

Nutrient Deficiencies and Plant Tissue Testing

The majority of soil testing, as well as fertilizer purchase and application, takes place between harvest one year and planting the next. After planting in the spring, soil fertility is often moved to the back burner as farmers concentrate on protecting their crop yield potential from insects, diseases, and weeds. This can be a costly mistake. Just because a *soil* was adequately fertilized prior to planting does not mean that a *crop* will be adequately fertilized all season long. There are a number of factors besides just what's in the soil that affects availability of nutrients to a plant. Wet soils, dry soils, compacted soils, and cool weather can all affect nutrient availability.

Here's a good example from 2008. University of Missouri professor Peter Scharf estimated that nearly 70 million bushels of potential corn production in Missouri were lost due to nitrogen deficiency last year. Most farmers applied sufficient nitrogen prior to planting, so why was so much potential corn yield lost? It was because the heavy spring rains caused much of the applied nitrogen to be lost due to volatilization, runoff, or leaching. Corn was nitrogen deficient and additional nitrogen should have been applied. For one reason or another, however, most farmers did not apply additional nitrogen.

The reason for not applying additional nitrogen should not be because farmers were unaware of the nutrient deficiency. Farmers should be scouting for nutrient deficiencies throughout the growing season, just like they scout for insects, diseases, or weeds. Signs of nutrient deficiency vary depending on nutrient and crop. If you have questions, contact your local extension agronomist. When nutrient deficiencies are detected, rescue fertilizer applications can sometimes be made and sometimes it is too late. Even if it is too late, it is still important to document the nutrient deficiency as well as the conditions that may have caused it. This information can be used to avoid nutrient deficiencies in the following years.

Soil testing is the foundation of a sound nutrient management program. It is the first step in preventing crop nutrient deficiencies. Another useful tool that is not utilized often enough is plant tissue testing. Plant tissue testing is the most accurate of all diagnostic tools for nutrient deficiencies and is available through the University of Missouri Soil and Plant Testing Laboratory. Plant tissue testing can even detect nutrient deficiencies in plants that exhibit no symptoms. Plant tissue testing, when used in conjunction with soil testing, will minimize potential yield loss due to nutrient deficiencies. For more information about nutrient deficiencies or plant tissue testing, contact your local extension center.