

Timing nitrogen on fescue

Dennis Hancock for *Progressive Forage*

AT A GLANCE

How much, when, where, why and to what extent will it improve yields? These are all valid questions regarding nitrogen application to fescue. Consider late fall applications to improve spring growth.

Every spring, there is a chorus of calls and emails asking, “When is the best time to put nitrogen (N) on tall fescue?” The answer that I usually give is, “Probably about five months ago.”

I have met a lot of farmers who can grow good grass, but the best fescue growers are either the ones growing it for high-end turf or for

seed. Yes, fine turf and seed fields are babied and pampered. They never skimp on fertilizer, and they manage pests. But the best of these managers are frugal, and they won't spend a dime if it doesn't pay back double. So when I ask them, “When is the best time to put N on tall fescue?” they always say, “Late fall, of course.”

Timing is everything

It is worth pointing out that this is not the N application applied ahead of stockpiling tall fescue, such as a N application made in August or September. Nor is this a winter application. This is a late season application. The precise time of the year when this N should be applied varies with latitude and climate. However, the best timing for a late fall application would be when the tall fescue stops active growth but is still very green. In the seed-producing areas of Oregon, 40 pounds of N per acre are recommended at this time. In the turf industry, specialists recommend 1 pound N per 1,000 square feet, which is approximately 44 pounds of N per acre. This is within the range of 40 to 50 pounds N per acre recommended for forage-type tall fescue in many states.

Benefits

There are several benefits of late season N applications on cool-season perennial grasses beyond simply providing better turf aesthetics and seed yield. These advantages include the following:

High spring growth rates and often greater forage yields: Some of the original work with turfgrass showed cool-season grasses like tall fescue had earlier and faster leaf growth rates during spring greenup, as well as producing roughly twice the amount of clippings as the grass receiving no late fall N. Surprisingly, there is little research that provides good data on the improvements in forage yield from tall fescue when it is provided late fall N applications. Some work in Virginia found these applications often increased forage yields, depending on the weather, but were never detrimental.

Larger plants and increased tiller count: Most forage-type tall fescues in the U.S. (e.g., Kentucky 31) are winter-hardy and summer-active and are known as continental tall fescues, since they have an origin in central and northern Europe. When late fall N applications are made and reproductive tillers are clipped either by grazing or mowing and hay production, continental tall fescues develop short rhizomes that extend and produce new tillers. Effectively, this causes individual tall fescue plants to spread out and expand into gaps in the stand.



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This is crucially beneficial if stand thinning is to be avoided or counteracted.

Decreased summer weed pressure: The rapid growth rate of tall fescue following late fall fertilization gives it a jump-start on weeds that may take advantage of gaps in the stand. Further, the expansion of individual plants into stand gaps can displace weeds before they can get a foothold.

Great root production, eventually: When late season N is applied, the levels of storage carbohydrate drops, and root growth is reduced initially. However, research has shown that root production starts back faster in the spring. By the time the cool-season grass slows in response to summer heat in early June, plants provided late season N have greater root development and rooting depth than plants provided no N or N only in the spring. This results in these plants being more drought tolerant.

It is still a bit of a mystery as to why root development in the spring is greater following late fall N application than when N is applied in the spring. It is thought that this is because grass plants provided N in late fall expend less photosynthetic energy absorbing N from the soil and can partition more of that energy to foliage and root growth. Since N uptake consumes approximately 25% of the energy generated from photosynthesis, it is reasonable to believe that this gives late season-fertilized plants a competitive advantage.

Easier logistics and, perhaps, lower costs: From solely a practical standpoint, applications of N in late fall are usually less weather dependent, as this is often a time of year when field conditions are drier and more conducive to application. Additionally, custom fertilizer applicators are not as busy in the late fall. Plus, N prices are historically lower in the fall of the year, and this may mean one can apply N at that time cheaper and more easily. This is also a good time to apply phosphorus and potassium with less risk of nutrient runoff or loss.

Challenges

As with all management practices, there are some challenges that need to be considered. These challenges include the following:

Weather does not allow for proper timing: All of us are becoming

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more and more familiar with wild swings in the weather. If poor weather conditions delay the N application too late (i.e., after cold weather has caused some or all of the green leaves to die back), the late application may result in poor N uptake by the plant.

N loss and environmental damage: If the N application is too late and uptake is poor, the N may leach through the soil profile and enter into the groundwater, hampering water quality and threatening aquatic ecosystems. Some forms of N are at higher risk of this loss than others. Usually, urea, ammonium nitrate, liquid UAN solutions and ammonium sulfate are considered good N sources for late fall application because these N forms are highly soluble and relatively rapidly absorbed by the plants. Manure and other organic fertilizers contain forms of N that are not as readily soluble and rapidly absorbed.

