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# Yields of the Field Experiments 1964

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## Crop Sequence Experiments - Crops in 1964

### Rothamsted Research

Rothamsted Research (1965) *Crop Sequence Experiments - Crops in 1964* ; Yields Of The Field Experiments 1964, pp 137 - 200 - DOI: <https://doi.org/10.23637/ERADOC-1-160>

64/C/1.1

### EFFECT OF K AND Mg

(IM and WAC)

K and Mg - Rothamsted (R) Sawyers I the sixth year, potatoes 1964 and Woburn (W) Stackyard Series C the fifth year, potatoes and sugar beet 1964.

Design: Sawyers I (R): 8 randomised blocks of 9 plots each.  
Stackyard Series C (W): 4 randomised blocks of 9 plots each, 2 blocks per crop.

Area of each plot:	Area harvested:
Sawyers I (R): 0.0206	0.0137
Stackyard Series C (W): 0.0011	0.0011

Treatments. All combinations of:-

1. Mg: None (Mg 0), 29 (Mg 1), 58 lb (Mg 2) applied as magnesium sulphate on Sawyers I (R) and none (Mg 0), 29 (Mg 1), 58 lb (Mg 2) as kieserite on Stackyard Series C (W).

2. K: Sawyers I (R): (in lb K).

	K0	K1	K2
1962	24	95	165
1963	None	71	142
1964	None	91	182

Stackyard Series C (W): None (K0), 95 (K1), 190 lb (K2), applied in 1962, 1963 and 1964. All K as sulphate of potash.

The K and Mg dressings on Stackyard Series C (W) were applied half in winter half in spring.

In addition in 1959 and 1962 magnesium-free calcium carbonate was applied to blocks on Sawyers I (R) at 38, 76 cwt (CA1, CA2).

Basal dressings:

Sawyers I (R): 0.5 cwt P2O5 as triple superphosphate applied on flat before planting.

1.0 cwt N as sulphate of ammonia applied on flat before planting.

Stackyard Series C (W): 1.5 cwt P2O5 as triple superphosphate, half dug in in winter, half applied in spring.

1.5 cwt N as ammonium nitrate in seedbed.

Cultivations, etc.:

Sawyers I (R): Ploughed: Jan 9, 1964. Fertilisers applied: May 8.

Rotary cultivated, potatoes machine planted: May 11. Earthed

up: June 24. Sprayed 3 times with mancozeb at 1.2 lb in 35 gals:

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June 30, July 17, July 31. Sprayed with diquat (Reglone at 3 pints in 40 gals): Sept 18. Lifted: Sept 25. Variety: King Edward.

Stackyard Series C (W):

Potatoes: First dressings of P,K and Mg applied, plots dug: Dec 2, 1963. Second dressings of PK and Mg and all N applied: Apr 23, 1964. Rotary cultivated, potatoes planted: Apr 28. Sprayed with copper oxychloride fungicide at 2.3 lb Cu in 40 gals: July 3. Sprayed with dimethoate at 3 fluid oz in 40 gals: July 6. Sprayed with copper oxychloride fungicide at 2.3 lb Cu in 40 gals: July 17. Lifted: Sept 9. Variety: King Edward.

Sugar beet: First dressing of P,K and Mg applied, plots dug: Dec 2, 1963. Second dressing of P,K and Mg and all N applied, plots rotary cultivated, seed drilled at 7 lb: Apr 23, 1964. Singled: June 4. Sprayed with dimethoate at 3 fluid oz in 40 gals: July 6. Lifted: Oct 13. Variety: Klein E.

NOTE: For details of previous years' results see 'Results' 60/Ci/3, 61/C/7, 62/C/6, 63/C/1.

Standard errors per plot.

Sawyers I (R):

Potatoes, total tubers: 0.724 or 10.9% (48 d.f.)

Stackyard Series C (W):

Potatoes, total tubers: 0.805 or 7.8% (8 d.f.)

Sugar beet, roots: 1.262 or 11.1% (8 d.f.)  
total sugar: 4.500 or 11.5% (8 d.f.)  
tops: 0.772 or 8.6% (8 d.f.)

64/C/1.3

SUMMARY OF RESULTS

Sawyers I (R)

POTATOES, TOTAL TUBERS

	K0	K1	K2	MG0	MG1	MG2	Mean
	( $\pm 0.209$ )*			( $\pm 0.209$ )*			
CA1	3.05	7.97	9.51	6.76	7.07	6.70	6.84
CA2	2.12	7.30	9.84	6.43	6.41	6.42	6.42
Diff.	-0.93	-0.67	+0.33	-0.33	-0.66	-0.28	-0.42
		( $\pm 0.295$ )**			( $\pm 0.295$ )**		
					( $\pm 0.256$ )		( $\pm 0.148$ )
		K0		2.78	2.73	2.25	2.59
		K1		7.42	7.61	7.87	7.64
		K2		9.58	9.89	9.57	9.68
		Mean ( $\pm 0.148$ )		6.59	6.74	6.56	6.63

\* For use in horizontal and interaction comparisons only.

\*\* For use only in testing the differences of 2 differences.



64/C/1.4

Sawyers I (R)

POTATOES, % WARE

	K0	K1	K2	MG0	MG1	MG2	Mean
CA1	67.5	89.0	92.1	82.8	84.0	81.8	82.9
CA2	53.2	89.2	92.9	80.8	78.4	76.2	78.5
Diff.	-14.3	+0.2	+0.8	-2.0	-5.6	-5.6	-4.4

K0	65.6	60.8	54.8	60.4
K1	87.0	90.1	90.2	89.1
K2	92.7	92.8	92.1	92.5
Mean	81.8	81.2	79.0	80.7

64/C/1.5

Stackyard Series C (W)

POTATOES, TOTAL TUBERS

	MGO	MG1	MG2	Mean
		(±0.569)		(±0.328)
K0	4.96	5.01	5.31	5.09
K1	10.67	12.55	12.01	11.74
K2	13.59	14.09	14.68	14.12
Mean (±0.328)	9.74	10.55	10.67	10.32

SUGAR BEET, ROOTS

		(±0.893)		(±0.515)
K0	5.63	7.47	7.15	6.75
K1	11.81	12.35	14.16	12.77
K2	14.69	14.37	14.89	14.65
Mean (±0.515)	10.71	11.40	12.07	11.39

64/C/1.6

Stackyard Series C (W)

SUGAR BEET, SUGAR %

	MG0	MG1	MG2	Mean
K0	16.5	16.5	16.6	16.5
K1	17.3	17.3	17.6	17.4
K2	17.1	17.7	17.4	17.4
Mean	17.0	17.2	17.2	17.1

SUGAR BEET, TOTAL SUGAR

		(±3.18)		(±1.84)
K0	18.5	24.6	23.7	22.3
K1	40.8	42.7	49.8	44.4
K2	50.3	50.9	51.8	51.0
Mean (±1.84)	36.6	39.4	41.8	39.3

SUGAR BEET, TOPS

		(±0.546)		(±0.315)
K0	6.20	7.19	7.94	7.11
K1	9.43	9.03	10.32	9.59
K2	10.52	10.22	10.17	10.30
Mean (±0.315)	8.71	8.81	9.48	9.00

64/C/2.1

INTENSIVE BARLEY GROWING EXPERIMENT

(IB)

Little Knott I - 1964, the fourth year

For treatments etc., see 'Results' 61/C/8. (NO = None, N1 = 0.3, N2 = 0.6, N3 = 0.9 cwt N per acre).

Area of each plot (acres): 0.0212. Area harvested: 0.0139.

Cultivations, etc.: Ploughed: Oct 7, 1963. All plots except winter wheat chisel ploughed: Dec 17.

Spring beans: Seed placement drilled at 200 lb (rows spaced at 10.5 ins): Feb 14, 1964. Combine harvested: Sept 2.

Oats: Seed combine drilled at 4 bushels: Mar 6, 1964. 'Nitro-Chalk' applied: Mar 9. Sprayed with MCPA/dichlorprop (Seritox at 8 pints in 40 gals): May 15. Combine harvested: Aug 22.

Spring wheat: Seed combine drilled at 3 bushels: Mar 11, 1964. 'Nitro-Chalk' applied: Mar 31. Sprayed with MCPA/dichlorprop (Seritox at 8 pints in 40 gals): May 15. Combine harvested: Aug 28.

Barley: Seed combine drilled at 2.5 bushels: Feb 13, 1964. 'Nitro-Chalk' applied: Feb 14. Sprayed with MCPA/dichlorprop (Seritox at 8 pints in 40 gals): May 15. Combine harvested: Aug 11.

Winter wheat: Seed combine drilled at 2.5 bushels: Oct 17, 1963. 'Nitro-Chalk' applied: Mar 5, 1964. Sprayed with mecoprop/2,4-D (Methoxone Extra at 7 pints in 40 gals): May 12. Combine harvested: Aug 26.

- NOTES: (1) Yields were taken only for sequences 1, 2, 5, 7, 8, 9 and 10.  
(2) Estimates of eyespot (*Cercospora herpotrichoides*) and take-all (*Ophiobolus graminis*) were made in spring and summer and percentage area lodged was estimated.  
(3) For details of the previous years' results see 'Results' 61/C/8, 62/C/7 and 63/C/2.

Standard errors per plot.	Grain:
Spring wheat (5 and 8):	2.70 or 8.3% (9 d.f.)
Barley (1,2,7 and 10):	3.52 or 9.1% (15 d.f.)



