An aerial photograph of a large agricultural field divided into numerous rectangular plots. The plots show varying stages of crop growth, with some appearing as vibrant green and others as golden-brown. A tractor is visible in the upper left quadrant, and a farm building with a parking lot is located in the middle right section. The overall scene depicts a well-maintained and productive farming operation.

Sulf-N<sup>®</sup> Ammonium Sulfate

ADVANCING,  
FIELD AFTER FIELD

ADVANSix

## Ammonium Sulfate Advantage

In field after field, the yield advantage goes to fertilizer programs that include AdvanSix Sulf-N® ammonium sulfate fertilizers.

Sulf-N® fertilizers satisfy the growing need for sulfur (S) and supply ammonium, a more efficient nitrogen (N) form that is immediately available for root uptake and resists loss from leaching, volatilization and denitrification.

## A Better Nitrogen Form

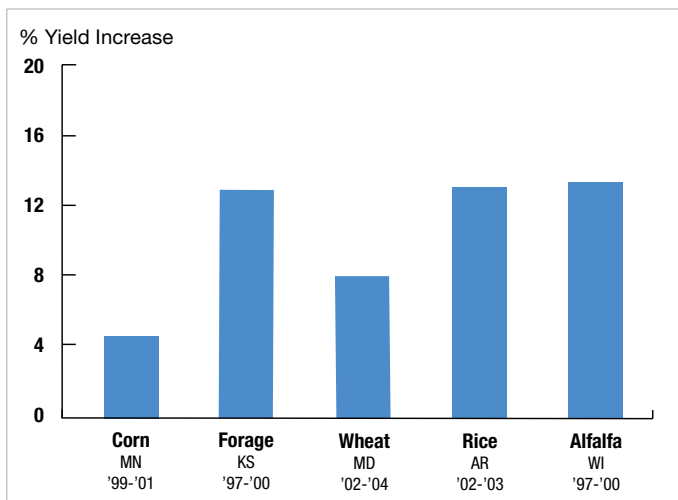
Nitrogen enhances yield more than any other fertilizer nutrient, so why not use the best form for your crop? Ammonium-rich Sulf-N® nitrogen is immediately available for root uptake while resisting the three major pathways of nitrogen loss.

**Less leachable.** Positively charged ammonium ions bind to negatively charged soil ions, making Sulf-N® fertilizers less susceptible to leaching.

**Resists volatilization.** Urea-based fertilizers should be incorporated to minimize volatilization loss, but is not necessary with Sulf-N® fertilizers on the majority of soil types.

**Not affected by denitrification.** The denitrification process that can cause nitrate loss in poorly drained soils does not affect the availability of ammonium.

## AdvanSix Sulf-N® Fertilizers Deliver Real Agronomic Value



\* Returns based on yield gains in university trials.



Even when field conditions may cause other nitrogen sources to fail, Sulf-N® fertilizers resist nitrogen loss, optimize root uptake, and support maximum yield potential.

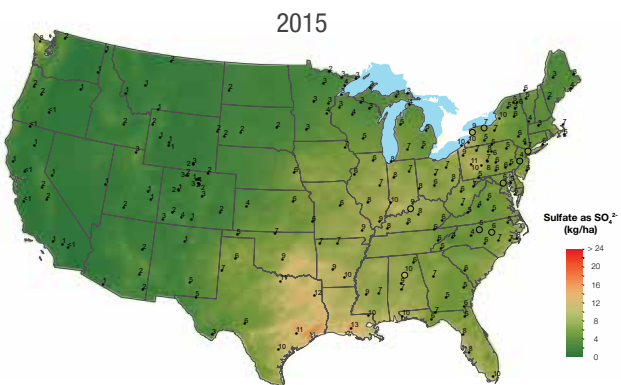
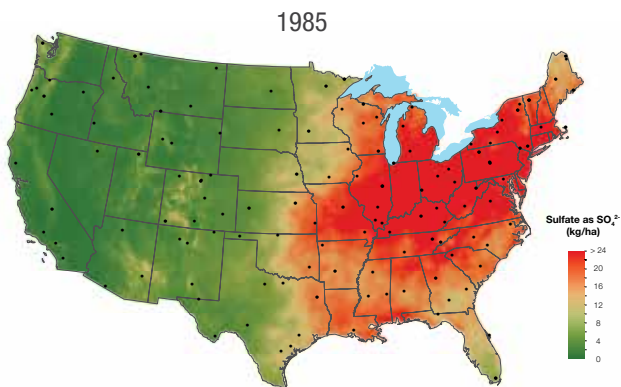
### Did You Know?

