

SECTION 2

LAWN AND GARDEN MANAGEMENT

This fact sheet addresses the impacts lawn and garden management can have on water quality and how *you* can make a difference with **Best Management Practices (BMPs)**. BMPs are actions you can take to protect our natural resources. **The ultimate goal of this information is to minimize negative impacts to water quality.**

1. Read the facts and information in the following pages.
2. Fill out the risk assessment worksheets (p. 2-9) in order to analyze your property's specific needs.
3. Fill out the action worksheet (p. 2-11), then **take action!**

Why are Lawns and Gardens a Potential Problem?

Lawn and gardening activities on the shoreline often involve fertilizing, weed and pest control, and soil disturbance. Soluble **nutrients** found in fertilizers are beneficial to yards and gardens but can cause problems when they enter surface water such as lakes, rivers, and streams. **Nitrogen** and **phosphorus** contribute to **aquatic plant** and **algae** growth, which depletes oxygen in the water, impedes water recreation, and is aesthetically unappealing (Figure 2-1). Lawn and garden pesticides can have a negative impact on the health of humans, fish, and wildlife, if used incorrectly. Keep in mind that many shoreline landowners and managers use surface water for drinking and irrigation.

Soil eroding into the lake impacts the clarity of water and carries fertilizers and pesticides. The proximity of many homes to the lakeshore increases the risk that these materials will enter the water and cause problems. Conscientious homeowners can help maintain high water quality for everyone to enjoy. Refer to your county's site disturbance ordinance to find out local building setback limits (see Resource Directory, p. 2-8).



Figure 2-1. An algae bloom impacts clarity of water and is aesthetically unappealing.



Courtesy of the Washington State Water Quality Consortium

Pay Special Attention if:

- There are areas of bare and exposed erodible soil on shoreline, flowerbeds, lawns, vegetable gardens, etc.
- The property slopes toward surface water.
- There are **impervious** surfaces close to surface water.
- Lawn or landscape maintenance is being done close to surface water.
- Fertilizers, pesticides, or soil amendments are being applied.



Vegetative Buffers

The most effective and efficient action you can take to protect surface water from lawn and garden activities is to add or preserve a native **vegetative buffer** or **riparian zone** along the shoreline (Figures 2-2 & 2-3). A buffer between surface water and your land activities should consist of native or beneficial plants that have deep root systems, do not need additional water, and do not require fertilizer application. The lack of a vegetative buffer is one of the most significant causes of excessive nutrient runoff into lakes, rivers, and streams, as well as property loss due to soil **erosion**.

Create a diverse buffer using native grasses, trees, and shrubs along at least 50% of your shoreline. For maximum pollution prevention, buffers should extend at least 25 feet from the water's edge to any management activities associated with lawn and garden care. For more information on plant selection and design, read Section 8, Riparian, Pasture, and Forest Management and consult the Resource Directory on page 2-8.



Figure 2-2. A healthy vegetative buffer protects surface water and adds beauty to your landscape.



Figure 2-3. The property on the left leaves sloping bare soil/sand exposed to **stormwater**. The property on the right is attractive with abundant plants and access.

Easy Care Lawns

Lawns can be an attractive part of your landscape. In fact, a well-maintained lawn or lawn alternative adds value to your property and helps to tie together your home and other landscape plants (Figures 2-4 & 2-5). Healthy vegetation actually improves your living environment. On a hot day, greenery reduces the glare of the sun, keeps surrounding areas cooler, and attracts birds and other wildlife.

However, lawns should never be maintained all the way to the water's edge. This will only accelerate erosion due to the shallow roots of turf grass. In most cases, a vegetated buffer should be integrated into the shoreline's landscape design. With proper management, dense turf provides a good ground cover to prevent soil erosion but should not be used as a long-term solution within 25 feet of the high water mark. Traditional lawn management activities like mowing, fertilizing, and herbicides are harmful to water quality. Use the BMPs that follow to reduce contaminants from entering surface water.



Figure 2-4. Creeping thyme replaces traditional lawn. This plant is drought tolerant and doesn't require fertilizer or mowing.



Figure 2-5. Native grasses don't require water, fertilizer or mowing.

