

## Your Lawn and Its Care

James A. Murphy, Ph.D., Extension Specialist in Turfgrass Management

A healthy lawn prevents pollution from soil erosion and provides an enjoyable and pleasant setting for your home landscape. Whether your lawn interests include low-input maintenance, enhanced pest resistance, better traffic tolerance, or high aesthetic quality, the proper use and mowing of improved turfgrasses along with good soil management provide the basis for a healthy, durable lawn that enhances the environment. Attention to these basic principles will ensure favorable conditions for growth of a healthy and functional lawn that meets your needs/expectations with a minimum of labor, inputs, and expense.

### Turfgrass

Turfgrass selection is critical to achieving the desired goals for your lawn. Growing the correct plant (turfgrass) species and variety for your site conditions and needs is a basic principle of integrated pest management (IPM). Using un-adapted turfgrass(es) for your situation could be frustrating, increase the use of pesticides and fertilizers, and ultimately could lead to failure of the lawn. Numerous varieties of highly attractive and stress-resistant turfgrasses are developed and made commercially available each year. These grasses can provide you with a more attractive, durable lawn that is easier to maintain. A number of fact sheets are available from Rutgers Cooperative Extension (RCE) to help guide your selection of turfgrasses for new establishment or renovation of existing lawn areas, including: *Turfgrass Seed Selection for Home Lawns* (FS684), *Tall Fescue Varieties for New Jersey* (FS990), *Fine Fescues: Low Maintenance Species for Turf* (FS688), *Perennial Ryegrass Varieties for New Jersey* (FS989), and *Sodding: Steps to an Instant Lawn* (FS104).

### Liming

Liming may be needed to neutralize soil acidity (not uncommon for soils in New Jersey). A soil test will determine the degree of soil acidity, which is used to produce a recommended amount of lime for your lawn. Lime is best applied in the fall and early winter seasons, and when done properly will not need to be applied every year. See Rutgers Cooperative Extension (RCE) publication *Soil Testing for Home Lawns and Gardens* (FS797), and [www.rce.rutgers.edu/soiltestinglab](http://www.rce.rutgers.edu/soiltestinglab) for more information about getting your soil tested.

### Fertilizing

Fertilizing lawns supplies nutrients (nitrogen, phosphorus, potassium, and others) that are essential for plant growth. Economical and environmentally sound choices of fertilizer products can be made based on soil testing results. The appropriate nutrient ratio needed in a fertilizer is best determined from soil test results. See [www.rce.rutgers.edu/soiltestinglab/learnntest.asp](http://www.rce.rutgers.edu/soiltestinglab/learnntest.asp) for details.

Nitrogen (N) is very often the single nutrient having the greatest impact on turfgrass health and quality. Not only is the proper use of N critical for the health and durability of the lawn; but it is also important for the protection of water quality. Nitrogen is the first nutrient to consider in developing a fertilization program. Once your N program is known, the information from a soil test is integrated into a program to meet all nutrient requirements.

A low-maintenance program involves fertilizing 0 to 2 times per season with N at an annual rate of 0 to 2 pounds



per 1000 ft<sup>2</sup>; a moderate maintenance program would apply fertilizer 2 to 3 times per season at an annual N rate of 2 to 4 pounds per 1000 ft<sup>2</sup>; and higher maintenance programs would fertilize 3 to 6 times per seasons at annual N rates of 3 to 5 pounds per 1000 ft<sup>2</sup>. Note that soil type, weather, turfgrass species, and age of turf will influence how much N is needed to meet your quality expectations and management goals for the lawn.

Color and growth rate of the grass serve as a guide in determining the need for nitrogen fertilizer. Slow growth and light-green color should be expected at various times of the year for lawns with a low-maintenance objective. Severe thinning of the lawn and exposure of soil is a likely symptom of nutrient deficiency under a low-maintenance program. Stabilization of the soil is a primary function of a low-maintenance turf, which is needed to minimize soil erosion from the lawn area during rainfall and subsequently protect water quality. A moderately green and uniformly colored lawn with modest growth probably indicates sufficient nitrogen fertilization. Extremely dark green color and a frequent need for mowing (2 or more times per week) is a sure symptom of excess N fertilization, and future N fertilization should be delayed until the lawn exhibits symptoms that indicate a need for fertilization.

A lawn in full sun can be fertilized at the rate of approximately 1 pound of N per 1000 ft<sup>2</sup> in late summer to early fall, and again in late fall if the lawn conditions and soil test indicate a need for additional fertilizer. After late-season fertilization, delay any spring application until late spring, or eliminate it if the lawn is healthy and growing well (this timing of fertilization also helps avoid applying N at a time of year when leaching is more likely to occur — late winter and early spring). Situations including the establishment of a new lawn, excessive rainfall, or infertile soil may require additional low-rate applications of nitrogen for healthy growth during the growing season. For a shady lawn, limit the number of applications to one, or possibly two, per season only in the fall with N not to exceed a total of 2 pounds per 1000 ft<sup>2</sup>.

