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ROTHAMSTED
RESEARCH

Collection of Plans for the Woburn Long-term Liming Experiment

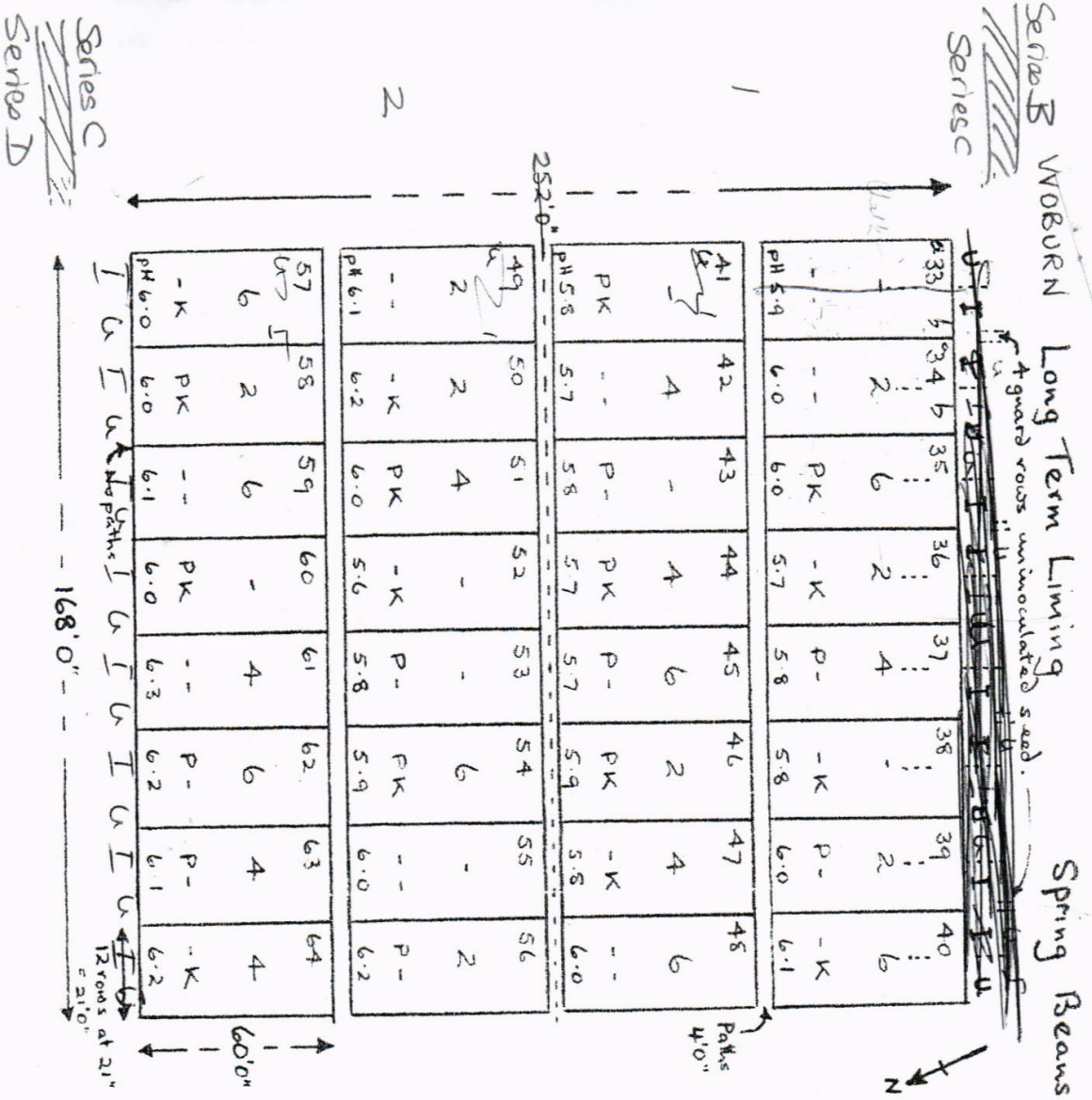
The image shows a thumbnail of a document page, likely a table of contents or an experimental plan. It contains a grid of text and numbers, possibly representing different experimental treatments or plots. The text is small and difficult to read, but it appears to be a structured list of items.

[Full Table of Content](#)

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.

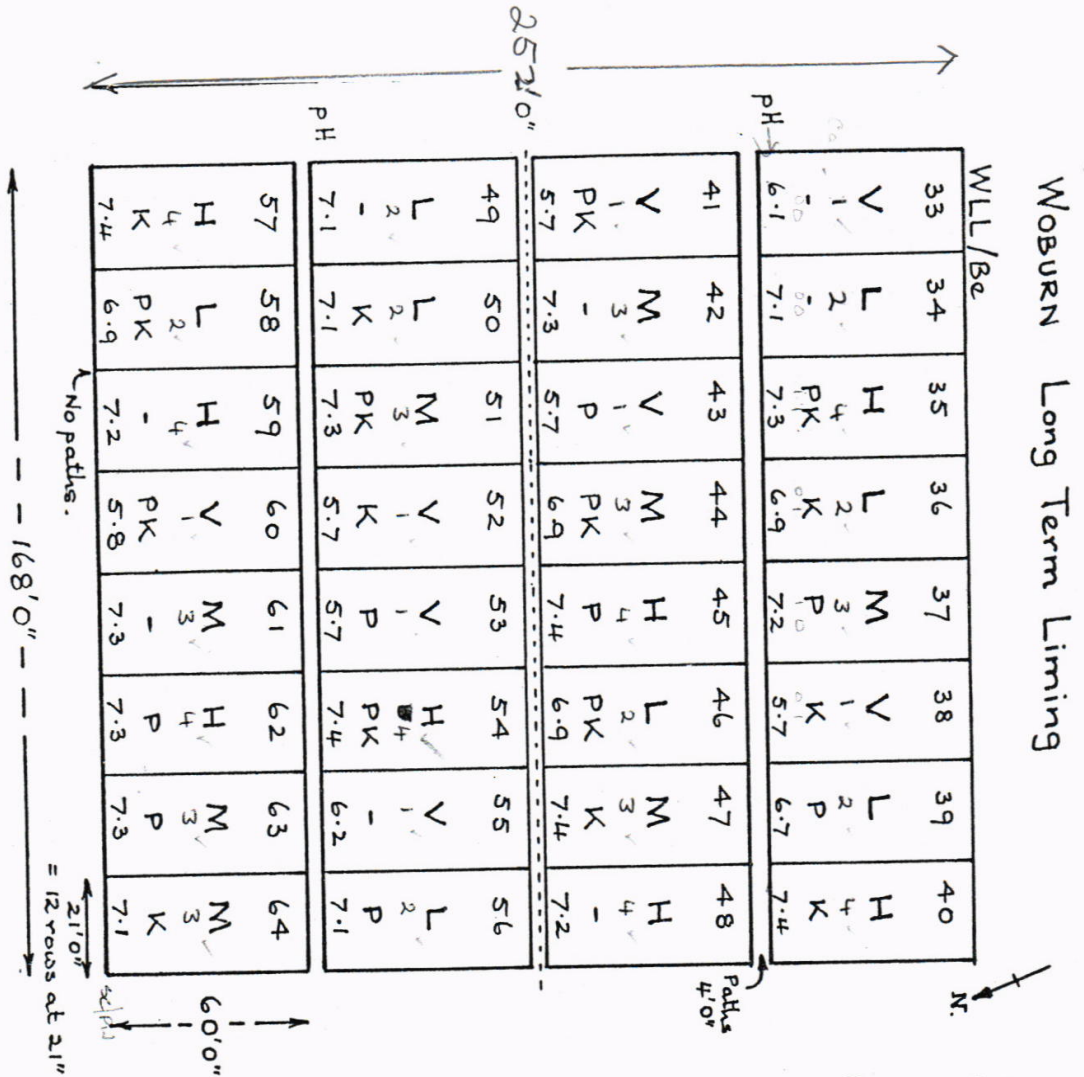
U, I Uninoculated, inoculated seed (P.S.N.)
 Basal manuring: None (10 column of 4 sub-plots)

Variety: Spring Tick
 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.



STACKYARD Series C 1963

2nd Year.

TREATMENTS. per acre.

V, L, M, H None, 2, 4³/₄, 7¹/₂ 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.
 (Rok. 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.

Spr. Beans sown after failed winter crop.

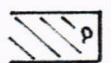
TREATMENTS. per acre

(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.

— P 0.5 cwt P₂O₅ as superphosphate } Broadcast
— K 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

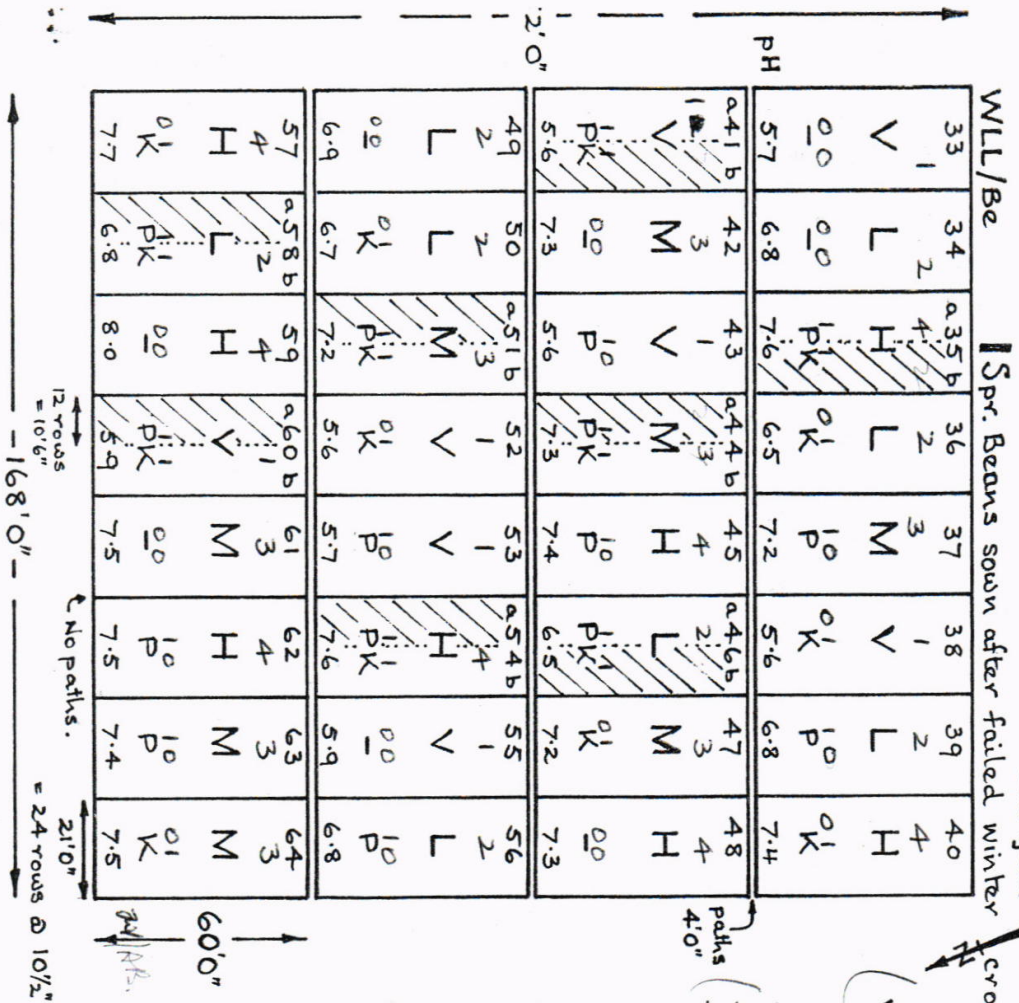
sown: March 13 (Winter beans sown Nov 8, 1963)
Simazine applied twice: Nov 9, 1963 and April 6 1964.

