



April 13, 2012

## SULFUR DEFICIENCY IN WHEAT

A couple fields in Saline County last year and a couple more fields this year where winter wheat is being grown into soybean stubble are showing some unique symptoms I have never seen before to this extent. The wheat that has developed a pale yellow color this spring may have sulfur deficiency. Samples were taken last year that verified sulfur deficiency and more samples were taken this week. Similar examples were found in fields in Thayer County and in north-central Kansas.

With sulfur deficiency symptoms in wheat, it can be confused with nitrogen deficiency, but there are differences. Lack of N or S can cause a general chlorosis of the leaves. However, with sulfur deficiency the whole plant is pale with the worse yellow or chlorosis in the young leaves. With sulfur deficiency, I am seeing the whole plant with a pale yellow coloring and in the areas of fields showing severe symptoms, stunting in the size of plants. Sulfur is not mobile in the plant like nitrogen, so the lower leaves do not show more severe deficiency symptoms than the upper leaves. That is just the opposite of the pattern with nitrogen deficiency.

The one thread that has been common the past two years in these fields are they are winter wheat planted in soybean stubble with the worse symptoms on slopes, areas that had an eroded history and areas where organic matter is the lowest in the field. You really see some unusual patterns in the fields that are related to soil type.

Sulfur deficiencies are more likely to occur when soils are cold in the spring. But sulfur deficiencies also can be evident during the remainder of the growing season, particularly in soils prone to sulfur deficiency. During the period of residue buildup in no-tillage, sulfur mineralization may also be limited. Including sulfur in a fertilizer program to avoid sulfur deficiency is more efficient and less costly than correcting a sulfur deficiency once it occurs.

Typically, a soil application of 15-20 lbs. of sulfate-sulfur per acre is sufficient to prevent sulfur deficiency. Adding ammonium thiosulfate to liquid nitrogen solutions or blending ammonium sulfate with urea is convenient and cost-effective ways to provide sulfur in the problem fields. Other sources include elemental sulfur; however, this source is not available to the crop immediately and should be applied in time to allow conversion to the sulfate form of sulfur. Gypsum, which is calcium sulfate, also can be an effective fertilizer option.

Another issue is chloride. We have not been applying potash (a source of potassium and chloride). More testing is needed to see if chloride can enhance wheat yields in Southeast Nebraska. Reaching high yield goals in wheat is very important or we will see more pressure in reducing one of our best soil conserving crops.

Randy Pryor, Extension Educator  
University of Nebraska-Lincoln Extension in Saline County  
306 West 3<sup>rd</sup> Street, Wilber, NE 68465

Phone (402) 821-2151 • Fax (402) 821-3398 • e-mail: [randy.pryor@unl.edu](mailto:randy.pryor@unl.edu)

