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ROTHAMSTED
RESEARCH

Collection of Plans for the Woburn Organic Manuring Experiment

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W/RN/12 - Woburn Organic Manuring 1970 - 1974

Rothamsted Research

Rothamsted Research (1966-1988) *W/RN/12 - Woburn Organic Manuring 1970 - 1974* ; Collection Of Plans For The Woburn Organic Manuring Experiment, pp 5 - 9

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 STACKYARD 'B' 6th year 1970
 Sponsor: G.E.G. Mattingly
 Keys cut 496.

TREATMENTS per acre
Organic Manures 1970

Dg 20 tons F.Y.M. (3 tons DM/annum on average;
 St 3 tons (DM) Straw } Total nutrients
 Pt 3 tons (DM) Peat } balanced by
 Gm Green manure } PK Mg additions
 1968: clover (late flowering red).

Fertilisers

Fd PKMg equivalent to FYM (High PKMg).
 Fs K₂Mg equivalent to straw with P (Low PKMg).

N.B. In 1970 all plots receive 0.5 cut P₂O₅, 1.0 cut K;
 as (0:14:28)

Supplementary fertilisers

Fd 0.3 cut K₂O. Lc 0.4 cut K₂O } as mural
 St 0.3 cut K₂O. Ln 0.8 cut K₂O } of Potash
 Nitrogen to Sugar Beet 1969 (after wheat 1968)
 (1)(3)(5)(7) 0.2, 0.6, 1.0, 1.4 cut N as Nitro-chalk '21.

