

Understanding Lime's Function In Soil

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Liming is an important part of soil management. Alkaline ions, such as calcium and magnesium, are leached from the soil as a result of rainfall, including acidic rainfall. In time, most soils will become acidic if not treated with lime.

Even though soils will turn acidic naturally, you should not apply lime without the benefit of a soil test. Too much lime can be as harmful as too little. Excess lime raises the pH above crop tolerances and affects availability and growth of beneficial microorganisms in the soil. Information on soil testing is available in all county cooperative extension offices and many lawn and garden centers. The soil test tells when and when not to add lime and nutrients to the soil. A test could actually save you money if you have always treated your soil each season.

Liming the soil to the proper pH is important to crop growth. Not all plants grow at the same pH level. Blueberries do best at pH between 4.5 and 5.5. Most field crops need some lime to keep the soil pH between 6.5 and 7.0. Soil pH is measured on a scale of 0 to 14, with pH 7 being neutral, neither acid nor alkaline. Values below 7 are listed as acidic and those above 7 are alkaline or basic.

When you apply lime to the soil, spread it uniformly. Lime is insoluble and stays where you put it, either on the soil surface or at the depth which you till the soil. On turfgrass, especially, overlapped areas are as bad as skipped areas, so get uniform coverage at the suggested application rate. For best coverage, try applying one-half the recommended amount in one direction and the remainder at a right angle. Most liming materials are light-colored and easy to see on the soil.

Since lime has no direct effect on growth, it can be applied almost any time. Fall applications let the lime break down over the winter from the next season's growth. However, if a spring soil test indicates a need for lime, apply the material then.

Lime begins to react with the soil as soon as it is applied. A single application should be effective for three to four years. A soil test within this period will help you track the progress of the lime in altering or maintaining the soil pH.

Fertilizer applied with the lime will also alter the soil pH. Most nitrogen fertilizers used on garden or turf areas have an acidic reaction on the soil. Heavy applications of fertilizer can speed the loss of lime in the soil and lower the pH faster.

Liming materials come in a variety of forms, each with its own

value, potential use and application problems. Lime is available in calcitic, dolomitic, burned, hydrated and pelletized forms. Select the one that best meets your needs as well as those of the soil.

Calcitic lime is mined from natural limestone bedrock deposits. After the rock is crushed and pulverized, it is run through screens to meet certain specifications. This is generally labeled as either ground or pulverized limestone. Depending on the quality of the bedrock, the material has an 85 to 100 percent neutralizing value. In addition to raising the soil pH, the material also supplies calcium, an element essential for growth.

Dolomitic lime is mined and prepared the same as calcitic lime

and has about the same neutralizing value. It supplies both calcium and magnesium for plant growth. It is often used to meet magnesium needs.

Burned lime or calcium oxide (often sold as quicklime or unslaked lime) is prepared by heating crushed lime in a furnace to force off carbon dioxide. It has the highest neutralizing value, between 150 and 175 percent, but is very caustic. It is difficult to handle because it absorbs moisture quickly. When applied to soil, it must be incorporated immediately to prevent the formation of granules or flakes that are difficult to break down.

Hydrated lime (sold as builder's or slaked lime) is produced by

adding water to burned lime. Its neutralizing value is between 120 and 135 percent. Hydrated lime is also quite caustic and difficult to handle. Like burned lime, it should never be applied to turfgrass or other plants that are established because it will burn the foliage. All applications of hydrated lime should be incorporated into soil immediately.

Pelletized lime is finely ground agricultural lime to which a cementing agent has been added. While more expensive than regular ground limestone, it is easier to spread and eliminates dust. The pellets dissolve with a soaking rain or irrigations and release lime to the soil. Uniform distribution is still important.

Pennsylvania's Soil Losses Cut

HARRISBURG — Soil conservation practices applied in 1988 reduced soil erosion by more than 2.3 million tons reports Richard Duncan, state conservationist for the USDA Soil Conservation Service. This is a marked increase over the 1.7 million ton reduction in 1987.

Duncan credited U.S. Department of Agriculture programs for the increased soil savings. He also predicted that there will be a marked increase for the next five or six years for the same reason.

The Conservation Reserve Program which pays farmers an

annual rental for ten years if they convert highly erodible cropland to grass and trees was credited with saving 1.25 million tons of soil during the past year. Soil conservation practices such as terraces, strip cropping, conservation tillage and grassed waterways saved another 1.1 million tons of soil.

Duncan based his prediction of increased soil savings in the future on the conservation compliance requirement of the 1985 Farm Bill. This bill requires farmers with highly erodible cropland to have a conservation plan by the

end of 1989 or lose other USDA program benefits. They have until the end of 1994 to install the soil saving measures in the plan to maintain their USDA benefits.

"Pennsylvania farmers planned erosion control for more than 860,000 acres of highly erodible cropland last year" stated Duncan.

Duncan added that this is exactly what Congress wanted to happen when the law was passed. "By treating the highly erodible acres, the greatest soil savings will be made," said Duncan.

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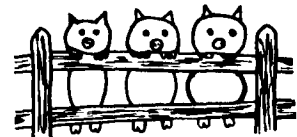
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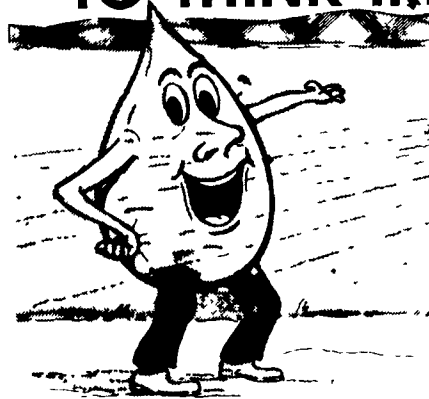
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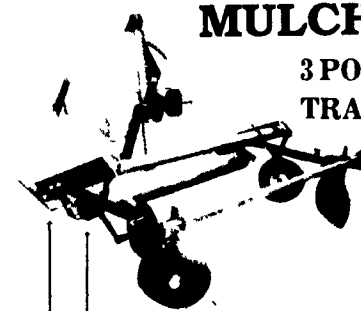


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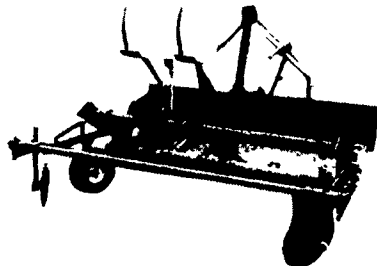
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