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Lime to Boost Yields

By W. H. PIERRE

 Helps All Crops

The average increase in corn yields in Iowa has been about 5 bushels an acre from lime alone in 51 field experiments by the Iowa Agricultural Experiment Station on the major acid soils of the state during about a 20-year period. Oats showed an increase of 3.7 bushels, wheat 3.4 bushels, mixed hay 0.3 ton and alfalfa 1.5 tons. (See accompanying table.)

Liming increased the yield of all crops in our experiments here in Iowa, but it proved especially beneficial in getting stands and increasing the yield of legume crops, particularly alfalfa.

About two-thirds of the soils of Iowa are estimated to be acid. The average lime need is between 2 and 3 tons to the acre. Over 3 million acres are seeded to legumes each year. If lime were used at an average rate of 2 tons to the acre on 60 percent of this acreage, over 3 1/2 million tons of limestone would be required. We feel that a minimum of at least 1 1/2 million tons should be used annually during this war period to assure higher crop yields.

Iowa has an abundance of limestone deposits. With the reduction in the demand for crushed limestone for road building, the production capacity of plants for agricultural limestone could be increased. Some of the "bottleneck" to production and distribution of lime are shortages of labor, machinery repair parts and trucking and spreading facilities. Where these "bottlenecks" exist, action should be taken through the proper governmental agencies to remove them.

Fine Lime Important

One of the most important points now is to use lime that is finely ground so as to get quick benefit from its use. The finer the limestone is ground the more slowly, for instance, only 50 percent of the material coarser than 20 mesh became available in 2 years. This is the reason why the standard generally recommended is that ground limestone should be fine enough so that at least 90 percent will pass through an 8-mesh sieve (a wire sieve with eight openings per linear inch).

A study is now in progress of the fineness of the ground limestone used in Iowa. Of the 148 samples thus far analyzed we found that only about one-fourth were sufficiently fine so that 90 percent of the material passed through an 8-mesh sieve. The 110 samples which failed to meet the standard generally above had an average of 22.2 percent of material too coarse to pass an 8-mesh sieve. On the basis of the data on the accompanying graph, only about 50 percent of these ground limestones would become effective in the soil during the first 6 months after application and only 5 percent during a period of 2 years. That's too slow for this war period when we want increased food production in the shortest possible time.

It costs just as much to quarry the rock and to handle, transport and spread ground limestone regardless of whether the material is coarse and very slowly available in the soil or is of good quality, has a large percentage of fine dust and becomes readily available. The slightly greater cost of grinding that would result from increasing the fineness of much of the ground limestone used would be a very small item in comparison to the benefits obtained.

![Graph showing percent of limestone retained with soil over time for different mesh sizes.](image-url)