

LATE SEASON NITROGEN RESEARCH IN MINNESOTA & WHAT IT CAN MEAN TO YOU

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"Grass is the forgiveness of nature...her constant benediction...., harvests perish, flowers vanish, but grass is immortal."

John J. Ingalls (1833-1900), speech to Senate, 1874.

The beauty of the words by John Ingalls fails us on an occasional spring when a young man's fancy turns toward all sorts of things. But the golf course superintendent's fancy turns toward bringing the course back from another average Minnesota winter. Average in that there are no two alike.

We do lots of things to "bring the course back" after winter. We aerify, vertical mow, overseed, top dress, fertilize and hope no one really wants to know what happened. Some of the most productive things we can do, however, can be accomplished in the fall before winter. This is the time for us to be thinking about spring. It is the time when grasses develop roots and rhizomes and lay down storage materials that will help carry the plants through the winter and winter-spring transition when most damage seems to occur.

Research here at Minnesota has shown that one of the most productive things we can do to help grass plants overwinter is to ensure that a late season nitrogen supply is available to the grass community. Late season meaning after October 15 in the Twin City area.

Until recent years the standard recommendation has been to stop fertilizing with nitrogen by 10-15 September. The concern was that the nitrogen would stimulate growth and not allow plants to "harden" for the winter. At the same time many superintendents were applying snowmold treatments mixed with organic fertilizer with excellent results. That was alright because everyone knew that the organic fertilizer would not release any nutrients because it was too cold to decompose. But still many of the greens treated in this manner came through the winter better than others. That was one of the reasons why we started to research late season nitrogen nutrition in the 1960's. One of the first things we found was that nitrogen was released from the organic fertilizer even with late applications.

We have been conducting experiments every year since then, investigating nitrogen effects on growth, overwintering and hardiness. In fact we have done many things like applying nitrogen weekly during the fall to try to influence hardiness in the turfgrasses. Results from these experiments have clearly shown that late fall nitrogen applications in the proper amounts do not affect the grass plants ability to harden in the fall. Indeed the late fall fertilized treatments always turned out at least as hardy as the regularly fertilized turves which did not receive nitrogen after September 10. (See Figure 1, Page 5).

Benefits that have resulted from the late season nitrogen application are: 1) more green leaves and stems overwinter; 2) earlier growth initiation in the spring; 3) better recovery from winter diseases; 4) more moderate growth pattern in the spring (no flush of growth as is usual with spring applications); 5) no need for a spring nitrogen application until June; 6) and in many cases a reduction in yearly total nitrogen while maintaining quality.

Our experiments show that the results are associated with late season (October 15 - November 10) applications of one pound of nitrogen (actual) per 1000 square feet, of a soluble nitrogen source such as Ammonium nitrate or Urea or an organic such as Milorganite. The results have often favored the ammonium nitrate over the years but results have been similar with all three sources. If you are on a slow release nitrogen source program, results have been more comparable if the fertilizer is applied two to four weeks earlier than the soluble fertilizers, around the end of September.

Remember to be sure the grass is dry when you apply a soluble nitrogen fertilizer if you cannot water it in.

If you decide to try it this year, now is the time for you to plan your program, order your fertilizer and prepare for making the application. If you decide not to try it, I suggest that you identify a small area on the course where you can experiment and put out your own plots.

In summary our research shows that late season nitrogen applications:

- (1) do not adversely affect hardness.
- (2) result in more green matter carried overwinter and an earlier start in the spring with higher quality turf.
- (3) better recovery from winter diseases.
- (4) moderate growth patterns in the spring.
- (5) a reduction in the total amount of nitrogen needed over the year.
- (6) the soluble forms of nitrogen have a long lasting effect in the spring often maintaining quality to mid-June.

Best wishes for the end of another good season and a better year in 1983.

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FIGURE 1

RELATIVE HARDINESS OF PENNCROSS CREEPING BENTGRASS
AFTER POSTHARDENED (OCT 25) FERTILIZER TREATMENTS