- Crop roots take up nitrogen as nitrate and ammonium, and many crops actually prefer a combination of the two.
- Sulf-N® ammonium nitrogen is immediately available for root uptake.
- Sulf-N® fertilizers can be surface-applied on most soils with minimal risk of volatilization loss – even when broadcast in reduced tillage systems or topdressed on grasses.
- Sulf-N® nitrogen can improve uptake of phosphorus and key micronutrients, often performing as well as or better than more expensive phosphate blends in corn starter on high P soils.
- Sulf-N® ammonium sulfate supplies sulfate sulfur – the only form immediately available for root uptake.
- When sulfur is lacking, combined applications of nitrogen and sulfur promote maximum yields and reduce the accumulation of nitrates in the soil profile, a win-win for the grower and the environment.

## Changing Sulfur Trends

Air pollution control has dramatically reduced the amount of “free” sulfur available to crops throughout the eastern half of the United States and Canada. This “free” sulfur originates from industrial emissions and eventually lands in growers’ fields, mostly as sulfates (see deposition maps below). This is a major reason why more sites and soil types are responding to sulfur fertilization.

## Sulfate Ion Wet Depositions, 1985 versus 2015

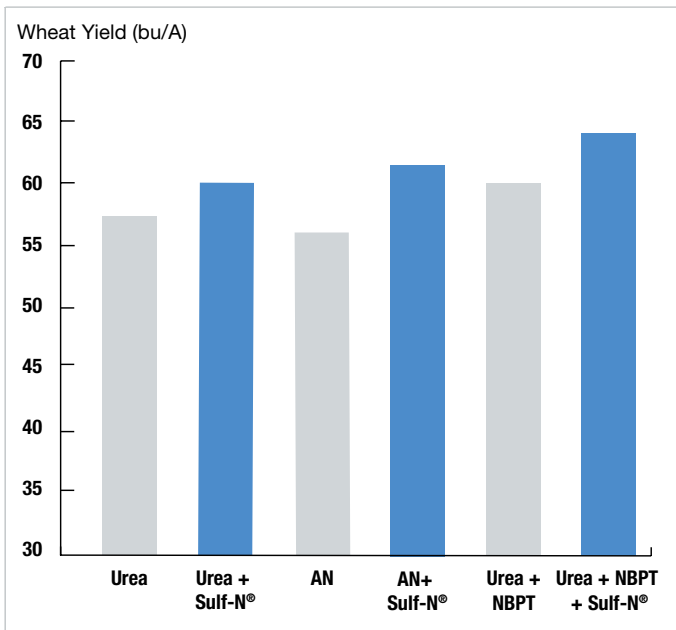


National Atmospheric Deposition Program/National Trends Network  
[nadp.isws.illinois.edu](http://nadp.isws.illinois.edu)

