

## Yard and Garden Care

### How it Affects Your Health and Environment

If your home is like most, it is surrounded by lawns, gardens, shrubs and trees that require regular maintenance. This chapter examines the potential impact of yard and garden care on the environment and your health. Topics covered include:

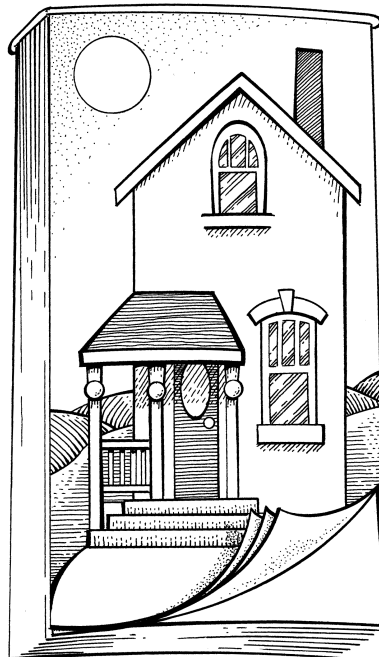
- Soil testing
- Lawn type and maintenance
- Fertilizers and pesticides
- Ground covers and erosion protection
- Composting
- Water conservation

This guide will help you identify and evaluate pollution risks and give tips for reducing those risks.

#### What are the environmental concerns?

Your yard and garden — the natural settings of your home and property — might be the last places you would look for pollution problems. But behind beautiful landscapes are activities that may threaten your health and the environment.

On average, homeowners use ten times more chemical fertilizers and pesticides per acre than farmers use on farmland. If improperly applied, these chemicals can find their way into drinking water wells and pollute nearby lakes and streams. Children are particularly vulnerable to pesticides that are stored or used without proper safety precautions.



Other problems occur when exposed soil washes away during a storm, harming wildlife habitat and choking waterways.

Indiscriminate watering of lawns and gardens wastes large amounts of water. Gasoline-powered mowers, weed cutters, leaf blowers and other devices make noise and pollute the air. Powered by a two-cycle engine, a lawn mower in one hour spews the same amount of exhaust as a car driven 350 miles.

While it may seem that your contribution to pollution is minor, the effects of chemicals, soil loss and wasted water from hundreds or thousands of homes in your region can make a significant cumulative impact.

#### Are you using your time and money effectively?

Americans spend a lot of money on garden gadgets, flowers, seeds and chemical products. They also dedicate many hours of leisure time to caring for their yards and gardens. Valuable time and money may be wasted, however, if homeowners manage their lawns and gardens in an environmentally unsound way.

Think about the money, time and effort it would take to replace a lawn or garden damaged by over-fertilization or misuse of pesticides. Consider the hard work required to return unsightly, eroded areas back to productive use. Imagine how much less time lawn care would take if grass clippings were left on the lawn instead of being raked and bagged.

You can have a low-maintenance lawn without losing the well-kept appearance of your home. Good management practices not only benefit the environment — they can save you time and money as well.

#### Managing your lawns, gardens and landscaping

Many homeowners desire a well-kept home landscape with attractive flowers, woody plants, and a green lawn. A lot of time and money is spent to achieve

this ideal, and the number of products and lawn-care services increases each year to meet the demand.

Normal applications of lawn and garden products generally pose few problems. A properly maintained home landscape, in fact, can help reduce soil erosion and increase water retention and soil fertility. Poor maintenance, either through neglect or excessive chemical use, can lead to soil problems, polluted runoff and unsafe well water.

Look over the topics below, and read the ones that will help you better understand your yard and garden practices. Fill out the accompanying work sheet to see where you might need to make improvements.

## Has your soil been tested?

Adding fertilizer without first testing your soil is like taking medicine without knowing if you need it. Your soil already has some of the nutrients needed for good plant growth, such as nitrogen, phosphorus and potassium. It is important to find out how much of each nutrient is present.

Soil testing takes the guesswork out of how much fertilizer to use. Check with your local University Outreach and Extension center or garden supply stores about testing your soil.

Testing often involves taking small samples from several places in your yard and garden. The soil is analyzed, and you receive a lab report that lists the amounts of each nutrient in each sample. Because of local differences, some parts of your property may need regular applications of fertilizer while other areas may need few or no applications. Soil tests

should be conducted every three years. For further information consult MU Guide G6954: Soil Testing for Lawns.

## What fertilizers does your lawn need?

Your soil tests will let you know if your lawn needs fertilizer and, if so, how much and where. Nitrogen is the key plant nutrient for building a thick, green lawn. Applied at the right time and in the right amount, fertilizers will supply the nitrogen your soil needs.

