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71/W/RN/15 Rotation and Fumigation - Potatoes, Barley, Sugar Beet

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71/W/RN/15

ROTATION AND FUMIGATION

Object: To study different ways of using nematicides with a three-course rotation and to determine the effects of the nematicides on crop yields and incidence of pathogenic nematodes - Woburn Butt Close.

The third year, potatoes, barley, sugar beet.

For previous years see 69/W/RN/15(t) and 70/W/RN/15(t).

Whole plot dimensions: 5.33 x 31.1. Sub plot area harvested: Barley - 0.00052, potatoes - 0.00104, sugar beet - 0.00127.

Basal applications:

Barley: Manures: 303 kg (0:20:20). Weedkiller: Ioxynil at 0.53 kg plus mecoprop at 1.58 kg in 281 l.

Potatoes: Manures: 1103 kg (0:14:28). Weedkiller: Linuron at 1.12 kg in 371 l. Fungicide with insecticide: Mancozeb at 1.34 kg plus demeton-s-methyl at 245 g in 416 l. Fungicide: Mancozeb at 1.34 kg in 371 l.

Sugar beet: Manures: 2510 kg magnesian limestone, 1103 kg (0:14:28), 'Solubor' at 13.4 kg B203 in 157 l. Insecticide: Demeton-s-methyl at 245 g in 281 l.

Cultivations, etc.:

Barley: Ploughed: 28 Oct, 1970. 'D-D' injected: 16 Dec. Dazomet applied, all plots rotary cultivated: 17 Dec. Ploughed: 11 Feb, 1971. N applied: 1 Mar. Seed combine drilled at 168 kg: 10 Mar. Weedkiller applied: 3 May. Combine harvested: 16 Aug. Variety: Julia.

Potatoes: Ploughed: 9 Nov, 1970. 'D-D' injected: 16 Dec. Dazomet applied, all plots rotary cultivated: 17 Dec. Ploughed: 11 Feb, 1971. PK applied: 29 Mar. N applied, rotary cultivated, potatoes planted: 31 Mar. Weedkiller applied: 5 May. Rotary ridged: 1 June. Fungicide with insecticide applied: 28 June. Fungicide applied: 13 Aug. Haulm destroyed mechanically: 14 Sept. Lifted: 17 Sept. Variety: Pentland Crown.

Sugar beet: Rotary cultivated: 4 Sept, 1970. Magnesian limestone applied: 7 Oct. Ploughed: 28 Oct. 'D-D' injected: 16 Dec. Dazomet applied, all plots rotary cultivated: 17 Dec. Ploughed: 11 Feb, 1971. PK applied: 29 Mar. N applied: 31 Mar. Power harrowed, seed drilled at 6 kg: 8 Apr. Singled: 19 - 20 May. Boron spray applied: 1 June. Hoed by hand twice: 1 - 2 June, 17 - 21 June. Insecticide applied: 19 July. Lifted: 20 Oct. Variety: Klein E.

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NOTE: Samples of soil were taken after harvest for eelworm counts.

Standard errors per sub plot.

Barley, grain, tonnes/hectare: 0.417 or 9.6% (18 d.f.)

Potatoes, total tubers, tonnes/hectare:

5.14 or 13.6% (18 d.f.)

Sugar beet, roots, tonnes/hectare:

2.77 or 5.6% (18 d.f.)

Total sugar, tonnes/hectare:

0.507 or 6.0% (18 d.f.)

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SUMMARY OF RESULTS

BARLEY

	O&R	P	S	B	A	AZ	Mean
N: KG/HA	GRAIN: TONNES/HECTARE						
	(± 0.208)*			(± 0.295)*			
38	3.07	4.03	4.25	3.24	2.61	5.19	3.64
75	4.71	4.59	5.30	3.96	4.67	5.30	4.75
113	4.52	5.07	4.87	4.22	4.38	4.83	4.63
Mean	4.10 (± 0.120)	4.56	4.81	3.80 (± 0.170)	3.89	5.11	4.34

* For use in horizontal and interaction comparisons only

STRAW: TONNES/HECTARE

38	2.14	3.06	3.15	2.42	1.95	3.48	2.62
75	3.42	3.68	3.85	2.64	3.54	3.79	3.48
113	3.38	3.74	3.59	3.37	3.20	3.87	3.51
Mean	2.98	3.50	3.53	2.81	2.90	3.71	3.20

Mean D.M. %: Grain: 80.9
Straw: 85.7

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POTATOES

	O&R	P	S	B	A	AZ	Mean
N: KG/HA	TOTAL TUBERS: TONNES/HECTARE						
	(±2.57)*			(±3.63)*			
75	22.5	29.8	26.5	26.5	36.3	38.9	29.0
150	23.8	44.9	37.2	45.1	46.0	45.5	38.1
225	32.9	50.7	48.0	48.3	55.3	56.6	46.4
Mean	26.4 (±1.48)	41.8	37.2	40.0 (±2.10)	45.9	47.0	37.8

* For use in horizontal and interaction comparisons only

% WARE: 3.81 CM (1.5 INCH) RIDDLE

75	90.6	92.2	93.4	90.7	93.4	93.5	92.1
150	94.4	97.7	96.6	94.9	94.7	96.5	95.6
225	95.9	97.5	97.2	96.9	97.2	96.5	96.7
Mean	93.6	95.8	95.7	94.2	95.1	95.5	94.8

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SUGAR BEET

	O&R	P	S	B	A	AZ	Mean
N: KG/HA	ROOTS (WASHED): TONNES/HECTARE						
	(± 1.39)*			(± 1.96)*			
75	46.3	48.7	48.9	50.0	48.1	53.7	48.9
150	44.5	45.8	48.3	52.1	53.2	46.9	47.9
225	49.3	50.6	53.2	53.4	52.6	50.1	51.2
Mean	46.7 (± 0.80)	48.4	50.1	51.8 (± 1.13)	51.3	50.2	49.3

SUGAR %

75	17.4	17.5	17.1	17.1	16.5	17.4	17.2
150	17.3	17.4	17.0	17.5	16.7	16.8	17.1
225	16.8	16.8	16.7	16.9	16.1	16.7	16.7
Mean	17.2	17.3	16.9	17.2	16.4	16.9	17.0

TOTAL SUGAR: TONNES/HECTARE

	(± 0.253)*			(± 0.358)*			
75	8.03	8.54	8.37	8.57	7.93	9.34	8.40
150	7.67	7.96	8.19	9.14	8.86	7.88	8.20
225	8.31	8.51	8.89	9.04	8.46	8.34	8.55
Mean	8.01 (± 0.146)	8.33	8.49	8.92 (± 0.207)	8.42	8.52	8.38

* For use in horizontal and interaction comparisons only