

Piles of Lime around Barron County

What are all of those piles of “stuff” setting in farm fields around the County? Is that lime? These are two commonly asked questions this spring at the Barron County UW-Extension Office these days. The piles of material in question are a by-product produced during the water softening process at municipal water treatment plants in the Twin Cities. It can be an economical liming amendment for agricultural producers and there is little environmental risk associated with its use.

A variety of liming materials are available to Wisconsin producers. For many years, ground agricultural limestone or Aglime was the primary liming material used in Barron County. There are, however, a number of by-product materials that can be used to increase soil pH. The materials differ in place of origin, amount of neutralizing power and nutrients or other elements associated with the liming agent. In some situations, these materials are given to the grower. In other cases, there is no charge for the material, but the grower pays the cost of hauling.

A liming material is any compound capable of increasing soil pH by combining with hydrogen ions in the soil. Although most agricultural liming materials contain calcium, it is the negatively charged component of the compound that actually neutralizes the acidity. When added to the soil, calcium and/or magnesium dissolved from the liming materials displaces hydrogen (H^+) from the clay particles. It is the hydrogen ion (H^+) that makes soils acid. The displaced hydrogen then reacts with carbonate, reducing soil acidity. Byproduct lime generally contains 25 to 30% Ca on a dry weight basis, has a calcium carbonate equivalence of about 50%, and has a low trace metal content.

Lime quality is judged by how effectively it raises the soil pH to a desirable level within three years. Two properties of lime govern its quality: purity, the percent calcium carbonate equivalent, and fineness or particle size. These two factors are used to calculate the neutralizing index, a measurement of the relative value of the liming material.

The moisture content and the neutralizing index of by-product materials vary over a wide range. The farmers who use these products should have them analyzed. With this analysis, it's possible to determine the pounds of the liming material per acre to apply to bring the soil pH to a desired level.

There is one other factor to consider when choosing a liming material. According to John Peters, University of Wisconsin-Extension soil and forage lab at the Marshfield Agricultural Research Station. The liming material selected should spread easily so that it's possible to achieve a uniform application over the entire field. Liming materials often dissolve slowly, allowing them to neutralize soil acidity only in the solution immediately surrounding each lime particle. The only way to speed the process is by using finer particles and distributing them evenly throughout the soil. If the liming materials are mixed thoroughly with the soil, the soil pH will begin to rise within a few weeks. Aglime spreads easily. On the other hand, some of the by-product liming materials can be challenging to spread uniformly over the field. This lack of uniform spreading could cause production problems for several years after application.

“Choosing between Liming Materials” is a University of Wisconsin-Extension publication that can help farmers effectively evaluate liming materials. The bulletin is available at the Barron County UW-Extension Office in Barron.