

## Getting the most out of soil test report for lawn establishment

When establishing your lawn be sure to adjust soil pH if necessary and fertilize with phosphorus only if soil test indicates the need.

Phosphorus runoff from lawns can contribute to algae blooms and reduce levels of oxygen in water, killing fish. **The New York State 2010 Nutrient Runoff Law** restricting the use of lawn fertilizer containing phosphorus is aimed at reducing the amount of phosphorus that makes its way to lakes and streams through runoff. That's why fertilizers containing more than 0.67% phosphate ( $P_2O_5$ ) can be used on lawns **ONLY if** establishing a new lawn or if a soil test indicates it is needed on established lawns.

Keep in mind that many of our soils in New York have adequate or high levels of P already. There will be no benefit to adding P if levels are sufficient.

### Soil pH in the 6.0 to 7.5 range is optimal for the health of lawns.

Soil pH measures the acidity or alkalinity of the soil. **Lime** is used to raise the pH when the pH is 6.0 or lower. **Sulfur** or acidifying fertilizers (like ammonium sulfate or ammonium nitrate) are used to lower soil pH when the pH is above 7.5.

Modifying the pH is best accomplished before planting. The material has time to work in the soil and improve the root zone. Apply only the recommended rate and mix into the upper 4 to 6 inches of soil. Do not apply more than 50 pounds (lbs.) of lime per 1,000 square feet per application. If your lawn requires 50 lbs. or more split the application and apply the other half in 3-6 months. Check pH every few years.

### Phosphorus (P)

Phosphorus is very important at the time of seeding. Phosphorus does not move in the soil very much so it is best to incorporate P into the soil before planting so the roots can access more of this nutrient.

If phosphorus soil test levels are low be sure to only apply the recommended amount.

## Pre-plant phosphorus recommendations

Commonly available phosphorus sources include: natural organics with varying amounts of P and superphosphate with 16-21% available phosphate ( $P_2O_5$ ), triple superphosphate with 40-47% available phosphate and the ammonium phosphates with 46-53% available phosphate.

**Table A** lists soil test results and some phosphorus fertilizer sources. Do not exceed recommended amounts and be sure to incorporate the fertilizer into the upper 6 inches of soil.

<b>Table A: Soil test levels and pre-plant phosphorus recommendations</b>				
<b>Soil test report levels</b>	<b>Pounds of phosphate (<math>P_2O_5</math>) to apply per 1,000 sq. ft. prior to planting*</b>	<b>Some fertilizer sources that contain phosphorus</b>		
		<b>Inorganic fertilizers</b>		<b>Organic fertilizers</b>
		<b>Super-phosphate 0-20-0</b>	<b>Triple super-phosphate 0-46-0</b>	<b>Rock phosphate 0-3-0</b>
		<b>20% <math>P_2O_5</math></b>	<b>46% <math>P_2O_5</math></b>	<b>3% <math>P_2O_5</math></b>
		<b>Quickly available</b>	<b>Quickly available</b>	<b>Very slowly available</b>
<b>Amount of product to apply per 1,000 square feet</b>				
<b>Very low</b>	3 lbs.	15 lbs.	6.5 lbs.	100 lbs.
<b>Low</b>	2 lbs.	10 lbs.	4 $\frac{1}{3}$ lbs.	66.5 lbs.
<b>Medium</b>	1 lb.	5 lbs.	2.2 lbs.	33 $\frac{1}{3}$ lbs.
<b>High</b>	0	-	-	

\*If you can only incorporate the phosphate into the upper 3" of soil use half the recommended rate.

## A closer look at using composts

While compost can improve soils, many are high in phosphorus, difficult to apply at low rates and can wash off into water as easily as fertilizers. Depending on the source, compost additions may increase phosphorus levels far beyond what the grass needs and exceed levels considered a threat to water quality.

## Lawn establishment information

Selecting the right grass, using the ideal seeding rate and timing are key to successful lawn establishment. Visit [Lawn Care: The Easiest Steps to an Attractive Environmental Asset](http://turf.cals.cornell.edu/lawn/lawn-care-the-easiest-steps-to-an-attractive-environmental-asset/) (<http://turf.cals.cornell.edu/lawn/lawn-care-the-easiest-steps-to-an-attractive-environmental-asset/>) for recommended lawn establishment practices.

## Fertilizer basics

The nutrient content (fertilizer analysis) is printed on the bag of fertilizer.

The first number indicates the *percent* of nitrogen (N), the second number is the *percent* of phosphate ( $P_2O_5$ ) a source of phosphorus, and the third number is the *percent* of potash ( $K_2O$ ) a source of potassium. They are simply referred to as N-P-K. A 50 pound (lb.) bag of 10-6-4 actually contains 5 lbs. of N, 3 lbs. of  $P_2O_5$  and 2 lbs. of  $K_2O$ . The rest of the material is made up of other inert material, such as sand or clay granules to help spread the fertilizer.

When nitrogen (N), phosphorus (P) and potassium (K) are all needed a *complete fertilizer* that contains all 3 nutrients can be used. For example: 10-6-4, 28-3-10, 32-4-8.

