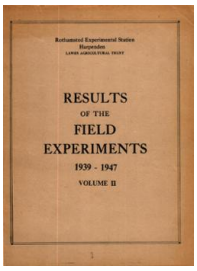
ROTHAMSTED RESEARCH

Yields of the Field Experiments 1939-1947 Volume 2



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G Effects of Various Organic Manures

Rothamsted Research

Rothamsted Research (1948) *G Effects of Various Organic Manures ;* Yields Of The Field Experiments 1939-1947 Volume 2, pp 21 - 34 **- DOI: https://doi.org/10.23637/ERADOC-1-186**

DIRECT AND RESIDUAL EFFECTS OF VARIOUS ORGANIC MANURES

A series of two-year experiments, one of which was started every year from 1940 to 1948. See also "Results of the Field Experiments", 1948 and 1949.

In the first year, the experiment tests the effect of various organic manures, sulphate of ammonia, superphosphate and muriate of potash on potatoes, and in the second year tests the residual effects of the previous year's organic manures on a corn crop.

Design; 5 x 5 lattice square in three replicates. In 1940 and 1947 the plots were split into two for applications of nitrogen and potash, and in 1941-46 the plots were split into four for applications of nitrogen, phosphate and potash, in each year the highest-order interaction of artificials being confounded with differences between whole plots.

First Season

Potatoes.

Area of each whole plot; 1940, 0.025 acre

1941-46, 0.030 acre

1947, 0.019 acre

Organic manures; Of the 25 main plots in each replicate, 3 received no organic manure, and the remaining 22 were treated with 11 different organics each at single and double rates. In 1940 there were only 9 different organics, fermented and pulverised town refuse being broadcast before ridging or applied in the ridges. In all other cases organic manures were applied in the ridges.

The fresh normal dung was applied at 8 tons per acre (single dressing) and the other dungs at equivalent rates based on equal amounts of concentrates and hay used in making them. From 1942 onwards the sludges were applied at 5 tons per acre of dry matter (single dressing). "Stored dung" had been kept for 4 months (bullock boxes) and 12 months (straw bale yards and commercial dung).

Artificial fertilizers;

Sulphate of ammonia; None, 0.6 cwt. N per acre

Superphosphate; None, 0.6 cwt. P_2O_5 per acre (None in 1940 and 1947)

Muriate of potash; None, 1.0 cwt. K_2O per acre.

https://doi.org/10.23637/ERADOC-1-186

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Effects of various organics

Basal manuring; 1940, Superphosphate, 0.6 cwt. P_2O_5 per acre

1941-46 None

1947, Superphosphate, 0.6 cwt. P_2O_5 per acre

Crop Notes.

Year	Previous Crop	Date Planted	Date Lifted	Year	Previous crop	Date Planted	Date Lifted
1940	Wheat	May 15	September 30	1944	Wheat	April 17	October 4
1941	Wheat	May 15	October, 15	1945	Barley	April 25	October 5
1942	Barley	May 9	October 23	1946	Linseed	May 9	October 13
1943	Wheat	May 4	September 29	1947	Barley	May 24	October 9

Variety; 1940-42, Arran Banner; 1943-47, Majestic.

In 1944 on 11 sub-plots varying amounts of King Edward seed were used instead of Majestic, so that the yields on these plots were lower than they would have been with a full plant of Majestic. The yield of each row of these plots was determined separately, and the total yield of the sub-plot adjusted so as to represent a full plant of Majestic.

Second Season

1941-45, Barley. 1946 and 1947, Wheat.

Area of each plot; 1941, 0.035 acre

1942-47 0.028 acre.

Basal manuring; 1941, None

1942-46, 0.2 cwt. N per acre as sulphate of ammonia

1947, 0.4 cwt. N per acre as sulphate of ammonia.

Crop Notes.

	1941	1942	1943	1944	1945	1946	1947
Sown	March 31	March 26	March 4	March 9	March 14	27/10/45	5/11/46
Harvested	Sept.19	Aug. 20	Aug. 12	Aug. 16	Aug. 17	Aug.21	Aug. 9
Variety:	Barley,	Plumage Archer		Wheat, Bersee			

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Potatoes. Great Harpenden, 1940 (Direct effects)

