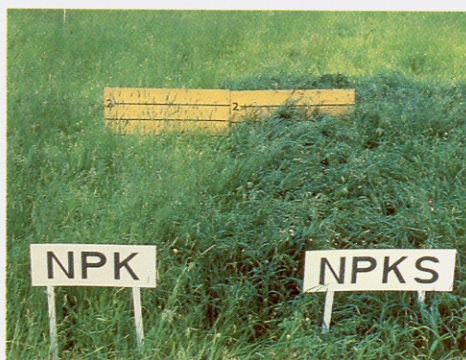


SULPHUR

DO NORTHWEST CROPS GET ENOUGH?



Be Sure it's Sulphur

Sulphur deficiency first appears as a general, inter-veinal yellowing. Plant growth rate and maturity are stunted, and sulphur-deficient plants usually have short, spindly stalks and stems.

Because these symptoms are frequently confused with those of a nitrogen shortage, agronomists generally recommend a soil test, followed by an early-season plant analysis to verify sulphur deficiency. A check plot with a sulphur-containing fertilizer will also help to assess the nutrient's need.

Keep in mind that maximum response to sulphur (S) cannot be attained without adequate quantities of other nutrients in the soil—particularly nitrogen (N). These two nutrients work together to synthesize protein, so a shortage of either N or S can reduce the crop's ability to make good use of the other.

This phenomenon has been demonstrated locally.

- On a low-sulphur silt loam soil in Washington State, nitrogen alone reduced the yield of wheat. When sulphur was added, however, yields were increased at both the 40 and 80-pound rates of nitrogen application.

- In Montana, fertilizing orchardgrass with nitrogen alone reduced crop yield by 23 percent. This decrease likely occurred because the additional nitrogen increased the crop's internal N:S ratio from 34:1 to 53:1.

In adjacent test plots where the same amount of nitrogen was applied with 32 pounds of sulphur, the crop's N:S ratio improved from 34:1 to an optimum 11:1. Crop yield was *more than double* the untreated check and nearly *three times greater* than the plot that had received nitrogen only.

“We're beginning to see a greater frequency of responses to sulphur than we have in the past. And I think we'll see even more as we farm the land more intensively. . .”

—Dr. Jim Bauder, Montana State University



Fertilizing pastures with sulphur can enhance ruminant performance.

The Odds Have Never Been Greater

If you grow crops in the Pacific Northwest, there's a good chance that, sooner or later, you may be faced with a sulphur deficiency.

Unless you take steps *now* to prevent the problem.

Once limited to highly weathered and coarse-textured soils, sulphur deficiency is now being detected throughout the region—often in fields where it has not been seen previously.

"In an area like the Pacific Northwest, you often have to treat sulphur like one of the major nutrients. If your soil isn't sulphur-deficient now, it eventually will be..."

—Dr. Jim Bauder, Montana State University

This trend concerns area soil specialists because, without adequate sulphur, crops cannot possibly reach their full potential in terms of yield or protein content. Nor can crops make efficient use of nitrogen, phosphorus and other vital elements.

What's more, research has shown that sulphur-deficient forage crops, when fed to livestock, can actually reduce animal performance.

And flour made from sulphur-deficient wheat has consistently received poor marks for milling and baking quality.

"As wheat producers become more concerned about quality, they'll have to become more concerned about sulphur..."

—Dr. Bob McDole, University of Idaho

Sulphur—the Fourth Major Nutrient

If you're the least bit concerned about fertilizer efficiency, maximum economic yields, crop quality and protein content, make it a point to keep close tabs on sulphur—or what agronomists call "the fourth major nutrient."

"In areas where sulphur responses are common, and on crops like small grains and forages, which are particularly sensitive to sulphur, the nutrient has to be a routine part of your fertilizer program. You can't grow crops profitably without it. . ."

—Dr. Neil Christensen, Oregon State University

Like nitrogen, phosphorus and potassium, sulphur is one of 16 elements needed to support plant life. In fact, crops generally require as much sulphur as they do phosphorus.

Sulphur is a building block of protein and vitamin A. The nutrient also plays an active role in the production of chlorophyll, enzymes and other essential plant compounds.

Why the Urgent Need?

For many years, crops received significant amounts of sulphur from the atmosphere. Some traditional fertilizers—materials such as ammonium sulphate and single superphosphate—also provided crops with a steady dose of sulphur.

Although farmers can still draw on these sources to fill a *portion* of their crop's total sulphur requirement, it may be necessary to make *deliberate* applications of this crucial nutrient—for a variety of reasons:

- Record crop yields and more intensive land use in the region have naturally withdrawn more sulphur from the soil. (An 80-bushel wheat crop, for example, removes about 30 pounds of sulphur from the soil, as does a 6-ton yield of hay.)
- Many of today's high-analysis fertilizers—urea, conventional nitrogen solutions, triple superphosphate and muriate of potash—contain little or no sulphur.
- Decreasing levels of soil organic matter have reduced natural sulphur reserves.
- And, in some areas, cleaner air resulting from pollution-control programs has reduced the amount of free sulphur that crops receive from the atmosphere.

"In many areas, you can't maintain optimum production without sulphur. Without it, your yields will decrease and—if the deficiency gets bad enough, which it will—the decrease in yield will become severe..."

—Dr. Fred Koehler, Washington State University



How Much to Apply—and When

Sulphur-containing fertilizers can be readily incorporated into virtually any fertilizer program—including fertigation.

On wheat and other small grains, a portion of the crop's sulphur requirement can be applied with a starter fertilizer. The balance of the crop's sulphur need can be included with topdressed nitrogen.

Forage crops, which are extremely sensitive to sulphur deficiency, can be topdressed throughout the year on an as-needed basis.

And row crops can receive sulphur in starter, broadcast or sidedress applications.

Talk to a Specialist

Specific sulphur fertilizer requirements will vary from crop to crop, soil to soil. So, for best results, talk to your local fertilizer dealer, crop consultant or extension specialist about the most cost-effective and suitable way to include sulphur in your fertilizer program.

If a deficiency is detected, a small investment in a sulphur-containing fertilizer could yield a handsome dividend at harvest.

For more information, contact:

Additional information about sulphur in agriculture can be obtained by contacting:



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