64/C/2.2

SUMMARY OF RESULTS

GRAIN

WINTER WHEAT 9

Crop in 1961 Crop in 1962 Crop in 1963	SW WW WW				Mean
	NO	N1	N2	N3	
	23.4	21.7	29.6	33.4	27.0

Mean D.M. %: 87.2

SPRING WHEAT 5 AND 8

Crop in 1961 Crop in 1962 Crop in 1963	SW SW SW				SW Be O	Mean
	NO	N1	N2	N3		
	16.0	22.8	32.9	32.4	38.7	32.4
		(±1.91)			(±0.95)	

Mean D.M. %: 83.8

BARLEY 1,2,7 AND 10

Crop in 1961 1962 1963	NO				Mean
	N1	N2	N3		
		(±2.49)		(±1.24)	
B B B	18.5	27.6	29.5	34.2	27.4
O Be B	18.5	37.3	37.7	44.8	34.6
SW O Be	43.4	45.6	49.8	48.1	46.8
Be WW P	41.6	48.3	46.1	44.6	45.1
Mean (±1.24)	30.5	39.7	40.8	42.9	38.5

Mean D.M. %: 82.1

64/C/3.1

LONG TERM LIMING EXPERIMENT - SPRING BEANS 1964

(LL and WLL)

For treatments etc., see 'Results' 63/C/3 and for previous years' results see 62/C/8 and 63/C/3.

Area of each sub plot: 0.0145. Area harvested: Sawyers I (R) - 0.0133, Stackyard Series C (W) - 0.0096.

Plots receiving both P and K were subdivided for a comparison between broadcasting of powder fertiliser (B) (rates and materials as before) and placement drilling of 409 lb 0:14:28(D).

Basal dressing: 0.25 cwt N as 'Nitro-Chalk' broadcast.

Cultivations, etc.

Sawyers I (R): Ploughed: Nov 14, 1963. Fertilisers applied: Feb 15, 1964. Seed drilled at 200 lb: Mar 6. Sprayed with simazine at 1 lb in 40 gals: Mar 13. Combine harvested: Aug 25. Variety: Spring Tick.

Stackyard Series C (W): Ploughed: Nov 1, 1963. Fertilisers applied and seed drilled\* at 200 lb: Nov 8. Sprayed with simazine at 1 lb in 40 gals: Nov 9. Seed drilled\* at 200 lb: Mar 13, 1964. Sprayed with simazine at 1 lb in 40 gals: Apr 6. Combine harvested: Aug 25. Variety: Spring Tick.

\* The winter beans failed through bird damage and the spring beans were sown without seedbed cultivation.

NOTE: On Sawyers I (R) samples were taken at harvest for pod and bean counts.

Standard error per plot. Grain:

Main experiment

Sawyers I (R): 3.56 or 20.2% (15 d.f.)

Stackyard Series C (W): 1.62 or 10.5% (15 d.f.)

PK plots

Sawyers I (R): Whole plot: 2.46 or 12.4% (3 d.f.)

Sub plot: 0.96 or 4.8% (4 d.f.)

Stackyard Series C (W): Whole plot: 1.30 or 6.6% (3 d.f.)

Sub plot: 2.23 or 11.4% (4 d.f.)

Ground chalk tons per acre.

CA0 = None

CA2 = 2

CA4 = 4

CA8 = 8

64/C/3.2

SUMMARY OF RESULTS

SAWIERS I (R)

GRAIN

Main experiment

	CA0	CA2	CA4	CA8	Mean
Mean ( $\pm 1.26$ )	14.7	19.0	19.8	17.1	17.7
		( $\pm 1.78$ )			( $\pm 0.89$ )
-	15.1	20.2	19.7	16.2	17.8
P	14.4	17.8	19.9	18.0	17.5
-	15.2	16.6	17.5	14.7	16.0
K	14.2	21.4	22.0	19.5	19.3
	-	P			
	( $\pm 1.26$ )				
-	16.7	15.3			
K	18.9	19.7			

Mean D.M. %: 83.0

PK plots

	CA0	CA2	CA4	CA8	Mean
		(1) and (2)			( $\pm 0.34$ )
B	15.1	21.6	22.8	19.2	19.7
D	15.9	21.5	22.4	20.9	20.1
Mean ( $\pm 1.23$ )	15.5	21.5	22.6	20.0	19.9

Mean D.M. %: 82.5

- (1) ( $\pm 0.68$ ) For use in vertical and diagonal comparisons  
 (2) ( $\pm 1.80$ ) For use in horizontal and interaction comparisons



64/C/3.3

STACKYARD SERIES C (W)

GRAIN

Main experiment

	CA0	CA2	CA4	CA8	Mean
Mean ( $\pm 0.57$ )	19.1	16.5	13.0	13.2	15.5
	( $\pm 0.81$ )				( $\pm 0.41$ )
-	18.1	16.3	12.4	12.4	14.8
P	20.0	16.7	13.6	14.1	16.1
-	16.6	12.8	10.9	10.7	12.7
K	21.6	20.3	15.2	15.7	18.2
	-	P			
	( $\pm 0.57$ )				
-	13.1	12.4			
K	16.5	19.8			

Mean D.M. %: 83.9

PK Plots

	CA0	CA2	CA4	CA8	Mean
	(1) and (2)				( $\pm 0.79$ )
B	22.1	22.3	17.8	17.2	19.8
D	22.3	21.4	17.4	16.5	19.4
Mean ( $\pm 0.65$ )	22.2	21.8	17.6	16.9	19.6

Mean D.M. %: 83.6

- (1) ( $\pm 1.58$ ) For use in vertical and diagonal comparisons  
 (2) ( $\pm 1.44$ ) For use in horizontal and interaction comparisons



04/01/00

STANDARD SERIES 1 (W)

GRAPH

Main component

Year	2000	2001	2002	2003	2004
Mean	1.00	1.00	1.00	1.00	1.00
Min	0.00	0.00	0.00	0.00	0.00
Max	2.00	2.00	2.00	2.00	2.00
Std Dev	0.50	0.50	0.50	0.50	0.50
Skewness	0.00	0.00	0.00	0.00	0.00
Kurtosis	3.00	3.00	3.00	3.00	3.00
Mean (adj)	1.00	1.00	1.00	1.00	1.00
Min (adj)	0.00	0.00	0.00	0.00	0.00
Max (adj)	2.00	2.00	2.00	2.00	2.00
Std Dev (adj)	0.50	0.50	0.50	0.50	0.50
Skewness (adj)	0.00	0.00	0.00	0.00	0.00
Kurtosis (adj)	3.00	3.00	3.00	3.00	3.00

SK PLOTS

Year	2000	2001	2002	2003	2004
Mean	1.00	1.00	1.00	1.00	1.00
Min	0.00	0.00	0.00	0.00	0.00
Max	2.00	2.00	2.00	2.00	2.00
Std Dev	0.50	0.50	0.50	0.50	0.50
Skewness	0.00	0.00	0.00	0.00	0.00
Kurtosis	3.00	3.00	3.00	3.00	3.00
Mean (adj)	1.00	1.00	1.00	1.00	1.00
Min (adj)	0.00	0.00	0.00	0.00	0.00
Max (adj)	2.00	2.00	2.00	2.00	2.00
Std Dev (adj)	0.50	0.50	0.50	0.50	0.50
Skewness (adj)	0.00	0.00	0.00	0.00	0.00
Kurtosis (adj)	3.00	3.00	3.00	3.00	3.00

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

64/C/4.1

METHODS OF APPLICATION OF FERTILISER 1963 - 64

(AR/W)

Methods of application of fertiliser - Great Knott II 1964, the second year - winter wheat.

Design: 3 x 3 x 3 in 3 blocks of 9 plots each together with 3 additional plots per block.

Area of each plot: 0.0212. Area harvested: 0.0126.

Treatments:

3 x 3 x 3: All combinations of:-  
To wheat 1964.

1. NPK: None (F0), 0.66 (F1), 1.32 (F2) cwt N as spring top dressings of 'Nitro-Chalk' each with superphosphate and muriate of potash applied in autumn in the seedbed in the proportion 13 N, 13 P<sub>2</sub>O<sub>5</sub>, 20 K<sub>2</sub>O.

To potatoes 1963.

2. Levels of 13:13:20 to supply (cwt):

N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O
0.66	0.66	1.02 (L1)
1.32	1.32	2.03 (L2)
2.00	2.00	3.07 (L3)

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

Additional plots:

To wheat 1964. NPK: F0, F1, F2 as above to plots receiving no treatment in 1963.

Basal dressing: None.

Cultivations, etc.: Chisel ploughed: Oct 24, 1963. PK applied, seed drilled at 3 bushels: Oct 28. 'Nitro-Chalk' applied - 1st half dressing: Apr 1, 1964. Sprayed with mecoprop/2,4-D (Methoxone Extra at 7 pints in 40 gals): Apr 30. 'Nitro-Chalk' applied - 2nd half dressing: May 4. Combine harvested: Aug 27. Variety: Cappelle. Previous crop: Spring beans 1962.

- NOTES: (1) For previous year's results see 'Results' 63/C/5.  
(2) Green-crop and grain and straw samples were taken for NPK and dry matter determination.

Standard error per plot.

Grain: 2.30 or 4.6% (18 d.f.)

64/C/4.2

SUMMARY OF RESULTS

GRAIN

	B	P	BR	L1	L2	L3	Mean
		(±1.33)			(±1.33)		(±0.77)
F0	42.2	44.9	47.9	39.5	45.2	50.3	45.0
F1	54.5	53.8	52.4	51.0	55.6	54.1	53.6
F2	53.2	56.4	53.5	54.5	55.2	53.4	54.4
					(±1.33)		
		B		48.3	51.0	50.7	50.0
		P		48.5	53.1	53.4	51.7
		BR		48.2	51.9	53.6	51.2
		Mean (±0.77)		48.3	52.0	52.6	50.5 (±0.44)

Plots untreated in 1963

	F0	F1	F2	Mean
	36.0	49.7 (±1.33)	54.8	46.8 (±0.77)

General mean: 49.6

Mean D.M. %: 86.3

64/C/4.3

STRAW

	B	P	HR	L1	L2	L3	Mean
F0	28.2	32.2	33.4	28.0	30.4	35.4	31.3
F1	37.0	39.6	34.9	35.7	39.1	36.7	37.2
F2	43.0	46.5	43.7	45.7	43.9	43.6	44.4
		B		32.8	36.7	38.7	36.1
		P		38.6	40.7	39.0	39.4
		HR		37.9	36.0	38.0	37.3
		Mean		36.5	37.8	38.6	37.3

Plots untreated in 1963

	F0	F1	F2	Mean
	22.6	31.6	41.1	31.8

General mean: 35.9

Mean D.M. %: 92.2



6.4/0/43

WASTE

Mean	IS	IS	IS	SE	P	B	
37.3	4.33	4.33	0.86	4.33	3.22	3.22	10
37.3	7.33	7.33	1.47	7.33	5.22	5.22	7
41.4	8.33	8.33	1.67	8.33	6.22	6.22	11
38.1	7.33	7.33	1.47		B		
39.4	8.33	8.33	1.67		P		
37.3	8.33	8.33	1.67		HI		
Mean	38.6	37.8	36.3				

Place untreated in 193

Mean	IS	IS	IS
37.3	4.33	4.33	0.86

General mean: 37.3

Mean D.M. 37.3

64/C/5.1

METHODS OF APPLICATION OF FERTILISER 1964 - 65

(AY and WBC)

Methods of application of fertiliser - Rothamsted (R) Whittlocks and Woburn (W) Broad Mead II, 1964 the first year - potatoes.

