Sulf-N® Ammonium Sulfate

ADVANCING WHEAT YIELDS

AdvanSix

It's easy to see the visible difference between urea-only and ammonium sulfate plus urea treatments in this photo.

Photo taken June 6, 2007, at the University of Maryland's Salisbury research station.

Discover the Benefits

More fall tillers. Preplant application of ammonium nitrogen (N) favors fall tillering, which leads to larger kernels and more kernels per head versus spring tillering. In a North Carolina State University study, better fall tillering from ammonium sulfate increased winter wheat yields by 13%.

Less nitrogen loss. Nitrogen from ammonium sulfate resists loss from volatilization – a critical factor in no-till systems or where nitrogen is surface applied, especially when wheat follows a high-residue crop like corn. In research with nitrogen tracer material, ammonium sulfate was five times less volatile than urea.

Healthier roots. Ammonium nitrogen improves phosphorus uptake and promotes better root health through suppression of soil-borne diseases like take-all.

Better spring topdress. At the University of Maryland's Poplar Hill Research Farm, topdressing wheat with fertilizer blends or solutions containing ammonium sulfate has consistently improved winter wheat yields by six to 12 bushels per acre on silt and sandy loam soils.

Essential sulfur. Wheat needs one pound of sulfur (S) for every 10 to 15 pounds of nitrogen.When the plant doesn't get enough sulfur, nitrogen efficiency also suffers.

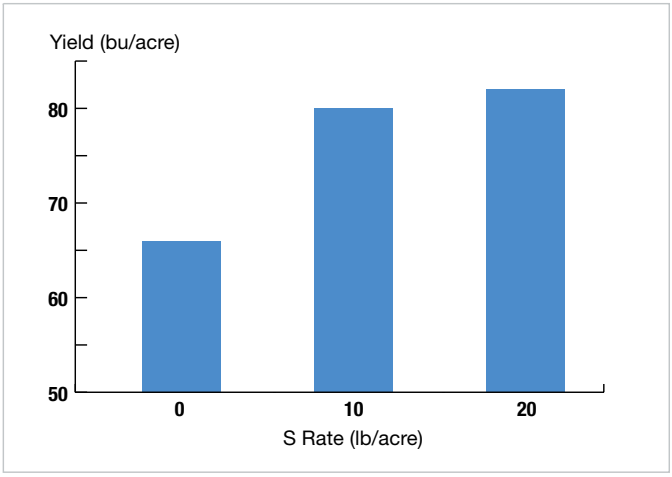
Tissue Tests are Revealing

Sulfur was the most commonly deficient nutrient in tissue tests from eastern Virginia's 2006-2007 winter wheat crop. In North Carolina, 26% of 2006 wheat tissue tests and 18% of 2007 wheat tissue tests showed a need for additional sulfur.

These results are part of a growing trend driven by anti-pollution regulations that have cut sulfur dioxide emissions.

Crop response to sulfur can be very dramatic. In a Missouri trial, 10 pounds of sulfur per acre of ammonium sulfate applied in fall and spring increased winter wheat yields by 30 bushels per acre (70 bu/acre versus 100 bu/acre) compared to no-sulfur treatments. This soil was extremely sulfur deficient. Yield increases of five to 10 bushels are more common where sulfur levels are low to moderate.

Sulf-N® Fall Advantage



Sulfur applied as Sulf-N® ammonium sulfate
Wheat Tech, Missouri, 1999-2001

A Growing Need

Sulfur increases kernel weight and size, grain protein and yield. Higher wheat yields have higher sulfur requirements.

Wheat Yield (bu/acre)	Sulfur Requirement (bu/acre)
60	15
80	20
100	25

Source: IPNI

Wheat is most susceptible to sulfur deficiency when it breaks out of winter dormancy. Deficiency symptoms may be confused with a lack of nitrogen. Both result in lighter green plant tissue or turn yellow in more severe cases. When sulfur is lacking, nitrogen efficiency also suffers.

Ammonium sulfate corrects sulfur deficiency quickly and effectively. Sulfate-S is immediately available for root uptake, even in the cool soil conditions that are common during wheat topdressing season. Elemental-S is not plant available until it converts to sulfate, a process that is delayed by cool soil conditions.

Sulf-N® Spring Advantage

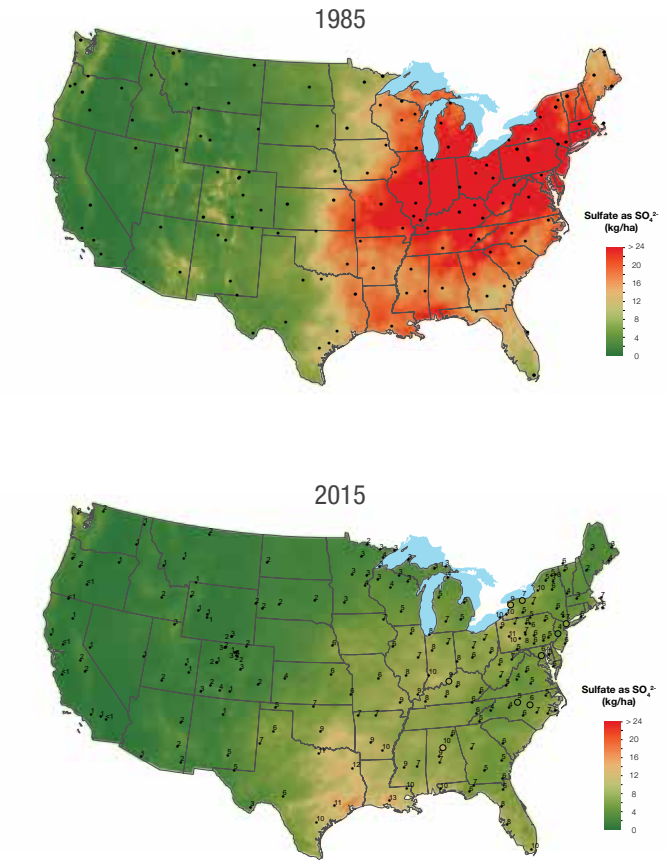
Note that the April 2015 photo was taken a week after Sulf-N® ammonium sulfate fertilization.

