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ROTHAMSTED
RESEARCH

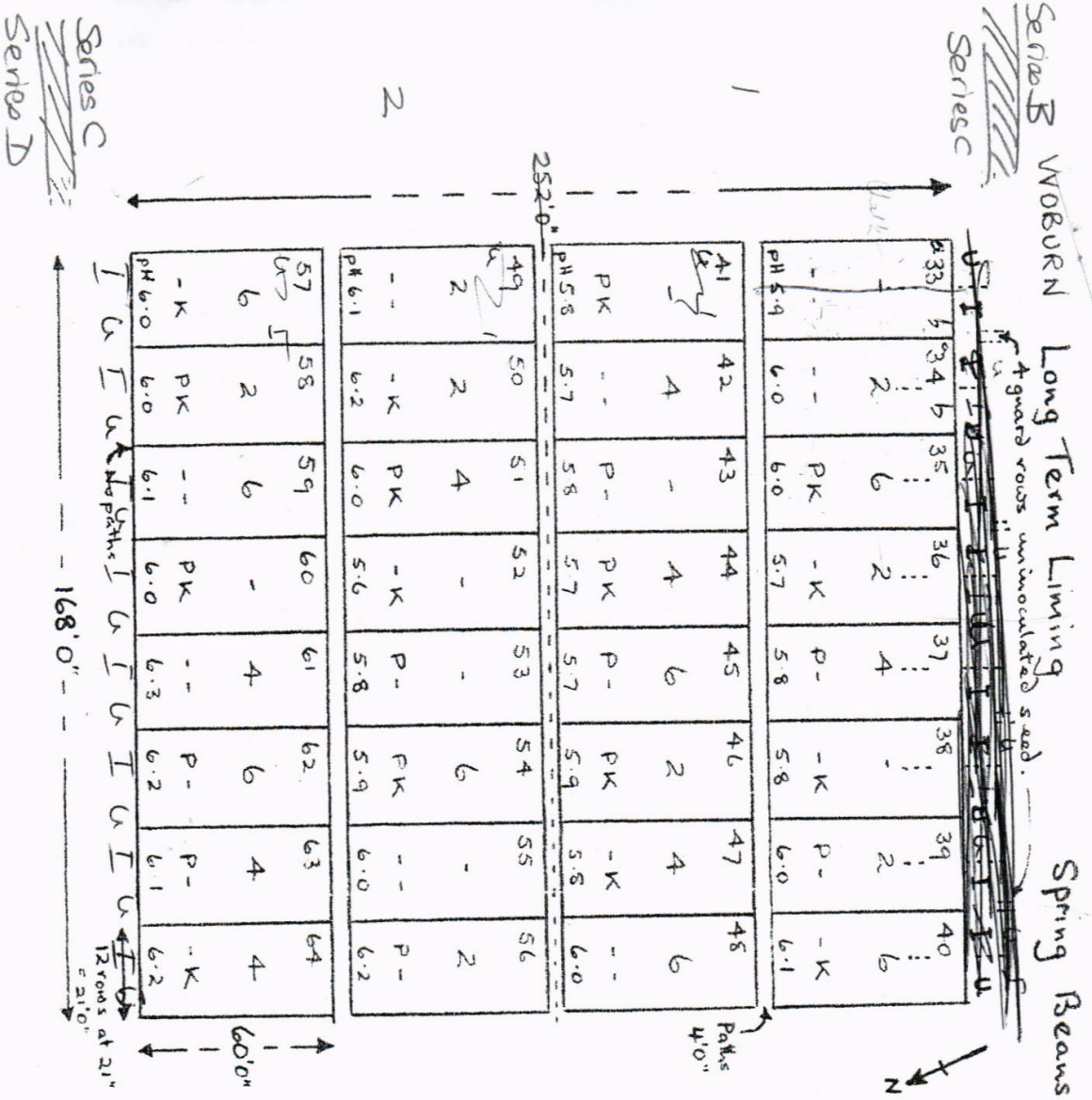
Collection of Plans for the Woburn Long-term Liming Experiment

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Default Title

Rothamsted Research

Rothamsted Research (1962 - 1997) *Default Title* ; Collection Of Plans For The Woburn Long-Term Liming Experiment, pp 1 - 31



STACYARD Series C 1st year 1962
Code letter WLL/

TREATMENTS per acre

- , 2, 4, 6 None, 2, 4, 6 tons CaCO₃
as ground chalk

(chalk analysis: Sample No % CaCO₃)

- , P None, 0.5 cent P₂O₅ as superphosphate

- , K None, 1.0 cent K₂O as muriate of potash.

U, I Uninoculated, inoculated seed (P.S.N.)
Basal manuring: None (10 column of 4 sub-plots)

Variety: Spring Tick
split for seed inoculation

Design: 2 blocks of 16 plots/analysis to include covariance with pH.

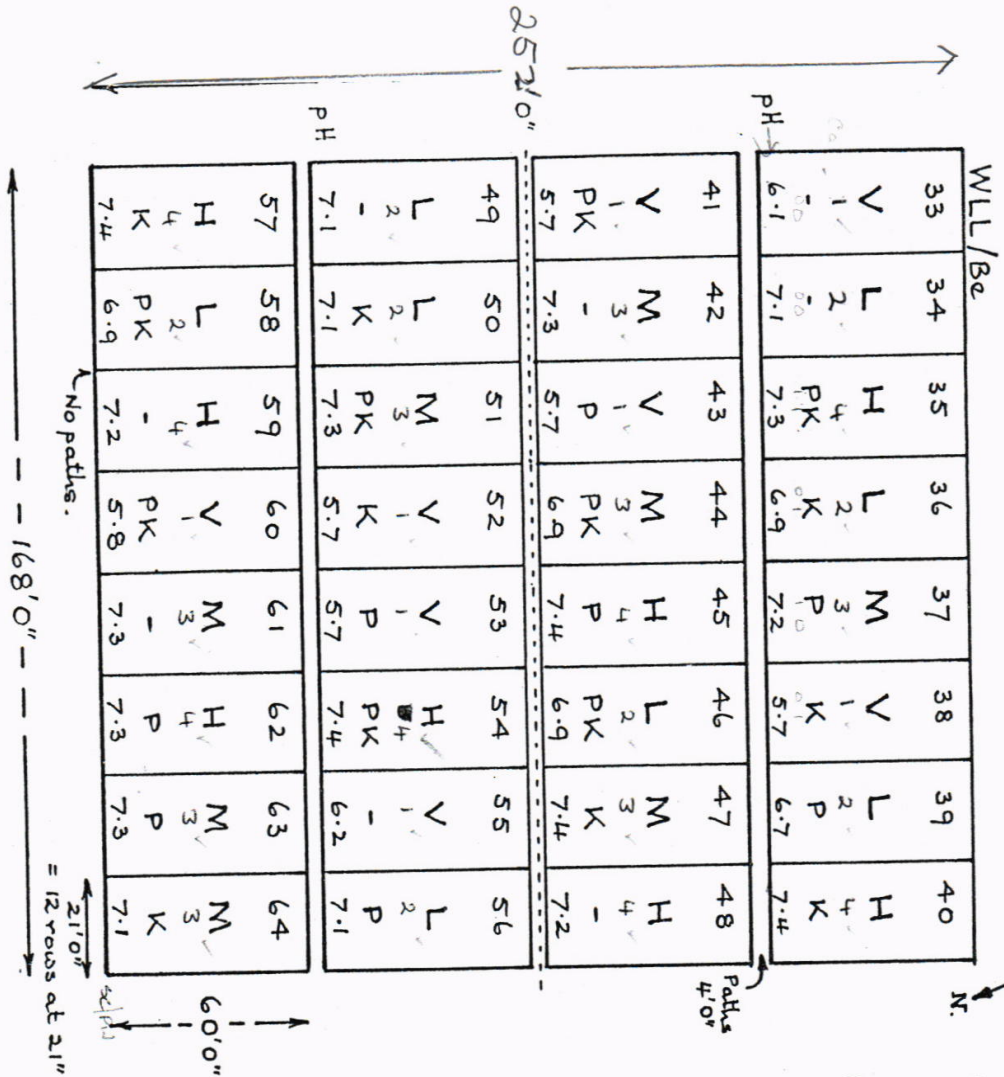
Plot area: 21'0" x 60'0" = 0.0289 acre

Sub-plots: 4 rows x 21" x 60'0"

Harvested = 0.0096 acre.

Note: Simazine weed killer to be applied to crop.

Woburn Long Term Liming



STACKYARD Series C 1963

TREATMENTS. per acre.
2nd Year.

V, L, M, H None, 2, 4 3/4, 7 1/2 tons CaCO₃
1 2 3 4 as ground chalk.

(Chalk applied at -, 2, 4, 6 tons in spring 1962
15 cut chalk p.a. added to 'M' and 30 cut to 'H'
on 19.10.62)

pH soil pH after harvest 1962 (16.10.62)
P 0.5 cut P₂O₅ as superphosphate.
K 1.0 cut K₂O as muriate of potash.

Basal manuring: None.

Variety: 30B Sown: March 27.
(Roh. seed) Seed rate: 200lb p.a.

Design: 2 blocks of 16 plots.
(analysis to include co-variance with pH)

Plot area: 21'0" x 60'0" = 0.0289 acre

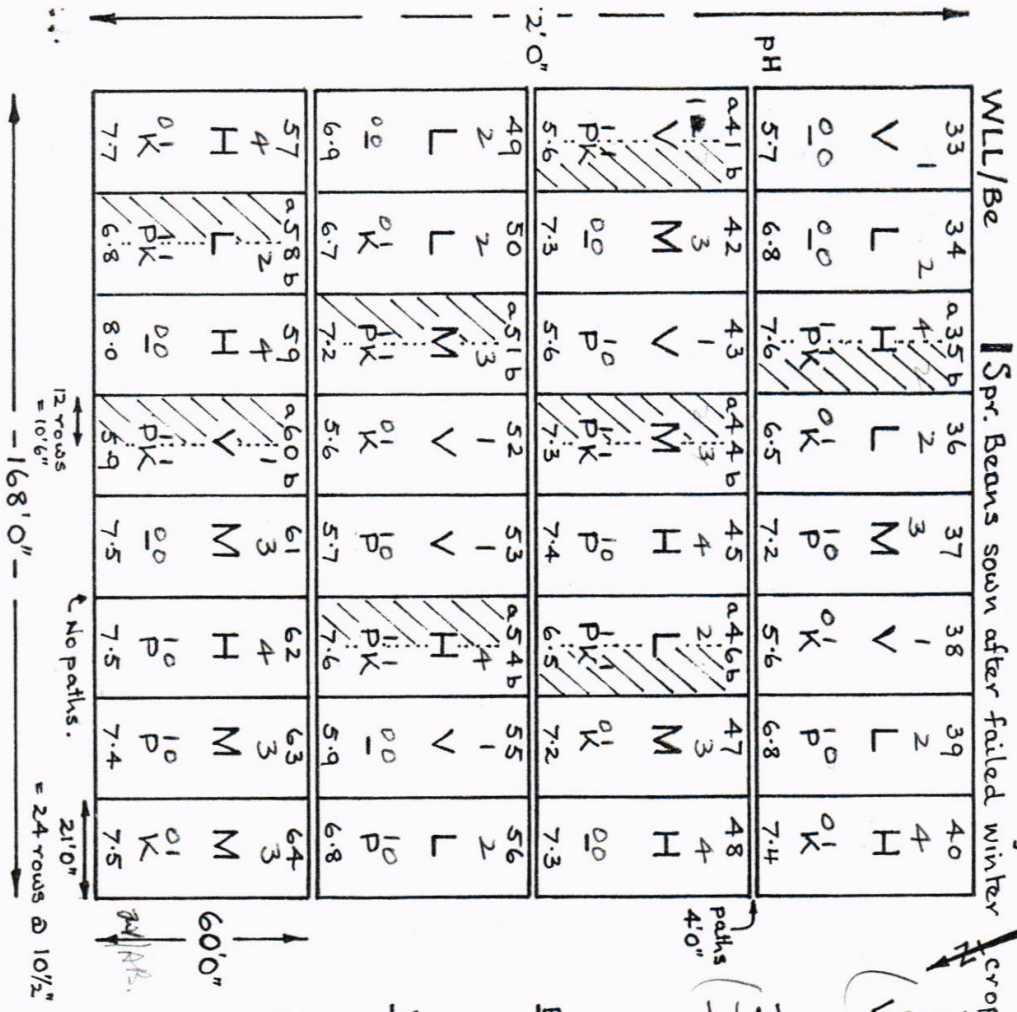
Harvested: 5 rows at 21" x 60'0" = 0.0121 acre

Symbols: V Very Low pH.
L Low. M Medium.
H High pH.

WOBURN Long Term Liming

BEANS 3rd year

STACKYARD Series C 1964
Sponsor: J.R. Moffatt, J. Rolton.

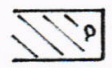


TREATMENTS. per acre

(V, L, M, H)

None, 2, 4³/₄, 7¹/₂ tons CaCO₃ applied as ground chalk (1962-63)
pH of soil samples taken 25.9.63.

To winter sown beans only.



0.5 cwt P₂O₅ as superphosphate } Broadcast
1.0 cwt K₂O as muriate of potash } east.
PK placement drilled on shaded sub-plots, as compound fertiliser (0:14:28) to winter sown beans

Basal manuring, per acre

0.25 cwt N as 'Nitro-chalk' 21 broadcast to winter beans.

* No seedbed cultivations done for spring sowing.

Variety: Spring Tick* Seed rate: 200lb/acre

sown: March 13 (Winter beans sown Nov 8, 1963)

Simazine applied twice: Nov 9, 1963 and April 6 1964.

Design: 2 blocks of 16 plots.

