

## Lime Response

Do you need lime in your garden, on your lawn, or in your field? Let's explore the uses and misuse of lime in this week's column.

On numerous occasions we have had gardeners who are having trouble growing a good garden and are having no luck growing root crops like radishes and onions. They grow but do not develop the root or bulb. Soil tests on the garden show a high pH (very alkaline soil) like 8.4 when it should be near neutral pH, like 6.6 to 7.0. When asked the home owner explains that the garden is on the site of an old building, the garden center recommended lime, and the neighbor recommended wood ashes. This gardener has the combined effects of triple liming the soil. Lime from the wood ashes, lime from the concrete foundation/floor, and the lime applied.

Very few gardens in our area are in need of lime. Some long-time garden areas away from foundations might benefit from a lime application if the soil test indicates and the amount of lime applied is calculated based on the soil test.

Lime is a soil amendment. It is not a fertilizer. We are not applying it to meet the calcium needs of the plants. We are applying it to acid soils, with pH values below 6.0 to change the chemistry of the soil to a pH level of 6.5. We do this because at low pH levels some nutrients become harder for the plant to take up from the soil. In farm fields pH can also effect the activity or breakdown rate of weed killers like atrazine. Under high pH conditions in Western Nebraska atrazine is often not used or used at very low rates, because it breaks down very slowly in high pH conditions.

Farmers counting their dollars carefully will use Ag lime, which are the fines from road rock or cement manufacturing material operations in our area. Liquid lime materials and finely processed lime materials work great, but triple the cost of the lime. Once the quality of lime is known and soil test for the field from single or soil samples is evaluated then from 1 to 4 tons per acre of Ag lime is applied.

Lime can be incorporated which will react to change the pH in 2-3 years or be left on the surface in no-till fields which will increase the reaction time to 3-4 years.

As part of the soybean profitability project one field was limed in test strips and yields taken on the corn and soybeans for 7 years. The cost of the lime was \$44 per acre in this sample field. The pH in the field was 5.5. The pH level in the limed area was changed to 6.3, pretty close to the target of 6.5, within 3 years. Yield increases which can be attributed to the lime applications produced \$60 worth of returns in the seven years. Almost all the yield improvements came from the soybean crop. Corn yield was significantly higher in two out of four years and soybeans in three out of three years. This is a pretty normal yield response. In ten years lime will generally pay out 2x or 2.5x the cost.

A soil amendment not a fertilizer. A long-term investment not a short-term payback. Alfalfa and soybeans are high responders, and the grass crops are less responsive.

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