

## PLANT NUTRIENTS

**AdvanSix Sulf-N® Ammonium Sulfate****Is Gypsum a Good Source of Sulfur?**

There's plenty of talk in the field about gypsum, and with supplies of flue gas desulfurization (FGS) gypsum doubling between 2004 and 2010 – and expected to double again by the end of the decade – we can expect to hear more. With a sulfur content averaging 18 percent and a calcium content of 23 percent, gypsum is often positioned against both calcium and sulfur fertilizers in the marketplace.

However, there's a lot of misunderstanding surrounding gypsum, notes Mercedes Gearhart, Senior Agronomist for AdvanSix. Knowing what gypsum can and can't do is extremely important when building a fertilizer program.

**Low Solubility**

It's vital to understand that gypsum – calcium sulfate – has a relatively low solubility. As a result, particle size is directly related to its plant-availability. While a fine particle size is desirable from the point of view of effectiveness within the season, a dusty product is not applicator-friendly. Up front, ordinary gypsum may appear to be cost-effective, Gearhart points out, but when growers and applicators factor in the time they spend cleaning gypsum-caked machinery when they could be doing something more profitable, the perceived cost savings quickly erode.

**Not Created Equal**

Though flue gas desulfurization has become the most common process for manufacturing gypsum, it can also be mined, recycled from sheetrock, or created as a byproduct of the citric acid manufacturing process.

Because the sources can vary so widely, the quality, nutrient analysis and form of calcium of gypsum can be unpredictable.

A University of Arizona Extension bulletin points out, “Regardless of the form of gypsum used, it is important that the quality of the gypsum be determined by a reputable laboratory. (Note: knowing the calcium content of gypsum is not sufficient, as calcium may be present in other forms such as lime, CaCO<sub>3</sub>, which is not an effective calcium source in high pH soils.)”

Unlike lime, which is widely used to raise soil pH, the calcium in gypsum does not neutralize hydrogen ions when added to soil. In fact, a study in North Dakota demonstrated that even at rates of 18 tons per acre, gypsum had no effect on soil pH, says Gearhart. That's what makes gypsum a popular calcium source for acid-loving crops, but puts it into a completely separate category from lime.

Gypsum can be very helpful in sodic soils – soils with high levels of sodium salts, which interfere with proper flocculation, Gerhart points out. Calcium is a great flocculator, and can counteract the “chemical compaction” caused when sodium ions occupy the exchange sites of clay particles and cause them to disperse instead of aggregating into healthy structures.

However, she notes, there aren't that many areas in the U.S. with the arid conditions and sodic soils that put gypsum to its best use. As pointed out by Dr. Douglas Beegle of Pennsylvania State University, gypsum would have no effect on physically compacted soils as long as they have been limed anywhere near optimum soil pH.

## Sulf-N® Ammonium Sulfate: Top Sulfur Source

Where sulfur in the profile is low or its availability is not timed to match the crop's needs, ammonium sulfate remains the industry's source of choice.

Sulf-N® ammonium sulfate is a consistent, high-quality source of sulfate sulfur – the form of the nutrient roots take up, says Gearhart. It's soluble and easy to handle, with three available grades that facilitate reliability and flexibility of application, whether applied straight or in a fertilizer blend.

With an analysis of 21-0-0-24S, Sulf-N® ammonium sulfate is also a source of valuable ammonium nitrogen. Both nitrogen and sulfur are integral components of amino acids, the plant's building blocks, working hand-in-hand to deliver yield-boosting benefits, explains Gearhart. A dual supply of nitrogen and sulfur is something gypsum simply can't deliver.

## References

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## Contact AdvanSix

To learn more about the benefits of Sulf-N® Ammonium Sulfate, visit [AdvanSix.com](http://AdvanSix.com) or [SulfN.com](http://SulfN.com) or call: **1-844-890-8949** (toll free, U.S./Can.) **+1-973-526-1800** (international)

**AdvanSix**  
300 Kimball Drive, Suite 101  
Parsippany, NJ 07054



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