

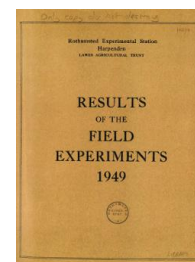
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Yields of the Field Experiments 1949

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49/BA/1 Two-course Rotation - Rothamsted

49/BA/1 *Two-course Rotation - Rothamsted*, Rothamsted Research (1950) Yields Of The Field Experiments 1949, pp 14 - 18

49/Ba/1.1

TWO COURSE ROTATION

Cumulative Effects of Agricultural Salt

Rothamsted 1949

Object of the experiment: To test the cumulative effects of agricultural salt and muriate of potash, and to compare two methods of application of the salt.

Rotation: Sugar beet followed by barley.

System of replication: For each crop 4 blocks of 12 plots. Second order interactions partially confounded with blocks.

Area of each plot:

Series 1, Barley: 0.02072 acre

Series 2, Sugar beet: 0.02000 acre (harvested area, 0.01733 acre).

Treatments:

All combinations of:

- (1) Agricultural salt: None, $2\frac{1}{2}$, 5 and $7\frac{1}{2}$ cwt per acre applied to sugar beet.
- (2) Muriate of potash: None, the equivalent of half the single dressing of salt (approximately 1 cwt K_2O per acre), the equivalent of the single dressing of salt (approximately 2 cwt K_2O per acre), applied to sugar beet at sowing.
- (3) Time of application of salt: Before ploughing in winter, in seed bed at sowing.
- (4) Salt applied to sugar beet only, salt repeated at half rate on barley.

Note: treatment (3) applies to both sugar beet and barley crops; the barley receives no potash treatment.

Basal dressings, applied to all plots at sowing:

Barley: 0.3 cwt N per acre as sulphate of ammonia

Sugar beet: 0.8 cwt N per acre as sulphate of ammonia

0.6 cwt P_2O_5 per acre as superphosphate.

Cultivations, etc.:

Barley. Series 1. Long Hoos VII.

Agricultural salt applied: Dec 16. Ploughed: Dec 29-30. Spring-tined: Feb 25. Sulphate of ammonia applied: Feb 26. Harrowed: Mar 4. Seed drilled, agricultural salt applied, harrowed in: Mar 11. Hand cut thistles: June 14, 15, 21. Harvested: Aug 8, 9. Variety: Plumage Archer. Previous crop: Sugar beet.

Sugar beet. Series 2. Long Hoos V.

Agricultural salt applied: Sept 23. Ploughed twice: Sept 24-25, Dec 28-29. Springtine harrowed: Feb 26. Cultivated: Mar 30.

Harrowed: Apr 1. Ring rolled: Apr 2. Agricultural salt and muriate

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of potash applied, seed drilled: Apr 11. Sulphate of ammonia
applied: Apr 12. Superphosphate applied, harrowed in: Apr 13.
Rolled: Apr 14. Hoed: May 17 - July 2. Singled: May 31 - June 2.
Lifted: Nov 26-29. Variety: Klein E. Previous crop: Barley.

Standard errors per plot:

Barley, grain, 2.06 cwt per acre or 7.6%
Sugar beet, total sugar, 1.92 cwt per acre or 6.7%
tops, 0.609 tons per acre or 8.2%

All standard errors from 22 degrees of freedom.

49/Ba/1.3

Series 1: Barley

Salt applied 1948 cwt per acre	Muriate of potash applied in 1948 K ₂ O cwt per acre			Salt applied In seed		Salt in 1949		Mean
	0.0	1.0	2.0	Winter	bed	None	Half Rate	
Grain: cwt per acre								
	(±1.03)			(±0.79)				(±0.60)
0	26.0	28.2	27.1					27.1
2.5	27.0	27.6	28.4	27.8	27.5	28.3	27.1	27.7
5.0	26.2	26.4	25.1	26.1	25.7	25.9	25.9	25.9
7.5	26.6	29.7	27.4	28.1	27.7	28.7	27.1	27.9
Mean	26.4	28.0	27.0	27.3	27.0	27.6	26.7	27.1
	(±0.52)			(±0.48)				
Straw: cwt per acre								
0	29.2	30.4	30.6					30.1
2.5	31.1	32.9	32.1	34.2	29.9	31.5	32.6	32.0
5.0	28.3	27.5	28.1	27.0	29.0	28.2	27.7	28.0
7.5	28.9	33.9	29.9	34.0	27.8	33.5	28.3	30.9
Mean	29.4	31.2	30.2	31.7	28.9	31.1	29.5	30.2

49/Ba/1.4

Series 2: Sugar Beet

Salt applied 1949 cwt per acre	Muriate of potash applied in 1949 K ₂ O cwt per acre			Salt applied In seed		Mean
	0.0	1.0	2.0	Winter	bed	

Total Sugar: cwt per acre

		(±0.96)		(±0.73)		(±0.56)
0	21.0	26.7	27.6			25.1
2.5	28.4	28.7	30.3	29.1	29.2	29.2
5.0	29.4	30.1	31.9	30.7	30.5	30.6
7.5	29.7	29.3	28.7	30.2	28.4	29.3
Mean	27.3	28.7	29.7	30.0	29.4	28.5
		(±0.48)		(±0.44)		

Sugar percentage

0	14.70	14.73	14.85			14.76
2.5	14.78	15.12	15.24	15.16	14.93	15.04
5.0	15.12	14.76	15.13	15.16	14.86	15.01
7.5	14.83	15.20	14.56	14.98	14.75	14.87
Mean	14.86	14.96	14.95	15.10	14.85	14.92

Roots (washed): tons per acre

0	7.14	9.05	9.29			8.50
2.5	9.63	9.48	9.94	9.60	9.76	9.68
5.0	9.89	10.17	10.55	10.13	10.29	10.21
7.5	10.02	9.66	9.86	10.07	9.63	9.85
Mean	9.17	9.59	9.91	9.93	9.89	9.56

Tops: tons per acre

		(±0.304)		(±0.233)		(±0.176)
0	7.11	7.59	7.47			7.39
2.5	8.43	7.26	7.32	7.84	7.50	7.67
5.0	7.62	7.75	7.59	7.78	7.53	7.66
7.5	7.19	6.77	6.93	6.83	7.10	6.96
Mean	7.59	7.35	7.33	7.48	7.38	7.42
		(±0.152)		(±0.141)		

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Series 2: Sugar Beet (contd.)

Salt applied 1949 cwt per acre	Muriate of potash applied in 1949 K ₂ O cwt per acre			Salt applied		Mean
	0.0	1.0	2.0	Winter	In seed bed	

Plant number: thousands per acre

0	23.6	25.6	25.1			24.8
2.5	24.7	25.5	24.9	24.7	25.3	25.0
5.0	26.6	25.2	25.8	26.4	25.3	25.9
7.5	25.1	24.3	24.0	26.0	23.0	24.5
Mean	25.0	25.2	24.9	25.7	24.5	25.0

Noxious nitrogen: mg. per 100 gm.

0	48.8	45.0	51.2			48.3
2.5	46.2	45.0	40.0	44.0	43.5	43.8
5.0	43.8	40.0	47.5	46.0	41.5	43.8
7.5	46.2	42.5	52.5	47.3	46.8	47.1
Mean	46.2	43.1	47.8	45.8	43.9	45.7