.80
D0	20.48	28.12	31.80	34.39	28.70
D1	23.05	25.19	32.25	34.24	28.68
D2	29.62	35.84	36.84	40.15	35.61
S3	24.12	30.64	33.47	36.91	31.29
S4	22.69	27.99	32.87	34.67	29.56

TABLE 1

SUMMARY OF DATA

Year	1970	1971	1972	1973	1974	1975
1970	10.00	10.00	10.00	10.00	10.00	10.00
1971	10.00	10.00	10.00	10.00	10.00	10.00
1972	10.00	10.00	10.00	10.00	10.00	10.00
1973	10.00	10.00	10.00	10.00	10.00	10.00
1974	10.00	10.00	10.00	10.00	10.00	10.00
1975	10.00	10.00	10.00	10.00	10.00	10.00
1976	10.00	10.00	10.00	10.00	10.00	10.00
1977	10.00	10.00	10.00	10.00	10.00	10.00
1978	10.00	10.00	10.00	10.00	10.00	10.00
1979	10.00	10.00	10.00	10.00	10.00	10.00
1980	10.00	10.00	10.00	10.00	10.00	10.00
1981	10.00	10.00	10.00	10.00	10.00	10.00
1982	10.00	10.00	10.00	10.00	10.00	10.00
1983	10.00	10.00	10.00	10.00	10.00	10.00
1984	10.00	10.00	10.00	10.00	10.00	10.00
1985	10.00	10.00	10.00	10.00	10.00	10.00
1986	10.00	10.00	10.00	10.00	10.00	10.00
1987	10.00	10.00	10.00	10.00	10.00	10.00
1988	10.00	10.00	10.00	10.00	10.00	10.00
1989	10.00	10.00	10.00	10.00	10.00	10.00
1990	10.00	10.00	10.00	10.00	10.00	10.00
1991	10.00	10.00	10.00	10.00	10.00	10.00
1992	10.00	10.00	10.00	10.00	10.00	10.00
1993	10.00	10.00	10.00	10.00	10.00	10.00
1994	10.00	10.00	10.00	10.00	10.00	10.00
1995	10.00	10.00	10.00	10.00	10.00	10.00
1996	10.00	10.00	10.00	10.00	10.00	10.00
1997	10.00	10.00	10.00	10.00	10.00	10.00
1998	10.00	10.00	10.00	10.00	10.00	10.00
1999	10.00	10.00	10.00	10.00	10.00	10.00
2000	10.00	10.00	10.00	10.00	10.00	10.00
2001	10.00	10.00	10.00	10.00	10.00	10.00
2002	10.00	10.00	10.00	10.00	10.00	10.00
2003	10.00	10.00	10.00	10.00	10.00	10.00
2004	10.00	10.00	10.00	10.00	10.00	10.00
2005	10.00	10.00	10.00	10.00	10.00	10.00
2006	10.00	10.00	10.00	10.00	10.00	10.00
2007	10.00	10.00	10.00	10.00	10.00	10.00
2008	10.00	10.00	10.00	10.00	10.00	10.00
2009	10.00	10.00	10.00	10.00	10.00	10.00
2010	10.00	10.00	10.00	10.00	10.00	10.00
2011	10.00	10.00	10.00	10.00	10.00	10.00
2012	10.00	10.00	10.00	10.00	10.00	10.00
2013	10.00	10.00	10.00	10.00	10.00	10.00
2014	10.00	10.00	10.00	10.00	10.00	10.00
2015	10.00	10.00	10.00	10.00	10.00	10.00
2016	10.00	10.00	10.00	10.00	10.00	10.00
2017	10.00	10.00	10.00	10.00	10.00	10.00
2018	10.00	10.00	10.00	10.00	10.00	10.00
2019	10.00	10.00	10.00	10.00	10.00	10.00
2020	10.00	10.00	10.00	10.00	10.00	10.00



65/B/6.1

## IRRIGATION EXPERIMENT

(WIR)

Revised 1963

The effects of irrigation and nitrogen - Woburn Butt Close 1965, the 15th year.

For details of previous cropping, treatments etc., see 'Details' 1962 and 'Results' 63/B/6, 64/B/6.

Rotation: The barley crop is now replaced by spring wheat, which receives 0.4 (N1), 0.8 (N2), 1.2 (N3), 1.6 (N4) cwt N as 'Nitro-Chalk' to quarter plots.

Lucerne: This is now replaced by Italian ryegrass. A test of 350 (N1K1) v 700 lb (N2K2) (16:0:16) for each cut is applied to half plots.

### Basal applications:

Manures: Spring wheat: 240 lb (0:14:28) combine drilled, 40 cwt ground chalk.

Italian Ryegrass: 373 lb superphosphate.

Other crops as before.

Weedkillers: Spring wheat: Ioxynil and mecoprop ('Actril' P at 4 pints in 40 gals).

Italian Ryegrass: 2,4-D butoxyethylester at 7 oz a.e. in 40 gals.

Area harvested (Sub plot): Sugar beet - 0.0042, spring wheat - 0.0076, clover - 0.0058, ryegrass - 0.0058.

65/B/6.2

RAINFALL AND IRRIGATION: INCHES

Week ending	Rain-fall	Sugar beet			Spring wheat	Clover			Grass		
		A	B	C	C	A	B	C	A	B	C
3 May	0.66										
10	0.42										
17	0.12										
24	0.43				0.50	0.50	-	0.50			
31	0.83	0.50	-	0.50					-	-	0.50
7 June	0.24										
14	0.84										
21	0.67										
28	0.37										
5 July	0.13	-	0.50	0.50	0.50	-	0.50	0.50	-	0.50	0.50
12	0.69	-	0.50	0.50	0.50	-	0.50	0.50	-	0.50	0.50
19	0.33										
26	1.86										
2 Aug	0.29										
9	0.81										
16	0.02										
23	0.55										
30	0.85										
Total	10.11	0.50	1.00	1.50	1.50	0.50	1.00	1.50	0.00	1.00	1.50

Cultivations, etc.:

Sugar beet: Ploughed: Oct 9, 1964. Salt applied: Jan 5, 1965. Basal compound and sulphate of ammonia applied: Mar 31. Seed drilled at 5 lb: Apr 2. Singled (early plots): May 17. Singled (late plots): June 2. Lifted: Oct 5.

