

A Variety of Liming Materials

For several years, ground agricultural limestone or Aglime was the primary liming material used in Minnesota. There are, however, a number of by-product materials that can be used to increase soil pH. 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. The moisture content and TNP of these materials varies over a wide range. The grower who uses these products should have them analyzed. With this analysis, it's possible to determine the pounds of ENP 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. The liming material selected should spread easily so that it's possible to achieve a uniform application over the entire field. Aglime spreads easily. On the other hand, liming materials that contain relatively large amount of water (sugar beet lime; water softening lime) are more difficult to spread uniformly over the field. This lack of uniform spreading could cause production problems for several years after application.

If applied to supply equivalent amounts of ENP per acre, all liming materials should have an equal effect on crop yield. So, the decision on source to use should be based primarily on cost.

Dolomitic Versus Calcitic Limestone

Most of the Aglime quarried in Minnesota contains both calcium and magnesium. Both of these nutrients are essential for crop production. Calcium requirements of crops are low and Minnesota soils contain ample amounts of this nutrient. There are some who believe that, when lime is needed, only calcitic lime should be used.

This belief originates from a concept which suggests that there is an ideal ratio of calcium to magnesium in

soils and any deviation from this ratio will cause problems with crop production. Several field trials have been conducted to test the validity of this concept. The results are clear—the ratio of calcium to magnesium in soils has not had any effect on crop yield in the northern Corn Belt. Wisconsin researchers, for example, varied the ratio of calcium to magnesium from 2 to 8 and found no effect on the yield of alfalfa grown on a sandy soil and a silt loam soil.

The calcium to magnesium ratio is not important in Minnesota soils. However, the supply of magnesium can affect production. Magnesium will be needed in a fertilizer program if the soil test for magnesium is low. The use of dolomitic lime is one of the easiest and most cost effective ways to add magnesium to soils.

Economic Considerations

The determination of the ENP of various liming materials has economic implications for the grower. With this measurement, it's now possible to compare various liming materials on a cost basis. The following equation can be used to calculate this cost:

$$\text{Cost/lb. ENP} = \frac{\text{Price/ton of Material (\$)}}{\text{lb. of ENP per ton}}$$

The Lime Law and The Lime User

The recent implementation of the Minnesota Lime Law is a major step forward. Although new terminology is introduced in making liming recommendations, it should not be confusing. This law does provide a standardized system for calculating costs. Growers now have a basis for computing costs of a wide variety of liming materials. This ability to calculate costs and choose liming materials based on costs should improve the profitability of Minnesota growers who need lime for crop production.



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