(Analysis to include covariance with pH)

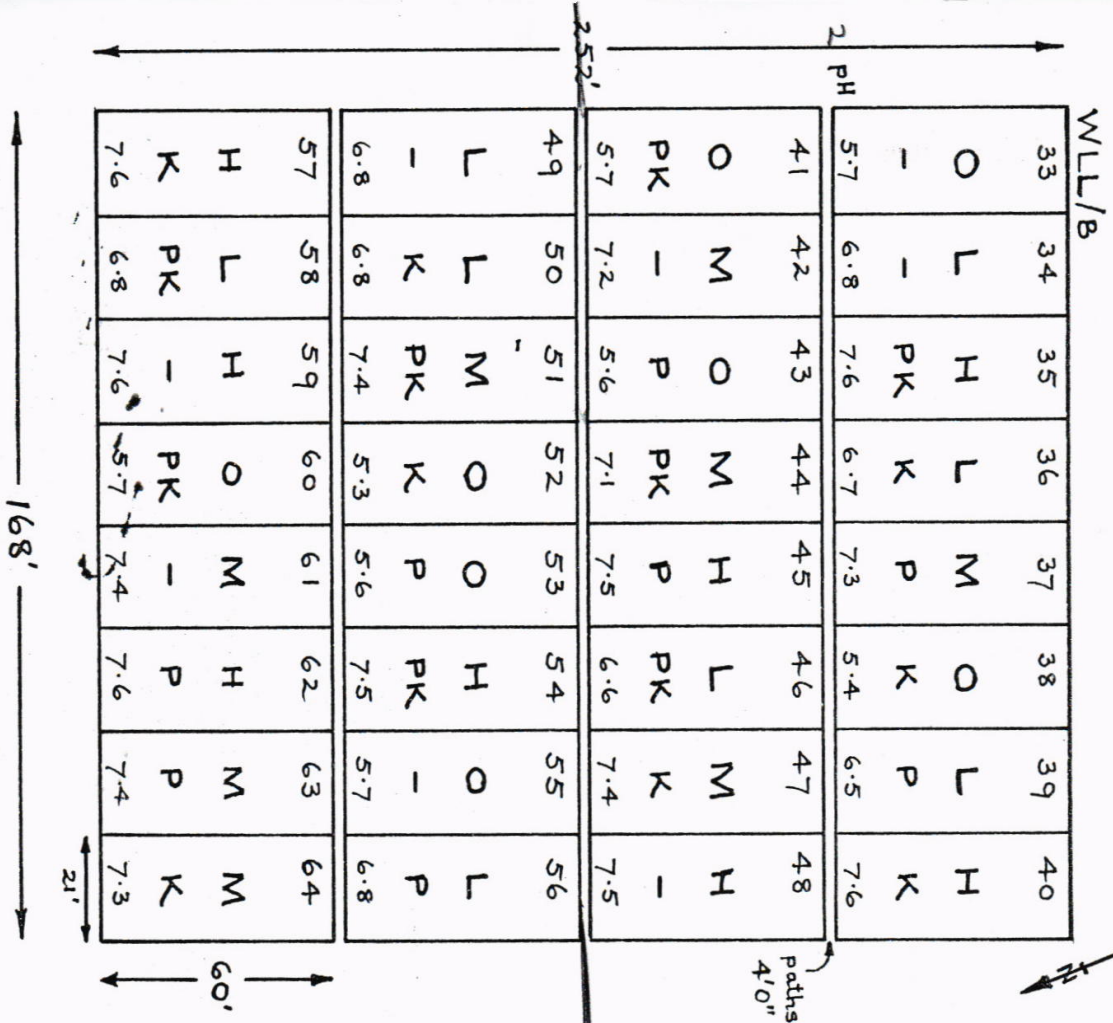
Plot area: 21'0" x 60'0" = 0.0289 acre

sub-plot 10'6" x 60'0" = 0.0145 acre

Note: Treatment and basal manures applied in autumn were not repeated for spring crop.

Woburn Long Term Liming BARLEY

STACKYARD Series C 4th year 1965
Sponsor: J. Bolton.



TREATMENTS per acre

O, L, M, H None, 2, 4³/₄, 7¹/₂ tons CaCO₃ applied as ground chalk (1962-63)

PH pH of soil samples taken 24.11.64

In seedbed - broadcast

P 0.5 cwt P₂O₅ as superphosphate
K 1.0 cwt K₂O as muriate of potash

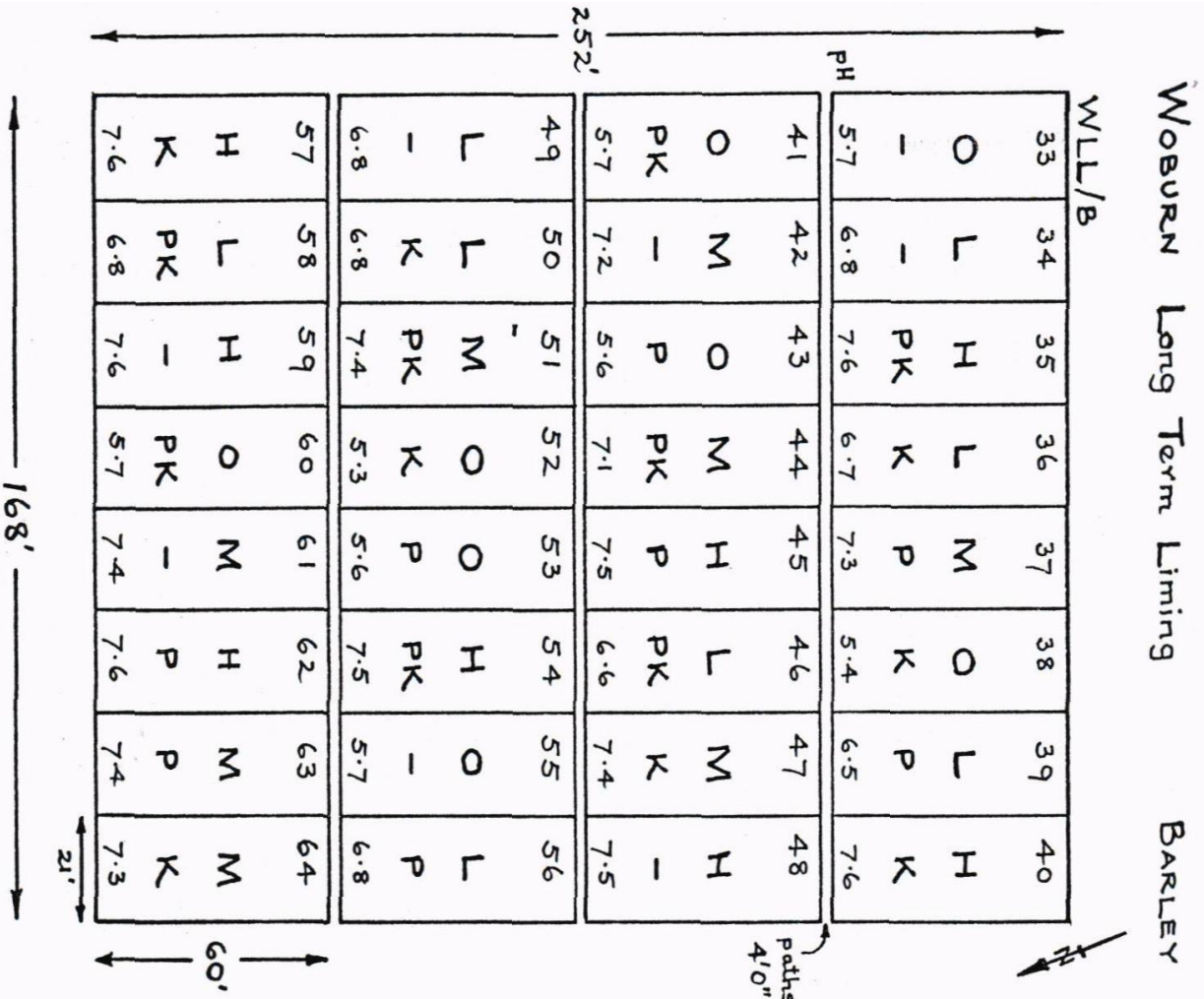
Basal manuring - per acre

0.5 cwt N as 'Nitro-Chalk' 21 combine drilled.

Variety: Mavis Badger Sown: March 29.

Design: 2 blocks of 16 plots

Plot area: 21'0" x 60'0" = 0.0289 acre



STACKYARD Series C 5th year 1966
 Sponsor: J. Bolton.

TREATMENTS per acre

O, L, M, H None, 2, 4³/₄, 7¹/₂ tons CaCO₃ applied
 as ground chalk (1962-63)

pH of soil samples taken 24.11.64

In seedbed - broadcast

P 0.5 cwt P₂O₅ as superphosphate } Applied
 K 1.0 cwt K₂O as muriate of potash } by hand

Basal manuring - per acre

0.5 cwt N as sulphate of ammonia applied
 by fertiliser drill.

Variety: Mavis Badger Sown: March 11

Design: 2 blocks of 16 plots

Plot area: 21'0" x 60'0" = 0.0289 acre

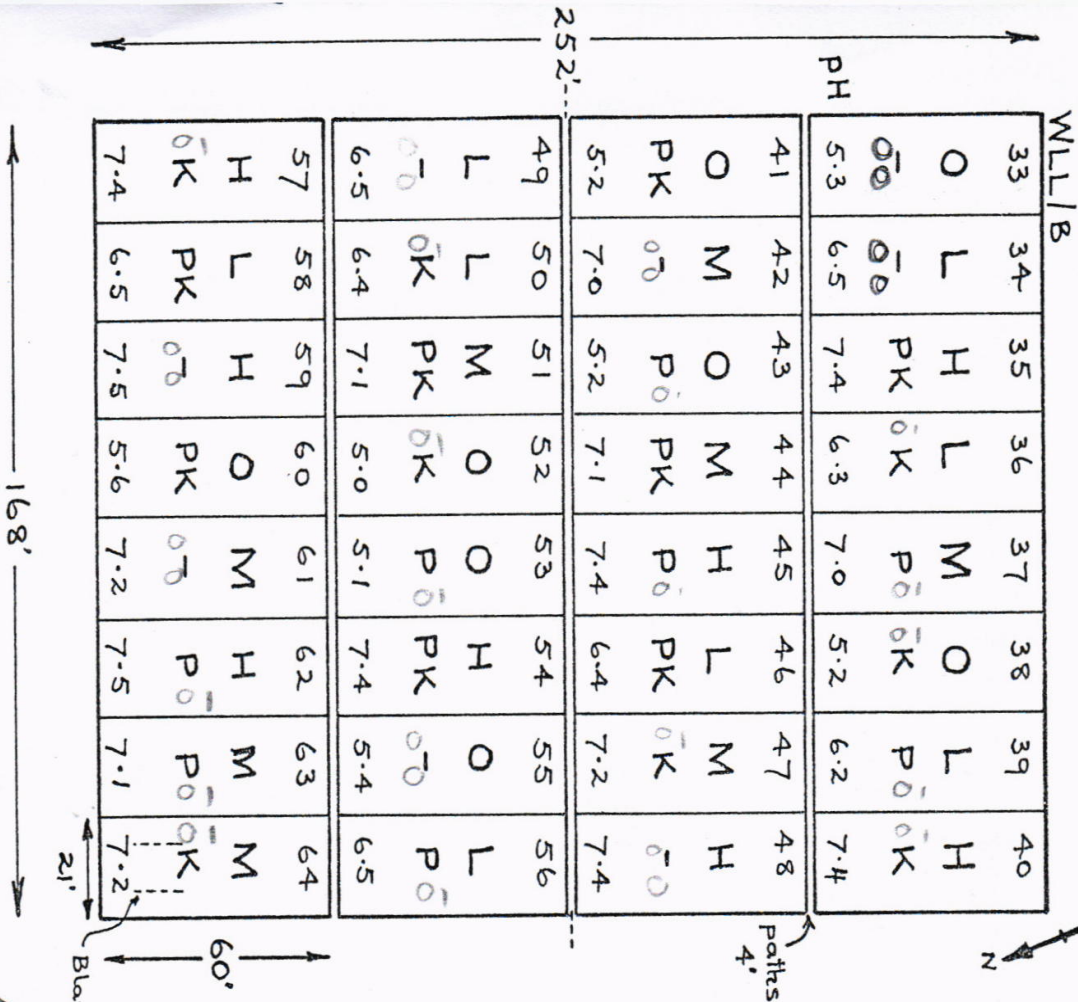
C/3

WOBURN Long Term Liming

BARLEY

STACKYARD Series C 6th year 1967
Sponsor: J. Bolton

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TREATMENTS per acre

O, L, M, H None, 2, 4³/₄, 7¹/₂ tons CaCO₃ applied as ground chalk (1962-63)

PH pH of soil samples taken 11 Nov. 1966.

In Seedbed - broadcast

P 0.5 cwt P₂O₅ as superphosphate
K 1.0 cwt K₂O as muriate of potash.

Basal manuring - per acre

1.0 cwt N as sulphate of ammonia

Variety: Maris Badger Seed rate =

Sown:

Design: 2 blocks of 16 plots

Plot area: 21' x 60' = 0.0289 acre

Harvested:

9'4" x 60' = 0.0129 acre

#

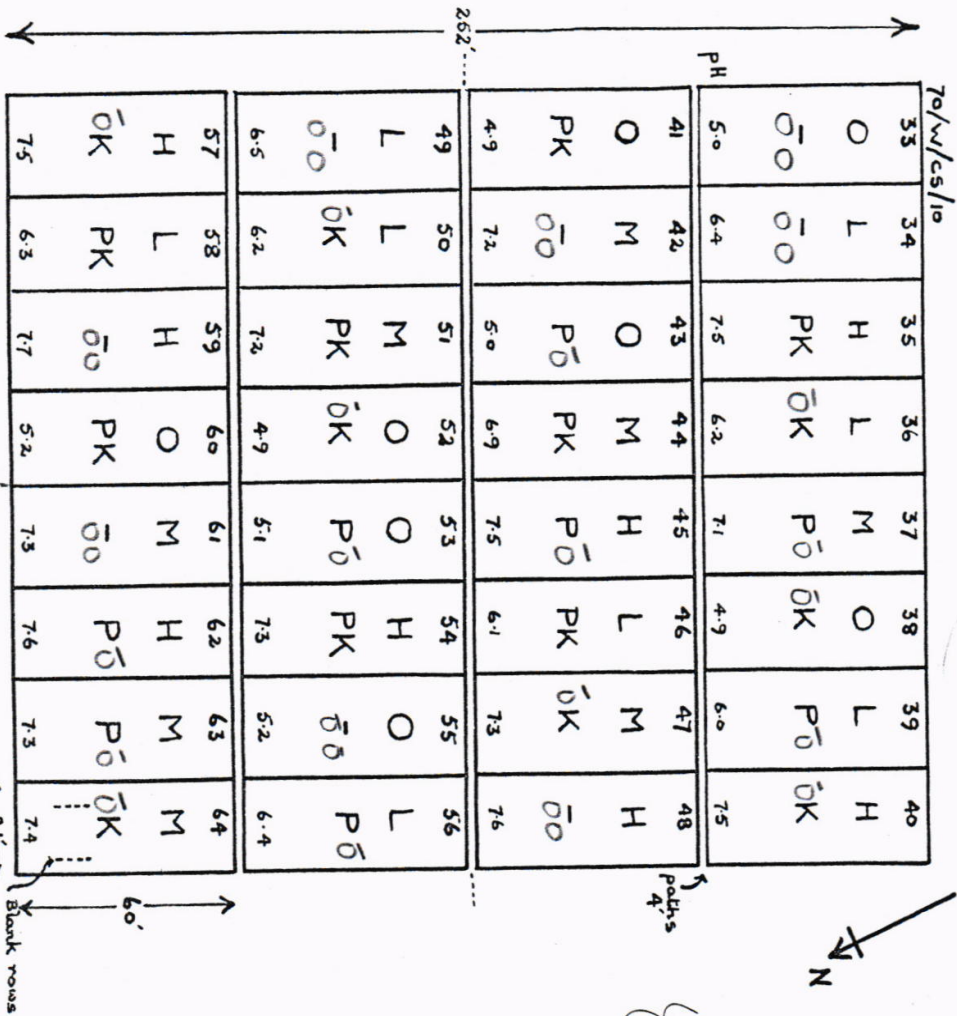
WOBURN

LONG-TERM LIMING

Barley

STACKYARD Series C 9th year 1970
Sponsors: J. Bolton, D.B. Slope.