Spring wheat: Ground chalk applied: Nov 10, 1964. Ploughed: Nov 11. Seed combine drilled at 180 lb: Mar 29, 1965. 'Nitro-Chalk' applied: Mar 30. Sprayed: May 11. Combine harvested: Sept 14. Variety: Opal.

Clover: Seed undersown in barley at 30 lb: Apr 27, 1964. Basal compound fertiliser applied: Feb 3, 1965. Cut 3 times: June 11, Aug 5, Oct 19.

Ryegrass: Ploughed: Nov 4, 1964. Basal P and first dressings of NK compound applied: Mar 16, 1965. Seed drilled at 40 lb: Mar 17. Sprayed: May 10. Cut five times: June 11, July 14, Aug 10, Sept 7, Oct 19. NK compound applied after first 4 cuts. Variety: Italian.

65/B/6.3

Standard errors per plot.

Sugar beet. Roots, Whole plot: 0.574 or 3.3% (6 d.f.)  
1/2 plot: 0.613 or 3.5% (8 d.f.)  
Row strips: 0.587 or 3.3% (8 d.f.)  
Total sugar, Whole plot: 1.87 or 3.0% (6 d.f.)  
1/2 plot: 2.65 or 4.3% (8 d.f.)  
Row strips: 1.59 or 2.6% (8 d.f.)  
Tops, Whole plot: 0.974 or 5.3% (6 d.f.)  
1/2 plot: 1.938 or 10.5% (8 d.f.)  
Row strips: 0.664 or 3.6% (8 d.f.)

Spring wheat. Grain, Whole plot: 2.32 or 6.3% (5 d.f.)  
1/4 plot: 1.93 or 5.2% (30 d.f.)

Clover. Dry matter, 1st cut. Whole plot: 4.24 or 12.8% (6 d.f.)  
1/2 plot: 1.96 or 5.9% (8 d.f.)  
2nd cut. Whole plot: 1.49 or 9.4% (6 d.f.)  
1/2 plot: 1.73 or 10.8% (8 d.f.)  
3rd cut. Whole plot: 1.57 or 9.0% (6 d.f.)  
1/2 plot: 0.79 or 4.5% (8 d.f.)  
Total of 3 cuts. Whole plot: 5.52 or 8.3% (6 d.f.)  
1/2 plot: 3.59 or 5.4% (8 d.f.)

Ryegrass. Dry matter, 1st cut. Whole plot: 1.25 or 6.3% (6 d.f.)  
1/2 plot: 0.99 or 5.0% (8 d.f.)  
2nd cut. Whole plot: 2.10 or 7.0% (6 d.f.)  
1/2 plot: 1.76 or 5.8% (8 d.f.)  
3rd cut. Whole plot: 1.09 or 5.6% (6 d.f.)  
1/2 plot: 2.27 or 11.7% (8 d.f.)  
4th cut. Whole plot: 0.44 or 4.5% (6 d.f.)  
1/2 plot: 1.20 or 12.3% (8 d.f.)  
5th cut. Whole plot: 1.13 or 8.0% (6 d.f.)  
1/2 plot: 1.27 or 9.0% (8 d.f.)  
Total of 5 cuts. Whole plot: 3.34 or 3.6% (6 d.f.)  
1/2 plot: 3.63 or 3.9% (8 d.f.)

Errata to Results 64/B/6.1, 'Area harvested'. These were all sub plots and not as stated.



65/B/6.4

SUMMARY OF RESULTS

SUGAR BEET

	O	A	B	C	Mean
ROOTS					
Mean ( $\pm 0.331$ )	18.35	17.67	17.48	16.84	17.59
	(1) and (2)				( $\pm 0.177$ )
N1	18.46	17.08	16.98	16.06	17.15
N2	18.25	18.26	17.98	17.62	18.03
	(3) and (4)				( $\pm 0.170$ )
E	18.41	17.96	17.89	17.18	17.86
L	18.30	17.38	17.07	16.50	17.31

SUGAR %

Mean	17.7	17.5	17.8	17.6	17.6
N1	17.6	17.6	17.8	17.5	17.6
N2	17.8	17.4	17.7	17.6	17.6
E	17.5	17.6	17.8	17.6	17.6
L	17.8	17.3	17.7	17.5	17.6

(1) ( $\pm 0.415$ ) (3) ( $\pm 0.409$ ) For use in horizontal and diagonal comparisons  
 (2) ( $\pm 0.354$ ) (4) ( $\pm 0.339$ ) For use in vertical and interaction comparisons



65/B/6.5

SUGAR BEET					
	O	A	B	C	Mean
TOTAL SUGAR					
Mean ( $\pm 1.08$ )	64.9	61.8	62.0	59.2	62.0
		(1) and (2)			( $\pm 0.76$ )
N1	65.0	60.0	60.6	56.4	60.5
N2	64.8	63.6	63.5	62.1	63.5
		(3) and (4)			( $\pm 0.46$ )
E	64.5	63.3	63.7	60.5	63.0
L	65.3	60.3	60.4	57.9	61.0

(1) ( $\pm 1.53$ ) (3) ( $\pm 1.26$ ) For use in horizontal and diagonal comparisons  
 (2) ( $\pm 1.53$ ) (4) ( $\pm 0.92$ ) For use in vertical and interaction comparisons

TOPS					
Mean ( $\pm 0.563$ )	18.60	18.12	18.89	18.34	18.49
		(1) and (2)			( $\pm 0.559$ )
N1	16.99	15.56	16.35	15.45	16.09
N2	20.21	20.69	21.43	21.22	20.89
		(3) and (4)			( $\pm 0.192$ )
E	18.41	18.68	18.84	19.00	18.73
L	18.79	17.57	18.94	17.67	18.24

(1) ( $\pm 0.971$ ) (3) ( $\pm 0.624$ ) For use in horizontal and diagonal comparisons  
 (2) ( $\pm 1.119$ ) (4) ( $\pm 0.383$ ) For use in vertical and interaction comparisons

65/B/6.6

SPRING WHEAT

N

	1	2	3	4	Mean
GRAIN					
	(1) and (2)				( $\pm 0.95$ )
D	32.8	38.1	36.8	35.8	35.9
C	34.8	42.0	38.7	35.2	37.7
Mean ( $\pm 0.56$ )	33.8	40.1	37.8	35.5	36.8

Mean D.M. %: 76.7

STRAW

D	26.5	32.6	29.7	31.4	30.0
C	32.3	35.1	36.3	31.9	33.9
Mean	29.4	33.8	33.0	31.6	32.0

