



FOR IMMEDIATE RELEASE

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

July 27, 2015, Chicago, IL... Ohio and Indiana farmers wishing to use gypsum to improve soil quality now have access to technical information and possible financial assistance through their local Natural Resources Conservation Service (NRCS) office.

Both Ohio and Indiana NRCS technical staff recently adopted interim practice standards providing guidelines for how gypsum can be incorporated as part of various conservation programs including the Environmental Quality Incentives Program (EQIP). The new standards are set up on a trial basis while a national standard is being developed.

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

Ohio farmer Dave Brandt set up a trial two years ago to test gypsum's impact on soil quality at his Carroll, OH, no-till operation. At a field day Brandt and his family held this past April, Brandt told farm visitors, "Water infiltrated into the soil better where we applied the gypsum two years earlier."

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.”

Todd Hesterman, a farmer and certified crop advisor in Napoleon, OH, has used gypsum on his own farm and has made recommendations for gypsum to other growers as an independent agronomist working with Nester Ag.

Hesterman says he’s seen better water infiltration, especially on lakebed soils where crusting and ponding are problems due to high magnesium and low calcium levels. “If pH is in line and the magnesium base saturation level is high, gypsum can be a great way to counter that and get sulfur into the soil as well,” Hesterman explains.

Joe Nester, a Bryan, OH, based agronomist who owns Nester Ag, has seen similar results on clay-based soils across the Western Lake Erie Basin, as well as in the glacial till soils that expand into northeast Indiana and Michigan.

“We use gypsum in situations where soils are carrying high levels of magnesium, an element that can make clays tight and can antagonize infiltration rates,” Nester explains. “Water infiltration is an extremely important component of healthy soils. Too much saturation for too long can add length to the duration of stress on our crops.”

Researchers at 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, Delta and Southeast. “The sulfate in gypsum binds with excess magnesium in the soil to form soluble Epsom 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

Ohio and Indiana’s new interim practice standards cover three basic conservation purposes for gypsum applications, including:

- Improve soil health by increasing infiltration and improving physical/chemical properties of soil;
- Reduce dissolved phosphorus concentrations in surface runoff and subsurface drainage;
- Improve water quality by reducing the potential for pathogens transport and other contaminant transport from areas of manure and biosolids application.

The Ohio practice standard also addresses aluminum toxicity and stipulates qualified gypsum applications must be used to alter the physical or chemical characteristics of soil to help achieve one of the purposes. The practice does not apply to soils with cation exchange capacity (CEC) of less than five, soils with pH of less than 5.8, soils with extractable magnesium less than 200 lbs/acre or soils used for organic production.

For Indiana, “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. An Indiana 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

In addition to technical information, the new standard spells out NRCS financial assistance options for gypsum applications. In Ohio, approved growers are eligible to apply to receive approximately \$21 to \$36 per acre depending on the application rate. Minorities and veterans are eligible for additional incentives.

For Indiana growers, 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 about using gypsum as part of on-farm conservation programs, visit your local Ohio or Indiana NRCS office or find links to NRCS documents at www.gypsoil.com/conservation.

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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.

GYPSOIL 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. GYPSOIL 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. GYPSOIL brand gypsum is distributed to crop growers in the Midwest, Delta and Southeast. www.gypsoil.com.

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Joe Nester, Nester Ag, Bryan, OH



Nester Ag intern Brad Nester takes tile water sample.



Ron Chamberlain,
GYPSOIL Lead Agronomist and Director of Research



Todd Hesterman, farmer and certified crop advisor, Napoleon, OH



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.

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