



## Fertilizing Your Lawn

Many factors go into growing grass. Sun and fertilizer are at the top of the list. Grass needs 6 or more hours of sun for acceptable growth. Anything less and the grass begins thinning and growth slows, eventually dying out.



<http://turf.cals.cornell.edu>

For sunny lawn locations fertilizing your lawn is the key to having a dense, healthy, vigorously growing lawn. A well managed lawn is pleasing to look at and increases property value. Proper fertilizer applications improves the quality of your lawn, crowds out weeds and help it withstand and recover from wear and tear as well as heat and drought stress.

As part of a comprehensive maintenance strategy, proper lawn fertilization minimizes the applications of herbicides, insecticides and fungicides.

### Fertilizer Labels

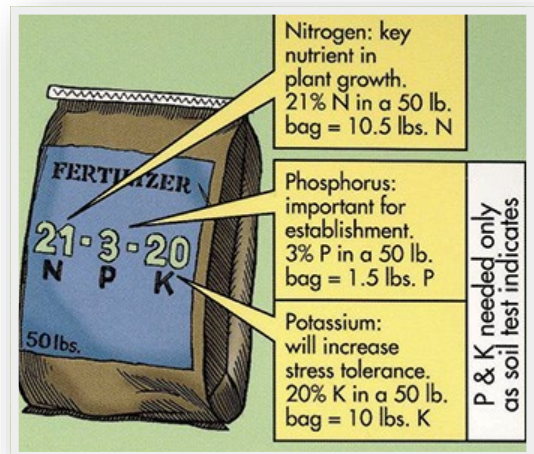
The nutrient content (fertilizer analysis) is printed on the fertilizer bag. Nitrogen (N), phosphorus (P) and potassium (K) are the nutrients required by grass in the highest quantity. Other nutrients are usually adequately available when the pH is in the proper 6.0 to 7.5 range.

Nitrogen is **the most** important nutrient grass requires for good growth, that's why many fertilizers formulated for grass have a high nitrogen % number. Nitrogen levels fluctuate depending on soil conditions and biological activity. Soil testing provides a good measure of the availability of P and K but not N.

Soil nutrient test results are the basis for choosing a fertilizer product with the necessary P or K. Only if P is low should a fertilizer with P be used. Only if K is low should a fertilizer with a low percent or zero percent K be used.

Water-insoluble nitrogen (WIN) is a slow release source that is less likely to contaminate waterways. This includes sulfur coated or polymer coated urea. Sulfur coated nitrogen products will release nitrogen over an 8 week period. Polymer coated nitrogen products will release nitrogen over a 12 week period. Estimates depend on the amount of rain received.

- On **non-sandy** soils use a fertilizer containing at least 30 percent slow release N.
- On **sandy** soils use a fertilizer containing at least 60 percent slow release N.



## Standard Nitrogen (N) Recommendations

- Never apply more than 1 pound of nitrogen (N) per 1,000 square feet (about 32 feet by 32 feet) per application.
- Return grass clippings to minimize the need for phosphorus fertilizer and reduce the need for nitrogen by 25 percent.

To determine how many N applications you need — and when to apply N — first determine your lawn quality:

	Mowing	Watering	Pesticide Treatments	Fertilizer Timing
<b>Good Lawns</b> <b>80% density</b>	Mowed at 2 ½ to 3 inches, with clippings left in place without clumps	No supplemental water	May receive targeted pesticide spot treatment to address identified weeds and insects as needed	Apply 1 fertilizer application in early September
<b>Better Lawns</b> <b>80-90% density</b>	Mowed at 2 ½ to 3 inches, with clippings left in place without clumps	No supplemental water	May receive targeted pesticide spot treatment to address identified weeds and insects as needed	1-2 applications/year, early September and an additional application in late May
<b>Best Lawns</b> <b>90-100% density</b>	Intensely managed, mowed at 2 ½ to 3 inches and clippings left in place without clumps	Watered as needed	May receive targeted pesticide spot treatment to address identified weeds and insects as needed	3 applications/year, early September and October and late May,

## Nitrogen Sources

Organic fertilizers contain carbon and are derived from living organisms. Corn gluten meal, feather meal, composted manure and bio-solids are examples of natural organic fertilizers derived from plant and animal residue. Using nitrogen (N) from organic sources is usually more expensive because by volume they have lower amounts of available nutrients. They also provide P that may not be needed.

