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NUTRIENT DEFICIENCY SYMPTOMS... DON'T WAIT UNTIL YOU SEE THEM

Plant nutrient deficiency symptoms begin to appear when one of the essential nutrients is lacking. Sometimes deficiencies appear early in the growing season when soils are cold or wet, and when root activity is low. Deficiencies are also commonly observed later in the season when the soil cannot satisfy the high nutrient demand of a rapidly growing crop. Whether the deficiency is caused by poor root uptake or low nutrient-supplying power of the soil, proper management practices can help alleviate these problems.

Deficient plants do not initially show any obvious symptoms of nutrient shortage other than slower growth, which can also be due to many factors. In the case of a mild deficiency, plants may never show a visual symptom except slow growth and reduced yield.

Nutrient deficiency causes a disruption in any number of essential metabolic processes within the plant. Crops mature unevenly because deficiencies rarely occur uniformly across entire fields. This leads to lower yield, harvesting difficulties and poorer crop quality. And as previously stated, this can all occur without diagnostic symptoms appearing.

When deficiency symptoms become noticeable, severe stress is already occurring and steps should be considered to overcome the problem, if it is practical and economical to do. The effects of other stresses such as drought and pests can complicate diagnoses. Another problem is that not all deficiencies produce clear-cut symptoms. Then there is the possibility of multiple deficiencies. The most severe deficiency may be manifested first. Knowing which nutrients are mobile or immobile within the plant is helpful in pinpointing the cause of the deficiency symptom. Diagnosing symptoms also requires understanding of specific crop colors and markers. It is worth noting that some crops are more susceptible to visible symptoms than others.

Plant analysis (tissue testing) is useful for diagnosing specific nutrient deficiencies as they arise. It is best when nutrient concentrations in deficient plants growing in problem areas are compared with healthy plants to identify the differences. It is also helpful to collect soil samples for analysis from the two areas at the time the plant samples are collected.

Tissue testing also is valuable for monitoring plant health during the season to verify that nutrient concentrations do not drop below nor exceed established critical values. Guidelines have been developed for many crops for what the appropriate nutrient concentrations should be during various growth stages. Supplemental fertilization should be considered if the concentrations fall below these established thresholds.

Pre-season soil testing should also be part of a strategy for preventing nutrient shortages. In addition to helping avoid plant stress, soil analysis will allow decisions to be made that will avoid over or under application of fertilizer and resulting economic inefficiency.

The International Plant Nutrition Institute (IPNI) has a large database of nutrient deficiency images that is continually growing. Visit the website at: <http://media.ipni.net>. Additionally, a collection of over 500 of our best plant nutrient deficiency photos is available for purchase at <http://ipni.info/nutrientimagecollection>. A condensed version of this collection is available as an app for iPhones and iPads at <http://www.ipni.net/article/IPNI-3273>.

When nutrient deficiency symptoms appear, first act quickly to diagnose the problem and then make plans to correct it and to avoid having them reoccur in the future.

– RLM –

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Abbreviations: N = nitrogen.

Note: *Plant Nutrition TODAY* articles are available online at the IPNI website: www.ipni.net/pnt