Mean D.M. %: 68.5

(1) ( $\pm 1.17$ ) For use in horizontal and diagonal comparisons

(2) ( $\pm 0.79$ ) For use in vertical and interaction comparisons

65/B/6.7

CLOVER

	O	A	B	C	Mean
1ST CUT*					
	(1) and (2)				(±0.57)
N1	8.0	32.0	31.9	34.6	34.1
N2	33.6	33.9	28.8	30.9	31.8
Mean (±2.45)	35.8	32.9	30.4	32.7	33.0

Mean D.M. %: 15.5

(1) (±2.57) For use in horizontal and diagonal comparisons

(2) (±1.13) For use in vertical and interaction comparisons

2ND CUT

	(1) and (2)				(±0.50)
N1	14.6	16.1	14.8	17.4	15.7
N2	15.8	13.6	16.5	18.8	16.1
Mean (±0.86)	15.2	14.8	15.6	18.1	15.9

Mean D.M. %: 16.8

(1) (±1.11) For use in horizontal and diagonal comparisons

(2) (±1.00) For use in vertical and interaction comparisons

65/B/6.8

CLOVER

	O	A	B	C	Mean
3RD CUT					
	(1) and (2)				(±0.23)
N1	17.2	16.8	17.2	17.4	17.1
N2	17.0	19.0	17.7	17.4	17.8
Mean (±0.91)	17.1	17.9	17.4	17.4	17.5

Mean D.M. %: 15.9

(1) (±0.96) For use in horizontal and diagonal comparisons

(2) (±0.46) For use in vertical and interaction comparisons

TOTAL OF 3 CUTS

	(1) and (2)				(±1.04)
N1	69.7	64.8	63.9	69.4	66.9
N2	66.5	66.5	63.0	67.0	65.7
Mean (±3.19)	68.1	65.7	63.4	68.2	66.3

Mean D.M. %: 16.1

(1) (±3.51) For use in horizontal and diagonal comparisons

(2) (±2.07) For use in vertical and interaction comparisons



65/B/6.9

RYEGRASS				
	O & A	B	C	Mean
1ST CUT				
	(1) and (2)	(3) and (4)		(±0.28)
N1K1	17.2	14.8	16.6	16.4
N2K2	22.9	23.2	23.2	23.0
Mean	20.0 (±0.51)	19.0 (±0.72)	19.9	19.7

Mean D.M. %: 15.0

(1) (±0.58) (3) (±0.82) For use in horizontal and diagonal comparisons

(2) (±0.40) (4) (±0.57) For use in vertical and interaction comparisons

2ND CUT				
	(1) and (2)	(3) and (4)		(±0.51)
N1K1	28.8	27.5	28.8	28.5
N2K2	31.6	31.2	32.7	31.8
Mean	30.2 (±0.86)	29.3 (±1.21)	30.8	30.1

Mean D.M. %: 12.1

(1) (±0.99) (3) (±1.41) For use in horizontal and diagonal comparisons

(2) (±0.72) (4) (±1.02) For use in vertical and interaction comparisons

NOTE: All cuts O = A  
1st cut O = A = B

65/B/6.10

RYEGRASS				
	O & A	B	C	Mean
3RD CUT				
	(1) and (2)	(3) and (4)		(±0.66)
N1K1	20.5	19.4	18.4	19.7
N2K2	20.2	19.7	17.0	19.3
Mean	20.4 (±0.44)	19.5 (±0.63)	17.7	19.5

Mean D.M. %: 12.8

(1) (±0.79) (3) (±1.12) For use in horizontal and diagonal comparisons

(2) (±0.93) (4) (±1.31) For use in vertical and interaction comparisons

4TH CUT				
	(1) and (2)	(3) and (4)		(±0.35)
N1K1	11.0	11.3	11.1	11.1
N2K2	8.2	8.7	8.3	8.4
Mean	9.6 (±0.18)	10.0 (±0.25)	9.7	9.7

Mean D.M. %: 13.1

(1) (±0.39) (3) (±0.55) For use in horizontal and diagonal comparisons

(2) (±0.49) (4) (±0.69) For use in vertical and interaction comparisons

NOTE: All cuts O = A  
1st cut O = A = B

65/B/6.11

RYEGRASS				
	O & A	B	C	Mean
5TH CUT				
	(1) and (2)	(3) and (4)		(±0.37)
N1K1	14.8	15.5	13.8	14.7
N2K2	12.8	13.9	14.5	13.5
Mean	13.8 (±0.46)	14.7 (±0.65)	14.2	14.1

Mean D.M. %: 12.8

(1) (±0.59) (3) (±0.83) For use in horizontal and diagonal comparisons

(2) (±0.52) (4) (±0.73) For use in vertical and interaction comparisons

TOTAL OF 5 CUTS				
	(1) and (2)	(3) and (4)		(±1.05)
N1K1	92.3	88.6	88.7	90.5
N2K2	95.9	96.7	95.6	96.0
Mean	94.1 (±1.36)	92.7 (±1.93)	92.2	93.2