## Improve turf quality as well as protect the environment with proper fertilization

**There is no benefit to applying more fertilizer than your lawn requires.**

Proper fertilizer applications will improve the quality of your lawn, crowd out weeds and help it withstand and recover from wear and tear as well as heat and drought.

However, over fertilization can be harmful to both your lawn and the environment and it wastes money. A complete nutrient analysis will determine if additional phosphorus and potassium will be needed and if the pH is in the proper range.

# Nitrogen

## **Nitrogen fertilizer sources to protect water quality.**

You can find information about the source of fertilizers on the fertilizer bag. *Slow release nitrogen sources* (which are less likely to leach) include coated products of urea (sulfur-coated or polymer coated), and other natural and other slow release products. *Water soluble sources* of nitrogen fertilizer (which can leach if improperly applied) include urea, ammonium sulfate, ammonium phosphates and natural materials including calcium and potassium nitrate (Chilean nitrate).

On **non-sandy soils** the application of no more than 1 pound of nitrogen per 1,000 square feet should have at least 30 percent slow release nitrogen.

On lawns with **sandy soils** the application of no more than 1 pound of nitrogen per 1,000 square feet should be made with at least 60 percent slow release nitrogen to minimize leaching losses.

## **Match the nitrogen fertilizer application with your lawn use and desired lawn quality.**

The kind of grass, intensity of lawn use, quality expectations, site conditions (sunny vs. shady) and maintenance practices (clippings left or removed) help determine the amount of nitrogen fertilizer needed.

**Good lawns** are usually not irrigated, do not receive pesticide applications, are mowed infrequently with clippings returned and don't receive much use. These lawns may need no fertilization or at most one application of nitrogen per year.

**Better lawns** which receive more care and more use, may need up to two applications of nitrogen fertilizer per year (up to 1 pound of nitrogen per 1,000 square feet of lawn per application twice a year). Clippings are returned.

**Highest quality lawns** are often irrigated, are mowed regularly, may require pesticide applications and are used often for outdoor activities. These lawns may normally need two to three applications of fertilizer per year (up to 1 pound of nitrogen per 1,000 square feet of lawn per application two or three times a year) and occasionally up to 4 applications a year when in the full sun, heavily used and clippings are removed.

Never apply more than 1 pound of nitrogen per 1,000 square feet per application and that fertilizer should have at least 30 percent slow release nitrogen if applied to non-sandy sites and at least 60 percent slow release nitrogen when applied to sandy sites.

**Chart A: Timing of nitrogen fertilizer applications based on use and quality**

Lawn Use and Desired Quality	Number of Applications (no more than)	SPRING		SUMMER		FALL	
		early April	late May	early June	late August	early September	late October
Little lawn use and good quality (including shady sites)	0-1	<----->		<----->		⊕----->	
Little lawn use and better quality	1-2	<-----*->		----->		⊕----->	
Moderate lawn use and better quality	2-3	<-----*->		----->		⊕-----*->	
Little lawn use and highest quality	3	<-----*->		----->		⊕-----*->	
High lawn use and highest quality	4	<-----*->		*-----		⊕-----*->	

**Key:** <-----> Legally allowable fertilizing period  
 \* Recommended application times  
 ⊕ Best recommended application time

**Follow the law and best practices when applying fertilizer.**

Never apply fertilizers to frozen ground or water-logged soils. Application of any fertilizer on non-agricultural lawns and turf is prohibited between December 1 and April 1. (November 1 to April 1 for Suffolk County, November 15 and April 1 for Nassau County, and other locales may have more restrictive laws.)

Application of any fertilizer within 20 feet of a water body is restricted; you must use a drop or shielded spreader and be no closer than 3 feet from the water.

Fertilizer spilled on impervious surfaces must be cleaned up immediately. Avoid using rotary spreaders near water or impervious surfaces like roads, driveways and sidewalks, especially if your spreader does not have a shield.

Do not fertilize if a heavy rainfall is expected within 2 days of application.

After applying fertilizer, lightly water the lawn with about a ¼” of water to wash the fertilizer off the leaves and into the soil.

**Fertilize less when grass clippings are left and in the shade.**

Returning the grass clippings to your lawn can eliminate the need for any phosphorus fertilizer and reduces the need for nitrogen fertilizer by 25 to 50 percent.

Parts of your lawn that are shady need about half the amount of nitrogen fertilizer as the sunny parts, so fertilize them less.

**Remember:**

- Follow the NYS Nutrient Runoff Law Article 17 Title 21 (January 2012).
- Apply nitrogen (N) to meet your needs AND protect the environment.
- Never apply more than 1 pound (lb.) of nitrogen per 1,000 square feet (sq. ft.) per application.
- Focus on fall fertilizer applications.
- Leave grass clippings.

For more information on the establishment and maintenance of your lawn Visit [Lawn Care: The Easiest Steps to an Attractive Environmental Asset](#):

<http://turf.cals.cornell.edu/lawn/lawn-care-the-easiest-steps-to-an-attractive-environmental-asset/>