Variety: Maris Bead. Sown at 200 lb/acre: 20 Mar

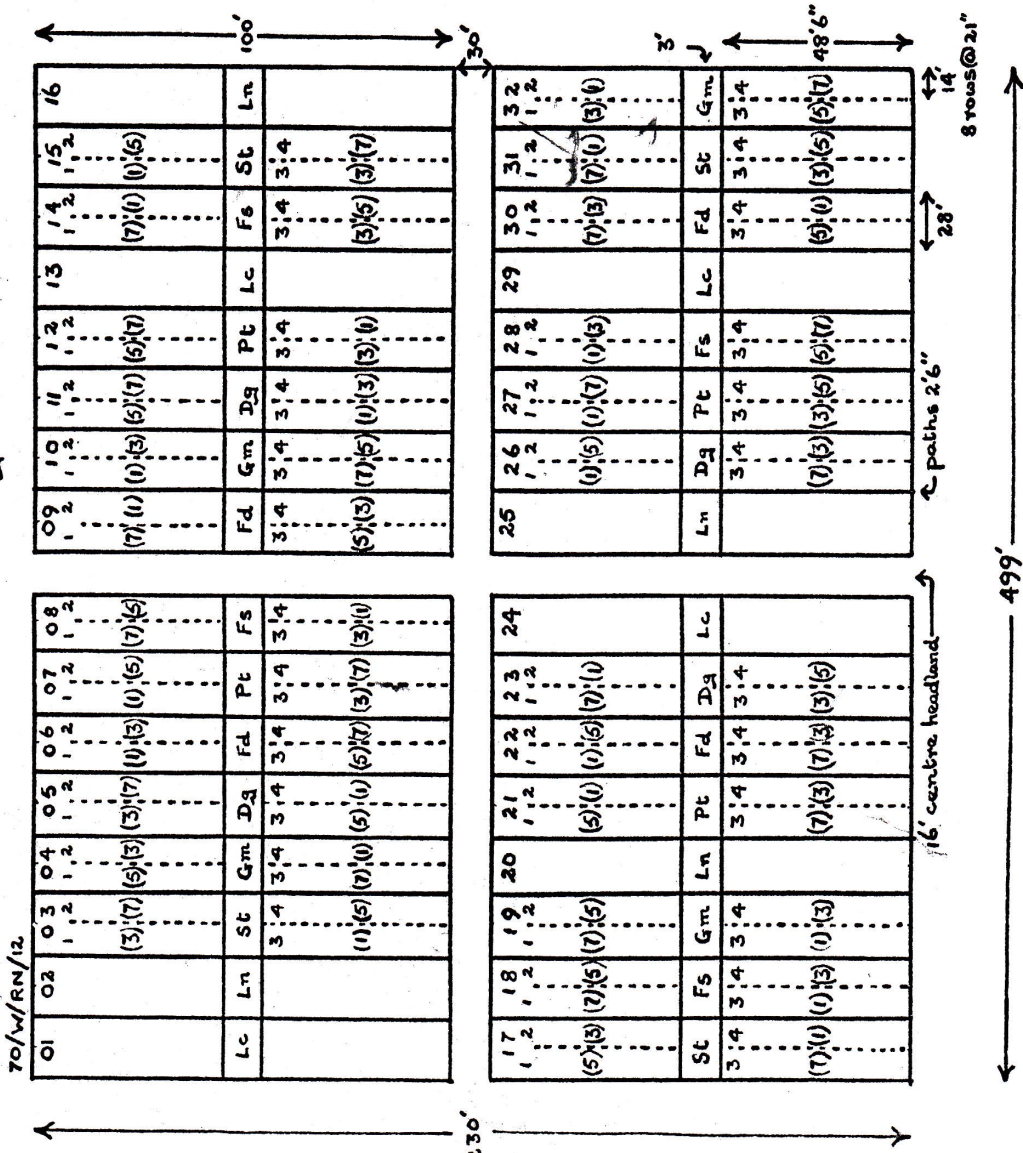
Keys: Sown: Apr 23, 1965

Lc: Mixture with clover

Ln: Mixture without clover, 1.0 cut N in Spring;
 for each cut. Keys receive PKMg manuring
 annually for nutrients removed in cut grass.

Sub plot area 14' x 48'6" = 0.0156 acre

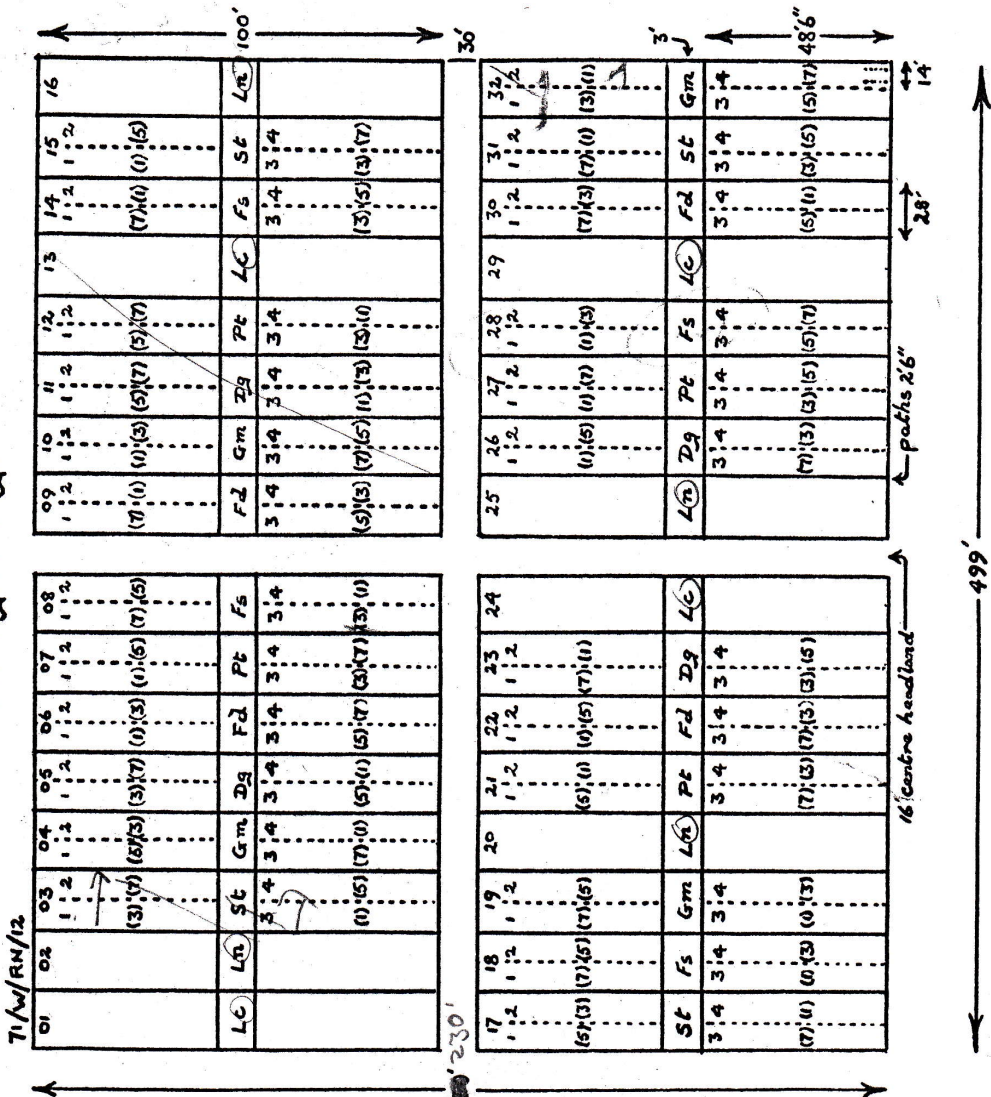
WOUBURN ORGANIC MANURING EXPERIMENT
 1970 S.Beans & Keys