Total tubers: tons per acre

Level of manuring		Mean Yield 1	Mean Yield 2	Responses N 1	Responses N 2	Responses K 1	Responses K 2
Treatments, tons/acre (single dressing)		±0.385		±0.560		±0.560	
No organic manure		7.52[a]		0.40[b]		1.53[b]	
Dung: Fresh normal	8.0	8.15	8.90	0.69	0.46	0.01	0.04
Fresh strawy	7.6	8.37	9.21	0.62	1.72	0.28	-0.38
Stored normal	5.2	8.77	9.14	0.86	0.16	0.18	0.34
Stored strawy	5.2	8.61	9.49	0.84	0.43	1.70	0.29
Ferm. town refuse (in ridges)	8.0	7.60	8.32	-0.21	0.73	1.64	0.59
Ferm. town refuse (broadcast)	8.0	7.23	7.73	1.19	0.51	1.38	-0.03
Pulv. town refuse (in ridges)	8.0	8.15	8.13	0.73	0.79	1.41	0.32
Pulv. town refuse (broadcast)	8.0	7.50	7.07	0.02	1.36	2.37	2.00
Screened dust	8.0	7.93	7.46	1.13	0.53	-0.15	0.54
Controlled tip refuse: Luton	8.0	7.87	7.01	-0.44	-0.63	1.03	1.92
Wheathampstead	8.0	7.30	7.52	-0.67	-0.59	3.04	1.02

Averages over two levels of organic manures

	Mean Yield	Responses N	Responses K
	±0.272	±0.396	
No organic manure	7.52[a]	0.40[b]	1.53[b]
Dung: Fresh normal	8.52	0.58	0.02
Fresh strawy	8.79	1.17	-0.05
Stored normal	8.96	0.51	0.26
Stored strawy	9.05	0.64	1.00
Ferm. town refuse (in ridges)	7.96	0.26	1.12
Ferm. town refuse (broadcast)	7.48	0.85	0.68
Pulv. town refuse (in ridges)	8.14	0.76	0.86
Pulv. town refuse (broadcast)	7.28	0.69	2.18
Screened dust	7.70	0.83	0.20
Controlled tip refuse: Luton	7.44	0.54	1.48
Wheathampstead	7.41	-0.63	2.03
Mean	8.00		

Standard errors: (a) 0.222 (b) 0.307

Standard errors per plot: per whole plot, 0.667 tons per acre or 8.3%, 24 d.f.
per sub-plot, 0.647 tons per acre or 8.1%, 29 d.f.

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Effects of various organics

Potatoes. Little Hoos, 1941. (Direct effects)

Total tubers: tons per acre

Level of manuring		Mean yield 1	Mean yield 2	Responses to N 1	Responses to N 2	Responses to P 1	Responses to P 2	Responses to K 1	Responses to K 2
Treatments, tons/acre (single dressing)		±0.391		±0.646		±0.646		±0.646	
No organic manure		4.76[a]		1.59[c]		0.69[c]		2.39[c]	
Dung: Fresh normal	8.0	8.12	10.10	0.45	1.57	1.19	0.50	-0.33	0.26
Fresh strawy	8.8	8.05	10.45	1.78	2.05	0.99	-0.61	-0.65	0.74
Stored normal	4.7	7.74	8.63	3.30	2.88	0.23	-0.29	0.92	0.31
Stored strawy	5.8	7.57	7.91	3.51	2.46	1.10	-1.13	0.70	0.95
Fermented town refuse	8.0	5.60	7.08	1.85	3.03	0.76	0.81	2.32	0.65
Pulverized town refuse	8.0	6.37	6.70	2.69	1.67	0.21	0.79	2.34	1.50
Screened dust		5.64	5.41	3.22	2.64	1.20	0.80	3.13	2.19
Sewage sludge: W.Middlesex	4.0	5.96	6.92	1.72	2.34	-0.90	0.44	3.58	4.53
Birmingham	4.0	6.01	6.34	1.66	1.44	-0.07	0.49	3.37	4.14
Sludge and town refuse	8.0	7.13	7.40	2.41	2.91	-0.19	1.05	2.32	1.26
Bracken compost*	8.0	7.36[b]		2.43[d]		-0.23[d]		0.63[d]	
Improved bracken compost*	8.0	8.04[b]		2.60[d]		0.22[d]		0.69[d]	

*No double dressing. The improved bracken compost received 20 lb. sulphate of ammonia and 20 lb. calcium carbonate for each ton of fresh bracken.

Averages over two levels of organic manures

	Mean yield	Responses to N	Responses to P	Responses to K
	±0.276		±0.457	
No organic manure	4.76[a]	1.59[c]	0.69[c]	2.39[c]
Dung: Fresh normal	9.11	1.01	0.84	-0.04
Fresh strawy	9.25	1.92	0.19	0.04
Stored normal	8.18	3.09	-0.03	0.62
Stored strawy	7.74	2.98	-0.02	0.82
Fermented town refuse	6.34	2.44	0.78	1.48
Pulverized town refuse	6.54	2.18	0.50	1.92
Screened dust	5.52	2.93	1.00	2.66
Sewage sludge: W.Middlesex	6.44	2.03	-0.23	4.06
Birmingham	6.18	1.55	0.21	3.76
Sludge and town refuse	7.26[b]	2.66[d]	0.43[d]	1.79[d]
Bracken compost	7.36[b]	2.43[d]	-0.23[d]	0.63[d]
Improved bracken compost	8.04[b]	2.60[d]	0.22[d]	0.69[d]
Mean	7.00			

Standard errors: (a) 0.226, (b) 0.391, (c) 0.362, (d) 0.646

Standard errors per plot: per whole plot, 0.677 tons per acre or 9.7%, 24 d.f.
per sub-plot, 1.06 tons per acre or 15.1%, 87 d.f.