Design (each field): 3 randomised blocks of 12 plots each.

Area of each plot: 0.0212. Area harvested: 0.0133.

Treatments: None (L0) (3 plots per block) and all combinations of:-

1. Levels of 13:13:20 to supply (cwt):

N	P2O5	K2O
0.66	0.66	1.02 (L1)
1.32	1.32	2.03 (L2)
2.00	2.00	3.07 (L3)

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

NOTE: The experiment is designed to include an additional factor applied to the 1965 wheat crop, viz. PK broadcast on seedbed and 'Nitro-Chalk' as spring dressing to supply:-  
N, P2O5 and K2O at levels as (0), (1), (2) above.

Basal dressing: None.

Cultivations, etc.:

Whittlocks (R). Ploughed: Oct 11, 1963. Fertilisers applied to ploughing: Apr 8, 1964. Rotary cultivated, fertilisers applied, potatoes planted: Apr 15. Earthed up: June 12. Sprayed three times with mancozeb at 1.2 lb in 35 gals: June 30, July 16, July 31. Sprayed with diquat (Reglone at 3 pints in 40 gals): Sept 8. Lifted: Sept 15. Variety: King Edward. Previous crops: Winter and spring wheat 1962, spring wheat 1963.

Broad Mead (W). Ploughed twice: Oct 2, 1963 and Jan 13, 1964. Fertilisers applied to ploughing: Apr 9. Rotary cultivated: Apr 13. Fertilisers applied, potatoes planted: Apr 14. Sprayed with diquat/paraquat (Preaglone Extra at 2 pints in 40 gals): May 12. Sprayed with mancozeb at 1.6 lb in 50 gals: June 25, and again at 1.2 lb in 36 gals: July 14. Sprayed with diquat (Reglone at 3 pints in 40 gals): Sept 2. Lifted: Sept 10. Variety: King Edward. Previous crops: Spring wheat 1962, barley 1963.

Standard errors per plot. Total tubers:

Whittlocks (R):	0.610 or 5.6% (24 d.f.)
Broad Mead II (W):	1.985 or 17.4% (24 d.f.)

64/C/5.2

SUMMARY OF RESULTS

WHITTLOCKS (R)

	L0	L1	L2	L3	Mean
TOTAL TUBERS					
		(±0.352)			(±0.203)
B		11.23	12.83	13.92	12.66
P		10.72	13.04	13.27	12.34
BR		10.27	13.01	14.60	12.63
Mean (±0.209)	6.18	10.74	12.96	13.93	10.95*

	% WARE				
B		90.4	90.1	91.4	90.6
P		86.3	91.7	91.4	89.8
BR		88.3	91.9	91.1	90.4
Mean	82.0	88.3	91.2	91.3	88.2*

\* General mean

64/C/5.3

BROAD MEAD II (W)

	L0	L1	L2	L3	Mean
TOTAL TUBERS					
(±1.146)					
B		9.82	11.90	14.84	12.19
P		12.96	15.55	14.09	14.20
BR		10.06	13.50	14.66	12.74
Mean (±0.662)	6.51	10.94	13.65	14.53	11.41*
% WARE					
B		84.2	85.7	80.0	83.3
P		89.1	86.0	78.3	84.5
BR		88.4	88.0	85.9	87.4
Mean	82.4	87.2	86.6	81.4	84.4*

\* General mean



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TABLE II (W)

Year	1971	1972	1973	1974	Total
	TOTAL TONNES				
	(±1.1%)				
1971	11.94	11.90	98.6		123.54
1972	14.00	12.22	15.00		41.22
1973	14.00	13.20	10.00		37.20
1974	14.14	13.62	10.94	12.8	51.50
	WARE				
	(±1.1%)				
1971	83.3	82.1	84.3		249.7
1972	84.3	82.0	82.1		248.4
1973	81.4	82.0	82.4		245.8
1974	84.4	82.8	81.8	82.4	331.4

\* General mean

64/C/6.1

GRASS

(AF)

Levels of N and K - Harwoods Piece 1964, the 7th year. For treatments etc. see 'Results' 63/C/7 and for previous years' results see 58/Cg/2, 59/Cg/2, 60/Ci/1, 61/Dg/1, 62/C/11 and 63/C/7.

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

The Cocksfoot failed and was replaced by a mixture of Timothy at 8 lb and Meadow Fescue at 12 lb.

Cultivations, etc.: P and first dressings of N and K applied: Mar 23, 1964. Cut once: June 3. Sprayed with 3 amino-1,2,4 triazole at 6 lb and ammonium thiocyanate at 5.55 lb in 40 gals: June 10. Ploughed: July 3. Rotary cultivated: Aug 14. Grass resown: Aug 20. No further cuts were taken.

Standard error per plot.

Dry matter: 2.41 or 11.9% (33 d.f.)

64/C/6.2

SUMMARY OF RESULTS

DRY MATTER

cwt per acre	0.0	0.3	0.3	0.3	0.3	0.6	0.6	0.6	0.6	0.9	0.9	0.9	0.9	0.9	0.9	Mean
N*																
P205	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	1.2
K20*	0.0	0.0	0.3	0.6	0.6	0.0	0.3	0.6	0.6	0.0	0.3	0.6	0.6	0.6	0.6	0.6
	9.5	22.1	22.2	21.3	19.5	24.4	22.3	17.2	22.1	21.0	22.6	20.1	20.3			

(±1.20)

Mean D.M. %: 21.3

\* For each cut

64/C/7

DECLINE OF TAKE-ALL

(AO)

The effect of crop sequences on the decline of take-all (*Ophiobolus graminis*) - Great Field I 1964, the second year.

Design: 3 randomised blocks of 6 plots each (5 of winter wheat, 1 of oats), using the plots of Series III of the Cereals and Beans Rotations Experiment (see 'Results' 61/C/1).

Area of each plot: 0.0305. Area harvested: 0.0199.

Treatments: 6 crop sequences. For details see 'Results' 63/C/8.

Basal dressings: 2.5 cwt compound fertiliser (0:20:20) combine drilled. 1.0 cwt N to wheat and 0.4 cwt N to oats applied in spring as 'Nitro-Chalk'.

Cultivations, etc.: Sprayed with aminotriazole (Weedazol-TL at 2 gals in 40): Oct 1, 1963. Ploughed: Oct 30. Winter wheat drilled at 2.5 bushels: Nov 13. 'Nitro-Chalk' applied to winter wheat: Mar 5, 1964. Oats drilled at 4 bushels: Mar 7. 'Nitro-Chalk' applied to oats: Mar 9. Sprayed with mecoprop/2,4-D (Methoxone Extra at 7 pints in 40 gals): Apr 27. Combine harvested: Oats - Aug 22, winter wheat - Aug 26. Varieties: Winter wheat - Cappelle, oats - Condor.

- NOTES: (1) Yields were taken for winter wheat only.  
 (2) Estimates were made on 6 occasions of the incidence of take-all on wheat.  
 (3) For details of the previous year's results see 'Results' 63/C/8.

Standard error per plot. Winter wheat.  
 Grain: 2.32 or 6.1% (8 d.f.)

SUMMARY OF RESULTS

GRAIN

Crop in 1959	W	W	B	W	WS	
1960	W	O	W	O	W	
1961	WS	WS	B	Be	WS	
1962	W	W	W	W	W	
1963	W	W	W	W	O	Mean
	38.3	36.4	39.5	35.4	40.7	38.1
			(±1.34)			



64/C/8

CHEMICAL CONTROL OF TAKE-ALL

(AP)

The chemical control of take-all (*Ophiobolus graminis*) in winter wheat - Highfield Drive 1964, the second year.

Design: 3 randomised blocks of 5 plots each.

Area of each plot: 0.0072. Area harvested: 0.0070.

Treatments: None (0) and all combinations of:-

1. Rates of spraying: heptachlor at 4 lb in 70 gallons (H4), at 8 lb in 140 gallons (H8).
2. Times of spraying: in 1964 only (S1), in 1963 and in 1964 (S2).

Basal dressings: 2.5 cwt (0:20:20) combine drilled. 1 cwt N as 'Nitro-Chalk' applied as spring top dressing.

Cultivations, etc.: Ploughed: Sept 26. Heptachlor treatments applied: Oct 8, 1963. Rotary cultivated twice: Oct 10 and 14, 1963. Seed drilled at 2.5 bushels: Oct 14. 'Nitro-Chalk' applied: Apr 15, 1964. Sprayed with mecoprop/2,4-D (Methoxone Extra at 7 pints in 40 gals): Apr 27. Combined harvested: Aug 26. Variety: Cappelle.

NOTE: (1) Estimates were made of the incidence of take-all on 3 occasions.

(2) For previous year's results see 'Results' 63/C/9.

S.E. per plot.

Grain: 0.99 or 2.6% (8 d.f.)

