

CYCLIC REACTIONS OF SOLU-CAL IN ACID SOILS

EFFECTIVENESS OF TREATED LIME (SOLU-CAL) COMPARED TO CONVENTIONAL LIME

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Introduction

According to literature from Greensmooth Ltd., an organic acid (T.O.G.(TM)) may be combined with pure fine-ground pelletized limestone to form the product referred to As 'SOLU-LIME'. Benefits of using this modified limestone product include helping "achieve a uniform calcium profile throughout the growing media" and providing a more readily available calcium source for plant uptake.

The increased efficiency of calcium uptake may permit reduced modified lime applications compared to conventional lime applications. The proposed research will compare three SOLU-LIME treatments to conventional lime and no lime.

Materials and Methods

Treatments:

- Control - no lime application
- Pelletized lime - 2000 lb./acre 220SGN
- SOLU-LIME - 500 lb./acre 210SGN
- 1000 lb./acre 210SGN
- Double SOLU-LIME - 500 lb./acre 210SGN

Results and Discussion

Two weeks after treatment, all field hockey plots with any lime treatment had significantly higher pH compared to plots receiving no lime (Table 1). By the eight week, 1000 lb. Solu-lime-treated plots had significantly higher pH than most other treatments. Similar results were observed on the baseball field plots (Table 2). By the eighth week, calcium and calcium base saturation levels on the field hockey field were significantly higher on treated than non-treated plots (Table 3). Interestingly, the baseball field soil test (Table 4) showed significantly greater calcium and calcium base saturation levels after eight weeks for Solu-lime at either the 500 or 1000 lb. rates, but not pelletized lime at the 2000 lb. rate. To date magnesium and magnesium base saturation levels on either field (Tables 5 and 6) have not shown the response observed with calcium.

Table 1. URI Women's field hockey field pH levels recorded 2, 5, and 8 weeks after treatment with lime or lime-treated products.

Treatment		pH 1	pH 2	pH 3
Control, No Lime		5.1b ¹	5.2c	5.2c
Regular Lime, 2000 LB	Week 0 pH 5.1	5.3a	5.4b	5.4b
Solu-Lime, 500 LB	Week 0 pH 5.1	5.3a	5.5ab	5.4b
Solu-Lime, 1000 LB		5.4a	5.6a	5.6a
Solu-Lime, 500 LB, Double Strength		5.3a	5.5ab	5.5ab
MSD ²		0.14	0.18	0.12

¹ Means within each column followed by the same letter are not significantly different using the Waller-Duncan t-test, k-ratio = 100, p ~ .05.

² MSD = Minimum Significant Differences among means within column. 'ns' = means were not significant

Table 2. URI Men's varsity baseball field pH levels recorded 2, 5, and 8 weeks after treatment with lime or lime-treated products.

Treatment		pH 1	pH 2	pH 3
Control, No Lime		5.1c ¹	5.1c	5.2b
Regular Lime, 2000 LB	Week 0 pH 5.1	5.1bc	5.2ab	5.2b
Solu-Lime, 500 LB	Week 0 pH 5.1	5.3ab	5.2ab	5.4a
Solu-Lime, 1000 LB		5.3a	5.4a	5.4a
Solu-Lime, 500 LB, Double Strength		5.2abc	5.2bc	5.2b
MSD ²		0.14	0.15	0.17

¹ Means within each column followed by the same letter are not significantly different using the Waller-Duncan t-test, k-ratio = 100, p ~ .05.

² MSD = Minimum Significant Differences among means within column. 'ns' = means were not significantly different.

Table 3. URI Women's field hockey field calcium (CA) and calcium base saturation (CABS) levels recorded 2, 5, and 8 weeks after treatment with lime or lime-treated products.

Treatment	CA 1	CA 2	CA 3	CABS 1	CABS 2	CABS 3
Control, No Lime	288c ¹	359c	199c	41.9b	42.1b	37.5c
Regular Lime, 2000 LB	365ab	451bc	290a	47.5a	49.6a	45.3ab
Solu-Lime, 500 LB	339bc	418bc	272a	48.0a	49.5a	43.8b
Solu-Lime, 1000 LB	419a	557a	331a	50.5a	54.0a	49.0a
Solu-Lime, 500 LB, Double Strength	373ab	465ab	290a	47.6a	50.4a	45.8ab
MSD ²	66	95	71	4.0	4.8	4.3

¹ Means within each column followed by the same letter are not significantly different using the Waller-Duncan t-test, k-ratio = 100, p ~ .05.

² MSD = Minimum Significant Differences among means within column. 'ns' = means were not significantly different.

Table 4. URI Men's varsity baseball field calcium (CA) and calcium base saturation (CABS) levels recorded 2, 5, and 8 weeks after treatment with lime or lime-treated products.

Treatment	CA 1	CA 2	CA 3	CABS 1	CABS 2	CABS 3
Control, No Lime	346b ¹	400b	292b	44.2b	41.8c	41.7b
Regular Lime, 2000 LB	384ab	443b	268b	50.8a	47.6ab	42.3b
Solu-Lime, 500 LB	420ab	421b	426a	47.1b	47.5ab	50.4a
Solu-Lime, 1000 LB	474a	571a	434a	51.2a	50.0a	51.6a
Solu-Lime, 500 LB, Double Strength	391ab	424b	303b	44.8b	45.9b	43.4b
MSD ²	102	100	115	3.0	3.7	3.8

¹ Means within each column followed by the same letter are not significantly different using the Waller-Duncan t-test, k-ratio = 100, p ~ .05.

² MSD = Minimum Significant Differences among means within column. 'ns' = means were not significantly different.