



Result Demonstration Report

2019-2020 Liming Material Study

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Cooperator

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Summary

East Texas soils are naturally acidic because of the materials from which they were derived from. Nutrient availability is soil pH dependent. Agricultural producers have several options to buffer acidic soils. There are different liming material available to raise the soil pH in pastures and hay meadows. There are relatively new products available for producers to choose from. This study compared the buffering capacity of three different liming products and rates to determine the amount the soil pH was increased and how long it persisted in the soil.

Objective

The objective of this result demonstration was to compare liming material effectiveness on buffering the soil pH and to determine how long it persisted in the soil.

Materials and Methods

Liming materials and application rates of liming materials used in this result demonstration are shown in Table I. The result demonstration was a strip trial that was not replicated. Plots were 20 feet x 50 feet (1000 ft²). The application rates were for a per acre rate that were calculated for 1000 ft² plot size. Liming materials were applied on May 14, 2019 using a hand-held spreader to evenly broadcast pelleted lime. A backpack sprayer was used to apply liquid lime. Georgetown Ag Lime was evenly distributed by hand. A soil test was taken before the liming applications to determine the initial soil pH. After the liming materials were applied, a soil test was taken for each plot 1, 2, & 6 months after treatment (MAT) and 1 year after treatment (YAT) to determine soil pH and the persistence of the liming materials.

Table I. Liming Material & Rates Used in Study

| Plot | Liming Material | Rate/Acre |
|------|--------------------|-------------------|
| 1 | Georgetown Ag Lime | 2000 LBS (1 Ton) |
| 2 | 98G Pelleted Lime | 400 LBS |
| 3 | Georgetown Ag Lime | 4000/LBS (2 Tons) |
| 4 | Liquid Lime | 2.5 gallons |

Results and Discussion

Liming materials were applied on May 14, 2019. Soil samples were taken 1, 2, and 6 months (MAT) and 1 year after treatment (YAT). The results are in Table II. Table III shows the cost of each individual liming material on a per acre basis. Please note that May 2019 rainfall was 10.25 inches.

Table II. Liming Material and Soil pH Measurements for 1,2, 6 MAT & 1 YAT

| Plot | Liming Material & Rate/Acre | Soil pH 1 MAT | Soil pH 2 MAT | Soil pH 6 MAT | Soil pH 1 YAT |
|-------------|---|--------------------------|--------------------------|--------------------------|--------------------------|
| 1 | Georgetown Agricultural Limestone (1 Ton/Acre) | 5.2 | 5.7 | 6.0 | 6.2 |
| 2 | 98G (400 lbs/Acre) | 5.2 | 5.4 | 5.7 | 5.5 |
| 3 | Georgetown Agricultural Limestone (2 Ton/Acre) | 5.2 | 5.9 | 6.4 | 6.4 |
| 4 | Liquid Lime (2.5 gallons/acre) | 5.2 | 5.2 | 5.2 | 5.2 |

Table III. Liming Material & Rate/Acre & Cost/Acre

| Liming Material & Rate/Acre | <u>Cost (\$)</u> | <u>Cost (\$)/Acre</u> |
|---|-------------------------|------------------------------|
| Georgetown Agricultural Limestone (1 Ton/Acre) | \$72/Ton | \$72/Acre |
| 98G (400 lbs/Acre) | \$285/Ton | \$57/Acre |
| Georgetown Agricultural Limestone (2 Ton/Acre) | \$72/Ton | \$144/Acre |
| Liquid Lime (2.5 gallons/acre) | \$46.75/2.5 gallons | \$46.75/Acre |

* Costs from Rozell Sprayers & Manufacturing and Potts Feed Store (September 29, 2020)

Conclusions

This is the first year of a multi-county research trial. Very positive results have occurred. More research will be conducted to compare higher rates of 98G liming material and compare it to Georgetown Agricultural Limestone, and liquid lime to determine buffering capacity and persistence in the soil.

Acknowledgements

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Trade names of commercial products used in this report is included only for better understanding and clarity. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by Texas AgriLife Extension Service and the Texas A&M University System is implied. Readers should realize that results from one experiment do not represent conclusive evidence that the same response would occur where conditions vary.