Mean D.M. %: 13.2

(1) (±1.72) (3) (±2.43) For use in horizontal and diagonal comparisons

(2) (±1.48) (4) (±2.10) For use in vertical and interaction comparisons

NOTE: All cuts O = A  
1st cut O = A = B

TABLE 1

Year	1980		1981	
	(1)	(2)	(3)	(4)
1980	1.00	1.00	1.00	1.00
1981	1.00	1.00	1.00	1.00
1982	1.00	1.00	1.00	1.00
1983	1.00	1.00	1.00	1.00
1984	1.00	1.00	1.00	1.00
1985	1.00	1.00	1.00	1.00
1986	1.00	1.00	1.00	1.00
1987	1.00	1.00	1.00	1.00
1988	1.00	1.00	1.00	1.00
1989	1.00	1.00	1.00	1.00
1990	1.00	1.00	1.00	1.00
1991	1.00	1.00	1.00	1.00
1992	1.00	1.00	1.00	1.00
1993	1.00	1.00	1.00	1.00
1994	1.00	1.00	1.00	1.00
1995	1.00	1.00	1.00	1.00
1996	1.00	1.00	1.00	1.00
1997	1.00	1.00	1.00	1.00
1998	1.00	1.00	1.00	1.00
1999	1.00	1.00	1.00	1.00
2000	1.00	1.00	1.00	1.00
2001	1.00	1.00	1.00	1.00
2002	1.00	1.00	1.00	1.00
2003	1.00	1.00	1.00	1.00
2004	1.00	1.00	1.00	1.00
2005	1.00	1.00	1.00	1.00
2006	1.00	1.00	1.00	1.00
2007	1.00	1.00	1.00	1.00
2008	1.00	1.00	1.00	1.00
2009	1.00	1.00	1.00	1.00
2010	1.00	1.00	1.00	1.00
2011	1.00	1.00	1.00	1.00
2012	1.00	1.00	1.00	1.00
2013	1.00	1.00	1.00	1.00
2014	1.00	1.00	1.00	1.00
2015	1.00	1.00	1.00	1.00
2016	1.00	1.00	1.00	1.00
2017	1.00	1.00	1.00	1.00
2018	1.00	1.00	1.00	1.00
2019	1.00	1.00	1.00	1.00
2020	1.00	1.00	1.00	1.00
2021	1.00	1.00	1.00	1.00
2022	1.00	1.00	1.00	1.00
2023	1.00	1.00	1.00	1.00
2024	1.00	1.00	1.00	1.00
2025	1.00	1.00	1.00	1.00
2026	1.00	1.00	1.00	1.00
2027	1.00	1.00	1.00	1.00
2028	1.00	1.00	1.00	1.00
2029	1.00	1.00	1.00	1.00
2030	1.00	1.00	1.00	1.00

TABLE 1. (continued) (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16) (17) (18) (19) (20) (21) (22) (23) (24) (25) (26) (27) (28) (29) (30) (31) (32) (33) (34) (35) (36) (37) (38) (39) (40) (41) (42) (43) (44) (45) (46) (47) (48) (49) (50) (51) (52) (53) (54) (55) (56) (57) (58) (59) (60) (61) (62) (63) (64) (65) (66) (67) (68) (69) (70) (71) (72) (73) (74) (75) (76) (77) (78) (79) (80) (81) (82) (83) (84) (85) (86) (87) (88) (89) (90) (91) (92) (93) (94) (95) (96) (97) (98) (99) (100)

TABLE 2

Year	1980		1981	
	(1)	(2)	(3)	(4)
1980	1.00	1.00	1.00	1.00
1981	1.00	1.00	1.00	1.00
1982	1.00	1.00	1.00	1.00
1983	1.00	1.00	1.00	1.00
1984	1.00	1.00	1.00	1.00
1985	1.00	1.00	1.00	1.00
1986	1.00	1.00	1.00	1.00
1987	1.00	1.00	1.00	1.00
1988	1.00	1.00	1.00	1.00
1989	1.00	1.00	1.00	1.00
1990	1.00	1.00	1.00	1.00
1991	1.00	1.00	1.00	1.00
1992	1.00	1.00	1.00	1.00
1993	1.00	1.00	1.00	1.00
1994	1.00	1.00	1.00	1.00
1995	1.00	1.00	1.00	1.00
1996	1.00	1.00	1.00	1.00
1997	1.00	1.00	1.00	1.00
1998	1.00	1.00	1.00	1.00
1999	1.00	1.00	1.00	1.00
2000	1.00	1.00	1.00	1.00
2001	1.00	1.00	1.00	1.00
2002	1.00	1.00	1.00	1.00
2003	1.00	1.00	1.00	1.00
2004	1.00	1.00	1.00	1.00
2005	1.00	1.00	1.00	1.00
2006	1.00	1.00	1.00	1.00
2007	1.00	1.00	1.00	1.00
2008	1.00	1.00	1.00	1.00
2009	1.00	1.00	1.00	1.00
2010	1.00	1.00	1.00	1.00
2011	1.00	1.00	1.00	1.00
2012	1.00	1.00	1.00	1.00
2013	1.00	1.00	1.00	1.00
2014	1.00	1.00	1.00	1.00
2015	1.00	1.00	1.00	1.00
2016	1.00	1.00	1.00	1.00
2017	1.00	1.00	1.00	1.00
2018	1.00	1.00	1.00	1.00
2019	1.00	1.00	1.00	1.00
2020	1.00	1.00	1.00	1.00
2021	1.00	1.00	1.00	1.00
2022	1.00	1.00	1.00	1.00
2023	1.00	1.00	1.00	1.00
2024	1.00	1.00	1.00	1.00
2025	1.00	1.00	1.00	1.00
2026	1.00	1.00	1.00	1.00
2027	1.00	1.00	1.00	1.00
2028	1.00	1.00	1.00	1.00
2029	1.00	1.00	1.00	1.00
2030	1.00	1.00	1.00	1.00

TABLE 2. (continued) (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16) (17) (18) (19) (20) (21) (22) (23) (24) (25) (26) (27) (28) (29) (30) (31) (32) (33) (34) (35) (36) (37) (38) (39) (40) (41) (42) (43) (44) (45) (46) (47) (48) (49) (50) (51) (52) (53) (54) (55) (56) (57) (58) (59) (60) (61) (62) (63) (64) (65) (66) (67) (68) (69) (70) (71) (72) (73) (74) (75) (76) (77) (78) (79) (80) (81) (82) (83) (84) (85) (86) (87) (88) (89) (90) (91) (92) (93) (94) (95) (96) (97) (98) (99) (100)

TABLE 2. (continued) (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16) (17) (18) (19) (20) (21) (22) (23) (24) (25) (26) (27) (28) (29) (30) (31) (32) (33) (34) (35) (36) (37) (38) (39) (40) (41) (42) (43) (44) (45) (46) (47) (48) (49) (50) (51) (52) (53) (54) (55) (56) (57) (58) (59) (60) (61) (62) (63) (64) (65) (66) (67) (68) (69) (70) (71) (72) (73) (74) (75) (76) (77) (78) (79) (80) (81) (82) (83) (84) (85) (86) (87) (88) (89) (90) (91) (92) (93) (94) (95) (96) (97) (98) (99) (100)



65/B/7.1

## 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 1965, the sixth year.

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

Area of each plot:

Great Field IV: 0.0193. Area harvested: Potatoes and barley - 0.0129, swedes - 0.0096.

Sawyers I: 0.0212. Area harvested: Potatoes and barley - 0.0141, swedes - 0.0106.

Treatments 4 and 5 (all crops) received 0.75 and 1.5 cwt P2O5 respectively in 1965 (as granular superphosphate).

Cultivations, etc. (both fields): Ploughed: Oct 27, 1964.

