



— Soil Fertility Note 18 — Lime

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N.C.D.A. & C.S. Agronomic Division

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Serving North Carolina growers since 1940

- ❖ Reduces acidity
- ❖ Improves soil tilth
- ❖ Increases availability of important plant nutrients
- ❖ Increases pH
- ❖ Provides calcium and magnesium

What is Agricultural Lime?

Lime is a soil amendment that usually contains carbonates or oxides of calcium and/or magnesium. It is applied to raise pH and supply calcium and magnesium for plant growth.

Lime's potential to reduce acidity is characterized in terms of its calcium carbonate equivalency (CCE) based on pure calcium carbonate being given a theoretical neutralizing value of 100. Limes with high CCE have a greater ability to neutralize a given amount of acidity as compared to calcium carbonate. The CCE of most agricultural limes is between 80 and 95%.

What is the Difference Between Calcitic Lime and Dolomitic Lime?

Calcitic lime refers to lime that contains only calcium whereas dolomitic contains both calcium and magnesium.

What is the Difference Between Pelletized Lime and Ground Limestone?

Pelletized lime is made from very finely ground particles that are compressed into larger pellets. When the pellets become wet, the finely ground particles disperse or break apart into small particles that can react.

How Fast Does Lime React?

Lime begins reacting when it comes into contact with acidity so mixing it with soil is important for optimum reaction. Much of the speed is controlled by particle size. Smaller particles of lime have more surface area and react faster than large particles. Oxide sources of lime also react faster than carbonates. Typically, bagged lime sold for homeowner use contains both oxide and carbonate forms of calcium and magnesium and also a range of particles sizes. Such a mixture raises soil pH fairly quickly and sustains it for one to four years, depending on soil type, fertilization and environmental factors. Lime is not very water soluble.

How Often Should Lime Be Applied?

On sandy soils, lime may be needed every one to two years. On more loamy to clay soils, lime may be needed every three to four years. Never apply lime unless recommended by soil test.

What Is Liquid Lime?

Liquid lime is very finely ground lime suspended in water. It has about 2/3 to 3/4 the liming equivalence of bag lime due to dilution with water. Liquid lime works about as quickly as bag lime when used in equivalent amounts.

How Much Liquid Lime Should I Use?

The application rate for liquid lime is calculated by dividing the amount of lime recommended on the soil test report by the weight per gallon of the liquid material times its calcium carbonate equivalency (CCE). The last two values are given on the product label.

For example, suppose a soil report provides a lime recommendation of 1 ton/acre, and a grower wants to use a liquid lime product with a weight of 12 lb/gal. and a CCE of 73%.

$$\begin{aligned} 1 \text{ ton/acre} &= 2000 \text{ lb/acre} \\ \text{rate of liquid lime to apply} &= 2000 \text{ lb/acre} \div (12 \text{ lb/gal.} \times 0.73) = 228 \text{ gal./acre} \end{aligned}$$

The 228 gallons of liquid lime applied to one acre would weigh 2736 pounds (= 228 gal. × 12 lb/gal.).

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Questions or comments should be directed to the Soil Testing Section of the NCDA&CS Agronomic Division. Information on field services, nematode assay and plant/waste/solution/media analyses is also available from the division.

Steve Troxler, Commissioner of Agriculture