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

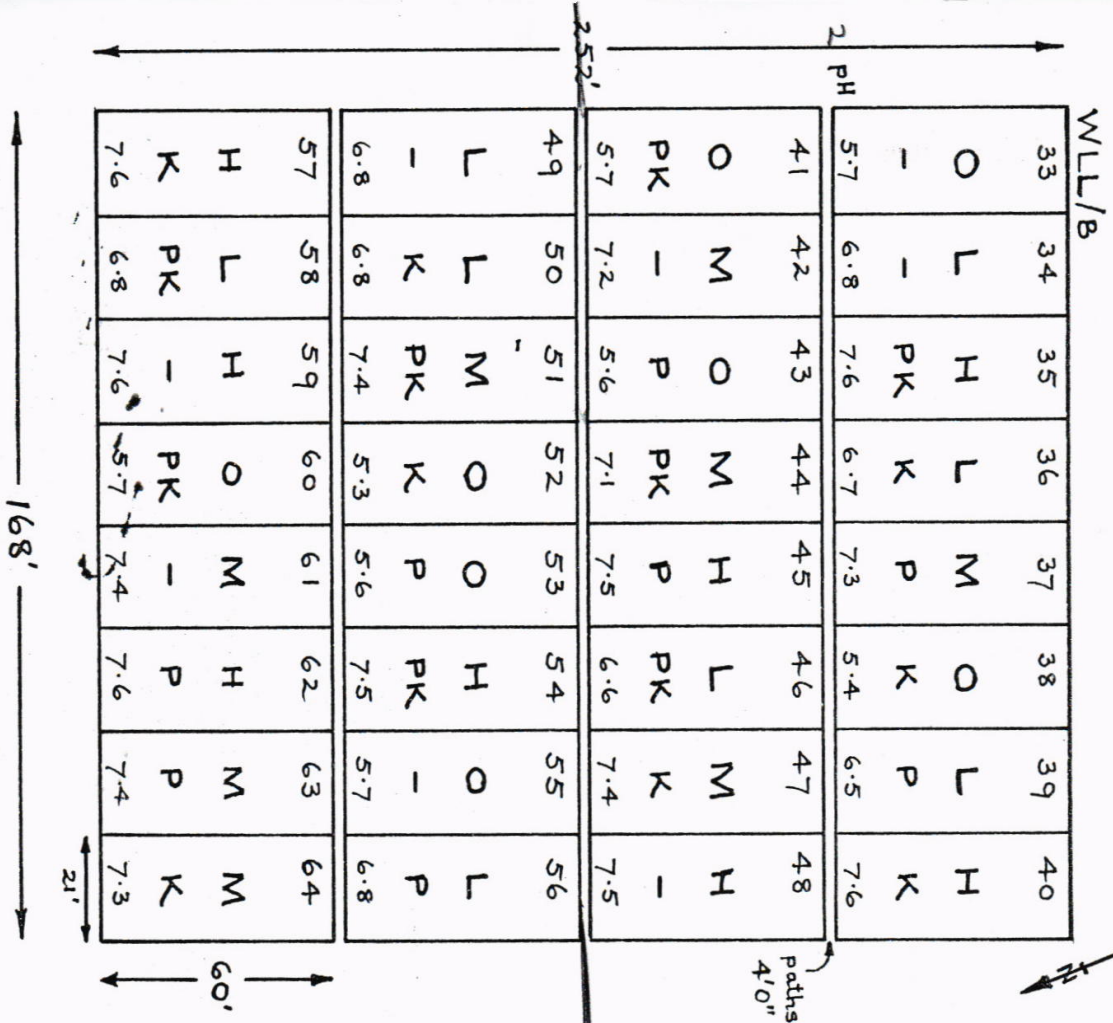
Note: Treatment and basal manures applied in autumn were not repeated for spring crop.



MOBURN Long Term Liming BARLEY

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

110



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

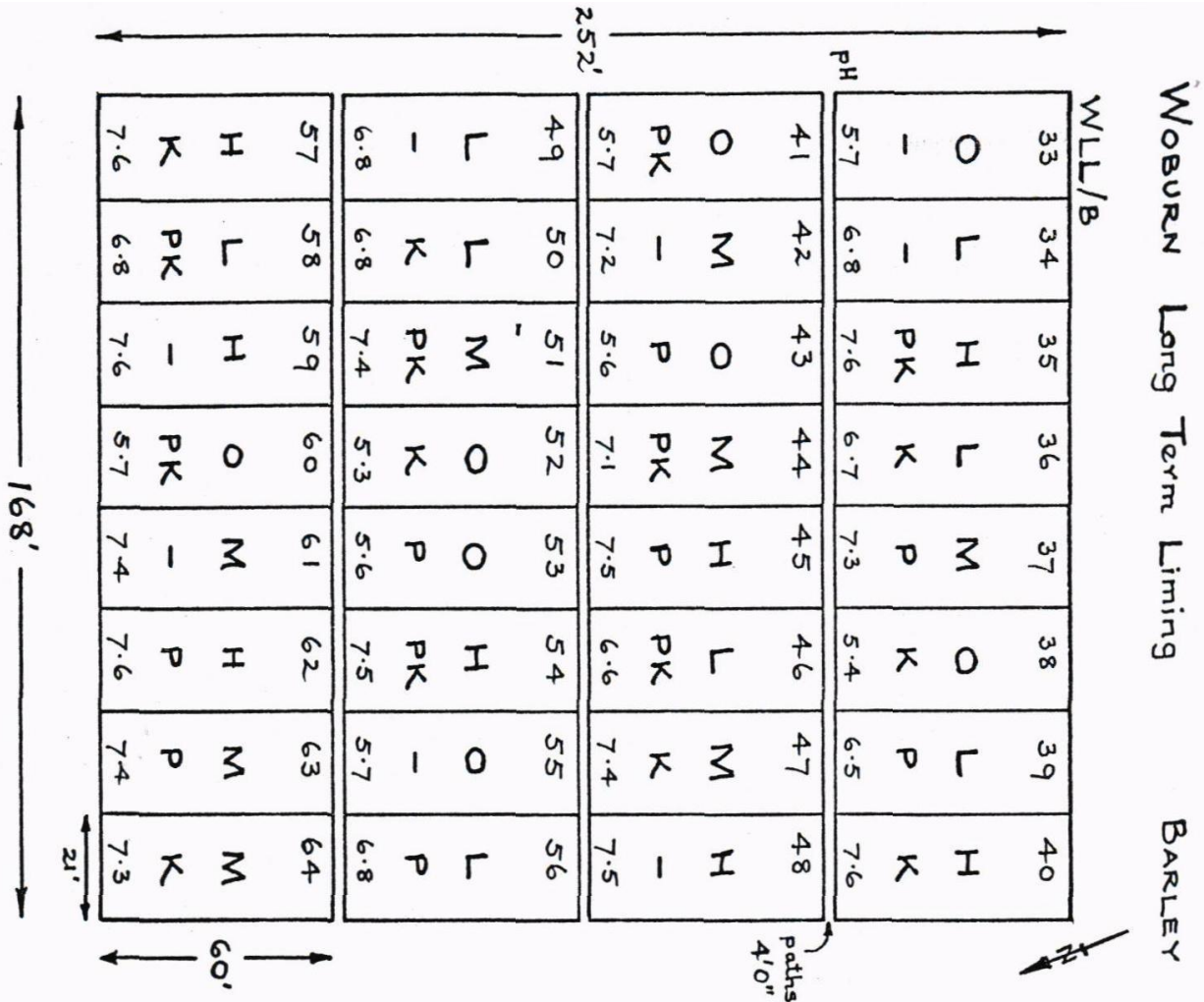
Basal manuring - per acre

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.

110

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

K 1.0 cwt K₂O as muriate of potash } Applied 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

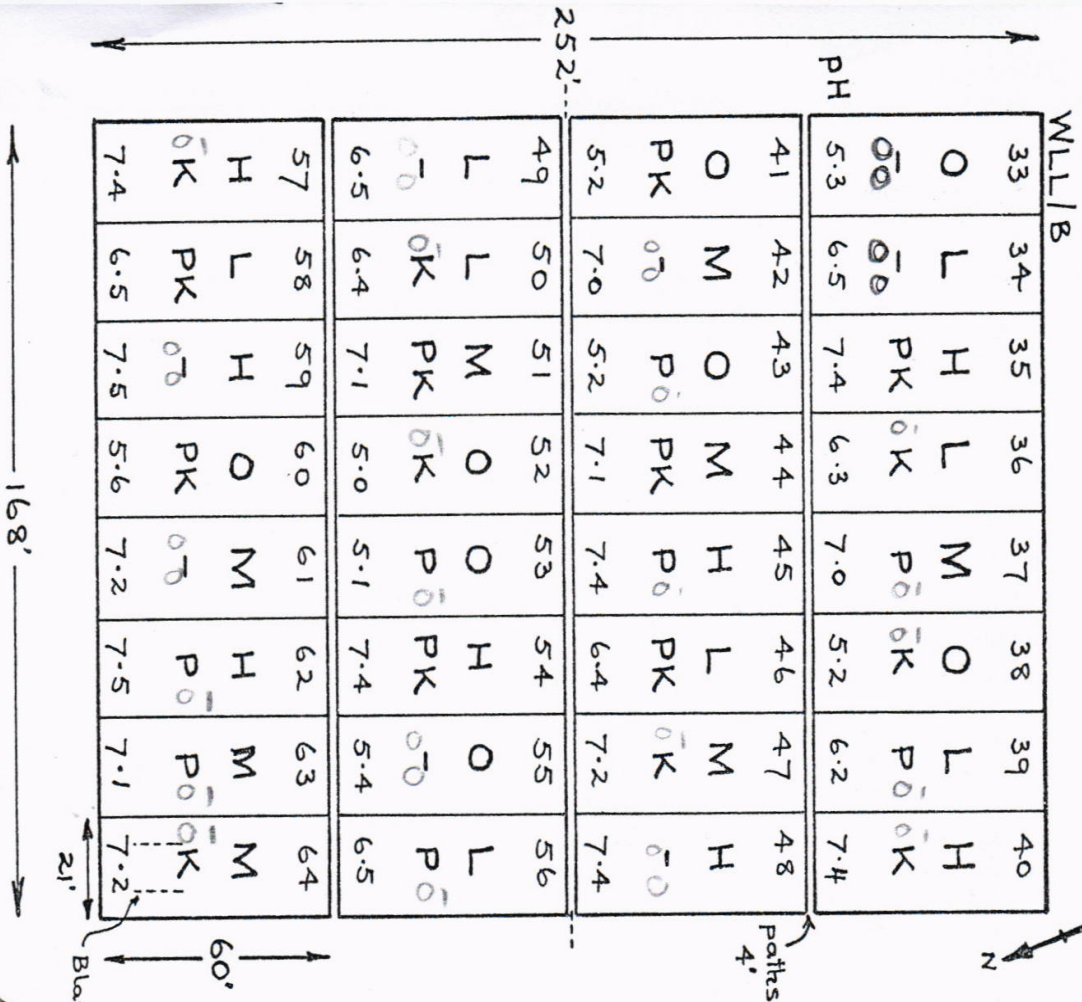
C/3

WOBURN Long Term Liming

BARLEY

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

112



TREATMENTS per acre

O, L, M, H None, 2, 4 $\frac{3}{4}$, 7 $\frac{1}{2}$ 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