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TREATMENTS per acre
O, L, M, H None, 2, 4 3/4, 7 1/2 tons CaCO₃ applied
as ground chalk (1962-63)
PH of soil samples taken - 8 Sept 1967.

In Seedbed - broadcast
(O P) 0.5 cat P₂O₅ as Superphosphate
(OK) 1.0 cat K₂O as muriate of potash

BASAL MANURING per acre
1.0 cat N as 'Nitro-chalk' 21.

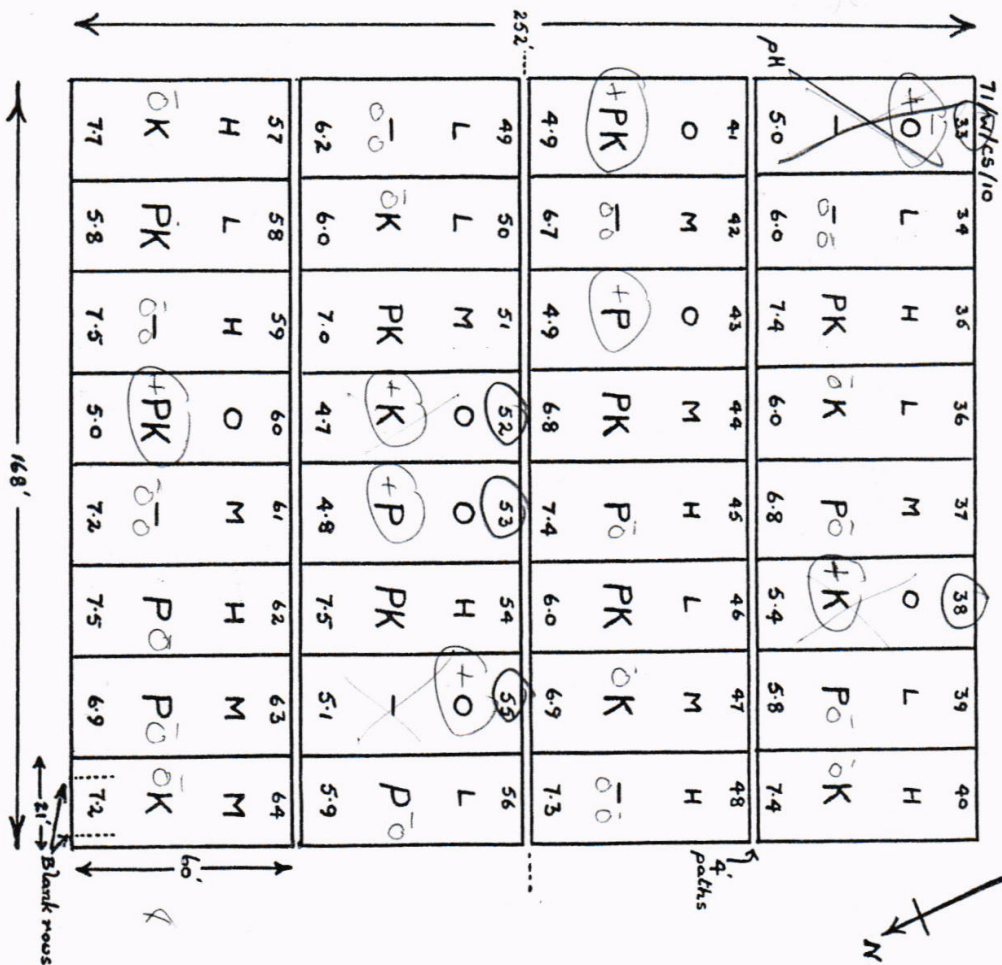
VARIETY : Julia Seed rate: 135 lb
Sown: 26 Mar.

DESIGN:
2 blocks of 16 plots

PLOT AREA : 21' x 60' = 0.0289 acre
harvested : 9'4" x 60' = 0.0129 acre

WOBURN LONG-TERM LIMING Barley

STACKYARD series C 10th year 1971
Sponsors: T. Bolton, D.B. Slope.



TREATMENTS per acre (hectare)
O, L, M, H None, 2, 4 3/4, 7 1/2 tons (None, 5, 12, 19 tonnes) CaCO₃
applied as ground chalk (1962-63)
pH of soil samples taken - Sept 1970

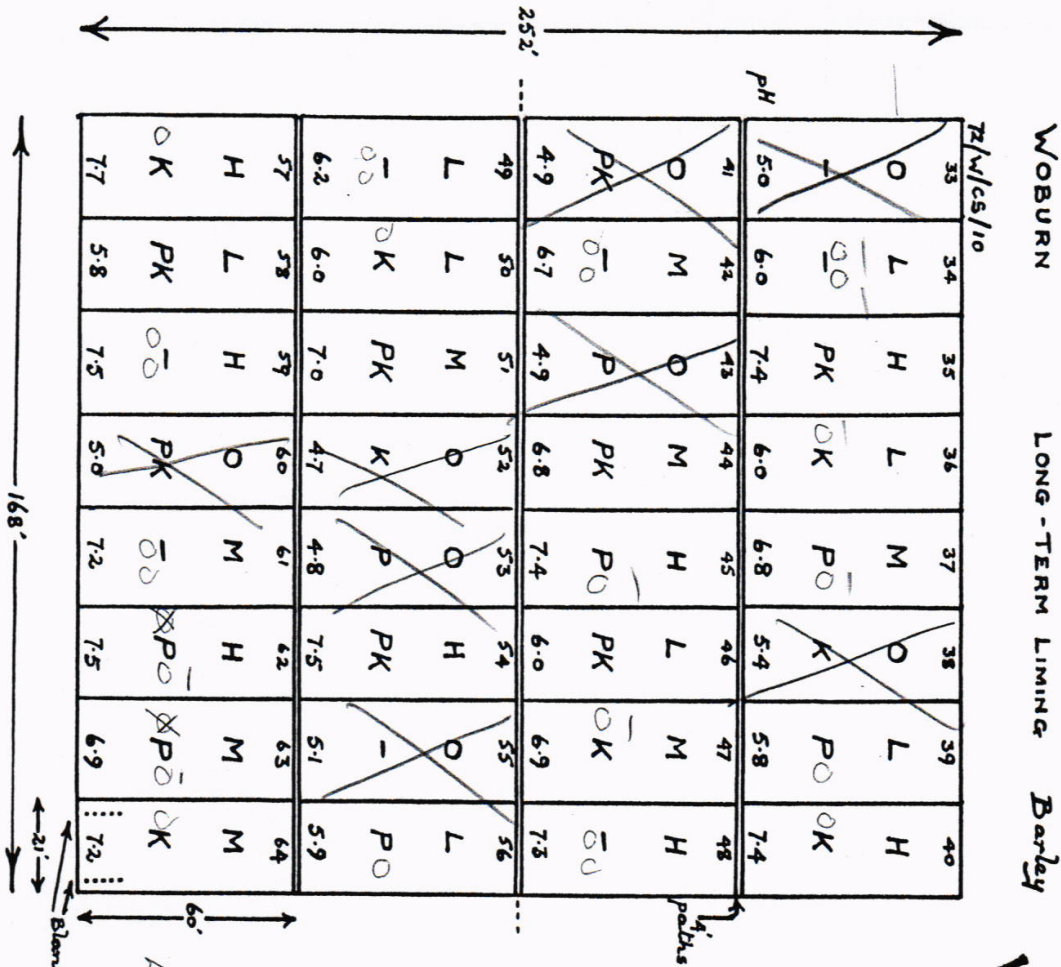
In Seedbed - broadcast
P 0.5 cwt (63kg) P₂O₅ as superphosphate
K 1.0 cwt (126kg) K₂O as muriate of potash

BASAL MANURING per acre (hectare)
1.0 cwt (126 kg) N as Nitro-chalk 21. on 4 Mar.

VARIETY : Jilia seed rate: 140lb (157kg)
Sown: 17 Mar

DESIGN : 2 blocks of 16 plots

PLOT AREA : 21' x 60' = 0.0289 acre (0.0117ha)
harvested : 9'4" x 60' = 0.0129 acre (0.0052ha)



WOBURN LONG-TERM LIMING Barley

11th year

STACKYARD series C 1972
Sponsors: T.B. Bolton, D.B. Slope.

2/12

TREATMENTS per acre (hectare)

O, L, M, H None, 2, 4 1/2, 7 1/2 tons (None, 5, 12, 19 tonnes) CaCO₃

applied as ground chalk (1963-63)

PH pH of soil samples taken Sept 1970.

In seedbed - broadcast

P 0.5 cut (63 kg) P₂O₅ as superphosphate

K 1.0 cut (126 kg) K₂O as muriate of potash

BASAL MANURING per acre (hectare)

1.0 cut (126 kg) N as 'Nitro-chalk' 2:1.

VARIETY : Julia (dressed with ethirimol)

Seed rate: 137 lb (154 kg) Sown: 15 Mar.

DESIGN:

2 blocks of 16 plots

PLOT AREA:

21' x 60' = 0.0289 acre (0.0117 ha)

harvested:

9'4" x 60' = 0.0129 acre (0.0052 ha)

WOBURN

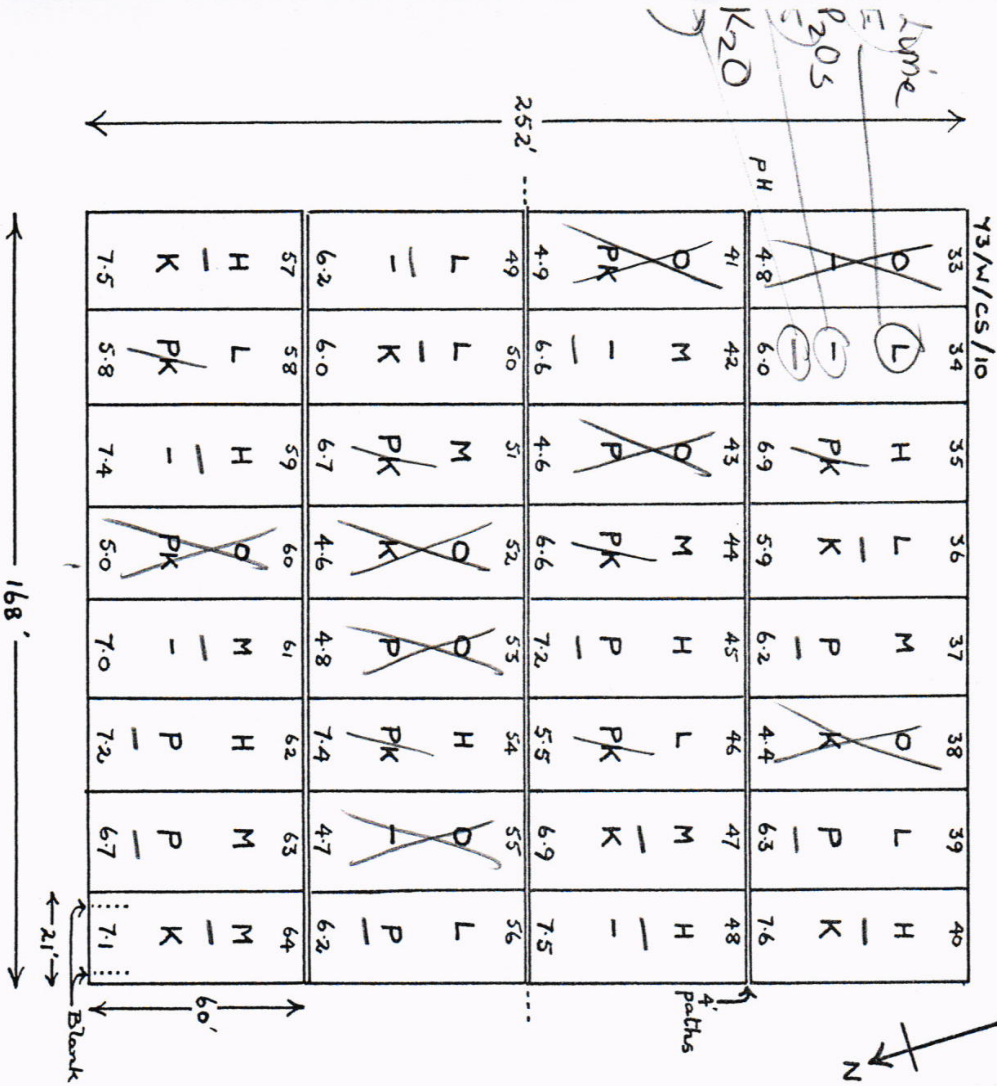
LONG-TERM LIMING

Barley

12th year

STACKYARD Series C 1973
Sponsors: T. Bolton, D.B. Slope

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TREATMENTS per acre (hectare)

O, L, M, H None, 2, 4 3/4, 7 1/2 tons (None, 5, 12, 19 tonnes) CaCO₃

applied as ground chalk (1962-63)

PH pH of soil samples taken Oct 1972

In seedbed - broadcast

P 0.5 cwt (63kg) P₂O₅ as superphosphate

K 1.0 cwt (126kg) K₂O as muriate of potash

BASAL MANURING per acre (hectare)

1.0 cwt (126 kg) N as 'Nitro-chalk' 25

VARIETY : Julia (dressed with ethirimol)

Seed rate: 145lb (65kg) Sown: 12 Mar

DESIGN:

2 Blocks of 16 plots

PLOT AREA:

21' x 60' = 0.0289 acre (0.0117 ha)

harvested:

94' x 60' = 0.0129 acre (0.0052 ha)