If you apply fertilizer at the wrong time or in the wrong amount, you may make conditions worse, and insect and disease problems can increase. Excess fertilizer is likely to wash away before the grass takes it up. Fertilizer in runoff contributes to unwanted plant growth in nearby streams or lakes.

Especially in sandy soils, or soils that are shallow to bedrock, nitrogen and other chemicals can seep downward and enter groundwater used for drinking. For more information consult MU Guide G6705: Lawn Maintenance Calendar.

If you hire a lawn-care service, make sure the workers test your soil before applying fertilizer. Insist that lawn fertilizers only be applied when the weather is favorable — when rain is not expected for at least 24 hours. Sweep excess fertilizer off walks and back onto the lawn before it is washed away by rain. Non-chemical fertilizers, such as compost and fish meal, and other soil amendments should be applied based on the needs of your lawn.

## Greening the White House

Take a cue from the White House, where groundskeepers have launched a gardening and landscaping practice designed to protect the environment.

The staff now uses integrated pest management (IPM), an environmentally friendly approach that controls pests using a minimum of chemicals. They fertilize according to local recommendations, limit watering to the early morning hours to save water and leave grass clippings on the lawn, where they decompose naturally.

## Are you taking proper care of your lawn?

It will be easier to keep your lawn healthy if the type of grass is suited to local growing conditions, which include rainfall amount, temperature, soil type and available light. Contact your local University Outreach and Extension center for a list of recommended grasses for your region.

Cutting your grass to the right height is important; lawns cut too short invite weeds to invade. Grass clippings should be left on the lawn — in many cases, they supply enough natural fertilizer so that only minimal additional fertilizer is needed to keep your lawn green and healthy.

Additionally, University research has demonstrated that returning clippings does not increase thatch accumulation.

Clippings should be swept off paved surfaces so they aren't carried away by storm water. For further information consult MU Guide G6959: "Don't Bag It" Lawn Care: How to Recycle your

Grass Clippings, Leaves, and Branches.

Switching to a human-powered mower can cut down air and noise pollution and provide exercise. If you reduce your lawn size and grow plants that require little maintenance, such a mower can be practical. Consider using an electric mower for smaller-sized lawns.

## Are you applying pesticides wisely?

Although removing weeds, insects and other pests by hand is safest for the environment and your health, pesticides, if properly used, may pose only a minimal risk. The key is doing your homework before you start treatment.

Correctly identifying the pest and the extent of plant damage is the first step. Many plant problems are not caused by insects or disease but are related to temperature extremes, waterlogging or drought, damage caused by lawn mowers, or overuse of chemicals. Many plants can withstand a certain level of insect damage, and delaying pesticide treatments may provide sufficient time for natural predators to become effective.

Indiscriminate use of pesticides can have harmful consequences. Pesticides can eliminate natural predators, contaminate groundwater and promote chemically resistant pests.

To reduce these risks, learn when and where pesticides may be needed to control problems. Apply them only where pests occur. Select the least toxic chemicals possible or those that break down quickly into less harmful substances.

Remember to read pesticide labels carefully and follow the directions for application rates and methods. Check with your local University Outreach and

Extension center or garden supply stores for information and consult MU Guides G6980: Buying Home and Garden Chemicals, G6951: Understanding and Using Garden and Home Grounds Herbicides and G7520: Pesticides and the Environment.

Pest prevention is often simpler (and cheaper) than pest removal. If you have disease-resistant grasses or other plants and keep them healthy, pests will be less of a problem. Be sure to ask yourself, for the sake of clean groundwater and an environment with fewer chemical pollutants, if you can tolerate a few more weeds and bugs around your home.

## Integrated pest management (IPM)

It sounds fancy, but integrated pest management, or IPM, is simply a systematic approach to controlling pests in your landscape. Although the use of non-chemical controls is preferred, chemicals may be used selectively if nothing else works.

Weeds can be controlled by hand pulling or hoeing. Insect damage can often be minimized by mechanical methods such as traps and barriers, hand-picking, or spraying with water. Cleaning up dead leaves and debris removes potential homes to pests.

Using natural predators to control pests is another method; you can release into your garden beneficial insects and microorganisms such as *Bacillus thuringiensis* (Bt) that feed on pest insects.

When you have no other choice, try to find nontoxic or low-toxic chemicals such as insecticidal soaps. Follow directions carefully, and mix only the amount you need. For more information consult MU Guides G7273: Least-Toxic Control Methods to Manage Indoor Plant Pests and G7274: Aphids, Scales and Mites on Garden and Landscape Plants.

