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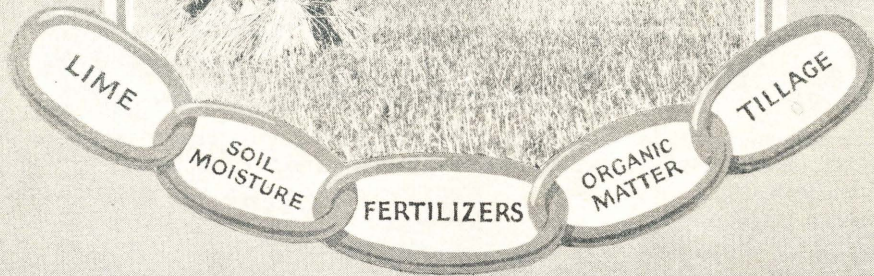
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Lime for Michigan Soils
Michigan State University Extension Service
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LIME FOR MICHIGAN SOILS



LINKS IN PROFITABLE FARMING

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LIME FOR MICHIGAN SOILS

BY JOHN SIMS

Clover failures are increasing in Michigan, and this fact clearly shows the necessity of using lime to correct the sour condition of the soil. When alfalfa or sweet clover is used, the need for lime is even greater.

Legumes must be grown if soil fertility is to be maintained, and "Legumes Like Lime." Many other crops also are benefited by the correction of soil acidity. Some crops may be benefited by supplying as a plant food calcium and magnesium, both of which are found in variable quantities in all forms of lime.

Does My Soil Need Lime?

This question can be answered at an expense of 25 cents and in from one to three hours time. The 25 cents should be sent to the local county agricultural agent, or directly to the Soils Department of the Michigan State College, for a Soiltest outfit. At least the first half-hour of the time should be spent in getting an understanding of how to test soil and where and how to get the sample to test.

The Soiltest method of testing soil for acidity is very simple and anyone can use it, but the testing cannot be done in "just any old way," if correct results are to be obtained. Directions for using Soiltest are included in every outfit. These directions should be carefully followed.

Taking Soil Samples

In taking a sample of soil for testing for lime requirement, use a clean shovel and dig down from 5 to 7 inches, leaving one side of the hole straight. Then shave off a thin slice of soil from the straight side, mix it thoroughly, and use it for testing.

TEST THE SUBSOIL: The subsoil should be tested, the depth the roots have to go to reach lime makes a great deal of difference to leguminous plants. Dig down from 20 to 30 inches and make a test in the same manner. Two or three tests should be made on each type of soil found in the field, testing both the surface and subsoils.

Forms of Lime

The two forms of lime in general use for correcting soil acidity in Michigan are carbonates and hydrated lime.

1. Carbonates:

(a) Limestone: Three limestone products are offered for sale: coarse, medium, and finely ground limestone. The medium and fine have given excellent results. The limestone should be ground so that practically all will pass through a 10 mesh screen

and at least one-third pass an 80 mesh screen. The coarser the limestone, the slower it becomes dissolved. However, some limestone dissolves sooner than others. The medium ground material, having the above physical analysis has a good supply of fine material mixed with a little coarser material. It is a very effective form, even though it may be advisable to use just a little heavier application to get comparative results.

(b) Marl: Marl can be secured in many sections of Michigan at a very low cost, and it is quite easily obtained. This form of lime is very satisfactory. Because of the variation in purity it should always be tested. Send samples to the Soils Department, Michigan State College, for testing. Before much time and money is spent on making marl available at any location, the depth of marl and extent of the bed should be determined. Marl is usually applied with a manure spreader or an end-gate spreader.



The difference in growth of sweet clover in foreground and background testifies to the importance of supplying plant food not present in soil.

(c) Sugar Factory Lime: This form usually contains from 80 to 85 per cent of carbonate equivalent on a dry basis. In moisture content, it is in much the same condition as marl, and it should be used in similar quantities. Sugar factory lime also contains small amounts of plant food elements, but not enough to be of particular value.

(d) Wood Ashes: Wood ashes are occasionally obtainable. Un-leached wood ashes contain about 50 per cent calcium carbonate, and leached wood ashes about 40 per cent. Wood ashes may also contain as high as five per cent potash and two and one-half per cent phosphoric acid.

2. Hydrated Lime:

Sometimes called Agricultural Lime. On the basis of actual lime present, from 1,400 to 1,500 pounds of hydrated lime will equal 2,000 pounds of finely ground limestone. In order to get as much lime

applied to the soil, it usually costs much more to lime an acre with hydrated lime than with limestone. Hydrated lime is in a very good mechanical condition and is readily available, but because of its cost a great many farmers use too small amounts. If lime is present in the soil at a shallow depth, an application of from 400 to 800 pounds of hydrated lime per acre may give temporary results, but it will not last as long in the soil as a normal application of limestone.

Consider the Cost Per Acre

On the basis of the materials given below, the cost of liming an acre will determine which form of lime to use.

Field experiments show that two tons of finely ground limestone will give approximately the same results as one and one-half tons of hydrated lime; or five yards of marl or sugar factory lime; or from two to two and one-half tons of medium ground limestone. Obtain the price of each and determine which form is best to use. This will vary in different sections of the State.

Time and Rate of Applying Lime

Lime should be applied well in advance of the legume, preferably on the crop preceding the seeding to a leguminous crop. Applying lime a year in advance of seeding is a very good practice, since it takes some time for the lime to correct the soil acidity. Applying the lime two or three years before seeding to the legume has given good results, even applying it on sod to be plowed for a cultivated crop which in turn is followed by a grain crop and seeded to a legume has proved to be a good practice. One may be successful by seeding almost immediately after liming, but it is certain that a great many failures result from this practice.

Don't guess at the rate of application. Use the amount indicated by the Soiltest. Soils differ so much as to the lime requirement that no standard "dose" can be given.

Methods of Applying Lime

Two-wheeled spreaders; end-gate spreaders—both the simplex type and the fan type; manure spreaders; and spreading by hand with a shovel are successful methods of applying lime now being used. Any way to get the lime evenly spread, at the required rate, is satisfactory. The Simplex spreader may be made at home. Anyone desiring plans may secure them by writing the Michigan State College. Other forms of spreaders may be secured through implement dealers.

Lime Does Not Replace Fertilizers

Lime is applied to soil primarily to correct soil acidity. Fertilizers are used to supply plant food. Fertilizers will not give best results on soils which are medium to strongly acid. The acid condition should first be corrected. It will then be more profitable to use suitable fertilizers.