WOBURN

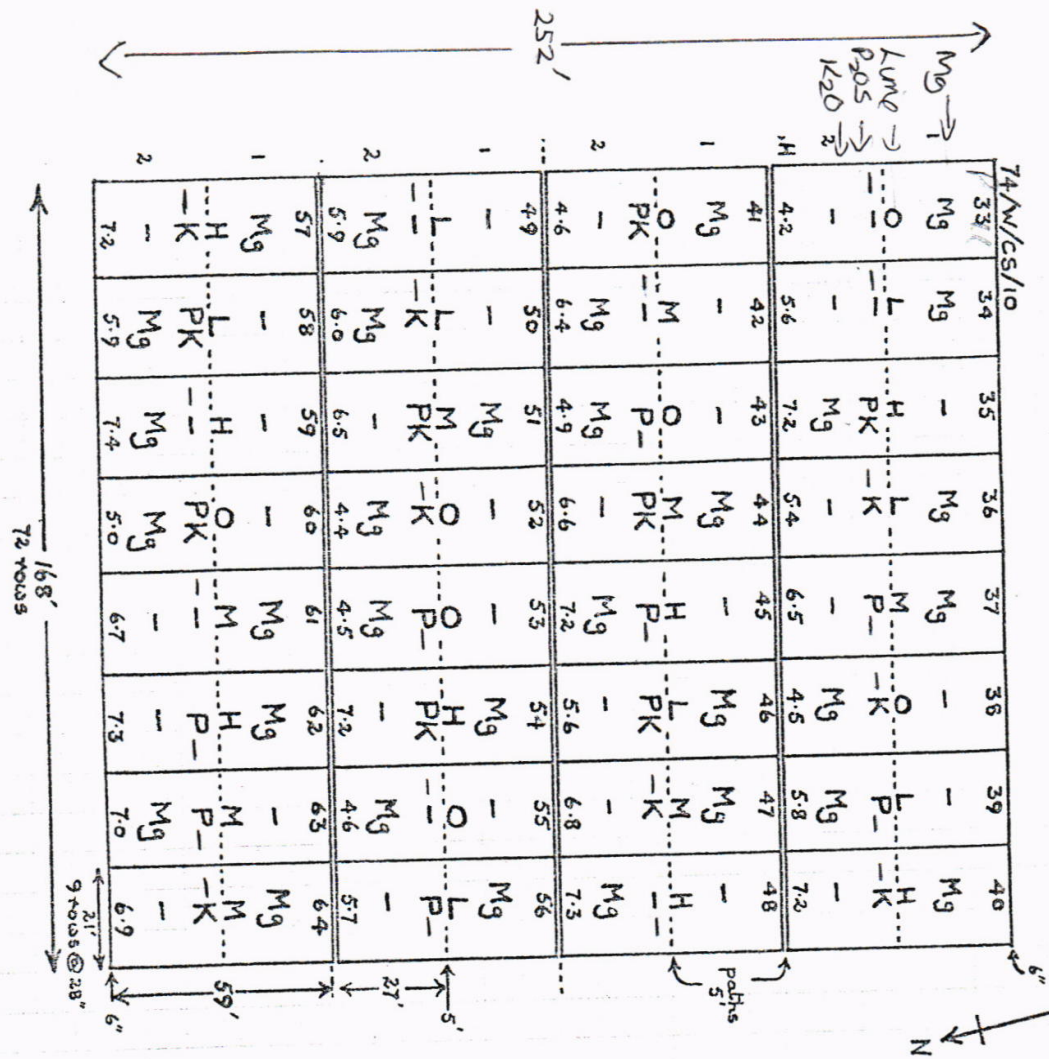
LONG-TERM LIMING

Potatoes

13th year

STACKYARD Series C 1974
Sponsor: T. Bolton

212



TREATMENTS per acre (hectare)

Whole Plots

O, L, M, H None, 2, 4 3/4, 7 1/2 tons (None, 5, 12, 19 tonnes) CaCO₃
applied as ground chalk (1962-63)

PH pH of soil samples taken Oct 1973

P 1.0 cut (126 kg) P₂O₅ as superphosphate } Applied broadcast

K 1.5 cut (188 kg) K₂O as muriate of potash } seedbed

Half Plots

- , Mg None, 100lb (112kg) Mg as sulphate of magnesia (10% Mg)

BASAL MANURING per acre (hectare)

900lb (1009kg) Nitro-chalk 25 broadcast before planting

VARIETY : Penland Crown Planted : 17 Apr

DESIGN : 2 blocks of 16 plots, split into 2.

PLOT AREA : 21' x 59' = 0.0284 acre (0.0115ha)

Harvested : 4 rows
9'4" x 27' = 0.0058 acre (0.0023ha)

Previous Cropping:

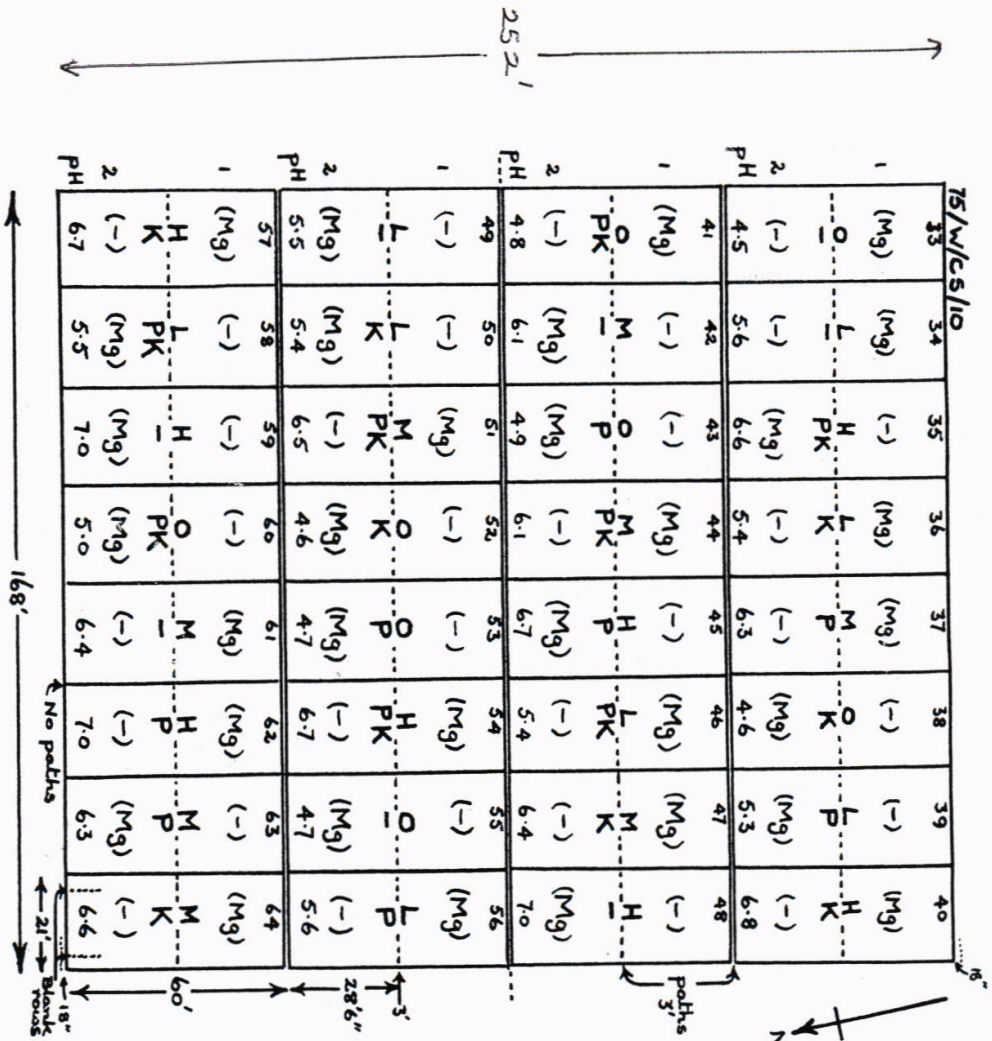
1962-64 Spring beans, 1965-67 barley, 1968 potatoes,
1969 fallow, 1970-73 barley.

WOBBURN

LONG-TERM LIMING

Spring Oats 14th year STACKYARD series C 1975

Sponsor: T. Bolton



TREATMENTS per acre (hectare)

Whole Plots

O, L, M, H None, 2, 4½, 7½ tons (None, 5, 12, 19 tonnes) CaCO₃ applied as ground chalk (1962-63)

pH of soil samples taken Feb 1975

P 0.5 cut (63kg) P₂O₅ as Superphosphate Broadcast

K 1.0 cut (126kg) K₂O as muriate of potash } in seedbed

Half Plots - Mg Residues

(-), (Mg) None, 100lb (112kg) Mg as sulphate of magnesia (10% Mg)

BASAL MANURING per acre (hectare)

71lb (80kg) N as Nitro-chalk 25.

VARIETY: Manod sown at: 180lb (202kg) Date: 20 Mar

DESIGN:

2 blocks of 16 plots, split into 2.

PLOT AREA

21' x 60' = 0.029 acre (0.0117 ha.)

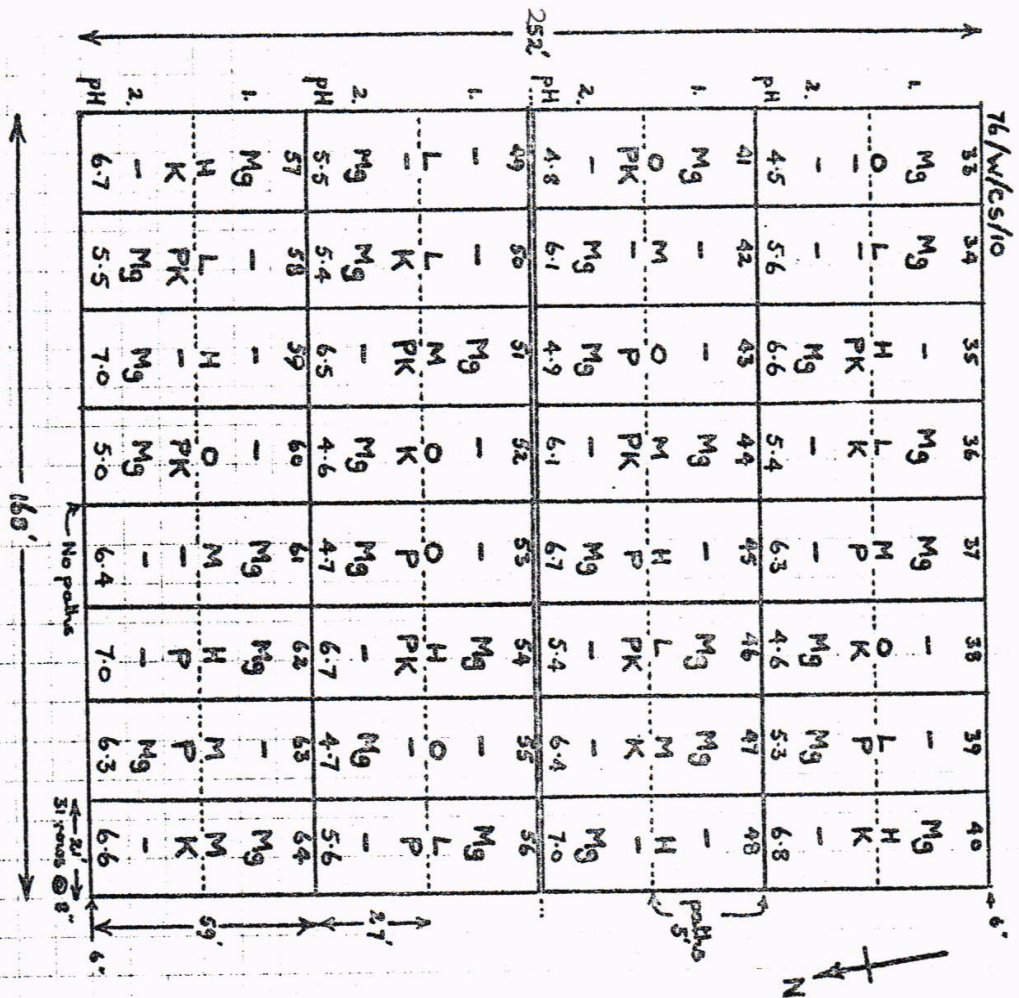
Sub-plot harvested

9'4" x 28'6" = 0.0061 acre (0.00246 ha.)

PREVIOUS CROPPING

1962-64 Spring beans, 1965-67 barley, 1968 potatoes, 1969 fallow, 1970-73 barley, 1974 potatoes.

WOBURN LONG-TERM LIMING Spring Oilseed Rape 15th year STACKYARD series c 1976 212
 Sponsor: V. Bolton.



TREATMENTS per acre (haecore)

Whole Plots

O, L, M, H None, 2, 4 1/2, 7 1/2 tons (None, 5, 12, 19 tons) cases applied as ground chalk (1962-63)

PH pH of soil samples taken Feb 1975

P 0.5 t/acre (63 kg) P2O5 as Superphosphate } Broadcast

K 1.0 t/acre (126 kg) K2O as muriate of potash, in seedbed

Half Plots

-, Mg None, 100 lb (45 kg) Mg as sulphate of magnesia (10% Mg)

Note: P, K, and Mg treatments cumulative (Mg in 1974 & 76 only) (Mg)

BASAL MANURING per acre (haecore)

600 lb (675 kg) Nitro-chalk 26

VARIETY

Maris Waptona souw: 5.5B (6 kg) Date: 31 Mar

DESIGN

2 blocks of 16 plots, split into 2.

PLOT AREA

21' x 60' = 0.029 acre (0.0117 ha.)

Sub-plot harvested

10' x 28' 6" = 0.006 acre (0.0026 ha.)

PREVIOUS CROPPING: 1962-64 Spring beans, 1965-67 barley, 1968 potatoes, 1969 fallow, 1970-73 barley 1974 potatoes 1975 oats

WOBURN

LONG-TERM LIMING

Spring oats

16th year STACKYARD series c 1977 212
 sponsor: J. Bolton

	77w/cs/10	34	35	36	37	38	39	40
1.	Mg	Mg	-	Mg	Mg	-	-	Mg
2.	-	-	H	L	M	O	L	H
PH	4.5	5.6	6.6	5.4	6.3	4.6	5.3	6.8
1.	Mg	-	-	Mg	-	Mg	Mg	-
2.	O	M	O	M	H	L	M	H
PH	4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8
1.	-	-	-	-	-	-	-	-
2.	PK	-	P	M	P	PK	K	-
PH	4.8	6.1	4.9	6.1	6.7	5.4	6.4	7.0
1.	-	-	Mg	-	-	Mg	-	Mg
2.	L	L	M	O	O	H	O	L
PH	5.5	5.4	6.5	4.6	4.7	6.7	4.7	5.6
1.	Mg	-	-	-	Mg	Mg	-	Mg
2.	H	L	H	O	M	H	M	M
PH	5.7	5.8	5.9	6.0	6.1	6.2	6.3	6.4
1.	-	-	-	-	-	-	-	-
2.	K	PK	-	PK	-	P	P	K
PH	6.7	5.5	7.0	5.0	6.4	7.0	6.3	6.6



TREATMENTS per acre (hectare)
 Whole Plots
 O, L, M, H None, 2, 4³/₄, 7¹/₂ tons (None, 5, 12, 19 tonnes) CaCO₃
 applied as ground chalk (1962-65)
 PH of soil samples taken Feb 1975
 0.5 cut (63kg) F₂O₅ as superphosphate } Broadcast
 K 1.0 cut (126kg) K₂O as muriate of potash } in seedbed
 Half Plots
 -, Mg None, 100lb (112kg) Mg as sulphate of magnesias (10²/₆ Mg)

Note: P, K and Mg treatments cumulative (Mg in 1974, 76 & 1977 only)

BASAL MANURING per acre (hectare)
 340lb (580kg) Nitro-chalk 25

VARIETY
 Manod Sown at: 180lb (202kg) Date: 31 Mar.

