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Indiana NRCS' new conservation practice standard for gypsum opens door for financial assistance

June 18, 2015, Chicago, IL... Indiana farmers wishing to use gypsum to improve soil quality as part of on-farm conservation programs now have access to technical information and possible financial assistance through their local Natural Resources Conservation Service (NRCS) office.

Indiana's state NRCS technical staff recently adopted an interim practice standard providing guidelines for how gypsum can be incorporated as part of various conservation programs. In fiscal year 2015, Indiana is offering payments for the use of Indiana's gypsum standard through the Environmental Quality Incentives Program (EQIP) in the Western Lake Erie Basin (through Great Lakes Restoration Initiative funding and in the new Regional Conservation Partnership Program project); in Indiana's National Water Quality Initiative watersheds and in the Big Pine and Little Wea Mississippi River Basin Healthy Watersheds Initiative watersheds.

Ohio's NRCS state office has also adopted an interim standard on a trial basis while a national standard is being developed.

Many Indiana farmers have experimented with gypsum to increase water infiltration, decrease erosion, expand rooting and reduce nutrient losses.

Greg Lake, a farmer in Woodburn, IN, and District Director for the Allen County Soil and Water Conservation District, has used gypsum for approximately ten years to improve the high clay soils that are common in the Western Lake Erie Basin and to eliminate crusting and sealing. "We are trying to improve water movement as well as soil quality," says Lake.

Lake says gypsum is effective in driving magnesium levels down and calcium levels up, which is good for improving soil structural conditions. “If you have soil test results that clearly show calcium and magnesium are out of balance, then gypsum is a good option,” he says.

Agronomist Greg Kneubuhler has seen similar results. “We have used gypsum for years for soil structural management and have seen better water infiltration and a reduction in sedimentation in runoff. That keeps phosphorus in fields,” says Kneubuhler, an independent agronomist and owner of G & K Concepts, Inc. based in Harlan, IN, with clients in northern Indiana and northwest Ohio. “This all translates into a more efficient system which leads to better crop yields.”

Researchers at The Ohio State University have studied gypsum’s impact on water quality. In a study at multiple commercial sites, the Ohio researchers are demonstrating gypsum reduces soluble phosphorus concentrations in tile water runoff. In the first two years of the ongoing study, farm fields treated with gypsum had an average 55-percent reduction in soluble phosphorus concentrations based on tests of water samples collected from the fields’ drainage tiles.¹

How gypsum helps

Gypsum ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$) contains about 20 percent calcium and 16 percent sulfur in sulfate form on a dry matter basis, however nutrient values vary depending on the specific source of the product. Beyond providing valuable nutrients, soil scientists have observed gypsum can improve the physical properties of certain soils, particularly those with high clay content. The calcium in gypsum helps to build soil aggregates and create pore spaces within the soil profile.²

“Gypsum alters soil chemistry,” notes Ron Chamberlain, lead agronomist and director of research for the GYPSOIL division of Beneficial Reuse Management. GYPSOIL sells gypsum to farmers in 21 states in the Midwest, Mid-South and Southeast. “The sulfate in gypsum binds with excess magnesium in the soil to form soluble Epson salts that are flushed lower into the soil profile. The magnesium is then replaced by the gypsum’s calcium which improves water holding capacity, root development and soil structure.

“Good soil structure helps prevent compaction and problems with runoff, ponding and erosion,” Chamberlain says.

In addition to soil amendment benefits, gypsum also supplies valuable nutrients for crops. Kneubuhler says that in particular sulfur is important because it is often deficient in background soils. “From a nutrient standpoint, gypsum is a very good sulfur source,” says Kneubuhler.

But Lake reminds producers that conservation must be the underlying goal to qualify for financial incentives.

Practice code details

Indiana's new provisional practice standard is spelled out in a document called, "Amending Soil Properties with Gypsiferous Products (Code 801)" and an Agronomy Technical Note with criteria for gypsum rates, site eligibility and other technical measures. Both are available online in Section IV at Indiana NRCS's Field Office Technical Guide.

The code lists three distinct conservation purposes for gypsum applications, including:

- Improve soil physical/chemical properties to reduce soil erosion and improve infiltration;
- Reduce dissolved phosphorus concentrations in surface runoff and subsurface drainage;
- Reduce the potential for pathogen transport from areas of manure and biosolids application.

"Soil test values of calcium, magnesium, cation exchange capacity, and other parameters dictate the site eligibility and suitability," says Shannon Zezula, Indiana NRCS state resource conservationist. "The Indiana gypsum technical note provides details about recommended application timing, application rates and other management strategies."

Kneubuhler emphasizes the importance of managing gypsum applications by performing routine soil tests to assess nutrient values and by obtaining input from an experienced agronomy advisor.

Payment schedules

The new Indiana provisional practice standard spells out NRCS financial assistance options for gypsum applications in EQIP projects. "Our payment to participants in EQIP is \$28/acre, which is based off of a typical application rate of about one ton/acre," says Zezula.

For more information and links to the new Indiana gypsum code and technical information, visit www.gypsoil.com/conservation or contact your local NRCS office.

GYP SOIL is a division and tradename of Beneficial Reuse Management LLC. Its mission is to make a positive impact in its customers' soil and crops while conserving natural resources and protecting the environment. GYP SOIL identifies gypsum supplies, assists in meeting regulatory compliance, helps growers understand the agronomics and application methods in using gypsum, and develops cost-effective distribution and transportation networks. GYP SOIL brand gypsum is distributed to crop growers in the Midwest, Delta and Southeast. www.gypsoil.com.

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References

1 Knebusch, 2014. Gypsum Spread on Farms Could Help Keep Water Clean, Not Green, The Ohio State University College of Food, Agricultural and Environmental Sciences news release. Link: <http://cfaes.osu.edu/news/articles/gypsum-spread-farms-could-help-keep-water-clean-not-green>

2 Chen, Liming, and Warren Dick. 2011. Gypsum as an Agricultural Amendment. Extension Bulletin 945. The Ohio State University. Columbus, OH.



Ron Chamberlain,
GYPSOIL Lead Agronomist and Director of Research



Greg Kneubuhler, an independent agronomist and owner of G & K Concepts, Inc., has recommended gypsum for soil structural management and to improve water infiltration and sedimentation losses in runoff.



Greg Lake, Farmer and District Director for the Allen County Soil and Water Conservation District, Woodburn, IN



Gypsum can be applied with spreaders designed to apply bulk materials.

For high resolution photos please visit
Gypsoil.com/news-and-events/media-room/photo-gallery.