



SOIL LIMING

Understanding Your Soil Test Recommendation

The desired soil pH for the indicated crop is printed on the soil test report. One should remember that soil pH can easily vary by ± 0.25 pH units during the growing season and such a variation from the desired soil pH should not be cause of concern. A lime requirement recommendation is generally issued by the soil test laboratory when the soil pH (measured in water; H_2O) is 5.8 or less for mineral soils and 5.2 or less for organic soils. Mineral soils, for the purpose of this note, have an organic matter content of 20% or less, while organic soils have higher organic matter levels.

SOIL VOLUME

The lime requirement of a soil represents the amount of good quality limestone that is required to achieve the indicated pH for a volume of soil contained in a plow layer of one hectare (2.5 acres) to a depth of 20 centimetres (8 inches). The approximate soil volume of a plow layer is about 2 million litres (about 1100 cubic feet) of soil.

APPLICATION RATE

The applied limestone should be of good quality, be finely pulverized and have a proper neutralizing power. It should be spread evenly over the soil surface and thoroughly worked into the plow layer. If the limestone cannot be worked into the soil, it can be surface applied. However, the recommended rates should be reduced to one-third so as to avoid the possibility of localized overliming. If this

reduced rate is less than about two tonnes per hectare, a practical minimum rate, merely apply two tonnes per hectare. Surface applied limestone will gradually neutralize soil acidity at depth, it moves through the plow layer at a rate of about one to three cm per year. On land that is to remain untilled for a number of years such as a perennial forage grass, it is wise to apply the full required rate prior to any reseeding operation. Light applications of lime should only be considered for highly pH sensitive perennial crops.

HIGHER RATES

Understanding the maximum rate of application is important in order to achieve a thorough mixing of the liming material in the soil. Thorough mixing is essential to obtain a rapid neutralization of soil acidity. It is best to limit the maximum quantity of limestone applied and worked into the soil at any one time to about 6-10 tonnes per hectare. Generally several small limestone applications will result in a more even soil coverage than a single larger addition. Where lime and/or lime application costs are high, the worst effect of soil acidity can be eliminated for most crops by liming to pH 5.5.

Liming to a pH level greater than 5.5 may be beneficial for some crops. It will also generally lengthen the interval before soil pH falls to a level that may adversely affect crop growth. In fact, money spent on seed, fertilizer and farm labour will return very little on strongly acid soils.

MAGNESIUM REQUIREMENT

Where plant available soil magnesium levels are below 200 kg/ha, dolomitic limestone can be substituted for calcitic limestone as it contains an important proportion of magnesium. Soil magnesium levels can also be raised by using a fertilizer blend containing magnesium. However, dolomitic limestone may be less expensive as a source of magnesium. It will raise the level of plant available magnesium in acid soils while neutralizing soil acidity. A dolomitic limestone offers no special advantage over calcitic limestones, assuming that both have the same agricultural value rating, on soils that have a good magnesium reserve.

TIMING

Finally, one should remember not to apply ammonium or urea fertilizers in contact with limestone or hydrated lime as gaseous losses of the

applied nitrogen will result. A month or so should also be allowed between surface applied limestone and boron fertilization so as to minimize the formation of less soluble boron compounds containing calcium and magnesium. Lime should be applied in the fall for perennial cropland or in the spring prior to cultivation on annually cropped land.

Should you require additional information about liming, please contact the BC Ministry of Agriculture and Food office near you or refer to one of the following factsheets:

[No. 637.000-2 Soil Acidity & Liming Facts](#)

[No. 637.000-1 Liming Acid Soils in Central BC](#)

[No. 637.100-1 Soil pH](#)

FOR FURTHER INFORMATION, CONTACT:

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