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Numerical Results of the Field Experiments 1970

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70/W/RN/14 Long Term Phosphate - Sugar Beet, Barley

Rothamsted Research

Rothamsted Research (1971) *70/W/RN/14 Long Term Phosphate - Sugar Beet, Barley* ; Numerical Results Of The Field Experiments 1970, pp 119 - 123 - DOI:

<https://doi.org/10.23637/ERADOC-1-59>

LONG TERM PHOSPHATE

(70/W/RN/14)

Residual and cumulative effects of superphosphate - Woburn Stackyard III 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 previous years' results, design, treatments etc., see 'Results' 68/B/8 and 69/W/RN/14.

Area of each sub-plot: 0.0167. Area harvested: Barley: 0.0111, sugar beet: Roots: 0.0051, tops: 0.0026.

Superphosphate treatments, to sub-plots:-
Sugar beet: None (0), 1.0 cwt P₂O₅ (P)
Barley: None (0), 0.5 cwt P₂O₅ (P).

Standard applications:-

Sugar beet: Manures: 465 lb muriate of potash (60% K₂O), 335 lb Epsom salts (16% MgO), 805 lb 'Nitro-Chalk' 21. Weedkiller: Phenumedipham (Betanal at 5 pts in 20 gals). Insecticide: Demeton-s-methyl at 3.5 fl oz in 25 gals.

Barley: Manures: 95 lb muriate of potash (60% K₂O), 640 lb 'Nitro-Chalk' 21. Weedkiller: Ioxynil at 7.5 oz and mecoprop at 22.5 oz in 25 gals.

Cultivations, etc.:

Sugar beet: Ploughed: 3 Sept, 1969. Reploughed: 14 Nov. P applied: 7 Apr, 1970. K and N applied: 15 Apr. Mg applied: 16 Apr. Power harrowed, seed drilled at 5 lb: 20 Apr. Weedkiller applied: 15 May. Partly redrilled because of poor germination: 22 May. Singled: 27 May, 2 June. Insecticide applied: 22 June. Lifted: 23 Oct. Variety: Klein E.

Barley: Ploughed: 13 Nov, 1969. K and N applied: 25 Mar, 1970. Power harrowed, seed drilled at 135 lb, P applied: 26 Mar. Weedkiller applied: 18 May. Combine harvested: 25 Aug. Variety: Julia.

NOTE: Soil samples were taken for P analyses before applying fresh P.

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Standard errors per plot:

Sugar beet: Roots (washed) tons:	Whole plot:	1.099 or 8.5% (10 d.f.)
	Sub plot:	1.091 or 8.4% (12 d.f.)
Total sugar, cwt:	Whole plot:	4.30 or 9.4% (10 d.f.)
	Sub plot:	4.32 or 9.5% (12 d.f.)
Tops, tons:	Whole plot:	1.569 or 11.4% (10 d.f.)
	Sub plot:	1.685 or 12.2% (12 d.f.)
Barley: Grain, cwt:	Whole plot:	5.12 or 21.8% (10 d.f.)
	Sub plot:	2.77 or 11.8% (12 d.f.)

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SUMMARY OF RESULTS

SUGAR BEET

	RO*	R1	R2	R4	R6	Mean
		ROOTS (WASHED): TONS				
	(1) and (2)		(3) and (4)			(±0.257)
O	11.97	11.78	13.75	13.82	12.94	12.70
P	13.13	12.78	12.50	15.03	12.17	13.12
Mean	12.55 (±0.449)	12.28	13.12 (±0.635)	14.43	12.55	12.91

(1) (±0.548) (3) (±0.775) For use in horizontal and diagonal comparisons only

(2) (±0.445) (4) (±0.630) For use in vertical and interaction comparisons only

SUGAR %

O	17.5	17.4	17.9	17.8	17.6	17.6
P	17.6	17.6	17.5	17.7	17.4	17.5
Mean	17.5	17.5	17.7	17.8	17.5	17.6

* Duplicated treatment

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SUGAR BEET

	RO*	R1	R2	R4	R6	Mean
TOTAL SUGAR: CWT						
	(1) and (2)		(3) and (4)			(±1.02)
O	41.8	40.9	49.2	49.2	45.7	44.8
P	46.3	45.0	43.7	53.3	42.4	46.1
Mean	44.0 (±1.76)	42.9	46.4 (±2.48)	51.2	44.0	45.4

(1) (±2.15) (3) (±3.04) For use in horizontal and diagonal comparisons only

(2) (±1.76) (4) (±2.49) For use in vertical and interaction comparisons only

TOPS: TONS

	(1) and (2)		(3) and (4)			(±0.397)
O	12.39	13.31	13.83	13.37	13.54	13.14
P	13.95	15.57	14.87	14.82	13.66	14.47
Mean	13.17 (±0.641)	14.44	14.35 (±0.906)	14.09	13.60	13.80

(1) (±0.804) (3) (±1.137) For use in horizontal and diagonal comparisons only

(2) (±0.688) (4) (±0.973) For use in vertical and interaction comparisons only

* Duplicated treatment

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BARLEY

	RO*	F1	R2	R4	R6	Mean
		GRAIN: CWT				
	(1) and (2)	(3) and (4)				(±0.65)
O	22.8	24.7	23.9	27.3	25.8	24.5
P	21.7	24.7	23.2	21.7	21.9	22.5
Mean	22.3 (±2.09)	24.7	23.5 (±2.95)	24.5	23.8	23.5

(1) (±2.24) (3) (±3.16) For use in horizontal and diagonal comparisons only
 (2) (±1.13) (4) (±1.60) For use in vertical and interaction comparisons only

STRAW: CWT

O	7.9	10.5	8.4	12.1	10.9	9.6
P	7.4	11.9	9.0	11.4	9.1	9.4
Mean	7.7	11.2	8.7	11.7	10.0	9.5

Mean D.M. %: Grain: 78.9
 Straw: 78.8

* Duplicated treatment