### Commonly Available Sources of Natural Organic Lawn Fertilizer

Fertilizer Analysis	Sources	Residual Effect	Other Facts
10-2-8	Meat, bone, poultry and fish meal	Long	By-products from animal processing
6-2-0	Digested bio-solids	Long	By-products from treated and processed sewage sludge
5-2-4	Composted turkey litter and manure	Long	By-products from animal processing
6-1-3	Poultry feather meal, bone and blood meal	Long	By-products from animal processing
10-0-0	Corn gluten	Moderate	By-product of corn millings

Natural organic fertilizers supply nitrogen in complex organic forms that are not immediately available to plants. They require warm, (higher than 65°F), moist soils for microbial activity to release N. Natural organic fertilizers are well-suited for applications during warm summer months when the potential for burning plants with high-salt synthetic fertilizers is higher. Slow-release nitrogen reduces the possibility of N leaching out of the root zone. Research shows that on most soils with some silt and clay, nitrogen leaching from lawns is a rare.

Slow-release N (a.k.a. water insoluble nitrogen or WIN) becomes available to the plant over a period of time depending on soil moisture, temperature and microbial activity. The balance of the N is water soluble, which is readily available for plant uptake. In addition to supplying N over a longer period of time, slow-release nitrogen sources have a lower risk of burning plants and a lower potential to pollute water than water-soluble N sources. The tradeoff is that slow-release N is usually more expensive.

### Inorganic/Synthetic Organic Lawn Fertilizer

Fertilizer Analysis	Residual Effect	Other Facts
Ammonium Sulfate (inorganic)	Short	Do not apply when temperature is over 80 degrees or high humidity
Sulfur-Coated Urea	Moderate	Also provides sulfur. Nitrogen is released from SCU by microbial degradation
Polymer-Coated Urea	Moderate	Nitrogen release increases with higher temperatures and is less dependent on soil moisture levels, soil pH, or microbial activity
Urea (synthetic organic)	Short	Do not apply when temperature is over 80 degrees or high humidity

### Fertilizer Timing And Rates

Fertilize based on recommendations from a soil nutrient analysis. This test measures the nutrients present and suggests fertilization with those that are deficient. Understanding how grass grows is important when making decisions about how much and when to apply nitrogen fertilizer.

For most low-maintenance lawns, a single application in early September to mid-October is sufficient. Apply 1 pound of nitrogen per 1,000 square feet. (1 lb. N/1,000 ft.<sup>2</sup>). Use a fertilizer that has 30-60 percent slow-release nitrogen, depending on the soil type (clay, loam or sand type soils).

For higher maintenance lawns, similar applications can be made Labor Day and Memorial Day. Avoid early-spring applications. Research shows these applications do not enhance spring green-up compared with early-fall applications. (Neglected lawns or sods thinned by winterkill may benefit from .5 lb. N/1,000 ft.<sup>2</sup> after the soil has thawed and drained but before the grass greens up in the spring.) At least 50 to 75 percent of the nitrogen applied to any lawn should be applied between late August and mid-October.

*Avoid early spring fertilizer applications. Research shows these applications do not enhance spring green-up compared to early-fall applications.*

*Fertilizing after mid-October is more problematic for waterway contamination*

Fertilizing healthy lawns in spring increases top growth (and mowing chores) at the expense of root growth. This lush, succulent growth encouraged by spring fertilization makes the plant more susceptible to insects and diseases. Plants with fewer roots are more vulnerable to drought later in the season.

Lawns that did not receive fall fertilizer applications or have suffered winter injury may benefit from spring nitrogen applications. Wait until soil temperatures have warmed to at least 55° F before applying.

