

Corn May Be Short Of **Sulfur**

Free airborne supplies have dwindled

by Ron Brunoehler

The EPA crackdown on sulfur dioxide emissions by heavy industry and motor vehicles is a mixed bag for crop farmers. It's good for their health, but not very good for their wallets.

For many years, free airborne sulfur filled much of crops' need for this essential nutrient. Sulfur shortages were uncommon except on sandy soils. That's changing.

Between 1988 and '97, air concentrations of sulfur dioxide decreased by nearly 40% nationwide. Sulfur emissions declined 12% during that same period. And more reductions are coming as air-quality standards tighten further.

"Farmers should be aware of the potential impact on their crops," points out Donald Messick, agronomist with The Sulfur Institute. "This is especially true for crops with high sulfur needs on soils prone to sulfur deficiency."

Sulfur deficiency most often is found in sandy, low-organic-matter soils. But it can be caused in other soils by compaction that prevents roots from reaching sulfur in the soil, by heavy rains or irrigation that wash sulfur below the root zone, and by

cool soils that make sulfur less available.

Agronomists point out that farmers used to routinely apply fertilizers containing sulfur. But today's high-analysis products have little or no sulfur. That, coupled with higher yields, can reduce sulfur reserves in the soil.

Corn, alfalfa and wheat have substantial sulfur requirements and are among the crops most likely to be affected by a deficiency. Soybeans are less likely to show a sulfur shortage.

The signs of sulfur deficiency in corn include stunted growth and yellow-tinged younger leaves, says University of Illinois soil scientist Bob Hoelt. They are similar to nitrogen deficiency symptoms. "But sulfur deficiency occurs on new leaves, while nitrogen deficiency shows up on older leaves," Hoelt explains.

Agronomists say plant tissue analysis is better than soil testing for diagnosing sulfur deficiency. In corn, the sulfur content of leaves should be 0.15% or above, says Hoelt.

He recommends applying sulfur, where needed, at 15-25 lbs/acre for corn. "In responsive soils, sulfur can increase corn yields by 10-15 bu/acre," he reports.

In the Midwest, sulfur generally sells at about 25¢/lb. Applied at 15 lbs/acre, that's a cost of \$3.75/acre. If it increases yield by 10 bu/acre, there is a substantial payback even with \$2/bu corn.

Independent crop consultant Dave Harms, whose Crop Pro-Tech firm tests soils and plants in Iowa, Illinois and Indiana, says he's not yet seen a general need for sulfur fertilizer on corn or soybeans.

"One exception is on sandy soils that have produced high corn yields," says Harms. "It also can occur on heavier soils that consistently produce 180-plus bu/acre yields. Eventually, as there is less sulfur available in the atmosphere, I believe we'll need to monitor for it more closely." ♦



PHOTO: JOE ZEBLENA, CLEMSON UNIVERSITY

Stunted growth and yellow-tinged younger leaves are signs of sulfur deficiency, as the corn at right in photo exhibits.