Fertilizer Management for Lawns

Consider the following BMPs for lawns:

- Have your soil tested to determine how much fertilizer is actually needed (Figure 2-6). Soil tests are available at the University of Idaho Extension office, Natural Resources Conservation Service (NRCS), or local hardware stores.
- Whether it is organic or chemical, too much fertilizer is never a good idea. If chemical fertilizers are used, select slow-release (water insoluble) forms. For proper application, follow the instructions on the fertilizer bag.
- Choose fertilizers with low phosphorus levels. A healthy turf grass growing in our region generally doesn't need excess phosphorus.
- Nitrogen moves quickly through the soil to groundwater, so pay close attention to application rates.
- If you use a professional lawn care service, familiarize yourself with the type of pesticides and fertilizers being used and how they are applied. In some cases they may unnecessarily include a "weed and feed" product at every application.
- Mulching mowers recycle grass clippings and can eliminate the need for one fertilizer application per year.
- Water your lawn sparingly after fertilizing. This prevents excess water and fertilizers from running into surface waters.
- Choosing native grasses will decrease your need to fertilize and water, giving you more time to play!
- Always sweep up any fertilizer spills from hard surfaces and reapply to the grass. Never wash it off.
- Do not spread fertilizer within *at least* 25 feet of surface waters or *wetlands*.



Figure 2-6. A soil test kit can help you determine the levels of phosphorus, nitrogen, potassium and pH of the soil on your property.

Improper Use of Fertilizers:

- Contaminates surface water with excess nutrients such as nitrogen and phosphorus.
- Contaminates drinking water from groundwater wells with *nitrate*, which is hazardous, especially to pregnant women, infants, and small children.
- Contributes to severe fungal diseases on plants.
- Makes some weeds more competitive with the plants you are trying to grow.

Improper Application of Pesticides:

- Harms or kills beneficial insects and earthworms associated with your lawn or garden.
- Harms wildlife and pets that come into contact with your lawn or garden.
- Results in chemical runoff, during rainfall or irrigation, into streams, rivers, lakes, and *storm-water* drains.
- Leaches through the soil directly into groundwater that is used for drinking water.
- Creates pest resistance to the applied chemicals, making them more difficult to control in the future.



Pest Management for Lawns



If possible, avoid the use of chemical pesticides and herbicides. Consult a professional from University of Idaho Extension to determine if using pesticides is justified (see Resource Directory, p. 2-8).

The following practices will minimize the potential of contamination from pesticides:

- Properly identify the problem. Most plant problems are caused by environmental conditions or human activities, not insects and diseases.
- Determine if there is an economic or aesthetic justification for initiating pest control.
- Consider control options other than using a chemical pesticide; biological controls and pest-resistant plant varieties are becoming readily available.
- Use the least toxic and most degradable product.
- Read the pesticide label carefully, and pay special attention to safety precautions and warnings about use near water.
- Do not apply pesticides when it is windy to avoid drift.
- When purchasing pesticides, buy only what is needed to control the problem during the current season.
- For empty pesticide containers, triple rinse the containers and reapply the rinse water to the areas already treated. Empty containers should be disposed of properly at your local transfer station. Never pour excess pesticides on the ground, into surface waters, or into sanitary treatment systems.
- When controlling diseases, insects, and weeds use chemicals responsibly and use only the required amount.



Irrigation Management: Water Wisely

Over-watering may cause pesticides, fertilizers, and sediment to run off to surface waters, or leach through soil and contaminate the ground water you use for drinking.

- Established lawns only need 1-2 inches of water per week. A tuna can is a useful measuring tool.
- Install an irrigation system. Set system for early mornings or evenings. Make sure system is working correctly and that water is not being wasted on sidewalks, walkways and driveways (Figure 2-7).
- Drip systems use water efficiently and reduce the risk of erosion by watering individual plants rather than the entire soil surface. Consider installing in vegetable gardens and gardens with new plantings (Figure 2-8).
- Water deeply in the early morning or evening to avoid evaporation during the hot days.
- Avoid overwatering at all times, but especially after applying fertilizers and pesticides.
- Leave grass clippings on the lawn to shade the soil surface, retain moisture, and provide nitrogen, potassium, and phosphorus reducing the need for fertilizer.



Figure 2-7. An improperly functioning sprinkler wastes water on street.



Figure 2-8. A drip system watering an individual plant.

Garden Wisely

Flower and vegetable gardens can add to the quality of life, but certain precautions must be taken to prevent the possibility of surface water contamination.

Your garden is a complex ecosystem of plants, animals, insects, birds, fungi, worms, and microorganisms such as bacteria. A healthy garden ecosystem has a balance between producers, consumers, and decomposers. If an imbalance occurs, symptoms such as plant disease or an increase of damaging pests may result. This imbalance can be caused by improper applications of pesticides, fertilizers, and water or by removing organic matter, such as leaves, from the garden. By using gardening BMPs, the potential for gardening problems and the need for chemical controls are reduced. By reducing chemical use, the risk of contaminating the surface water and your drinking water is also reduced.