DESIGN
 2 blocks of 16 plots, split into 2

PLOT AREA
 21' x 60' = 0.029 acre (0.0117 ha)
 Sub-plot harvested: 9'4" x 28'6" = 0.0061 acre (0.00246 ha)

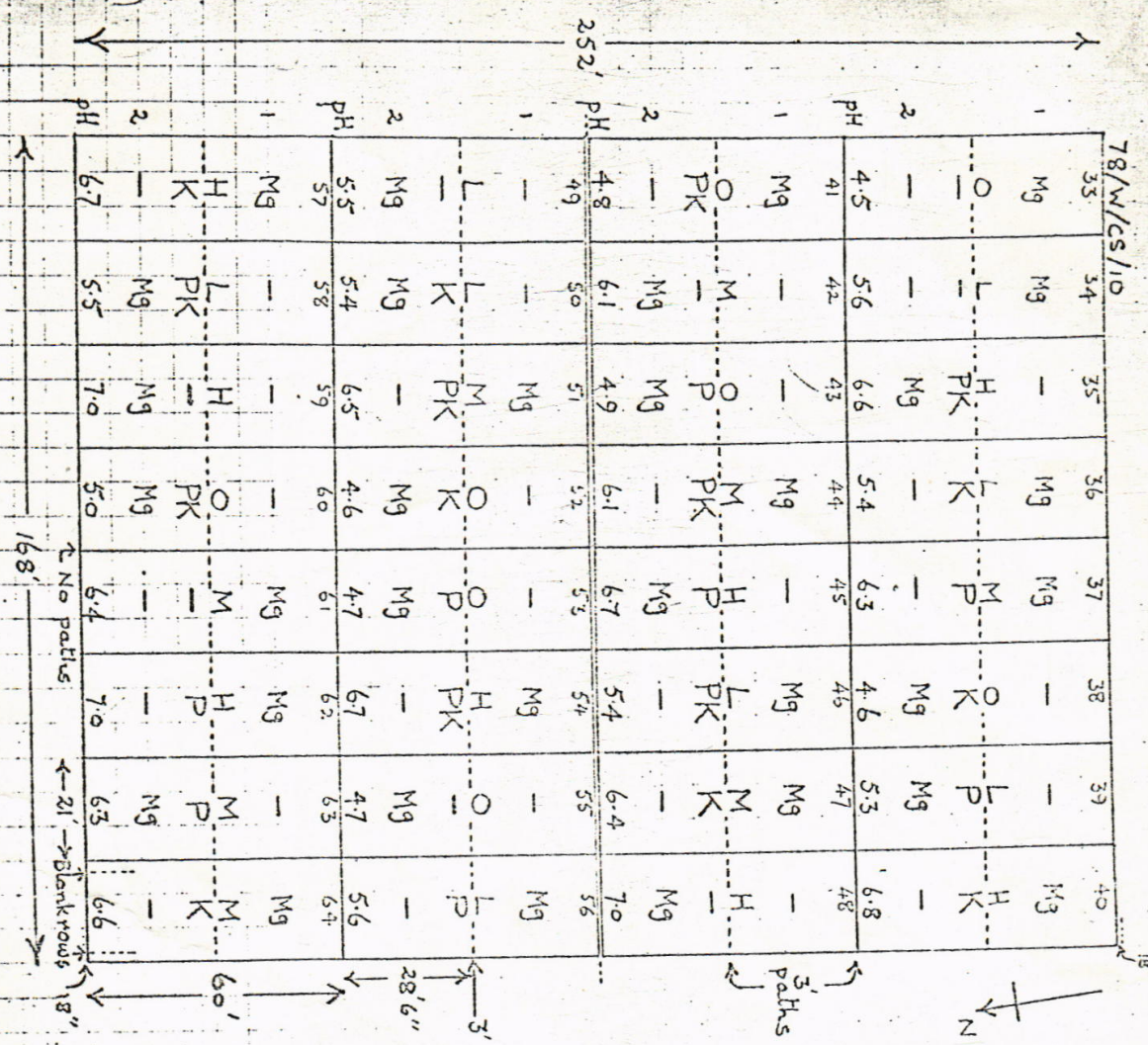
Previous cropping
 1962-64 Spring beans, 1965-67 barley, 1968 potatoes, 1969 fallow, 1970-73 barley, 1974 potatoes, 1975 Spring oats, 1976 Spring oilseed rape.

WOBBURN

LONG-TERM LIMING

Barley

17th year STACKYARD series C 1978 212
Sponsor: J. Bolton



TREATMENTS per acre (haetone)

Whole Plots
O, L, M, H None, 2, 4 3/4, 7 1/2 tons (None, 5, 12, 19 tons) CaCO₃
applied as ground chalk (1962-65)
pH of soil samples taken Feb 1975
P 0.5 cwt (65 kg) P₂O₅ as superphosphate } Broadcast
K 1.0 cwt (126 kg) K₂O as muriate of potash in seedbed

Half Plots
None, 100 lb (112 kg) Mg as sulphate of magnesium (10% N)

Notes: PK and Mg treatments cumulative (Mg in 1974, 1976, 1977 & 1978)

BASAL MANURES per acre (haetone)
1.0 cwt (126 kg) N as Nitre-chalk 25

VARIETY:
Porthos (dressed with aluminium)
Seed rate: 145 lb (162 kg) Sown: 15 Mar
Resown: 3 Apr

DESIGN:
2 blocks of 16 plots

PLOT AREA:
21 x 60' = 0.0289 acre (0.0117 ha)
harvested: 9'4" x 28'6" = 0.0561 acre (0.0246 ha)

WOBOURN

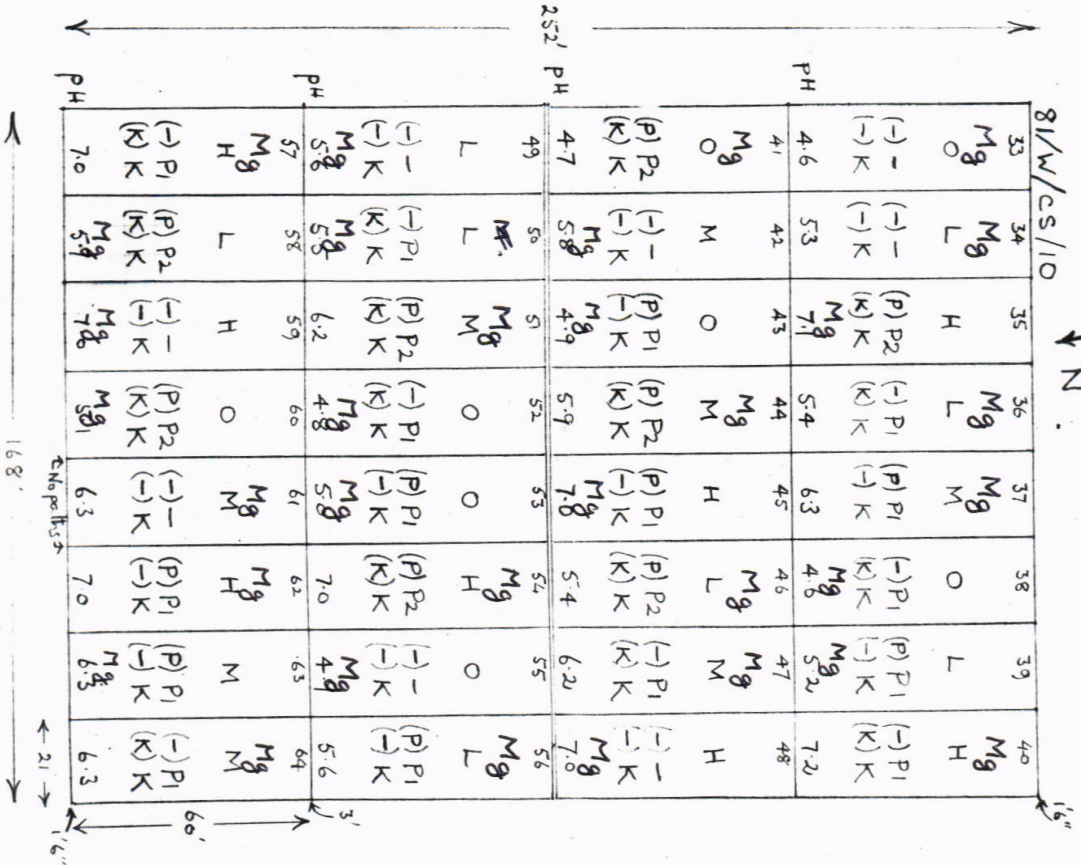
LONG-TERM LIMING

Spring Oats

20th year

STACKYARD series C 1981

Sponsors: S. McGrath, D.P. Stribley



TREATMENTS

P&K	Until 1978		From 1981		LIME
	P	K	P	K	
(-) (-) K	-	-	-	K	0
(P) (-) K	P	-	P	K	6
(-) P (-) K	-	P	-	K	14
(P) P (-) K	P	P	P	K	23

P&K until 1978 cumulative, rates depended on crop

From 1981 per ha (acre)

P₁, P₂ 25, 75 kg P (22, 67 lb P)

K 120 kg K (107 lb K)

BASAL MANURING per ha (acre)

N Nitro-chalk at 80 kg N (71 lb N)

Mg Kieserite at 100 kg Mg (89 lb Mg)

VARIETY Peniarth Sown at 180 lb (202 kg) Date: 9 Apr

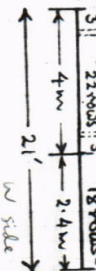
DESIGN 2 blocks of 16 plots

PLOT AREA 21' x 60' = 0.029 acre (0.0117 ha)

Harvested

275m x 60' = 0.0124 acre (0.0050 ha)

PLOT ARRANGEMENT 311 Yield & sampling 22 rows x 3 18 rows x 2.25m sown within 2.4m Rows 12.5cm apart (5'').



No weathervane or postcard without sponsors consent.

All operations by Farrow.

S.M.G.

WOBURN

LONG-TERM LIMING

Spring Oats 21st year

STACKYARD 52025 C 1982
Sponsors: S.M.G. Math, Dr. Stibbley

211

	33	34	35	36	37	38	39	40
82/W/CS/10	0	L	H	L	M	O	L	H
	-	-	P3	P1	P2	P1	P2	P1
	41	42	43	44	45	46	47	48
	O	M	O	M	H	L	M	H
	P3	-	P2	P3	P2	P3	P1	-
	49	50	51	52	53	54	55	56
	L	L	M	O	O	H	O	L
	-	P1	P3	P1	P2	P3	-	P2
	57	58	59	60	61	62	63	64
	H	L	H	O	M	H	M	M
	P1	P3	-	P3	-	P2	P2	P1

252' ← Y-axis
168' ← X-axis
No paths
← 21' →
60'
3'

TREATMENTS OF P&K

	Until winter 1978	1981	1982	Rate of P in 1982
-	-	-K	K	None
P1	K	P1K	P1K	50kg P/ha (45lb/ae)
P2	P	P1K	-K	None
P3	PK	P3K	P1K	50kg P/ha (45lb/ae)

P&K until 1978 cumulative, rates depended on crop.

Ir 1981 per ha (ae)
P1, P3 25, 75 kg P (22, 67 lb P)
K 120 kg K (107 lb K)

LIME

	Total 1962-1978 t/ha	Winter 1981 t/ha
O	None	None
L	6	2
M	14	5
H	23	10

BASAL MANURING per ha (ae)

N Nitro-chalk at 80kg N (71 lb N)
K Murale P Stek at 120kg K (107 lb K)
Mg Kieserit at 40kg Mg (36 lb Mg)

VARIETY

Peniarth

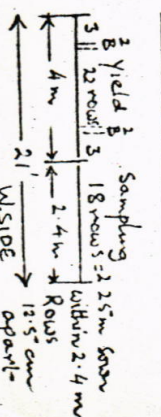
DESIGN

2 blocks of 16 plots

PLOT AREA

21' x 60' = 0.029 acre (0.0117 ha)
Harvested
275 m x 60' = 0.0124 acre (0.0050 ha)

PLOT ARRANGEMENT



// No woodland or pasture without sponsors consent // All operation by Farm

WOBURN

LONG-TERM LIMING

Potatoes 2nd year

STACKYARD series c 1983
Sponsors: S. McGrath, D. P. Stewbley

211

83/W/cs/10	33	34	35	36	37	38	39	40
	O	L	H	L	M	O	L	H
	-	-	P3	P1	P2	P1	P2	P1
41	42	43	44	45	46	47	48	
O	M	O	M	H	L	M	H	
P3	-	P2	P3	P2	P3	P1	-	
49	50	51	52	53	54	55	56	
L	L	M	O	O	H	O	L	
-	P1	P3	P1	P2	P3	-	P2	
57	58	59	60	61	62	63	64	
H	L	H	O	M	H	M	M	
P1	P3	-	P3	-	P2	P2	P1	

Dimensions: 252' x 168' (51.2m). Path widths: 0.4m, 0.3m, 0.8m, 0.8m, 0.4m. No paths between 33-34, 35-36, 37-38, 39-40. 1.6m rows @ 75cm.