WOBURN ORGANIC MANURING EXPERIMENT
 STACKYARD 'B' 7th year 1971 20'
 Sponsor G.E.G. Mattingly



1971 Rye & Leys



TREATMENTS per acre (hectare)

- Organic Manures 1971
 Dg 10 tons (25 tonnes) FYM (3 tons DM/annum on average)
 St 3 tons (7.5 tonnes) (DM) Straw } Total nutrients
 Pt 3 tons (7.5 tonnes) (DM) Peat } balanced by PKMg
 Gm Green manure } additions to equal Fs
- 1970: clover (late flowering red).

Fertilisers

- Fd P, K, Mg equivalent to Dg (High PKMg).
 Fs K, Mg equivalent to straw with P (Low PKMg)

Note: Additional P and Mg are applied in autumn and spring to balance nutrients differentially removed by previous crops.

BASAL NITROGEN TO RYE

- 0.25 cwt (31kg) N as 'Nitro-chalk' 21 top dressed in spring.
 Nitrogen to sugar beet 1969 (after v.wheat 1968)
 (1), (3), (5), (7) 0.2, 0.6, 1.0, 1.4 cwt (23, 75, 125, 175 kg) as Nitro-chalk 21
 VARIETY: King II: 17 Oct. (No nitrogen to beans 1970)
 Leys: Sown: Apr 23, 1965
 Lc: Mixture with clover
 Ln: Mixture without clover, 10cwt (125kg) N in Spring & for each cut. Leys receive PKMg manuring annually for nutrients removed in cut grass.
 Sub plot area: 14 x 486" = 0.0156 acre (0.0063 ha)

STACKYARD 'B' 8th year 1972 21

Sponsor G.E.G. Mattingly

TREATMENTS per acre (hectare)

Residues of Organic Manures applied annually 1965-71

- (Dg) 4 tons (10 tonnes) (DM) FYM } Total nutrients
- (St) 3 tons (7.5 tonnes) (DM) Straw } balanced by PKMg
- (Pt) 3 tons (7.5 tonnes) (DM) peat } additions to equal Fs.
- (Gm) Green Manure

1971: Late flowering Red Clover : 22 Apr * (16 tons (40 tonnes) F.M.)

Fertilisers

(Fd) P, K, Mg equivalent to Dg (High PKMg)

(Fs) K, Mg equivalent to straw with P (Low PKMg)

Note: PKMg are applied in autumn and spring in addition, to balance nutrients differentially removed by previous crops

Nitrogen to Potatoes 1972

N₀, N₁, N₂, N₃, N₄, N₅, N₆, N₇
0, 8, 16, 24, 32, 40, 48, 56, 64, 72, 80, 88, 96, 104, 112, 120, 128, 136, 144, 152, 160, 168, 176, 184, 192, 200, 208, 216, 224, 232, 240, 248, 256, 264, 272, 280, 288, 296, 304, 312, 320, 328, 336, 344, 352, 360, 368, 376, 384, 392, 400, 408, 416, 424, 432, 440, 448, 456, 464, 472, 480, 488, 496, 504, 512, 520, 528, 536, 544, 552, 560, 568, 576, 584, 592, 600, 608, 616, 624, 632, 640, 648, 656, 664, 672, 680, 688, 696, 704, 712, 720, 728, 736, 744, 752, 760, 768, 776, 784, 792, 800, 808, 816, 824, 832, 840, 848, 856, 864, 872, 880, 888, 896, 904, 912, 920, 928, 936, 944, 952, 960, 968, 976, 984, 992, 1000