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Potatoes. Long Hoos I and II, 1942 (Direct effects)

Total tubers: tons per acre.

Level of manuring		Mean Yield 1	Mean Yield 2	Responses N 1	Responses N 2	Responses P 1	Responses P 2	Responses K 1	Responses K 2
Treatments, tons/acre (single dressing)		±0.597		±0.701		±0.701		±0.701	
No organic manure		11.62[a]		2.62[b]		0.30[b]		1.63[b]	
Dung: Fresh normal	8.0	12.84	14.02	2.60	1.97	-0.05	1.44	1.48	1.17
Fresh strawy	8.6	12.94	13.52	1.92	1.87	0.36	1.45	1.29	-0.05
Stored normal	5.7	12.89	14.12	2.37	2.81	-1.17	0.73	1.03	1.55
Stored strawy	7.1	12.73	13.04	2.14	2.12	0.57	-0.93	0.68	0.81
Composted town refuse	8.0	11.27	12.43	2.57	0.94	2.26	1.07	0.45	0.67
Pulverized town refuse	8.0	11.79	11.47	2.95	1.36	0.87	0.96	1.33	1.64
Sewage sludge: W.Middlesex	10.2	13.15	12.46	1.74	1.56	1.15	0.47	2.13	0.51
Birmingham	7.4	11.74	12.47	2.30	0.18	0.42	0.51	1.87	0.52
Rotherham	7.9	11.49	11.94	2.87	1.09	0.76	0.25	0.51	2.11
Huddersfield	5.6	12.38	10.58	1.27	0.63	0.47	0.66	1.29	1.54
Bracken compost	8.0	13.35	14.43	1.35	2.21	1.83	-0.08	0.13	0.01

Averages over two levels of organic manure

	Mean Yield	Responses N	Responses P	Responses K
	±0.422		±0.496	
No organic manure	11.62[a]	2.62[b]	0.30[b]	1.63[b]
Dung: Fresh normal	13.43	2.28	0.70	1.32
Fresh strawy	13.23	1.90	0.90	0.62
Stored normal	13.50	2.59	-0.22	1.29
Stored strawy	12.88	2.13	-0.18	0.74
Composted town refuse	11.85	1.76	1.66	0.56
Pulverized town refuse	11.63	2.16	0.92	1.48
Sewave sluge: W.Middlesex	12.80	1.65	0.81	1.32
Birmingham	12.10	1.24	0.46	1.20
Rotherham	11.72	1.98	0.50	1.31
Huddersfield	11.48	0.95	0.56	1.42
Bracken compost	13.89	1.78	0.88	0.07
Mean	12.48			

Standard errors: (a) 0.344, (b) 0.384

Standard error per plot: per whole plot, 1.93 tons per acre or 8.2%, 24 d.f.
per sub-plot, 1.15 tons per acre or 9.2%, 87 d.f.

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Effects of various organics

Potatoes. Sawyers II, 1943. (Direct effects)

Total tubers: tons per acre

Level of manuring		Mean Yield 1	Mean Yield 2	Responses N 1	Responses N 2	Responses P 1	Responses P 2	Responses K 1	Responses K 2
Treatments, tons/acre (single dressing)		±0.458		±0.439		±0.439		±0.439	
No organic manure		4.42[a]		0.64[b]		1.24[b]		2.75[b]	
Dung: Normal (bullock boxes)	8.0	8.06	8.24	1.15	1.23	0.87	0.44	0.05	1.05
Strawy (bullock boxes)	8.3	7.51	8.04	2.02	1.24	0.86	1.36	0.28	-0.54
Rich (calves)	8.0	8.62	8.43	0.97	1.16	1.21	-0.21	0.66	-0.04
Poor (straw-fed cattle)	8.0	6.68	6.66	1.72	1.98	1.29	1.49	0.25	0.22
Composted town refuse	8.0	5.34	4.86	1.15	0.15	0.90	1.04	2.33	1.59
Pulverized town refuse	8.0	4.33	3.99	0.63	0.28	1.23	1.09	0.69	1.14
Straw sludge compost	8.0	5.66	5.85	1.14	0.83	0.81	0.64	3.39	2.98
Sewage sludge: W.Middlesex	12.3	5.47	5.57	0.92	0.33	0.43	-0.51	3.04	2.28
Birmingham	7.2	2.75	3.58	0.10	0.94	0.65	0.83	1.63	0.88
Harpenden	17.5	5.80	5.95	0.74	0.21	0.01	-0.03	3.73	2.28
Bracken compost	8.0	8.31	10.06	1.32	1.58	1.41	0.38	0.14	-0.51