Blank rows

#

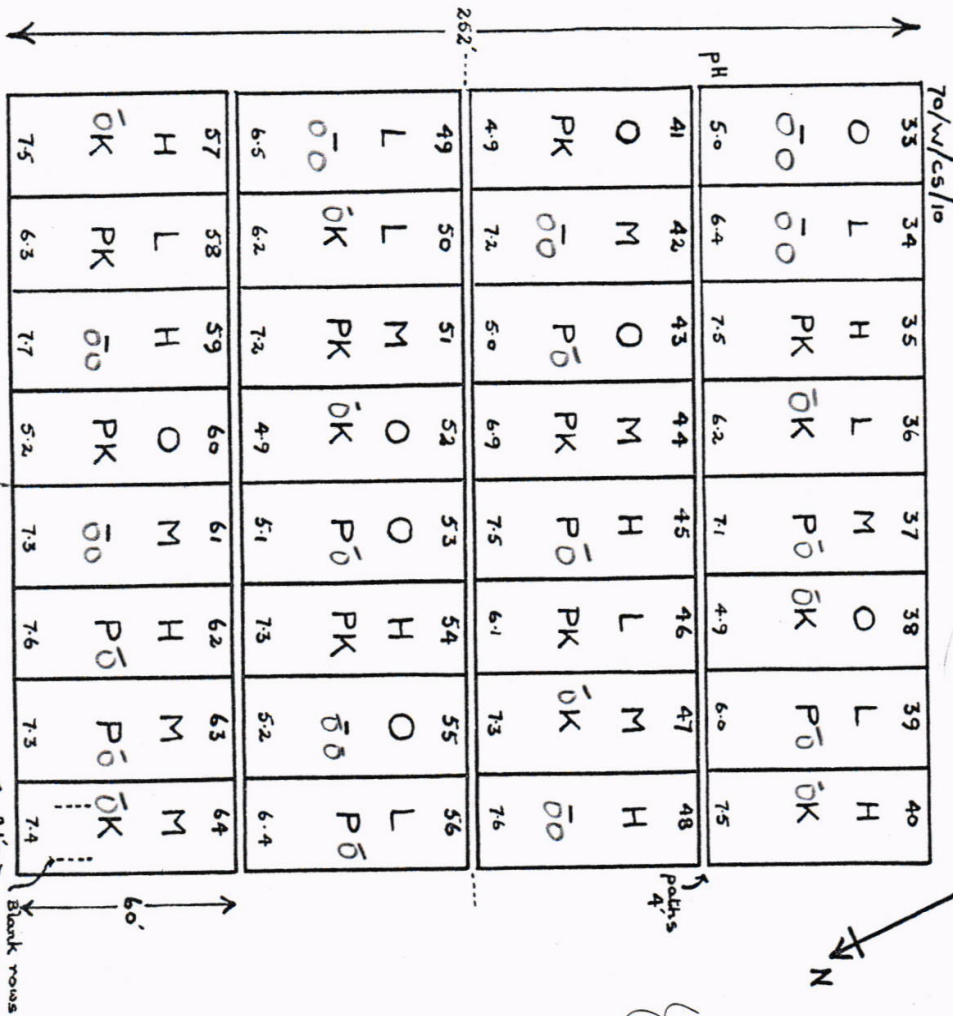
WOBURN

LONG-TERM LIMING

Barley

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

215



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

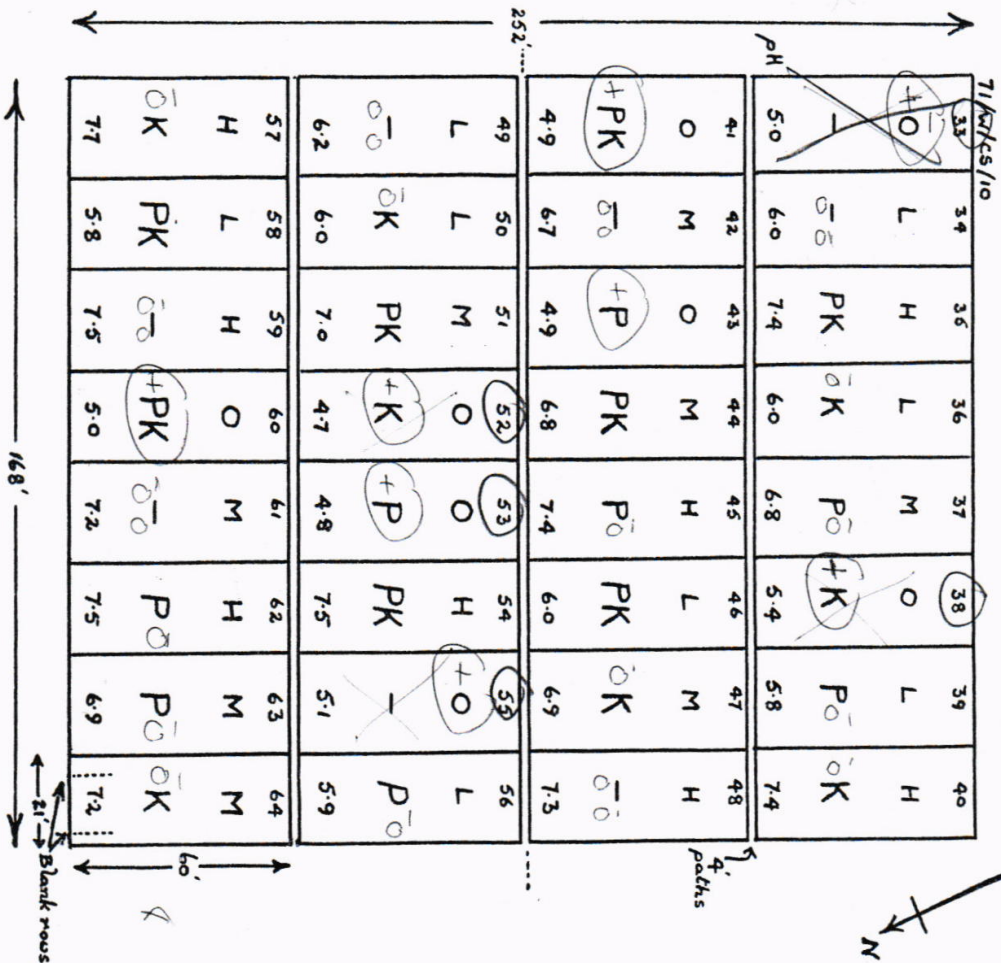
WOBURN

LONG-TERM LIMING

Barley

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

212



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.

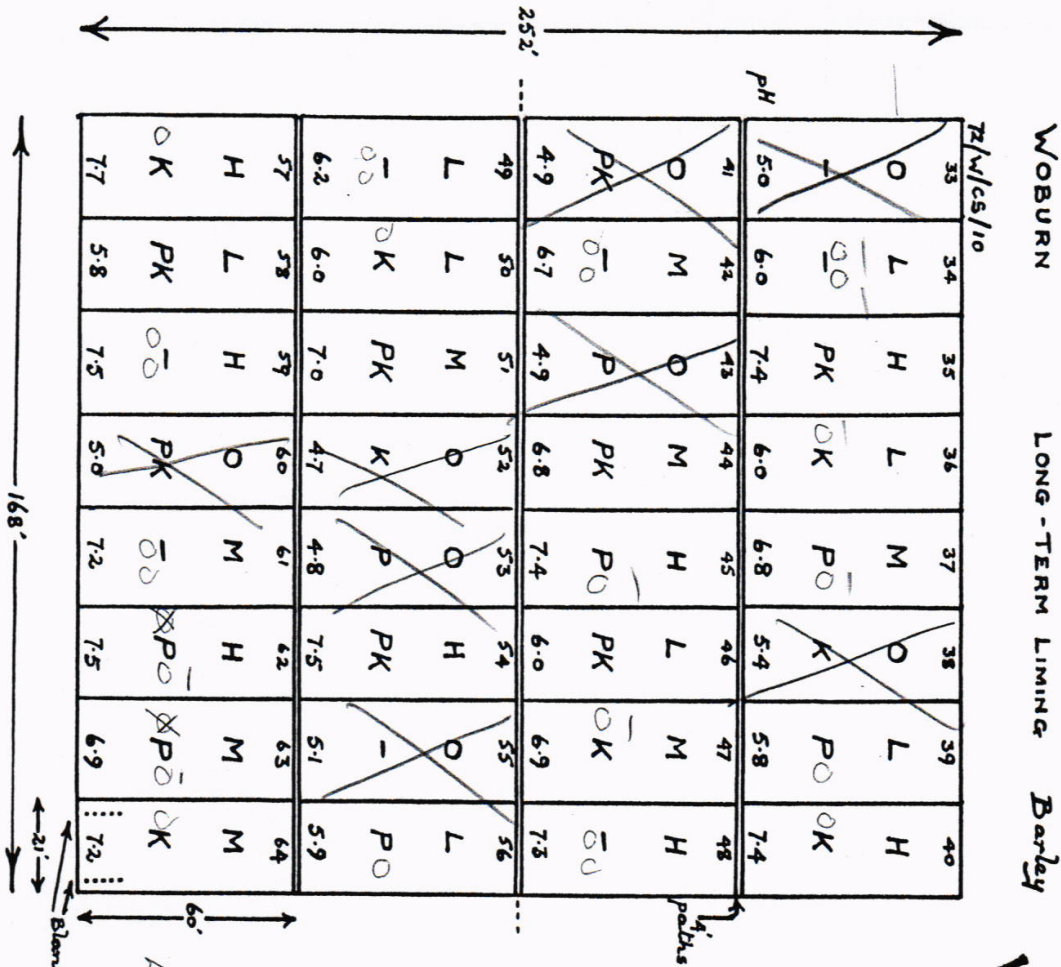
VARIETY : Jilia seed rate: 140lb (157kg)

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

2/12

Sponsors: T.B. Bolton, D.B. Slope.