## Nutrient Uptake Highlights

|                   |            | Total Nutrient Uptake (lb/A) |                               |                  |    |
|-------------------|------------|------------------------------|-------------------------------|------------------|----|
| Crop              | Yield      | N                            | P <sub>2</sub> O <sub>5</sub> | K <sub>2</sub> O | S  |
| Alfalfa           | 10 tons/A  | 560                          | 150                           | 600              | 50 |
| Barley - Spring   | 120 bu/A   | 180                          | 66                            | 180              | 24 |
| Beets - Sugar     | 25 tons/A  | 212                          | 33                            | 458              | 37 |
| Bermudagrass      | 8 tons/A   | 368                          | 96                            | 400              | 44 |
| Birdsfoot Trefoil | 4 tons/A   | 192                          | 84                            | 272              | 20 |
| Cabbage           | 700 cwt/A  | 270                          | 63                            | 249              | 64 |
| Canola            | 35 bu/A    | 105                          | 46                            | 83               | 21 |
| Clover - Grass    | 6 tons/A   | 300                          | 90                            | 360              | 30 |
| Corn              | 200 bu/A   | 266                          | 114                           | 266              | 33 |
| Corn Silage       | 32 tons/A  | 266                          | 114                           | 266              | 33 |
| Cotton            | 1,500 lb/A | 240                          | 72                            | 210              | 36 |
| Fescue            | 3.5 tons/A | 135                          | 65                            | 185              | 14 |
| Oats              | 100 bu/A   | 115                          | 40                            | 145              | 19 |
| Onions            | 600 cwt/A  | 180                          | 80                            | 160              | 37 |
| Oranges           | 540 cwt/A  | 265                          | 55                            | 330              | 28 |
| Orchardgrass      | 6 tons/A   | 300                          | 100                           | 375              | 25 |
| Peanuts           | 4,000 lb/A | 240                          | 39                            | 185              | 21 |
| Potatoes - Irish  | 500 cwt/A  | 269                          | 90                            | 546              | 22 |
| Rice              | 7,000 lb/A | 112                          | 60                            | 168              | 12 |
| Sorghum - Grain   | 8,000 lb/A | 238                          | 84                            | 240              | 38 |
| Soybeans          | 60 bu/A    | 315                          | 58                            | 205              | 20 |
| Sunflower         | 3,000 lb/A | 151                          | 60                            | 110              | 14 |
| Sweet Corn        | 90 cwt/A   | 140                          | 47                            | 136              | 11 |
| Tobacco - Burley  | 4,000 lb/A | 307                          | 38                            | 330              | 45 |
| Tomatoes          | 40 tons/A  | 232                          | 87                            | 463              | 54 |
| Wheat             | 80 bu/A    | 166                          | 54                            | 184              | 20 |

## AdvanSix Sulf-N® Ammonium Sulfate Blends Improve Wheat Yields



*Silt loam soil; N rate of 80 lb N/A; S blends to supply S needs. All treatment broadcast @ Feekes' GS 3 to 4. Maryland, 2004*



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

## Do Your Crops Need Sulfur?

Sulfur deficiencies are now occurring on more soil types. Your fields could benefit from AdvanSix Sulf-N® ammonium sulfate.

- **Do you plant row crops early?**  
Cool soil temperatures inhibit sulfur release from organic matter.
- **Are you farming with less tillage?**  
No-till, ridge-till and other reduced tillage systems delay soil warm up and interfere with sulfur release from organic matter.
- **Do you fertilize with manure?**  
Without organic matter from manure, potential deficiencies are more likely. Check fields farthest from your barns.
- **Are you seeing low sulfur levels in animal feed rations?**  
This could be an indicator of sulfur deficiency in fields where silage is grown.
- **Have you noticed that crops are slow to green up after emergence – or some parts of your fields are lighter than others?**  
Sulfur availability tends to vary within fields. Crops may “outgrow” early-season deficiency, but usually not before yields have been affected.
- **Are your soils eroded?**  
Eroded soils have less organic matter and less sulfur.
- **Are your soils sandy or well-drained?**  
Low organic matter levels contribute minimal amounts of S and above-average rainfall can cause significant leaching.
- **Are your fields getting less sulfur from the atmosphere?**  
Soils that used to get enough sulfur from industrial emissions are now at greater risk of deficiency due to cleaner-burning fuels.
- **How deep is your crop’s rooting system?**  
Shallow-rooted crops may not get enough early-season sulfur and may be slow to green-up when topdressed with straight nitrogen.



Dramatic response to sulfur application on alfalfa.

*Photo taken May 23, 2006, in northeast Iowa. Photo courtesy: Brian Lang Iowa State University Extension*



Sulfur works hand-in-hand with nitrogen to produce protein, boosting both forage yield and quality.

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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)

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