Enough N may already be freely available: There is growing evidence that healthy soils containing high levels of organic matter and are full of biotic life may hold and release enough N that one will not see a

benefit to late season N application. In these situations, addition of N fertilizer may be of little or no benefit, and therefore, not profitable. Currently, researchers are examining protocols to determine predictions of how responsive a stand will be to N application, and these may eventually be useful for predicting late season N response.

Summary

The application of 40 to 50 pounds of N per acre in late fall may be the best time to fertilize tall fescue and other cool-season perennial grasses. In pastures, no additional spring N fertilization may be needed, but spring or early summer N applications are required in some areas of the country for maximum hay production. In general, the benefits of improved spring greenup rates, higher yields, greater stand density, reduced weed pressures and improved root development are worth considering planning late season N applications. Nonetheless, producers should consider the challenges and weigh the risks against these potential rewards to their own farm operations. 

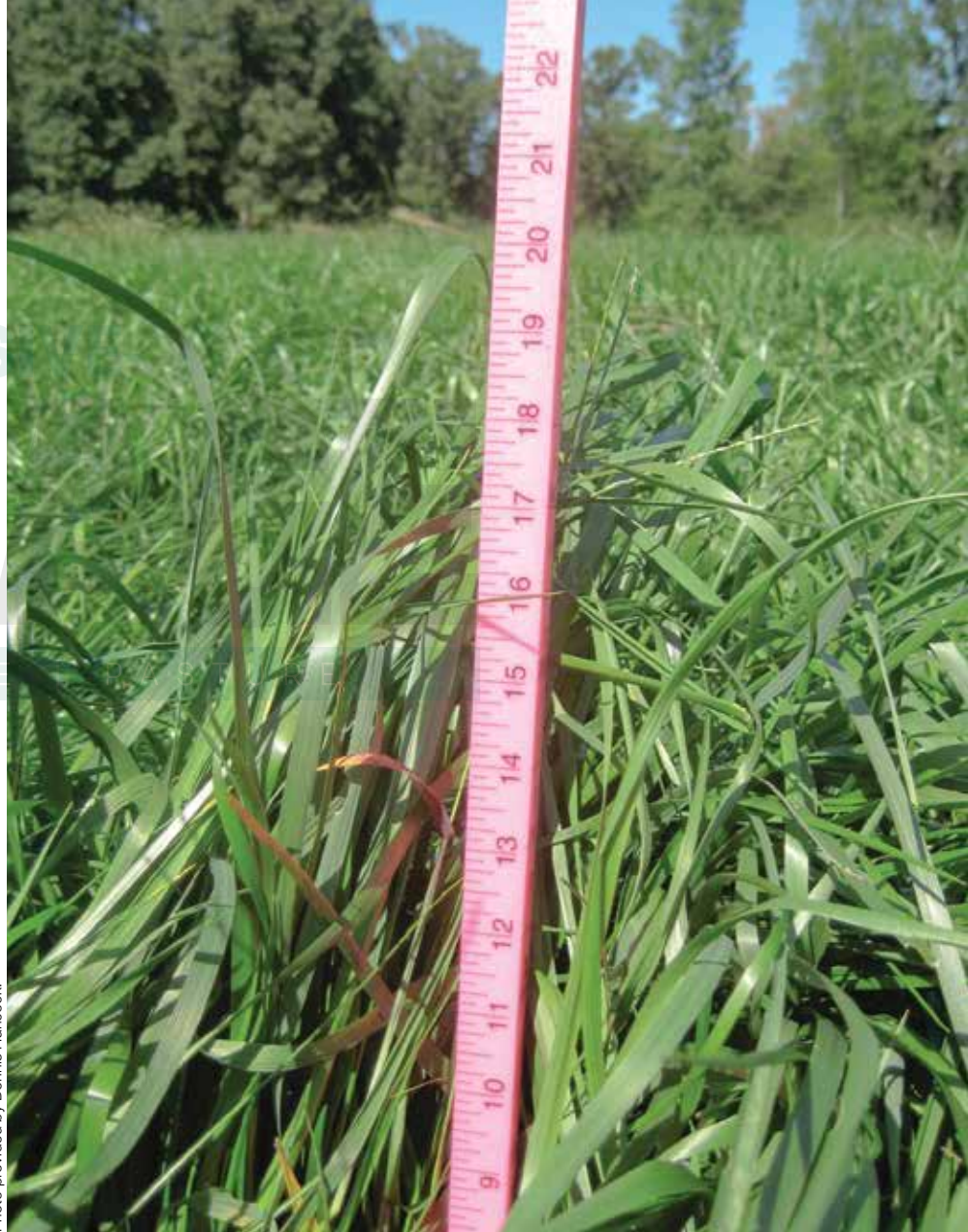


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We may not understand the “why” of late fall nitrogen application to fescue, but we can definitely see its positive impact on spring root growth.

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