SUMMARY OF RESULTS

GRAIN

0	H4 S1	H8 S1	H4 S2	H8 S2	Mean
35.8	37.3	39.1	37.4	38.1	37.6
		(±0.57)			

Mean D.M. %: 86.6

64/C/9.1

CEREAL DISEASE REFERENCE PLOTS

(AQ)

Pennells Piece 1964, the second year

For treatments etc., see 'Results' 63/C/10. (WW = Winter wheat, SW = Spring wheat, O = Oats).

Area of each plot: 0.0180. Area harvested: Winter wheat - 0.0115, spring wheat - 0.0116.

Cultivations, etc.: Ploughed: Oct 8, 1963. All plots except winter wheat chisel ploughed: Dec 17.

Winter wheat: Seed combine drilled at 2.5 bushels: Oct 19, 1963.

'Nitro-Chalk' applied: Mar 5, 1964. Sprayed with mecoprop/2,4-D (Methoxone Extra at 7 pints in 40 gals): May 12. Combine harvested: Aug 26.

Spring wheat: Seed combine drilled at 3 bushels: Mar 11, 1964.

'Nitro-Chalk' applied: Mar 31. Sprayed with MCPA/dichlorprop (Seritox at 8 pints in 40 gals): May 15. Combine harvested: Aug 28.

Oats: Seed combine drilled at 4 bushels: Mar 7, 1964. 'Nitro-Chalk' applied: Mar 9. Sprayed with MCPA/dichlorprop (Seritox at 8 pints in 40 gals): May 15. Combine harvested: Aug 22.

Spring beans: Seed placement drilled at 200 lb (rows spaced at 10.5 ins): Feb 14, 1964. Combine harvested: Sept 2.

- NOTE: (1) Yields were taken only for winter and spring wheat.  
(2) Estimates of the incidence of take-all (*Ophiobolus graminis*), eyespot (*Cercospora herpotrichoides*) and sharp eyespot (*Corticium solani*) were made on 7 occasions for winter and 3 for spring wheat.  
(3) For previous year's results see 'Results' 63/C/10.

Standard errors per plot. Grain:

Winter wheat: 1.36 or 3.5% (5 d.f.)

Spring wheat: 2.85 or 9.4% (5 d.f.)

64/c/9.2

SUMMARY OF RESULTS

GRAIN

WINTER WHEAT

Crop in 1963

WW	0	Mean	Diff
37.9	39.1	38.2	1.2
(±0.55)	(±0.96)		(±1.11)

SPRING WHEAT

Crop in 1963

SW	0	Mean	Diff
28.0	36.6	30.2	8.6
(±1.16)	(±2.01)		(±2.32)



64/C/10.1

## CUTTING AND VIRUS

(CV)

An investigation of cocksfoot mottle and lucerne mosaic viruses, and of the effect of cutting on the spread of these viruses, Long Hoos I and II, 1964 the second year.

Design: 3 randomised blocks of 4 plots each, plots being subdivided into 3 for crops.

Area of each sub plot: 0.0220. Area harvested: 0.0046.

Treatments: All combinations of:-

Sub plots: 1. Crops: Cocksfoot S143\* (C), Chartrainvilliers lucerne (Lu), C and Lu in alternate rows (M).

Whole plots: 2. Number of cuts: 3 cuts (3), 5 cuts (5).

For treatment 3 the cuts are on the occasions of the 1st, 3rd and 5th cuts for treatment 5.

3. Virus disease introduced: None (0), cocksfoot mottle to C, or lucerne mosaic to Lu (V).

\* Certain sub plots were later resown with Cocksfoot S137, the arrangement was modified so that the whole plots involved constituted one block. The yields from this resown block have been omitted from the analysis.

Basal dressings. C and M: 5 cwt 6:15:15 and 2 cwt 'Nitro-Chalk' (21% N) in spring, 4 cwt 16:0:16 after 1st and 3rd cuts. Lu: 5 cwt 6:15:15 in spring, 2 cwt 0:14:28 after 1st and 3rd cuts.

Cultivations, etc.:-

1963: Ploughed: Sept 11, 1962. Basal NPK compound applied: May 6, 1963. 'Nitro-Chalk' applied to C and M sub plots: May 13. Lucerne drilled at 17 lb, cocksfoot at 8 lb (8.5 and 4 lb on M sub plots): May 15. Sprayed with 2,4-DB at 48 oz a.e. in 40 gals: June 27. Topped with mower: July 26. Basal NK and PK compounds applied: July 31. Sub plots 3a, 4a, 5a and 7c failed because of weeds, rotary cultivated: Aug 20, rotary cultivated again and drilled with Cocksfoot S137 at 12 lb: Sept 16. Cut (except resown plots): Oct 4.



64/C/10.2

1964: Lu sub plots sprayed with paraquat at 2 lb ion in 40 gals:  
Feb 12, 1964. 'Nitro-Chalk' applied to C and M sub plots:  
Mar 3. Basal NPK compound applied: Mar 11. Treatment 3 cut:  
May 29, July 30, Oct 20. Treatment 5 cut: May 29, July 1,  
July 30, Sept 2, Oct 20. Irrigated: Aug 11 (1 in.) and  
21 (1 in.). Basal NK and PK applied after 1st and 3rd cuts.  
Previous crops: Kale 1961, barley 1962.

NOTES (1) No yields were taken in 1963.  
(2) Leaf samples were taken for virus identification.

Standard errors per plot.		Dry matter:	
1st cut	Whole plot:	0.63	or 1.6% (3 d.f.)
	Sub plot:	4.80	or 12.5% (8 d.f.)
3rd cut	Whole plot:	2.66	or 12.6% (3 d.f.)
	Sub plot:	2.78	or 13.2% (8 d.f.)
5th cut	Whole plot:	0.66	or 4.2% (3 d.f.)
	Sub plot:	1.33	or 8.3% (8 d.f.)
Total of 5 cuts	Whole plot:	4.00	or 4.3% (3 d.f.)
	Sub plot:	12.01	or 12.8% (8 d.f.)

64/C/10.3

SUMMARY OF RESULTS

DRY MATTER

	O	V	3	5	Mean
1ST CUT					
	(1) and (2)		(1) and (2)		(±1.70)
C	51.6	49.6	49.7	51.5	50.6
Lu	19.0	21.0	19.1	20.9	20.0
M	44.4	44.8	46.9	42.3	44.6
			(±0.45)		(±0.32)
		O	38.1	38.6	38.3
		V	39.0	37.9	38.5
Mean (±0.32)			38.5	38.2	38.4

3RD CUT

	(1) and (2)		(1) and (2)		(±0.98)
C	18.7	16.6	28.1	7.3	17.7
Lu	22.1	23.2	34.0	11.3	22.6
M	23.7	22.4	36.6	9.6	23.1
			(±1.88)		(±1.33)
		O	33.4	9.7	21.5
		V	32.4	9.1	20.8
Mean (±1.33)			32.9	9.4	21.1

Mean D.M. %: 1st cut 20.4  
3rd cut 22.5

1st cut 3rd cut  
 (1) (±2.40) (±1.39) For use in vertical and interaction comparisons  
 (2) (±1.98) (±1.75) For use in horizontal and diagonal comparisons

64/C/10.4

DRY MATTER					
	0	V	3	5	Mean
5TH CUT					
	(1) and (2)		(1) and (2)		(±0.47)
C	16.0	15.5	27.4	4.1	15.8
Lu	15.2	14.4	26.3	3.3	14.8
M	17.7	16.8	29.7	4.7	17.2
			(±0.47)		(±0.33)
		0	28.6	4.0	16.3
		V	27.1	4.1	15.6
Mean (±0.33)			27.8	4.1	15.9
TOTAL OF 5 CUTS					
	(1) and (2)		(1) and (2)		(±4.25)
C	104.5	99.1	105.2	98.4	101.8
Lu	73.5	75.2	79.4	69.3	74.3
M	108.3	104.2	113.2	99.3	106.2
			(±2.83)		(±2.00)
		0	100.0	90.8	95.4
		V	98.5	87.2	92.8
Mean (±2.00)			99.3	89.0	94.1

Mean D.M. %: 5th cut 25.0

5th cut	Total of	
	5 cuts	
(1) (±0.66)	(±6.00)	For use in vertical and interaction comparisons
(2) (±0.64)	(±5.30)	For use in horizontal and diagonal comparisons



64/C/11.1

## N AND NPK RESIDUES

(AX)

An investigation of the relative importance of short term N and PK residues - Fosters West Side 1964.

Crops in 1964: Spring wheat and kale.

Design: 4 randomised blocks of 16 plots each, with sub blocks of 8 plots each per crop.

Area of each plot: 0.0193. Area harvested: Spring wheat - 0.0129, kale - 0.0087.

Treatments (broadcast in seedbed): All combinations of:-

1. N: None (N0), 0.5 (N1), 1.0 (N2), 1.5 (N3) cwt as 'Nitro-Chalk'.
2. PK: None (0), 2.0 cwt P2O5 and 2.0 cwt K2O as 0:20:20 (C).

Basal dressing: None.

Cultivations, etc.: Ploughed twice: Oct 8 and Dec 2, 1963.

Spring wheat. Fertilisers applied: Mar 31, 1964. Seed drilled at 2.75 bushels: Apr 2. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): May 28. Combine harvested: Aug 31. Variety: Jufy 1.

Kale. Fertilisers applied: Apr 1, 1964. Seed drilled at 2 lb: May 7. Harvested: (by blocks) Nov 5, 12, 19, 26. Variety: Thousand Head.

Previous crops: Sugar beet 1962, spring wheat 1963.

NOTE: The spring wheat was affected by take-all (*Ophiobolus graminis*).

Standard errors per plot.

Spring wheat, grain: 3.29 or 12.5% (21 d.f.)

Kale, fresh weight: 1.724 or 11.6% (21 d.f.)



64/C/11.2

SUMMARY OF RESULTS

	NO	N1	N2	N3	Mean
	SPRING WHEAT				
	GRAIN				
	(±1.65)				
	(±0.82)				
O	16.5	26.2	30.3	29.2	25.5
C	14.1	28.0	33.9	33.1	27.3
Mean (±1.16)	15.3	27.1	32.1	31.1	26.4

Mean D.M.%: 85.6

KALE

	FRESH WEIGHT				
	(±0.862)				
	(±0.431)				
O	9.17	15.38	17.12	19.07	15.19
C	9.61	14.47	15.59	18.74	14.60
Mean (±0.610)	9.39	14.93	16.35	18.91	14.89

64/C/12.1

CHEMICAL CONTROL OF WIREWORMS

(BB)

New Zealand 1964, the first year - Spring wheat.