Numerous fertilizer products are commercially available and are composed of two basic forms of N: water soluble and water insoluble. Water insoluble nitrogen (WIN) is also known as slowly available or slow release and is often the safest and more convenient form to use for most property owners, albeit more expensive. Water insoluble nitrogen can be purchased in a natural organic, synthetic organic, or combined form. Natural organic fertilizers tend to be relatively high in WIN and thus, are very slow releasing N sources. The advantages of slow-release

fertilizers (whether natural or synthetic) include the capability of providing N over a long period of time and reducing the potential for N leaching. Note that natural organic fertilizers have a large amount of phosphorus relative to N, therefore, excess fertilization with phosphorus is a potential problem with natural organics when used on high phosphorus soils. Moreover, natural organics are limited in the nutrient ratios that can be provided in a fertilizer product. Therefore, it may be difficult to find a natural organic fertilizer with a nutrient ratio that matches the soil test recommendations unless the natural organic is supplemented (combined) with other fertilizer products containing the necessary nutrients, which may be organically or synthetically derived.

Slowly available nitrogen fertilizer (with 30% or more WIN) will last longer, provide more consistent growth, and reduce the danger of “burning” lawn grasses. Avoid fertilizing during the hot summer months or apply a slowly available fertilizer (50% WIN or more) at lower rates if nitrogen is needed in the summer. Select a fertilizer grade (N-P<sub>2</sub>O<sub>5</sub>-K<sub>2</sub>O) based on the results of a soil test. See *Fertilizing the Home Lawn* (FS633) for more information.

Addition of organic matter to improve soil is best done before establishing a lawn since it is a very difficult and slow process to incorporate organic materials into soil after turf has covered the soil. Moreover, organic matter sources can range from poor to high quality; poor-quality organic matter will often have detrimental effects on plant growth. Thus, the addition of organic matter to soil should be based on soil testing results to better determine the need for and quality of organic matter to add to a soil.

To protect water quality, do not apply fertilizer (natural organic or synthetic) near streams, ponds, lakes, etc. Also, clean up any fertilizer inadvertently applied to sidewalks, driveways, streets, and other impervious surfaces to prevent fertilizer from washing into nearby storm sewers and bodies of water during intense rainfall.

## Mowing

Mowing should be done at a height of 2½ to 3½ inches, particularly during the summer. Continuous mowing at 2 inches or lower tends to weaken the turf and increase pest and other stress problems.

Frequency of mowing is best determined by the rate of growth of the lawn. As a guide, mow as frequently as necessary to remove no more than 1/3 of the leaf height in a single mowing. That is, mow by the time leaves reach

a 3¼ inch height when cutting to 2½ inches, or mow by 5¼ inches when cutting to 3½ inches. As a general rule, a mowing frequency of once a week is adequate for mowing heights between 2½ and 3½ inches; heights of cut below 2½ inches will require more frequent mowing.

Removal of clippings imparts a neater appearance to the lawn; however it is usually **not** necessary to remove clippings. Returning clippings to the lawn will recycle nutrients to the soil and grass and also reduce waste. Mulching mowers facilitate this by chopping the clippings into smaller pieces. Contrary to the widespread misconception, returning clippings does not contribute to thatch accumulation in a lawn. However, heavy clipping yield—such as might occur if proper mowing frequency is neglected—might necessitate clipping removal or dispersal to prevent accumulation of large clumps of clippings on the lawn surface, which can smother and kill the grass.

Keep the mower blades sharp and properly adjusted. A dull blade shreds the grass leaves, weakens the turf, and turns the leaf tips brown, imparting an unattractive appearance to the lawn. Dull mower blades may also increase the severity of foliar turfgrass diseases. Mowing should stop in the fall when lawn growth has essentially ceased due to cold weather.

## Watering

Watering can maintain color and growth of lawns during dry periods. Lawns lose green color during prolonged dry spells, but can survive without watering during the relatively short droughts usually experienced in New Jersey. Non-irrigated turf will likely be more sustainable under low to moderate levels of maintenance (i.e., lower N fertilizer input and higher mowing heights). If you decide to irrigate, do not apply water until the lawn grasses indicate a need; drought symptoms include slow growth, blue-gray color, and eventually “footprinting” caused by wilt. Lawns can tolerate some wilting without losing leaves, but prolonged wilt stress will cause the leaves to die; as implied above, a loss of leaves does not mean the entire plant has died rather the plants have “dropped” leaves and begun entering a dormant state. Recovery from this condition requires water and time for new leaves to be re-formed and restore turf cover. Irrigation should moisten the soil to a depth of 6 inches, which should be enough water for about 1 week on “heavier” finer-textured soils and 2 to 3 days on sandy soils—applying less water than this will result in the need for more frequent watering. Avoid early evening sprinklings, which can increase disease, doing more harm than good. Late night

through early morning is the most efficient and effective time period for watering. See *Best Management Practices for Watering Lawns* (FS555) for more information.

