

Lawn Liming

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Learn about using lime as a lawn fertilizer. Topics include lime types, functions, and application suggestions.

Lawn nutrition

A functional, healthy, and attractive lawn is the result of a regularly and carefully executed management program. Turfgrass management requires three primary practices: mowing, fertilizer application, and irrigation. Since mowing removes top-growth at periodic intervals, lawns demand more mineral nutrients than most crops. These nutritional requirements of a lawn can be satisfied through fertilizers.



Applying fertilizer is one of the three main practices of managing a lawn.

Soil pH

To best determine the nutritional needs of a lawn, submit soil samples to your county WVU Extension office for testing. Soil testing will measure the quantity of hydrogen ions (H⁺) present in the soil, a characteristic that governs the availability of nutrients for uptake by plants. This is expressed in a measure of pH, with units between 1 and 14. Soils with a pH less than 7.0 are considered acidic, those with a pH greater than 7.0 are alkaline, and those with a 7 are neutral. Most lawn grasses prefer a pH of around 6.5.

An acidic soil condition may build up over the years when the soil's alkaline constituents, calcium and magnesium, leach out of the soil due to precipitation. It can also occur by yearly applications of nitrogenous fertilizers; by the addition of organic materials, such as compost or peat moss, to condition the soil or as a top dressing; and by the washing of sulfur from the air into the soil from rains. In West Virginia's typically acidic soils, pH may vary between 4 and 7; therefore, well-established lawns may require applications of lime periodically.

What is lime?

Lime is a compound of calcium or calcium and magnesium, capable of counteracting the harmful effects of an acid soil. "Agricultural lime" or "ground limestone" are terms used quite loosely and include all types of lime.

Types of lime

There are three major types of lime:

Calcium carbonate (ground limestone or calcic limestone). Ninety-five percent of all lime used in the United States is calcium carbonate because it is the most abundant, affordable, least caustic, and most easily handled form of lime. It may also contain varying amounts of magnesium carbonate.

Functions of lime

Calcium oxide (burnt lime, quick lime, or caustic lime). This lime acts more quickly and at half the application rate of calcium carbonate. Gloves should be worn when using calcium oxide because it is caustic.

Calcium hydroxide (hydrated lime or slaked lime). This lime is more effective and reacts more quickly than ground limestone. Like calcium oxide, calcium hydroxide is caustic; therefore, gloves should be worn.

As a soil amendment or conditioner, lime performs several important functions. Lime:

- corrects soil acidity;
- furnishes the important plant nutrients, calcium and magnesium;
- reduces the solubility and toxicity of certain elements in acidic soil, such as aluminum, manganese, and iron;
- promotes the availability of major plant nutrients by adjusting the soil to the desirable range of pH; and
- increases bacterial activity and hence induces favorable soil structure and relationships. (*Note: Soil structure is also improved by the addition of compost which makes it more porous, more able to absorb and hold moisture, and increases air-circulation within it.*)

Time of application

For new lawns, the best time to apply lime is when the soil is being prepared for planting. Since the movement of lime through the soil may take up to two years per 2 inches, tilling lime into the soil enables it to have effect on the grass roots more quickly. In established lawns, lime is best applied during fall, winter, or early spring, in that order. If lime is applied when the soil is too wet, even distribution is difficult to obtain. Lime must be spread evenly over the entire area for best results.

Rate of application

Before applying lime to your lawn, have the soil tested to determine the amount and type of lime required. Soil test results will describe the exact applications to be made based on the soil's degree of acidity, the soil type, and the choice of lime material. Soil test mailers and sampling instructions are available from your county WVU Extension Service office.

Single applications of more than 150 pounds of lime per 1,000 square feet (3 tons per acre) are not recommended. If more than this is needed, apply half one year and the remaining half two to three years later, after rechecking the soil pH. In general, lime should only be applied every three to five years. Remember that adding too much lime can be as damaging to lawn grasses as adding too little.

For more information

Last updated May 2015

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AG15-112