

Color Responses to Fall and Dormant Nitrogen

By Dr. Wayne R. Kusow

After three years and a like number of research proposals, the Wisconsin Fertilizer Research Council has agreed to provide some funds for turfgrass research. And why not? The money comes from a hidden 10¢ per ton tax on fertilizer sold in the state. By my estimates, turf managers have unknowingly contributed around \$5,000 to the Fertilizer Research Fund every year for the past several years. This year's \$5,376 contribution is being combined with \$2,575 from the WTA to begin a 3-year investigation of the significance of fall and dormant nitrogen in turf management.

The treatments in this study basically consist of three annual rates of N applied on a conventional schedule (no N after September 15) as contrasted with 40% of the annual N applied in the fall, as dormant N, or as a graded combination of fall and dormant N. These treatments are being applied on an old fescue-Kentucky bluegrass turf at the Yahara Hills Golf Course and on a new seeding of Penncross creeping bentgrass at the Cherokee Country Club.

One measure of a successful fall N program is the spring coloration of turfgrass and the duration of acceptable color. A basic premise of fall fertilization is that it delays the time when N must be applied the following season until air temperatures are 80°F or more. Under these circumstances, shoot growth response to N is curtailed and root die-back does not occur early in the season. The expected result is a turf that is better prepared to withstand the heat, moisture and disease stresses of summer.

Yahara Responses

Spring coloration of the fescue-Kentucky bluegrass blend was excellent to excessive, depending on the rate of N applied and when. As shown in figure 1, the most spring coloration occurred when 2/3 of the N was fall applied and 1/3 was a dormant application. The least color development was observed when all of the N was applied to dormant turf (not quite true in 1987

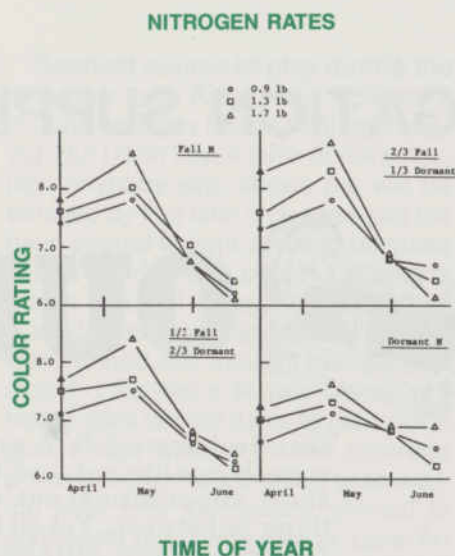


Fig. 1. Spring color ratings of fescue-Kentucky bluegrass treated with fall-dormant nitrogen.

— snow fell on green turf last year! The application date was November 21).

The apparent interactive effects of N rate and time of application on spring coloration were rather striking. For example, a fall application of 0.9 lb N gave essentially the same amount of green-up on April 13 as did a 1.7 lb dormant N application (Fig. 1).

Although the amount of spring coloration observed varied with the rate and time of N application, the duration of acceptable color (a color rating of 7.0 or greater) did not vary by more than one week over the entire series of treatments and did not extend beyond the end of May.

Cherokee Responses

Spring color responses of the creeping bentgrass to the fall-dormant N treatments were much less than those observed with the fescue-Kentucky bluegrass (Fig.2). However, the effect of time of application on the degree of color development was the same at both sites. Namely, the 2/3 fall 1/3 dormant N application gave the most spring color development and was followed in order by 1/3 fall 2/3 dormant, all fall and last, all dormant.

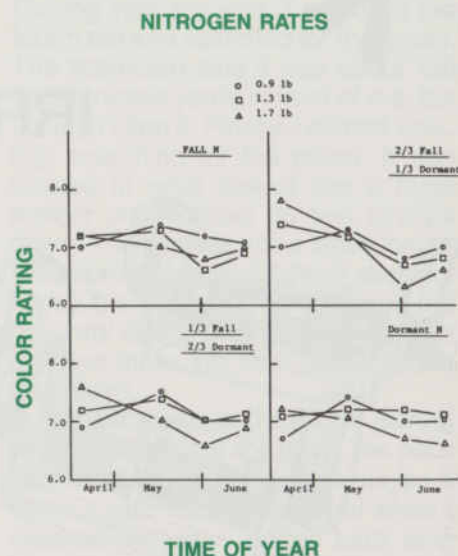


Fig. 2. Spring color ratings of Penncross creeping bentgrass treated with fall-dormant nitrogen.

Unlike what was observed at Yahara Hills, the duration of spring coloration at Cherokee varied substantially with the rate of N application. Whenever the 1.7 lb N rate provided notably better color than did the lower N rates, the N seemed to be depleted very rapidly and bentgrass color ratings of less than 7 occurred as early as May 17 (Fig. 2). In contrast, application of 0.9 lb N entirely in the fall or 1.3 lb N entirely dormant provided satisfactory bentgrass color until June 15, the date on which additional N was applied.

Comments

The turfgrass color responses reported here have to be interpreted cautiously, in part because last spring's weather was anything but typical. Another reason for exercising caution is the fact that turf requires time to respond fully to management practices. It is not until year two of this study that we will begin to quantify the impact of the N treatments on fall root growth and retention the following spring, on shoot growth rates throughout the season and on other indicators of turf quality.