TREATMENTS OF P&K

	until winter 1978	1981	1982	1983	Rates P 1981-83
P1	-	-K	-K	-K	None
P2	K	P1K	P2K	P2K	P1 25 kg P ha ⁻¹ (22 lb/ac)
P3	P	P1K	-K	P2K	P2 50 kg P ha ⁻¹ (45 lb/ac)
	PK	P3K	P2K	P4K	P3 75 kg P ha ⁻¹ (67 lb/ac)
					P4 100 kg P ha ⁻¹ (89 lb/ac)

P&K until 1978 cumulative, rates depended on crop rate of P 1983 kg P ha⁻¹
Rates of K 1981 & 1982 120 kg K ha⁻¹ (107 lb/ac)

LIME

	Total 1962-1978 t ha ⁻¹	Winter 1981 t ha ⁻¹	Winter 1982 t ha ⁻¹
O	None	None	None
L	6	2	5
M	14	5	5
H	23	10	10

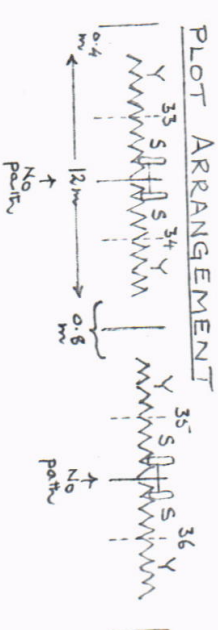
BASAL MANURING ha⁻¹ (acre)

N	250 kg N
K	250 kg K ₂ O
Mg	40 kg Mg (as Kieserite)

VARIETY Pentland Crown

DESIGN 2 blocks of 16 plots

PLOT AREA 21' x 60' = 0.029 acre (0.0117 ha)
Harvest 2 rows @ 75 cm x 60' = 0.0068 (0.0027 ha)



WOBURN

LONG-TERM LIMING

Spring Barley 24th year

STACKYARD series C 1985
Sponsor: S P McGrath

85/W/CS/10											
33	34	35	36	37	38	39	40	41	42	43	44
(O)	(L)	(H)	(L)	(M)	(O)	(L)	(H)	(O)	(M)	(O)	(M)
(-)	(-)	(P3)	(P1)	(P2)	(P1)	(P2)	(P1)	(P3)	(-)	(P2)	(P3)
49	50	51	52	53	54	55	56	57	58	59	60
(L)	(L)	(M)	(O)	(O)	(H)	(O)	(L)	(H)	(L)	(H)	(O)
(-)	(P1)	(P3)	(P1)	(P2)	(P3)	(-)	(P2)	(P1)	(P2)	(-)	(P3)
<p>252' ←</p> <p>168' ← No paths →</p> <p>3' ↓</p> <p>60' ↓</p> <p>21' →</p>											

- || No walkover, post-cide or fertilizer containing toxic elements.
- || All to be cleared with sponsor. No straw burning on site.
- || All operations by Farm.

TREATMENTS

Residues of P&K	1981	1982	1983	1981-83
(-)	-K	-K	-K	None
(P1)	P1K	P2K	P2K	P1 25 kg P
(P2)	P1K	-K	P2K	P2 50 kg P
(P3)	P3K	P2K	P4K	P3 75 kg P
				P4 100 kg P

P&K until 1978 cumulative, rates depended on crop
Rates of K
1981 & 1982: 120 kg K ha⁻¹

RESIDUES OF LIME t ha⁻¹

Total applied 1962-1978, 1981 & 1982	None
L	8
M	24
H	43

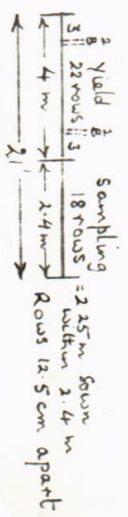
BASAL MANURING kg ha⁻¹
(25:0:16) at 440 lb (493 kg)

VARIETY
Klaxon (normal seed dressing). Sown at 136 lb (152 kg) Date 18 Mar

DESIGN
2 blocks of 16 plots

PLOT AREA
Harvested 21' x 60' = 0.029 acre (0.0117 ha)
275 m x 60' = 0.0124 acre (0.0050 ha)

PLOT ARRANGEMENT



K. J. J.

WOEBURN

LONG-TERM LINING

W. T. H. 25th year

1986
Sponsor: S. P. M. 211

1m2 base

	33	34	35	36	37	38	39	40
	(O)	(L)	(H)	(L)	(M)	(O)	(L)	(H)
	(-)	(-)	(P3)	(P1)	(P2)	(P1)	(P2)	(P1)
	41	42	43	44	45	46	47	48
	(O)	(M)	(O)	(M)	(H)	(L)	(M)	(H)
	(P3)	(-)	(P2)	(P3)	(P2)	(P3)	(P1)	(-)
49		50	51	52	53	54	55	56
(L)	(L)	(M)	(O)	(O)	(H)	(H)	(O)	(L)
(-)	(P1)	(P3)	(P1)	(P2)	(P3)	(-)	(P2)	
57	58	59	60	61	62	63	64	
(H)	(L)	(H)	(O)	(M)	(H)	(M)	(M)	
(P1)	(P3)	(-)	(P3)	(-)	(P2)	(P2)	(P1)	

No weedkillers, pesticides or fertilizers on sowing a trace element P₂.
All to be cleared with spinnaker. No straw burning on site.
All operations by Farm

W
N

TREATMENTS

Residues of P&K kg ha⁻¹

Until winter 1978	1981	1982	1983
(-)	-	-K	-K
(P1)	K	PK	P2K
(P2)	P	PK	P2K
(P3)	PK	P3K	P4K

Rates of P 1981-83

-	None
P1	25 kg P
P2	50 kg P
P3	75 kg P
P4	100 kg P

P&K until 1978 cumulative, rates depended on crop

Rates of K

1981 & 1982	120 kg K ha ⁻¹
1983	208 kg K ha ⁻¹

RESIDUES OF LIME t ha⁻¹

Total applied 1962-1978, 1981 & 1982	None
L	8
M	24
H	43

BASAL MANURING kg ha⁻¹

NK	None
----	------

VARIETY - Lasco sown at 140lb (160kg)

W/Triticale

Date: 22 Oct.

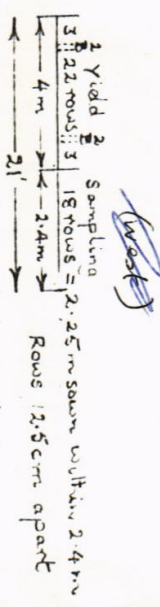
DESIGN 2 blocks of 16 plots

PLOT AREA 21' x 60' = 0.029 acre (0.0117 ha)

Harvested 2.75m x 60' = 0.0124 acre (0.0050 ha)

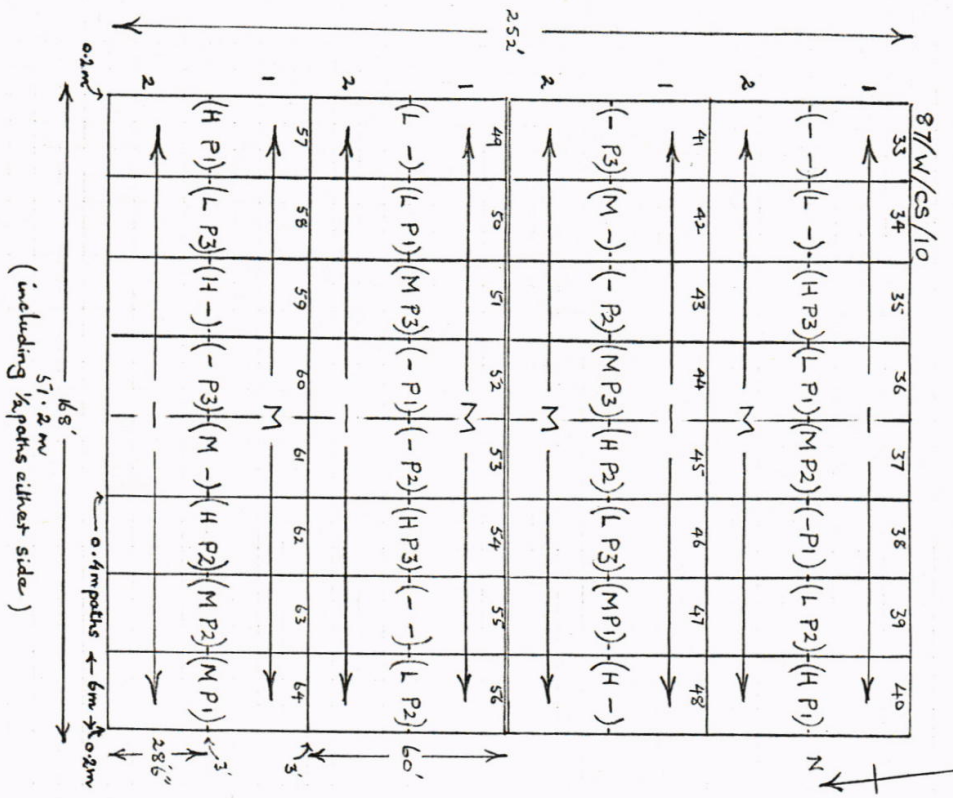
PLOT ARRANGEMENT

This is wrong way round



WOBURN LONG-TERM LIMING S. Lupinus 26th year STACKYARD series c 1987

Sponsors: S.F. N.G. Rath, J. McEwen, D.P. Yeoman



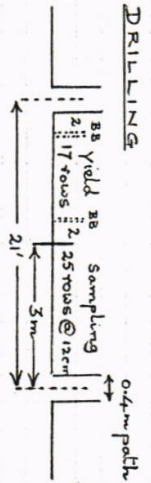
TREATMENTS
Residual effects of previous rates of Lime
(Total applied 1962-1978, 1981 & 1982)

- (-) None
 - (L) 8
 - (M) 24
 - (H) 43
- Residual effects of previous rates of P
- (-) None
 - (P1) 8
 - (P2) 24
 - (P3) 43

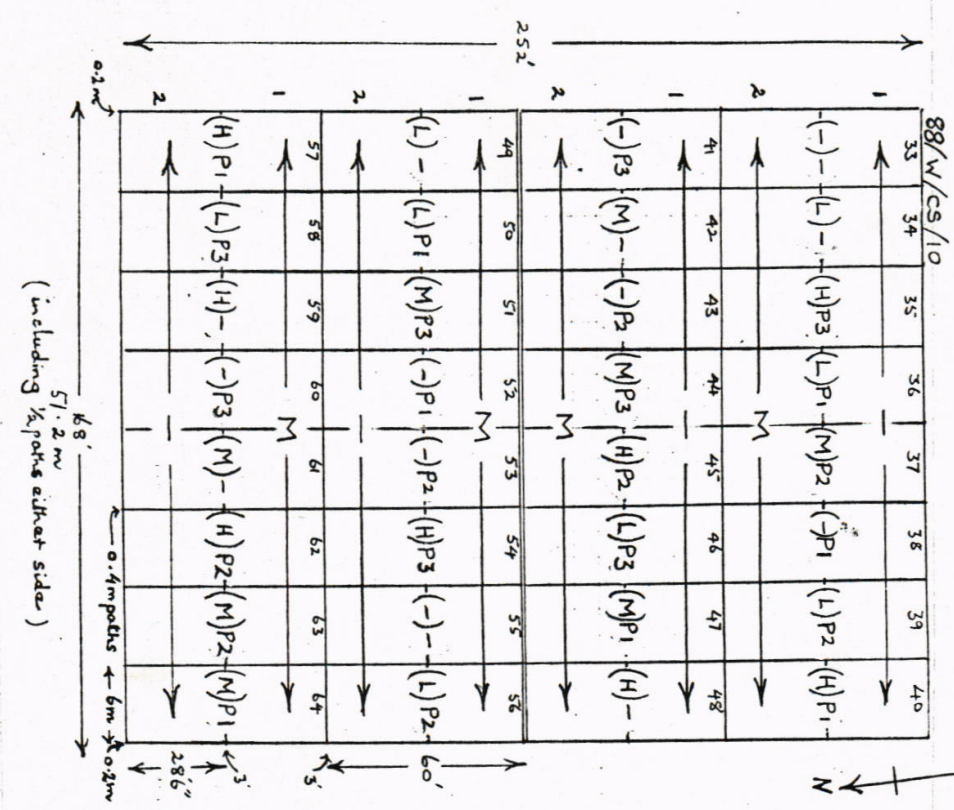
Manganese sprays in 1987 on strips of sub plots
None
Sprayed at rates & intervals to be silted
(applied by sprayer across strips of sub plots and to travel also over - sub plots on each occasion to equalize wheelings).

BASAL MANURING
None

VARIETY *L. albus (Growth)*
Vladimir, steel inoculated. Rhizobium, sown at 245 g m⁻² on 6 April
DESIGN
2 block of 16 plots, split into 2.
PLOT AREA
6m x 6m = 0.0110 ha
Harvest 17 rows @ 12cm x 28'6" = 0.0018 ha



WOBURN LONG-TERM LIMING Linedseed 27th year STACKYARD series c 1988
 Sponsors: SFRMcGrath, 211

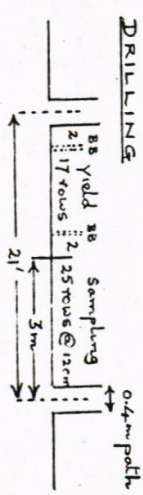


TREATMENTS
 Residual effects of previous rates of lime
 (total applied 1962-1978, 1981, 1982 & 1987) t ha⁻¹

(-) None
 (L) 9
 (M) 25.5
 (H) 45.5
 P applied Autumn 1987 Kg P/ha, cumulative to previous dressings.
 - None
 P1 2.5
 P2 2.5
 P3 7.5
 Manganese sprays in 1988 on strips of sub plots

- None
 Sprayed at rates & intervals to be settled
 (applied by sprayer across strips of sub plots and to travel also
 over - sub plots on each occasion to equalize wheatings).

BASAL MANURING per hectare
 K at 80 Kg Mg at 40 Kg N at 5 FR
VARIETY *rumex* at 80 g/ha = 24 t/ha
ANALYSES
DESIGN
 2 block of 16 plots, split into 2.
PLOT AREA
 6m x 60' = 0.0110 ha
 Harvest 17 rows @ 12cm x 28'6" = 0.0018 ha



WOBURN

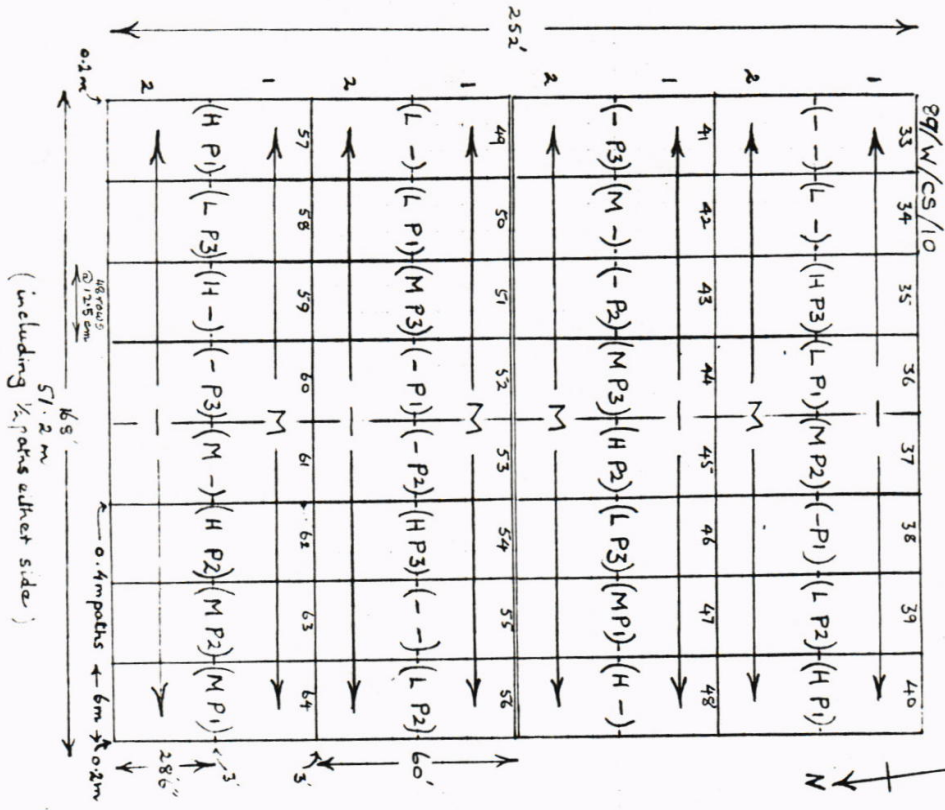
LONG-TERM LIMING

S. DEARNS

20th year STACKYARD series C 1989

Sponsors: S.P.M.G. Rath, J. McEwan, D. Freeman

211



TREATMENTS
Residual effects of previous rates of Lime
(Total applied 1962-1978, 1981 & 1982)

- (-) None
 - (L) 9
 - (M) 25.5
 - (H) 45.5
- Residual effects of previous rates of P applied 1962-88, rates varied with crops years
- (-)
 - (P1)
 - (P2)
 - (P3)

Manganese sprays in 1987 cumulative to previous applications

None
M 'Vitel' at 30L at 4 leaf stage + 1/2L just before flowering
(applied by sprayer across stripes of subplots and to travel also over - sub plots on each occasion to equalize wheelings).