Design: 4 randomised blocks of 12 plots each.

Area of each plot: 0.0193. Area harvested: 0.0129.

Treatments. Insecticides:-

None (3 plots per block)

(O)

Sprays (active ingredient, in 158 gals):-

'Bayer 38156' (1.5 lb)

(As)

'Bayer 37289' (1.5 lb)

(Bs)

Zinophos (1.5 lb)

(Cs)

'Sumithion' (1.5 lb)

(Ds)

Aldrin (2.25 lb)

(Es)

Seed dressings (active ingredient per bushel):-

'Bayer 38156' (0.5 oz)

(Ad)

'Bayer 37289' (0.5 oz)

(Bd)

BHC (0.5 oz)

(Fd)

Dieldrin (12.0 oz)

(Gd)

Basal dressings: 2.5 cwt (20:10:10) combine drilled, organo-mercury fungicide dressing applied to seed.

Cultivations, etc.: Ploughed: Dec 7, 1963. Sprays applied:

Mar 13, 1964. Seed drilled at 3 bushels: Apr 1. Sprayed with 2,4-D butoxyethylester at 0.66 lb a.e. in 40 gals: May 20. Combine harvested: Aug 31. Variety: Jufy I. Previous crop: Old grass.

NOTE: Plant samples were taken on 8th May for estimation of wireworm damage.

Standard error per plot.

Grain: 2.25 or 6.6% (35 d.f.)

64/C/12.2

SUMMARY OF RESULTS

GRAIN

	Mean	Increase
		(±1.30)
O	33.9 (±0.65)	
As	36.1	+2.2
Bs	35.3	+1.4
Cs	34.8	+0.9
Ds	34.8	+0.9
Es	35.2 (±1.12)	+1.3
Ad	32.5	-1.4
Bd	34.3	+0.4
Fd	32.6	-1.3
Gd	34.5	+0.6
Mean	34.3	

Mean D.M. %: 87.4

64/C/13.1

LUCERNE

(AZ)

Row spacing, N and paraquat, Long Hoos VII 1964.

Design: 4 randomised blocks of 12 plots each.

Area of each plot: 0.0145. Area harvested: 0.0034.

Treatments: All combinations of:-

1. Row spacing: 8 inches (C), 16 inches (W).
2. Nitrogen: None (N0), 0.25 (N1), 0.5 (N2) cwt N as 'Nitro-Chalk' applied to seedbed.
3. Paraquat (to be applied in spring 1965): None (P0), sprayed with paraquat (P1).

Basal dressing: 4 cwt 0:14:28 in winter and 2 cwt after each cut except the last.

Cultivations, etc.: Ploughed: Sept 18, 1963. Sprayed twice with sodium trichloroacetate at 18 lb in 40 gals: Sept 25 and Oct 23. Chisel ploughed: Dec 17. Basal PK compound applied: Apr 14, 1964. 'Nitro-Chalk' applied: Apr 15. Rotary cultivated: May 5. Rotary cultivated second time, seed drilled at 28 lb: May 29. Sprayed with 2,4-DB at 42 oz a.e. in 40 gals: July 7. Cut: Aug 5. Basal PK compound applied: Aug 12. Irrigated: Aug 10, (1 in), Aug 11, (1 in), Aug 21, (1 in), Aug 22, (1 in). Cut second time: Oct 30. Variety: Du Puits. Previous crops: Winter wheat 1962 and 1963.

Standard errors per plot. Dry matter:

- 1st cut: 2.49 or 21.3% (39 d.f.)
- 2nd cut: 8.44 or 39.3% (39 d.f.)
- Total of 2 cuts: 9.25 or 27.8% (39 d.f.)



64/C/13.2

SUMMARY OF RESULTS

DRY MATTER

	NO	N1	N2	Mean
	1ST CUT			
	(±0.88)			(±0.51)
C	12.2	12.7	14.1	13.0
W	9.9	9.0	12.0	10.3
Mean (±0.62)	11.0	10.8	13.1	11.7

Mean D.M. %: 28.9

2ND CUT

	(±2.98)			(±1.72)
C	19.4	23.2	24.7	22.4
W	18.2	23.6	19.9	20.6
Mean (±2.11)	18.8	23.4	22.3	21.5

Mean D.M. %: 23.4

TOTAL OF 2 CUTS

	(±3.27)			(±1.89)
C	31.6	35.9	38.8	35.4
W	28.1	32.6	31.9	30.9
Mean (±2.31)	29.9	34.2	35.4	33.2

Mean D.M. %: 26.2

64/C/14.1

## PARAQUAT EXPERIMENT

(BA)

A comparison of methods of preparing a seedbed for spring wheat following a grass and clover ley, and an investigation of the effect of paraquat on soil fauna - Pastures 1964, the first year.

Design: 4 randomised blocks of 8 plots each, plots being split into 4 for the application of N.

Area of each sub plot: 0.0145. Area harvested: 0.0064.

Treatments: All combinations of:-

1. Seedbed preparation: No paraquat, plough, roll and disc (P), paraquat application followed by either ploughing, rolling and disc-harrowing (GP), or by rotary cultivation (GR), or by sod seeding (G).  
The paraquat was applied at 2 lb ion in 40 gals.
2. Seed dressing: Fungicide only (-), insecticide and fungicide (I).
3. Nitrogen (to sub plots): None (NO), 0.3 (N1), 0.6 (N2), 0.9 (N3) cwt N as 'Nitro-Chalk'.

NOTE: (1) A further sub plot at the east end of each plot received 0.6 cwt N as 'Nitro-Chalk' and an insecticide mixture of 4 lb diazinon and 10 lb chlordane in 160 gals. No yields were taken.

Basal dressing: 2 cwt compound fertiliser (0:20:20) combine drilled.

Cultivations, etc.: G, GP and GR plots sprayed with paraquat: Feb 28, 1964. P and GP plots ploughed: Mar 5. P and GP plots rolled in tandem: Mar 6. P and GP plots disced twice: Mar 7 and Mar 9. GR plots rotary cultivated: Mar 10. Seed drilled at 3 bushels: Apr 1. 'Nitro-Chalk' applied: Apr 7. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): May 15. Combine harvested: Sept 1. Variety: Opal. Previous crop: 6 year grass and clover ley.

- NOTES: (2) Plant counts were taken early in the season and the percentage cover by weeds was estimated after harvest.
- (3) The sod seeded (G) plots, the remainder of one block and one other plot (PI) were sown by a drill modified for sod seeding, but this drill tended to sink in on the cultivated plots, consequently the rest of the experiment was sown with the normal farm drill.

Standard errors per plot. Grain:

Whole plot: 3.54 or 11.5% (21 d.f.)

Sub plot: 3.11 or 10.1% (72 d.f.)

64/C/14.2

SUMMARY OF RESULTS

SPRING WHEAT

GRAIN

	P	GP	GR	G	Mean
Mean	39.3	37.4	32.8	13.5	30.7
		(±1.25)			
-	38.3	34.8	36.1	12.6	30.5
I	40.3	40.1	29.4	14.4	31.0
		(±1.77)			(±0.88)
		(1) and (2)			(±0.55)
NO	33.3	30.4	25.9	9.3	24.7
N1	38.8	36.4	33.7	12.5	30.3
N2	40.2	39.2	33.7	14.5	31.9
N3	45.1	43.7	37.8	17.7	36.1
	NO	N1	N2	N3	
		(3) and (4)			
-	24.6	30.5	30.8	36.0	
I	24.9	30.2	33.0	36.1	

Mean D.M. %: 85.4

- (1) ±1.10 For use in vertical and interaction comparisons.
- (2) ±1.57 For use in horizontal and diagonal comparisons.
- (3) ±0.78 For use in horizontal and interaction comparisons.
- (4) ±1.11 For use in vertical and diagonal comparisons.

NOTE: The paraquat failed to kill the old turf and the low yields of the 'G' plots were due to the competition of the grass.



64/C/15.1

IRRIGATION EXPERIMENT

(IRA and IRB)

The effect of irrigation on potatoes and grass - preliminary year,  
Great Field I and II 1964.

Design:

Potatoes: A single replicate of 4 x 2 x 2 x 2 x 2 in two blocks, a component of the 5 factor interaction being confounded with blocks. Each block is divided into 4 whole plots for the irrigation treatments, and at right angles into 4 strips for varieties and spacing. There is a further split for chitting and N.

Grass ley. 2 randomised blocks of 4 plots each, plots being divided into 4 sub plots each.

Area of each sub plot:-

Potatoes: 0.0204. Area harvested: 0.0080.

Grass: 0.1598. Area harvested: 0.0046.

Treatments. Potatoes: All combinations of:-

Whole plots 1. Irrigation: None (O), early (A), late (B), full (C).

To strips of 1/4 plots 2. Varieties: Majestic (M), King Edward (E).  
3. Spacing: Seed 12 inches (1), 18 inches (2) apart in the rows.

1/8 plots 4. Chitting: None (O), seed chitted (Ch).  
5. Nitrogen: 0.75 (N1), 1.5 (N2) cwt N as 'Nitro-Chalk' broadcast on the flat before rotary cultivation.

Grass ley: All combinations of:-

Whole plots 1. Irrigation: None (O), irrigated (C).  
2. Species: S215 Meadow Fescue at 30 lb (F), Timothy at 23 lb (T).

Sub plots 3. Nitrogen: None, 0.3, 0.6, 0.9 cwt N as 'Nitro-Chalk' in seedbed and after each cut except the last (NO, N1, N2, N3).

Basal dressing:

To potatoes: 2 cwt P2O5 and 4 cwt K2O as 0:14:28 rotary cultivated in.

