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Yields of the Field Experiments 1973

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73/R&W/CS/110 - Fertiliser I Fym - Potatoes

Rothamsted Research

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73/R/CS/110 and 73/W/CS/110

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, Stackyard (R) and Woburn, Great Hill II (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. Farmyard manure (tonnes) to supply 377 kg N:		FYM
None		0 0
80 Stackyard (R), 63 Great Hill II (W)		80 63
2. N, in spring and PK fertilisers to give rates of nitrogen* (kg N):		N
188		188
377		377
565		565
3. Times of applying PK fertilisers		TIME
All in autumn		Autumn
All in spring		Spring
Half in autumn, half in spring		Aut/Sprng

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

Basal applications:

Stackyard (R): Weedkiller: Linuron at 1.2 kg plus paraquat at 0.42 kg ion in 450 l. Fungicide with insecticide: Mancozeb at 1.3 kg plus demeton-s-methyl at 0.25 kg in 370 l. Fungicide: Mancozeb at 1.3 kg in 370 l.

Great Hill II (W): Manures: Magnesian limestone at 7.5 tonnes. Weed-killers: Linuron at 1.2 kg plus paraquat at 0.56 kg ion in 280 l. Fungicide with insecticide: Mancozeb at 1.3 kg plus demeton-s-methyl at 0.25 kg in 390 l. Fungicide: Mancozeb at 1.3 kg in 390 l on the first occasion and in 370 l on the second occasion.

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Seed: Stackyard (R): King Edward,
Great Hill II (W): Maris Piper.

Cultivations, etc.:-

Stackyard (R): Autumn PK applied: 31 Oct, 1972. FYM applied, ploughed:
3 Nov. Spring PK applied: 28 Mar, 1973. N applied, rotary cultivated,
potatoes planted: 11 Apr. Weedkiller applied: 15 May. Grubbed:
7 June. Rotary ridged: 11 June. Fungicide with insecticide applied:
2 July. Fungicide applied: 18 July, 9 Aug. Haulm mechanically
destroyed: 17 Sept. Sprayed with undiluted BCV at 220 l: 18 Sept.
Lifted: 2 Oct. Previous crops: Wheat 1971, fallow 1972.

Great Hill II (W): Magnesian limestone applied: 19 Sept, 1972. Autumn
PK applied: 16 Nov. FYM applied, ploughed: 29 Nov. Spring PK
applied: 29 Mar, 1973. N applied: 3 Apr. Rotary cultivated,
potatoes planted: 6 Apr. Weedkiller applied: 9 May. Grubbed:
31 May. Rotary ridged: 5 June. Fungicide with insecticide applied:
6 July. Fungicide applied: 26 July, 13 Aug. Haulm mechanically
destroyed: 12 Sept. Lifted: 14 Sept. Previous crops: Potatoes 1971,
winter wheat 1972.

- 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:

Stackyard (R): 2.75 or 5.4% (34 d.f.)

Great Hill II (W): 2.82 or 7.2% (34 d.f.)

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TABLES OF MEANS

STACKYARD (R)

TOTAL TUBERS: TONNES/HECTARE

		N			TIME			Mean
		188	377	565	Autumn	Spring	Aut/Spng	
FYM								
	0	50.2	49.6	49.2	49.7	48.9	50.4	49.6
	80	55.3	52.8	49.6	53.1	51.8	52.8	52.6
		N						
			188		51.1	54.2	53.0	52.7
			377		52.8	48.0	52.8	51.2
			565		50.3	48.9	48.9	49.4
Mean					51.4	50.3	51.6	51.1

N	TIME	188			377			565		
		Autumn	Spring	Aut/Spng	Autumn	Spring	Aut/Spng	Autumn	Spring	Aut/Spng
FYM										
	0	48.0	51.9	50.8	51.4	45.5	51.8	49.8	49.2	48.5
	80	54.2	56.4	55.2	54.1	50.5	53.8	50.8	48.5	49.4

STANDARD ERRORS OF DIFFERENCES

FYM	N	TIME	FYM	FYM	N	FYM
			N	TIME	TIME	N
						TIME
0.75	0.92	0.92	1.30	1.30	1.59	2.24

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STACKYARD (R)

PERCENTAGE WARE: 4.44 CM (1.75 INCH) RIDDLE

		188	N		565	TIME			Mean
						Autumn	Spring	Aut/Spng	
FYM	0	78.9	83.4	81.7	84.2	79.9	79.8	81.3	
	80	83.8	81.8	83.2	84.4	82.3	82.1	82.9	
			N						
			188		83.8	80.4	79.8	81.3	
			377		85.0	80.3	82.5	82.6	
			565		84.1	82.6	80.7	82.5	
Mean					84.3	81.1	81.0	82.1	

TIME	N	188			377			565		
		Autumn	Spring	Aut/Spng	Autumn	Spring	Aut/Spng	Autumn	Spring	Aut/Spng
FYM										
0		82.2	77.8	76.7	85.2	80.3	84.7	85.4	81.7	78.0
80		85.4	83.0	82.9	84.8	80.2	80.2	82.9	83.5	83.3

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GREAT HILL II (W)

TOTAL TUBERS: TONNES/HECTARE

	188	N 377	565	Autumn	TIME Spring	Aut/Spng	Mean
FYM							
0	33.2	40.9	41.4	36.7	39.6	39.3	38.5
63	35.1	43.3	42.1	37.6	41.7	41.1	40.2
		N					
		188		31.8	35.9	34.7	34.1
		377		38.9	43.2	44.3	42.1
		565		40.8	42.8	41.5	41.7
Mean				37.2	40.6	40.2	39.3

N TIME	188 Autumn	Spring	Aut/Spng	377 Autumn	Spring	Aut/Spng	565 Autumn	Spring	Aut/Spng
FYM									
0	30.4	34.2	35.0	38.2	41.9	42.8	41.6	42.5	40.0
63	33.1	37.6	34.4	39.6	44.5	45.9	40.1	43.0	43.0

STANDARD ERRORS OF DIFFERENCES

FYM	N	TIME	FYM N	FYM TIME	N TIME	FYM N TIME
0.77	0.94	0.94	1.33	1.33	1.63	2.30

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GREAT HILL II (W)

PERCENTAGE WARE: 4.44 CM (1.75 INCH) RIDDLE

	188	N		565	TIME			Mean
		377			Autumn	Spring	Aut/Spng	
FYM								
0	53.2	66.6		68.7	60.2	65.0	63.2	62.8
63	58.9	67.1		67.3	62.4	65.4	65.5	64.4
		N						
		188			53.2	58.5	56.5	56.1
		377			64.5	68.6	67.3	66.8
		565			66.2	68.4	69.3	68.0
Mean					61.3	65.2	64.3	63.6

N	188			377			565		
	Autumn	Spring	Aut/Spng	Autumn	Spring	Aut/Spng	Autumn	Spring	Aut/Spng
FYM									
0	49.9	54.3	55.3	63.0	69.3	67.4	67.8	71.5	66.8
63	56.5	62.7	57.7	66.1	68.0	67.1	64.7	65.4	71.8