

PLANT NUTRIENTS

AdvanSix Sulf-N® Ammonium Sulfate**Support Yield-making Tillers***2012 is a great year for early-spring ammonium sulfate in winter wheat.*

A great fall and warm winter are setting the stage for what could be an outstanding 2012 crop. The key right now, says Dr. Ronnie Heiniger of North Carolina State University, is giving tillers the nutrients they need without spurring too much freeze-prone vegetative growth. His suggestion: an early spring dose of ammonium sulfate.

"You'd use ammonium sulfate for what I call a 'primer,'" Heiniger explains. "We need to get some release of nitrogen early. We want to support the plant and keep it from going into a lot of nitrogen stress, but on the other hand, you don't want to stimulate it too much. Ammonium sulfate will give us some nitrogen immediately, yet it will draw out or slow down some of that release, and we'll get sulfur right when we need it."

80% of the Crop

Heiniger says 80 percent of a wheat crop's yield comes from tillers that produce 30 kernels or more per spike, most of which are formed in late fall or winter. This year's crop in the Southeast set plenty of promising tillers, but the potential crop load is already putting a heavy burden on the plants.

"We've had a lot of warm weather, which has stimulated a lot of plant growth, but soil temperatures have been cool, so there's not a lot of root growth," he adds. "Sulfur and nitrogen tend to be lower in the profile, so we're seeing situations where we're just not picking up the sulfur and nitrogen that we need to support the crop."

Cool soil conditions also inhibit the conversion of organic sulfur in the soil to plant-available sulfate-sulfur, notes Mercedes Gearhart, Senior Agronomist for AdvanSix. In the early spring, crops suffer from a one-two punch – many face a shortage of plant-available sulfur in the upper inches of the soil, and their young roots can't yet access any sulfate-sulfur that might be present deeper in the profile, she explains. Applying ammonium sulfate delivers sulfate-sulfur,

which is immediately available for use by the crop regardless of soil temperatures.

Heiniger adds that sulfur is essential for healthy tiller development. "A lack of sulfur will cause the plant to fail to develop tillers, or stunt normal growth," he says.

Heiniger recommends applying 30 pounds of actual N per acre as ammonium sulfate for an early-spring "primer," followed by 120 to 150 pounds of actual N at jointing to support this year's promising crop.

Research backs up his prescription:

- Alabama studies demonstrated a 23-percent yield boost from ammonium sulfate in winter wheat.
- In Maryland, a combination of ammonium sulfate with urea or UAN solution consistently improved winter wheat yields by six to 12 bushels per acre on silt and sandy loam soils.
- Pennsylvania researchers saw a seven bushel-per-acre increase in winter wheat yields from top-dressed ammonium sulfate.
- Twenty pounds of sulfur per acre increased winter wheat yields by five bushels per acre at one site and eight bushels per acre at another in a Missouri study.

Soils Need S Replacement

Maintaining a healthy crop requires balancing nitrogen and sulfur, both of which are vital for producing amino acids, protein and chlorophyll in plants. Wheat needs one pound of sulfur for every 15 pounds of nitrogen, says Gearhart. If sulfur levels fall below that ratio, plants are limited in their ability to use nitrogen, even when it's readily available.

Sulfur is critical to a wheat crop, both from a yield and quality standpoint, Gearhart notes. An 80 bushel-per-acre wheat crop removes 20 pounds of sulfur per acre from the soil in a

single season, she notes. From a quality point of view, flour made from wheat with low sulfur content performs poorly in the bakery, with a short dough development time; hard, inextensible dough; and low bread volume.

In the past, a good portion of that demand was filled by sulfur deposited by windborne emissions from coal-burning power plants and factories. Since the Clean Air Act cleaned up America's smokestack emissions, airborne sulfur deposits have shrunk dramatically, notes Heiniger.

"We're just not getting much sulfur from the atmosphere anymore," he says. "We're taking up a lot of sulfur, but we're not replacing it. We need to use fertilizer now to replace what our crops are taking out. A sulfur program is now an integral part of raising a crop."

"Sulfur is the least-thought-of major nutrient we've got," Heiniger adds. "Often it's overlooked, but you do that at your peril."

Sulf-N®: A Great Source

Ammonium sulfate fertilizer, such as Sulf-N®, is an ideal source of both sulfate-sulfur and ammonium-nitrogen, notes Gearhart, especially whenever weather, management or field conditions favor volatilization loss. In fact, she points out, a University of Arkansas study using tracer material showed nitrogen applied as ammonium sulfate can be five times less volatile than urea when surface-applied without incorporation on a non-calcareous soil.

With the potential of delivering a bin-busting winter wheat crop, this is a great year for seeing the benefits of ammonium sulfate, concludes Heiniger.

"With this weather, it was easy making tillers," he says. "Now our job is to keep from losing them from lack of nutrient support. Getting a shot of sulfur and nitrogen in those situations is always important."

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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