Averages over two levels of organic manure

	Mean Yield	Responses N	Responses P	Responses K
	±0.324		±0.310	
No organic manure	4.42[a]	0.64[b]	1.24[b]	2.75[b]
Dung: Normal (bullock boxes)	8.15	1.19	0.66	0.55
Strawy (bullock boxes)	7.78	1.63	1.11	-0.13
Rich (calves)	8.52	1.06	0.50	0.31
Poor (straw-fed cattle)	6.67	1.85	1.39	0.24
Composted town refuse	5.10	0.65	0.97	1.96
Pulverized town refuse	4.16	0.46	1.16	0.92
Straw sludge compost	5.76	0.98	0.72	3.18
Sewage sludge: W.Middlesex	5.52	0.62	-0.04	2.66
Birmingham	3.16	0.52	0.74	1.26
Harpenden	5.88	0.48	-0.01	3.00
Bracken compost	9.18	1.45	0.90	-0.18
Mean	6.12			

Standard errors: (a) 0.264, (b) 0.240

Standard error per plot: per whole plot, 0.793 tons per acre or 12.9%, 24 d.f.
per sub-plot, 0.716 tons per acre or 11.7%, 87 d.f.

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Potatoes. Sawyers I, 1944. (Direct effects)

Total tubers: tons per acre.

Level of manuring		Mean Yield 1	Mean Yield 2	Responses N 1	Responses N 2	Responses P 1	Responses P 2	Responses K 1	Responses K 2
Treatments, tons/acre (single dressing)		±0.466		±0.556		±0.566		±0.566	
No organic manure		9.42[a]		0.93[b]		-0.29[b]		4.54[b]	
Dung:									
Normal (bullock boxes)	8.0	13.35	13.37	0.62	0.79	-0.17	0.16	1.01	-0.69
Strawy (bullock boxes)	9.3	13.37	14.21	1.16	0.47	-0.43	0.62	0.87	0.50
Normal (straw bale yards)	13.0	13.66	14.64	1.77	1.40	0.52	-0.88	0.68	0.58
Stored (straw bale yards)	7.0	11.81	11.63	0.76	2.05	0.80	-0.40	2.45	1.65
Stored strawy (")	9.2	11.95	13.52	1.07	0.48	0.10	1.62	1.39	1.50
Straw sludge compost: Fresh	8.0	10.70	11.90	1.30	-0.81	-1.15	-0.14	2.89	2.23
Stored	5.2	11.08	10.95	3.01	0.95	-0.53	-0.07	4.62	3.98
Sewage sludge: W.Middlesex	6.5	11.09	10.32	0.90	0.62	0.17	-0.52	4.43	4.40
Enfield	5.6	8.89	9.28	0.52	-0.74	0.12	0.15	3.28	3.40
Bracken compost	8.0	13.19	12.14	-0.84	-0.74	0.73	-0.10	0.35	-1.41
Peat	2.0	9.09	9.37	1.06	1.33	-1.23	-0.07	5.29	5.66

Averages over two levels of organic manure

	Mean Yield	Responses N	Responses P	Responses K
	±0.330		±0.393	
No organic manure	9.42[a]	0.93[b]	-0.29[b]	4.54[b]
Dung: Normal (bullock boxes)	13.36	0.71	0.00	0.16
Strawy (bullock boxes)	13.79	0.82	0.10	0.69
Normal (straw bale yards)	14.16	1.58	-0.17	0.63
Stored (straw bale yards)	11.72	1.41	0.20	2.05
Stored strawy (")	12.74	0.77	0.86	1.70
Straw sludge compost: Fresh	11.30	0.25	-0.65	2.56
Stored	11.01	1.98	-0.31	4.29
Sewage Sludge: West Middlesex	10.70	0.76	-0.17	4.41
Enfield	9.08	-0.11	0.13	3.34
Bracken compost	12.67	-0.79	0.31	-0.53
Peat	9.23	1.19	-0.65	5.48
Mean	11.51			

Standard errors: (a) 0.269, (b) 0.304

Standard error per plot: per whole plot, 0.808 tons per acre or 7.0%, 24 d.f.
per sub-plot, 0.908 tons per acre or 7.9%, 87 d.f.

