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67/W/WMG/B/5 Market Garden Soil

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67/B/5.1

WOBURN MARKET GARDEN EXPERIMENT

(WMG)

Organic manures, N, P and K - Lansome Field 1967, the seventh year with revised treatments.

For history, past treatments, etc., see 'Details 1967' and 'Results' 63/B/5, 64/B/5, 65/B/5 and 66/B/5.

Area of each sub-plot: carrots - 0.0062, sugar beet - 0.0017. Area harvested: carrots - 0.0007, sugar beet - 0.0016.

Treatment symbols:

FYM: None (D0), 10 (D1), 20 tons (D2).

PK compound (0:20:20): None (POK0), 1.5 P205, 1.5 K20 (P1K1), 3.0 P205, 3.0 cwt K20 (P2K2).

Seed: All viable (S1), 3 parts killed, 5 parts viable (S2).

Peat: None (0), 12.5 tons (PT).

Treatments: All combinations of:

Series A (carrots)

FYM plots: Whole plots: FYM: D1, D2 as previously.

PK: POK0, P1K1 as in 1966.

Half plots: Seed: S1, S2 (to strips of 4 half plots).

Fertiliser plots: Whole plots: PK: P1K1, P2K2 as in 1966.

Half plots: Seed: S1, S2 (to strips of 4 half plots).

NOTE: FYM plots received no N-fertiliser, remainder 0.9 cwt N as 'Nitro-Chalk'.

Series B, microplots, (sugar beet)

FYM plots: Whole plots: PK: POK0, P1K1 as in 1966.

Half plots: FYM: D0, D1 on old D1 plots, D0, D2 on old D2 plots, as in 1966.

Quarter plots: Nitrogen: None (N0), 0.7 (N1), 1.4 (N2), 2.1 cwt N (N3) as 'Nitro-Chalk'.

Fertiliser plots: Whole plots: PK: P1K1, P2K2 as in 1966.

Half plots: Peat: 0, PT as in 1966.

Quarter plots: Nitrogen: None (N0), 0.7 (N1), 1.4 (N2), 2.1 cwt N (N3) as 'Nitro-chalk', with (N3-N2+N1-N0) on half plots.

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Basal applications: Series A (carrots): Weedkiller: Linuron at 0.5 lb in 40 gals. Insecticide: Demeton-s-methyl 3 oz in 35 gals: June 9, and 3 oz in 30 gals: June 20.
Series B, microplots (sugar beet): Insecticide: Dimethoate at 3 fluid oz in 40 gals.

Cultivations, etc.:-

Carrots Series A: Dung applied, all plots ploughed: Jan 16, 1967. Fertilisers applied: Apr 3. Seed drilled at 3.25 lb: Apr 4. Weedkiller applied: May 31. Insecticide applied: June 9, June 20. Lifted (1st harvest): July 18 - 20. (2nd harvest): Aug 2 - 4. Variety: Early Market.
Sugar beet Series B, microplots: Ground chalk applied at 40 cwt: Jan 13, 1967. PK fertiliser, peat and dung applied, plots dug by hand: Jan 24, 26. N fertiliser applied, seed drilled at 10 lb: Mar 30. Singled: May 23, 24, 25. Insecticide applied: June 9, 23, July 10, 25. Lifted: Oct 13, 16. Variety: Klein E.

NOTE: Soil samples were taken on Oct 5, 16, 1967 for an analysis of the amount of zinc and other heavy metals.

Standard errors per plot.

Carrots.

Marketable roots. 1st harvest:	Whole plots:	1.733	or	42.4%	(6 d.f.)
	1/2 plots:	0.637	or	15.6%	(8 d.f.)
2nd harvest:	Whole plots:	2.973	or	25.7%	(6 d.f.)
	1/2 plots:	1.550	or	13.4%	(8 d.f.)
Mean of 2 harvests:	Whole plots:	2.231	or	28.5%	(6 d.f.)
	1/2 plots:	0.974	or	12.4%	(8 d.f.)
Total produce. 1st harvest:	Whole plots:	3.658	or	41.7%	(6 d.f.)
	1/2 plots:	1.170	or	13.3%	(8 d.f.)
2nd harvest:	Whole plots:	4.639	or	25.5%	(6 d.f.)
	1/2 plots:	2.387	or	13.1%	(8 d.f.)
Mean of 2 harvests:	Whole plots:	3.905	or	29.0%	(6 d.f.)
	1/2 plots:	1.608	or	11.9%	(8 d.f.)