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

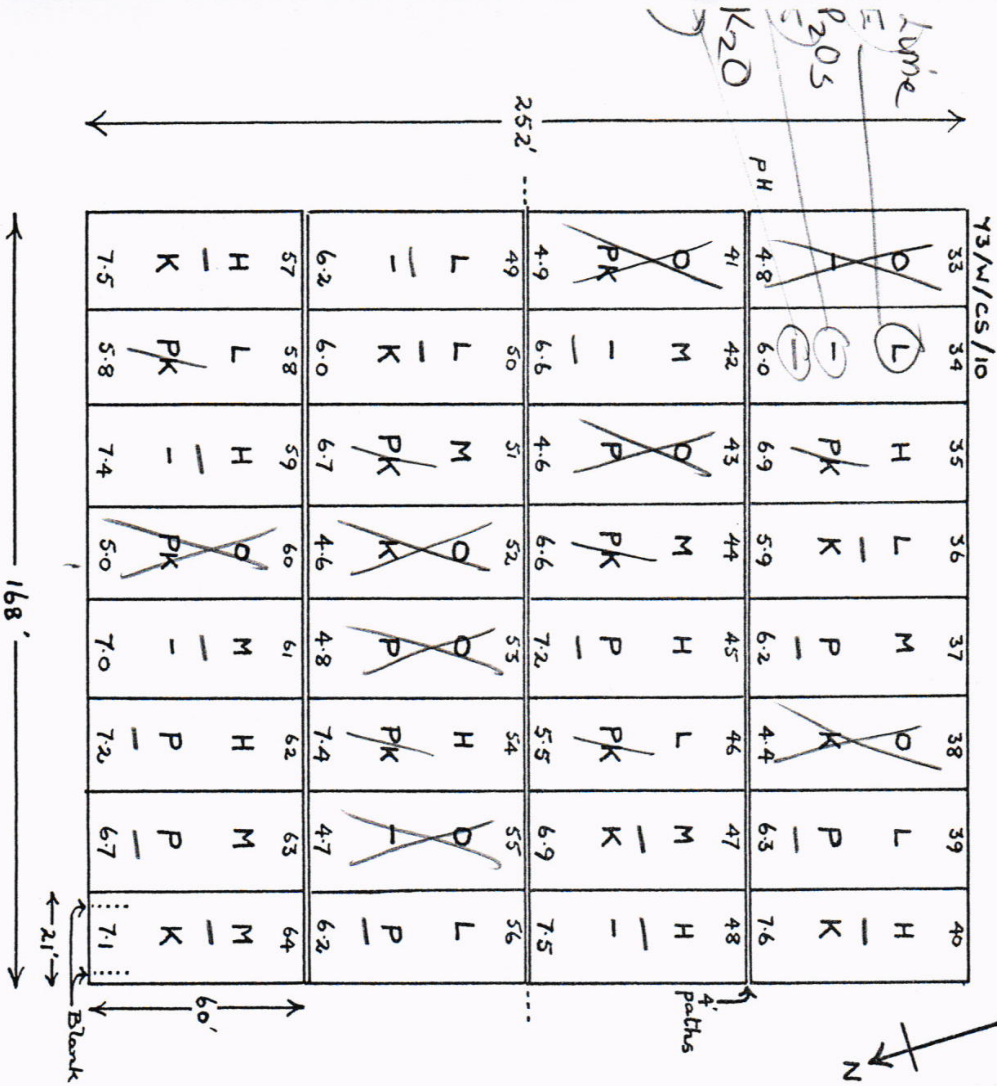
LONG-TERM LIMING

Barley

12th year

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

212



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

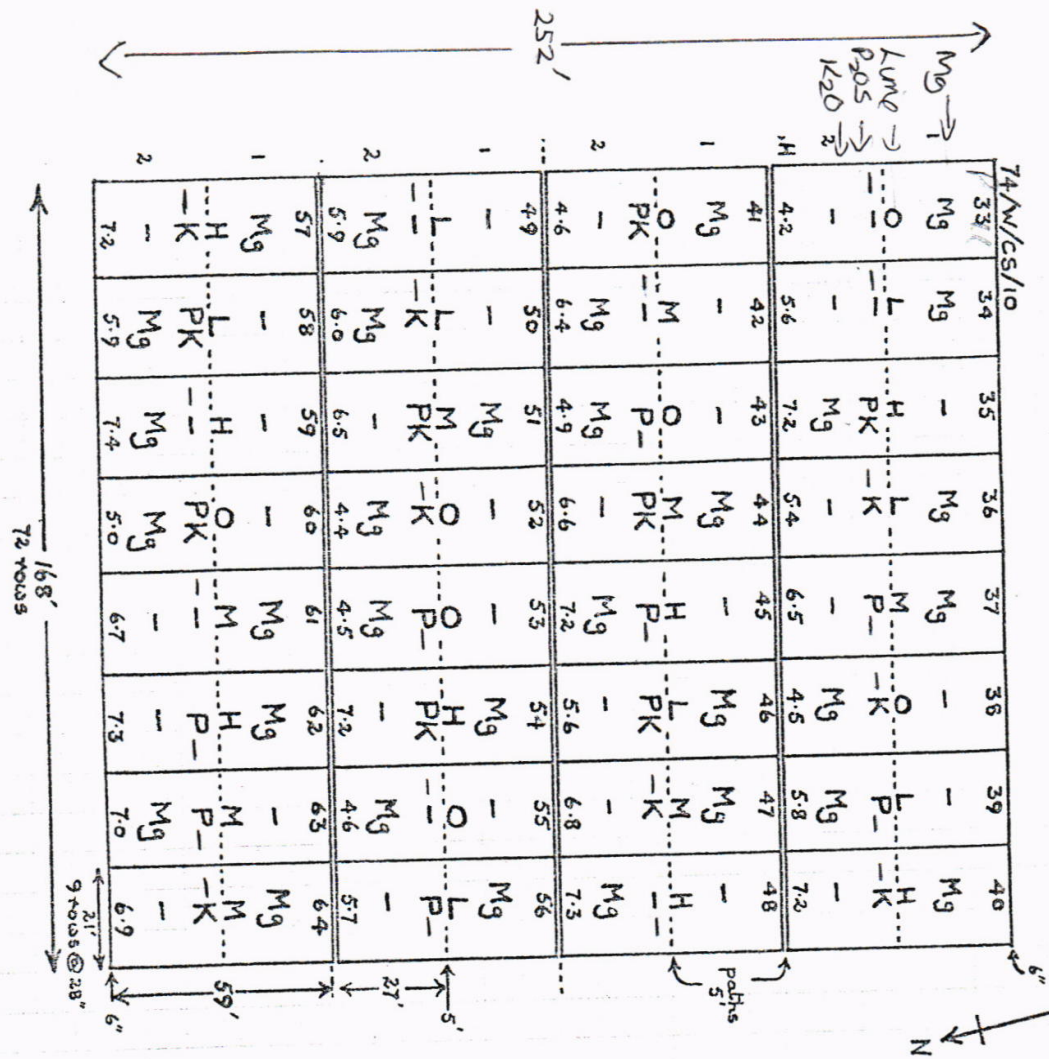
LONG-TERM LIMING

Potatoes

13th year

STACKYARD Series C 1974
Sponsor: T. Bolton

212



TREATMENTS per acre (haectare)

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 (haectare)

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.

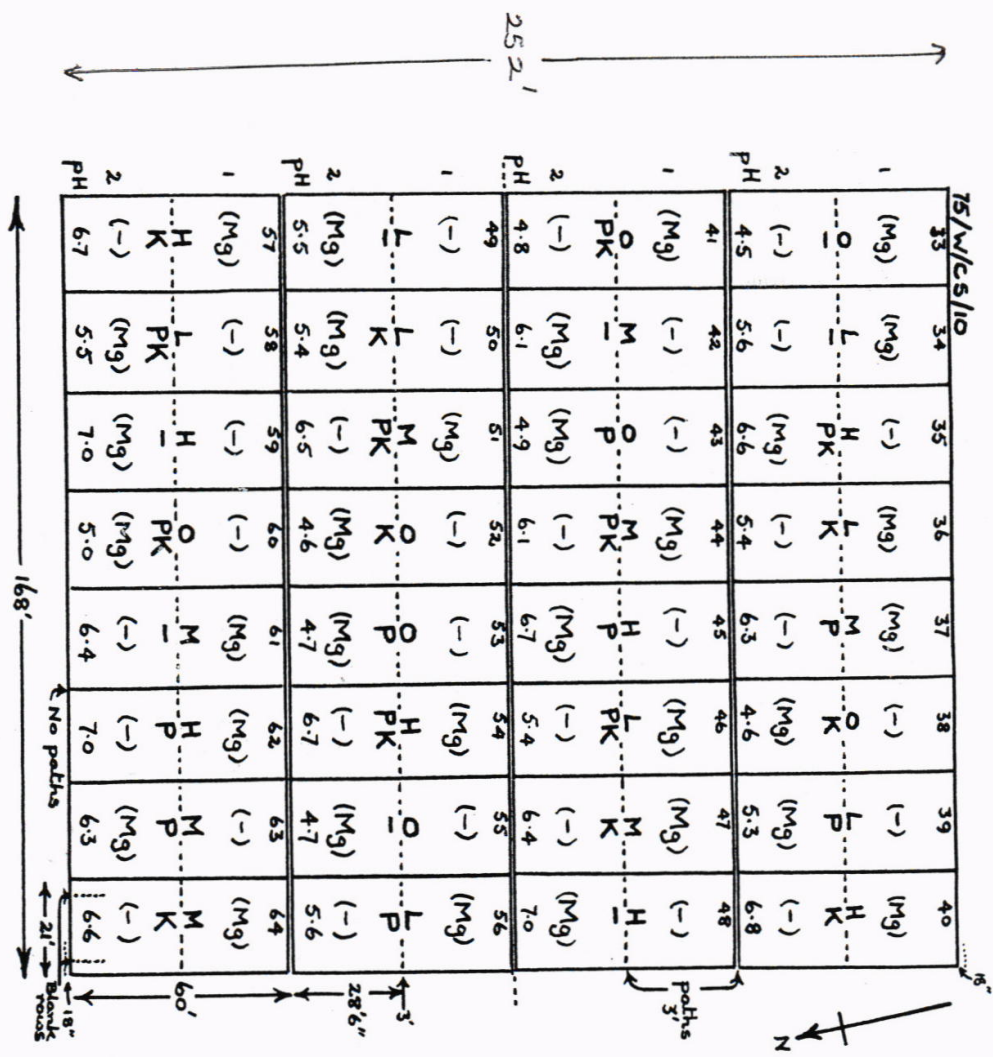
WOBURN

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, 4 1/2, 7 1/2 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.)

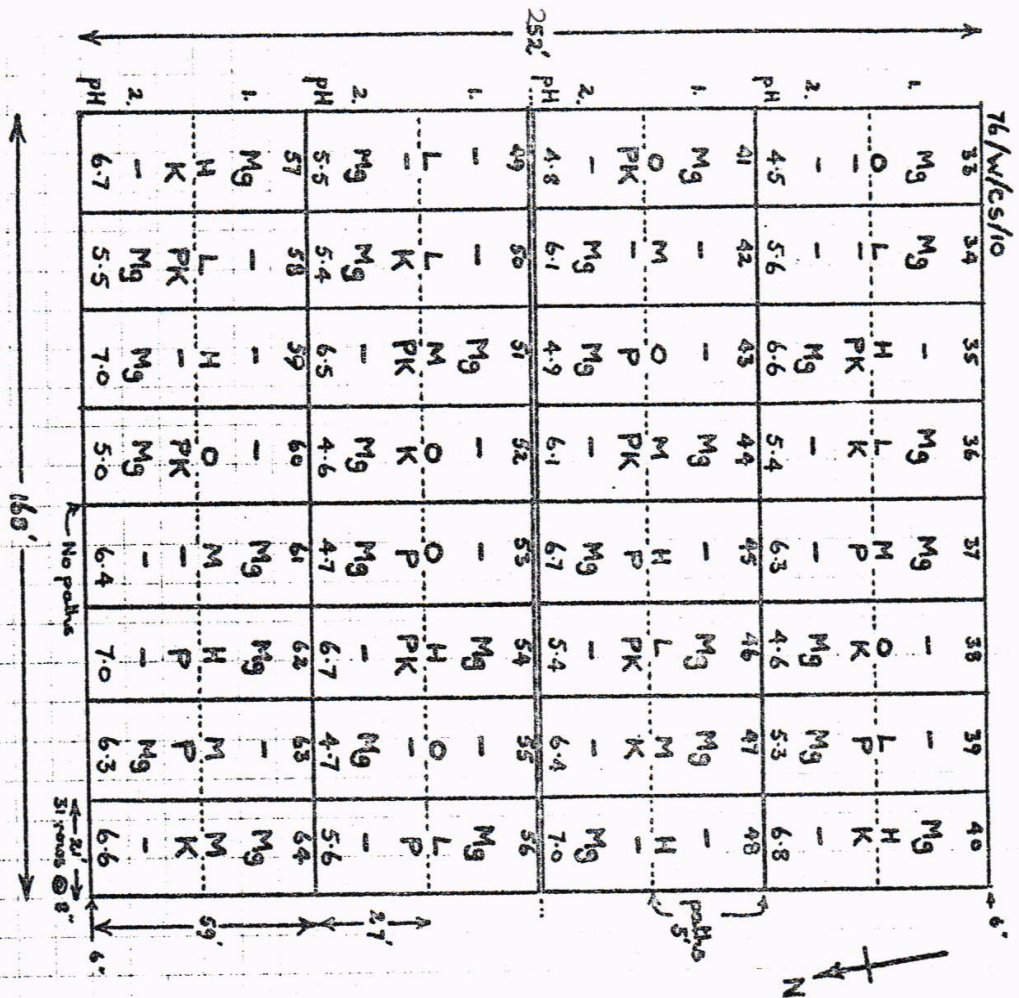
Sub-plot harvested

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 tonnes) cases

applied as ground chalk (1962-63)

