

VEGETATION MANAGEMENT

By Roger Funk, Ph.D., Davey Tree Expert Co., Kent, Ohio

Q: Much is being reported lately on the advantages of late fall fertilization. I have read that as much as two-thirds of the year's nitrogen should be applied during this period. At the same time, there are warnings to the effect that nitrogen late in the season may be undesirable by forcing top growth when the grass plants should be storing carbohydrates and developing root systems.

Please explain this seeming conflict. What is considered late fall timing here, and what fertilizer analysis do you recommend for this application? (Ohio)

A: The apparent contradictions are due, in part, to a failure in the literature to distinguish between fall and late fall fertilization, and between late fall and winter fertilization. The time period for each is not always clear since it can vary from one area of the country to another and even from one year to the next. The distinction is important, however, in predicting turfgrass response to fertilization since cool-season turfgrasses have a distinct seasonal cycle of growth, primarily the result of seasonal changes in temperature, day length, and light intensity.

SPRING — Maximum root growth of cool-season turfgrasses occurs in early spring before top growth (spring greenup) is evident. Later in the spring, top growth increases while root growth declines.

SUMMER — Both top and root growth slow during summer, and surface roots may be killed. Although the emergence of rhizomes is less seasonal-specific, Kentucky bluegrass reportedly produces the greatest number during the summer.

FALL — Top growth is again stimulated in late summer-early fall. As top growth slows in late fall, roots begin actively growing and continue growth at a decreasing rate until the soil temperature approaches freezing.

An extensive root system and vigorous but not excessive top growth are important objectives in maintaining good quality turfgrass. Because of the cyclic growth of cool-season turfgrasses, fertilizer applied before top growth is initiated in the spring or after top growth slows in the fall will stimulate root development without a correspondingly large gain in foliage. Top growth that occurs as a result of late fall fertilization is mainly in the form of new tillers that remain compact until spring.

Late fall fertilization roughly coincides with the last regular mowing of the season as the turfgrasses begin their hardening-off process to cold temperatures. In Ohio, this usually occurs in late October-early November. Excess nitrogen during this period has reportedly reduced cold resistance and enhanced turfgrass susceptibility to snow molds although I am not aware of any field data that demonstrates increased winter injury.

Concerning the appropriate analysis and application rate, many researchers suggest nitrogen alone at a rate of one to two pounds per 1000 square feet in a soluble form such as urea. The advisability of including potassium or phosphorus can be determined only through future testing. We are currently conducting re-

search to compare the results of late fertilization with other fertilization schedules and to determine the feasibility of including late fall fertilization in our program.

Q: Recommendations for insecticides are usually given for 100 gallons of solution. We do some of our spraying with a backpack and spend a lot of time trying to determine the right amount of material to use. Is there a chart available or some easier way to reduce the recommendations to a gallon of solution?

A: The measurements given below are approximate and should be used as a guideline only if the directions for mixing small quantities are not given on the label.

LIQUID MEASURE:

Amount per 100 gallons	Amount per gallon
1/4 pint	1/4 teaspoon
1 pint	1 teaspoon
1 quart	2 teaspoons
1 gallon	2-1/2 tablespoons
2 gallons	5 tablespoons
4 gallons	1/3 pint
11 gallons	7/8 pint

DRY WEIGHT

Amount per 100 gallons	Amount per gallon
1/2 pound	1/12 ounce
1 pound	1/6 ounce
2 pounds	1/3 ounce
3 pounds	1/2 ounce
4 pounds	2/3 ounce
6 pounds	4/5 ounce
16 pounds	2-3/5 ounces
20 pounds	3-1/5 ounces

Q: What is the name of the material which can be used to prevent wood from checking?

A: The product is polyethylene glycol (PEG). The latest information we have is that it is available through Dow Chemical Company, P. O. Box 1592, Midland, Michigan 48640; and Union Carbide Company, Park Avenue, New York, New York 10017.

Additional information may be available from Forest Products Laboratory, P. O. Box 5130, Madison, Wisconsin 53705.

Note: In response to the question on the availability of Krilium published in Vegetation Management, December 1980, I received the following information:

Mitchell Seed and Grain Company, located in Roswell, New Mexico, has several drums of Krilium purchased at the time that Monsanto phased out the product. If you are interested, contact that company direct for further information.

Send your questions or comments to: Vegetation Management c/o WEEDS TREES & TURF, 757 Third Avenue, New York, NY 10017. Leave at least two months for Roger Funk's response in this column.