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Effects of various organics

Potatoes. Sawyers III, 1945. (Direct effects)

Total tubers: tons per acre

Level of manuring		Mean Yield 1	Mean Yield 2	Responses N 1	Responses N 2	Responses P 1	Responses P 2	Responses K 1	Responses K 2
Treatments, tons/acre (single dressing)		±0.378		±0.446		±0.446		±0.446	
No organic manure		5.76[a]		0.83[b]		0.74[b]		5.41[b]	
Dung:									
(Bullock boxes) Normal	8.0	11.80	13.13	2.17	1.18	1.12	0.37	1.26	-0.04
Strawy	9.5	11.79	13.04	2.69	1.54	0.65	0.45	0.92	0.72
(Straw Bale yards) Normal	9.6	12.18	13.42	1.98	1.11	1.71	0.35	1.76	0.16
Strawy	10.2	10.50	12.40	1.71	2.63	0.37	1.45	1.58	0.66
Stored strawy	7.9	10.44	13.52	2.72	2.78	1.12	0.67	2.63	1.52
Straw Sludge compost: Epsom	7.0	8.21	8.97	1.96	1.67	0.24	0.55	4.35	3.05
Andover	7.0	7.38	8.67	1.53	0.45	0.19	0.28	5.56	3.82
Sewage sludge: W.Middlesex	9.7	7.25	7.55	0.54	0.84	0.71	0.13	6.67	7.76
Stockport	5.5	7.10	7.84	1.15	0.20	0.53	0.16	5.74	6.67
Bracken compost	8.0	10.94	13.92	1.72	2.24	1.11	0.50	2.11	0.86
Peat	2.0	5.48	6.79	1.26	0.92	0.15	1.27	5.89	5.80

Averages two levels of organic manure

	Mean Yield	Responses N	Responses P	Responses K
	±0.267		±0.315	
No organic manure	5.76[a]	0.83[b]	0.74[b]	5.41[b]
Dung:				
(Bullock boxes) Normal	12.46	1.68	0.74	0.61
Strawy	12.42	2.12	0.55	0.82
(Straw bale yards) Normal	12.80	1.54	1.03	0.96
Strawy	11.45	2.17	0.91	1.12
Stored strawy	11.98	2.75	0.90	2.08
Straw sludge compost: Epsom	8.59	1.82	0.40	3.70
Andover	8.02	0.99	0.24	4.69
Sewage sludge: W.Middlesex	7.40	0.69	0.42	7.22
Stockport	7.46	0.68	0.34	6.20
Bracken compost	12.43	1.98	0.80	1.48
Peat	6.14	1.09	0.71	5.84
Mean	9.58			

Standard errors: (a) 0.218, (b) 0.244

Standard error per plot: per whole plot, 0.654 tons per acre or 6.8%, 24 d.f.
per sub-plot, 0.728 tons per acre or 7.6%, 87 d.f.

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Potatoes. Great Knott, 1946 (Direct effects)

Total tubers: tons per acre

Level of manuring		Mean Yield 1	Mean Yield 2	Responses N 1	Responses N 2	Responses P 1	Responses P 2	Responses K 1	Responses K 2
Treatments, tons/acre (single dressing)		±0.612		±0.665		±0.665		±0.665	
No organic manure		8.75[a]		0.90[b]		-0.02[b]		3.17[b]	
Dung:									
Normal (bullock boxes)	8.0	10.59	12.14	0.16	2.25	1.27	1.26	0.35	0.32
Strawy (bullock boxes)	9.0	11.37	10.76	1.05	2.77	1.36	1.72	1.46	0.32
Normal (straw bale yards)	10.1	10.87	11.34	0.13	1.82	0.87	1.17	0.46	-0.31
Strawy (straw bale yards)	8.9	10.41	11.63	2.21	2.08	-0.95	0.01	0.51	0.65
Straw sludge compost:									
Fresh	8.0	9.77	10.54	1.17	1.27	-0.29	-0.43	2.13	1.41
Stored	8.0	10.21	11.16	1.38	2.36	0.60	0.04	1.55	1.59
Liquid sludge compost	8.0	10.82	12.09	2.31	1.78	-0.40	-0.66	1.89	0.12
Wet sludge	8.3	10.11	10.13	1.29	0.18	-1.49	-0.22	3.34	5.03
Dried sludge	6.2	9.85	9.75	0.53	-1.06	0.68	1.95	5.08	5.86
Bracken compost	8.0	11.94	13.03	1.72	1.06	1.05	-0.14	0.27	0.40
Peat	2.0	8.16	8.45	0.05	0.83	-0.37	-0.12	3.61	3.81