Potatoes: Fertilisers applied: Apr 8, 1965. Potatoes planted: Apr 14. Earthed up: June 17. Sprayed 3 times with mancozeb at 1.2 lb in 37 gals: July 1, July 27, Aug 10. Sprayed with undiluted BCV at 15 gals: Sept 2. Lifted: Oct 12.

Barley: Fertilisers applied: Feb 25, 1965. Seed drilled at 120 lb: Mar 17. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): May 19. Combine harvested: Sept 15.

Swedes: Fertilisers applied: May 10, 1965. Seed drilled at 2 lb: May 11. Singled: June 21. Lifted: Nov 24.

Standard errors per plot.

Sawyers I:

Potatoes, total tubers: 0.963 or 5.7% (11 d.f.)

Barley, grain: 1.75 or 4.5% (11 d.f.)

Swedes, roots: 2.233 or 11.8% (11 d.f.)

65/B/7.2

SUMMARY OF RESULTS

POTATOES

Treat-ment	TOTAL TUBERS		PERCENTAGE WARE	
	Great Field IV Mean	Sawyers I Mean	Great Field IV Mean	Sawyers I Mean
		(±0.681)		
1	15.33	13.89	96.7	96.4
2	18.86	15.71	96.7	98.1
3	19.53	18.31	96.7	97.0
4	19.88	18.31	97.2	96.9
5	20.84	18.70	95.1	97.6
6	18.03	17.18	96.3	97.0
7	17.11	16.87	97.0	96.7
8	17.11	16.49	97.2	97.7
9	17.42	16.41	97.5	97.7
10	16.53	15.14	97.4	96.8
11	17.46	16.99	97.2	96.7
12	17.77	16.98	97.2	96.8
Mean	17.99	16.75	96.9	97.1

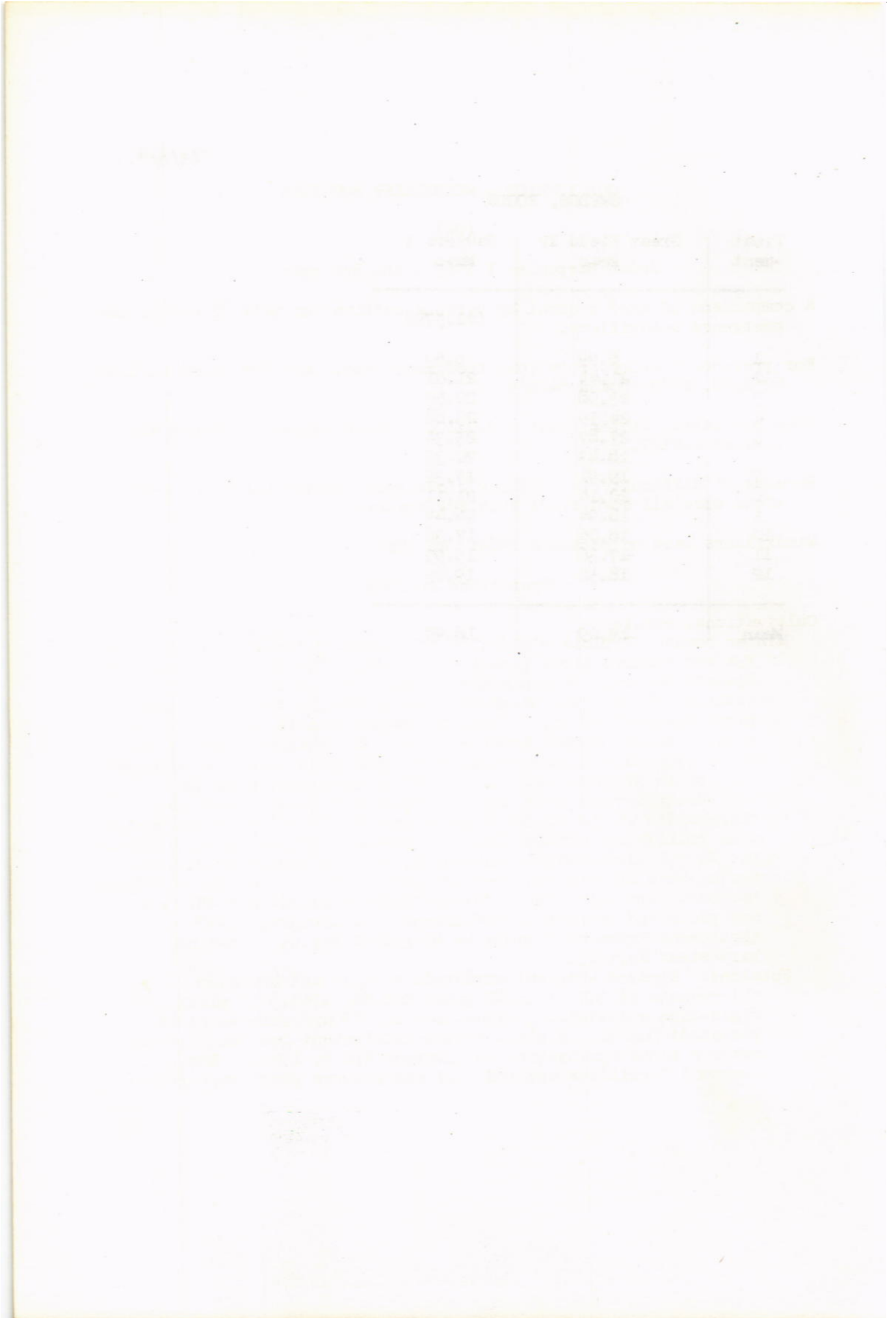
BARLEY

	GRAIN		STRAW	
		(±1.24)		
1	27.2	37.4	36.6	30.1
2	30.0	39.3	35.3	31.8
3	26.7	39.1	30.9	34.0
4	24.8	40.6	27.8	32.1
5	28.8	43.2	47.1	37.5
6	31.6	38.8	31.8	29.2
7	29.1	38.7	30.7	32.0
8	26.5	39.9	32.2	32.4
9	30.1	39.0	37.9	31.4
10	25.0	37.1	31.8	31.3
11	29.6	38.4	30.0	29.6
12	28.5	38.0	32.5	30.2
Mean	28.2	39.1	33.7	31.8
Mean D.M. %:	73.5	76.5	84.2	87.4

65/B/7.3

SWEDES, ROOTS

Treat-ment	Great Field IV Mean	Sawyers I Mean
		(±1.579)
1	6.99	6.40
2	21.44	21.61
3	23.98	22.52
4	24.59	23.68
5	27.87	25.34
6	18.43	20.35
7	19.91	17.32
8	20.14	21.11
9	18.94	16.44
10	18.06	17.36
11	17.36	15.95
12	18.52	19.83
Mean	19.69	18.99





65/B/8.1

## CULTIVATION - WEEDKILLER ROTATION

(CW)

Great Harpenden I 1965 - the 5th year

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

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

Area harvested: Winter beans - 0.0110. Winter wheat, potatoes and barley: 0.0107.

