Post Rock Extension District Column

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Could your wheat be showing sulfur deficiency?

In recent years, sulfur (S) deficiency in wheat has become more common in many areas of Kansas, particularly in no-till wheat. The likely reasons for this are a reduction in sulfur additions to the crop from atmospheric deposition (there is less S in the air now) and cooler soil temperatures as a result of no-till, which slows S mineralization in the soil. Some crops in the rotation, such as soybeans, can also take up significant amounts of S, resulting in an S deficit for the following wheat crop. Most of the crop's S needs will occur after spring green-up when the crop goes through stem elongation.

Historically, S deficiency was most common in high-yielding crops grown on irrigated, sandy soils that are low in organic matter and subject to leaching. However, due to the reasons discussed above, an increasing number of finer-textured soils have shown S deficiency in recent years

What are the symptoms of a sulfur deficiency in wheat? Generally, wheat deficient in sulfur is yellow and stunted and is observed in patches in the field, especially in areas with previous soil. The patchy S-deficient areas of the field are often found on hilltops or side slopes where erosion has occurred, and soil organic matter is reduced or where leaching is more pronounced. Wheat in areas where topsoil was removed or significant cuts were made (i.e., terraced or leveled fields) also commonly shows symptoms.

Sulfur deficiency in growing crops is often mistaken for nitrogen (N) deficiency. However, unlike N deficiency, where older leaves show firing and yellowing, **with S deficiency, the pale-yellow symptoms often appear first on the younger or uppermost leaves.** Wheat plants with S deficiency eventually become uniformly chlorotic or yellow leaf tissue.

Can you test for sulfur deficiency in your wheat? Absolutely!! Either a soil test or a wheat tissue test can provide you information to determine if sulfur deficiency may be happening in your crop. Since sulfate is mobile, sampling to a **24-inch depth** is important. However, due to the relatively high demand for S during the rapid vegetative growth phase of wheat and relatively shallow rooting by the wheat crop at this time, the S measured in the deeper subsoil levels by the test may not be available to wheat in the early spring, especially where soils are cold. Now is a good time to collect soil samples and assess S levels as you plan for topdressing in the spring.

Leaf tissue tests can also be useful, particularly when determining the exact cause of yellow wheat. A representative sample can be made by collecting the newest mature leaves from 30+ plants throughout the

area where deficiency symptoms are observed or the "bad" areas. A similar sample from a "good" area (no deficiency symptoms) should also be collected. This will allow direct comparisons between "good" and "bad" areas.

What kinds of sulfur are available for field application? There are many S-containing fertilizer materials. Several dry materials are available that can be blended with dry phosphorus or nitrogen fertilizers for winter/spring topdressing. However, some of these products are best used in pre-plant applications. Topdressing with thiosulfate and UAN can be done early, before wheat Feekes 5 growth stage (green up), and at temperatures below 70 degrees F. Be aware that some leaf burn may be expected with some of these liquid fertilizers. These products would be good sources for pre-plant application as well.

K-State Research and Extension has an excellent publication, "Sulfur in Kansas" and can be obtained online, https://bookstore.ksre.ksu.edu/pubs/MF2264.pdf, or at any of our Post Rock Extension District Offices.

If you have further questions on fall fertility management, contact Sandra at any Post Rock Extension District office in Beloit, Lincoln, Mankato, Osborne or Smith Center.

*Post Rock Extension District of K-State Research and Extension serves Jewell, Lincoln, Mitchell, Osborne, and Smith counties. Sandra may be contacted at swick@ksu.edu or by calling Smith Center, 282-6823, Beloit 738-3597, Lincoln 524-4432, Mankato 378-3174, or Osborne 346-2521. Join us on Facebook at "Post Rock Extension" along with our weekly Ag News Roundup. If you would like to receive our weekly Ag News Roundup, simply email us. Also remember our website is **www.postrock.ksu.edu** and my twitter account is @PRDcrops.*