



Maximize Yields and Sulfur Availability

Match Sulfur Supply to Your Corn Crop's Needs

Corn growers need balanced crop nutrition to maximize a corn crop's yield potential and get the most out of their fertilizer investment. In practice, this requires making all of the required nutrients available to the corn crop at the right time. Sulfur (S) is an important part of your balanced crop nutrition plan. When developing a plan to maximize a sulfur investment, it is important to ask three key questions:

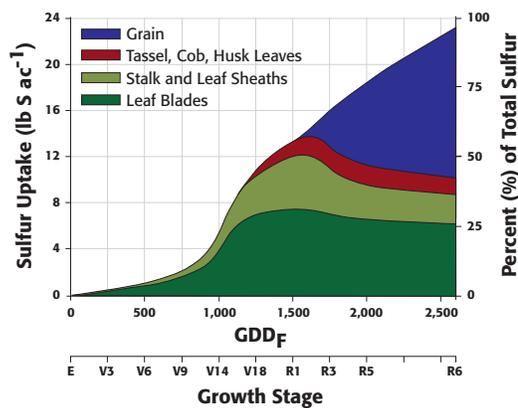
1. How much and when does corn need sulfur?
2. What form of S does the corn crop take up?
3. How can you supply the S in the right form at the right time?

Rate and Timing Needs for Sulfur

Sulfur, a secondary nutrient, is essential for corn growth. Total S uptake of 0.1–0.12 pound per bushel pales in comparison to total nitrogen (N) required; however, a non-limiting supply of S must be available at the right time to maximize yield potential.

When is the right time?

Sulfur uptake occurs over the entire growing season and is relatively constant from planting to maturity. Unlike N, in which 70 to 75 percent is taken up by the flowering stage, only 40 to 50 percent of total S is taken up by this time.



Another factor affecting timing is sulfur's immobility within the plant. The plant is unable to move S from older to newer growth to compensate for low levels that may occur late in the season. Without a steady S supply, late-season deficiencies can significantly impact yield.

Research has shown that the timing of S uptake by corn is very consistent even when different varieties and locations are considered.

Using a fertilizer that supplies sulfur in both its readily available SO_4 form and slowly released elemental sulfur form means that S is available as soon as you put the fertilizer down *and* as the growing season progresses, ensuring a season-long supply of S that matches crop demand.



Determining the Right Form of Sulfur

There are two common forms of S available in fertilizers today: Sulfate (SO_4), and elemental. Sulfate sulfur is the form that corn takes up. Elemental sulfur (ES) must be broken down into SO_4 by soil microbes before it is available for uptake.

Factors that affect how quickly elemental sulfur converts into SO_4 are the particle size of the elemental sulfur and environmental conditions. Warm, moist soils with good aeration result in more elemental sulfur being released, since microbes dominate this process. The oxidation of elemental sulfur into SO_4 means that S is slowly available over time from elemental sulfur sources.

Applying the Right Form of Sulfur at the Right Time

If sulfur must be in SO_4 form, why not just apply S in its available form of SO_4 ? Similar to N, S is subject to loss in the available form. Just as we focus on ways of controlling losses of N, S needs to be protected as well. Applying the total sulfur requirement in the available form at one time does not ensure a steady, season-long supply. Using a fertilizer that supplies S in both its readily available SO_4 form and in a slowly released elemental sulfur form means that S is available as soon as you put the fertilizer down *and* as the growing season progresses, ensuring a season-long supply that matches crop demand.

MicroEssentials® is a proprietary fertilizer from The Mosaic Company that ensures the season-long supply of sulfur that is required by your corn crop will be available by supplying both SO_4 and elemental sulfur in the same granule. Additionally, the elemental sulfur in MicroEssentials is in very small particle sizes to promote quicker release of the elemental sulfur, for season-long availability needed for a growing corn crop.

> FACT

- Although mobile in the soil, sulfur is immobile within the plant, meaning that sulfur cannot be moved from old to new growth late in the season.
- Corn requires sulfur all season long, with more than half of its S requirements needed after flowering.