Location, Location, Location

When planning a garden spot, ensure that BMPs are implemented:

- Unless your garden is made up of densely growing, low maintenance native plants, your garden should be located at least 200 feet from surface water and drain away from surface water.
- If your garden is located on a slope draining toward surface water, apply fertilizers and pesticides sparingly and only when absolutely necessary. Mulch all bare soil to prevent erosion.
- Terraced gardens on slopes can help slow water and provide long-term erosion prevention. Dense berries, shrubs, groundcovers and native grasses also provide excellent erosion prevention on slopes.
- Gardens should never be located on septic system drainfields or mounds.



Figure 2-9. A beneficial ladybug eating the dreaded aphid.

Pest Management in the Garden

The following pest BMPs will help keep your garden ecosystem healthy:

- Avoid using pesticides.
- Create a garden with diversity. Plant a combination of different plant types to create a balanced ecosystem, and if possible, rotate plants each year to outsmart potential pests and minimize the threat of soil-borne diseases.
- Maximize conditions for healthy plant growth. Choose plants that are suited for your climate and are resistant to diseases in the area. Group plants according to water and light requirements and space them to allow ample root and top growth at maturity.
- Use and protect beneficial insects (Figure 2-9). Develop garden habitats to ensure a healthy environment for beneficial insects. Learn to recognize the eggs and larvae of beneficial insects so as to not harm them.
- Use the least toxic solution for your problems. Some low toxic methods to solve problems include biological controls, insect traps, or mechanical means to remove pests. Learn to live with a low level of plant damage.
- If you do use herbicides or pesticides, use them carefully. Identify problem insects and weeds, and select the appropriate chemical. Buy only what you need, and follow label directions.
- Store and dispose of herbicides and pesticides properly. Store any extra in a secured area, and if you need to dispose of these chemicals, take them to your local household hazardous waste collection program or go through the Idaho State Department of Agriculture Pesticide Disposal Program (see Resource Directory, p. 2-8).

Fertilizer Management in the Garden

Fertilizer should be added only in the amounts needed, at the appropriate time, and in a form that makes the nutrients available to plants. Nutrient management BMPs to implement in your garden include the following:

- Test your soil for nitrogen (N), phosphorus (P), potassium (K), sulfur (S), pH, and organic matter. Soil samples should be taken to a depth of 12 inches.
- Build a healthy soil. Add organic matter, such as compost to enhance the structure, aeration, and nutrient content, and water-holding capacity of the soil. Organic matter can also be added by growing a green manure cover crop, such as clover. Supply needed nutrients using organic fertilizers, such as composted manure, cottonseed meal, bone meal, blood meal, and greensand. Most gardening shops have these types of fertilizers, or you can order from gardening retailers that specialize in providing organic fertilizers and pesticides.
- Apply fertilizers properly. Based on your soil test and plant needs, apply the proper rate of nutrients and apply it at the correct growth stage of the plant. Overfeeding plants can be as detrimental as underfeeding, but this risk can be reduced if organic fertilizers are used, because the nutrients are released slowly. Synthetic fertilizers, correctly applied, may also provide needed nutrients.

Irrigation Management in the Garden

To ensure that your plants stay healthy, efficient watering is essential:

- Reduce the need for watering by mulching. Mulches not only slow the evaporation of water from the soil surface but also can improve a soil's water-holding capacity, keep the soil cooler on hot summer days, reduce weed growth, and help prevent soil erosion. Examples of organic mulches include grass clippings, leaves, and straw. Inorganic mulches may also be used, such as permeable landscape fabric and/or rock.
- Irrigate only when the plants need water. Check whether the soil is dry several inches below the surface. If it is dry, then water, but water slowly so that it soaks into the root zone and does not run off the soil surface. The depth of the root zone depends on the plant, but in general this is 6 to 8 inches deep. If possible, use a drip irrigation system to conserve water.



- Reduce the need for watering by improving soil structure. Each year, add organic matter such as compost, grass clippings, tilled in cover crops (green manure), and other dead plant materials.
- Drip systems use water efficiently by watering individual plants rather than the entire soil surface. Consider installing drip systems in vegetable gardens and gardens with new plantings.

Proper Debris Disposal

Avoid burning on the beach or near shore because the remaining ash results in an immediate release of nitrogen and phosphorus, leading to algae and aquatic weed growth. This growth is of special concern with the tremendous expansion of *aquatic invasive species*. Burning trade or construction waste is prohibited per the "Rules for the Control of Air Pollution in Idaho" (*IDAPA* 58.01.01.600-617). Burning of debris requires a local fire district permit.

