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Yields of the Field Experiments 1956

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56/R/CE/4 and 56/W/CE/4 Potatoes - Dung N P and K

Rothamsted Research

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56/Ce/4.1

POTATOES

Dung, N, P and K - Rothamsted (R) Great Field II and Woburn (W) Butt Close 1956.

Design (each field): 4 randomized blocks of 16 plots each, a high order interaction being confounded with block differences.

Area of each plot: 0.0200 acres. Area harvested: 0.0133 acres.

Treatments: All combinations of:-

Dung: None; 5; 10; 20 tons per acre ploughed in.
N: None; 0.9 cwt N per acre as sulphate of ammonia.
P: None; 0.75 cwt P_2O_5 per acre as superphosphate.
K: None; 1.5 cwt K_2O per acre as muriate of potash.

Basal dressing: None

Cultivations, etc.:

Great Field II (R).

Ploughed: Nov 12, 1955. Dung applied, ploughed: Apr 9, 1956.
Fertilizers applied: Apr 20. Potatoes machine planted: Apr 23.
Earthed up: June 30. Sprayed with copper fungicide, 5 lb in 40 gallons per acre: July 24. Sprayed again at 3 lb in 80 gallons: Aug 14. Sprayed with sulphuric acid, 20% BOV, 80 gallons per acre: Sept 24. Lifted: Oct 15 - 16. Variety: Majestic. Previous crop: Wheat.

Butt Close (W).

Ploughed: Nov 9, 1955. Dung applied: Apr 17 - 18, 1956.
Ploughed: Apr 19. Fertilizers applied: Apr 20. Potatoes machine planted: Apr 23. Earthed up: June 21. Sprayed with copper fungicide, 5 lb in 40 gallons per acre: July 23. Sprayed with sodium arsenite, 1 gallon in 40 gallons per acre: Sept 1. Lifted: Oct 1. Variety: Majestic. Previous crop: Barley.

Standard errors per plot. Total tubers: tons per acre.

Great Field II (R): 0.960 tons per acre or 6.6% (29 d.f.)

Butt Close (W): 1.47 tons per acre or 13.1% (30 d.f.)

Notes:

Great Field II (R). The yields of total tubers were adjusted to allow for tractor damage to some of the rows during spraying.

Butt Close (W). The crop was infested by potato root eelworm (*Heterodera Rostochiensis*), the symptoms being more severe on the plots receiving no dung or 5 tons per acre. No adjustment was made.

56/Ce/4.2

Summary of Results

Total tubers: tons per acre

	Dung: tons per acre				Mean
	None	5	10	20	
Great Field (Rothamsted)					
Mean (± 0.240)	12.62	14.20	15.43	15.89	14.54
N: cwt per acre	(± 0.339)				
None	11.77	13.09	14.69	15.51	13.76
0.9	13.48	15.33	16.17	16.27	15.31
Difference (± 0.480)	+1.71	+2.24	+1.48	+0.76	+1.55 (± 0.240)
P ₂ O ₅ : cwt per acre					
None	11.33	13.01	14.41	14.84	13.40
0.75	13.91	15.41	16.46	16.95	15.68
Difference (± 0.480)	+2.58	+2.40	+2.05	+2.11	+2.28 (± 0.240)
K ₂ O: cwt per acre					
None	11.88	13.39	14.92	15.72	13.98
1.5	13.37	15.03	15.94	16.06	15.10
Difference (± 0.480)	+1.49	+1.64	+1.02	+0.34	+1.12 (± 0.240)
Butt Close (Woburn)					
Mean (± 0.368)	9.33	10.50	11.59	13.60	11.25
N: cwt per acre	(± 0.520)				
None	6.25	6.98	8.28	11.80	8.33
0.9	12.40	14.02	14.90	15.40	14.18
Difference (± 0.736)	+6.15	+7.04	+6.62	+3.60	+5.85 (± 0.368)
P ₂ O ₅ : cwt per acre					
None	9.02	10.28	11.52	13.63	11.11
0.75	9.64	10.72	11.66	13.57	11.40
Difference (± 0.736)	+0.62	+0.44	+0.14	-0.06	+0.29 (± 0.368)
K ₂ O: cwt per acre					
None	8.75	10.95	11.62	14.17	11.37
1.5	9.90	10.05	11.56	13.04	11.14
Difference (± 0.736)	+1.15	-0.90	-0.06	-1.13	-0.23 (± 0.368)

56/Ce/4.3

Percentage Ware					
	Dung: tons per acre				
	None	5	10	20	Mean
Great Field (Rothamsted) ⁽¹⁾					
Mean	88.7	88.6	84.9	86.3	87.1
N: cwt per acre					
None	89.2	90.0	86.5	89.7	88.8
0.9	88.3	87.2	83.3	82.9	85.4
Difference	-0.9	-2.8	-3.2	-6.8	-3.4
P ₂ O ₅ : cwt per acre					
None	89.6	88.8	86.7	87.0	88.0
0.75	87.8	88.4	83.0	85.6	86.2
Difference	-1.8	-0.4	-3.7	-1.4	-1.8
K ₂ O: cwt per acre					
None	88.5	88.3	85.0	86.4	87.1
1.5	88.9	88.8	84.7	86.2	87.2
Difference	+0.4	+0.5	-0.3	-0.2	+0.1
Butt Close (Woburn) ⁽²⁾					
Mean	69.1	76.7	79.4	82.9	77.0
N: cwt per acre					
None	58.5	66.8	72.7	79.2	69.3
0.9	79.6	86.6	86.1	86.6	84.7
Difference	+21.1	+19.8	+13.4	+7.4	+15.4
P ₂ O ₅ : cwt per acre					
None	70.1	75.5	79.3	82.9	76.9
0.75	68.1	77.9	79.5	82.9	77.1
Difference	-2.0	+2.4	+0.2	0.0	+0.2
K ₂ O: cwt per acre					
None	67.5	77.1	77.6	82.1	76.1
1.5	70.7	76.3	81.3	83.7	78.0
Difference	+3.2	-0.8	+3.7	+1.6	+1.9

Riddle (1) 1½" (2) 1⅜".

56/Ce/4.4

Total tubers: tons per acre

Response to	Responses to treatments cwt per acre					
	N		P ₂ O ₅		K ₂ O	
	None	0.9	None	0.75	None	1.5

Great Field (Rothamsted)

(± 0.339)

N	-	-	+0.72	+2.38	+1.50	+1.60
P ₂ O ₅	+1.45	+3.11	-	-	+1.80	+2.76
K ₂ O	+1.07	+1.17	+0.64	+1.60	-	-

Butt Close (Woburn)

(± 0.520)

N	-	-	+5.88	+5.82	+5.49	+6.21
P ₂ O ₅	+0.32	+0.26	-	-	+1.15	-0.57
K ₂ O	-0.60	+0.12	+0.62	-1.10	-	-

Percentage Ware

Response to	Responses to treatments cwt per acre					
	N		P ₂ O ₅		K ₂ O	
	None	0.9	None	0.75	None	1.5

Great Field (Rothamsted)⁽¹⁾

N	-	-	-1.9	-4.9	-3.9	-2.9
P ₂ O ₅	-0.3	-3.3	-	-	-2.2	-1.4
K ₂ O	-0.4	+0.6	-0.3	+0.5	-	-

Butt Close (Woburn)⁽²⁾

N	-	-	+17.0	+13.8	+16.5	+14.3
P ₂ O ₅	+1.8	-1.4	-	-	+2.2	-1.8
K ₂ O	+3.1	+0.9	+4.0	0.0	-	-

Riddle (1) 1½" (2) 1⅝".