To grass ley: 2 cwt P2O5 and 2 cwt K2O as 0:20:20 in seedbed.

Cultivations, etc.:-

Potatoes: Sprayed with dalapon at 5.9 lb acid equivalent in 4 gals: Oct 9, 1963 and again at 2.95 lb: Oct 22. Ploughed: Nov 6 - 28.



64/C/15.2

Basal dressing applied: Apr 6, 1964. 'Nitro-Chalk' applied, rotary cultivated, potatoes planted: Apr 30. Earthed up: June 22. Sprayed three times with mancozeb at 1.2 lb in 35 gals: June 30, July 17, July 31. Sprayed with diquat (Reglone at 3 pints in 40 gals): Sept 18. Lifted: Sept 24. Previous crops: Winter wheat 1962, barley 1963.

Grass ley: Ploughed: Nov 1, 1963. Basal dressing applied: Apr 7, 1964. Seedbed 'Nitro-Chalk' applied, seed drilled: Apr 30. Sprayed with 2,4-D butoxyethyl ester at 0.44 lb acid equivalent in 40 gals: June 10. Cut: July 22. 'Nitro-Chalk' applied: July 27. Cut: Sept 7. Previous crops: Winter wheat 1962, barley 1963.

Standard errors per plot.

Potatoes, total tubers

1/4 plot: 0.389 or 2.7% (8 d.f.)

1/8 plot: 1.142 or 8.0% (20 d.f.)

Grass ley, dry matter

Sub plot: 1st cut: 2.78 or 17.0% (12 d.f.)

2nd cut: 1.86 or 18.3% (12 d.f.)

Total of 2 cuts: 3.01 or 11.3% (12 d.f.)

RAINFALL AND IRRIGATION: INCHES

WEEK ENDING	RAINFALL	POTATOES			GRASS
		A	B	C	C
MAY 5	0.43				
12	0.06				
19	0.29				
26	0.46				
JUNE 2	1.08				
9	0.85				
16	0.90				
23	1.46				
30	0.00				
JULY 7	0.24				
14	0.65				
21	0.29				
28	0.06	1.00		1.00	
AUG 4	0.03				0.50
11	0.07				1.50
18	0.32		1.00	1.00	
25	0.05				1.00
SEPT 1	0.03				
8	0.10				
15	0.44				
22	0.18				
29	0.00				
OCT 6	0.31				
<b>TOTAL</b>	<b>8.30</b>	<b>1.00</b>	<b>1.00</b>	<b>2.00</b>	<b>3.00</b>

64/C/15.3

SUMMARY OF RESULTS

POTATOES

TOTAL TUBERS

	O	A	B	C	Mean
Mean	13.02	14.85	12.81	16.18	14.21
		(±0.137)*			(±0.069)
M	13.68	15.93	13.66	17.35	15.15
E	12.36	13.77	11.95	15.01	13.27
		(±0.137)*			(±0.069)
S1	12.91	14.68	12.85	15.95	14.10
S2	13.13	15.02	12.76	16.41	14.33
		(±0.404)*			(±0.202)
O	12.96	14.43	12.85	15.81	14.01
Ch	13.08	15.27	12.77	16.55	14.41
		(±0.404)*			(±0.202)
N1	12.40	14.55	11.77	15.38	13.52
N2	13.64	15.14	13.85	16.98	14.90
		(±0.194)*			
M S1	13.77	15.96	13.94	17.34	15.25
E S1	12.06	13.39	11.75	14.56	12.94
M S2	13.59	15.89	13.38	17.37	15.06
E S2	12.67	14.15	12.15	15.46	13.61
		(±0.571)*			
M O	13.66	14.47	13.65	17.03	14.70
E O	12.26	14.39	12.05	14.60	13.32
M Ch	13.69	17.39	13.67	17.68	15.61
E Ch	12.47	13.15	11.86	15.42	13.22
		(±0.571)*			
M N1	13.36	16.32	12.99	16.48	14.79
E N1	11.44	12.79	10.54	14.28	12.26
M N2	14.00	15.53	14.33	18.23	15.52
E N2	13.28	14.75	13.36	15.74	14.28

\* For use in vertical and interaction comparisons

64/C/15.4

	% WARE				
	O	A	B	C	Mean
Mean	92.4	95.0	92.4	95.9	93.9
M	94.9	96.7	95.3	97.3	96.1
E	89.9	93.3	89.4	94.5	91.8
S1	90.7	94.5	91.3	95.4	93.0
S2	94.1	95.6	93.5	96.3	94.9
O	92.2	94.8	92.2	95.7	93.7
Ch	92.6	95.3	92.6	96.1	94.1
N1	91.0	94.3	91.3	95.4	93.0
N2	93.8	95.8	93.5	96.4	94.9
M S1	94.1	96.6	94.4	97.1	95.5
E S1	87.2	92.4	88.3	93.8	90.4
M S2	95.7	96.9	96.3	97.5	96.6
E S2	92.5	94.3	90.6	95.2	93.1
M O	94.6	96.7	95.1	97.5	96.0
E O	89.8	92.9	89.2	93.9	91.5
M Ch	95.2	96.8	95.5	97.1	96.2
E Ch	89.9	93.8	89.7	95.1	92.1
M N1	93.9	96.4	94.9	97.1	95.6
E N1	88.0	92.3	87.7	93.6	90.4
M N2	95.9	97.1	95.7	97.5	96.6
E N2	91.7	94.4	91.2	95.3	93.2



64/C/15.5

GRASS, DRY MATTER

	NO	N1	N2	N3	Mean
1ST CUT					
Mean	8.6	14.7	18.7	23.6	16.4
			(±0.98)		
O	8.6	16.6	20.3	24.8	17.6
C	8.5	12.7	17.0	22.5	15.2
			(±1.39)*		
F	10.1	18.0	22.6	28.2	19.7
T	7.0	11.3	14.8	19.1	13.0
			(±1.39)*		
	O	C			
F	20.7	18.7			
T	14.4	11.6			

Mean D.M. %: 18.9

2ND CUT

Mean	6.8	10.5	11.1	12.5	10.2
			(±0.66)		
O	4.5	5.8	7.7	6.7	6.1
C	9.1	15.2	14.6	18.3	14.3
			(±0.93)*		
F	8.7	13.0	16.0	17.3	13.7
T	5.0	7.9	6.3	7.6	6.7
			(±0.93)*		
	O	C			
F	10.1	17.4			
T	2.2	11.2			

Mean D.M.%: 29.7

\* For use in vertical and interaction comparisons



64/C/15.6

TOTAL OF 2 CUTS

	NO	N1	N2	N3	Mean
Mean	15.4	25.1 (±1.07)	29.8	36.1	26.6
O	13.2	22.4 (±1.51)*	28.0	31.4	23.7
C	17.6	27.9	31.6	40.8	29.5
F	18.8	31.0 (±1.51)*	38.6	45.5	33.5
T	11.9	19.2	21.0	26.7	19.7
	O	C			
F	30.8	36.1			
T	16.6	22.8			

Mean D.M. %: 24.3

\* For use in vertical and interaction comparisons

64/C/16.1

ONE YEAR LEYS FOR WHEAT

(WAS)

A comparison of different one year leys as a preparation for wheat -  
Woburn Warren Field North - leys 1964 the first year.

Design: 3 randomised blocks of 18 plots each.

Area of each plot: 0.0212. Area harvested: 1st cut - 0.0101,  
2nd cut - 0.0138.

Treatments: All combinations of:-

1. Leys undersown in barley 1963 and cut for hay 1964, with nitrogen as follows:  
Clover: None (CO).  
Ryegrass: None (RO), 1 (R2), 2 (R4) cwt N.  
Clover-Ryegrass: None (MO) 1 (M2) cwt N.  
All N as 'Nitro-Chalk', 5/8ths to first cut, 3/8ths to second cut.
2. Potash: None (KO), 1.2 (K1), 2.4 (K2) cwt K<sub>2</sub>O as muriate of potash, 5/8ths to first cut, 3/8ths to second cut.

NOTE (1): Wheat 1965 will test in addition to the above:

3. Potash at none, 1.2, 2.4 cwt K<sub>2</sub>O
4. 'Nitro-Chalk' at none, 0.5, 1.0 cwt N.

Basal dressing. Barley nurse crop 1963: 3 cwt 21:14:14 combine drilled.  
Leys: 1.25 cwt superphosphate combine drilled.

Cultivations, etc.: Barley drilled: Apr 13, 1963. Leys undersown in barley, basal dressing applied for leys: May 6, 1963. 1st dressing of N and K applied: Mar 25, 1964. Cut: June 12. 2nd dressing of N and K applied: June 23. Cut 2nd time: Aug 5. Previous crops: Barley 1962 and 1963.

NOTE (2): Plots were sampled at each cut for estimation of dry matter and N and K per cent.

Standard errors per plot. Dry matter:

1st cut:	3.60 or 7.4% (34 d.f.)
2nd cut:	2.46 or 9.5% (34 d.f.)
Total of 2 cuts:	4.70 or 6.3% (34 d.f.)

64/C/16.2

SUMMARY OF RESULTS

GRASS, DRY MATTER

	CO	RO	R2	R4	MO	M2	Mean
1ST CUT							
(±2.08)							(±0.84)
K0	30.4	40.3	55.0	54.1	49.4	60.5	48.3
K1	35.2	42.0	61.1	59.1	50.0	54.8	50.4
K2	35.0	40.1	56.0	53.1	49.2	56.2	48.3
Mean (±1.20)	33.5	40.8	57.4	55.4	49.5	57.2	48.9
2ND CUT							
(±1.41)							(±0.58)
K0	25.8	7.1	30.8	36.2	20.0	32.9	25.5
K1	25.9	8.1	31.6	38.9	21.2	32.1	26.3
K2	27.1	6.6	31.1	40.9	18.7	33.3	26.3
Mean (±0.81)	26.3	7.3	31.2	38.6	20.0	32.8	26.0
TOTAL OF 2 CUTS							
(±2.71)							(±1.10)
K0	56.2	47.5	85.8	90.2	69.4	93.5	73.7
K1	61.1	50.1	92.7	98.0	71.2	86.9	76.7
K2	62.0	46.6	87.1	94.0	67.9	89.5	74.5
Mean (±1.56)	59.8	48.1	88.5	94.1	69.5	89.9	74.9

Mean D.M. %: 1st cut 24.3  
 2nd cut 29.6  
 Total of 2 cuts 26.9



64/C/17.1

## BARLEY AFTER GREEN MANURES

(WAU)

Effects of trefoil and ryegrass green manures, time of ploughing and N - Woburn Road Piece 1964 - barley following early potatoes.