If you must burn on the shore, burn in a metal or stone container that can be easily emptied of ash. Never leave ashes on the shore to be washed away, and **never dump ashes into the lake!**

Never dump leaves and vegetative debris into the lake or a stream. This releases nutrients and organic acids into the water and uses up valuable oxygen needed by fish. Rake leaves and brush away from the water (unless they are used as mulch); compost vegetation in a sturdy structure away from the shoreline or burn at least 100 feet from water.

Soil Stabilization

Surface waters are contaminated by soil particles (*sediment*) that are washed or blown into the water. Sediment makes water cloudy, covers spawning beds, and carries phosphorus. Unlike nitrogen, which moves quickly through the soil, phosphorus attaches itself to the soil particle and holds on tight. When soil is washed into water the phosphorus may dissolve and become available to plants, which makes aquatic invasive species and algae grow. Read Section 6, New Construction for detailed information on erosion control. Refer to your county's site disturbance ordinance to become aware of setback limits (see Resource Directory, p. 2-8).

Soil Protection Measures

Follow these BMPs to reduce soil erosion on your property:

- Maintain a vigorously growing vegetative buffer of grass, trees, and shrubs with deep root systems to protect your property from shoreline erosion (Figures 2-10, 2-11 and 2-12).
- Cover all areas of bare exposed soil with vegetation as soon as possible. If in a pinch, temporarily cover areas with mulch, such as straw, leaves, or wood mulch (Figure 2-13).
- Steep slopes should have dense vegetation with deep root systems or terracing. This vegetation will slow stormwater runoff and retain soil. Steep turf lawns are not recommended.



Figure 2-11. Property loss and sediment loading due to shoreline erosion. A healthy vegetative buffer instead of turf could help prevent this.



Figure 2-12. Native plants like this Douglas Spirea bring beauty to your garden and help stabilize soil.



Figure 2-10. Native vegetation on this river bank helps keep the shoreline stable and attractive.



Figure 2-13. This comparison shows how effective mulch, within an erosion control blanket, is at preventing erosion.

Resource Directory

Lawn and Garden Management

Kootenai County

Noxious Weed Control Department

10905 N. Ramsey Road
Hayden, ID 83835
(208) 446-1290

Solid Waste and Hazardous Materials Transfer Stations

(208) 446-1430
www.kcgov.us/departments/solidwaste

Ramsey Transfer Station
3650 Ramsey Road
Coeur d'Alene, ID 83815

Post Falls Transfer Station
15580 W. Prairie Avenue
Post Falls, ID 83854

Community Development (Planning and Building)

451 Government Way
Coeur d'Alene, ID 83814
(208) 446-1070
www.kcgov.us/departments/planning

Idaho Native Plant Society (Calypso Chapter)

www.idahonativeplants.org

Idaho Native Plant Expert

Idaho Panhandle National Forest
(208) 765-7417
www.fs.fed.us/ipnf

University of Idaho Extension Master Gardeners and Plant Clinic

www.uidaho.edu/extension

Kootenai/Shoshone County Extension
1808 N. 3rd Street
Coeur d'Alene, ID 83814
(208) 446-1680

Benewah County Extension
701 College Avenue, Suite LL2
St. Maries, ID 83861
(208) 245-2422

Coeur d'Alene Reservation Extension
402 Anne Antelope
Plummer, ID 83851
(208) 686-1716

Idaho State Department of Agriculture Pesticide Disposal Program

(208) 332-8628
www.agri.idaho.gov

Suggested Reading

Deep-Planting Techniques to Establish Riparian Vegetation in Arid and Semi-Arid Regions

Dreesen, D.R. and G.A. Fenchel. 2010.
Native Plants Journal. 11(1)

Forest Nursery Notes

U.S. Department of Agriculture Forest Service. USFS
Reforestation, Nurseries, and Genetic Resources.
www.rngr.net/publications/fnn

Landscaping with Native Plants in the Idaho Panhandle

Kinnikinnick Native Plant Society. 2011.
www.nativeplantsociety.org/

Northern Idaho Fertilizer Guide: Northern Idaho Lawns

Mahler R.L. and V.J. Parker-Clark. 1998. University
of Idaho Extension, Moscow, ID. Publication CIS
911.
www.cals.uidaho.edu/edcomm/pdf/CIS/CIS0911.pdf

The Practical Streambank Bioengineering Guide

Bentrup, G. and J.C. Hoag. 1998. U.S. Department of
Agriculture Natural Resources Conservation Service.
Washington, DC: USDA-NRCS.
[www.plant-materials.nrcs.usda.gov/pubs/
idpmcpu116.pdf](http://www.plant-materials.nrcs.usda.gov/pubs/idpmcpu116.pdf)

Rodale's Ultimate Encyclopedia of Organic Gardening

Bradley F.M., B.W. Ellis, and E. Phillips, eds. 2009.
New York, NY: Rodale, Inc.

