No more fertilizer required
November 22, 2019

Historically, late-season nitrogen fertilization – after Halloween – has been recommended for cool-season turfgrasses. The old rational was that the cool weather slowed shoot growth, but the warm soils still supported rapid nutrient uptake. Unfortunately, current research findings have shown that late-season nitrogen fertilization is very inefficient and provides little benefit to turfgrass health. While these research results have changed the minds of most turf fertility researchers and Extension specialists, there is still a lot of marketing and older extension documents that recommend nitrogen fertilization after Halloween. Here's the new rational for not fertilizing cool-season turf after October in Nebraska:

- Uptake of all nutrients is directly related to clipping yield production. This is true for all nutrients including nitrogen and potassium. So the natural slowdown in turfgrass growth rate limits the plant demand for all nutrients. This reduces nutrient uptake efficiency. As a result, we do not recommend fertilizing dormant turf.

- Turfgrass water use (transpiration) declines during the fall. Nutrients like nitrogen and potassium are dissolved in the soil water and are moved to the roots, in part, by water being sucked in by the plant roots. It's similar to drinking soda from a straw. Declining plant water use during fall minimizes this nutrient flow process and reduces nutrient uptake efficiency.

- Finally, nutrient uptake is selectively controlled by proteins on the root surface. They control the uptake of specific nutrients like gates on a fence. The activity of these proteins decline as soil temperature and shoot growth declines. This further limits nutrient uptake efficiency in late fall.

So what happens to nitrogen fertilizer applied in late fall? Ideally, some will be taken up by the plant – usually less than 30% – the rest will linger in the soil until next spring. This is still not ideal because it can cause a large growth surge in the spring which taxes sugar reserves and increases mowing requirements when labor can be short and soils are soft.

Under an even less ideal scenario, little to none of the fertilizer is taken up in late-fall. Then the nitrogen can volatilize to the air (urea), runoff into surface water supplies, or be leached below the turf roots during winter rain and snow melt. This scenario can be very common for turfgrass growing on sand or sand-based soils because of the limited water and nutrient holding. As a result, the applied fertilizer provides no benefit to the plant, wastes product and labor, and can potentially contaminate our ground and surface water.

If you've missed your fall fertilizer application for this year, then save the fertilizer for 2020. This is best for your turf, your wallet and our environment.

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