



Applying knowledge to improve water quality

Pacific Northwest

Regional Water Program

A Partnership of USDA CSREES
& Land Grant Colleges and Universities

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Protecting Water Quality:

Nutrient Management BMPs for your Lawn

A nice-looking, well-maintained lawn enhances the value of your property. A lawn should be a source of homeowner pride. Your lawn is not only an attractive part of your landscape, but it also helps to tie your home and landscaping together.

A healthy, good-looking lawn actually helps improve your living environment. On a hot day your lawn reduces the glare of the sun. Your lawn can also help keep surrounding areas cooler. A well-maintained lawn is much more attractive than pavement! Your lawn will attract birds and other wildlife. On windy days your lawn will trap dust particles from the air. And most importantly, your lawn protects the soil on your property from erosion.



Inputs such as pesticides, fertilizers, and water when used incorrectly may adversely impact surface and/or groundwater quality. To protect the environment and water quality you should use Best Management Practices (BMPs), which are defined as implemented strategies that eliminate or minimize environmental pollution. BMPs are designed to be compatible with good, sound lawn management. BMPs can protect the environment without compromising the beauty of your lawn.

Why should homeowners be concerned about fertilizer use on lawns?

- ◆ On a square foot basis many homeowners use large quantities of fertilizers on their lawns.
- ◆ Excessive or frequent fertilizer over-use can negatively impact the environment. Fertilizers can run off the soil surface and contaminate nearby rivers and lakes (especially phosphorus). Fertilizers also have the potential to contaminate groundwater when over applied (especially nitrogen).
- ◆ Fertilizer over-use can negatively impact the health of your lawn. The combination of large amounts of fertilizer, too much water, and watering at the wrong time of day sets up the perfect environment for many turfgrass diseases.
- ◆ Fertilizer over-use can result in excessive invasions by weeds. When given a nutrient-rich environment there are several weeds that become very competitive with the grasses you are trying to grow!

Fertilizer management BMPs you should implement on your lawns include:

1. Base fertilizer application rates on a sound scientific strategy.

Soil sampling is not recommended because it is relatively expensive for a homeowner with a lawn less than 3 acres in size. Rather it is best to base your nitrogen fertilizer application rate on a nutrient ratio strategy. This strategy includes:

- ◆ Base nitrogen (N) application on the lawn's growing season. Applications of phosphorus (P), potassium (K), and sulfur (S) fertilizers are based on the ratio to nitrogen.
- ◆ 1,000 square feet of lawn (a typical lawn is 3,000 square feet) requires 0.5 pounds of N per month of active growth.
- ◆ Determine the length of lawn growing season in months, and once the N need is determined, P, K, and S applications are based on a ratio to N. Your desired N:P:K:S ratio is 3:1:2:1.



**Pacific Northwest Regional Water
Quality Coordination Project
Partners**

Land Grant Universities

Alaska

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<http://www.uaf.edu/ces/water/>

University Publications:

<http://www.alaska.edu/uaf/ces/publications/>

Idaho

University of Idaho
Cooperative Extension System
Contact Bob Mahler: 208-885-7025

<http://www.uidaho.edu/wq/wqhome.html>

University Publications:

<http://info.ag.uidaho.edu/Catalog/catalog.html>

Oregon

Oregon State University
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University Publications:

<http://extension.oregonstate.edu/catalog/>

Washington

Washington State University
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University Publications:

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Water Resource Research Institutes

Water and Environmental Research
Center (Alaska)

<http://www.uaf.edu/water/>

Idaho Water Resources
Research Institute

<http://www.boise.uidaho.edu/>

Institute for Water and
Watersheds (Oregon)

<http://water.oregonstate.edu/>

State of Washington
Water Research Center

<http://www.swwrc.wsu.edu/>

Environmental Protection Agency

EPA, Region 10

The Pacific Northwest

<http://www.epa.gov/r10earth/>

Office of Research and Development,
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<http://www.epa.gov/wed/>

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Example Problem:

- Q.** How much N, P, K, and S do I need if my lawn is actively growing for 6 months per year?
- A.** 0.5 pounds N/1,000 square feet × 6 months = 3.0 pounds N/1,000 square feet. So based on the ratio, I need 3 pounds N, 1 pound P, 2 pounds K, and 1 pound S per 1,000 square feet.

Then buy a fertilizer with as close to a 3:1:2:1 ratio as possible, or mix different fertilizers together to make the desired fertilizer.

2. Correctly time your fertilizer applications

Try to apply fertilizer at the time the lawn needs it. Use split applications on your lawn – divide the total nutrient application (determined in part 1 above) by 4 and apply:

¼ in early spring (Easter)

¼ in late spring (Memorial Day)

¼ in the summer (July 4th)

¼ in early fall (Labor Day)

Example:

If your year requirement for N is 3.0 pounds/1,000 square ft (as in the last example problem), apply as follows:

0.75 pounds N around Easter

0.75 pounds N around Memorial Day

0.75 pounds N around July 4th

0.75 pounds N around Labor Day

3. Use slow-release nitrogen fertilizers

Slow release fertilizers improve nitrogen use efficiency by plants and reduce leaching. Look for fertilizers in home and garden stores with the word WIN on the bag. WIN stands for Water Insoluble Nitrogen. This means that the fertilizer is less likely to leach, resulting in better lawn nutrition and a reduced adverse environmental impact.

4. Use water wisely on lawns

Nutrients (including nitrogen fertilizers) in the soil move with water. Over-watering causes nutrient leaching and possible environmental damage such as groundwater contamination with nitrates. If the nutrients leach they can not help meet your lawn's needs.



National Water Quality Program Areas

The four land grant universities in the Pacific Northwest have aligned our water resource extension and research efforts with eight themes of the USDA's Cooperative State Research, Education, and Extension System.

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| 1. Animal Waste Management | 5. Pollution Assessment and Prevention |
| 2. Drinking Water and Human Health | 6. Watershed Management |
| 3. Environmental Restoration | 7. Water Conservation and Management |
| 4. Nutrient and Pesticide Management | 8. Water Policy and Economics |

CSREES is the Cooperative States Research, Education, and Extension Service, a sub-agency of the United States Department of Agriculture, and is the federal partner in this water quality program.