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Numerical Results of the Field Experiments 1969

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69/W/RN/15 - Rotation & Fumigation - Potatoes, Sugar Beet & Barley

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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 (O), 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. Fumigant 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:	4.67 or 16.2% (18 d.f.)
Sugar beet, roots (washed), tons:	1.191 or 6.7% (18 d.f.)
Total sugar, cwt:	4.21 or 6.8% (18 d.f.)
Potatoes, total tubers, tons:	1.508 or 9.7% (18 d.f.)

SUMMARY OF RESULTS

BARLEY

DD, LB/AC

	0	400	Mean
GRAIN: CWT			
	(±1.48)*	(±2.34)*	
N1	18.7	18.1	18.5
N2	34.8	36.0	35.1
N3	33.0	32.6	32.9
Mean	28.8 (±0.85)	28.9 (±1.35)	28.9

* For use in horizontal and interaction comparisons only

STRAW: CWT

N1	16.0	16.0	16.0
N2	27.6	28.7	27.9
N3	34.3	32.2	33.7
Mean	26.0	25.6	25.9

SUGAR BEET

DD, LB/AC

	0	400	Mean
ROOTS (WASHED): TONS			
	(±0.377)*	(±0.595)*	
N1	16.67	15.70	16.39
N2	18.44	18.40	18.43
N3	18.61	19.06	18.74
Mean	17.91 (±0.217)	17.72 (±0.344)	17.86
SUGAR %			
N1	17.8	17.6	17.7
N2	17.2	17.4	17.3
N3	16.9	16.8	16.9
Mean	17.3	17.3	17.3
TOTAL SUGAR: CWT			
	(±1.33)*	(±2.10)*	
N1	59.4	55.1	58.2
N2	63.5	64.1	63.7
N3	62.9	63.9	63.2
Mean	61.9 (±0.77)	61.0 (±1.22)	61.7

* For use in horizontal and interaction comparisons only

POTATOES

DD, LB/AC

	0	400	Mean
TOTAL TUBERS: TONS			
	(±0.477)*	(±0.754)*	
N1	11.08	14.41	12.03
N2	14.77	17.18	15.45
N3	18.91	20.30	19.30
Mean	14.92 (±0.275)	17.30 (±0.435)	15.60
% WARE			
N1	85.7	85.7	85.7
N2	86.5	86.1	86.4
N3	90.4	86.2	89.2
Mean	87.5	86.0	87.1

* For use in horizontal and interaction comparisons only