Weed Control in Lawns

University of Idaho Extension. 1991. Moscow, ID.
Publication no. 334.
[www.cals.uidaho.edu/edcomm/detail.asp?
IDnum=1137](http://www.cals.uidaho.edu/edcomm/detail.asp?IDnum=1137)

Risk Assessment Worksheet

Lawn and Garden Management

Assessment Worksheet 1 - Lawn and Garden Management

The assessment worksheet below will help you identify potential environmental risks related to your lawn and garden maintenance practices. For each question, indicate your risk level in the right-hand column. Some choices may not correspond exactly to your situation. Choose the response that best fits. When finished, go to the Lawn and Garden Management Action Worksheet on page 2-11 and record your medium and high-risk practices. The goal is to lower your risks. Use the BMP recommendations provided in this section to help you decide how to best reduce pollution.

	LOW RISK	MEDIUM RISK	HIGH RISK	YOUR RISK
Fertilizers	I test my soil for nutrients and use the recommended fertilizer rate. I do not apply fertilizer within 100 feet of any surface water.	I have not tested my soil. I am not sure how much fertilizer I need, and I apply it within 50 to 100 feet of surface water.	I have not tested my soil, and I apply fertilizer at a higher rate than the label recommendation and within 10-20 feet from the lake or its tributaries.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
Pesticides	I do not use chemicals to control weeds, insects, or diseases. I encourage natural defenses (lady bugs and wasps) and use non-toxic solutions (pull weeds).	I employ limited use of chemicals, and mostly spot spray.	I rely on chemical control for pests.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
Storing pesticides, fertilizers, and other chemicals	I store chemicals in waterproof containers in a secure area protected from stormwater and over 100 feet away from the lake or its tributaries.	I store chemicals in waterproof containers but not in a secured area.	I store chemicals in non-waterproof containers outdoors or within reach of stormwater.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
Handling and disposing of pesticides, fertilizers, and other chemicals	I clean up all spills immediately and dispose excess materials through a local household hazardous waste collection event or approved landfill.	I clean up spills and dispose of wastes in my garbage.	I don't clean up spills. I dispose of chemicals by burning or dumping them at an unapproved landfill or on my property.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
Vegetation buffer	I have planted shrubs, ground cover, and trees between the lake and the lawn and garden to reduce soil erosion and uptake excess nutrients and pesticides.	I have a natural buffer along my shoreline, but my lawn is manicured as close as possible to the lake.	I don't have any natural or planted vegetation buffer between the lake and my lawn and garden.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High

Assessment Worksheet 1 continued - Lawn and Garden Management

When finished, turn to the Lawn and Garden Management Action Worksheet on page 2-11 and record your medium and high-risk practices.

	LOW RISK	MEDIUM RISK	HIGH RISK	YOUR RISK
Grass clippings, leaves, and other yard waste	My grass clippings, leaves and other yard wastes are swept off paved surfaces and onto my lawn away from water flows. I compost leaves and other wastes.	I sweep my grass clippings and leaves into the street where they may be washed down the storm drain.	I rake leaves and other yard wastes into piles near the lake and burn them on site.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
Bare soil, gardens, and landscaping projects	I seed areas of bare soil and top them with a layer of mulch or straw. I use sediment retention barriers (straw wattles, silt fence) on steeper slopes until I can get grass established.	I leave soil bare during construction projects, but natural features slow and treat most runoff.	My soil is left bare. No natural features or sediment retention barriers slow runoff.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
Proximity to surface water	>200 feet to surface water.	<200 feet to surface water.	<100 feet to surface water.	
Lawn type and maintenance	My turfgrass is located at least 100 feet from surface water.	My turfgrass is located 25 feet from surface water.	My turfgrass grows right up to the shoreline, and I regularly use fertilizer and chemical pest control.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
Irrigation management	I water in the morning or evening. I use plants that are suitable to the climate and that do not need extra water.	I don't measure my watering.	I water heavily, and water runoff is excessive. I do not time watering according to pesticide and fertilizer applications.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
Composting	Debris from my property is composted at least 100 feet from surface water.	I do not compost, but I do burn debris at least 100 feet from surface water.	My compost pile is located <50 feet from surface water. I put pet waste on my compost pile.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High

