MEASURE AND MANAGE

Apparent Nutrient Deficiencies on Winter Wheat

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This spring we have witnessed a variety of nutrient symptoms largely attributed to a lack of optimum growing temperature and its impact on crop development. The winter wheat is showing, nitrogen, magnesium and manganese deficiencies. Some of these nutrient shortages have been confirmed by observation, plant tissue lab analysis and in-field check strips of applied nutrient. Some of the yellow wheat has analyzed with no nutrients below the critical levels. Some of the yellow wheat has shown P, K, S and B deficiencies by analysis. One of the wheat fields had Sulphur applied in the spring and was showing S deficiencies by analysis.

Treatments of various nutrients have experienced a mix of results that range from fixing the problem to having no impact. Generalization of the causes of yellow wheat is not productive, as the range of possibilities is endless. One sample of Magnesium deficient wheat came from a field with pH of 5.9 which seems like a plausible explanation. Another field of magnesium deficient wheat had a magnesium soil test at 384 ppm.

Diseases have been checked and for the most part are ruled out, although powdery mildew and septoria have been found.

Plant tissue sampling can be an issue. When wheat is small (less than 12 inches tall) submit the entire plant(15 to 20). When wheat is bigger submit all of the upper leaves. It may take 75 to 100 leaves to make up a sufficient sample volume for testing. Analyzing the whole plant at flag leaf will cause a dilution of nutrients and show results in deficient ranges.

One of the nutrients not measured is oxygen in the root zone. This year we have witnessed a high degree of soil consolidation in the top 4 to 5 inches of topsoil. Corn fields that failed to emerge this year really were not crusted but rather had a consolidated soil structure in the top 3-4 inches entombing the emerging seeds. The soil structure has become blocky and lacks aeration, resulting in greater bulk density and lower air filled porosity. This may also be the case in some wheat fields.

The roots need air to function properly and when not working properly nutrient uptake is impaired. Big yields come from big plants. Big plants have big roots and small plants have small roots. If the wheat did not respond to nitrogen or manganese treatments it is likely soil structure limiting root expansion and nutrient uptake including oxygen.

Certainly no one simple statement can add clarity to the situation. For every field with severe problems there are many that suffer very little. Take each field on a case by case basis and there are no magic bullets.