67/B/5.3

SUMMARY OF RESULTS

CARROTS

MARKETABLE ROOTS

DUNG PLOTS

Dung Organic manure applied	10	20	10	20	D1+C1	D2+C2	Mean
	D1	D2	C1	C2			
	1ST HARVEST						
	(±0.866)				(±0.613)		
Mean	2.31	4.89	3.50	5.67	2.90	5.28	4.09
	(±1.225)				(±0.866)		(±0.613)
POKO	2.57	5.04	3.51	5.79	3.04	5.42	4.23
PLK1	2.05	4.73	3.48	5.55	2.77	5.14	3.95
	(1) and (2)				(3) and (4)		(±0.159)
S1	2.17	5.46	3.40	6.03	2.79	5.75	4.27
S2	2.45	4.31	3.59	5.30	3.02	4.81	3.91

(1) (±0.895) (3) (±1.266) For use in vertical and interaction comparisons
 (2) (±0.318) (4) (±0.225) For use in horizontal and diagonal comparisons

67/B/5.4

CARROTS

MARKETABLE ROOTS

DUNG PLOTS

Dung Organic manure applied	10 D1	20 D2	10 C1	20 C2	D1+C1	D2+C2	Mean
	2ND HARVEST						
	(±1.487)				(±1.051)		
Mean	8.47	13.57	10.03	14.17	9.25	13.87	11.56
	(±2.102)				(±1.487)		(±1.051)
POKO	8.82	13.74	10.47	14.79	9.64	14.27	11.96
PKL	8.11	13.40	9.59	13.55	8.85	13.47	11.16
	(1) and (2)				(3) and (4)		(±0.388)
S1	9.37	13.76	10.34	14.73	9.85	14.25	12.05
S2	7.57	13.38	9.72	13.61	8.64	13.49	11.07

(1) (±1.584) (3) (±2.241) For use in vertical and interaction comparisons
 (2) (±0.775) (4) (±0.548) For use in horizontal and diagonal comparisons

67/B/5.5

CARROTS

MARKETABLE ROOTS

DUNG PLOTS

Dung Organic manure applied	10 D1	20 D2	10 C1	20 C2	D1+C1	D2+C2	Mean
	MEAN OF 2 HARVESTS						
	(±1.116)				(±0.789)		
Mean	5.39	9.23	6.76	9.92	6.08	9.57	7.82
	(±1.578)				(±1.116)		(±0.789)
POKO	5.69	9.39	6.99	10.29	6.34	9.84	8.09
PLK1	5.08	9.07	6.53	9.55	5.81	9.31	7.56
	(1) and (2)				(3) and (4)		(±0.244)
S1	6.52	10.15	6.12	9.84	6.32	10.00	8.16
S2	6.16	9.53	5.50	8.77	5.83	9.15	7.49

(1) (±1.168) (3) (±1.651) For use in vertical and interaction comparisons
 (2) (±0.487) (4) (±0.344) For use in horizontal and diagonal comparisons

67/B/5.6

CARROTS

TOTAL PRODUCE

DUNG PLOTS

Dung Organic manure applied	10 D1	20 D2	10 C1	20 C2	D1+C1	D2+C2	Mean
1ST HARVEST							
	(±1.829)				(±1.293)		
Mean	4.97	10.88	7.30	11.92	6.14	11.40	8.77
	(±2.587)				(±1.829)		(±1.293)
PCKO	5.45	11.27	7.56	12.26	6.50	11.77	9.14
PKL1	4.50	10.48	7.03	11.57	5.77	11.03	8.40
	(1) and (2)				(3) and (4)		(±0.292)
S1	5.00	11.82	7.27	12.87	6.14	12.35	9.24
S2	4.94	9.93	7.33	10.96	6.14	10.45	8.29

(1) (±1.875) (3) (±2.652) For use in vertical and interaction comparisons
 (2) (±0.585) (4) (±0.414) For use in horizontal and diagonal comparisons