Because of difficulty in drilling close rows, winter beans on the T plots were all sown at 21 inch row spacing.

Weedkillers used on potatoes 1965: As 1964.

### Operations in 1965

#### Cultivations, etc.:-

Winter beans: T plots rigid-tine cultivated 3 times: Oct 22, 1964. P,A and reserve plots ploughed: Oct 23. P,A and reserve plots disced: Oct 26. T plots disced: Oct 27. R plots rotary cultivated: Oct 29. Seed drilled at 275 lb: Nov 2. X and Y plots sprayed: Nov 9. Y plots sprayed: Mar 15, 1965. M and reserve plots tractor hoed: May 13. 11 ft at each end of all plots sprayed with menazon at 4 oz in 40 gals: June 14, and again at 6 oz in 37 gals: July 1. Combine harvested: Sept 28.

Winter wheat: Sprayed with aminotriazole at 4 lb and ammonium thiocyanate at 3.7 lb in 40 gals: Oct 24, 1964. T plots rigid-tine cultivated 3 times: Dec 1. P,A and reserve plots ploughed: Dec 2. R plots rotary cultivated, P, T, A and reserve plots spring-tine cultivated, seed drilled at 185 lb: Dec 22. All plots harrowed: Apr 13, 1965. 'Nitro-Chalk' applied: Apr 15. H sub plots and reserve plots sprayed with mecoprop/2,4-D (Methoxone Extra at 7 pints in 40 gals): May 6. Combine harvested: Sept 13.

Potatoes: Sprayed with aminotriazole at 4 lb and ammonium thiocyanate at 3.7 lb in 40 gals: Oct 24, 1964. T plots rigid-tine cultivated 3 times: Dec 1. P and reserve plots ploughed: Dec 3. R plots rotary cultivated: Dec 22. T,P and reserve plots spring-tine cultivated: Apr 6, 1965. Basal compound fertiliser applied, T,P and reserve plots spring-tine

65/B/8.2

cultivated, A plots rotary cultivated twice, R plots once, potatoes machine planted: Apr 7. Ridges rolled: May 8. M and reserve plots chain harrowed, X and Y plots sprayed: May 10. M and reserve plots grubbed: May 11. M and reserve plots weeded mechanically: May 31. M and reserve plots grubbed second time: June 2. M and reserve plots earthed up: June 21. Sprayed 3 times with mancozeb at 1.2 lb in 37 gals: July 1, July 28, Aug 10. Sprayed with diquat (Reglone at 4 pints in 40 gals): Sept 6. Haulm destroyed mechanically: Sept 13. Lifted: Oct 11.

Barley: All plots spring-tine cultivated twice, sprayed with sodium trichloroacetate at 18 lb in 40 gals: Oct 22, 1964. All plots spring-tine cultivated: Nov 25. Sprayed second time with sodium trichloroacetate at 18 lb in 40 gals: Nov 26. All plots spring-tine cultivated: Dec 22. T plots rigid-tine cultivated twice, P and reserve plots ploughed, R plots rotary cultivated: Jan 19, 1965. A plots rotary cultivated, all other plots spring-tine cultivated, seed drilled at 155 lb: Mar 29. H sub-plots and reserve plots sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): May 13. Combine harvested: Sept 2.

Standard errors per plot.

Winter beans.	Grain, whole plot: 2.81 or 11.3% (8 d.f.)
Potatoes.	Total tubers, whole plot: 0.590 or 3.0% (8 d.f.) sub plot: 0.755 or 3.9% (9 d.f.)
Barley.	Grain, whole plot: 1.89 or 4.8% (8 d.f.) sub plot: 0.99 or 2.5% (9 d.f.)
Winter wheat.	Grain, whole plot: 1.70 or 3.6% (11 d.f.) sub plot: 1.43 or 3.0% (12 d.f.)



65/B/8.3

SUMMARY OF RESULTS

	P	R	T	Mean
WINTER BEANS				
GRAIN				
Mean ( $\pm 1.15$ )	24.4	24.7 ( $\pm 1.99$ )	25.8	25.0 ( $\pm 1.15$ )
M	28.5	29.4	24.6	27.5
X	23.4	22.2	24.3	23.3
Y	21.3	22.3	28.6	24.1
	AY	Reserve M		
	23.0	27.2		

General mean: 25.2

Mean D.M. %: 72.7

WINTER WHEAT				
GRAIN				
Mean ( $\pm 0.69$ )	47.8	47.6	47.7	47.7
1964				
M ( $\pm 1.20$ )	47.6	45.9	48.9	47.5 ( $\pm 0.69$ )
X ( $\pm 0.85$ )	47.9	48.4	47.1	47.8 ( $\pm 0.49$ )
1965		(1) and (2)		( $\pm 0.34$ )
-	49.5	50.2	49.7	49.8
H	46.0	45.0	45.8	45.6
	AX-	AXH	Reserve XH	
	47.5	46.6	46.8	

General mean: 47.5

Mean D.M. %: 76.8

- (1) ( $\pm 0.58$ ) For use in vertical and interaction comparisons  
 (2) ( $\pm 0.81$ ) For use in horizontal and diagonal comparisons

65/B/8.4

POTATOES

	P	R	T	Mean
TOTAL TUBERS				
Mean ( $\pm 0.241$ )	18.90	19.37	19.92	19.40
1964		( $\pm 0.417$ )		( $\pm 0.241$ )
M	19.05	19.83	20.30	19.72
X	19.29	18.97	20.09	19.45
Y	18.37	19.32	19.38	19.02
	AX	Reserve M		
	19.19	20.48		

General mean: 19.56

% WARE

Mean	97.4	97.7	97.7	97.6
M	97.7	97.8	98.2	97.9
X	96.7	97.4	97.9	97.3
Y	97.8	97.9	97.1	97.6
	AX	Reserve M		
	98.0	97.8		

