

Sulfur Sources and Rate of Release



Overview

A laboratory study was conducted to evaluate the sulfur release rate of several sulfur sources. Sulfur release rates are important because corn and soybeans require an initial release of sulfur followed by a steady supply throughout the growing season to maximize yield.

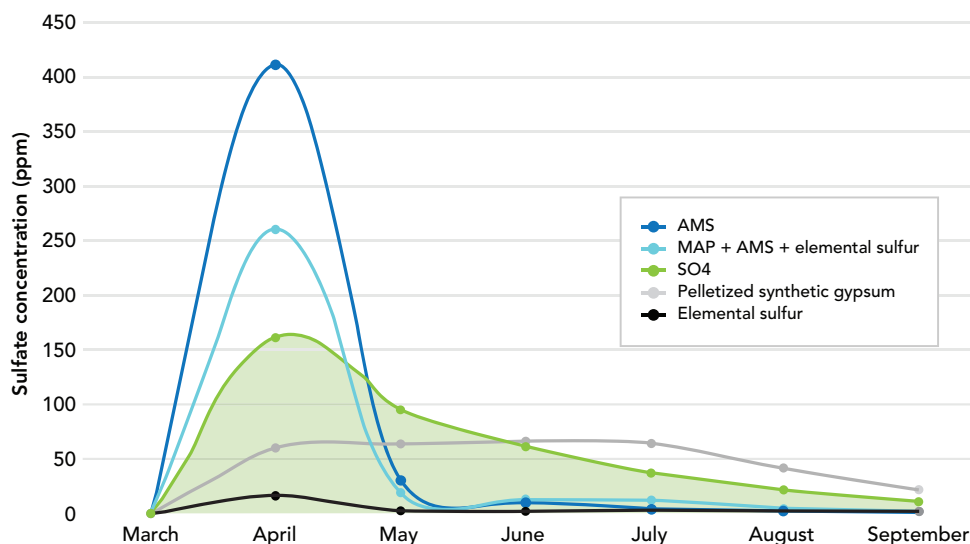
KEY STUDY FINDING

SO₄ supplies the best balance of initial sulfur release and steady supply throughout the growing season.

Background

- Soils were placed into shallow PVC columns.
- Simulated rainfall according to Iowa precipitation averages were used to demonstrate sulfur release by month.
- Three replications.
- Study conducted in the Calcium Products laboratory in 2017 by Andrew Hoiberg, Ph.D., VP of Research and Development.
- Analysis of sulfur release completed by Midwest Laboratories.

Study Results



STUDY FINDINGS

- Ammonium sulfate (AMS) has an extreme initial release of nearly all its sulfur, leaving it susceptible to leaching throughout the remainder of the growing season. AMS is 300x more soluble than SO₄.
- Sulfur release of Ammonium Thiosulfate would be similar to or greater than the sulfur release of AMS.
- Products combining AMS and elemental sulfur provide an initial release from the AMS but very little, if any, further release from the elemental sulfur. The initial released sulfur is then susceptible to leaching in subsequent months.
- Products containing AMS and elemental sulfur also degrade soil quality by acidification due to nutrient transformations.
- Elemental sulfur needs significant time to release its sulfur. Very little sulfur was released from elemental sulfur in this study.
- Synthetic pelletized gypsums include additives and extra binding agents, slowing initial breakdown and preventing full solubility during the season.