PH of soil samples taken Feb 1975

P 0.5 t (50 kg) P2O5 as Superphosphate } Broadcast

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

Half Plots

-, Mg None, 100 lb (45 kg) Mg as sulphate of magnesium (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

Mavis Kaplona 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' = 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	33	Mg	-	Mg	Mg	-	-	Mg
2. O	-	L	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	41	42	43	44	45	46	47	48
2. O	-	-	O	M	H	L	M	-
PH	4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8
1. Mg	-	-	-	Mg	-	Mg	Mg	-
2. O	-	M	P	M	P	L	K	H
PH	4.8	6.1	4.9	6.1	6.7	5.4	6.4	7.0
1. Mg	49	50	51	52	53	54	55	56
2. O	-	-	Mg	-	-	Mg	-	Mg
PH	4.9	5.0	5.1	5.2	5.3	5.4	5.5	5.6
1. Mg	-	-	-	-	Mg	Mg	-	Mg
2. O	L	L	M	O	P	H	O	L
PH	5.5	5.4	6.5	4.6	4.7	6.7	4.7	5.6
1. Mg	57	58	59	60	61	62	63	64
2. O	H	L	-	-	M	H	M	M
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)

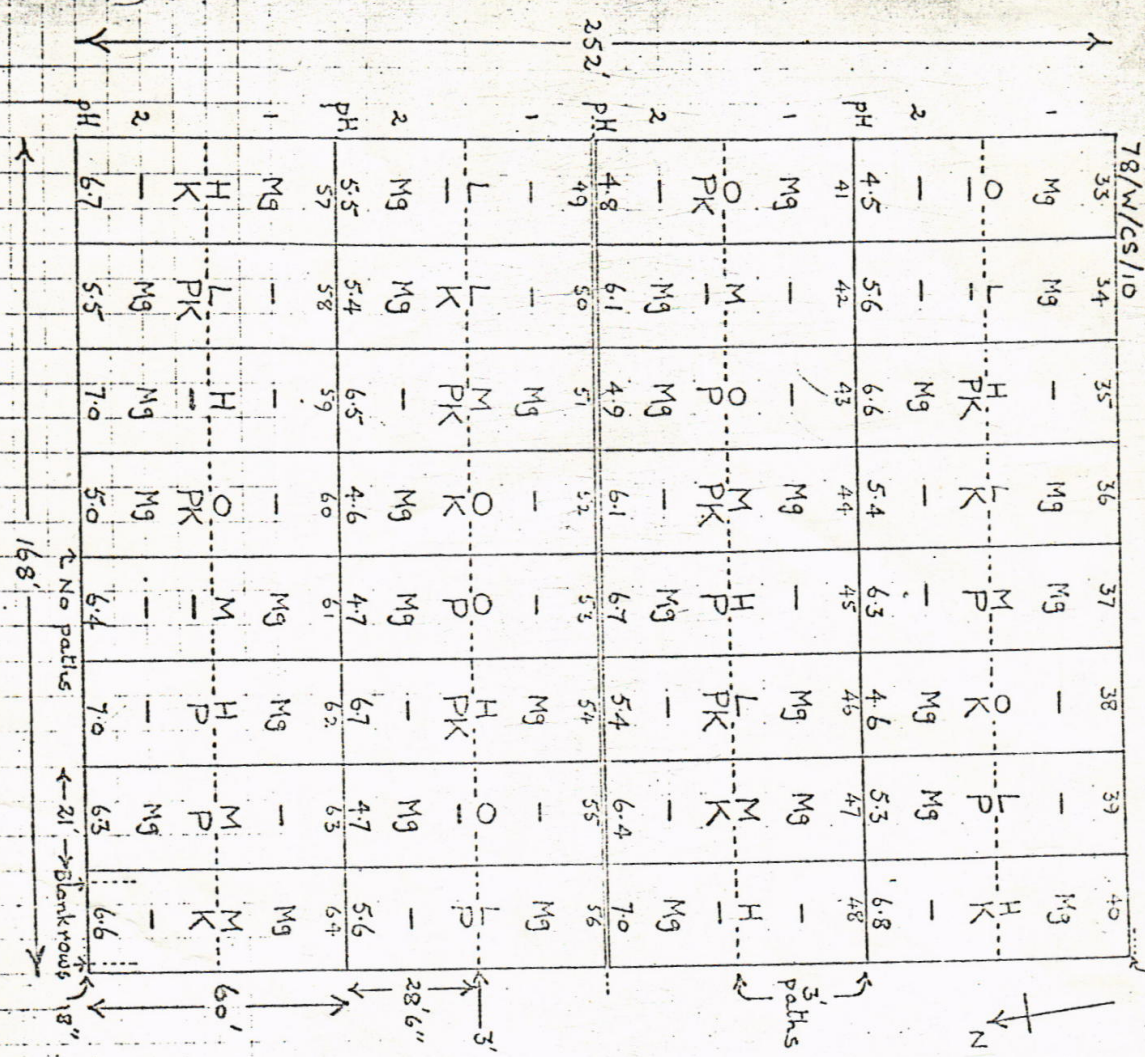
Previous cropping
 1962-64 Spring beans, 1965-67 barley, 1968 potatoes, 1969 fallow, 1970-73 barley, 1974 potatoes, 1975 Spring oats, 1976 Spring oilseed rape.

WOBBURN

LONG-TERM LIMING

Barley

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



TREATMENTS per acre (ha/acre)

Whole Plots
O, L, M, H None, 2, 4 3/4, 7 1/2 tons (Nume, 5, 12, 19 tonnes) CaCO₃
applied as ground chalk (1962-65)

pH of soil samples taken Feb 1975
P 0.5 cut (65 kg) F20 as superphosphate } Broadcast
K 1.0 cut (126 kg) K20 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 (ha/acre)
1.0 cut (126 kg) N as Nils-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)

WOBURN

LONG-TERM LIMING

Spring Oats

20th year

STACKYARD series C 1981

Sponsors: S. McGrath, D.P. Stribley

81W/CS/110

N

33	Mg	34	Mg	35	H	36	Mg	37	Mg	38	O	39	L	40	Mg
4.6	4.1	4.2	5.3	4.3	5.4	4.4	4.5	4.5	4.6	4.6	4.6	4.7	4.7	4.8	4.8
(-)	(-)	(-)	(-)	(P)	(-)	(-)	(P)	(P)	(-)	(-)	(P)	(P)	(-)	(-)	(-)
(-)	(-)	(-)	(-)	(K)	(K)	(K)	(K)	(K)	(K)	(K)	(K)	(K)	(K)	(K)	(K)
(-)	(-)	(-)	(-)	(P)	(-)	(-)	(P)	(P)	(-)	(-)	(P)	(P)	(-)	(-)	(-)
(-)	(-)	(-)	(-)	(K)	(K)	(K)	(K)	(K)	(K)	(K)	(K)	(K)	(K)	(K)	(K)
PH	PH	PH	PH	PH	PH	PH	PH	PH	PH	PH	PH	PH	PH	PH	PH
4.6	4.1	4.2	5.3	4.3	5.4	4.4	4.5	4.5	4.6	4.6	4.6	4.7	4.7	4.8	4.8
49	50	50	51	51	52	52	53	53	54	54	54	55	55	56	56
L	L	L	M	M	O	O	O	O	H	H	H	O	O	L	L
(-)	(-)	(-)	(-)	(P)	(-)	(-)	(P)	(P)	(-)	(-)	(P)	(P)	(-)	(-)	(-)
(-)	(-)	(-)	(-)	(K)	(K)	(K)	(K)	(K)	(K)	(K)	(K)	(K)	(K)	(K)	(K)
(-)	(-)	(-)	(-)	(P)	(-)	(-)	(P)	(P)	(-)	(-)	(P)	(P)	(-)	(-)	(-)
(-)	(-)	(-)	(-)	(K)	(K)	(K)	(K)	(K)	(K)	(K)	(K)	(K)	(K)	(K)	(K)
PH	PH	PH	PH	PH	PH	PH	PH	PH	PH	PH	PH	PH	PH	PH	PH
4.6	4.1	4.2	5.3	4.3	5.4	4.4	4.5	4.5	4.6	4.6	4.6	4.7	4.7	4.8	4.8
49	50	50	51	51	52	52	53	53	54	54	54	55	55	56	56
L	L	L	M	M	O	O	O	O	H	H	H	O	O	L	L
(-)	(-)	(-)	(-)	(P)	(-)	(-)	(P)	(P)	(-)	(-)	(P)	(P)	(-)	(-)	(-)
(-)	(-)	(-)	(-)	(K)	(K)	(K)	(K)	(K)	(K)	(K)	(K)	(K)	(K)	(K)	(K)
(-)	(-)	(-)	(-)	(P)	(-)	(-)	(P)	(P)	(-)	(-)	(P)	(P)	(-)	(-)	(-)
(-)	(-)	(-)	(-)	(K)	(K)	(K)	(K)	(K)	(K)	(K)	(K)	(K)	(K)	(K)	(K)

168' ← → 21' →

60' →

3' →

TREATMENTS

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

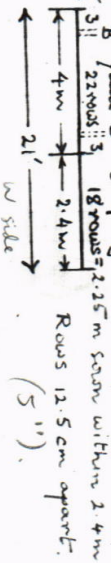
VARIETY Peniarth Sown at 190 lb (202 kg) Date: 9 Apr

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 2 rows 3 18 rows 2.25m scan 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

N
↙ ↘
W N

82/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

252' ←

168' ← No paths

3' ↓

60' ↓

21' ←

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 (acre)
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 (acre)

N Nitro-chalk at 80kg N (71 lb N)
K Murex at 120kg K (107 lb K)
Mg Kieserite at 40kg Mg (36 lb Mg)

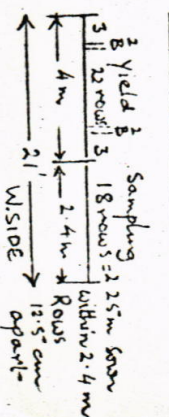
VARIETY
Peniarth

DESIGN
2 blocks of 16 plots

PLOT AREA

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

PLOT ARRANGEMENT



// No woodland or particles 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. 3 paths, 60' blocks.

TREATMENTS OF P&K

	until winter 1978	1981	1982	1983	Rates P 1981-83
-	-	-K	-K	-K	None
P1	K	P1K	P2K	P2K	P1 25 kg P ha ⁻¹ (22 lb/ac)
P2	P	P1K	-K	P2K	P2 50 kg P ha ⁻¹ (45 lb/ac)
P3	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

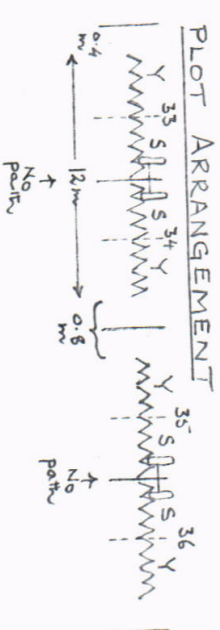
BASAL MANURING ha⁻¹ (acre)

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)



WOBBURN

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
	(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)	(P2)	(-)	(P3)	(-)	(P2)	(P2)	(P1)

- || No walkway, post hole or fertilizer containing trace elements.
- || All to be cleared with sponsor. No straw burning on site.
- || All operations by Farm.