67/B/5.7

CARROTS

TOTAL PRODUCE

DUNG PLOTS

Dung Organic manure applied	10 D1	20 D2	10 C1	20 C2	D1+C1	D2+C2	Mean
	2ND HARVEST						
	(±2.320)				(±1.640)		
Mean	13.34	21.36	15.87	22.18	14.60	21.77	18.19
	(±3.280)				(±2.320)		(±1.640)
POKO	13.85	21.35	16.53	23.36	15.19	22.36	18.77
PIK1	12.84	21.37	15.20	21.01	14.02	21.19	17.60
	(1) and (2)				(3) and (4)		(±0.597)
S1	14.62	21.78	16.34	23.20	15.48	22.49	18.99
S2	12.06	20.94	15.39	21.16	13.73	21.05	17.39

(1) (±2.468) (3) (±3.491) For use in vertical and interaction comparisons
 (2) (±1.194) (4) (±0.844) For use in horizontal and diagonal comparisons

67/B/5.8

CARROTS

TOTAL PRODUCE

DUNG PLOTS

Dung Organic manure applied	10 D1	20 D2	10 C1	20 C2	D1+C1	D2+C2	Mean
	MEAN OF 2 HARVESTS						
	(±1.953)				(±1.381)		
Mean	9.16	16.12	11.58	17.05	10.37	16.58	13.48
	(±2.761)				(±1.953)		(±1.381)
POKD	9.65	16.31	12.04	17.81	10.85	17.06	13.95
PLK1	8.67	15.93	11.12	16.29	9.89	16.11	13.00
	(1) and (2)				(3) and (4)		(±0.402)
S1	9.81	16.80	11.80	18.04	10.81	17.42	14.11
S2	8.50	15.44	11.36	16.06	9.93	15.75	12.84

(1) (±2.034) (3) (±2.876) For use in vertical and interaction comparisons
 (2) (±0.804) (4) (±0.569) For use in horizontal and diagonal comparisons

67/B/5.9

CARROTS

MARKETABLE ROOTS

NO ORGANIC PLOTS

	S1	S2	Mean
1ST HARVEST			
(1) and (2)			
P1K1	2.79	2.50	2.64
P2K2	2.72	2.32	2.52
Mean (± 0.135)	2.76	2.41	2.58

(1) (± 0.890) For use in vertical and interaction comparisons

(2) (± 0.332) For use in horizontal and diagonal comparisons

2ND HARVEST

(1) and (2)			
(± 1.513)			
P1K1	10.86	8.55	9.70
P2K2	6.47	7.27	6.87
Mean (± 0.340)	8.66	7.91	8.29

(1) (± 1.623) For use in vertical and interaction comparisons

(2) (± 0.833) For use in horizontal and diagonal comparisons

67/B/5.10

CARROTS
MARKETABLE ROOTS
NO ORGANIC PLOTS

	S1	S2	Mean
	MEAN OF 2 HARVESTS (1) and (2)		(±1.127)
P1K1	6.82	5.53	6.17
P2K2	4.60	4.79	4.70
Mean (±0.218)	5.71	5.16	5.44

- (1) (±1.188) For use in vertical and interaction comparisons
 (2) (±0.533) For use in horizontal and diagonal comparisons

67/B/5.11

CARROTS
TOTAL PRODUCE
NO ORGANIC PLOTS

	S1	S2	Mean
1ST HARVEST			
(1) and (2)			(±1.869)
P1K1	5.47	4.78	5.13
P2K2	6.00	4.99	5.49
Mean (±0.284)	5.74	4.88	5.31

(1) (±1.933) For use in vertical and interaction comparisons
 (2) (±0.696) For use in horizontal and diagonal comparisons

	(1) and (2)		(±2.441)
2ND HARVEST			
P1K1	16.52	13.08	14.80
P2K2	10.30	11.25	10.77
Mean (±0.529)	13.41	12.16	12.79

(1) (±2.607) For use in vertical and interaction comparisons
 (2) (±1.296) For use in horizontal and diagonal comparisons

67/B/5.12

CARROTS

TOTAL PRODUCE

NO ORGANIC PLOTS

	S1	S2	Mean
MEAN OF 2 HARVESTS			
	(1) and (2)		(±2.053)
P1K1	11.00	8.93	9.96
P2K2	8.15	8.12	8.13
Mean (±0.364)	9.58	8.52	9.05

- (1) (±2.148) For use in vertical and interaction comparisons
 (2) (±0.892) For use in horizontal and diagonal comparisons