## Dethatching

Dethatching vigorous dense lawns that have accumulated a thick layer of organic material (thatch, consisting primarily of roots and rhizomes) on the soil surface and below the green leaves can improve the stress tolerance of the lawn. Unfavorable conditions for growth of the lawn grasses can result from an excessive thatch layer. Once the lawn has more than a ½-inch deep thatch layer, it would benefit from dethatching in the fall. Mechanical devices (dethatching machines) are available for purchase or leasing. These machines should have a vertical blade rigidly fixed on a revolving shaft and the capability to adjust the blade to penetrate completely through the thatch layer and into the soil. Lawn aerators can also be used to remove thatch. Too much thatch in a lawn may be an indicator of excessive nitrogen fertilization and/or watering. Reduce these inputs if an overabundance of thatch develops. See *Thatch Management in Turf* (FS740) for more information.

## Weeds

Weeds that may invade lawns can be effectively prevented without herbicides by establishing and maintaining a healthy, dense cover of turf using the best management practices (BMPs) described above. A wide variety of broadleaf and grassy weeds can potentially infest lawns that are poorly established and/or improperly maintained. Some weeds can be effectively controlled by hand pulling; other weeds are not easily controlled by this method. Hand weeding of any weed, but especially difficult-to-control weeds, needs prompt action (identification and removal) because effective control becomes even more difficult as the weed spreads throughout the lawn. Thus, effective weed control procedures depend on an accurate and timely identification of the weed problem.

If you decide to use an herbicide, recognize that the herbicide may not need to be applied to the entire lawn and may not be needed every year if you use the herbicide correctly and in conjunction with the BMPs described above. If the weed problem is limited to a specific area of the lawn, you can save yourself time and money and limit your exposure to the herbicide by applying the herbicide only to that area of weed infestation (spot treat). Also, it is important to follow these guidelines if you decide to use herbicides: i) identify the weed(s) to be controlled before applying any herbicide; ii) select the proper herbicide for

the weed(s); and iii) use the herbicide according to label directions. There are a number of herbicides that will control many broadleaf weeds such as dandelions, plantains, and clover. Grassy weeds, including crabgrass, can be effectively controlled by use of a preemergence herbicide before the crabgrass germinates in the spring. Control of these weeds after emergence is possible, but requires expertise to be effective and must be done at an early stage of growth. Yellow nutsedge, a grass-like weed, can also be controlled by the proper herbicide. See *Weed Control in Home Lawns* (FS119), and *Weed Control Around the Home Grounds* (FS020) for more information.

## Insects and Diseases

Insects and diseases are not always severe pests in a lawn. A healthy and well-managed lawn using the BMPs described above will be able to tolerate a certain number of insect pests. Nevertheless, high populations of certain insects can threaten a lawn's survival in small to large areas. The most common and troublesome insects are white grubs, sod webworms, chinch bugs, and billbugs. Grubs live in the soil and cause damage by destroying the root system. Sod webworms, billbugs, and chinch bugs are active primarily during the summer months and feed at the base of the leaves (shoots). See *An Integrated Approach to Insect Management in Turfgrass: White Grubs* (FS1009), *Sod Webworms* (FS1007), *Hairy Chinch Bug* (FS1008), and *Billbugs* (FS1015) for more information on control options.

Likewise, an otherwise healthy lawn will have limited damage from disease and recover more quickly than a

sparse turf on infertile and/or acidic soil that is improperly mowed. Under certain climatic conditions however, disease pressure can overwhelm small to large areas of even the best lawns. The most troublesome diseases on home lawns include dollar spot, brown patch, leaf spot, red thread, rust, and stripe smut. Dollar spot is active from late May through October, whereas brown patch commonly occurs between June and September. The other diseases are most evident in the fall and/or spring. See the Plant Disease Control fact sheets *Managing Diseases of Landscape Turf* (FS814), *An Integrated Approach to Red Thread and Pink Patch Disease Control in Landscape Turf* (FS798), or *Chemical Control of Turfgrass Diseases* (FS184) for more information on identification and control of lawn diseases.

## Diagnosing Lawn Problems

Diagnosing lawn problems requires expertise in the recognition of characteristic symptoms and signs of the problem. When a problem develops, immediately arrange to have the trouble diagnosed to determine appropriate treatments. You can contact the RCE office in your county for assistance in diagnosing problems; look under county government in the blue pages of your phone book or visit [www.rce.rutgers.edu/county](http://www.rce.rutgers.edu/county) on the web.

**Note:** All fact sheets referenced can be obtained from your county RCE office or downloaded from [www.rce.rutgers.edu/pubs](http://www.rce.rutgers.edu/pubs).

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