



## Design for Everyday Living

# Liming the Lawn

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Nearly every homeowner desires an attractive lawn because this is one feature which most enhances the appearance of the average home grounds. Healthy, attractive lawns are not an accident but the result of a regularly and carefully executed maintenance program. This applies to the soil as well as to the turf grass itself.

Turf grasses will not grow well in highly acid soils, and since most soils in West Virginia are acid by nature, well established lawns will require applications of lime. Acid conditions of soils can be brought about by the leaching out of calcium and magnesium, the alkaline constituents, from the soil; yearly applications of nitrogenous fertilizers; the use of organic materials, such as compost or peat moss, used to condition the soil or as a top dressing; and the washing of sulfur from the air by rains into the soil.

Acid soils are commonly referred to as "sour," whereas alkaline soils are called "sweet." The reaction of soils is measured by the quantity of hydrogen (H) in the soil which is expressed by numerical units numbered between 1 and 14, with 7 being neutral. In West Virginia, soil reactions may vary between pH 4.0 and pH 7.0. Soils with a reaction of less than pH 7.0 are acid and those with a reaction greater than pH 7.0 are alkaline. Most lawn grasses perform best at a reaction between pH 6.5 and pH 7.0.

Acid soils are not necessarily infertile but an indication that the supply of calcium and magnesium is low and needs replenishing. More importantly, high acidity or low pH levels may also cause other nutrients to be unavailable to plants. The greater the acidity of the soil, the greater the need for lime.

### WHAT IS LIME?

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

There are three major types of lime and each has its advantages.

1. Ground limestone and calcic limestone—Calcium Carbonate ( $\text{CaCO}_3$ )—almost pure calcium carbonate, finely ground. Ninety-five percent of all lime used in the United States is calcium carbonate because it is the most abundant and cheapest form of lime. Also, it is not caustic or disagreeable to handle like burnt or hydrated lime. It may also contain varying amounts of magnesium carbonate. Limestones containing significant amounts of magnesium carbonate are called dolomitic limestones. Dolomitic limestone contains about equal parts of magnesium and calcium carbonate.
2. Burnt lime ( $\text{CaO}$ )—quick lime, caustic lime—acts more quickly than calcium carbonate. Gloves should be worn when using burnt or hydrated lime. Only  $\frac{1}{2}$  the rate of ground limestone is needed since burnt lime is twice as effective in neutralizing.
3. Hydrated lime [ $\text{Ca}(\text{OH})_2$ ]—or slaked lime—pound for pound is about  $1\frac{1}{2}$  times more effective and quicker to react than ground limestone (calcium carbonate).

## **FUNCTIONS OF LIME**

Lime is primarily a soil amendment or conditioner and not a fertilizer, as is commonly thought. Lime performs several important functions:

1. Corrects soil acidity
2. Furnishes important plant nutrients—calcium and magnesium
3. Reduces the solubility and toxicity of certain elements in the soil such as aluminum, manganese, and iron. This toxicity could reduce plant growth under acid conditions
4. It promotes availability of major plant nutrients. Calcium acts as a regulator and aids in bringing about the desirable range of availability of many plant nutrients. Some elements which lime aids in regulating are zinc, copper, and especially phosphorus.
5. It increases bacterial activity and hence induces favorable soil structure and relationships. Soil structure is also improved by the addition of decayed organic matter or compost. The soil becomes more porous, increasing air circulation and the ability of the soil to absorb and hold moisture.

## **TIME OF APPLICATION**

To obtain maximum efficiency and faster action, the best time to apply lime to the lawn is when the soil is being prepared for planting. This applies to the sub-soil as well as the topsoil because lime moves very slowly through the soil. Research has shown that it takes up to two years for lime to move two inches through the soil.

Applications of lime on established lawns may be made at any time of the year, the most favorable time of the year being fall, winter, or early spring, in that order. If applied when the soil is too wet, it is difficult to obtain an even distribution. If heavy equipment is needed to spread the lime, make the application on level areas when the ground is frozen. Less damage is made to the soil and grass under these conditions. Alternate freezing and thawing and early spring showers hasten its penetration into the soil.

Lime must be spread evenly over the entire area because it does not move horizontally. The use of a spreader insures a better distribution and

permits the lime to be placed next to flower beds or in close proximity to acid-loving plants.

Pelleted lime is now available at most garden centers. Pelleted lime costs a little more but has several advantages in that it goes through a spreader more easily; may be spread by hand without being covered by dust; dust does not drift or blow into areas where lime is not wanted; eliminates such problems as tracking lime onto patios, etc. or into the house; and is easier to clean up if the bag is broken.

## **RATE OF APPLICATION**

The amount of lime required will vary with the degree of acidity, the soil type and the kind of lime material. Light, sandy soils require less lime than soils high in silt and clay. It is always a good practice to have the soil tested to determine the amount and kind of lime required. Soil test mailers and sampling instructions are available from County Extension offices.

Liming the lawn is an important part of good maintenance and should be included in the schedule. However, many enthusiastic gardeners are apt to over-lime. Generally, applications of lime should only be made every three to five years. Soil tests will aid the homeowner in determining the exact applications to be made. Single applications of over 150 pounds of lime per 1,000 square feet (three tons per acre) are not recommended. If over 150 pounds per 1,000 square feet are needed, apply half one year and the remaining half two to three years later, after rechecking the soil pH.

It should be remembered that too much lime can be as damaging to lawn grasses as the lack of lime. Also, lime is not a cure-all to all lawn maladies but an ingredient which can correct soil acidity, thus creating favorable conditions for other factors to occur which develop favorable conditions in soil for lawn grasses. It is important that homeowners know that lime is necessary and how much is needed so that they can make the proper application for the first step toward a healthy lawn.