

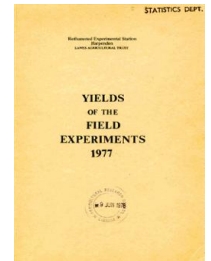
Thank you for using eradoc, a platform to publish electronic copies of the Rothamsted Documents. Your requested document has been scanned from original documents. If you find this document is not readable, or you suspect there are some problems, please let us know and we will correct that.



ROTHAMSTED
RESEARCH

Yields of the Field Experiments 1977

[Full Table of Content](#)



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

Rothamsted Research

Rothamsted Research (1978) *77/W/RN/15 Rotation and Fumigation - Potatoes, Barley, Sugar Beet ; Yields Of The Field Experiments 1977*, pp 91 - 96 - DOI: <https://doi.org/10.23637/ERADOC-1-29>

77/W/RN/15

ROTATION AND FUMIGATION

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

Sponsors: F.G.W. Jones, A.G. Whitehead, T.D. Williams.

The ninth year, potatoes, barley, sugar beet.

For previous years see 'Details' 1973 and 74-76/W/RN/15.

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

Whole plot dimensions: 5.33 x 31.1.

Treatments:

All phases of the rotation potatoes, barley, sugar beet are present.
Each crop tests all combinations of:-

Whole plots

1. N Nitrogen fertiliser (kg N), applied cumulatively:

Potatoes and S.Beet	Barley
75	38
150	75
225	113

Sub plots

2. CHEMICAL

Chemicals:

O	None
A (P)	Aldicarb at 6 kg before potatoes
A (SB)	Aldicarb at 6 kg before sugar beet
A (B)	Aldicarb at 6 kg before barley
A (ALL)	Aldicarb at 6 kg before all crops
A D(ALL)	Aldicarb at 6 kg before all crops in 1977. Dazomet at 224 kg before all crops 1970-76
BEN(ALL)	Benomyl at 22 kg before all crops since 1974 only

NOTE: Aldicarb was first used in 1976. From 1969-75 dichloropropane/dichloropropene ('D-D') was applied at 448 kg to CHEMICAL A (P), A (SB), A (B) and A (ALL).

Standard applications:

Potatoes: Manures (0:14:28) at 1080 kg. Fungicide: Mancozeb at 1.3 kg on four occasions, the last three with insecticide, in 420 l, 390 l and twice in 370 l successively. Insecticide: Pirimicarb at 0.14 kg on three occasions with fungicide.

77/W/RN/15

Barley: Manures: (0:20:20) at 310 kg. Weedkillers: Ioxynil at 0.53 kg plus mecoprop at 1.6 kg in 420 l.

Sugar beet: Manures: Magnesial limestone at 2.5 tonnes. (0:14:28) at 1080 kg. Boron at 7.4 kg B_2O_3 (as 'Solubor') applied with insecticide.

Insecticide: Pirimicarb at 0.14 kg in 280 l.

Seed: Potatoes: Pentland Crown.

Barley: Julia, dressed with ethirimol, sown at 160 kg.

Sugar beet: Klein E, sown at 6 kg.

Cultivations, etc.:-

All series: Ploughed: 26 Nov, 1976. Aldicarb and benomyl applied, and all plots rotary cultivated: 15 Mar, 1977 (Barley), 15 Apr (Potatoes, sugar beet).

Potatoes: PK applied: 6 Apr, 1977. N applied: 7 Apr. Potatoes planted: 15 Apr. Grubbed: 2 May. Fine tooth cultivated and grubbed twice: 25-26 May. Grubbed and earthed up: 20 June. Fungicide applied four times: 24 June, 8 July, 21 July, 12 Aug. Insecticide applied three times: 8 July, 21 July, 12 Aug. Haulm mechanically destroyed: 20 Sept. Lifted: 4 Oct.

Barley: Spring-tine cultivated: 15 Mar, 1977. N applied, spring-tine cultivated with crumbler attached: 30 Mar. Spring-tine cultivated with crumbler attached, seed sown: 4 Apr. Weedkillers applied: 30 May. Combine harvested: 4 Sept.

Sugar beet: Magnesial limestone applied: 6 Sept, 1976. PK applied: 6 Apr, 1977. N applied: 7 Apr. Spring-tine cultivated with crumbler attached, seed sown: 15 Apr. Tractor hoed: 27 May. Singled: 8-9 June. Steerage hoed: 27 June. Hand hoed: 11 July. Insecticide and boron applied: 18 July. Lifted: 11 Nov.

NOTE: Soil samples were taken after harvest for eelworm counts.