## Apply With Care

The point is to get the correct amount on the lawn and none in our streams and lakes. Rotary spreaders cover a wide swath. But they also hurl fertilizer into streets and driveways where the next rain carries it into our waterways. A drop spreader may take a little longer, but it puts the fertilizer exactly where you want it. Use care loading spreaders. Sweep up spills before they become a pollution problem.

## Water It In

If rainfall is not expected in the coming days, water in fertilizer with  $\frac{1}{4}$  to a  $\frac{1}{2}$  inch .

## Growing Grass In The Shade

The establishment and management of quality turfgrass under shaded conditions is possible when the basic requirements for turfgrass growth are known and understood. Trees have extensive root systems that enable them to utilize large amounts of water and nutrients. Some tree species have dense canopies of leaves that restrict light, other species have canopies that are less dense and restrict light intensity. These factors, competition for water, nutrients, and light, create inhospitable growing sites for grass. Poorly drained shaded areas supports moss growth, providing additional competition.

*Too much fertilizer applied to fine fescue grass leads to its decline.*

Effects of shade on turfgrasses include shorter roots, reduced shoot density, erect and elongated growth of stems and leaves, decreased plant vigor, increased susceptibility to disease, and reduced wear tolerance. Environmental conditions in shade are often conducive to disease development.

In creating a turfgrass management program for shade make every effort to reduce or eliminate competition for water, nutrients, and light and provide adequate soil drainage.

Maintenance practices to improve turfgrass growth under trees:

- Use shade tolerant grass species and/or varieties. Fine fescues (red, chewings, sheep, hard) are the most shade tolerant grasses. Fine fescues prefer drier soils and do not tolerate constantly wet soils. Some varieties of Kentucky bluegrass tolerate light shade.
- Fertilize Kentucky bluegrass at slightly higher than the normal rate used for that species or variety in sunny areas. Nitrogen over fertilization of the fine fescues leads to decline. Fine fescues do best when fertilized in early September around Labor Day. Apply 1 lb.nitrogen/1000 sq ft. and  $\frac{1}{2}$  lb. nitrogen/1000 sq ft late May around Memorial Day. Fertilizers having a ratio of 2-0-1 or 1-0-1 and containing 30 percent or more of the total nitrogen as slow release are recommended. The higher than normal rate of fertilization provides some nutrients for the trees.
- Water deeply and infrequently. Frequent, shallow irrigation results in the development of shallow tree roots, whereas deep, infrequent watering tends to develop deeper tree roots.
- Remove trees that are not essential to the beauty and/or utility of the landscape plan.
- Thin out branches to reduce canopy density without destroying the function and beauty of the tree. Hire an arborist that prunes according to industry standards.
- Control weeds to improve the appearance of the turf and reduce the competition for light, water, and nutrients. Be sure that the herbicides are safe for use under the tree canopy.

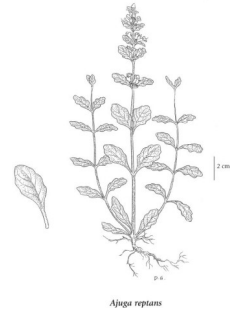


Lawns in deep shade will be sparse and poorly populated. Photo credits: Rebecca Finneran, MSU Extension

- Remove leaves and other debris promptly by raking or sweeping. Leaves allowed to accumulate may smother the grass, provide favorable conditions for turfgrass disease development, or harbor harmful insects.
- Provide good soil drainage and aeration to allow adequate penetration of nutrients, water, and air into the soil.
- Early fall grass seedings are recommended over spring seedings. Warm soil temperatures, cooler air temperatures encourage seed germination and less competition from weeds and trees. Keep fall-seeded areas free of leaves to prevent smothering of seedbed. Annual overseeding may be necessary.

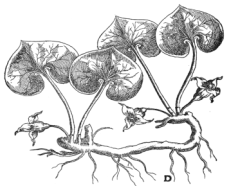
**Options To Grass** Use other types of ground covers (nongrasses) where environmental modifications are difficult and grasses will not provide adequate cover.

