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Yields of the Field Experiments 1972

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72/R/CS/88 and 72/W/CS/88 Fertiliser and Fym - Potatoes

Rothamsted Research

Rothamsted Research (1973) *72/R/CS/88 and 72/W/CS/88 Fertiliser and Fym - Potatoes ; Yields Of The Field Experiments 1972*, pp 239 - 244 - DOI: <https://doi.org/10.23637/ERADOC-1-62>

72/R/CS/88 and 72/W/CS/88

FERTILISER AND FYM

Object: To study the effects of a range of rates of NPK fertiliser, P and K being applied in autumn or spring, and FYM on the yields of potatoes - Rothamsted, Great Knott I (R) and Woburn, Warren Field I (W).

Sponsor: F.V. Widdowson.

The first year, potatoes.

Design: 3 randomised blocks of 18 plots.

Whole plot dimensions: 4.27 x 16.2. Area harvested: 0.00230.

Treatments: All combinations of:-

1. FYM: None (0), Great Knott I (R): 53 tonnes, Warren Field I (W): 73 tonnes (D).
2. N and PK fertilisers (F) to give rates of nitrogen*: 188 (1), 377 (2), 565 (3) kg N as 'Nitro-Chalk'.
3. Times of applying PK: All in autumn (A), all in spring (S), half in autumn, half in spring (AS).

* The ratio of N:P2O5:K2O was 1:1.5:1.5 for all N treatments.

Basal applications:

Great Knott I (R): Weedkiller: Linuron at 0.84 kg with paraquat at 0.42 kg ion in 440 l. Fungicide: Mancozeb at 1.3 kg in 440 l. Fungicide with insecticide: Mancozeb at 1.3 kg plus demeton-s-methyl at 0.25 kg in 440 l.

Warren Field I (W): Ground chalk at 5 tonnes. Weedkiller: Linuron at 1.7 kg in 370 l. Fungicide: Mancozeb at 1.3 kg in 430 l. Fungicide with insecticide: Mancozeb at 1.3 kg plus demeton-s-methyl at 0.25 kg in 430 l.

Seed: Great Knott I (R): King Edward.
Warren Field I (W): Maris Piper.

Cultivations, etc.:-

Great Knott I (R): Autumn PK applied: 1 Nov, 1971. FYM applied: 4 - 5 Nov. Ploughed: 5 Nov. Spring PK applied: 24 Apr, 1972. N applied: 25 apr. Rotary cultivated, potatoes planted: 26 Apr. Weedkiller applied: 18 May. Grubbed, rotary ridged: 15 June.

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Fungicide applied on three occasions: 11 July, 24 July, 10 Aug.
 Insecticide applied with fungicide: 24 July. Sprayed with
 undiluted BOV at 200 l: 20 Sept. Haulm destroyed mechanically:
 7 Oct. Lifted: 9 Oct. Previous crops: Barley 1970, fallow 1971.
 Warren Field I (W): Chalk applied: 6 Sept, 1971. Autumn PK applied:
 28 Oct. FYM applied, ploughed: 1 Nov. Spring PK and N applied:
 5 Apr, 1972. Rotary cultivated twice, potatoes planted: 24 Apr.
 Weedkiller applied: 11 May. Rotary ridged: 20 June. Fungicide
 applied: 6 July. Fungicide with insecticide applied: 28 July.
 Sprayed with undiluted BOV at 200 l: 5 Oct. Lifted: 17 - 18 Oct.
 Previous crops: Wheat 1970, barley 1971.

- NOTES: (1) Leaf samples were taken in July for percentage of Mg and K.
 (2) Tuber samples were taken at grading for percentage of N, P
 and K.
 (3) Tuber samples were taken for cooking tests by N.I.A.B.

Standard errors per plot. Total tubers, tonnes/hectare:

Great Knott I (R): 3.69 or 8.0% (34 d.f.)
 Warren Field I (W): 2.31 or 4.7% (34 d.f.)

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TABLES OF MEANS

GREAT KNOTT I (R)

TOTAL TUBERS: TONNES/HECTARE

	F			TIME			Mean
	1	2	3	A	S	AS	
FYM							
O	38.6	45.9	47.6	41.7	45.1	45.2	44.0
D	44.0	48.0	51.0	45.4	48.6	49.0	47.7
			F				
			1	40.0	42.4	41.5	41.3
			2	44.1	48.4	48.3	47.0
			3	46.5	49.8	51.6	49.3
Mean				43.5	46.9	47.1	45.8

F	1			2			3		
TIME	A	S	AS	A	S	AS	A	S	AS
FYM									
O	36.7	39.8	39.2	42.4	47.6	47.6	46.1	47.8	48.8
D	43.3	45.0	43.9	45.9	49.3	49.0	47.0	51.7	54.3

STANDARD ERRORS OF DIFFERENCES

FYM	F	TIME	FYM F	FYM TIME	F TIME	FYM F TIME
1.00	1.23	1.23	1.74	1.74	2.13	3.01

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GREAT KNOTT I (R)

PERCENTAGE WARE: 4.44 CM (1.75 INCH) RIDDLE

	F			TIME					
	1	2	3	A	S	AS	Mean		
FYM									
O	73.7	80.1	78.4	78.6	77.4	76.3	77.4		
D	77.2	79.7	80.1	80.4	77.4	79.2	79.0		
			F						
			1	77.5	74.2	74.6	75.4		
			2	80.8	79.2	79.8	79.9		
			3	80.3	78.7	78.8	79.3		
Mean				79.5	77.4	77.8	78.2		
F		1			2		3		
TIME	A	S	AS	A	S	AS	A	S	AS
FYM									
O	76.5	72.8	71.8	81.2	80.1	79.2	78.2	79.3	77.9
D	78.4	75.6	77.5	80.4	78.3	80.5	82.4	78.2	79.7

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WARREN FIELD I (W)

TOTAL TUBERS: TONNES/HECTARE

	1	F 2	3	A	TIME S	AS	Mean
FYM							
O	39.1	47.9	54.5	46.4	47.9	47.2	47.2
D	45.8	52.9	55.1	50.1	51.2	52.5	51.3
			F				
			1	42.8	40.9	43.7	42.5
			2	48.5	51.7	51.0	50.4
			3	53.4	56.1	54.9	54.8
Mean				48.3	49.5	49.9	49.2

F TIME	A	1 S	AS	A	2 S	AS	A	3 S	AS
FYM									
O	40.1	37.6	39.6	45.3	49.5	48.9	53.9	56.5	53.1
D	45.5	44.1	47.8	51.8	53.8	53.1	52.9	55.6	56.7

STANDARD ERRORS OF DIFFERENCES

FYM	F	TIME	FYM F	FYM TIME	F TIME	FYM F TIME
0.63	0.77	0.77	1.09	1.09	1.34	1.89

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WARREN FIELD I (W)

PERCENTAGE WARE: 4.44 CM (1.75 INCH) RIDDLE

	F			TIME					
	1	2	3	A	S	AS	Mean		
FYM									
O	88.8	89.6	89.7	91.2	87.4	89.5	89.4		
D	89.9	91.1	89.7	90.9	89.3	90.5	90.2		
			F						
			1	91.6	86.0	90.4	89.4		
			2	90.6	90.0	90.4	90.3		
			3	90.8	89.0	89.4	89.7		
Mean				91.0	88.3	90.0	89.8		
F		1			2		3		
TIME	A	S	AS	A	S	AS	A	S	AS
FYM									
O	92.1	84.3	90.0	90.6	88.8	89.3	90.8	89.1	89.4
D	91.1	87.8	90.8	90.6	91.2	91.4	90.9	88.8	89.4