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Yields of the Field Experiments 1958

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58/R/BC/1 Reference Plots

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58/Bc/1.1

REFERENCE PLOTS

The effects of N P K and Dung on a sequence of five arable crops -
Great Field IV 1956-1958.

The site selected for the experiment was ploughed out of old grassland in March 1956 and was shown by soil analysis to be low in available P and K. All crops in 1956 were spring sown. Similar effects are also illustrated on the original grass sward, which is cut for hay.

Design: Rotation:- Winter wheat; kale; barley; clover; potatoes.
6 rows (1 for each crop) of a 12 x 12 Latin Square.

Area of each plot: 0.0013 acres.

Treatments. All combinations of:-

Nitrogen: N_1 and no nitrogen.

Phosphate: P_1 and no phosphate.

Potash: K and no potash

and the following additional treatments

N_2PK ; dung; dung + N_1PK ; dung + N_2PK .

Rates and forms of manuring.

All N as 'Nitro-Chalk': Potatoes and wheat, 0.6 or 1.2;
barley, 0.45 or 0.90; kale, 1.0 or 2.0; clover, 0.15 or 0.30;
grass, 1.0 or 2.0 cwt N per acre.

All P as granular superphosphate: 0.5 cwt P_2O_5 per acre.

All K as sulphate of potash: 1.0 cwt K_2O per acre.

Dung: 15 tons per acre to all crops in 1956 and 1957; omitted on
clover in 1958.

Cultivations, etc.:

1956.

Spring wheat. Dung N P and K applied, drilled: Apr 7, 1956.

Harvested: Sept 7. Variety: Koga II.

Kale. Dung N P and K applied, sown: Apr 10, 1956. Harvested:
Nov 15. Variety: Thousand Head.

Barley. Dung N P and K applied, drilled: Apr 7, 1956. Harvested:
Aug 28. Variety: Proctor.

Clover. Dung N P and K applied, sown: Apr 10, 1956. Cut twice:
Aug 14 and Oct 25. Variety: Giant Hybrid.

Potatoes. Dung N P and K applied, planted: Apr 10, 1956.
Harvested: Sept 3. Variety: King Edward.

Note: The whole area received hydrated lime at 32 cwt per acre on
Apr 7, 1956.

1957

Winter wheat. Dung applied, hand dug: Sept 3, 1956. PK applied,
drilled: Sept 18. First N dressing applied: Mar 4, 1957.

Second N dressing applied: Mar 27. Harvested: Aug 7.

Variety: Cappelle.

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Kale. Dung applied and hand dug: Nov 26, 1956. N P and K applied, sown: Mar 13, 1957. Harvested: Nov 26. Variety: Thousand Head.

Barley. Dung applied and hand dug: Nov 27, 1956. Drilled, N P and K applied: Mar 4, 1957. Harvested: July 24. Variety: Proctor.

Clover. Undersown in barley: Apr 7, 1956. Dung applied: Nov 26. P and K applied: Feb 15, 1957. N applied: Mar 11. Cut twice: June 18 and Aug 13. Variety: Giant Hybrid.

Potatoes. Dung applied and hand dug: Nov 27, 1956. N P and K applied: Mar 13, 1957. Planted: Mar 14. Harvested: Sept 4. Variety: King Edward.

Permanent grass. Dung P and K applied: Feb 15, 1957. First N dressing applied: Mar 11. Second N dressing applied: May 29. Cut twice: May 29 and Sept 18.

1958

Winter wheat. Dung applied and hand dug: Sept 5, 1957. PK applied, drilled: Sept 23. First N dressing applied: Apr 30, 1958. Harvested: Aug 6. Variety: Capelle.

Kale. Dung applied and hand dug: Jan 17, 1958. N P and K applied, sown: Apr 9. Harvested: Oct 30. Variety: Thousand Head.

Barley. Dung applied and hand dug: Feb 3, 1958. N P and K applied, drilled: Mar 25. Harvested: Aug 16. Variety: Proctor.

Clover. Undersown in barley: Mar 4, 1957. N P and K applied: Feb 17, 1958. Cut twice: June 26 and Aug 29. Variety: Giant Hybrid.

Potatoes. Dung applied and hand dug: Jan 17, 1958. N P and K applied, planted: Apr 8. Harvested: Sept 12. Variety: King Edward.

Permanent grass. Dung applied: Feb 4, 1958. First N dressing applied, P K applied: Feb 17. Second N dressing applied: June 4. Cut twice: June 4 and Sept 16.

Summary of Results

1956

Treat- ment	cwt per acre				tons per acre				
	Wheat		Barley		Clover			Potatoes	Kale
	Grain	Straw	Grain	Straw	1st cut	2nd cut	Total	Total tubers	Total weight
	(at 85% D.M.)		(at 85% D.M.)		(dry matter)				
None	9.8	14.0	13.5	13.5	13.9	10.0	23.9	2.64	11.28
N ₁	13.3	18.1	26.1	25.5	17.7	10.5	28.2	2.54	16.76
P	11.3	16.6	15.5	13.4	17.0	9.7	26.7	3.90	15.80
N ₁ P	10.7	17.8	16.0	15.6	17.7	11.3	29.0	2.52	13.98
K	19.9	23.2	16.2	15.2	22.2	15.2	37.4	6.85	11.90
N ₁ K	22.1	26.7	15.9	16.4	25.3	16.6	41.9	8.47	16.76
PK	20.9	26.5	20.7	19.2	27.8	18.4	46.2	7.08	13.11
N ₁ PK	26.4	35.2	22.9	21.8	29.6	18.9	48.5	7.94	21.53
N ₂ PK	24.1	33.8	26.4	30.4	30.3	17.8	48.1	7.68	23.00
D	34.9	47.5	39.9	34.8	33.6	21.9	60.5	9.50	17.97
N ₁ PKD	30.6	54.1	36.5	45.4	34.7	24.6	59.3	13.44	24.57
N ₂ PKD	34.2	45.6	35.9	38.1	35.6	22.8	58.4	13.77	27.34
Mean									
D.M. %	67.8	65.5	71.7	57.7	18.4	15.0	16.7		

