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NOTES FROM THE FIELD BY DR. HOWARD BROWN:

Many corn fields have entered the rapid stage of growth. This is the stage that all of the parts a plant will ever have are developed and the process of growth begins. Corn plants will gain in height on a daily basis during this period. Although some corn fields are shoulder-high (Lincoln, IL), many have reached knee-high and are ready for cell elongation (stalk growth). This is a critical period of growth. Growth regulator-type herbicides should be avoided if possible. Amplification of cell elongation with such herbicides may lead to stalk breakage with additional environmental stress (wind). Always follow herbicide label directions.

Nutrient deficiency symptoms are common this growing season. Nutrients involved with producing the green color of plants (Chlorophyll) are the most visual. In most cases the visual symptoms are temporary and will fade away with warm, moist soil conditions and root growth. The cool, wet conditions early planted corn endured likely limited early root growth. Once the plant abandoned the primary root system (roots attached to the seed) and moved to the permanent system (referred to as nodal roots), symptoms appeared. The lack of early permanent root growth and accelerating above-ground growth (sunny days) resulted in a shortage of the young plant's demand for nutrients. With continued root growth and ample water, the plant should return to normal growth. Leaves expressing early nutrient deficiencies will likely continue to express the symptoms even though the plant's nutrient demands are satisfied. However, new growth should not reflect nutrient deficiency symptoms. If new growth continues to express a difference in color or growth call your local Illini FS crop specialist to investigate what else may be causing the problem. Nutrient deficiencies expressed this cropping season so far include: sulfur, manganese, zinc, and in some cases, nitrogen.

N-WATCH Update. N-WATCH sampling sites have provided information that has challenged what we think we know about soil nitrogen. It brought attention to the warmer-than-expected 2015 December's impact on nitrification of fall-applied N, even when following Best Management Practices (cool soil temperature and use of N-Serve). As much as 60% of the fall-applied N was in the nitrate-N form by the first part of January. N-WATCH provided a way to inventory the N detected after fall application to reassure participating producers that the applied N was still there although converted to the nitrate-N form soon-than-expected. N-WATCH has provided some reassurance to participating producers that there remains enough nitrate-N in the upper foot of soil to meet the 2016 crop's N demand (Late-Spring Nitrate Test as described by Iowa State University's publication Pm-1714).

The value of a soil nitrate-N test is rapidly diminishing. Soil tests to detect Plant-Available N (PAN) will have less value from V6 (growth stage) corn forward. Plants will soon enter the stage of growth where rapid uptake of N will start to deplete what is found in the upper soil profile. As the plant takes up PAN, soil test levels will decline. It will be difficult to determine if lower-than-expected concentrations of nitrate-N is the result of not enough N or that the N applied has already entered the plant where it will



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be relocated upon demand of the developing grain. Producers basing supplement N needs from nitrate-N soil tests beyond V6 need to keep this in mind. A misinterpretation may lead to an unnecessary N application and input expense.

N-WATCH data over the past three years shows a low level of PAN at 0 to 2 feet by the middle of July, regardless of the rate applied. Whether the N has entered the plant or is tied-up by soil microbial activity remains a mystery. However, nitrate and ammonium-N detected at multiple sites across three years reinforces the same result. We will see how 2016 follows the trend established so far.

For more information about N-WATCH and tracking Plant-Available N see your local Illini FS Crop Specialist.