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Yields of the Field Experiments 1966

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66/W/WCE/C/32 Irrigation and Eelworm - Potatoes

Rothamsted Research

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66/C/32.1

IRRIGATION AND EELWORM

(WCE)

Butt Close Woburn, the first year - potatoes.

Effects on yield and cyst-nematode of soil fumigant and irrigation and of sequences of resistant and susceptible varieties of potatoes.

Site: 3 replicates on Series I (Potatoes 1950, 1951, 1954, 1961), 3 on Series IV (last potato crop 1950) of the Irrigation Experiment 1951 - 1965.

Design: (each Series) 3 blocks of 4 whole plots, sequences of varieties on strips of 2 half plots, fumigants on quarter plots.

Area of each quarter-plot: 0.0114. Area harvested: 0.0068.

Treatments: All combinations of:-

1. Whole plots: Irrigation: None (O), full irrigation (C).
2. Strips of 4 plots: Sequences of varieties: (D = Pentland Dell, susceptible P = Maris Piper, resistant).

1966	1967	1968	1969
D	D	D	D
D	P	D	P
P	P	P	P
P	D	P	D

3. Quarter-plots: Fumigants: None (FO), DD injected at 400 lb at 6 inches in rows 12 inches apart (F).
Irrigation (C) 1966: (inches water)

	Series I	Series IV
May 27	0.5	May 26 0.5
June 1	0.5	June 2 0.5
June 7	0.5	June 6 0.5
June 10	0.5	June 9 0.5
July 4	0.5	July 5 0.5
July 18	0.5	July 14 0.5
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Total	3.0	3.0

Basal applications, etc.: 7 cwt (17:11:22). Weedkiller: Sprayed with 1 lb linuron plus 0.75 lb ion paraquat in 37 gals.
Fungicide: Mancozeb at 1.2 lb in 33 gals on 3 occasions.

Cultivations, etc.: Series I ploughed: Sept 27, 1965. Series IV

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ploughed: Jan 8, 1966. Fumigant injected: Feb 14. Basal NPK applied: Mar 23. Rotary cultivated, potatoes planted: Apr 29. Weedkiller applied: May 16. Earthed up: June 9. Fungicide applied: June 29, July 15, Aug 5. Sprayed with diquat (Reglone at 4 pints in 33 gals): Sept 12. Haulm mechanically destroyed: Sept 16. Lifted: Sept 20. Previous crops: Series I - sugar beet 1964, spring wheat 1965, Series IV - lucerne 1964, Italian ryegrass 1965.

- NOTES: (1) Soil samples were taken from each plot after fumigation and before cropping. Cyst and egg counts were made, and soil used for root invasion tests.
 (2) Plots were scored for magnesium deficiency and general appearance at the beginning of July.

Standard errors per plot. Total tubers:

Series I
 Strip: 1.537 or 12.7% (8 d.f.)
 1/2 plot: 1.577 or 13.0% (8 d.f.)
 1/4 plot: 1.823 or 15.0% (20 d.f.)
 Series IV
 Strip: 1.332 or 7.9% (8 d.f.)
 1/2 plot: 1.900 or 11.3% (8 d.f.)
 1/4 plot: 1.546 or 9.2% (20 d.f.)

Series	Strip	1/2 plot	1/4 plot
I	1.537	1.577	1.823
IV	1.332	1.900	1.546

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SUMMARY OF RESULTS

SERIES I

TOTAL TUBERS

	D	P	O	F	Mean
	(1) and (2)		(± 0.526)*		
O	11.47	14.79	10.97	15.29	13.13
C	9.57	12.69	8.82	13.44	11.13
			(3) and (4)		(± 0.628)
		D	7.77	13.27	10.52
		P	12.02	15.45	13.74
		Mean (± 0.372)	9.90	14.36	12.13

* For use in horizontal and interaction comparisons only

- (1) (± 0.644) For use in interaction comparisons only
- (2) (± 0.887) For use in horizontal comparisons only
- (3) (± 0.730) For use in vertical and diagonal comparisons only
- (4) (± 0.526) For use in horizontal and interaction comparisons only

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SERIES I

1/2 WARE

	D	P	O	F	Mean
O	86.4	92.6	84.6	94.4	89.5
C	78.9	89.4	76.3	91.9	84.1
	D		73.2	92.1	82.7
	P		87.7	94.3	91.0
	Mean		80.5	93.2	86.8

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SERIES IV
TOTAL TUBERS

	D	P	O	F	Mean
	(1) and (2)		(±0.446)*		
O	16.66	19.70	17.79	18.58	18.18
C	13.73	17.28	14.00	17.01	15.50
			(3) and (4)		(±0.544)
		D	14.02	16.37	15.19
		P	17.77	19.21	18.49
		Mean (±0.316)	15.89	17.79	16.84

* For use in horizontal and interaction comparisons only

- (1) (±0.776) For use in interaction comparisons only
- (2) (±0.769) For use in horizontal comparisons only
- (3) (±0.629) For use in vertical and diagonal comparisons only
- (4) (±0.446) For use in horizontal and interaction comparisons only

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SERIES IV

% WARE

	D	P	O	F	Mean
D	94.8	94.8	94.7	94.9	94.8
C	92.0	92.1	89.6	94.5	92.1
		D	92.5	94.4	93.4
		P	91.9	95.1	93.5
		Mean	92.2	94.7	93.5