Nitrogen to Sugar beat 1969, (after V. wheat 1968) as Nitro-Chalk 21

(1), (3), (5), (7) 0.2, 0.6, 1.0, 1.4 cut (55, 75, 125, 175)

BASAL MANURING per acre (hectare)

Blocks I and III Potatoes

183 cut (100kg) P₂O₅ as superphosphate, 192 cut (200kg) K₂O as muric, 100 cut potash ploughed in in autumn, and rotay cultivated at the same amount in spring. with 0.79 cut (99kg) MgO as Epsom Salts

Blocks II and IV Rye

400b (448kg) (0.14:28), 0.3 cut (38kg) MgO as Epsom Salts and 0.3 cut (40kg) N as Nitro-chalk 21 in spring

rows Leys: Sow: Apr 23, 1965, Blocks I & III ploughed autumn 1971

LC: Mixture with clover. LN: Mixture without clover 400b (448kg) (0.14:28), 0.3 cut (38kg) MgO as Epsom Salts, to LN only, 1.0 cut (126kg) N as Nitro-chalk 21 in spring and after each cut.

WOBBURN ORGANIC MANURING EXPERIMENT

Rye & Leys

10	12	14	15	16
1.2	1.2	1.2	1.2	1.2
(7)(1)	(5)(7)	(5)(7)	(1)(5)	
(Fd)	(Dg)	(Pt)	(Fs)	(St)
3.4	3.4	3.4	3.4	3.4
(5)(13)	(7)(5)	(1)(3)	(3)(5)	(3)(7)

IV Rye & Leys

25	26	27	28	29	30	31	32
1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
(1)(5)	(1)(7)	(1)(3)			(7)(3)	(7)(1)	(3)(1)
(Dg)	(Pt)	(Fs)			(Fd)	(St)	(Gm)
3.4	3.4	3.4			3.4	3.4	3.4
(7)(5)	(3)(5)	(5)(7)			(5)(1)	(3)(5)	(5)(7)

Potatoes

01	02	03	04	05	06	07	08
11	11	11	11	11	11	11	11
3.2	7.0	1.0	5.3	4.2	1.4	2.6	3.0
(Lc)	(Lm)	(Sc)	(Gm)	(Dg)	(Fd)	(Pt)	(Fs)
3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
0.1	2.4	6.7	0.4	6.1	0.6	0.1	2.5
5.7	3.5	4.5	2.7	3.0	7.3	3.7	4.6

III Potatoes

17	18	19	20	21	22	23	24
11	11	11	11	11	11	11	11
3.7	6.3	6.1	4.1	3.7	0.6	2.4	6.5
(Sc)	(Fs)	(Gm)	(Ln)	(Pt)	(Fd)	(Dg)	(Lc)
3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
6.1	5.4	3.0	5.6	6.0	3.7	6.5	2.1
0.5	0.7	5.6	3.5	2.4	1.3	1.4	3.4

Sub-plot area Potatoes : 14' x 20' = 0.0064 acre (0.0026 ha)

Sub-plot area Rye : 14' x 48'6" = 0.0156 acre (0.0063 ha)