BASAL MANURING
None

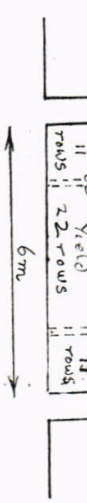
VARIETY Sown @ 200 kg/ha 31 March 1989
Alfred

DESIGN 2 block of 16 plots, split into 2.

PLOT AREA
6m x 60' = 0.0110 ha
Harvest 22 rows @ 12.5cm x 28'6" = 0.0025 ha

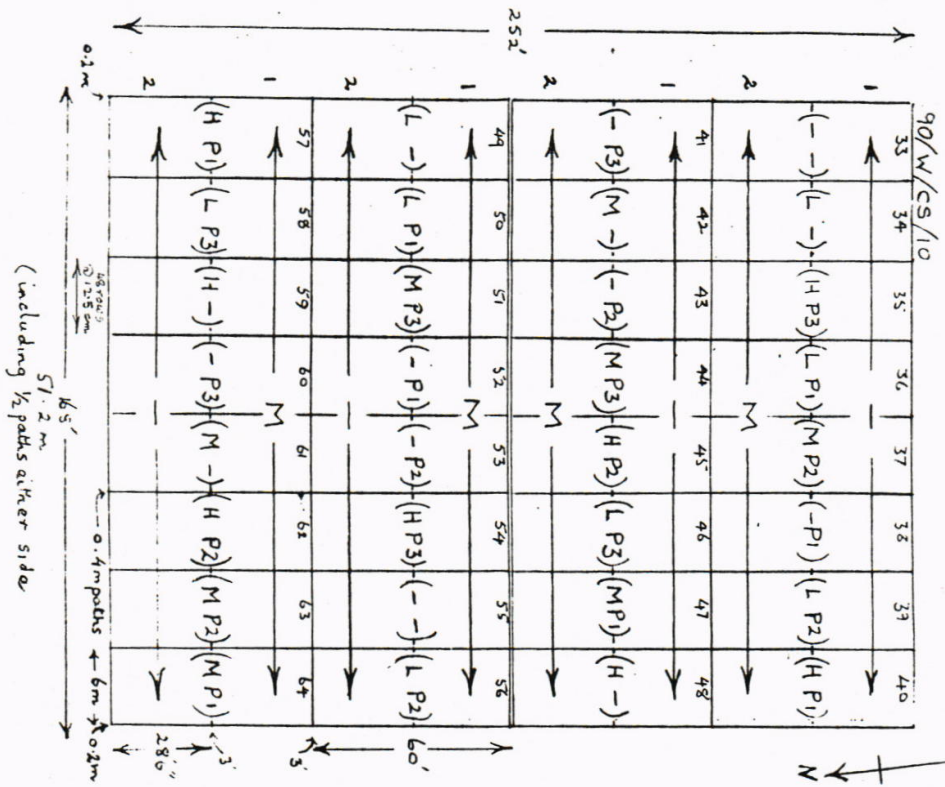
DILLING
11 rows Yield 88 14
11 rows 22 rows 11 rows 11
0.4m path

|| Vitel supplied by SFM.
|| All operations by Farm



WOBBURN LONG-TERM LIMING

S. Beams 29th year STACKYARD series c 1990
Sponsors: S.P.H., G. Rath, J. McEwan, D. Fryeman



TREATMENTS

Residual effects of previous rates of lime
(total applied 1962-1978, 1981 & 1982)

- (-) None
- (L) 9
- (M) 25.5
- (H) 45.5

Residual effects of previous rates of P applied 1962-88, rates varied with crops/year

- (-) None
- (P1) 9
- (P2) 18
- (P3) 27

Manganese sprays in 1990 cumulative to previous applications

M None
Vitel 3.0 l at 4 leaf stage 1/2 l just before flowering
(applied by sprayer across strips of subplots and to travel also over - subplots on each occasion to equalize wheelings).

BASAL MANURING

None

VARIETY Sown @ 250 kg/ha on 5 March

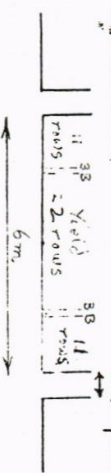
DESIGN

2 block of 16 plots, split into 2.

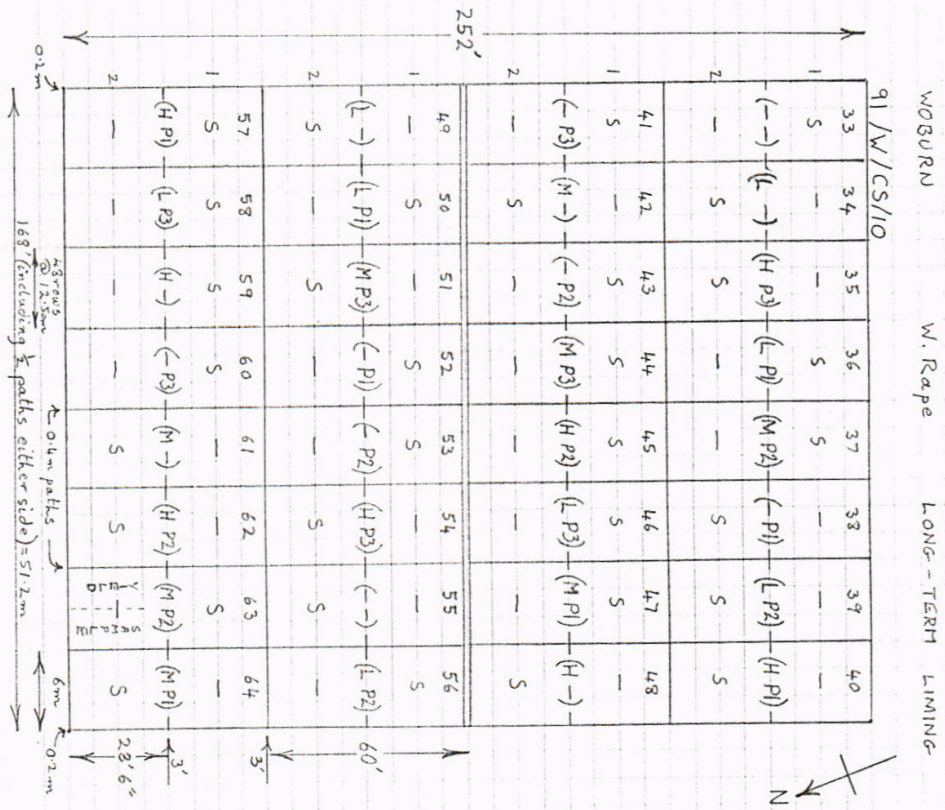
PLOT AREA

6m x 60' = 0.0110 ha
Harvest 22 rows @ 12.5cm x 28'6" = 0.0025 ha
Planted at 1.8 kg s.e./ha & weeded

DILLING



Vitel supplied by S.P.H.
All operations by Far



WOBURN W. Rape LONG-TERM LIMING

91/W/CS/110

30th Year STACKYARD Series C
Sponsors: S.P. Mc Grath, P.B. Barraclough, G.F. J. Nilford

1991

211

TREATMENTS

Residual effects of previous rates of lime
(total applied 1962-1978, 1981 & 1982) t/ha:

- (-) None
- (L) 9
- (M) 23.5
- (H) 45.5

Residual effects of previous rates of P applied 1962-88, rates varied with crops & year

- (-) None
- (P1)
- (P2)
- (P3)

Sulphur in 1991
- None
S Calcium sulphate @ 30 Kg S/ha⁻¹ by hand

BASAL MANURING

125.0:0:0 @ 200kg to seedbed, N in spring at SEP
F-lime Mg spray, not containing sulphate

VARIETY

Librava sown @ 6 Kg/ha⁻¹ on 30 August 1990

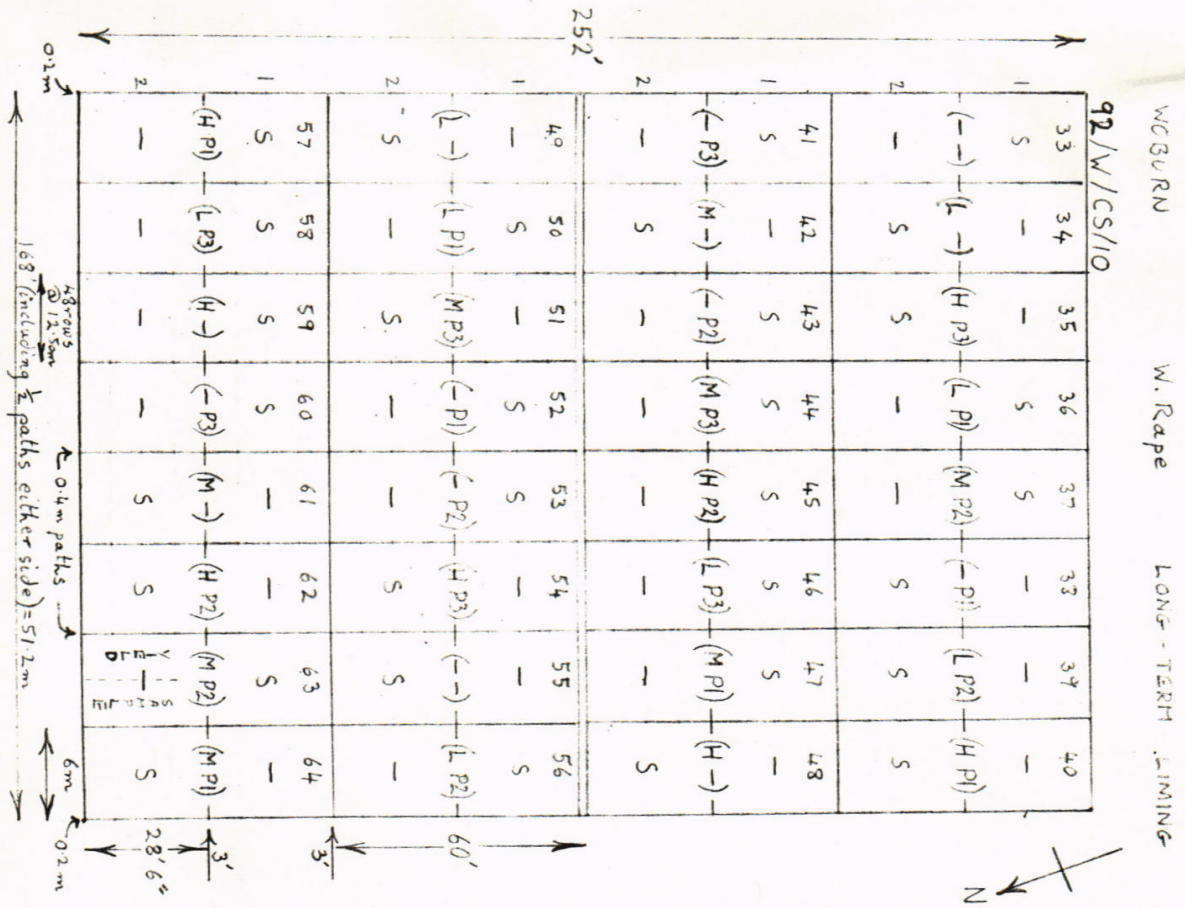
DESIGN

2 blocks of 16 plots split into 2

PLOT AREA

Whole plot: 6m x 60' = 0.0110 ha

- || All agrochemicals to be cleared by sponsor
- || All operations by farm.