Averages over two levels of organic manures

	Mean Yield	Responses N	Responses P	Responses K
	±0.433		±0.470	
No organic manure	8.75[a]	0.90[b]	-0.02[b]	3.17[b]
Dung: Normal (bullock boxes)	11.37	1.20	1.26	0.34
Strawy (bullock boxes)	11.06	1.91	1.54	0.89
Normal (straw bale yards)	11.10	0.97	1.02	0.07
Strawy (straw bale yards)	11.02	2.15	-0.02	0.58
Straw sludge compost: Fresh	10.16	1.22	-0.36	1.77
Stored	10.69	1.87	0.32	1.57
Liquid sludge compost	11.46	2.04	-0.53	1.01
Wet sludge	10.12	0.74	-0.85	4.19
Dried sludge	9.80	-0.26	1.31	5.47
Bracken compost	12.48	1.40	0.46	0.34
Peat	8.30	0.45	-0.24	3.71
Mean	10.4			

Standard errors: (a) 0.353, (b) 0.364

Standard error per plot: per whole plot, 1.06 tons per acre or 10.1%, 24 d.f.
per sub-plot, 1.09 tons per acre or 10.4%, 87 d.f.

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G/10

Effects of various organics

Potatoes, Great Harpenden II, 1947 (Direct effects)

Total tubers: tons per acre

Level of manuring		Mean Yield 1	Mean Yield 2	Responses N 1	Responses N 2	Responses K 1	Responses K 2
Treatments, tons/acre (single dressing)		±0.328		±0.385		±0.385	
No organic manure		7.27[a]		0.60[b]		0.98[b]	
Dung:							
(Bullock boxes)							
Stored normal	5.4	8.13	8.46	0.90	1.23	-0.30	1.00
Stored strawy	4.8	7.58	8.37	0.73	0.21	0.25	-0.45
(Straw-bale yards)							
Fresh normal	8.7	8.29	7.71	0.71	0.46	0.86	-0.64
Fresh strawy	10.8	8.69	8.17	0.36	-0.93	0.60	-0.39
Stored normal	6.8	7.94	9.00	0.40	0.85	0.52	0.56
Stored strawy	7.8	8.32	8.98	1.11	0.18	-0.42	-0.23
Fresh, low feeding	10.8	8.07	7.91	0.38	1.08	0.61	-1.00
Fresh, low feeding, with sulph.amm.	10.8	8.14	8.80	0.33	-0.72	0.35	-0.25
(Sunken yard) Stored commercial	8.0	8.67	9.12	0.46	-0.41	0.32	0.15
Bracken compost	8.0	7.79	8.94	1.04	1.42	1.26	0.89
Straw with sulph. amm.*	2.0	6.90	4.85	-0.43	-1.35	1.13	0.50

*Single dressing, 2 tons of straw and 0.3 cwt. N per acre

Averages over two levels of organic manure

	Mean Yield	Responses N	Responses K
	±0.232	±0.272	
No organic manure	7.27[a]	0.60[b]	0.98[b]
Dung:			
(Bullock boxes)			
Stored normal	8.30	1.06	0.35
Stored strawy	7.97	0.47	-0.10
(Straw-bale yards)			
Fresh normal	8.09	0.58	0.11
Fresh strawy	8.43	-0.28	0.11
Stored normal	8.47	0.62	0.54
Stored strawy	8.65	0.64	-0.32
Fresh, low feeding	7.99	0.73	-0.20
Fresh, low feeding, with sulph.amm.	8.47	-0.19	0.05
(Sunken yard) Stored commercial	8.90	0.03	0.24
Bracken compost	8.36	1.23	1.07
Straw with sulphate of ammonia	5.88	-0.89	0.81
Mean	8.03		

Standard errors (a) 0.189, (b) 0.211

Standard error per plot: per whole plot, 0.567 tons per acre or 7.1%, 50 d.f.
per sub-plot, 0.445 tons per acre or 5.5%, 29 d.f.

https://doi.org/10.23637/ERADOC-1-186 *pp 11*

Barley. Great Harpenden, 1941 (Residual effects)

Level of manuring	Grain: cwt. per acre 1	2	Mean	Straw: cwt. per acre 1	2	Mean
	±1.57		±1.11	±1.15		±0.81
No organic manure	20.1[a]		20.1[b]	20.7[b]		20.7[b]
Dung: Fresh normal	23.2	24.5	23.9	23.4	26.3	24.8
Fresh strawy	22.8	24.6	23.7	23.1	25.0	24.0
Stored normal	23.3	22.7	23.0	22.7	26.0	24.4
Stored strawy	19.6	20.8	20.2	21.4	23.7	22.6
Fermented town refuse (in ridges)	20.4	22.9	21.6	20.9	23.6	22.2
Fermented town refuse (broadcast)	20.5	21.4	21.0	21.7	23.5	22.6
Pulverized town refuse (in ridges)	20.7	21.7	21.2	24.0	24.3	24.2
Pulverized town refuse (broadcast)	22.1	21.0	21.6	22.2	23.3	22.8
Screened dust	20.0	18.2	19.1	21.3	20.7	21.0
Controlled tip refuse: Luton	19.0	20.0	19.5	20.6	22.1	21.3
Wheathampsted	21.5	22.3	21.9	21.0	22.3	21.6
Mean			21.4			22.6

Standard errors: (a) 0.906, (b) 0.664

Standard error per plot: Grain, 2.45 cwt. per acre or 11.5%, 24 d.f.
Straw, 1.72 cwt. per acre or 7.6%, 24 d.f.

