New England Regional Nitrogen and Phosphorus Fertilizer and Associated Management Practice Recommendations

For Lawns Based on Water Quality Considerations

INTRODUCTION

Significant land-use changes have occurred in New England during the last 30 to 50 years. Traditional agricultural crop production has declined rapidly and is being replaced with residential and commercial development. As urban and suburban development encroaches into rural landscapes, turfgrass is replacing cropland as one of the largest areas of managed land cover in the region. This situation is not unique to this region of the country; turf is replacing cropland along the entire Eastern Seaboard of the United States.

Because a large land area devoted to lawns in New England is located adjacent to pond, lake, river, and coastal shorelines, nutrient losses from lawns may contribute significantly to the

- If fertilization is

through the plant is driven by ET. Generally, ET is low during the mid to late fall in New England. So, it is physiologically impossible for the turf to absorb all available nitrate in the soil water solution provided by fall fertilization, unless ET is very high over an extended period. The nitrate not taken up by the grass is then subjected to leaching or runoff losses. It is not logical to increase soil nitrate at a time when ET is low and risk of leaching and runoff is high.

With cool-season grasses (bluegrasses, ryegrasses, fescues), avoid N application in the mid-summer. Cool-season grasses can undergo heat and drought stress during the hottest and driest time in mid-summer. Application of N at this time only increases the stress imposed on the grass plant that results in a further deterioration of its roots. This can be attributed to the addition of salts from the fertilizer formulation, or to the energy imbalance within the plant when N application stimulates leaf growth at the expense of root growth. Also, application of N during the mid-summer increases the incidence and

- **Choose grasses such as fescues that require less nutrient inputs**.
  The traditional grass species mix for lawns in New England is Kentucky bluegrass-perennial ryegrass-red fescue, with bluegrass and ryegrass the predominate species. Often, red fescue is not included in the mix. Kentucky bluegrass and perennial ryegrass have relatively high requirements for nutrients and water to maintain quality. Change selection from these higher-input requiring species to the lower-input requiring fescues and other species. There are the fine-leaf fescues (creeping red, Chewings, hard, sheep), and the turf-type tall fescues (including the compact (dwarf) tall fescue types). There is

inspecting the soil, and visually appraising the depth of the moist soil. The preferred approach, however, would be to let the lawn go dormant under dry conditions. It is encouraged that supplemental watering be limited to only those times when grass loss is imminent due to prolonged drought.

- **Request a soil test for nitrate and base N rates on this (experimental option).**

- **If unfertilized lawn considered acceptable, then do not fertilize.**
  For many lawns that are currently viewed as being acceptable, there may be sufficient mineralization of organic matter and/or clippings to meet the P needs of existing lawn grass species. Advocating P fertilization where none is needed will increase the risk of P losses.

- **Soil test for P – don't guess!**
  This is relatively straight forward, in that a soil test is the best guide to P fertilization. On established turf, if the soil test for extractable P reads in the medium-low or greater range, or optimum or above optimum range, or above 5 ppm (modified-Morgan P) apply no P. If reading is low and turf quality below acceptability with adequate N, then apply 0.5 lb P/1000ft^2 in the spring. If reading is low, but turf quality is acceptable, then do not apply P. On newly seeded turf, if the extractable P is in the high or greater range, or above optimum range, or above 10 ppm (modified Morgan P) apply no P. If reading is low, then apply 0.5 lb P/1000ft^2 preplant incorporated to a 4-inch depth, and another 0.5 lb P/1000ft^2 surface broadcast after grass has emerged.

- **Avoid P fertilizers on bare ground or low-density lawns, unless it is a new seeding.**
  In certain cases, the lawn may have very low density and/or bare spots. This may be due to low fertility, poor water holding capacity of the soil, soil compaction, or loss of turf due to pests (insects, weeds, diseases, small mammals). When this occurs with relatively high extractable P conc7 0 333 0 si -1 (ay) 3 0 0 333 0 0 T3 0 0 0 0 (i.0 1 Tf0 0 333m /onc7 0 333 333 0 si -1 (ay) 3 0 0 333 0 0 T3 0 ith

REFERENCES

Bremer, D.J. 2006. Nitrous oxide fluxes in turfgrass: Effects on nitrogen fertilization rates and types. J. Environ. Qual. 35:1678-1685.