

**Transition from slow to quick release nitrogen as ET declines
September 29, 2016**

The turfgrass is starting to recover from the summer stress. Our research manager Matt Sousek says, “perennial ryegrass looks good about two weeks a year,” and this is one of those weeks. The cool nights are helping to bring soil temperatures down and reduce night respiration – which burns stored sugars. The shortening day length is changing the growth habit of the turf. Applying nitrogen (N) fertilizer in fall also promotes recovery, but the release characteristics of the N fertilizer should change as fall goes forward.

From late August to late September, a granular fertilizer with 50% quick release N (water-soluble nitrogen, WSN) and 50% slow release or controlled release N is desirable. This ratio provides even release of nutrients for eight to 12 weeks. Evapotranspiration is still high this time of the year and causes the turf to “suck” up the nitrogen as it become available. This “sucking” movement is similar to drinking from a straw and is called mass flow.

Lower light intensity, shorter day length, and cooler temperatures in mid- to late-fall reduces evapotranspiration and reduces the “sucking” force to move N fertilizer to the turfgrass roots. This reduces uptake efficiency and increases the risk of N loss to the environment during winter. In the best-case scenario, the N sits in the soil and causes a tremendous growth flush the following fall. Slow release fertilizers that require microbial degradation also lose effectiveness as the soils cool and microbial activity slows.

Use fertilizers containing more quick release in early October and all quick release fertilizer in late October to maximize uptake prior to winter. These early October applications rarely increase in clipping yield but do increase color, which improves plant health going into the winter. No fertilizer should be applied to turfgrass in Nebraska after October because uptake efficiency is low. Yes, the roots can still take up N in November, but there isn’t much “sucking” to move the N from the soil to the turfgrass roots.

Managers on weekly or biweekly spoon-feeding programs should continue applications throughout the fall until growth ceases in late October. Adjust the amount of N applied in one application depending on turfgrass color. This provides uniform N availability and helps sustain uniform growth as the plant prepares for dormancy.

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The ideal weather and application of a balanced release fertilizer has improved the condition of the perennial ryegrass plots on campus. Switch to fertilizers with more quick release nitrogen as the fall continues.