General mean: 97.7



65/B/8.5

BARLEY

GRAIN

	P	R	T	Mean
Mean ( $\pm 0.77$ )	39.1	40.5	39.8	39.8
1964		( $\pm 1.34$ )		( $\pm 0.77$ )
M	38.1	39.4	40.7	39.4
X	39.4	41.9	39.0	40.1
Y	39.9	40.3	39.7	40.0
1965		(1) and (2)		( $\pm 0.23$ )
-	39.4	41.2	40.7	40.4
H	38.8	39.9	38.9	39.2
	AX-	AXH	Reserve MH	
	42.5	40.4	39.2	

General mean: 39.8

Mean D.M. %: 76.6

- (1) ( $\pm 0.40$ ) For use in vertical and interaction comparisons  
 (2) ( $\pm 0.82$ ) For use in horizontal and diagonal comparisons

TABLE 1

Year	1	2	3	4
1901	1.00	1.00	1.00	1.00
1902	1.00	1.00	1.00	1.00
1903	1.00	1.00	1.00	1.00
1904	1.00	1.00	1.00	1.00
1905	1.00	1.00	1.00	1.00
1906	1.00	1.00	1.00	1.00
1907	1.00	1.00	1.00	1.00
1908	1.00	1.00	1.00	1.00
1909	1.00	1.00	1.00	1.00
1910	1.00	1.00	1.00	1.00
1911	1.00	1.00	1.00	1.00
1912	1.00	1.00	1.00	1.00
1913	1.00	1.00	1.00	1.00
1914	1.00	1.00	1.00	1.00
1915	1.00	1.00	1.00	1.00
1916	1.00	1.00	1.00	1.00
1917	1.00	1.00	1.00	1.00
1918	1.00	1.00	1.00	1.00
1919	1.00	1.00	1.00	1.00
1920	1.00	1.00	1.00	1.00
1921	1.00	1.00	1.00	1.00
1922	1.00	1.00	1.00	1.00
1923	1.00	1.00	1.00	1.00
1924	1.00	1.00	1.00	1.00
1925	1.00	1.00	1.00	1.00
1926	1.00	1.00	1.00	1.00
1927	1.00	1.00	1.00	1.00
1928	1.00	1.00	1.00	1.00
1929	1.00	1.00	1.00	1.00
1930	1.00	1.00	1.00	1.00
1931	1.00	1.00	1.00	1.00
1932	1.00	1.00	1.00	1.00
1933	1.00	1.00	1.00	1.00
1934	1.00	1.00	1.00	1.00
1935	1.00	1.00	1.00	1.00
1936	1.00	1.00	1.00	1.00
1937	1.00	1.00	1.00	1.00
1938	1.00	1.00	1.00	1.00
1939	1.00	1.00	1.00	1.00
1940	1.00	1.00	1.00	1.00
1941	1.00	1.00	1.00	1.00
1942	1.00	1.00	1.00	1.00
1943	1.00	1.00	1.00	1.00
1944	1.00	1.00	1.00	1.00
1945	1.00	1.00	1.00	1.00
1946	1.00	1.00	1.00	1.00
1947	1.00	1.00	1.00	1.00
1948	1.00	1.00	1.00	1.00
1949	1.00	1.00	1.00	1.00
1950	1.00	1.00	1.00	1.00
1951	1.00	1.00	1.00	1.00
1952	1.00	1.00	1.00	1.00
1953	1.00	1.00	1.00	1.00
1954	1.00	1.00	1.00	1.00
1955	1.00	1.00	1.00	1.00
1956	1.00	1.00	1.00	1.00
1957	1.00	1.00	1.00	1.00
1958	1.00	1.00	1.00	1.00
1959	1.00	1.00	1.00	1.00
1960	1.00	1.00	1.00	1.00
1961	1.00	1.00	1.00	1.00
1962	1.00	1.00	1.00	1.00
1963	1.00	1.00	1.00	1.00
1964	1.00	1.00	1.00	1.00
1965	1.00	1.00	1.00	1.00
1966	1.00	1.00	1.00	1.00
1967	1.00	1.00	1.00	1.00
1968	1.00	1.00	1.00	1.00
1969	1.00	1.00	1.00	1.00
1970	1.00	1.00	1.00	1.00
1971	1.00	1.00	1.00	1.00
1972	1.00	1.00	1.00	1.00
1973	1.00	1.00	1.00	1.00
1974	1.00	1.00	1.00	1.00
1975	1.00	1.00	1.00	1.00
1976	1.00	1.00	1.00	1.00
1977	1.00	1.00	1.00	1.00
1978	1.00	1.00	1.00	1.00
1979	1.00	1.00	1.00	1.00
1980	1.00	1.00	1.00	1.00
1981	1.00	1.00	1.00	1.00
1982	1.00	1.00	1.00	1.00
1983	1.00	1.00	1.00	1.00
1984	1.00	1.00	1.00	1.00
1985	1.00	1.00	1.00	1.00
1986	1.00	1.00	1.00	1.00
1987	1.00	1.00	1.00	1.00
1988	1.00	1.00	1.00	1.00
1989	1.00	1.00	1.00	1.00
1990	1.00	1.00	1.00	1.00
1991	1.00	1.00	1.00	1.00
1992	1.00	1.00	1.00	1.00
1993	1.00	1.00	1.00	1.00
1994	1.00	1.00	1.00	1.00
1995	1.00	1.00	1.00	1.00
1996	1.00	1.00	1.00	1.00
1997	1.00	1.00	1.00	1.00
1998	1.00	1.00	1.00	1.00
1999	1.00	1.00	1.00	1.00
2000	1.00	1.00	1.00	1.00
2001	1.00	1.00	1.00	1.00
2002	1.00	1.00	1.00	1.00
2003	1.00	1.00	1.00	1.00
2004	1.00	1.00	1.00	1.00
2005	1.00	1.00	1.00	1.00
2006	1.00	1.00	1.00	1.00
2007	1.00	1.00	1.00	1.00
2008	1.00	1.00	1.00	1.00
2009	1.00	1.00	1.00	1.00
2010	1.00	1.00	1.00	1.00
2011	1.00	1.00	1.00	1.00
2012	1.00	1.00	1.00	1.00
2013	1.00	1.00	1.00	1.00
2014	1.00	1.00	1.00	1.00
2015	1.00	1.00	1.00	1.00
2016	1.00	1.00	1.00	1.00
2017	1.00	1.00	1.00	1.00
2018	1.00	1.00	1.00	1.00
2019	1.00	1.00	1.00	1.00
2020	1.00	1.00	1.00	1.00
2021	1.00	1.00	1.00	1.00
2022	1.00	1.00	1.00	1.00
2023	1.00	1.00	1.00	1.00
2024	1.00	1.00	1.00	1.00
2025	1.00	1.00	1.00	1.00
2026	1.00	1.00	1.00	1.00
2027	1.00	1.00	1.00	1.00
2028	1.00	1.00	1.00	1.00
2029	1.00	1.00	1.00	1.00
2030	1.00	1.00	1.00	1.00
2031	1.00	1.00	1.00	1.00
2032	1.00	1.00	1.00	1.00
2033	1.00	1.00	1.00	1.00
2034	1.00	1.00	1.00	1.00
2035	1.00	1.00	1.00	1.00
2036	1.00	1.00	1.00	1.00
2037	1.00	1.00	1.00	1.00
2038	1.00	1.00	1.00	1.00
2039	1.00	1.00	1.00	1.00
2040	1.00	1.00	1.00	1.00
2041	1.00	1.00	1.00	1.00
2042	1.00	1.00	1.00	1.00
2043	1.00	1.00	1.00	1.00
2044	1.00	1.00	1.00	1.00
2045	1.00	1.00	1.00	1.00
2046	1.00	1.00	1.00	1.00
2047	1.00	1.00	1.00	1.00
2048	1.00	1.00	1.00	1.00
2049	1.00	1.00	1.00	1.00
2050	1.00	1.00	1.00	1.00

