



## Is Your Lawn Truly Green? *Sage Advice from Top Northeast Experts*

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Concerns about environmental impact and effects on human health have brought the perfect, lush green lawn—an enduring symbol of American prosperity—into the spotlight. What it takes to create and maintain that lawn needs some scrutiny. A high-maintenance lawn can become dependent upon frequent pesticide, fertilizer, and water use to keep it “healthy” and looking green, and these potentially harmful substances may end up in our precious waterways, living rooms, and bodies.

### **CAN WE HAVE OUR LAWN AND A HEALTHY ENVIRONMENT?**

Do we have to forego our lawns altogether to save ourselves and the planet? Probably not, if we are willing to rethink our idea of perfection. An attractive lawn *can* be grown without regular use of pesticides (weed, insect, or disease controls) and little or no added fertilizer. Researchers have been analyzing every facet of lawn production and maintenance to see what works and what doesn't. Old guidelines have been refined and new ones developed. Following these amended guidelines will help us to have truly “green” lawns that can significantly reduce the risks for our children, pets, and the environment.

The following information has been prepared with the help of four Northeast university turfgrass specialists\*:

### **FERTILIZATION—REDUCED RATES OF NITROGEN ONLY, NO PORK (PHOSPHORUS OR POTASSIUM)!**

Here's where critical new findings have come to light. When soils are adequate, only newly established and young lawns need fertilizer and, even then, only nitrogen—phosphorus and potassium are seldom needed, unless indicated by a soil test. The guideline of applying 2–4 pounds of nitrogen fertilizer per 1,000 square feet of lawn has been revised to one-quarter to one-half that amount. Basically, lawns need only one or two applications per year at half the labeled application rate.

Lawns 10 years and older store necessary nutrients and may never need fertilizer. Grass clippings are free fertilizer—if these are returned to the lawn with a mulching mower, chances are, additional fertilizer will not be needed.

*When to Fertilize:* Contrary to popular belief and common practice, spring is not the best time to fertilize a lawn. At that time, nitrogen will encourage top growth at the expense of roots and will promote germination of weed seeds. If and when fertilizer is applied, ideally it should be done

only once or twice a year in late August or September. This approach provides fertilizer when the grass can best utilize it, not when it is likely to run off into waterways (always sweep fertilizer back onto the lawn from sidewalks and driveways). Fertilizer should never be applied to frozen or saturated soils, or in advance of expected heavy rain.

### **OVERSEEDING—KEEPS OUT WEEDS!**

At the first sign of thinning or bare spots in the lawn, loosen the soil with a rake or similar tool and apply perennial ryegrass at a rate of about 7 seeds per square inch, with nitrogen fertilizer at one-third the labeled rate. Ryegrass will germinate quickly (7–10 days), before the weeds get a chance to invade. Do this every few weeks in early spring and late summer. Overseeding is also an inexpensive method for replacing high-maintenance grass varieties with lower ones (*see Choose Appropriate Grass Species, below*).

### **CHOOSE APPROPRIATE GRASS SPECIES—THEY WILL MAKE YOUR LIFE EASIER!**

Many problems with lawns are due to inappropriate grass species. Popular species, including most Kentucky bluegrass varieties, have high fertilizer and water requirements, are not shade-tolerant, and are more susceptible to disease. To survive and maintain quality, these species need a high level of pesticides and fertilizer. This increases the likelihood of water quality problems due to runoff and leaching of nutrients or pesticides, *and that's what we are trying to avoid*.

On the other hand, turf-type tall fescues and fine-leaf fescues require less fertilizer and water and are more shade-tolerant. These are the “green” species we want on our lawns. In small amounts, perennial ryegrass, because of its quick growth rate, is perfect for overseeding bare spots, but, for the same reasons mentioned for Kentucky bluegrass, it is not as suitable for covering an entire lawn.

Whichever species are used, be sure they are endophyte-enhanced (insect-resistant—*see Pest Management, below*).