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1957

Treat- ment	Wheat		Barley		Clover		
	cwt per acre		cwt per acre		1st	2nd	Total
	Grain (at 85% D.M.)	Straw (at 85% D.M.)	Grain (at 85% D.M.)	Straw (at 85% D.M.)	cut	cut (dry matter)	
None	27.8	50.2	24.1	18.0	31.8	32.8	64.6
N ₁	32.5	41.1	28.1	21.1	39.4	31.0	70.4
P ₁	33.8	53.5	29.2	22.6	31.9	24.5	56.4
N ₁ P	20.5	38.7	22.4	22.4	32.5	23.5	56.0
K	37.6	75.2	28.0	23.1	46.3	37.5	83.8
N ₁ K	40.9	78.6	30.4	24.4	39.9	33.3	73.2
PK	36.7	76.2	30.7	24.1	50.0	37.3	87.3
N ₁ PK	42.4	81.9	39.4	37.5	45.1	33.5	78.6
N ₂ PK	40.1	76.1	44.1	41.1	47.0	36.4	83.4
D	42.4	86.2	42.9	38.5	37.2	33.5	70.7
N ₁ PKD	39.4	80.0	45.9	42.0	41.0	37.9	78.9
N ₂ PKD	43.1	76.8	47.8	47.9	39.6	33.2	72.8

Treat- ment	tons per acre		cwt per acre		
	Potatoes	Kale	Grass		
	Total tubers	Total weight	1st cut	2nd cut (dry matter)	Total
None	1.42	13.88	28.0	23.4	51.4
N ₁	2.49	14.36	30.1	26.3	56.4
P	1.47	13.30	18.5	22.2	40.7
N ₁ P	1.92	20.62	36.9	29.0	65.9
K	4.46	8.32	31.9	22.8	54.7
N ₁ K	6.42	12.36	49.4	31.2	80.6
PK	8.88	12.96	37.4	22.8	60.2
N ₁ PK	8.10	21.76	46.1	29.3	75.4
N ₂ PK	8.86	22.62	50.0	37.5	87.5
D	12.76	16.88	34.4	26.1	60.5
N ₁ PKD	16.26	20.80	44.7	33.2	77.9
N ₂ PKD	17.95	28.36	55.4	39.3	94.7

Mean dry matter % as harvested.

Wheat	Grain, 85.0	Grass	1st cut, 28.4
	Straw, 72.8		2nd cut, 31.0
			Total, 29.7
Barley	Grain, 71.4		
	Straw, 54.6		
Clover	1st cut, 28.0		
	2nd cut, 21.4		
	Total, 24.7		

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1958

Treat- ment	Wheat		cwt per acre Barley		Clover		
	Grain (at 85% D.M.)	Straw	Grain (at 85% D.M.)	Straw	1st cut	2nd cut	Total (dry matter)
None	45.3	59.4	24.5	23.6	24.8	10.7	35.5
N ₁	43.1	56.6	19.8	36.5	31.1	9.5	40.6
P	44.7	67.2	26.1	33.6	33.0	14.9	47.9
N ₁ P	30.8	62.4	24.6	40.4	33.2	12.0	45.2
K	50.9	68.0	24.4	54.2	51.9	38.3	90.2
N ₁ K	56.0	73.5	32.2	40.4	46.3	32.6	78.9
PK	48.8	79.4	31.6	45.9	54.9	35.9	90.8
N ₁ PK	51.1	78.6	43.2	41.9	58.6	32.2	90.8
N ₂ PK	46.9	80.5	47.1	36.2	57.8	30.5	88.3
D	52.2	84.8	37.5	59.2	53.6	31.3	84.9
N ₁ PKD	46.4	97.9	40.9	33.1	54.4	41.4	95.8
N ₂ PKD	45.5	80.2	23.6	66.4	63.6	34.0	97.6

Treat- ment	tons per acre		cwt per acre		
	Potatoes Total tubers	Kale Total weight	1st cut	2nd cut	Total (dry matter)
None	4.72	12.59	21.3	37.4	58.7
N ₁	8.00	16.93	27.2	34.7	61.9
P	4.37	16.93	17.5	36.6	54.1
N ₁ P	5.26	22.83	31.9	38.6	70.5
K	8.72	14.06	22.0	32.6	54.6
N ₁ K	8.77	21.36	44.1	45.3	89.4
PK	12.63	12.32	27.9	40.3	68.2
N ₁ PK	11.52	23.00	40.0	36.0	76.0
N ₂ PK	14.06	30.90	50.0	43.7	93.7
D	13.00	18.49	35.5	39.9	75.4
N ₁ PKD	16.95	32.73	39.7	53.3	93.0
N ₂ PKD	18.56	40.28	53.3	57.2	110.5

Mean dry matter % as harvested.

Wheat Grain, 62.4
Straw, 39.7

Grass 1st cut, 24.0
2nd cut, 22.4
Total, 23.2

Barley Grain, 80.8
Straw, 54.1

Clover 1st cut, 21.0
2nd cut, 16.1
Total, 18.6