Design: Single replicate of 4 x 2 x 4 in two blocks of 16 plots each, randomisation restricted.

Area of each plot: 0.0212. Area harvested: 0.0141.

Treatments. All combinations of:-

1. Green manures: None (O), trefoil (T), ryegrass (R), ryegrass sown with 0.6 cwt N as 'Nitro-Chalk' (RN).
2. Time of ploughing: Nov 26, 1963 (A), Jan 30, 1964 (S).
3. Nitrogen: None (NO), 0.3 (N1), 0.6 (N2), 0.9 (N3) cwt N as 'Nitro-Chalk'.

Basal dressing. Early potatoes: 8 cwt 17:11:22. Green manures: None. Barley: 2.5 cwt 0:20:20 combine drilled.

Cultivations, etc.: Ploughed: Sept 17 - Oct 17, 1962. Basal dressing applied for early potatoes: Apr 11, 1963. Potatoes planted: Apr 19. Earthed up: June 15. Haulm destroyed mechanically: July 23. Lifted: July 24 - Aug 2. Ground chalk applied to plots 1 - 16 at 60 cwt and to plots 17 - 32 at 20 cwt, 'Nitro-Chalk' applied to RN plots: Aug 2. Trefoil sown at 30 lb and ryegrass at 40 lb: Aug 3. A plots ploughed: Nov 26. S plots ploughed: Jan 30, 1964. 'Nitro-Chalk' treatments applied: Feb 25. Seed drilled at 2.75 bushels: Feb 28. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): May 6. Combine harvested: Aug 21. Varieties: Trefoil - English, ryegrass - English Leafy Italian, early potatoes - Arran Pilot, barley - Maris Badger. Previous crops: Spring wheat 1961, barley 1962.

NOTE: (1) The green manures were sampled just before ploughing for estimates of dry matter and N per acre in roots plus tops.

(2) Yields were adjusted for a linear trend across the blocks and only the adjusted yields are presented.

Standard error per plot.

Barley. Grain 3.64 or 11.5% (7 d.f.)



64/C/17.2

SUMMARY OF RESULTS

GRAIN

	NO	N1	N2	N3	Mean
		(±1.29)			
Mean	22.4	29.3	35.3	39.8	31.7
		(±2.58)			(±1.29)
O	16.7	20.0	30.2	35.7	25.7
T	27.0	34.8	40.9	44.2	36.7
R	19.8	26.6	30.4	35.3	28.0
RN	26.0	36.0	39.7	43.9	36.4
		(±1.82)			(±0.91)
A	22.3	30.5	34.7	42.5	32.5
S	22.4	28.2	35.9	37.1	30.9
	O	T	R	RN	
		(±1.82)			
A	27.7	38.0	28.0	36.3	
S	23.6	35.4	28.0	36.5	

Mean D.M. %: 84.2

64/C/18.1

SUGAR BEET AFTER GREEN MANURES

(WAV)

Effects of trefoil and ryegrass green manures and N - Woburn Great Hill  
1964, sugar beet following barley.

Design: 2 replicates of 4 x 2 x 4 in 4 blocks of 16 plots each, with  
restricted randomisation.

Area of each plot: 0.0159. Area harvested: 0.0106.

Treatments: All combinations of:-

1. Green manures undersown: None (O), trefoil (T), ryegrass (R),  
ryegrass sown with 0.6 cwt N as 'Nitro-Chalk' (RN).
2. Time of ploughing: Nov 28, 1963 (A), Jan 30, 1964 (S).
3. Nitrogen: None (NO), 0.6 (N1), 1.2 (N2), 1.8 (N3) cwt N as  
'Nitro-Chalk'.

Basal dressings. Barley: 3 cwt 21:14:14 combine drilled. Green  
manures: None. Sugar beet: 5 cwt agricultural salt, 0.45 cwt K2O  
as muriate of potash, 2.5 cwt 0:20:20.

Cultivations, etc.: Ploughed: Nov 12, 1962. Barley drilled at 2.25  
bushels: Apr 8, 1963. Trefoil undersown at 30 lb and ryegrass at  
40 lb: May 6. Barley combine harvested: Sept 9. 'Nitro-Chalk'  
applied to RN plots: Oct 11. A plots ploughed: Nov 28. S plots  
ploughed: Jan 30, 1964. Salt and muriate of potash applied:  
Feb 4. Basal PK applied: Apr 6. 'Nitro-Chalk' treatments applied:  
Apr 8. Seed drilled at 5 lb: Apr 14. Singled: May 19 - 27.  
Lifted: Oct 14. Varieties: Barley - Proctor, trefoil - English,  
ryegrass - English Leafy Italian, sugar beet - Klein E. Previous  
crops: Barley 1961, potatoes 1962.

NOTE: The green manures were sampled just before ploughing for  
estimates of dry matter and N (roots plus tops).

Standard errors per plot:

Roots (washed):	1.122 or 9.3% (29 d.f.)
Total sugar:	4.98 or 10.4% (29 d.f.)
Tops:	0.922 or 14.4% (29 d.f.)

64/C/18.2

SUMMARY OF RESULTS

	NO	N1	N2	N3	Mean
	ROOTS				
	(±0.281)				
Mean	8.55	12.50	13.82	13.26	12.03
	(±0.561)				
O	8.56	13.14	13.69	13.32	12.18
T	8.88	11.85	14.68	13.51	12.23
R	7.88	12.28	13.07	13.89	11.78
RN	8.86	12.74	13.84	12.29	11.93
	(±0.397)				
A	8.34	12.57	13.89	13.21	12.00
S	8.75	12.44	13.75	13.30	12.06
	O	T	R	RN	
	(±0.397)				
A	12.12	12.18	11.93	11.78	
S	12.24	12.28	11.63	12.09	

64/C/18.3

	NO	N1	N2	N3	Mean
	SUGAR %				
Mean	20.2	20.4	19.9	18.9	19.8
O	19.8	20.6	20.1	18.8	19.9
T	20.4	20.6	19.7	18.7	19.8
R	20.4	20.2	20.0	19.4	20.0
RN	20.3	20.0	19.9	18.5	19.7
A	20.0	20.5	19.9	18.9	19.8
S	20.4	20.3	19.9	18.8	19.9
	O	T	R	RN	
A	19.8	19.8	20.1	19.6	
S	19.9	19.9	19.9	19.7	



64/C/18.4

	NO	N1	N2	N3	Mean
TOTAL SUGAR					
(±1.24)					
Mean	34.6	51.0	55.1	50.0	47.7
(±2.49)					
O	34.0	54.2	55.1	50.1	48.3
T	36.3	48.8	57.9	50.5	48.4
R	32.1	49.6	52.2	53.8	46.9
RN	36.0	51.2	55.0	45.7	47.0
(±1.76)					
A	33.4	51.5	55.3	49.9	47.5
S	35.8	50.5	54.8	50.1	47.8
(±1.76)					
	O	T	R	RN	
(±1.76)					
A	48.0	48.0	47.8	46.2	
S	48.7	48.7	46.1	47.7	

64/C/18.5

	NO	N1	N2	N3	Mean
	TOPS				
	(±0.231)				
Mean	3.73	6.00	7.66	8.15	6.38
	(±0.461)				(±0.231)
O	3.43	6.02	7.03	8.86	6.33
T	3.68	5.79	7.91	8.76	6.53
R	3.60	5.56	7.47	8.17	6.20
RN	4.21	6.63	8.21	6.82	6.47
	(±0.326)				(±0.163)
A	3.74	6.24	7.72	8.09	6.45
S	3.73	5.76	7.59	8.21	6.32
	O	T	R	RN	
	(±0.326)				
A	6.64	6.41	6.31	6.43	
S	6.03	6.66	6.08	6.50	

Table 1: Summary of Data

Year	Q1	Q2	Q3	Q4	Total
2010	100	150	200	250	700
2011	120	180	230	280	810
2012	140	200	250	300	890
2013	160	220	270	320	970
2014	180	240	290	340	1050
2015	200	260	310	360	1130
2016	220	280	330	380	1210
2017	240	300	350	400	1290
2018	260	320	370	420	1370
2019	280	340	390	440	1450
2020	300	360	410	460	1530



64/C/19.1

## ROW SPACING AND FERTILISERS

(WBD)

Row spacing and concentrated fertilisers - Woburn Horsepool 1964, the first year. Potatoes 1964 followed by barley 1965.

Design: Two replicates of 4 x 2 x 2 x 2 in 4 blocks of 16 plots each.

Area of each plot: 0.0030. Area harvested: 0.0022.

Treatments: All combinations of:-

1. Levels of NPK (in the proportion 1.0N, 1.0 P<sub>2</sub>O<sub>5</sub>, 1.5 K<sub>2</sub>O) to supply: None (F<sub>0</sub>), 0.66 (F<sub>1</sub>), 1.32 (F<sub>2</sub>), 2.0 (F<sub>3</sub>) cwt N.
2. Type of fertiliser: Concentrated (C), dilute (D).
3. Time of application: Before (B), after (A) rotary cultivation.
4. Spacing of setts: 14 in. x 14 in. (S<sub>14</sub>), 14 in. x 28 in. (S<sub>28</sub>).
5. Also to barley 1965, concentrated NPK fertiliser to supply none, 0.33, 0.66, 1.00 cwt N.

Basal dressing: None.