168'

No paths

21'

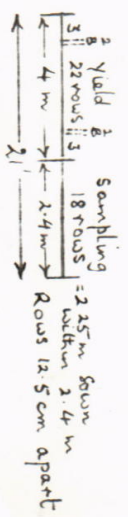
60'

VARIETY
Klaxon (normal seed dressing). Sown at 1366b (152kg) Date 18 Mar

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



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

RESIDUES OF LIME t ha⁻¹

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

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

TREATMENTS	Residues of P&K kg ha ⁻¹	1981	1982	1983	Rates P 1981-83
(-)	-	-K	-K	-K	None
(P1)	K	P1K	P2K	P2K	P1 25 kg P
(P2)	P	P1K	-K	P2K	P2 50 kg P
(P3)	PK	P3K	P2K	P4K	P3 75 kg P
					P4 100 kg P

K. July

WOBURN

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 -K

(P1) K P1K P2K P2K

(P2) P P1K -K P2K

(P3) PK P3K P2K P4K

Rates of P 1981-83

- None

P1 25kg P

P2 50kg P

P3 75kg P

P4 100kg P

P&K until 1978 cumulative, rates depended on crop

Rates of K

1981&1982 120kg K ha⁻¹

1983 208kg K ha⁻¹

RESIDUES OF LIME t ha⁻¹

Total applied 1962-1978, 1981&1982

0 None

L 8

M 24

H 43

BASAL MANURING kg ha⁻¹

NK None

VARIETY

W. T. H. scale - Lasko sown at 140lb (160kg) 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

1 Yield 2 Sampling

3 22 rows 3 18 rows = 2.25m sown within 2.4m

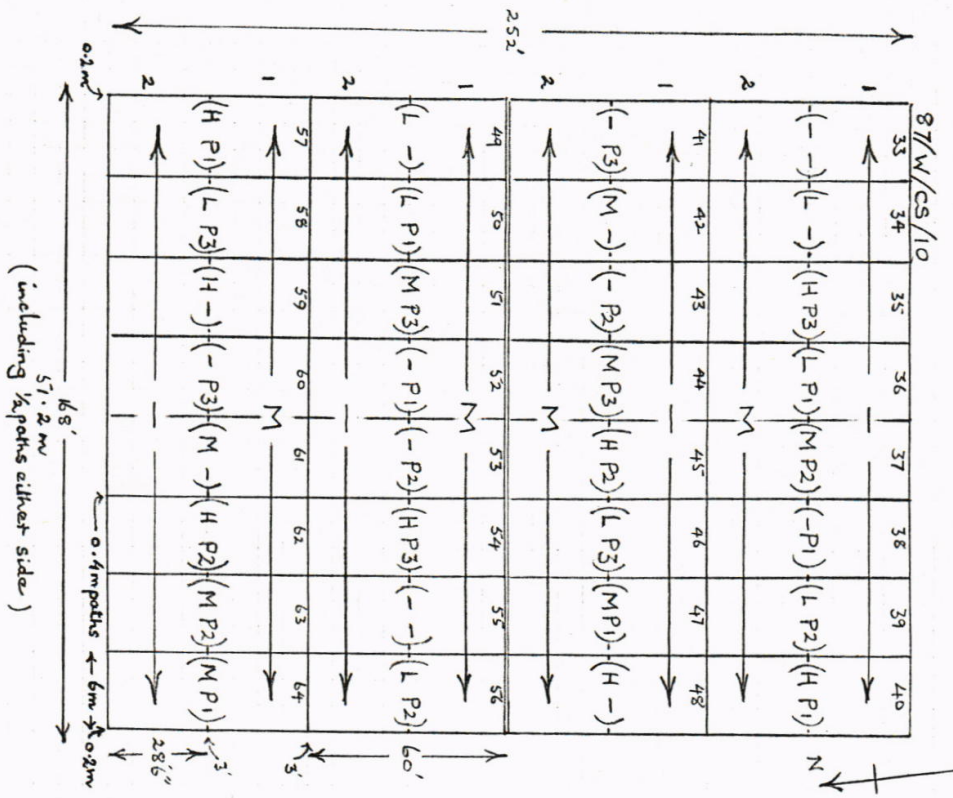
4m 2.4m

21' Rows 2.5cm apart

This is wrong way round

WOBURN LONG-TERM LIMING S. Lupinus 26th year STACKYARD series c 1987 211

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

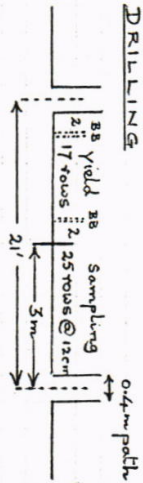
- None
- M Sprayed at rates & intervals to be silted (applied by sprayer across strips of sub plots and to travel also over - sub plots on each occasion to equalize wheelings).

BASAL MANURING
 None

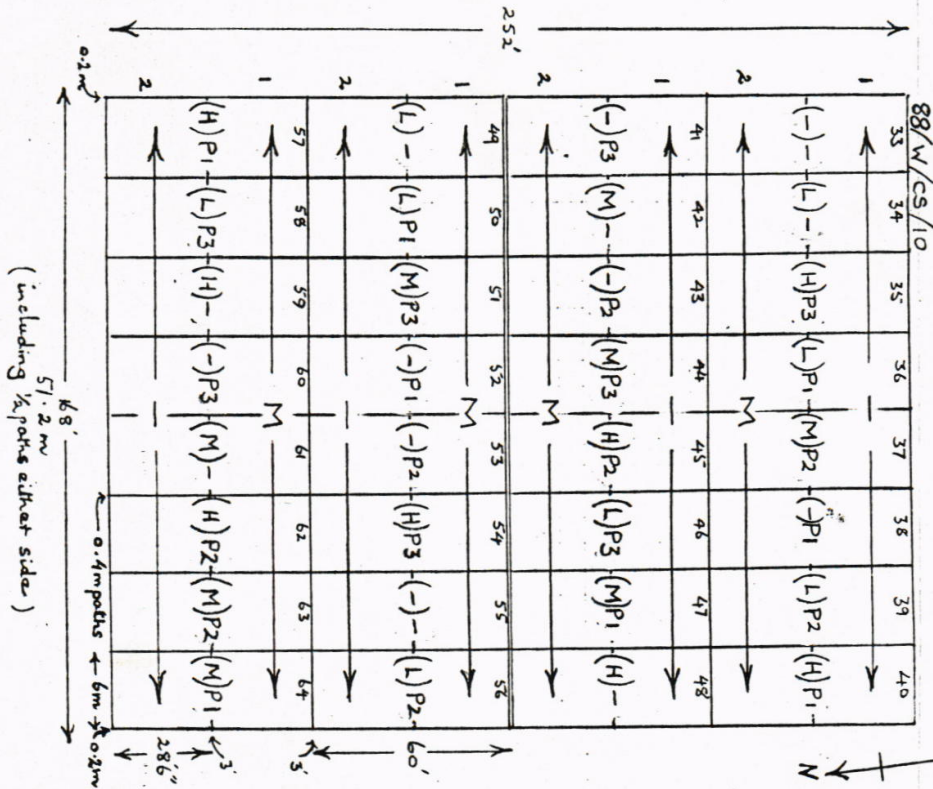
VARIETY
 'L. albus (Growth)'
 Vladimir, seed inoculated. Rhizobium, sown at 145 g/m² on 6 April

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 Linedseed 27th year STACKYARD series c 1988
Sponsors: SFRMcGrath, 211

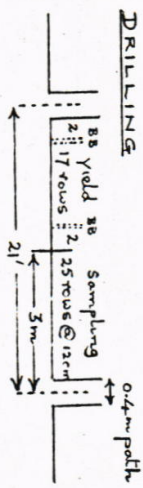


TREATMENTS
Residual effects of previous rates of lime
(total applied 1962-1978, 1981, 1982 & 1987) t ha⁻¹

(-) 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, none at 80 kg/ha in seedbed
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

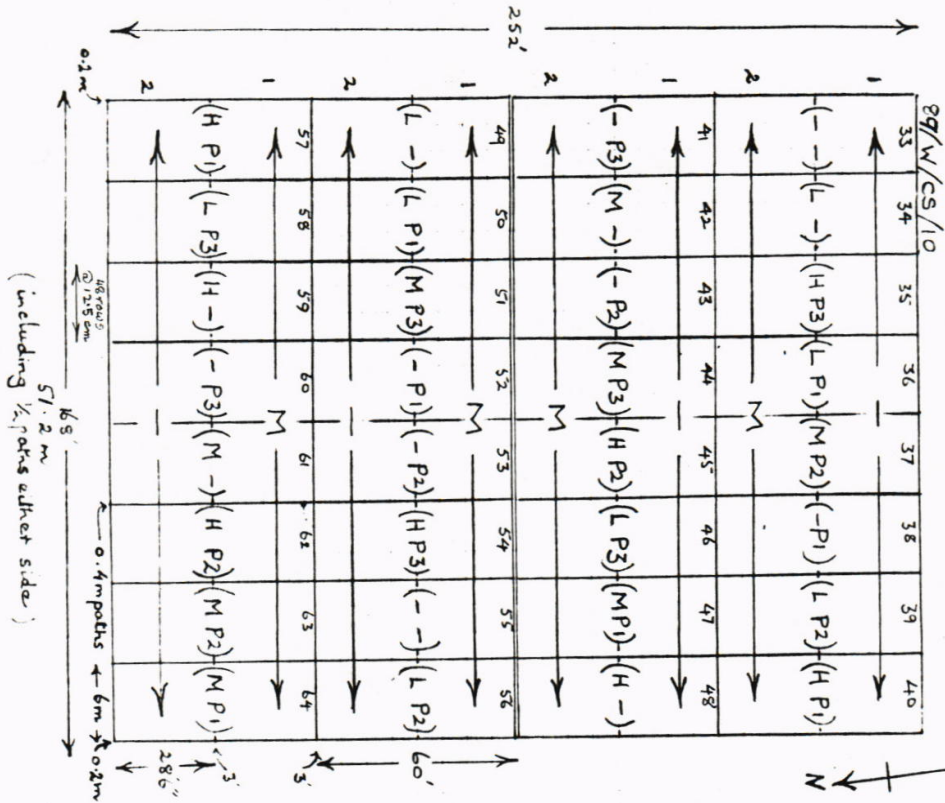
LONG-TERM LIMING

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

(-) None
(P1) 9
(P2) 25.5
(P3) 45.5

Manganese sprays in 1987 cumulative to previous applications

None
M 'Ytel' 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

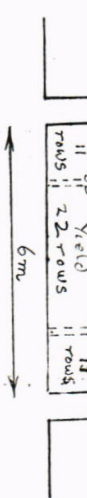
DESIGN 2 block of 16 plots, split into 2.

