Sulfur fertilizer boosts winter forage production

A dose of sulfur fertilizer this fall can significantly boost ryegrass production this winter, according to new research at the University of Florida's Range Cattle Research and Education Center at Ona.

For two consecutive years, Dr. Jack Rechcigl has recorded yield increases of 15 to 17 percent when adding sulfur to the N-P-K fertilizer mix for ryegrass.

"We also have seen protein content increase by 3 percentage points, from 12 percent to 15 percent, when using sulfur on ryegrass," says Rechcigl.

Plants need both nitrogen and sulfur to form proteins, he explains. If there's not enough sulfur, then forage crops like ryegrass will produce less volume and lower quality feed.

In addition to ryegrass, Rechcigl has recorded yield and protein increases from sulfur fertilization of bahiagrass, limpograss and Bermudagrass.

"The focus on sulfur is fairly new," says Rechcigl. In the past, many phosphorus fertilizers also contained trace amounts of sulfur – enough to satisfy most crops, he explains. But when fertilizer manufacturers increased the analysis of phosphate fertilizers, they dropped out the sulfur.

Additionally, EPA reports confirm that there is less sulfur coming from industry smokestacks. "As a result, sulfur deficiencies are becoming more pronounced and widespread throughout the world," says Rechcigl.

Coastal Plain soils are especially prone to sulfur deficiencies because rainfall tends to leach sulfur out of the root zone. But sulfur deficiencies are often overlooked because the visual symptoms of sulfur deficiency closely resemble those of nitrogen deficiency. Both cause stunted plant growth and a yellowing of plant tissue, says Rechcigl. In less severe cases of sulfur deficiency, no visual symptoms may be evident at all, but crop yield and quality will still be affected.

"Although it is usually called a secondary nutrient, sulfur should be considered one of the primary nutrients essential for crop growth, right up there with nitrogen, phosphorous, and potassium," says Rechcigl.

In his ryegrass studies, Rechcigl evaluated three rates of sulfur (1, 30, and 60 pounds per acre) using ammonium sulfate (21-0-0-24S) or a blend of ammonium sulfate and ammonium nitrate (33.5-0-0). Plots were also fertilized with nitrogen, phosphorous and potassium.

"Research has demonstrated that 25 pounds per acre of phosphorous should be applied at planting for maximum ryegrass production when the soil tests very low in P," notes Rechcigl. "It is also important to apply approximately 50 pounds per acre of potash if the soil tests low in K."

Soil tests, however, do not provide reliable information about sulfur. Instead, Rechcigl recommends tissue testing for sulfur.

"For grasses, the level of sulfur in the plant tissue should range from 0.25 to 0.5 percent," he says. "If the level of sulfur is less than 0.25 percent, the grass should respond to sulfur fertilization."

Recent studies also indicate that limestone should be applied to the soil when the pH is less than 6.5, says Rechcigl.

"Use domestic limestone if your calcium to magnesium ratio is greater than eight to one," he advises. "If the ratio is less than eight to one, then high cal or dolomitic limestone may be used."

Ryegrass is an excellent source of high quality green grass for winter and early spring grazing, concludes Rechcigl, as long as ranchers give it the lime and fertilizer needed to maximize production.

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