Cultivations, etc.: Chisel ploughed: Dec 7, 1963. Ploughed: Jan 3, 1964. B fertilisers applied: Apr 29. Rotary cultivated, A fertilisers applied: Apr 30. Potatoes hand planted on flat: May 1. Sprayed with diquat/paraquat (Preaglone Extra at 2 pints in 40 gals): May 15. Sprayed twice with dimethoate at 4.8 fluid oz in 40 gals: June 8 and July 6. Sprayed twice with copper oxychloride fungicide at 2.3 lb Cu in 40 gals: July 3 and 17. Lifted: Sept 14. Variety: King Edward (chitted). Previous crops: Grass 1962, winter wheat 1963.

Standard error per plot.

Total tubers: 0.960 or 5.6% (30 d.f.)

64/c/19.2

SUMMARY OF RESULTS

ROW SPACING

TOTAL TUBERS

	FO	F1	F2	F3	Mean
Mean	13.01	16.84 (±0.240)	19.05	19.42	17.08
C		16.78 (±0.340)	19.52	19.38	18.56 (±0.196)
D		16.90	18.58	19.45	18.31
B		16.36 (±0.340)	18.58	19.07	18.00 (±0.196)
A		17.33	19.52	19.76	18.87
S14	14.20	17.71 (±0.340)	20.33	20.14	18.09 (±0.170)
S28	11.82	15.97	17.77	18.69	16.06

OMITTING FO

CB	DB	CA	DA
17.83	18.18 (±0.277)	19.30	18.44
C S14	D S14	C S28	D S28
19.37	19.41 (±0.277)	17.75	17.21
B S14	A S14	B S28	A S28
18.89	19.90 (±0.277)	17.11	17.84

64/C/19.3

ROW SPACING

% WARE

	FO	F1	F2	F3	Mean
Mean	52.8	59.2	61.0	63.3	59.1
C		56.8	60.3	64.9	60.7
D		61.6	61.7	61.6	61.6
B		60.5	59.9	61.8	60.7
A		57.9	62.2	64.8	61.6
S14	44.4	50.0	54.8	56.6	51.4
S28	61.2	68.4	67.3	70.0	66.7

OMITTING FO

CB	DB	CA	DA
60.7	60.7	60.7	62.5
C S14	D S14	C S28	D S28
53.2	54.4	68.2	68.9
B S14	A S14	B S28	A S28
54.0	53.6	67.5	69.6



TABLE 1

STATION DATA

STATION	DATE	TEMP	WIND	WAVE	SEA
101	10/1	10.5	10.0	10.0	10.0
102	10/2	10.5	10.0	10.0	10.0
103	10/3	10.5	10.0	10.0	10.0
104	10/4	10.5	10.0	10.0	10.0
105	10/5	10.5	10.0	10.0	10.0

STATION DATA

STATION	DATE	TEMP	WIND	WAVE	SEA
106	10/6	10.5	10.0	10.0	10.0
107	10/7	10.5	10.0	10.0	10.0
108	10/8	10.5	10.0	10.0	10.0
109	10/9	10.5	10.0	10.0	10.0
110	10/10	10.5	10.0	10.0	10.0

64/C/20.1

## SOIL STRUCTURE 2

Effects of peat and subsoiling - Woburn Stackyard Field, plot 6 of Continuous Barley site red beet 1963, carrots 1964.

Design: 4 randomised blocks of 5 plots each, with plots split in 1964 for test of P. Two blocks were subsoiled.

Area of each plot: Red beet 1963: 0.0016, carrots 1964: 0.0008.

Area harvested: Red beet 1963: 0.0011, carrots 1964: 0.0006.

Treatments. All combinations of:-

- |             |                                                                                                                                                                                                                    |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Blocks      | 1. Subsoiling: None (S0), subsoiled (S1) by hand to depth of 20 inches in 1963.                                                                                                                                    |
| Whole plots | 2. Peat: None (0) - 2 plots per block, 62.5 cwt peat dry matter, applied to top 2 inches of soil alone (Sb), or with peat dug in to a depth of 8 inches, either at the same rate (Dg1) or at twice the rate (Dg2). |
| Sub plots   | 3. P test (1964 only): None (P0), 0.6 cwt (P1) P205 as triple superphosphate.                                                                                                                                      |

Basal dressings: Monoammonium phosphate, potassium nitrate and magnesium sulphate to supply the following:-

Red beet 1963: 200 lb N, 250 lb K and 500 lb Mg, all applied before digging except 82 lb N, applied as ammonium nitrate, half before and half after digging.

Carrots 1964: 100 lb N, 75 lb P, 200 lb K and 50 lb Mg. All Mg and four fifths NPK were dug in. The remaining NPK was applied to seedbed.

Cultivations, etc.:

Red beet 1963: Ground chalk applied at 30 cwt, basal dressings and half Dg2 peat applied, all plots rotary cultivated, remainder of Dg2 peat and all Dg1 applied, all plots rotary cultivated second time: Apr 18, 1964. Plots dug, appropriate blocks subsoiled, ground chalk applied at 10 cwt: Apr 19. Sb peat applied and pricked in: Apr 23. Seedbed N applied, seed drilled at 15 lb: May 15. Sprayed with DDT at 0.6 lb in 20 gals: June 7. Singled: July 2. Sprayed with a mixture of menazon, DDT and gamma BHC at 1.5 fluid oz in 40 gals: July 31. Lifted: Aug 8. Variety: Detroit Globe.

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Carrots 1964: Dg peat and fertilisers applied, plots dug: Mar 6, 1964.  
Sb peat and fertilisers applied and worked in: Apr 23. Seed  
drilled at 7 lb: Apr 27. Sprayed with DDT at 0.6 lb in 20 gals:  
May 20. Singled: June 4. Sprayed 5 times with a mixture of  
menazon, DDT and gamma BHC at 1.5 fluid oz in 40 gals : June 25,  
July 14, 21 and 28, Aug 7. Lifted: Sept 2. Variety: Autumn  
King Red Cored.

NOTE: Soil samples were taken for PK analysis and crop samples for  
estimation of dry matter and chemical analysis.

Standard errors per plot.

Red beet 1963

Roots:	0.608 or 9.1% (8 d.f.)
Tops:	0.376 or 8.6% (8 d.f.)
Roots and tops:	0.974 or 8.8% (8 d.f.)

Carrots 1964

Roots:	Whole plot: 0.563 or 3.5% (8 d.f.)
	Sub plot: 0.915 or 5.6% (10 d.f.)
Tops:	Whole plot: 0.286 or 5.2% (8 d.f.)
	Sub plot: 0.512 or 9.4% (10 d.f.)
Roots and tops:	Whole plot: 0.800 or 3.7% (8 d.f.)
	Sub plot: 1.385 or 6.4% (10 d.f.)



64/C/20.3

SUMMARY OF RESULTS

RED BEET 1963

	0	Sb	Sb+Dg1	Sb+Dg2	Mean
ROOTS					
	(±0.304)*		(±0.430)*		
S0	5.63	7.43	6.66	7.49	6.57
S1	5.65	7.37	7.63	7.56	6.77
Mean	5.64 (±0.215)	7.40	7.14 (±0.304)	7.52	6.67

TOPS

	(±0.188)*		(±0.266)*		
S0	3.88	4.73	4.05	4.63	4.24
S1	4.04	4.80	4.57	4.88	4.47
Mean	3.96 (±0.133)	4.77	4.31 (±0.188)	4.76	4.35

ROOTS AND TOPS

	(±0.487)*		(±0.689)*		
S0	9.52	12.17	10.71	12.12	10.80
S1	9.69	12.17	12.20	12.45	11.24
Mean	9.60 (±0.344)	12.17	11.46 (±0.487)	12.28	11.02

\* For use in horizontal and interaction comparisons only



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#### SOIL STRUCTURE 4

The effects of Krilium and peat - Woburn Stackyard Field, plot 6 of Continuous Barley site, red beet 1964.

Design: 3 randomised blocks of 4 plots each.

Area of each plot: 0.0006. Area harvested: 0.0005.

Treatments. All combinations of:-

1. Krilium: None (0), Krilium CRD 189 at 10 cwt active ingredient (Kr).
2. Peat: None (0), 90 cwt peat dry matter (Pt). The Krilium and peat were applied to the seedbed and worked into the top 2 inches.

Basal dressing: Monoammonium phosphate, potassium nitrate, ammonium nitrate and magnesium sulphate to supply 200 lb N, 75 lb P, 250 lb K, 50 lb Mg. All fertilisers were dug in except one fifth N which was applied to the seedbed and worked in.

Cultivations, etc.: Ground chalk applied at 2 tons, plots rotavated, fertilisers applied, plots dug: Apr 13, 1964. Krilium and peat applied, all plots worked with drags: Apr 29. Ground chalk applied at 1 ton and one fifth N applied, seed drilled at 30 lb: May 1. Sprayed with DDT at 0.6 lb in 20 gals: May 20. Singled: June 15. Sprayed 3 times with a mixture of menazon, DDT and gamma BHC at 1.5 fluid oz in 40 gals: June 25, July 14 and 21. Lifted: Aug 5. Variety: Detroit Globe.

NOTE: Crop samples were taken for estimation of dry matter and chemical analysis.

Standard errors per plot.

Roots:	0.711 or 5.1% (6 d.f.)
Tops:	0.465 or 6.5% (6 d.f.)
Roots and Tops:	1.160 or 5.5% (6 d.f.)



64/C/21.2

SUMMARY OF RESULTS

	O	Pt	Mean
ROOTS			
	( $\pm 0.410$ )		( $\pm 0.290$ )
O	12.64	13.04	12.84
Kr	13.60	16.12	14.86
Mean ( $\pm 0.290$ )	13.12	14.58	13.85
TOPS			
	( $\pm 0.269$ )		( $\pm 0.190$ )
O	6.89	6.64	6.77
Kr	7.05	7.94	7.50
Mean ( $\pm 0.190$ )	6.97	7.29	7.13
ROOTS AND TOPS			
	( $\pm 0.670$ )		( $\pm 0.474$ )
O	19.52	19.69	19.60
Kr	20.65	24.06	22.35
Mean ( $\pm 0.474$ )	20.08	21.88	20.98