67/B/5.13

SUGAR BEET							
FERTILISER PLOTS							
	NO	N1	N2	N3	O	PT	Mean
CLEAN BEET							
P1K1	8.23	13.96	14.03	15.28	11.84	13.91	12.88
P2K2	10.90	16.45	17.63	17.42	15.15	16.05	15.60
Mean	9.56	15.21	15.83	16.35	13.50	14.98	14.24
O	9.19	13.64	15.42	15.74			
PT	9.94	16.78	16.24	16.95			
SUGAR %							
P1K1	15.1	16.0	15.7	15.3	15.4	15.7	15.6
P2K2	15.8	16.3	16.2	15.4	16.0	15.9	15.9
Mean	15.5	16.1	16.0	15.4	15.7	15.8	15.7
O	15.4	16.2	15.8	15.3			
PT	15.6	16.0	16.1	15.5			
TOTAL SUGAR							
P1K1	25.1	44.7	44.3	46.8	36.6	43.9	40.2
P2K2	34.5	53.3	57.0	53.8	48.4	50.9	49.6
Mean	29.8	49.0	50.7	50.3	42.5	47.4	44.9
O	28.7	44.2	49.0	48.1			
PT	30.9	53.8	52.4	52.5			

67/B/5.14

SUGAR BEET

FERTILISER PLOTS

	NO	N1	N2	N3	O	PT	Mean
TOPS							
P1K1	6.70	10.40	13.00	14.85	11.11	11.36	11.24
P2K2	8.16	12.89	14.57	18.88	12.96	14.28	13.62
Mean	7.43	11.65	13.78	16.86	12.04	12.82	12.43
O	6.87	10.86	13.61	16.81			
PT	7.98	12.43	13.96	16.92			

PLANT NUMBER

P1K1	30.5	30.6	30.0	29.4	30.3	29.9	30.1
P2K2	30.6	31.0	29.8	31.6	30.8	30.7	30.8
Mean	30.6	30.8	29.9	30.5	30.6	30.3	30.4
O	31.1	30.3	30.0	30.8			
PT	30.0	31.3	29.8	30.2			

67/B/5.15

SUGAR BEET					
DUNG PLOTS					
	D1	D2	D1R	D2R	Mean
CLEAN BEET					
Mean	17.31	20.48	15.44	17.97	17.80
FOO	16.73	19.92	14.13	16.64	16.86
F11	17.89	21.04	16.75	19.30	18.74
NO	15.13	18.85	12.08	15.63	15.42
N1	18.21	20.26	15.77	18.28	18.13
N2	17.91	21.63	16.71	19.33	18.89
N3	18.00	21.18	17.19	18.64	18.75
SUGAR %					
Mean	15.5	15.2	15.6	15.5	15.5
FOO	15.5	15.2	15.4	15.3	15.3
F11	15.5	15.2	15.9	15.8	15.6
NO	16.0	15.9	15.6	15.3	15.7
N1	15.5	15.3	16.4	16.0	15.8
N2	15.5	15.2	15.4	15.6	15.4
N3	14.9	14.5	15.1	15.2	14.9
TOTAL SUGAR					
Mean	53.4	62.3	48.2	55.9	54.9
FOO	51.7	60.8	43.4	50.9	51.7
F11	55.0	63.8	53.0	60.9	58.2
NO	48.3	59.7	37.9	48.0	48.5
N1	56.4	62.0	51.3	58.5	57.1
N2	55.3	65.6	51.5	60.6	58.3
N3	53.4	61.9	52.0	56.4	55.9

67/B/5.16

SUGAR BEET

DUNG PLOTS

	D1	D2	D1R	D2R	Mean
	TOPS				
Mean	14.46	20.28	11.90	15.64	15.57
FOO	14.39	19.98	11.37	15.35	15.27
F11	14.53	20.59	12.43	15.92	15.87
NO	10.65	16.41	7.72	11.72	11.63
N1	14.63	20.84	10.16	14.28	14.98
N2	14.14	19.90	13.85	17.21	16.28
N3	18.41	23.97	15.85	19.34	19.39

PLANT NUMBER

Mean	30.0	30.5	31.0	31.8	30.8
FOO	30.3	30.2	30.7	32.0	30.8
F11	29.7	30.7	31.3	31.5	30.8
NO	30.1	30.2	32.5	31.7	31.1
N1	29.6	31.1	30.4	32.5	30.9
N2	30.7	30.9	29.6	31.1	30.6
N3	29.6	29.8	31.7	31.8	30.7