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KEEP A LOG OF SOIL ACIDITY

Applying N again this year? Chances are you applied N on the same field last year – that is, if you're one of the many farmers planting more corn after corn. In the Midwest, much of the additional corn acres are coming from ground that used to be rotated to soybean production every other year. So now, instead of applying N once every 2 years, many are applying N every year.

Nitrogen acidifies the soil. Whether the source is urea or anhydrous ammonia, the acidifying effect is the same. A rule of thumb is that for every 100 lb of N applied, enough soil acidity is produced to require 225 lb of agricultural limestone. Does that mean you need to apply 225 lb? Probably not. But applying N more frequently increases the chances that soils will become more acid more quickly.

Soils differ in how they respond to the acidifying effects of N fertilizers. Some soils will be very sensitive, such as sands, and others, like silt loams, will not change as much. If you want to find out just how much agricultural limestone is needed, take a soil sample and send it to a reputable laboratory. They will run a test that determines how well the soil is able to buffer changes. This test is often reported as "buffer pH" on the soil test report. The laboratory compares this test result with calibration data to determine how much agricultural lime should be applied.

A ton is not a ton. Often, when people see that a ton of agricultural lime is recommended, they apply a ton of limestone. If only it were that easy. Here's the twist. Not all limestone has the same chemical makeup. Some limestone sources contain more impurities or are not as finely ground as others. Both the purity and the fineness of a particular source are used to adjust the rate from the one recommended to the one that actually gets applied. Soil test reports usually contain guidance on how to calculate this adjustment and university Extension publications do, too. The bottom line – if a source has more impurities and is more coarsely ground, that one ton of lime recommended on the soil test report will need to be more than one ton of agricultural limestone that actually gets applied.

Soil acidity affects how plants respond to nutrient applications. Generally, when soils are too acid, crops grown on them make poorer use of the nutrients applied. So keeping soil acidity in check can improve the economic returns to other applied nutrients.

Monitor changes in soil acidity over time. If you soil test only occasionally, consider picking out a couple of areas to sample every year. Look at how the soil pH and the recommended lime rates change with time. Consider doing this on fields that have just been limed as well as those that haven't. Keeping a log of soil acidity will help you gain insight into how quickly your soils become more basic after a lime application as well as how quickly they become more acid when N is applied more frequently.

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For more information, contact Dr. T. Scott Murrell, Northcentral Director, IPNI, 2422 Edison Dr., West Lafayette, IN 47906. Phone: 765-463-1012. E-mail: smurrell@ipni.net.

Abbreviations: N = nitrogen.