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

DILLING
11 8B Yield 11 8B 14
rows 11 22 rows 11 11 rows

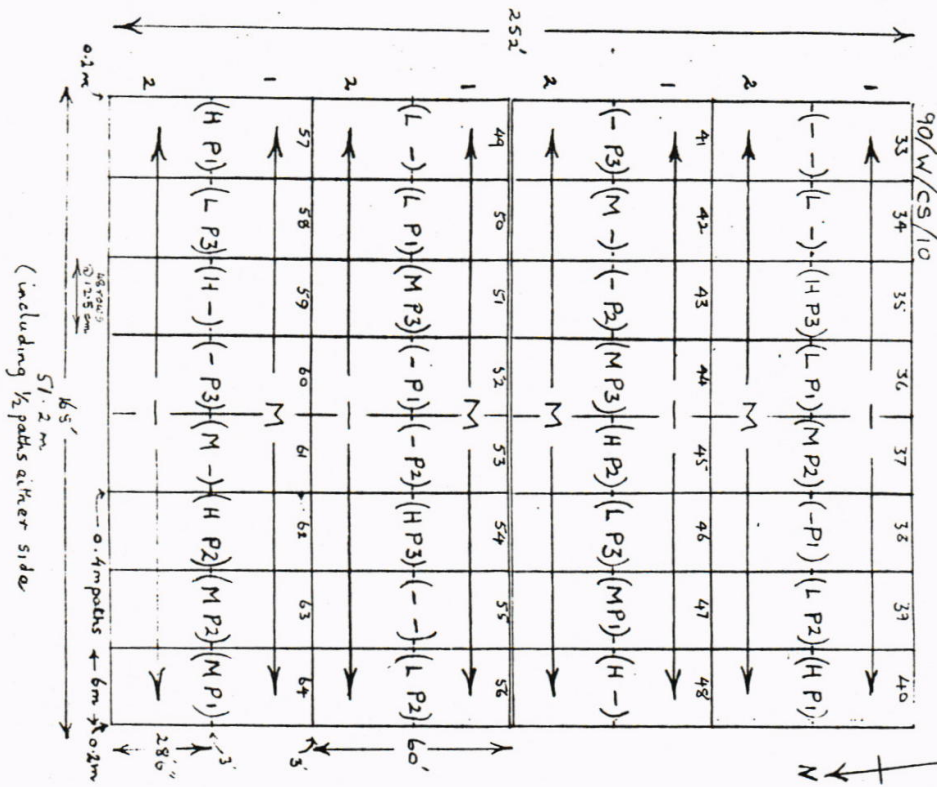
0.4m path

Ytel 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. McEwen, 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) 1
- (P2) 2
- (P3) 3

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

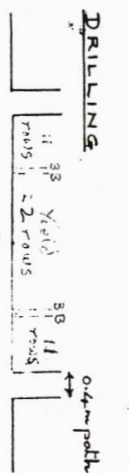
DESIGN

2 block of 16 plots, split into 2.

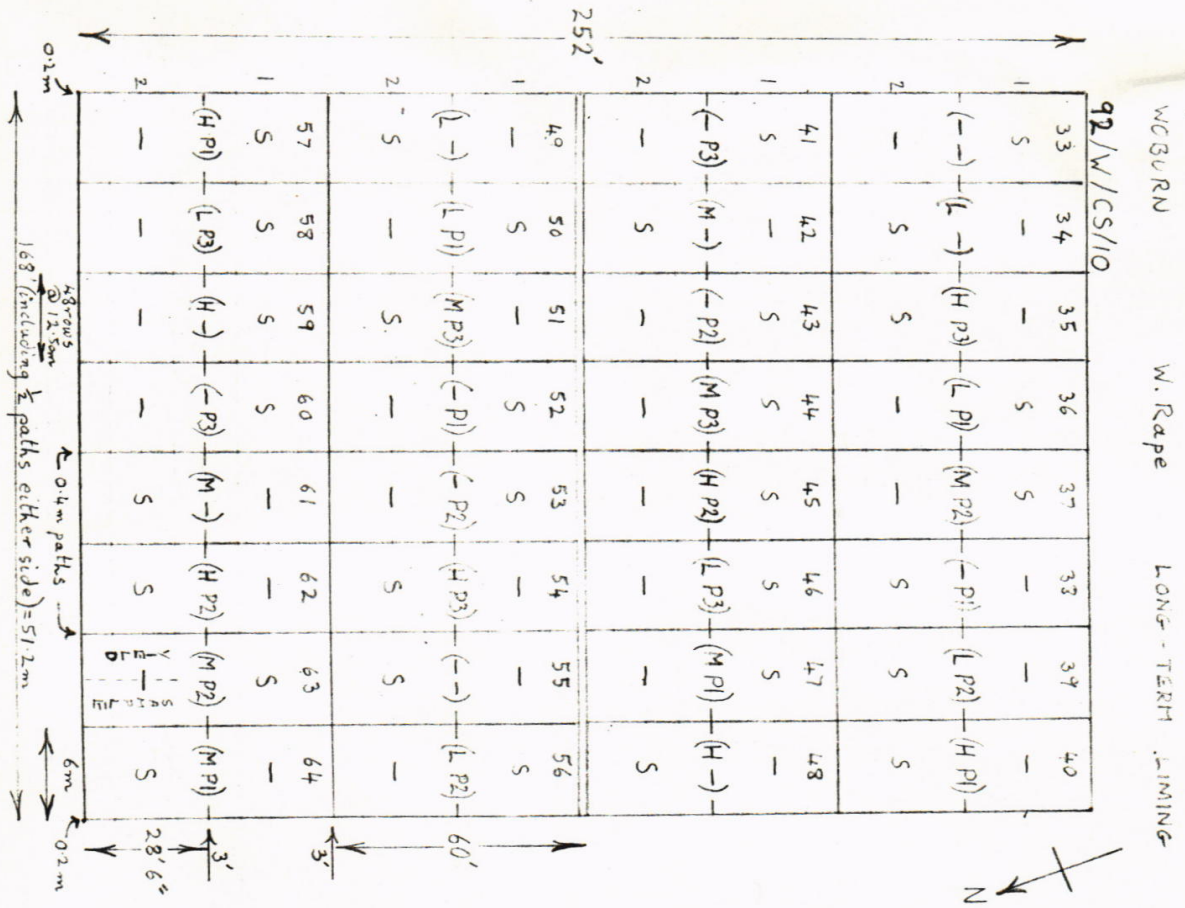
PLOT AREA

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

DILLING



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



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

- (—) None
 - (P1) 30
 - (P2) 60
 - (P3) 90
- 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-ant Mg spray, not containing sulphate

VARIETY

Libravo sown @ Kghal on

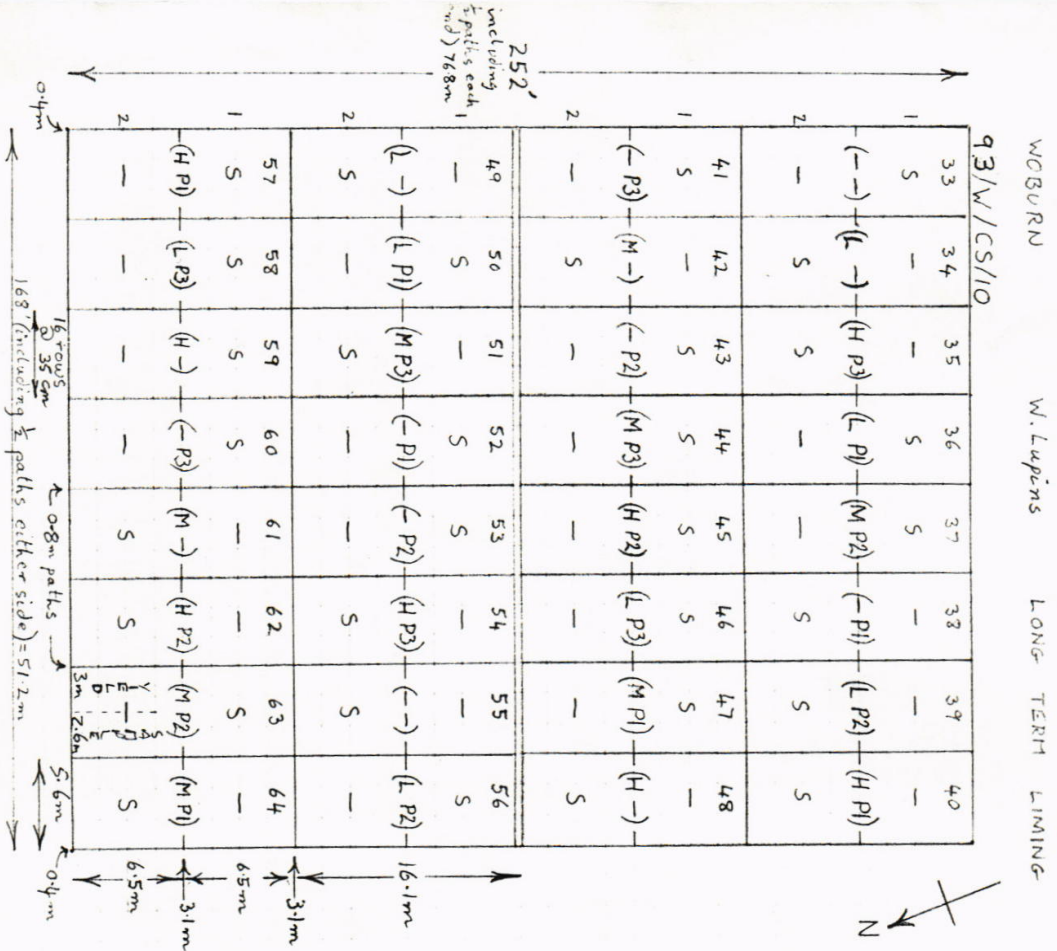
DESIGN: 2 blocks of 16 plots split into 2

PLOT AREA

Whole plot: 6m x 60' = 0.0110 ha

// All agrochemicals to be cleared by sponsor

// All operations by Farm.



32nd Year
Sponsors: S.P. McGrath, P.B. Barralough, G.F. J. 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 1993 (cumulative to 1991 & 1992)
- None
 - S calcium sulphate @ 30 Kg S ha⁻¹ by hand