31st Year STACKYARD Series C 1992
 Sponsors: S.P. McGrath, P.B. Barracough, G.F. Milford

TREATMENTS

Residual effects of previous rates of lime
 (total applied 1962-1978, 1981 & 1982) t ha⁻¹

- (-) None
 - (L) 9
 - (M) 25.5
 - (H) 45.5
- Residual effects of previous rates of P applied 1962-88 rates varied with crops & years

- (-)
 - (P1)
 - (P2)
 - (P3)
- Sulphur in 1992 (cumulative to 1991)
 - None
 S calcium sulphate @ 30 kg S ha⁻¹ by hand

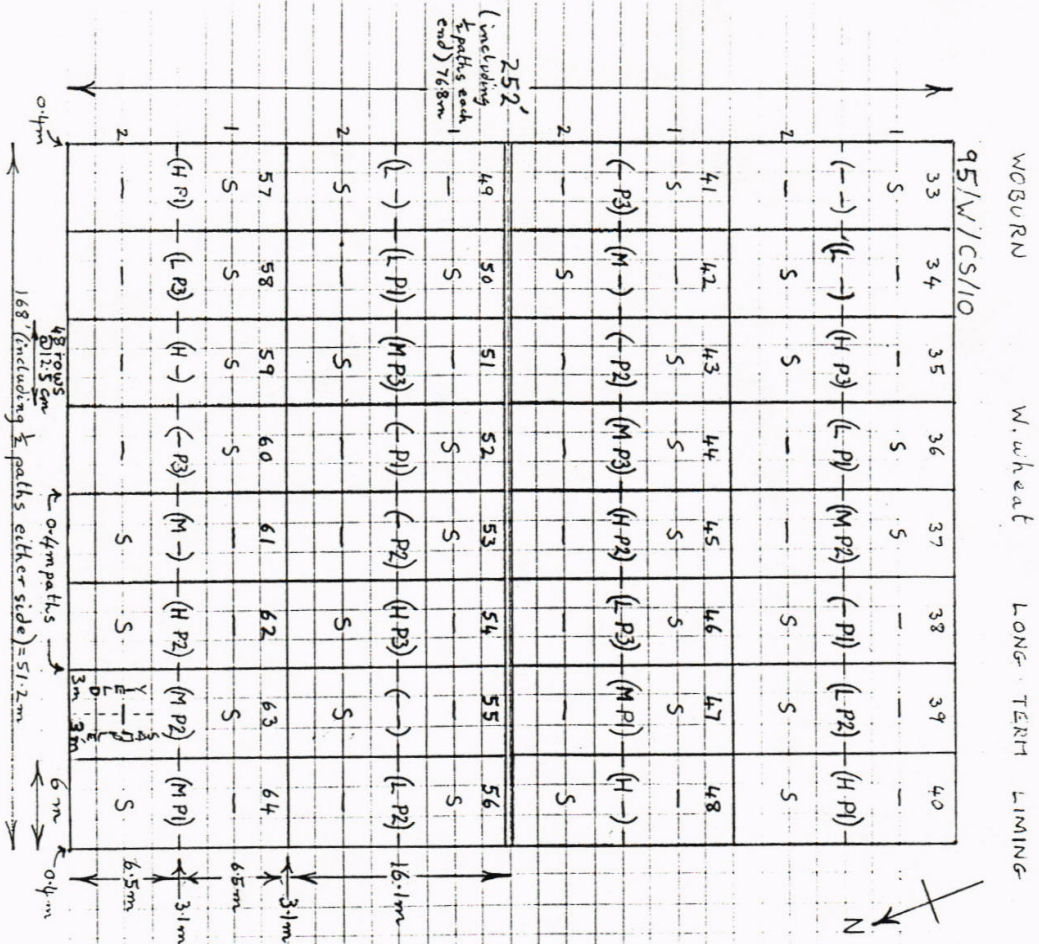
BASAL MANURING
 25.0:0:0 @ 200kg to seedbed, N in spring at SEP
 F-vant Mg spray, not containing sulphate

VARIETY
 Libravo sown @ Kghal on

DESIGN 2 blocks of 16 plots split into 2

PLOT AREA
 Whole plot: 6m x 60' = 0.0110 ha

// All agrochemicals to be cleared by sponsor
 // All operations by Farm.



WOBURN W. wheat LONG TERM LIMING

34th Year Sponsors: S.P. McGrath, STACKYARD Series C 1995

TREATMENTS

Residual effects of previous rates of lime (total applied 1962-1978, 1981 & 1982). t ha⁻¹

- (-) None
- (L) 9
- (M) 25.5
- (H) 45.5

Residual effects of previous rates of P applied 1962-88, rates varied with crops years

- (-) None
- (P1)
- (P2)
- (P3)

Sulphur in 1995 (cumulative to 1991, 1992 & 1994)
 - None
 S Calcium sulphate @ 30 kg S ha⁻¹ by hand

BASAL MANURING
 N in spring at 5 F.P.

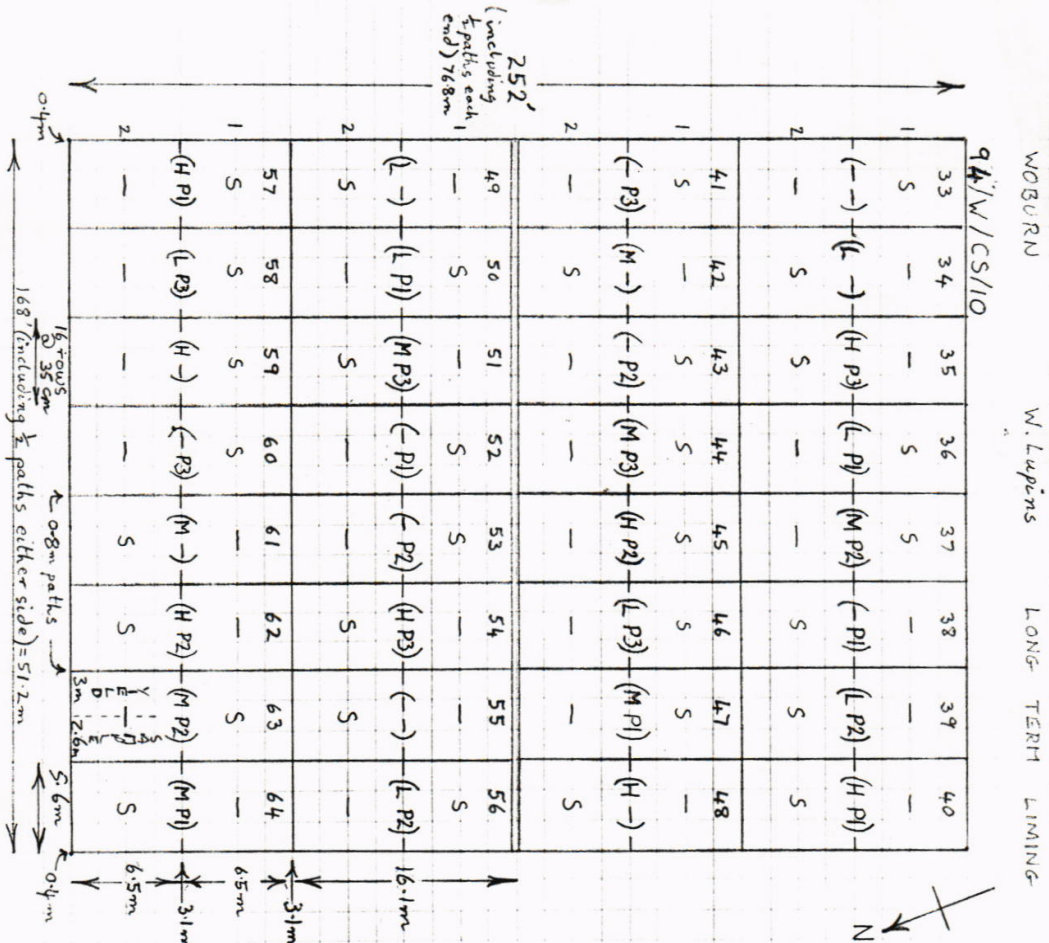
VARIETY
 Genesis or Rapperson @ 300 seeds/m² on 30 Sept 1994

DESIGN 2 blocks of 16 plots split into 2

PLOT AREA

Whole plot: 6.0m x 16.1m = 0.0097 ha
 Sub-plot: 6.0m x 6.5m = 0.0039 ha

|| All agrochemicals to be cleared by Sponsor
 || All operations by Farm.



33rd Year STACKYARD Series C 1994
 Sponsors: S.P. McGrath, P. Barracough, G.F. Milford, J.M. Day

TREATMENTS

Residual effects of previous rates of lime
 (total applied 1962-1978, 1981 & 1982). t ha⁻¹

- (-) None
- (L) 9
- (M) 25.5
- (H) 45.5

Residual effects of previous rates of P applied 1962-88, rates varied with crops & years

- (-) None
- (P1)
- (P2)
- (P3)

Sulphur in 1994 (cumulative to 1991 & 1992)
 - None
 S Calcium sulphate @ 30 Kg S ha⁻¹ by hand

BASAL MANURING

None

VARIETY
 CH 304/70 sown @ 1 kg ha⁻¹ on

DESIGN 2 blocks of 16 plots split into 2

PLOT AREA
 whole plot: 5.6m x 16.1m = 0.009 ha

- // All agrochemicals to be cleared by sponsor
- // All operations by farm.
- // Sponsors supply inoculated seed

97/W/CS/10

Long Term Liming

36th Year

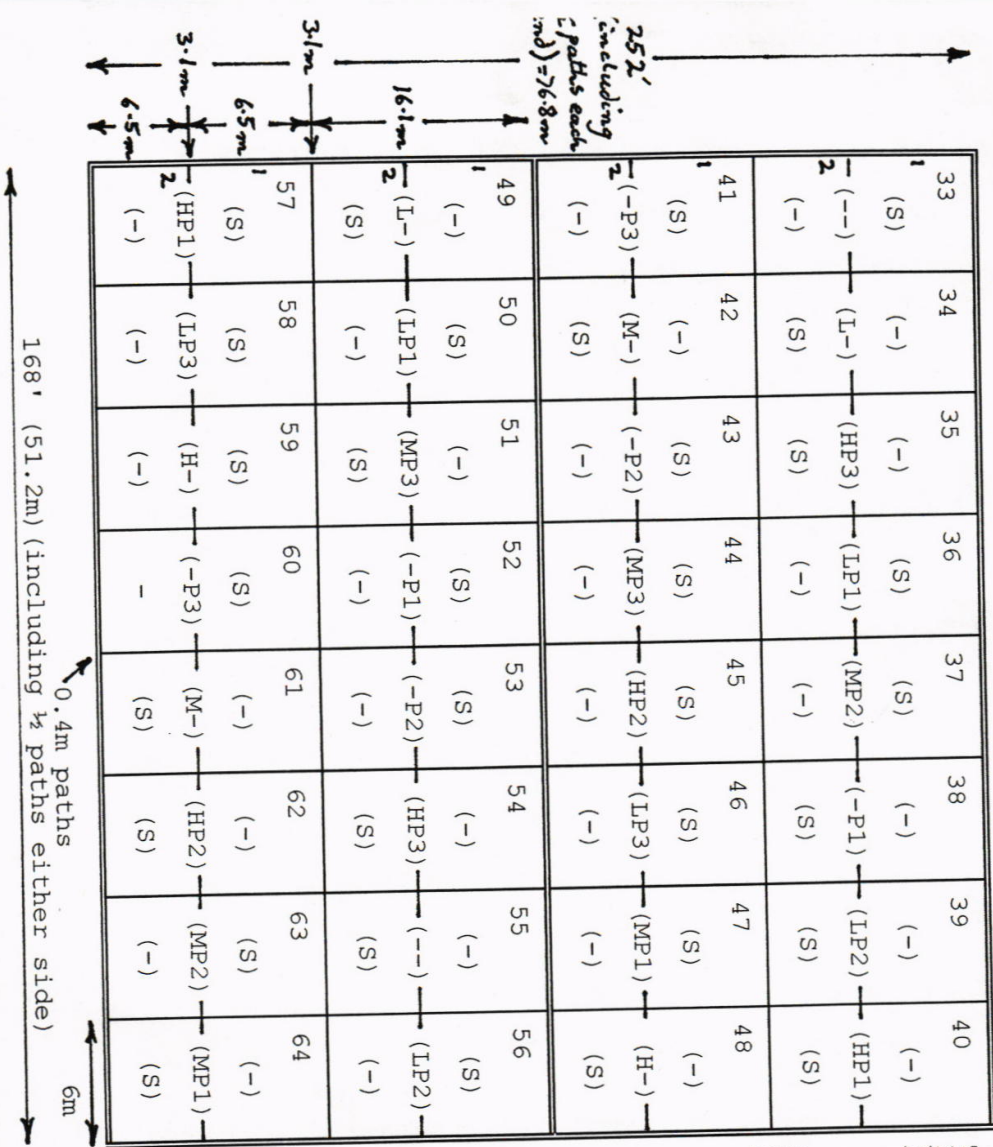
Stackyard C

211

Sponsor: S.P. McGrath

~~Robert~~
Woburn

Grass



33	(S)	(-)	(-)	(S)	(S)	(-)	(-)	(-)	(S)
34	(-)	(L-)	(-)	(HP3)	(LP1)	(-)	(-)	(-)	(HP1)
35	(-)	(-)	(-)	(S)	(S)	(-)	(-)	(-)	(S)
36	(S)	(-)	(-)	(S)	(S)	(-)	(-)	(-)	(S)
37	(-)	(-)	(-)	(S)	(MP2)	(-)	(-)	(-)	(S)
38	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(S)
39	(-)	(-)	(-)	(-)	(LP2)	(-)	(-)	(-)	(S)
40	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(S)
41	(S)	(-)	(-)	(S)	(S)	(-)	(-)	(-)	(-)
42	(-)	(-)	(-)	(S)	(S)	(-)	(-)	(-)	(S)
43	(-)	(-)	(-)	(S)	(S)	(-)	(-)	(-)	(S)
44	(-)	(-)	(-)	(S)	(S)	(-)	(-)	(-)	(S)
45	(-)	(-)	(-)	(S)	(S)	(-)	(-)	(-)	(S)
46	(-)	(-)	(-)	(S)	(S)	(-)	(-)	(-)	(S)
47	(-)	(-)	(-)	(S)	(S)	(-)	(-)	(-)	(S)
48	(-)	(-)	(-)	(S)	(S)	(-)	(-)	(-)	(S)
49	(-)	(-)	(-)	(S)	(S)	(-)	(-)	(-)	(S)
50	(-)	(-)	(-)	(S)	(S)	(-)	(-)	(-)	(S)
51	(-)	(-)	(-)	(S)	(S)	(-)	(-)	(-)	(S)
52	(-)	(-)	(-)	(S)	(S)	(-)	(-)	(-)	(S)
53	(-)	(-)	(-)	(S)	(S)	(-)	(-)	(-)	(S)
54	(-)	(-)	(-)	(S)	(S)	(-)	(-)	(-)	(S)
55	(-)	(-)	(-)	(S)	(S)	(-)	(-)	(-)	(S)
56	(-)	(-)	(-)	(S)	(S)	(-)	(-)	(-)	(S)
57	(S)	(S)	(S)	(S)	(S)	(-)	(-)	(-)	(S)
58	(S)	(S)	(S)	(S)	(S)	(-)	(-)	(-)	(S)
59	(S)	(S)	(S)	(S)	(S)	(-)	(-)	(-)	(S)
60	(S)	(S)	(S)	(S)	(S)	(-)	(-)	(-)	(S)
61	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(S)
62	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(S)
63	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(S)
64	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(S)

Treatments
Rates of lime applied 1962-78, 1981 and 1982, total t/ha

(-) None
(L) 9.0
(M) 25.5
(H) 45.5
Rates of P applied 1962-88 rates varied with crops and years

(-) (P1)
(-) (P2)
(-) (P3)
Sulphur applied cumulatively 1991,2,4,5&6
(-) None
(S) 30 kg S/ha/annum

Basal manuring
N at sfp.

Variety Atalja sown at 30 kg/ha on 9 September 1996

Design 2 randomized blocks of 4 x 4 plots split into 2

Plot area
Whole plot 6.0m x 16.1m = 0.0097 ha
Sub-plot 6.0m x 6.5m = 0.0039 ha

// All agro-chemicals to be cleared by Sponsor
// All operations by Farm