77/W/RN/15

POTATOES

TOTAL TUBERS TONNES/HECTARE

***** TABLES OF MEANS *****

N	75	150	225	MEAN
CHEMICAL				
O	7.1	27.7	26.2	20.3
A (P)	18.4	34.0	35.7	29.4
A (SB)	13.0	20.1	36.3	23.1
A (B)	11.0	28.2	30.7	23.3
A (ALL)	20.6	30.5	41.0	30.7
A D(ALL)	21.0	37.3	44.2	34.2
BEN(ALL)	19.1	23.0	30.8	24.3
MEAN	15.7	28.7	35.0	26.5

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

TABLE	CHEMICAL	N* CHEMICAL
SED	2.98	5.16

* WITHIN SAME LEVEL OF N ONLY

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

STRATUM	DF	SE	CV%
BLOCK.WP.SP	18	5.16	19.5

PERCENTAGE WARE 3.81CM (1.5 INCH) RIDDLE

***** TABLES OF MEANS *****

N	75	150	225	MEAN
CHEMICAL				
O	56.9	85.4	85.5	75.9
A (P)	82.2	90.7	93.0	88.6
A (SB)	77.2	88.1	91.4	85.6
A (B)	73.3	91.1	92.7	85.7
A (ALL)	82.3	91.4	92.3	88.7
A D(ALL)	88.1	90.5	93.6	90.7
BEN(ALL)	81.1	88.8	91.9	87.3
MEAN	77.3	89.4	91.5	86.1

SUB PLOT AREA HARVESTED 0.00052

77/W/RN/15

BARLEY

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

N	38	75	113	MEAN
CHEMICAL				
O	2.13	3.17	2.85	2.72
A (P)	2.35	3.08	3.44	2.96
A (SB)	2.03	3.49	3.47	2.99
A (B)	2.03	2.68	3.35	2.68
A (ALL)	1.51	3.56	2.82	2.63
A D(ALL)	1.94	3.06	3.45	2.82
BEN(ALL)	2.04	3.19	2.74	2.66
MEAN	2.00	3.18	3.16	2.78

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

TABLE	CHEMICAL	N* CHEMICAL
SED	0.201	0.349

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

STRATUM	DF	SE	CV%
BLOCK.WP.SP	18	0.349	12.6
GRAIN MEAN DM%	79.4		

STRAW TONNES/HECTARE

***** TABLES OF MEANS *****

N	38	75	113	MEAN
CHEMICAL				
O	1.23	1.91	1.65	1.60
A (P)	1.12	1.43	2.09	1.55
A (SB)	1.08	1.98	1.94	1.67
A (B)	1.29	1.57	1.70	1.52
A (ALL)	0.99	2.07	1.87	1.64
A D(ALL)	1.27	1.85	2.01	1.71
BEN(ALL)	1.22	1.70	1.50	1.47
MEAN	1.17	1.79	1.82	1.59

STRAW MEAN DM% 79.4

SUB PLOT AREA HARVESTED 0.00052

77/W/RN/15

SUGAR BEET

ROOTS (WASHED) TONNES/HECTARE

***** TABLES OF MEANS *****

N	75	150	225	MEAN
CHEMICAL				
0	22.0	32.9	34.7	29.8
A (P)	24.6	38.8	36.7	33.4
A (SB)	30.4	40.6	41.0	37.3
A (B)	27.1	35.2	38.6	33.6
A (ALL)	28.6	36.4	40.5	35.2
A D(ALL)	32.3	35.1	36.4	34.6
BEN(ALL)	25.9	31.8	34.0	30.6
MEAN	27.3	35.8	37.4	33.5

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

TABLE	CHEMICAL	N*
		CHEMICAL
SED	2.04	3.54

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

STRATUM	DF	SE	CV%
BLOCK.WP.SP	18	3.54	10.6

SUGAR PERCENTAGE

***** TABLES OF MEANS *****

N	75	150	225	MEAN
CHEMICAL				
0	18.8	18.2	17.6	18.2
A (P)	18.7	18.4	17.6	18.3
A (SB)	18.8	18.4	17.6	18.2
A (B)	18.8	18.4	17.7	18.3
A (ALL)	18.7	18.1	17.7	18.2
A D(ALL)	18.7	18.0	17.3	18.0
BEN(ALL)	18.8	18.1	17.7	18.2
MEAN	18.7	18.2	17.6	18.2

77/W/RN/15

SUGAR BEET

TOTAL SUGAR TONNES/HECTARE

***** TABLES OF MEANS *****

	N	75	150	225	MEAN
CHEMICAL					
O		4.13	5.98	6.10	5.40
A (P)		4.61	7.15	6.47	6.08
A (SB)		5.70	7.47	7.22	6.79
A (B)		5.08	6.46	6.82	6.12
A (ALL)		5.35	6.58	7.17	6.37
A D(ALL)		6.05	6.32	6.30	6.22
BEN(ALL)		4.87	5.76	6.01	5.55
MEAN		5.11	6.53	6.58	6.08

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

TABLE	CHEMICAL	N* CHEMICAL
SED	0.392	0.680

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

STRATUM	DF	SE	CV%
BLOCK.WP.SP	18	0.680	11.2
SUB PLOT AREA HARVESTED	0.00130		