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K-Mag Beneficial on Southeastern Soils

For most farmers south of the Mason-Dixon line, scorching summers, red fire ants and sandy soils are as sure as death and taxes.

While Mother Nature and organized ant colonies remain elusive forces, Southeastern growers can do something about their nutrient-deficient soils. Sandy, low organic-matter soils are susceptible to nutrient leaching and often are deficient in both magnesium and sulfur - essential nutrients in plant nutrition.

"With more emphasis on higher crop yields, growers in the Southeast should take a closer look at the need for magnesium and sulfur on their soils," says Dr. Cliff Snyder, Southeast Director of the Potash & Phosphate Institute, (PPI).

Secondary nutrients, prime importance
Although sulfur and magnesium are referred to as secondary nutrients, they play an important role in plant nutrition.

"Growers have been intent on minimizing input costs, so unfortunately these secondary nutrients have been frequently neglected," Snyder says. "Farmers need to give as much attention to secondary nutrients as to the major nutrients-nitrogen, phosphorus and potassium.

"On sandy, leachable soils, the best time to replace those elements removed by the growing plants is at or near planting," he says.

Recognize nutrient deficiencies
Magnesium is the central atom in the chlorophyll molecule; it is actively involved in photosynthesis. Magnesium also helps carry phosphorus to the plant tissues.

"Magnesium is an important factor in plant strength," Snyder says. "It helps increase tolerance to dry conditions and enables plants to better withstand stresses from plant pests."

Magnesium deficiency first appears on the older or lower leaves. Because magnesium is a mobile element, the plant will move magnesium from the older leaves to the younger growing leaves as the supply of magnesium in the soil decreases.

"In crops such as corn and sorghum, growers may observe interveinal yellowing-or a striping effect in the leaf blade. In forage grass, it's much more difficult to identify, so tissue analysis will be needed," Snyder says.

Symptoms of magnesium deficiency include:
- Weak stalks with long-branched roots

- Leaves curved upward along edges
- Leaf veins stay green, but loss of green color occurs between veins
- Interveinal chlorosis in the bottom (older) leaves
- Dropping of immature fruit.

Sulfur aids in initial root growth, while promoting seed production and vigorous plant growth. Plants require the sulfate form of sulfur for the development of enzymes and vitamins and for chlorophyll formation. Without sufficient sulfur, legumes cannot fix nitrogen and protein synthesis is impaired.

Sulfur deficiency produces symptoms similar to nitrogen deficiency:
- Stunted leaves and plants
- General yellowing appears in younger leaves first
- Plants develop an overall yellow color

Timely testing
Secondary nutrient deficiencies can decrease plant growth as much as primary nutrient deficiencies. However, growers can't always detect magnesium and sulfur deficiencies just by looking at the crop.

"Soil testing and plant tissue analysis are good tools to help growers determine crop nutrient needs," Snyder says. "Avoid making soil fertility decisions based strictly on visual analysis."

Stalling until visible damage has occurred also makes it more difficult for growers and advisors to determine which nutrient(s) caused the problem.

"As soon as a grower recognizes plants aren't growing properly, it's a good idea to get out there and collect plant tissue samples," he adds.

K-Mag can help
Once growers conduct soil tests to determine nutrient needs, an ideal way to make sure the soil has adequate nutrients is to apply K-Mag.

K-Mag's unique three-in-one combination of 21-22 percent potassium, 10-11 percent magnesium and 21-22 percent sulfur can be used to provide all of a crop's sulfur and magnesium needs and a portion of the potassium need, says Dr. Joe O'Connor, agronomist for IMC Global.

Unlike some magnesium and sulfur sources, K-Mag fertilizer is nearly100 percent water-soluble. However, K-Mag Granular dissolves relatively slowly, thanks to its larger particle size, so it resists the rapid leaching from Southeast soils.

As long as there is enough soil moisture to support crop growth, K-Mag goes to work immediately upon application. "K-Mag's sulfate form of potassium, magnesium and sulfur can be immediately utilized by the crop," O'Connor says.

Look to the future
"If there's a problem this year, it should be diagnosed with plant tissue and soil analysis so that corrective action can take place before the next crop," Snyder suggests.

"It's a struggle to keep our soil fertility levels in the optimum range," he says. "Plants need much more potassium than magnesium, but both nutrients need to be provided to replace amounts removed in harvested crops, and also to build soil fertility levels.

"With the knowledge of the crop yield potential, crop-nutrient uptake demand as well as the soil's fertility and physical characteristics, the proper nutrient rate and timing can be determined to meet crop demands," Snyder says.

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