Barley. Little Hoose, 1942 (Residual effects)

Level of manuring	Grain: cwt. per acre 1	2	Mean	Straw: cwt. per acre 1	2	Mean
	±1.52		±1.07	±1.20		±0.85
No organic manure	24.4[c]		24.4[c]	23.7[e]		23.7[e]
Dung: Fresh normal	28.0	30.4	29.2	26.5	27.3	26.9
Fresh strawy	27.0	30.8	28.9	25.0	29.1	27.0
Stored normal	25.1	28.3	26.7	24.0	25.4	24.7
Stored strawy	25.8	29.6	27.7	27.1	27.8	27.4
Fermented town refuse	26.3	27.6	27.0	24.7	25.2	25.0
Pulverized town refuse	23.7	24.2	24.0	21.8	23.5	22.6
Screened dust	19.3	22.7	21.0	19.6	22.4	21.0
Sewage sludge: W.Middlesex	24.7	26.6	25.6	23.5	25.8	24.6
Birmingham	27.0	31.3	29.2	25.1	28.9	27.0
Composted sludge & town refuse	22.2	25.8	24.0[d]	21.6	23.6	22.6[f]
Bracken compost	25.6		25.6[d]	22.8		22.8[f]
Improved bracken compost	24.2		24.2[d]	23.0		23.0[f]
Mean			26.0			24.6

Standard errors: (c) 0.88, (d) 1.52, (e) 0.69, (f) 1.20

Standard error per plot: Grain, 2.63 cwt. per acre or 10.1%, 24 d.f.
Straw, 2.08 cwt. per acre or 8.5%, 24 d.f.

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G/12

Effects of various organics

Barley. Long Hoos I and II, 1943 (Residual effects)

Level of manuring	Grain: cwt.per acre 1	2	Mean	Straw: cwt.per acre 1	2	Mean
	±1.29		±0.91			
No organic manure	20.6[a]		20.6[a]	24.1		24.1
Dung: Fresh normal	20.7	25.6	23.2	24.0	28.7	26.4
Fresh strawy	23.2	25.4	24.3	26.5	30.7	28.6
Stored normal	22.9	24.3	23.6	26.1	27.9	27.0
Stored strawy	21.5	23.7	22.6	24.1	28.9	26.5
Composted town refuse	20.5	22.8	21.6	23.0	26.6	24.8
Pulverized town refuse	21.6	21.7	21.6	24.7	24.7	24.7
Sewage sludge: W.Middlesex	27.9	26.9	27.4	30.3	30.4	30.4
Birmingham	23.4	24.9	24.2	27.5	27.0	27.2
Rotherham	21.1	22.5	21.8	25.3	26.8	26.0
Huddersfield	27.8	28.9	28.4	30.1	33.3	31.7
Bracken compost	24.2	22.8	23.5	26.5	25.1	25.8
Mean			23.4			26.8

Standard error (a) 0.74

Standard error per plot: Grain: 2.23 cwt. per acre or 9.5%, 24 d.f.

Barley. Sawyers II, 1944 (Residual effects)

Level of manuring	Grain: cwt. per acre 1	2	Mean	Straw: cwt. per acre 1	2	Mean
	±1.27		±0.90	±1.06		±0.75
No organic manure	21.6[b]		21.6[b]	22.7[c]		22.7[c]
Dung: Normal (bullock boxes)	25.1	26.5	25.8	26.0	28.0	27.0
Strawy (bullock boxes)	22.4	24.7	23.6	23.1	26.2	24.6
Rich (calves)	27.6	28.2	27.9	27.8	29.6	28.7
Poor (straw-fed cattle)	24.4	24.0	24.2	24.7	26.8	25.8
Composted town refuse	24.9	22.3	23.6	22.6	22.3	22.4
Pulverized town refuse	21.8	24.0	22.9	23.4	25.0	24.2
Straw sludge compost	23.8	24.2	24.0	24.6	27.7	26.2
Sewage sludge: W.Middlesex	24.8	23.1	24.0	25.9	23.5	24.7
Birmingham	21.4	23.6	22.5	22.8	24.0	23.4
Harpenden	23.9	24.2	24.0	23.0	24.6	23.8
Bracken compost	23.1	24.2	23.6	25.7	26.2	26.0
Mean			23.9			24.9

Standard errors: (b) 0.73, (c) 0.61.

