

GYPSUM

Gains Respect



PHOTO: JIM PATRICO



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Does gypsum really work?

Growers are applying gypsum to improve soil structure, porosity and ultimately productivity. But does it work? Companies sell natural gypsum or synthetic gypsum by-products, and the market is growing. However, during the years, university researchers have not really supported the practice because they weren't able to measure results. In August 2012, industry representatives and scientists gathered to address whether soils could be beneficially amended with gypsum. It seems opinions are changing, and acceptance is more widespread.

Gypsum (calcium sulfate) provides both calcium and sulfur. It's 200 times more soluble than limestone and readily moves down through the soil profile. However, gypsum is not a liming agent and can't reduce acidity or alkalinity. It can, however, remediate aluminum toxicity when soil pH drops below 5.

Calcium is an important nutrient in its own right, and plants need plenty of it. As a cation with a 2+

charge, calcium helps flocculate soil particles resulting in better structure by aggregating soil particles together in naturally stable clumps.

While calcium is the master of flocculating soil particles, sodium is the master at deflocculating (dispersing) soil particles. And sulfate is an important nutrient for plants and soil organisms, especially with less atmospheric deposition, and there is a greater need to supplement with commercial forms.

Researchers in Wisconsin report gypsum has a greater effect (improving porosity) on soils high in clay or poorly structured but didn't seem to affect loam soils. USDA research is beginning to confirm gypsum can curb erosion, improve infiltration, decrease runoff and enable soils to retain more phosphorus.

Soils erode easily or crust when soil particles aren't aggregated. Poorly flocculated soil has less porosity. That results in less infiltration, more runoff and greater risk of waterlogging. And the calcium naturally displaces sodium, so it is great at remediating sodic soils. The end result is an improvement in soil health, crop rooting and yield productivity.

While scientists are beginning to recognize the value of gypsum, they remain uncertain whether the effect is from a change in physical structure because of more calcium and sulfur. However, many farmers are doing their own tests and making their own observations.

I run a small farm in northeast Nebraska with high clay soils with tight and dense structure, and I have used gypsum products. I now see a change in soil tilth and a more porous and productive soil. I am a believer. However, my decision to use it—and how frequently—is still an economic one.

Nick Miller, from Oconomowoc, a speaker at the Wisconsin conference, reported his soybean yield hit 65 bushels the first year after using gypsum, up 20 bushels from his 10-year average. And producer Jack Maloney from Indiana told the audience gypsum was critical for drainage.

Gypsum is not a magic bullet, but as part of your soil-management system, it can be an important addition.

The information provided is general only and should not be taken as a professional recommendation.

If you have a question, e-mail Dr. Daniel Davidson at askdrdan@telventdtn.com