



Meeting Sulfur Demand of Modern Corn Hybrids

Many fertilizer application recommendations are based on research performed with older corn hybrids. A study published in 2013 in *Agronomy Journal* noted several significant changes in newer corn genetics that have resulted in major yield increases, including:

- Greater tolerance to stress (including high plant density).
- Ability to stay-green.
- Highly effective root systems.
- Higher source activity to feed growing ears.
- Extended reproductive-stage accumulation of nitrogen (N).

Failure to provide the mid-season nutrients necessary to keep these high-powered hybrids in full production can limit full yield potential.

Key Research Findings

While employed as a postdoctoral researcher at Purdue University, Dr. Ignacio Ciampitti collaborated with Dr. Tony Vyn, Cropping Systems Extension Agronomist, to study the nutrient content of various parts of the corn plant at six stages of growth. Together, they delved deep into the physiology of reproductive-stage nutrient accumulation. Their findings include:

- Corn plants had only accumulated an average of 58% of their sulfur (S) before silking, compared to approximately 71% of their N.
- Yield and whole-plant N content have a linear relationship at low yields. As yield increases, whole-plant N content increases at a greater rate while the relationship between S and biomass remains consistent.
- More than 60% of all S in the plant goes to the seed.
- As in the case of N, both remobilization within the plant and post-flowering uptake from the soil play a role. About 40% of S in the grain comes from the soil rather than from remobilization, compared to 30% for N. This means that S in the plant-available sulfate form must be present in the soil during the early reproductive stages as well as later in the season.

Ciampitti, who is now assistant professor of Crop Production and Cropping Systems at Kansas State University, points out that the ratio between N and S in whole-plant tissue must be maintained between 13:1 and 17:1 for healthy growth.

“If you are in a situation that is conducive to sulfur deficiency—such as low sulfur levels and very low organic carbon—it is much better that you create a balance,” he adds. “If you are applying 150 pounds of nitrogen, you need to think, ‘I need 10 pounds of sulfur.’”

Ensuring balanced nutrition is important.”

Achieving Full-Yield Potential

A side-dress fertilization with ammonium sulfate around the V6 growth stage or later can be a vital tool in helping modern hybrids achieve their yield potential, and a great way to react to springtime conditions.

“You can decide, on-the-go, the yield potential based on the early season,” Ciampitti notes. Early-season nutrient losses or outstanding yield potential could warrant a significant boost.

Late-Season Fertilization on Corn



Photo courtesy Highway Equipment Company, manufacturer of New Leader

Ammonium sulfate delivers the S and N that plants can access during silking and grain fill. In fact:

- Sulfate-S is immediately available to plants, unlike elemental sulfur which must be transformed by soil microbes before it can be taken up by roots.
- Ammonium-N is also immediately available to crops. It can help supplement soil reserves to meet post-silking demands or make up for springtime losses from nitrate leaching or denitrification.

Today’s corn hybrids are more demanding, requiring nutrients for many more weeks than older ones. However, high-clearance equipment that is also more nimble and accurate than ever before allows farmers to deliver vital N and S to meet their late-season crop needs.

Useful Resources

View a [free webinar](#) replay to learn about the effectiveness of ammonium sulfate versus the use of new granular sulfur fertilizers used in crop production. You can also [visit this page](#) to learn more about the use of Sulf-N® ammonium sulfate in corn, or contact [Mercedes Gearhart](#), Senior Agronomist for AdvanSix.

Contact AdvanSix

To learn more about the benefits of Ammonium Sulfate, visit [Advan6.com](#) or [SulfN.com](#) or call: 1-844-890-8949 (toll free, U.S./Can.) +1-973-526-1800 (international)

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