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EFFECTIVENESS OF LIMING MATERIALS

Monroe Rasnake

A number of different sources of liming materials are available to Kentucky farmers and homeowners. The best one for any particular use depends on several factors:

1. Size of area being treated
2. How quickly the reaction is needed
3. Method of application
4. Cost of the material
5. Quality (neutralizing value) of the material

Following is an evaluation of some liming materials based on those factors.

Ground agricultural limestone is by far the most commonly used liming material available in Kentucky. It is produced in about 100 quarries in the state which mine limestone and crush it so that at least 90 percent passes a ten mesh sieve and 35 percent passes a 50 mesh sieve. About two-thirds of this material will dissolve in the soil and neutralize soil acidity. Relative Neutralizing Value (RNV) is dependent on the purity of stone and how finely it is ground. RNV's of ground agricultural limestone range from a low of 50 to near 100. Higher RNV's indicate higher quality lime. These values can be obtained from county extension offices.

Ground agricultural limestone is the least expensive liming material and is easy to apply. It takes several months to react with the soil and increase soil pH. It also lasts longer in the soil, so that it can be effective for three-to-five years. It is probably the best source of lime for large areas such as farmer's fields, and for most homeowner uses if it can be purchased in bags.

Rock Dust is a product intended for use in coal mines to suppress coal dust. It is finely ground rock material which is usually shipped in bags. If the source rock is good quality and the material is ground fine enough, rock dust may be a convenient source of liming material for use on small areas. However, it is not inspected by the Kentucky Department of Agriculture for suitability as a liming material. Before it is used, it should be checked by someone who can evaluate its suitability, such as the County Extension Agent for Agriculture.

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Liquid lime or lime suspensions are mixtures of finely ground lime, a suspending agent and water. The effectiveness is determined by the percent of lime in the suspension and the RNV of the lime. A typical liquid lime will contain about 50 percent aglime. When high purity stone is used, it results in good quality (high RNV) aglime. Liquid lime is usually applied at lower rates and causes a more rapid increase in soil pH. This source is more expensive than dry aglime and doesn't last as long, thus requiring more frequent applications.

Burned lime and hydrated lime are high purity, fast acting liming materials. They are difficult to handle, caustic and more expensive than aglime. Because of their high neutralizing value (RNV's of 125 to 185), there is a danger of applying too much. They react very quickly with the soil and will need to be reapplied more often. Their suitability as a liming material is limited to small areas and special applications.

Wood ash is a commonly available liming material with the current popularity of wood burning stoves. Wood ash is not as effective as most other liming materials (RNV's of 30 to 70), but it is fast acting and inexpensive. Wood ash can be used effectively as a liming material by spreading it evenly on an acid soil. Its use should be based on a soil test and care must be taken not to over-apply in one area. Wood ash also provides substantial amounts of potassium which can be of value in soils with low soil test potassium.

CHARACTERISTICS OF SOME LIMING MATERIALS

Name	Advantages	Disadvantages	RNV
Agricultural Limestone	Inexpensive, long-lasting, handles easily, good quality	Slow acting	50 to 100
Liquid Lime	Convenient, good quality, fast acting	Expensive, doesn't last	40 to 75*
Burned Lime	Fast acting, high RNV	Difficult to handle, expensive, doesn't last	150 to 185
Hydrated Lime	Fast acting, high RNV	Difficult to handle, expensive, doesn't last	125 to 145
Wood Ash	Inexpensive, fast acting, contains potassium	Danger of overliming, not commercially available	30 to 70

*Based on total weight of suspension.