Standard errors per plot: Grain, 2.20 cwt. per acre or 9.2%, 24 d.f.
Straw, 1.83 cwt. per acre or 7.4%, 24 d.f.

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Barley. Sawyers I, 1945 (Residual effects)

Level of manuring	Grain: cwt.per acre 1	2	Mean	Straw: cwt.per acre 1	2	Mean
	±0.60		±0.42	±1.34		±0.95
No organic manure	30.8[a]		30.8[a]	38.7[b]		38.7[b]
Dung: Normal (bullock boxes)	32.5	33.7	33.1	42.0	44.7	43.4
Strawy (bullock boxes)	33.4	33.2	33.3	43.1	44.7	43.9
Normal (straw bale yards)	33.2	34.4	33.8	39.9	46.2	43.0
Stored (straw bale yards)	30.3	31.9	31.1	39.9	41.4	40.6
Stored strawy (")	31.7	33.2	32.4	41.1	41.3	41.2
Straw sludge compost: Fresh	32.6	32.8	32.7	45.8	42.0	43.9
Stored	33.3	32.2	32.8	41.9	42.6	42.2
Sewage sludge: W.Middlesex	33.0	32.3	32.6	43.6	45.2	44.4
Enfield	31.9	31.2	31.6	41.9	42.3	42.1
Bracken compost	32.3	33.2	32.8	42.4	44.7	43.6
Peat	30.9	31.2	31.0	41.0	39.6	40.3
Mean			32.3			42.1

Standard errors: (a) 0.35, (b) 0.77

Standard errors per plot: Grain, 10.4 cwt.per acre or 3.2%, 24 d.f.
Straw, 2.32 cwt.per acre or 5.5%, 24 d.f.

Wheat. Sawyers III, 1946 (Residual effects)

Level of manuring	Grain: cwt.per acre 1	2	Mean	Straw: cwt.per acre 1	2	Mean
	±1.02		±0.72	±1.45		±1.02
No organic manure	37.0[c]		37.0[c]	44.7[d]		44.7[d]
Dung: Normal (bullock boxes)	43.0	47.0	45.0	50.4	55.0	52.7
Strawy (bullock boxes)	42.3	47.9	45.1	48.4	57.4	52.9
Normal (straw-bale boxes)	44.2	45.4	44.8	51.1	57.5	54.3
Strawy (straw-bale boxes)	41.8	46.0	43.9	48.0	54.4	51.2
Stored strawy (")	40.2	42.6	41.4	47.7	50.4	49.0
Straw sludge compost: Epsom	40.3	42.6	41.4	47.5	50.1	48.8
Andover	40.9	41.4	41.2	47.3	49.9	48.6
Sewage sludge: W.Middlesex	40.1	41.3	40.7	49.6	52.1	50.8
Stockport	40.9	39.1	40.0	48.6	50.2	49.4
Bracken compost	39.4	43.2	41.3	48.3	53.4	50.8
Peat	38.9	38.0	38.4	46.0	47.5	46.8
Mean			41.5			49.8

Standard errors: (c) 0.59, (d) 0.84.

Standard errors per plot: Grain, 1.77 cwt. per acre or 4.3%, 24 d.f.
Straw, 2.50 cwt. per acre or 5.0%, 24 d.f.

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Effects of various organics

Wheat. Great Knott II, 1947 (Residual effects)

Level of manuring	Grain: cwt.per acre 1	2	Mean	Straw: cwt.per acre 1	2	Mean
	±1.64		±1.16			
No organic manure	26.0[a]		26.0[a]	23.6		23.6
Dung: Normal (bullock boxes)	26.2	25.9	26.0	22.9	22.0	22.4
Strawy (bullock boxes)	28.8	23.3	26.0	24.9	23.0	24.0
Normal (straw-bale yards)	24.7	24.0	24.4	21.4	23.0	22.2
Strawy (straw-bale yards)	24.6	27.9	26.2	24.8	25.4	25.1
Straw sludge compost: Fresh	24.5	25.2	24.8	21.8	24.5	23.2
Stored	26.2	30.1	28.2	22.4	26.2	24.3
Liquid sludge compost	25.1	25.5	25.3	23.1	24.9	24.0
Sewage sludge: Wet	24.1	24.1	24.1	21.7	22.0	21.8
Dried	25.6	24.2	24.9	25.1	23.6	24.4
Rotted bracken	25.8	25.9	25.8	24.4	24.7	24.6
Peat	21.4	27.4	24.4	20.3	24.1	22.2
Mean			25.5			23.5

Standard error (a) 0.95

Standard error per plot: Grain, 2.84 cwt.per acre or 11.1%, 24 d.f.

https://doi.org/10.23637/ERADOC-1-186