65/B/9.1

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 1965, the sixth year.

For history, rotation etc., see 'Results' 60/B/11, 61/B/11, 62/B/11, 63/B/11 and 64/B/10.

Area of each plot: 0.0482. Area harvested: Sugar beet - roots - 0.0121, tops - 0.0040, barley - 0.0229.

Nitrogen is now applied to the barley at 0.6 (N1), 0.85 (N2), 1.10 cwt N (N3), 0.6 cwt N being applied as basal fertiliser (20:10:10) combine drilled, the remainder as 'Nitro-Chalk' broadcast in the seedbed.

Basal applications: Manures: as above for barley, as before for sugar beet. Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals) to barley.

Cultivations, etc.:

Sugar beet: R plots rotary cultivated: Sept 29, 1964. T plots rigid-tine cultivated twice: Nov 2. P plots ploughed: Nov 19. Salt applied: Jan 5, 1965. Basal NPK applied, R plots rotary cultivated, T and P plots spring-tine cultivated: Apr 1. All plots harrowed and rolled: Apr 2. Seed drilled at 5 lb: Apr 3. All plots tractor hoed: May 13 and June 4. Singled: May 20. Lifted: Nov 4.

Barley: T plots rigid-tine cultivated, P plots ploughed: Nov 20, 1964. R plots rotary cultivated: Nov 25. 'Nitro-Chalk' applied, all plots spring-tine harrowed, seed drilled at 155 lb: Mar 11, 1965. Sprayed: May 11. Combine harvested: Aug 23.

Standard errors per plot.

Sugar beet.	Roots:	1.768 or 9.1% (14 d.f.)
	Total sugar:	7.05 or 9.8% (14 d.f.)
	Tops:	0.940 or 10.0% (14 d.f.)
Barley.	Grain:	1.40 or 3.4% (8 d.f.)

For erratum to 'Results' 61/B/11 see page 65/B/9.3.

65/B/9.2

SUMMARY OF RESULTS

P	R	T	Mean	
SUGAR BEET				
ROOTS				
	(±0.722)			
19.34	19.70	19.06	19.36	
SUGAR %				
18.7	18.3	18.8	18.6	
TOTAL SUGAR				
	(±2.88)			
72.5	72.0	71.7	72.1	
TOPS				
	(±0.384)			
9.00	9.85	9.50	9.45	
BARLEY				
GRAIN				
	N1	N2	N3	Mean
		(±0.99)		(±0.57)
P	40.5	42.5	44.8	42.6
R	41.1	42.1	44.2	42.5
T	38.7	42.9	40.6	40.8
Mean (±0.57)	40.1	42.5	43.2	41.9
Mean D.M.%: 80.5				



65/B/9.3

Errata to Results 61/B/11.

Page 61/B/11.1

Delete all references to Potatoes after 'area harvested' and substitute:-

Treatments:

Potatoes: All combinations of:-

Cultivations before planting: Ploughed and spring-tine cultivated (P), rotary cultivated (R), rigid-tine and spring-tine cultivated (T).

Treatments after planting: Normal cultivations (M), simazine\* applied after planting (X), simazine\* applied after early cultivations (Y).

Basal dressing per acre:

Potatoes 10 cwt compound fertiliser, 17% N, 11% P<sub>2</sub>O<sub>5</sub>, 22% K<sub>2</sub>O.

Cultivations, etc.:

Potatoes: All plots ploughed: Dec 12, 1960. P plots re-ploughed, T plots rigid-tine cultivated twice: Feb 24, 1961. P and T plots spring-tine cultivated twice: Mar 16. P and T plots rolled and then spring-tine cultivated twice, R plots rotary cultivated: Mar 23. Basal dressing applied, potatoes machine planted: Mar 24. Simazine applied on rolled bouts to X plots: Mar 31. M and Y plots earthed up: May 2. Y plots earthed up and sprayed with simazine: May 19. X plots grubbed twice+: May 30. M and X+ plots earthed up: June 14. Sprayed with undiluted BCV at 12 gallons per acre: Sept 18. Lifted: Sept 21. Variety: Majestic.

+ Because of failure of X treatment.

Page 61/B/11.2

Standard errors per plot.

Potatoes, total tubers replace values shown by 0.925 tons per acre on 15.6% (8 d.f.)

Errata to 61/B/11.2 continued

65/B/9.4

SUMMARY OF RESULTS

Potatoes Total tubers. Replace tables printed by:

	P	R	T	Mean
TOTAL TUBERS: TONS PER ACRE				
		(±0.654)		(±0.378)
N	6.86	7.54	7.46	7.28
Sx	2.37	2.61	1.28	2.08
Sy	9.33	8.14	7.89	8.45
Mean (±0.378)	6.18	6.09	5.54	5.93

	PERCENTAGE WARE (1 1/2" RIDDLE)			
N	91.3	89.1	90.1	90.1
Sx	81.6	81.1	74.1	78.9
Sy	92.9	88.4	90.6	90.6
Mean	88.6	86.2	84.9	86.5