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64/R/LM/C/1 and 64/W/WAC/C/1 Levels of K and Mg - Potatoes and Sugar Beet

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64/C/1.1

EFFECT OF K AND Mg

(IM and WAC)

K and Mg - Rothamsted (R) Sawyers I the sixth year, potatoes 1964 and Woburn (W) Stackyard Series C the fifth year, potatoes and sugar beet 1964.

Design: Sawyers I (R): 8 randomised blocks of 9 plots each.
Stackyard Series C (W): 4 randomised blocks of 9 plots each, 2 blocks per crop.

Area of each plot:	Area harvested:
Sawyers I (R): 0.0206	0.0137
Stackyard Series C (W): 0.0011	0.0011

Treatments. All combinations of:-

1. Mg: None (Mg 0), 29 (Mg 1), 58 lb (Mg 2) applied as magnesium sulphate on Sawyers I (R) and none (Mg 0), 29 (Mg 1), 58 lb (Mg 2) as kieserite on Stackyard Series C (W).

2. K: Sawyers I (R): (in lb K).

	K0	K1	K2
1962	24	95	165
1963	None	71	142
1964	None	91	182

Stackyard Series C (W): None (K0), 95 (K1), 190 lb (K2), applied in 1962, 1963 and 1964. All K as sulphate of potash.

The K and Mg dressings on Stackyard Series C (W) were applied half in winter half in spring.

In addition in 1959 and 1962 magnesium-free calcium carbonate was applied to blocks on Sawyers I (R) at 38, 76 cwt (CA1, CA2).

Basal dressings:

Sawyers I (R): 0.5 cwt P₂O₅ as triple superphosphate applied on flat before planting.

1.0 cwt N as sulphate of ammonia applied on flat before planting.

Stackyard Series C (W): 1.5 cwt P₂O₅ as triple superphosphate, half dug in in winter, half applied in spring.

1.5 cwt N as ammonium nitrate in seedbed.

Cultivations, etc.:

Sawyers I (R): Ploughed: Jan 9, 1964. Fertilisers applied: May 8.

Rotary cultivated, potatoes machine planted: May 11. Earthed

up: June 24. Sprayed 3 times with mancozeb at 1.2 lb in 35 gals:

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June 30, July 17, July 31. Sprayed with diquat (Reglone at 3 pints in 40 gals): Sept 18. Lifted: Sept 25. Variety: King Edward.

Stackyard Series C (W):

Potatoes: First dressings of P,K and Mg applied, plots dug: Dec 2, 1963. Second dressings of PK and Mg and all N applied: Apr 23, 1964. Rotary cultivated, potatoes planted: Apr 28. Sprayed with copper oxychloride fungicide at 2.3 lb Cu in 40 gals: July 3. Sprayed with dimethoate at 3 fluid oz in 40 gals: July 6. Sprayed with copper oxychloride fungicide at 2.3 lb Cu in 40 gals: July 17. Lifted: Sept 9. Variety: King Edward.

Sugar beet: First dressing of P,K and Mg applied, plots dug: Dec 2, 1963. Second dressing of P,K and Mg and all N applied, plots rotary cultivated, seed drilled at 7 lb: Apr 23, 1964. Singled: June 4. Sprayed with dimethoate at 3 fluid oz in 40 gals: July 6. Lifted: Oct 13. Variety: Klein E.

NOTE: For details of previous years' results see 'Results' 60/Ci/3, 61/C/7, 62/C/6, 63/C/1.

Standard errors per plot.

Sawyers I (R):

Potatoes, total tubers: 0.724 or 10.9% (48 d.f.)

Stackyard Series C (W):

Potatoes, total tubers: 0.805 or 7.8% (8 d.f.)

Sugar beet, roots: 1.262 or 11.1% (8 d.f.)
total sugar: 4.500 or 11.5% (8 d.f.)
tops: 0.772 or 8.6% (8 d.f.)

64/C/1.3

SUMMARY OF RESULTS

Sawyers I (R)

POTATOES, TOTAL TUBERS

	K0	K1	K2	MG0	MG1	MG2	Mean
	(± 0.209)*			(± 0.209)*			
CA1	3.05	7.97	9.51	6.76	7.07	6.70	6.84
CA2	2.12	7.30	9.84	6.43	6.41	6.42	6.42
Diff.	-0.93	-0.67	+0.33	-0.33	-0.66	-0.28	-0.42
		(± 0.295)**			(± 0.295)**		
					(± 0.256)		(± 0.148)
		K0		2.78	2.73	2.25	2.59
		K1		7.42	7.61	7.87	7.64
		K2		9.58	9.89	9.57	9.68
		Mean (± 0.148)		6.59	6.74	6.56	6.63

* For use in horizontal and interaction comparisons only.

** For use only in testing the differences of 2 differences.

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Sawyers I (R)

POTATOES, % WARE

	K0	K1	K2	MG0	MG1	MG2	Mean
CA1	67.5	89.0	92.1	82.8	84.0	81.8	82.9
CA2	53.2	89.2	92.9	80.8	78.4	76.2	78.5
Diff.	-14.3	+0.2	+0.8	-2.0	-5.6	-5.6	-4.4

K0	65.6	60.8	54.8	60.4
K1	87.0	90.1	90.2	89.1
K2	92.7	92.8	92.1	92.5
Mean	81.8	81.2	79.0	80.7

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Stackyard Series C (W)

POTATOES, TOTAL TUBERS

	MGO	MG1	MG2	Mean
		(±0.569)		(±0.328)
K0	4.96	5.01	5.31	5.09
K1	10.67	12.55	12.01	11.74
K2	13.59	14.09	14.68	14.12
Mean (±0.328)	9.74	10.55	10.67	10.32

SUGAR BEET, ROOTS

		(±0.893)		(±0.515)
K0	5.63	7.47	7.15	6.75
K1	11.81	12.35	14.16	12.77
K2	14.69	14.37	14.89	14.65
Mean (±0.515)	10.71	11.40	12.07	11.39

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Stackyard Series C (W)

SUGAR BEET, SUGAR %

	MG0	MG1	MG2	Mean
K0	16.5	16.5	16.6	16.5
K1	17.3	17.3	17.6	17.4
K2	17.1	17.7	17.4	17.4
Mean	17.0	17.2	17.2	17.1

SUGAR BEET, TOTAL SUGAR

		(±3.18)		(±1.84)
K0	18.5	24.6	23.7	22.3
K1	40.8	42.7	49.8	44.4
K2	50.3	50.9	51.8	51.0
Mean (±1.84)	36.6	39.4	41.8	39.3

SUGAR BEET, TOPS

		(±0.546)		(±0.315)
K0	6.20	7.19	7.94	7.11
K1	9.43	9.03	10.32	9.59
K2	10.52	10.22	10.17	10.30
Mean (±0.315)	8.71	8.81	9.48	9.00