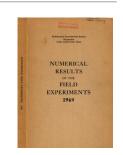
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Numerical Results of the Field Experiments 1969



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Rothamsted Research

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ROTATION AND FUMIGATION

(69/W/RN/15)

The effects of a soil fumigant on a rotation of crops - Woburn Butt Close 1969, 1st year - Barley, potatoes and sugar beet.

Design: 3 series each of 2 blocks of 3 plots split into 7.

Area of each sub plot: 0.0048. Area harvested: Barley, potatoes - 0.0013, sugar beet - 0.0014.

Treatments: All combinations of:-

Whole plots: 1. Nitrogen to barley: 0.3 (N1), 0.6 (N2), 0.9 (N3) cwt N as 'Nitro-Chalk'.

or Nitrogen to potatoes and sugar beet: 0.6 (N1), 1.2 (N2), 1.8 (N3) cwt N as 'Nitro-Chalk'.

Sub plots: 2. Fumigant: None (0), 400 lb DD applied before potatoes (P), sugar beet (S), barley (B), all crops (A), 2 untreated reserve plots (R).

Basal applications:-

Barley: 280 lb (0:20:20). Weedkiller: Ioxynil at 7.5 oz plus mecoprop at 22.5 oz in 25 gals.

Potatoes: 940 lb (0:14:28). Weedkiller: Paraquat at 0.37 lb ion plus linuron at 0.5 lb in 25 gals. Fungicide: Mancozeb at 1.2 lb in 37 gals applied on 3 occasions. Insecticide: Demeton-s-methyl at 3.5 oz in 37 gals applied once with fungicide.

Sugar beet: 940 lb (0:14:28). Weedkiller: Phenmedipham ('Betanal' at 5 pts in 20 gals). Insecticide: Demeton-s-methyl at 3.5 oz in 30 gals.

Cultivations, etc.:

All crops: Ploughed: 30 Sept, 1968. Furnigant injected: 30 Oct. Ploughed: 3 Feb, 1969. Previous crops: Barley 1967, 1968.

Barley: N applied: 25 Mar. Seed combine drilled at 140 lb: 26 Mar. Weedkiller applied: 14 May. Combine harvested: 7 Aug. Variety: Zephyr.

Potatoes: PK applied: 26 Mar. N applied: 8 Apr. Rotary cultivated, potatoes planted: 18 Apr. Weedkiller applied: 14 May. Grubbed, rotary ridged: 17 June. Fungicide plus insecticide applied: 18 July. Fungicide applied: 6 Aug, 27 Aug. Lifted: 24 Sept. Variety: King Edward.

Sugar beet: PK applied: 26 Mar. N applied, power harrowed: 8 Apr. Seed drilled at 5 lb: 10 Apr. Weedkiller applied: 14 May. Singled: 23 May. Insecticide applied: 26 June. Lifted: 28 Oct. Variety: Klein E.

NOTE: Soil samples were taken for eelworm counts, (Heterodera rostochiensis, H.avenae) in April. Soil samples for counts of other nematodes were taken in May. Further soil samples were taken from the barley area in August and potatoes and sugar beet areas in November for nematode counts.

Standard errors per sub plot.

Barley, grain, cwt:

Sugar beet, roots (washed), tons:

Total sugar, cwt:

Potatoes, total tubers, tons:

4.67 or 16.2% (18 d.f.)

1.191 or 6.7% (18 d.f.)

4.21 or 6.8% (18 d.f.)

1.508 or 9.7% (18 d.f.)

SUMMARY OF RESULTS

BARLEY

DD, LB/AC

	0	400	Mean
	GRAIN: CWT		
N1 N2 N3	(±1.48)* 18.7 34.8 33.0	(±2.3 ¹ 4)* 18.1 36.0 32.6	18.5 35.1 32.9
Mean	28.8 (±0.85)	28.9 (±1. 35)	28.9

^{*} For use in horizontal and interaction comparisons only

STRAW: CWT

N2 N3 Mean	34.3	32.2 25.6	33.7
N2	16.0 27.6	16.0 28.7	16.0

SUGAR BEET

DD, LB/AC

	0	400	Mean
	ROOTS (WASHED): TONS		
	(±0.377)*	(±0.595)*	
N1 N2 N3	16.67 18.44 18.61	15.70 18.40 19.06	16.39 18.43 18.74
Mean	17.91 (±0.217)	17.72 (±0.344)	17.86
	SUGAR %		
N1 N2 N3	17.8 17.2 16.9	17.6 17.4 16.8	17.7 17.3 16.9
Mean	17.3	17.3	17.3
	TOTAL SUGAR	R: CWT	
	(±1.33)*	(±2.10)*	The state of the
N3 N3	59.4 63.5 62.9	55 .1 64 . 1 63 . 9	58.2 63.7 63.2
Mean	61.9 (±0.77)	61.0 (±1.22)	61.7

^{*} For use in horizontal and interaction comparisons only

POTATORS

DD, LB/AC

	0	400	Mean
	TOTAL TUBERS	: TONS	
	(±0,477)*	(±0.754)*	
NI N2 N3	11.08 14.77 18.91	14.41 17.18 20.30	12.03 15.45 19.30
Mean	14.92 (±0.275)	17.30 (±0.435)	15.60
	% WARE		
N1 N2 N3	85.7 86.5 90.4	85.7 86.1 86.2	85.7 86.4 89.2
Mean	87.5	86.0	87.1

^{*} For use in horizontal and interaction comparisons only