

NITROGEN FERTILIZER

by Eliot C. Roberts

(Continued from last month)

Nitrogen and Weed Infestation

Nitrogen fertilization of lawn turf increases the competitive nature of the grass so that weed infestations are less severe. Since two objects cannot occupy the same place at the same time a healthy vigorous grass plant can prevent the establishment of a weed. Where turf is thin and weak because of lack of nitrogen weeds quickly crowd out the grass.

Studies at Iowa State University have shown that both seedbed and maintenance nitrogen treatments are helpful in preventing weed infestations. With both Merion bluegrass and a Kentucky bluegrass-Creeping red fescue mixture more crabgrass developed under low seedbed nitrogen treatments than under high seedbed treatments. Merion bluegrass has a higher nitrogen requirement than Kentucky bluegrass and creeping red fescue, thus more crabgrass came into Merion turf under low nitrogen than came into the Kentucky bluegrass-red fescue turf. Also under high nitrogen the Merion was more competitive than the Kentucky-red fescue turf and thus the amount of crabgrass that became established was less.

Maintenance nitrogen treatments at the high level helped reduce crabgrass infestations when seedbed nitrogen treatments were high. It is likely that the combination of high seedbed nitrogen plus high maintenance nitrogen provided excess available nitrogen which weakened the turf stand and allowed slightly more crabgrass to become established. A weakening of turf fertilized with high rates of nitrogen when temperatures are high is quite common.

Nitrogen and Plant Population Shifts

Just as nitrogen level affects competition between basic turf grasses and weeds, it also affects competition between various varieties and strains of basic grasses. The exact percentage of various bluegrasses and red fescues in a seed mixture maintenance treatments on the established turf will determine to a large extent which of the grasses will predominate.

Studies at Iowa State University have shown that high nitrogen levels favor bluegrasses over red fescues, and that only when nitrogen levels are low does red fescue have much of a chance to spread in a bluegrass-red fescue mixture.

SUMMARY

What should you expect from a Nitrogen fertilizer?

1. Expect fast acting nitrogen sources to burn turf foliage if not carefully applied.

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2. Expect nitrogen to increase foliar growth when temperatures are cool, light intensity is adequate, and moisture is readily available.
3. Expect turf fertilized with too much nitrogen to be more susceptible to wilt during hot weather.
4. Expect nitrogen fertilization to increase the rate of thatch formation in those grasses which become thatched readily.
5. Expect nitrogen fertilization of thatched greens to help breakdown these organic thatch deposits.
6. Expect nitrogen fertilization just prior to and during hot weather to reduce foliar growth and plant vigor.
7. Expect poor nitrogen response in turf that is unbalanced in respect to the presence of other essential nutrient elements.
8. Expect increasing levels of nitrogen to reduce root development at high clipping heights, but have little effect on root growth as the height of cut is lowered.
9. Expect too little or too much nitrogen to produce poorer foliage under moisture stress than a medium nitrogen level.
10. Expect medium and high levels of nitrogen to increase rate of foliar production during cool weather so that normal stimulation of root development by increasing moisture deficiency will not be noted.
11. Expect the turf to develop a deeper root system following fall fertilization with nitrogen.
12. Expect to increase resistance to Merion bluegrass to rust by use of nitrogen fertilizer.
13. Expect to decrease resistance of bluegrass to leaf spot by heavy watering and use of large amounts of nitrogen fertilizer.
14. Expect nitrogen fertilizer to have a pronounced effect on the degree of infection and turf injury caused by disease complexes.
15. Expect well fertilized greens to be more resistant to dollar spot disease.
16. Expect variation in the effect of nitrogen on Brown Patch infection of bentgrass greens.
17. Expect nitrogen fertilizer to be effective in preventing weed problems in lawns.
18. Expect nitrogen fertilizers to encourage bluegrasses at the expense of red fescue in lawn mixtures.

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