

Gypsum Gains Ground

This mineral improves soil tilth, water permeability and nitrogen uptake **BY RHONDA BROOKS**



PHOTO: PAM SMITH

Effingham Equity, a large independent cooperative, spreads gypsum on the Howard Buffet Foundation farm near Decatur, Ill.

What do coal-fired power plants that generate electricity have in common with an increasing number of U.S. corn and soybean farms? They both benefit from the use of gypsum.

Farmers use the naturally occurring mineral to improve soil tilth, water infiltration and nitrogen uptake in their fields. According to the American Coal Ash Association, a utility industry group, farmers used 279,000 tons of gypsum in 2008. That's more than three times the amount they used in 2002.

"With gypsum, the soil structure becomes more spongelike, so even tight clay soils readily absorb water and move it down through the soil profile, rather than allowing it to pond or run off," says Ron Chamberlain, director of gypsum programs for Beneficial Reuse Management. The company sells a synthetic gypsum product, Gypsoil, for agricultural use.

Synthetic gypsum is a byproduct of fossil-fueled power plants that work to remove sulfur dioxide from flue gases in an effort to curb pollution and comply with clean air regulations. In recent years, synthetic gypsum has gained

ground with farmers because of its availability and lower price.

"Gypsum is a big benefit to corn as the plants' roots are able to work their way deeper into the ground," says Brad Brown, a Center Point, Ind., farmer who uses synthetic gypsum.

Brown says his soybean crops also benefit from gypsum.

"We are seeing a reduction in mold problems because the water is able to move into the soil," he says.

Purdue University research indicates that gypsum also offsets the impact of aluminum toxicity in low pH soils, helps curb phosphorus runoff and increases iron uptake by reducing the effects of bicarbonates.

Some seed companies are conducting field research to determine whether the soil benefits from gypsum also support increased crop yields. To date, the data shows mixed results.

Brown has used gypsum for eight years, and the soil quality benefits have steadily improved over time. A side payoff, he notes, is that his fields containing gypsum are easier to harvest in wet conditions.

Using a lime spreader, Brown

applies 1 ton of gypsum per acre to select fields postharvest. The gypsum he purchases from a local power plant contains 16% sulfur and 22% calcium. The moisture content is 6%.

"It has the consistency of baking soda," he says.

Cost and availability. Brown pays between \$9 and \$14 per ton. To keep costs down, he loads and transports the gypsum to his farm, using a polyurethane liner in the semi to help contain the product.

Because the country remains reliant on coal-fired plants, farmers can expect to have access to a steady supply of gypsum in the years ahead. The federal government encourages farmers' use of synthetic gypsum to minimize build-up of the product around plants. Several environmental groups are at odds with this decision.

"The power plants used to just throw away the gypsum," Brown says. "Now that we know it's useful to our soils, it can be a good deal for everyone." 

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