## Do your landscape practices prevent soil erosion?

Like pesticides and fertilizers, soil washed away by rain can pollute streams, lakes or bays. Even if you do not live near water, soil will eventually be carried to surface water in runoff from storms. Gardens, lawns and construction sites with areas of bare soil — especially on sloped land — are prone to soil erosion. For further information consult MU Guide 6955: Improving Lawn and Landscape Soils.

You can protect soil and reduce erosion by planting turfgrasses or ground covers that are well-adapted to your environment and keeping them dense and healthy. Or use wood-chip mulch or landscape fabric.

On steep slopes, plant a vigorous ground cover or slow- and low-growing turfgrasses, such as fine leafed fescues or buffalograss, which require little mowing.

Building terraces or retaining walls on slopes can also help prevent soil loss.

As with lawns, choose ground covers and shrubs that are suited to your area and that are resistant to insects and diseases. For further information consult MU Guide 6835: Selected Ground Covers for Missouri.

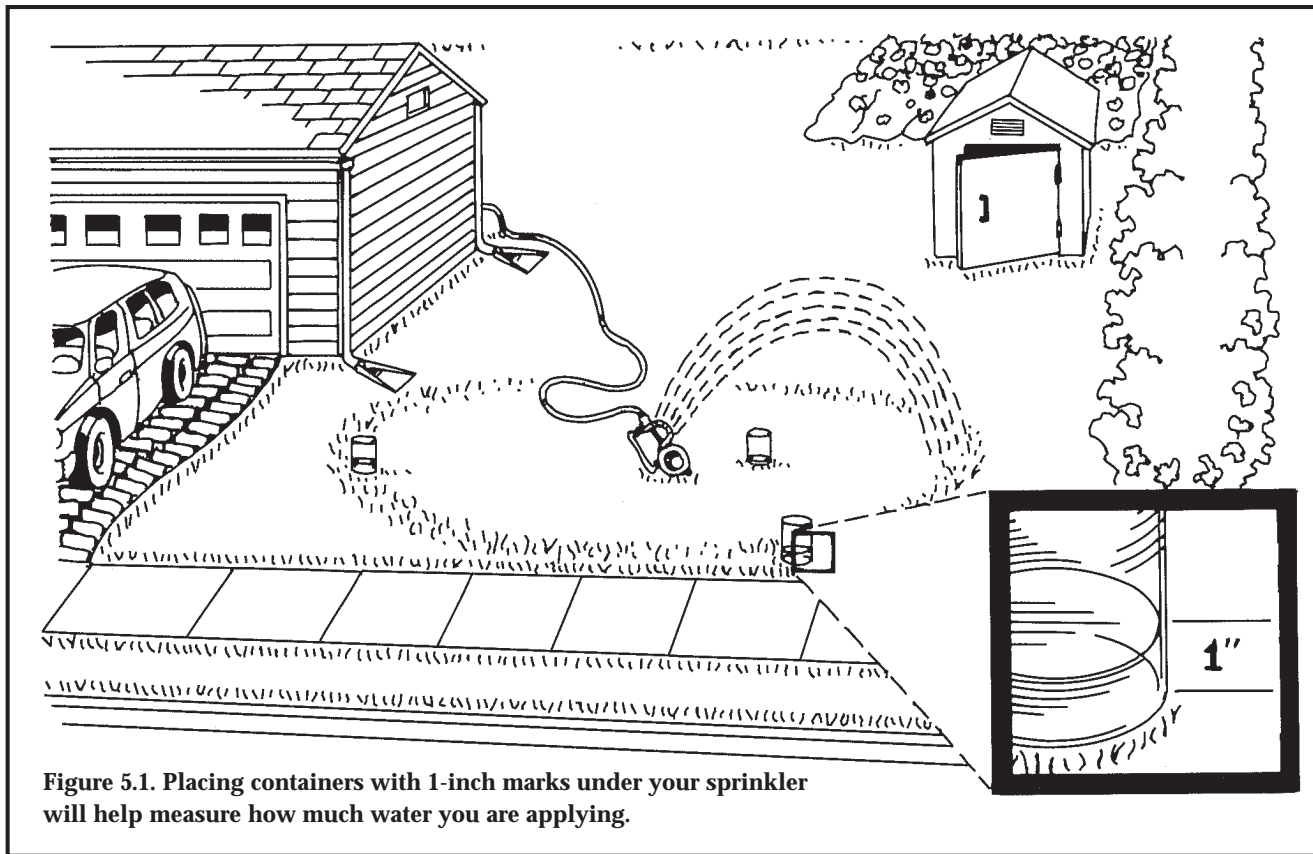


Figure 5.1. Placing containers with 1-inch marks under your sprinkler will help measure how much water you are applying.

