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Numerical Results of the Field Experiments 1970

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70/W/RN/4 Market Garden - Sugar Beet, Barley

Rothamsted Research

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MARKET GARDEN

(70/W/RN/4)

Residues of organic manures, P and K and effect of fresh P -
Lansome I 1970.

First year of revised scheme testing fresh P on two phases per annum
of a three course rotation - Sugar beet, barley, potatoes - crops
in 1970 sugar beet and barley.

For history, past treatments, etc., see 'Details' 1967 and 'Results'
68/B/4 and 69/W/RN/4.

Area of each plot for sugar beet: 0.0109. Area harvested:
Roots (washed): 0.0040.
Tops: 0.0016.
sub-plot for barley: 0.0055. Area harvested: 0.0018.

Superphosphate treatments (applied to whole plots with confounding
of certain two and three factor interactions):-

Series A: Sugar beet: None (0), 1.0 cwt P2O5 (P)
Series B: Barley: None (0), 0.5 cwt P2O5 (P).

Standard applications:-

Series A: Sugar beet: Manures: 20 cwt ground chalk. 480 lb muriate
of potash (60% K2O), 550 lb Epsom salts (16% MgO).
810 lb 'Nitro-Chalk' 21. Weedkiller: Phenmedipham
('Betanal' at 5 pints in 20 gals). Insecticide:
Demeton-s-methyl at 3.5 fl oz in 25 gals.
Series B: Barley: Manures: 20 cwt ground chalk, 95 lb muriate of
potash (60% K2O), 265 lb 'Nitro-Chalk' 21.
Weedkiller: Ioxynil at 7.5 oz and mecoprop at
22.5 oz in 25 gals.

Cultivations, etc.:

Series A: Sugar beet: Ground chalk applied: 29 Sept, 1969. Ploughed:
13 Oct. K, Mg and N applied: 4 Apr, 1970. P applied: 7 Apr.
Power harrowed, seed drilled at 5 lb: 20 Apr. Weedkiller applied:
15 May. Singled: 27 May. Insecticide applied: 22 June. Lifted:
22 Oct. Variety: Klein E.
Series B: Barley: Ground chalk applied: 29 Sept, 1969. Ploughed:
13 Oct. K, N and P applied, power harrowed, seed drilled at
135 lb: 26 Mar, 1970. Weedkiller applied: 16 May. Combine
harvested: 13 Aug. Variety: Julia.

NOTE: Soil samples were taken in early spring, before applying fresh P.

70/W/RV/4

SUMMARY OF RESULTS

SERIES A

SUGAR BEET

Organic		POKO		PK1		P2K2	
1942-61*	1962-67	O	P	O	P	O	P
ROOTS (WASHED): TONS							
O	O			17.81	16.28	10.89	18.12
S1	O					17.35**	17.82**
S2	O					18.60**	17.32**
T1	O					17.50**	18.56**
T2	O					17.39**	18.06**
D1	D1	17.32	18.28	17.14	17.50		
D2	D2	19.28	19.53	19.28	20.10		
C1	D1	17.50	20.15	17.83	19.64		
C2	D2	19.75	21.44	18.48	21.00		
SUGAR %							
O	O			17.1	17.1	16.7	17.4
S1	O					17.7**	16.6**
S2	O					16.8**	17.4**
T1	O					17.4**	17.5**
T2	O					16.8**	17.3**
D1	D1	17.3	17.1	17.9	17.3		
D2	D2	17.5	17.4	18.0	17.1		
C1	D1	17.5	17.6	17.7	17.3		
C2	D2	17.1	17.3	17.8	17.2		

General mean: Roots (washed): 17.89
 Sugar %: 17.3

* Last applied to Leeks 1961/62

** PK1 1962-65

70/W/RN/4

SERIES A

SUGAR BEET

Organic		POKO		PK1		P2K2	
1942-61*	1962-67	O	P	O	P	O	P

TOTAL SUGAR: CWT

O	O			61.0	55.8	36.4	63.3
S1	O					61.3**	59.3**
S2	O					62.4**	60.2**
T1	O					61.2**	64.8**
T2	O					58.6**	62.6**
D1	D1	59.8	62.4	61.5	60.4		
D2	D2	67.4	68.1	69.3	68.8		
C1	D1	61.3	70.9	62.9	67.9		
C2	D2	67.5	74.4	65.6	72.0		

TOPS: TONS

O	O			13.80	12.31	9.39	10.75
S1	O					15.61**	17.31**
S2	O					18.70**	15.75**
T1	O					15.24**	17.12**
T2	O					17.26**	16.22**
D1	D1	11.04	15.42	12.29	13.47		
D2	D2	12.64	12.57	12.64	14.38		
C1	D1	13.47	15.49	13.47	14.24		
C2	D2	15.35	14.86	13.54	12.92		

General mean: Total sugar: 61.8
 Tops: 14.41

* Last applied to Leeks 1961/62
 ** PK1 1962-65

70/W/RN/4

SERIES B

BARLEY

1942-61	Organic 1962-64	1966-67	POKO	P1K1	P2K2
			O	P O O	P O

GRAIN: CWT

O	O	O		37.0	37.1	40.0	37.6
O	O	PT			34.3	30.8	37.3
S1	O	O	36.3*	37.1*			
S2	O	O	32.1*	37.5*			
T1	O	O	42.2*	39.8*			
T2	O	O	30.0*	38.1*			
D1	D1	D1		35.0	36.9	41.3	31.0
D1	D1	O	36.0	36.7	38.3	37.3	
D2	D2	D2		40.2	38.0	41.1	41.0
D2	D2	O	45.5	36.4	39.3	42.1	
C1	D1	D1		38.3	42.3	43.1	44.8
C2	D2	D2		35.0	36.6	37.4	41.4

STRAW: CWT

O	O	O		20.2	16.1	20.7	18.2
O	O	PT			18.4	20.2	19.5
S1	O	O	20.4*	17.1*			
S2	O	O	15.2*	18.3*			
T1	O	O	22.9*	18.6*			
T2	O	O	18.0*	20.1*			
D1	D1	D1		18.7	17.7	18.9	16.3
D1	D1	O	14.3	16.7	25.5	16.3	
D2	D2	D2		13.1	15.7	18.8	18.8
D2	D2	O	27.2	12.7	19.7	21.0	
C1	D1	D1		18.6	20.5	23.1	22.7
C2	D2	D2		18.2	17.9	20.4	22.3

General mean: Grain: 37.9
 Straw: 19.1
 Mean D.M. %: Grain: 84.0
 Straw: 78.4

* P1K1 1962-64