*Diversity Is Best:* The “freedom” or “climax” approach to lawns is advocated by some turfgrass specialists. These lawns include a wide diversity of perennial grasses and other herbaceous plants, including chamomile, yarrow, and especially black medic and Dutch white clover—plants that fix nitrogen and provide free fertilizer. Rethinking the perfect lawn may also require redefining what constitutes a weed. Clover, now considered a weed by many, used to be very popular for lawns until widespread use of herbicides began, but plants that provide free fertilizer should be celebrated.

### **MOW HIGH—WITH A SHARP BLADE**

*3" or more does the trick!* It is well established that the higher the cut when mowing the lawn, the deeper and more extensive the root system. Deeper-rooted lawns recover more quickly from drought. Higher mowing heights leave a lawn with more resistance to water movement, therefore reducing runoff. Higher cut grasses can also tolerate a higher population of pests without significant damage. Last, and certainly not least, taller grass blades shade out weeds and reduce the number of seeds that germinate.

### **WATER WISELY AND INFREQUENTLY**

In the Northeast, except for a few weeks in the summer, most lawns rarely need watering. The case can be made for never watering (*see, Final Words from an Expert, below*). Only if absolutely necessary, deeply soak the lawn once or twice a week with a total of 1" of water. Frequent, shallow watering encourages shallow root growth, thatch buildup, and increases the potential for pesticide and fertilizer runoff.

### **CORE AERATION**

Thatch is a layer of dead and decomposing grass plants that forms above the soil. A thin thatch layer prevents weed invasion and reduces soil compaction. However, if thatch gets too thick (more than 1"), water runs off, taking fertilizers and pesticides with it. Heavy thatch also provides harborage for insects and diseases. On older, heavily fertilized lawns, the thatch should be reduced to ¾"–½" by core aeration or by topdressing with ⅛" of

compost (look for a compost with less than 1% phosphorus). Similar to the action of earthworms, core aerators punch small holes in the lawn, allowing air and moisture to penetrate the soil, and bringing decomposers to the surface where they help break down the thatch.

### **MIND YOUR SOIL'S pH**

If a soil test indicates the pH is below 6, or indicates a calcium or magnesium deficiency, consider applying lime. Liming helps release nutrients that are bound up in the soil.

### **PEST MANAGEMENT**

Research has shown that there are effective means other than using traditional pesticides to minimize weeds, insect pests, and diseases in lawns. Keep in mind the concept of threshold: the mere presence of a few weeds or insects does not necessitate the application of a pesticide.

*Weeds:* Overseeding lawns to achieve maximum density is the most effective approach to weed management. Weeds take advantage of thin, less vigorous lawns.

*Grass Species Diversity:* The more grass varieties and herbaceous plants a lawn has, the healthier it will be. As in all horticulture, growing large numbers of a single species leaves plants more subject to disease or pest infestation.

*Use Insect- and Disease-resistant Grasses:* Endophyte-enhanced grass species harbor a beneficial fungus that produces alkaloid compounds. These alkaloids reduce disease and insect infestations, increase drought tolerance, and further reduce the need for fertilizer and pesticides. However, these grasses are not recommended for pasture areas.

*Beneficial Nematodes:* Grubs—the larva of certain insects, including Japanese beetles and European chafers—can be a major lawn problem. Even the most powerful pesticides are not fully effective. However, the use of beneficial or parasitic nematodes—microscopic, worm-like organisms that feed on grubs—has shown promise and presents less risk than insecticides. In fact, when applied properly, nematodes can be 95% effective in controlling grubs—and that's better than many chemical controls.

Nematodes are recommended for treating localized, high-priority lawn areas. Key to their effectiveness is to first identify the grub species and then match it with the right nematode species. Newly hatched grubs are targeted, usually in August to early September, when other susceptible organisms are not present. Different than using chemical controls, this biocontrol needs moisture and should be applied in the evening (*see For More Information to find out how to obtain nematodes*).