BASAL MANURING

None

VARIETY

CH304/70 sown @
Kyhar¹ on

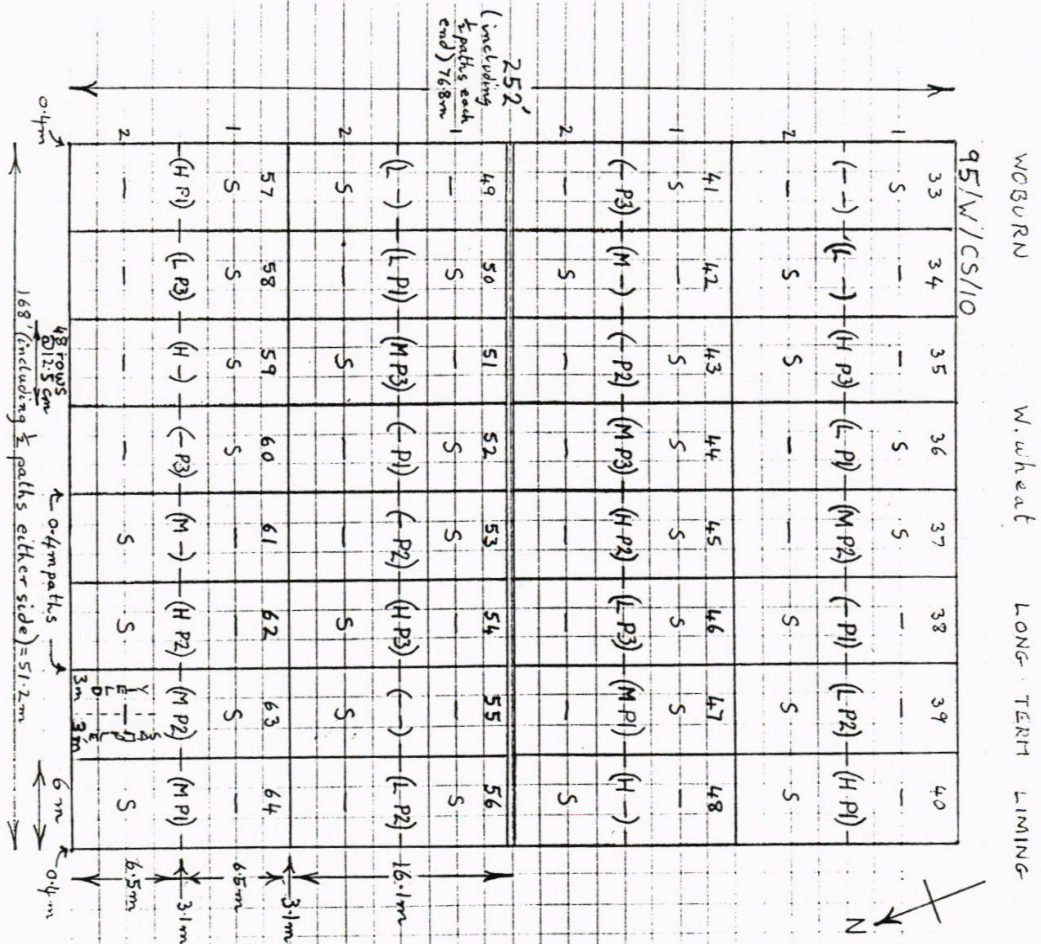
DESIGN

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



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

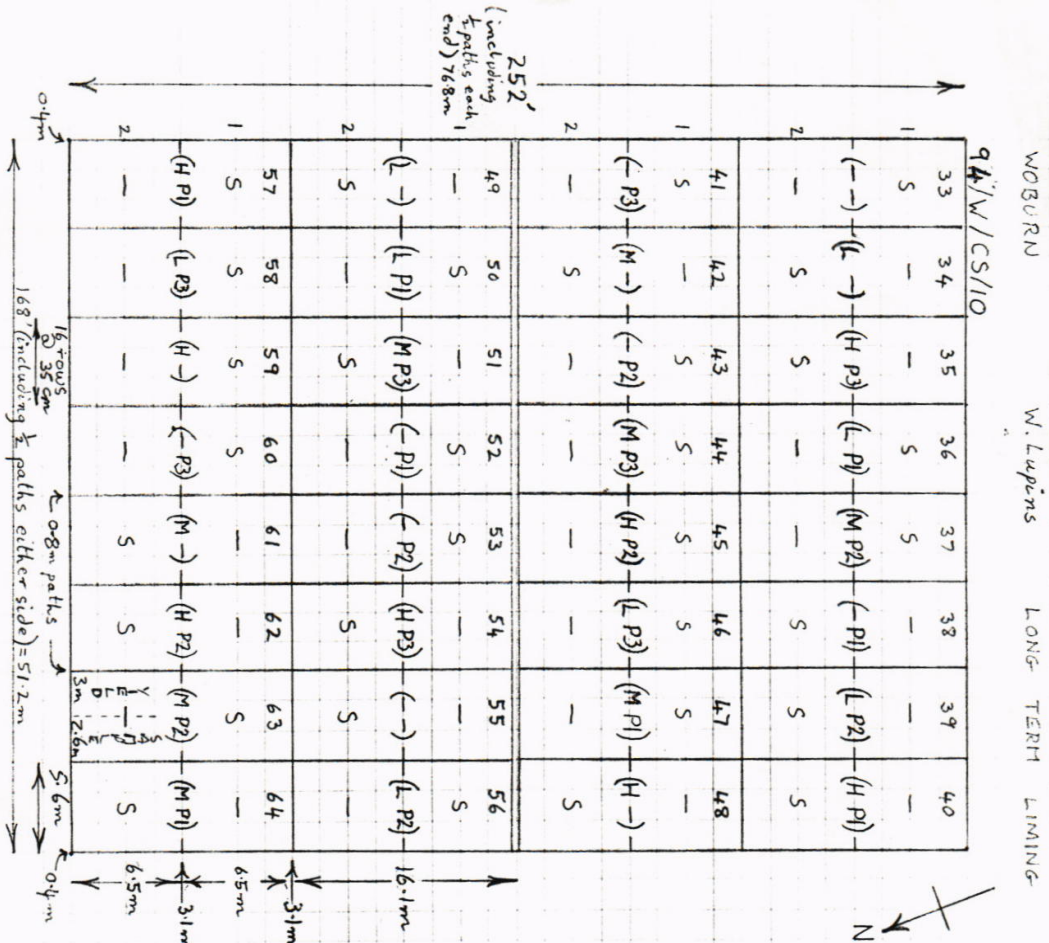
BASAL MANURING
N in spring at 5 F.P.

VARIETY
Genesis dt 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 = 0.0639 ha

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



WOBURN W. Lupinus LONG TERM LIMING

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

GH304/70 sown @ 1 kg ha⁻¹ on

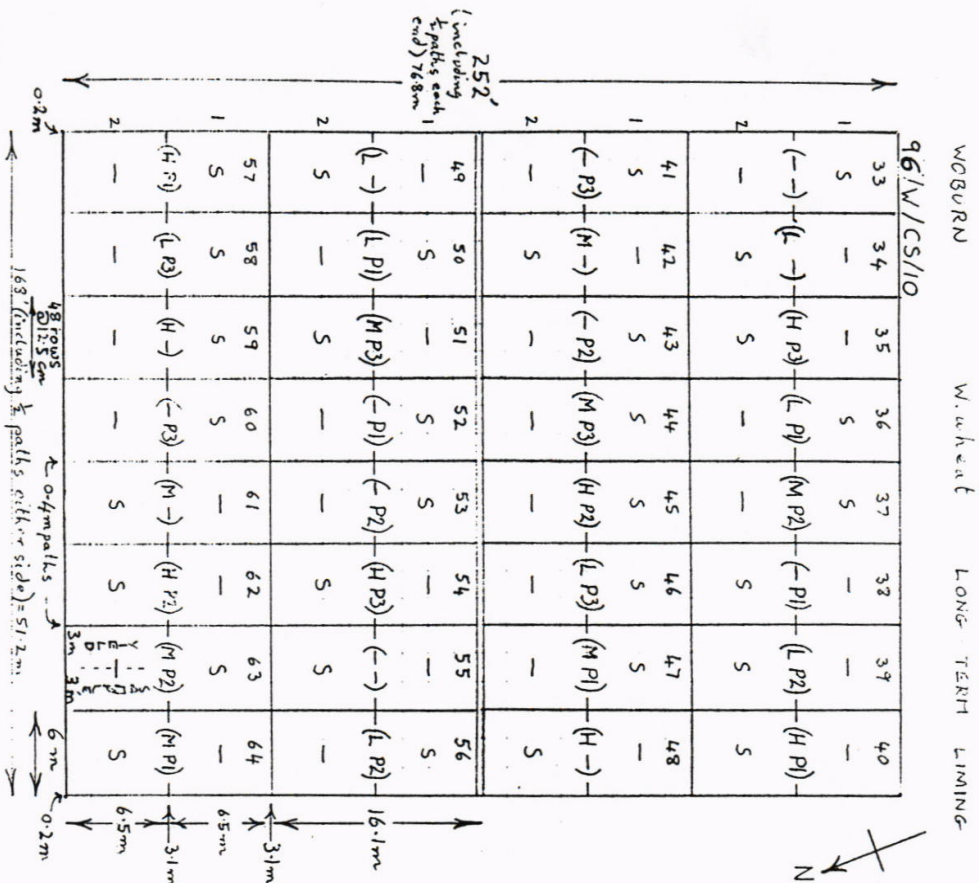
DESIGN

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



35th Year STOCKYARD Series C 1996
Sponsors: S P McGrath.

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 & 1995)

- None
S Calcium sulphate @ 30 Kg Shat⁻¹ by hand

BASAL MANURING

N in spring at S.F.P.

VARIETY

Hereward dr. Subulotoun @ 375 seeds/m² on 3 Oct 1995

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.

97/W/CS/10

Long Term Liming

36th Year

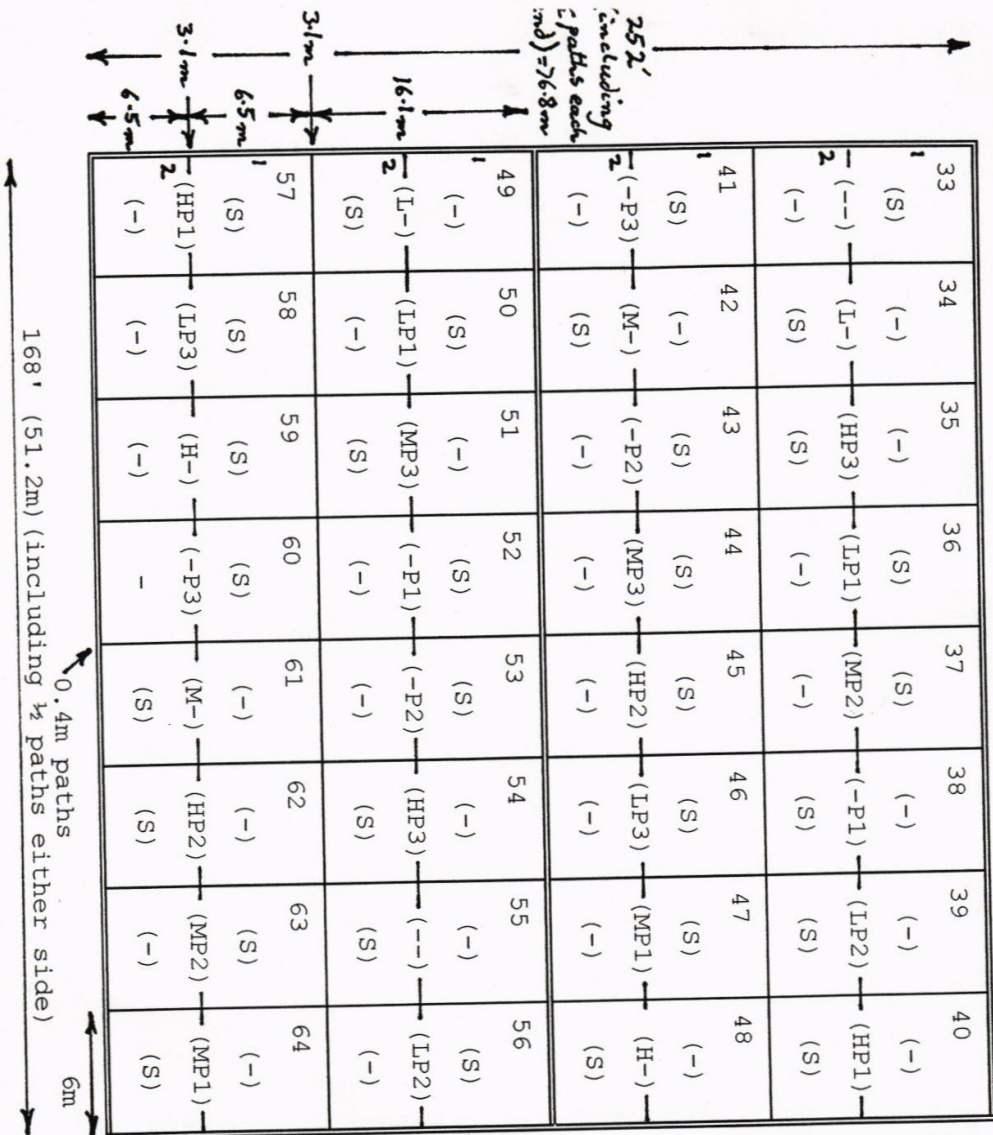
Stackyard C

211

Sponsor: S.P. McGrath

~~Robert~~
Woburn

Grass



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