Miracle Sulfur Source?

Gypsoil shows promising benefits

BY JIM DICKRELL

Anecdotal evidence from farmers and claims by the marketers of Gypsoil—the commercial name for flue gas desulfurization (FGD) gypsum—suggest this relatively new source of sulfur fertilizer also improves soil tilth, nitrogen utilization and crop yields while reducing runoff and dissolved phosphorus losses.

University research results vary by state. In Ohio, dry matter yields of new seeding alfalfa were up as much as 40% and established stand yields up 5% to 6%, says Warren Dick, an Ohio State University agronomist. Results in Wisconsin, however, are inconclusive, says University of Wisconsin Extension soils specialist Dick Wolkowski.

What is being confirmed is that FGD gypsum is a bona fide replacement for mined gypsum that is used to provide sulfur and calcium. It also could prove to be cheaper, with FGD available at its source for less than $20 per ton.

A new source of fertilizer provides the sulfur and calcium of mined gypsum and may have other benefits as well.

PHOTO: PAM SMITH

One of the challenges is that there are no good soil tests for sulfur. The best you can do for alfalfa is a leaf tissue test to see if concentrations meet the goal of 0.25%, says Ohio's Dick. Such data reflects what has already happened, but it can then be used to correct sulfur deficiencies. To meet alfalfa sulfur requirements, he recommends, use about 100 lb. to 200 lb. per acre of gypsum.

"Since sulfur is leached from soil as sulfate, slightly higher rates can sometimes be applied in sandy soils and in more humid climates," Dick says. He usually sees the greatest response on alfalfa. Corn, a high user of sulfur, sometimes responds.

Improvement in soil porosity and tilth is a more controversial claim. "We have seen improvement in soil quality due to gypsum additions, although this work is not yet published," Dick says.

For those unsure whether to apply gypsum to improve overall soil quality, Dick recommends treating several small areas with 1,000 lb. to 2,000 lb. per acre every year or every other year for two or three years. "If benefits are not obvious, I would no longer use these higher rates, at least until we have more data," he says.

In Wisconsin trials, FGD gypsum produced an 18% yield bump in first-cutting alfalfa in the seeding year. But this difference was not repeated at second cutting, and total tonnage for the year was not statistically different, Wolkowski says.

The research raises an intriguing possibility. Two tons per acre of FGD reduced dissolved reactive phosphorus from the surface of soils 30 days after application. The reduction was highly significant at one site and nearing significance at a second site. That suggests FGD could be used to reduce phosphorus runoff on fields.

"While these data are promising, no recommendation for FGD gypsum can be made beyond its proven benefit as a calcium and sulfur source for plants," Wolkowski says.

A note of caution: Due to sulfate toxicity, gypsum can be harmful to ruminants if they consume a kilogram (2.2 lb.) per day for a week or more. Do not allow cattle access to stockpiles of gypsum, and manage loading and spreading equipment to avoid small piles from accumulating in fields where cattle graze.

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