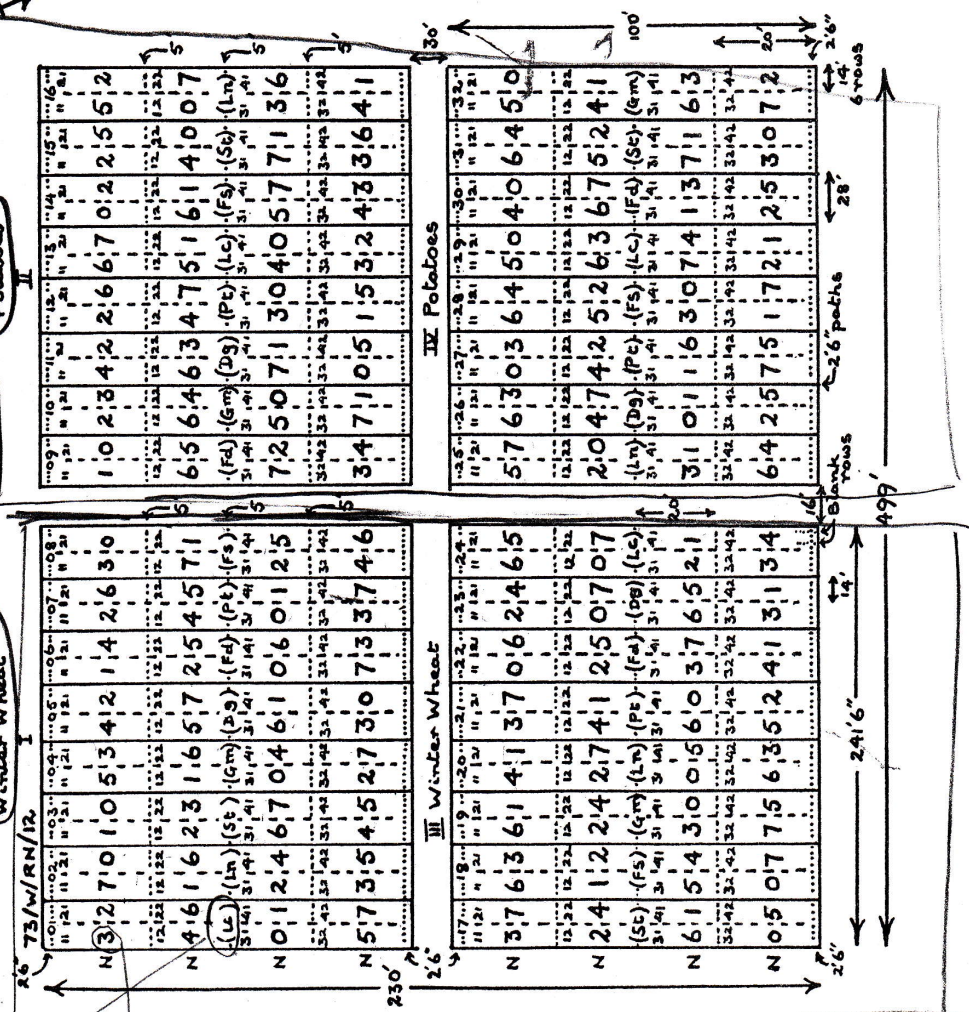
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STACKYARD 'B' 1973

Sponsor: G.E. & Mattingly

9th year

573776
573775
WOBURN ORGANIC MANURING EXPERIMENT
Potatoes
Winter Wheat



TREATMENTS per acre (hectare)

Residues of Organic Manures applied annually 1965-71 and Ley (saw) 1965

(Dg) 4 tons (10 tonnes) (DM) FYM, (16 tons [40 tonnes] FYM)

(St) 3 tons (7.5 tonnes) (DM) Straw

(Pt) 3 tons (7.5 tonnes) (DM) peat

(Gm) Green Manure 1972 Blocks II & IV Essex Broad Red Clover

(Lc) Grass-clover ley ploughed up 1971 Blocks I & III

(Ln) Grass ley with N 1972 Blocks II & IV

Fertilisers

(Fd) P, K, Mg equivalent to Dg (High PKMg)

(Fs) K, Mg equivalent to straw with P (Low PKMg)

Note: P, K, Mg are applied in autumn and spring in addition to

balance nutrients differentially removed by previous crops

Nitrogen to Winter Wheat 1973

N0-N9, N1-0-4, N2-0-8, N3-0-6, N4-0-8, N5-1-0, N6-1-0, N7-1-3, N8-1-3, N9-1-3

(0 25 50 75 100 125 150 175 kg N)

Nitrogen to Potatoes 1973

N0-N9, N1-0-4, N2-0-8, N3-1-1, N4-1-5, N5-1-9, N6-2-3, N7-2-7, N8-3-1, N9-3-5

(0 50 100 150 200 250 300 350 kg N)

BASAL MANURING per acre (hectare)

Blocks II & IV Potatoes - Pentland Crown Planted: 6-7 Apr

183 cut (230 kg) P₂O₅ as superphosphate, 192 cut (240 kg) K₂O as muriate of

potash ploughed in in autumn, and rotary cultivated in at the same

amount in spring with 0.79 cut (100 kg) MgO as Epsom salt + balancing

P & Mg differentially removed by rye in 1972

Blocks I & III Winter Wheat - Cappelle @ 175 lb (196 kg) Date: 24 Nov

Sub-plot area

14' x 20' = 0.0064 acre (0.0026 ha.)