### **FINAL WORDS FROM AN EXPERT**

In telling us how he cares for his own lawn, University of Connecticut agronomy professor Karl Guillard concisely summarizes the current approach to lawn care that will provide us with an environmentally sound but still beautiful lawn: *“I advocate the ‘Freedom Lawn’ approach on my property—allowing a wide diversity of perennial grasses and other herbaceous plants to dominate the lawn. I believe this is better for the overall ecology of the lawn and supportive of a greater overall biodiversity on my land. I will mow at least once every two weeks at 4”, sometimes once a week during very rapid growth periods, and return the clippings back into the lawn using a mulching mower. I never water my lawn and allow nature to take its course during dry periods. I overseed fescues (both fine and turf-type) and white clover into my yard, especially those areas that are thin due to poor tolerance of the existing species to low fertility, water stress, or shade. I only apply fertilizers to newly seeded areas. Once established, they rarely ever see a fertilizer again. Compared to some of my neighbors who choose a higher management approach to their lawn areas, my lawn is very comparable to theirs in quality and aesthetic appeal. I firmly believe that low-input lawns are not necessarily low-quality.”*

## FOR MORE INFORMATION

- Maine YardScaping Partnership: [www.yardscaping.org](http://www.yardscaping.org)
- *Lawn Care without Pesticides*: [www.gardening.cornell.edu/lawn/](http://www.gardening.cornell.edu/lawn/)
- *The Homeowners Lawn Care Water Quality Almanac*: [www.gardening.cornell.edu/lawn/almanac/index.html](http://www.gardening.cornell.edu/lawn/almanac/index.html)
- Fertilizer Calculator: [www.cag.uconn.edu/ces/sustainability/fertcalc.html](http://www.cag.uconn.edu/ces/sustainability/fertcalc.html)
- *Insect Parasitic Nematodes for Turfgrass Pest Management*: [www.oardc.ohio-state.edu/nematodes/turfgrass\\_pest\\_management.htm](http://www.oardc.ohio-state.edu/nematodes/turfgrass_pest_management.htm)
- Maine and on-line vendors of biocontrols: [http://www.yardscaping.org/lawn/documents/local-online-vendors-biocontrols\\_5-08.pdf](http://www.yardscaping.org/lawn/documents/local-online-vendors-biocontrols_5-08.pdf)

*YardScaping hopes to inspire Maine people to create and maintain healthy landscapes through ecologically based practices that minimize reliance on water, fertilizer, and pesticides. The MaineYardScaping Partnership was formed out of the rising concern among statewide businesses, organizations, and agencies over the possible pollution caused by yard care chemicals washing away into water bodies, as well as the risks of pesticide exposure to people, pets, and wildlife.*

*\*Jennifer Grant, A. Martin Petrovic, and Frank Rossi, at Cornell University, and Karl Guillard at the University of Connecticut.*

## THE EXPERTS' TURFGRASS TOP 10

- 1. Fertilize in Late August or September**
  - *Only if necessary and only on new or young lawns (less than 10 years old)*
- 2. Mow High**
  - *3" or more for vigorous roots and to shade out weeds*
- 3. Leave Clippings**
  - *They are high-quality, free fertilizer*
- 4. Plant Appropriate (Endophyte-enhanced) Grass Species**
  - *They require less water, fertilizer, and pesticides, and compete better with weeds*
- 5. Get Your Soil Tested**
  - *The only way to know just what the lawn needs is to do a soil test*
- 6. Keep Turf Cover Dense**
  - *Higher density means fewer weeds—overseed, overseed, overseed*
- 7. Core Aerate, Topdress, or Mulch Leaves**
  - *Reduces thatch, improves soil structure and releases nutrients into the soil*
- 8. Water Deep and Infrequently**
  - *Only if absolutely necessary, deeply soak the lawn once or twice a week with a total of 1" of water*
- 9. Keep Fertilizer and Clippings Off Sidewalks and Driveways**
  - *Prevents runoff of nutrients into our waterways*
- 10. Keep Mower Blades Sharp**
  - *A clean cut prevents disease*