Photos courtesy G. Love, NCDA&CS

Changing Sulfur Trends

Air pollution control has drastically reduced the amount of “free” sulfur originating from industrial emissions and eventually landing in growers’ fields, a major reason why more sites and soil types are responding to sulfur fertilization.

Sulfate Ion Wet Depositions, 1985 versus 2015



National Atmospheric Deposition Program/National Trends Network
nadp.isws.illinois.edu

Research Highlights

Independent research supports application of ammonium sulfate, applied straight, in urea blends or mixed with a urea-ammonium nitrate (UAN) solution.

Alabama

Ammonium sulfate improved winter wheat yield by 23 percent.

Maryland

Adding ammonium sulfate to urea and UAN for topdress application has consistently improved winter wheat yields by six to 12 bushels per acre.

Pennsylvania

Topdressing Sulf-N® ammonium sulfate increased winter wheat yield by seven bushels per acre.

Missouri

Twenty pounds of sulfur increased yield by five bushels per acre at one site and eight bushels per acre at another site.

Ohio

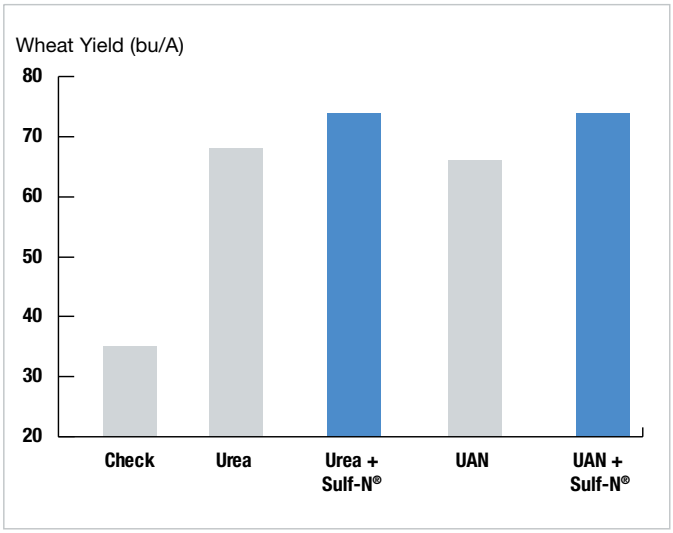
Ammonium sulfate improved winter wheat yields by four bushels per acre over urea and seven bushels per acre over a UAN solution.

Sulfur availability is critical to bread wheat cultivars for optimum bread loaf volume.

Increasing Nitrogen Efficiency

If it seems like your nitrogen dollars are evaporating into thin air, you may be right if urea is your primary nitrogen source. Urea – including the urea portion of a UAN solution – is susceptible to volatilization loss when it's not incorporated into the soil by rainfall or tillage. Sulf-N® ammonium sulfate is different. It's naturally resistant to volatilization loss and improves nitrogen efficiency in direct applications, blends with urea, or tank mixes with UAN solution.

Sulf-N® Ammonium Sulfate Blends Increase Nitrogen Efficiency

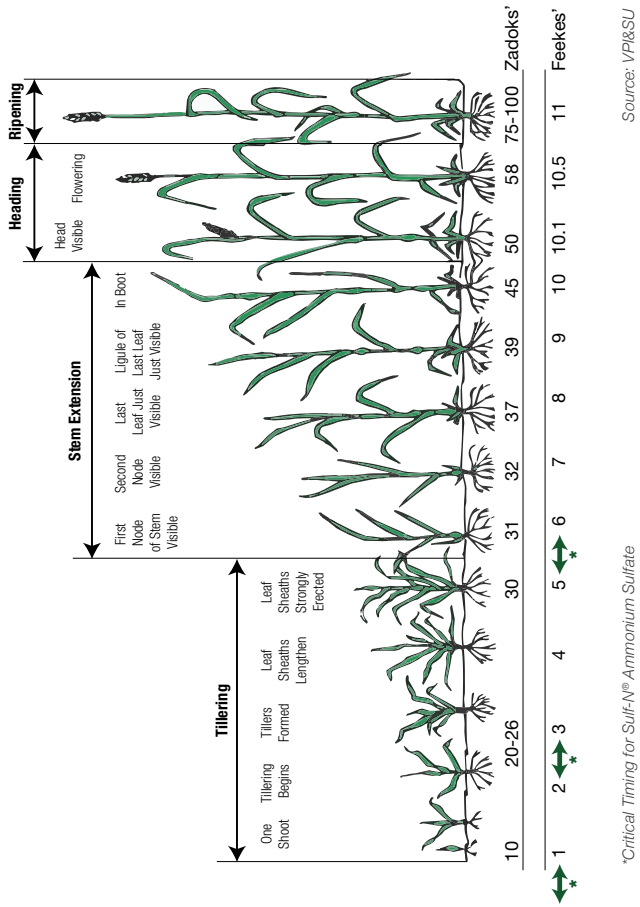


Sulf-N® ammonium sulfate blends outperform straight urea or UAN.

Sandy loam soil, 100 lbs N/acre (80 lb at Feekes' GS 2-3), University of Maryland, 1995-98

Winter Wheat Growth Stages

For maximum economic yields, apply Sulf-N® ammonium sulfate at these growth stages.



PARTNER

Contact AdvanSix

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

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