STACKYARD B' 1974

Sponsor: G.E. & Mattingly

10th year

WOBURN ORGANIC MANURING EXPERIMENT

Sugar beet

7A W/RN/12 I

08-11	09-11	10-11	11-11	12-11	13-11	14-11	15-11	16-11
3.2	7.0	1.0	5.3	4.2	1.4	2.6	3.0	
4.6	1.6	2.3	1.6	5.7	2.5	4.5	7.1	
(Lc)	(Ln)	(St)	(Gm)	(Dg)	(Fd)	(Pt)	(Fs)	
0.1	2.4	6.7	0.4	6.1	0.6	0.1	2.5	
5.7	3.5	4.5	2.7	3.0	7.3	3.7	4.6	

III Sugar beet

17-11	18-11	19-11	20-11	21-11	22-11	23-11	24-11
3.7	6.3	6.1	4.1	3.7	0.6	2.4	6.5
2.4	1.2	2.4	2.7	4.1	2.5	0.7	0.7
(St)	(Fs)	(Gm)	(Ln)	(Pt)	(Fd)	(Dg)	(Lc)
6.1	5.4	3.0	0.5	6.0	3.7	6.5	2.1
0.5	0.7	7.5	6.3	5.2	4.1	3.1	3.4

Winter Wheat

09-11	10-11	11-11	12-11	13-11	14-11	15-11	16-11
1.0	2.3	4.2	2.6	6.7	0.2	2.5	5.2
6.5	6.4	6.3	4.7	5.1	6.1	4.0	0.7
(Fd)	(Gm)	(Dg)	(Pt)	(Lc)	(Fs)	(St)	(Ln)
7.2	5.0	7.1	3.0	4.0	5.7	7.1	3.6
3.4	7.1	0.5	1.5	3.2	4.3	3.6	4.1

IV Winter Wheat

25-11	26-11	27-11	28-11	29-11	30-11	31-11	
5.7	6.3	0.3	6.4	5.0	4.0	6.4	5.0
2.0	4.7	4.2	5.2	6.3	6.7	5.2	4.1
(Ln)	(Dg)	(Pt)	(Fs)	(Lc)	(Fd)	(St)	(Gm)
3.1	0.1	1.6	3.0	7.4	1.3	7.1	6.3
6.4	2.5	7.5	1.7	2.1	2.5	3.0	7.2

TREATMENTS per acre (hectare)

Residues of Organic Manures (applied annually 1965-71) and Ley (Sown 1965)

(Dg) 4 tons (40 tonnes) (DM) FYM, (16 tons [40 tonnes] FYM)

(St) 3 tons (7.5 tonnes) (DM) Straw

(Pt) 3 tons (7.5 tonnes) (DM) Peat

(Gm) Green Manure

(Lc) Grass-clover ley (ploughed up 1971 Blocks I & III)

(Ln) Grass ley with N (1972 Blocks II & IV)

Fertilisers

(Fd) P, K, Mg equivalent to Dg (High P, K, Mg)

(Fs) K, Mg equivalent to straw with P (Low P, K, Mg)

Nitrogen to Winter Wheat 1974 Series II and IV

NO - None, N1 - 0.2, N2 - 0.4, N3 - 0.6, N4 - 0.8, N5 - 1.0, N6 - 1.19, N7 - 1.39 cat N as

(0 25 50 75 100 125 150 175 kg N/ha)

Nitrogen to Sugar beet 1974 Series I and III

NO - None, N1 - 0.3, N2 - 0.6, N3 - 0.9, N4 - 1.3, N5 - 1.6, N6 - 1.9, N7 - 2.2 cat N as

(0 40 80 120 160 200 240 280 kg N/ha)

PRASAL MANURING per acre (hectare) sown at:

Blocks II and IV W. Wheat - Cappelle 170 lb (190 kg) 22 Oct

0.9 cat (114 kg) B₂O₅ as Superphosphate, 0.48 cat (60 kg) K₂O as Muriate of Potash

Blocks I and III Sugar beet - Kleira E sown at: 7 lb (78 kg) Data: 5 Apr

1020 lb (1143 kg) compound fertiliser (0:20:20) ploughed in in

autumn. 510 lb (572 kg) compound fertiliser (0:20:20), 89 lb (100 kg)

MgO as Epsom salts in the seedbed, 73 lb (82 kg) B₂O₅ as Solubar in

Sub-plot area.

14' x 20' = 0.0064 acre (0.0026 ha)