*Ajuga reptans* - Bugleweed, Low-growing, attractive foliage, spreads via above ground stolons. Prefers moist, well-drained soils in heavy shade to full-sun; protect from winter winds. Will spread into the lawn. Cultivars vary in both flower and foliage color.



In Klinkenberg, Brian.  
(Editor) 2017. E-Flora BC

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ASARON - CANADENSE.



*Asarum canadense* - Canada Wild Ginger, Forms foliage mass up to six inches tall, spreads rapidly via rhizomes. Excellent for partial to deep shade.

*Convallaria majalis* - Lily-of-the-Valley, Forms thick carpet of upright leaves, spreads rapidly via rhizomes, very adaptable but does best in well-drained soils, partial to full shade. May crowd out delicate plants. Large quantities of roots and rhizomes are poisonous. Fragrant flowers are popular.



*Galium odoratum* - Sweet Woodruff, Delicate deciduous groundcover that forms uniform mat of bright green, persistent foliage. Small, white flowers. Prefers moist, well-drained soils in medium to deep shade.

*Hosta* species - Hosta, Plantain Lily, Large group of hardy, dependable plants with bold, decorative foliage forming neat, circular clumps. Plants spread slowly via short rhizomes. Adaptable, best in open shade, leaf burn problems in sun. Slugs are a common problem.



*Pachysandra terminalis* - Japanese Spurge, Neat, uniform, evergreen groundcover that spreads via rhizomes to form dense mat. Best in shade, well-drained soils. Protect from winter winds; may have pest or disease problems if stressed.



*Vinca major*

*Vinca minor* - Periwinkle, Trailing, vine like evergreen groundcover, rooting as it creeps along. Grows in fairly heavy shade to full-sun; although foliage tends to be deeper green and glossier in the shade. Protect from winter wind and sun. Disease problems may occur with poor drainage and poor air movement.

## New York State Runoff Law

- Restricting the use of lawn fertilizer containing phosphorus (P) is aimed at reducing the amount of phosphorus that makes its way to lakes and streams through runoff.
- Do not apply any fertilizer on lawns between December 1 and April 1. Fertilizer is most likely to run off frozen ground and water saturated soil to then contaminate waterways.
- Fertilizer spilled on surfaces (roads, driveways, sidewalks) must be swept up immediately to avoid being washed into storm drains.
- Do not apply any fertilizer within 20 feet of a water body. You must use a drop spreader or one with a shield.
- Do not fertilize if a heavy rainfall is expected within 2 days of application.
- Lightly water the lawn with about a ¼ inch of water to wash the fertilizer off the grass blades and into the soil.

**Use Phosphorus-Free Lawn Fertilizer  
It's the Law!**

Most lawns in New York State do not need additional phosphorus for healthy growth. When you use fertilizer containing phosphorus for your lawn, the rain can wash it into streams, lakes and reservoirs. Fertilizer in water can create excess algae, plant growth and green scum that:

- Interfere with boating and swimming
- Harm fish populations
- Degrade drinking water quality

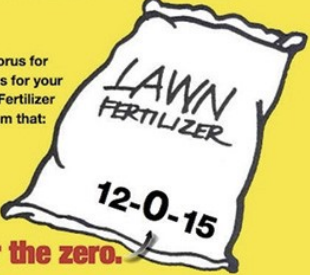
**How do you know if you are using phosphorus-free fertilizer? Look for the zero.**

Check the fertilizer bag for a set of three numbers; they represent the percentage of nitrogen, phosphorus and potassium. The number in the middle should be a "0."

Phosphorus runoff poses a threat to water quality. Therefore, under New York law (effective January 1, 2012), phosphorus-containing fertilizer may only be applied to lawns or non-agricultural turf when:

- A soil test indicates that additional phosphorus is needed for growth of a lawn or non-agricultural turf. or
- The fertilizer is used for newly established lawns or non-agricultural turf during the first growing season.

Visit <http://www.dec.ny.gov> for more information.  
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION



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