



# Reducing Urban Phosphorus Runoff from Lawns

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## Definition:

As cities develop and streets are paved, the loss of natural vegetation results in much more rapid water runoff. This runoff carries contaminants, including phosphorus (P), to lakes and streams. Keeping the water clean is easier and cheaper than cleaning up polluted water.

Although individual lawns contribute only small amounts of pollutants, they add up to bigger problems downstream. Nutrient runoff from lawns, parks and gardens can contribute to overgrowth of aquatic weeds and algae, degrading fish and wildlife habitat and recreational opportunities.

Yards can have a positive effect on water quality by slowing down and filtering runoff water, or they can contribute to water quality problems. The effects depend on the management of fertilizer, water, soil and the landscape (including paved areas) around the home.

## Purpose:

Sound fertilizer, irrigation, soil management and lawn maintenance practices will reduce the amount of P in urban runoff.

## How Does This Practice Work?

Phosphorus can come onto your property in fertilizer, soil amendments, detergents (for example, from washing cars), or may be deposited on your property as pet waste.

Phosphorus is needed for good root development in lawns and gardens; however, there may already be adequate P in your soil, depending on geology and previous management. Since P can have detrimental impacts on water quality, only apply it when it is necessary for lawn health. Use only the amount of fertilizer that is recommended; more is not better. Excess fertilizer not only wastes money, but can damage water quality. Do not fertilize when the lawn doesn't need it. One way to know how much fertilizer to apply is to take a soil test. Or you can ask your local Extension office for advice.

Use slow-release forms of fertilizer to minimize runoff losses. Generally, lawns require much less P than N to stay healthy. Consider buying N only fertilizer rather than a "balanced" fertilizer that includes P when soil P is adequate. Use

a fertilizer spreader on the setting recommended on the fertilizer bag; if you are not sure where to set the spreader, put it on a low setting to avoid over-fertilizing. After application, water the fertilizer into the soil, but do not over-water and cause runoff.

Never apply fertilizer to sidewalks and driveways; if you accidentally do get fertilizer on paved areas, sweep it up and return it to the lawn. Wash off fertilizer application equipment on the lawn, not on the sidewalk or driveway. Store all fertilizers in a safe, dry place.

Overwatering is not only wasteful but also provides the means of transport for nutrients into the environment. Phosphorus usually moves in runoff from the soil surface but can also leach through the soil below the rootzone.

Install water-efficient sprinkler systems that are directed away from paved surfaces. Don't water the pavement! Also, check your downspouts and redirect them from paved areas to vegetated areas.

Water lawns on an "as-needed" basis, when it is dry, rather than on a calen-

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dar schedule. Watering a little bit every day is unnecessary and can lead to contamination of our water supplies. Homeowners with automatic sprinkler systems need to pay attention to weather patterns and landscape water needs. Turn off or reset sprinklers after rain or during periods of cool weather. Apply only enough irrigation water to meet plant needs.

In addition to irrigation management, there are other soil management techniques that can improve infiltration and water-holding capacity, thus minimizing runoff and leaching. Always improve the soil prior to planting with a good organic soil amendment such as aged manure or compost. This will help develop a soil with good infiltration and aeration. These soil amendments contain nutrients, so be sure to reduce your fertilizer application accordingly.

Establish a groundcover or mulch on all bare soil areas to prevent runoff. Mulching will help conserve moisture, protect roots, reduce weeds and prevent the loss of soil and nutrients.

Core aerate your lawn at least once a year to encourage good rooting and water penetration. Maintain natural buffer areas where no fertilizer is applied

between your property and any stream, lake or drainage way. Keeping any part of your property that borders surface water in dense, natural vegetation can help filter out chemicals that might be carried in runoff water.

Finally, plant selection and lawn maintenance decisions can reduce the need for fertilizer and water and, thereby minimize the potential for water contamination with nutrients. Select landscape plants that are well adapted to the area and that have low irrigation requirements. Mow grass up to 3 inches high and do so regularly to keep the lawn healthy. Leave grass clippings on the lawn to recycle nutrients and reduce the need for fertilizer. A healthy lawn will reduce the potential for runoff.

### **Where This Practice Applies and Its Limitations:**

Specific recommendations are subject to local soil, climate and management scenarios. However, the concepts described here apply to all of these scenarios.

### **Effectiveness:**

Following these practices will reduce P runoff from urban areas by reducing soil test P buildup and minimizing the potential for

P transport. Combining good fertilization and irrigation practices with proper soil and landscape management will result in the greatest effectiveness in protecting water quality.

### **Cost of Establishing and Putting the Practice in Place:**

Following the practices outlined here will save you money on both fertilizer and water. Soil amendments and mulches will vary in cost depending on availability, and aeration costs will depend on whether you have your own aerator or have to contract for this service.

### **Operation and Maintenance:**

The decisions that this fact-sheet addresses are not made at one time for the indefinite future. These decisions must be reconsidered every time that fertilizer is applied or irrigation takes place. Site-specific soil and climatic conditions will affect these decisions.

### **For Further Information:**

Contact your local conservation district, USDA-NRCS or Cooperative Extension office.