## Do you make compost?

Composting is a cost-effective, natural way to handle leaves, grass clippings and other yard wastes — materials that might otherwise end up in a landfill. Composting creates an organic, slow-release fertilizer and soil-enhancing material. It takes advantage of nature's recycling system for breaking down plant and other organic materials.

To compost, simply put yard wastes in a pile, or install home-made or store-bought bins to contain the material. In addition to yard waste, you can add vegetable trimmings and fruit peels from your kitchen. Your compost pile will remain relatively odor-free if it is turned and aerated regularly.

One word of caution: animal manures contain high levels of nitrogen, and different types of manures have different levels. If

manure is left in piles exposed to the weather, nitrogen-rich runoff may result.

If you mix manure from horses, sheep, cows or other plant-eating animals into your compost, be sure to add plenty of high-carbon materials such as leaves, straw or sawdust to keep concentrations of nitrogen and other nutrients low.

This will help prevent contamination of groundwater. Do not put pet manures (from cats and dogs) in compost piles because of potential parasite and disease problems.

Try to locate piles at least 50 feet from any wells, lakes or rivers. Finished compost can be mixed into garden soil or spread on lawns as a slow-release fertilizer.

Check with your local University Outreach and Extension center, garden stores, the library, and your neighbors for other ideas.

Consult MU Guides G6956: Making and Using Compost;

G6957: How to Build a Compost Bin; and G6958: Grass Clippings, Compost and Mulch: Questions and Answers.

## Do your yard care practices save water?

The average American uses approximately 200 gallons of water each day. About half of that water may be used for landscaping and gardening, depending on climate, time of year, and plant species in the landscape. This is an immense amount of clean water, and only a small portion is actually used by your plants.

If you convert your landscape plants to ones adapted to your region and climate, you will take the biggest step in conserving water. Consult MU Guide G6912: Water-Efficient Gardening and Landscaping.

In places with dry climates, there are many native plants that are drought-tolerant. Consider using drought-resistant turfgrass species like tall fescue, zoysia-grass and buffalograss.

Perennial flowers conserve water because their roots grow deeper than annual plants and require little or no watering once established. A shallow mulch (about 2 inches deep) of wood or bark chips over bare soil will reduce storm water runoff and keep water from evaporating. Consult MU Guide G6960: Mulches.

## Watering wisely

Because most plants can tolerate at least short dry periods, watering should be timed to meet the biological needs of plants. Watering slowly and deeply helps develop deep roots; in the long-run, your plants will need less frequent watering. The plants that seem to benefit most from shallow watering are the ones you don't want: weeds.

Soils can absorb only so much water. Over watering wastes water and can injure certain plants. Placing several containers with 1-inch marks under your sprinkler will help you gauge how much water your lawn or

garden is getting (see figure 5.1, page 4). Consult MU Guide G6720: Home Lawn Watering Guide.

Another option in some regions is to allow established cool-season lawn grasses to go dormant during the hot, dry summer rather than irrigating. Drip irrigation systems and soaker hoses deliver water to the intended plants efficiently. The time of day when you irrigate matters, too: early morning (4 to 8 a.m.) is best.

## Assessing your yard and garden care

Work Sheet 5 will help you identify potential environmental risks related to your yard and garden maintenance practices.

For each question, indicate your risk level in the right-hand column. Although some choices may not correspond exactly to your situation, choose the response that best fits. Refer to the previous pages if you need more information to complete the table.

## For more information

### Soil testing

Contact your local University Outreach and Extension center or private testing laboratories. In your yellow pages, look under the heading "laboratories" or "soil testing."

### Pollution prevention at home helps ensure your safety

For more information about topics covered in the Missouri Home•A•Syst series, or for information about laws and regulations specific to your area, contact your nearest University Outreach and Extension center. Or contact the Missouri Department of Natural Resources Technical Assistance Program (phone number?)

Contact the **Missouri Farm•A•Syst/Home•A•Syst Program** at: 205 Agricultural Engineering Building, University of Missouri-Columbia, Columbia, MO 65211; phone 573-882-0085.

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## How to order the Home•A•Syst Environmental Risk Assessment Guides:

(EQM101 through EQM105 include a fact sheet and work sheet.)

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The complete Home•A•Syst series is available on the web at:

<http://muextension.missouri.edu/xplor/>

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