

# Water Wise Guide

*for Home Gardeners*



Cornell University  
Cooperative Extension  
Ulster County

## Acknowledgement:

This guide is adapted from an earlier New York Sea Grant version. Thanks to Master Gardener Melanie Avallone for design services.

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New York Sea Grant  
March 2015

## You Can Prevent Water Pollution!

New York is the only state in the country bordering both the Great Lakes and the Atlantic Ocean. Home landscapes and gardens potentially contribute stormwater runoff containing contaminants to nearby water bodies. This guide reviews practices that can reduce threats to water quality. Proper watering is essential for a healthy garden, but be water-wise when planning your garden and landscape. By making well-informed choices you can enjoy a healthy, attractive landscape and promote sound stewardship of New York's water.

## Everyone Lives in a Watershed

A watershed is the entire area of land that drains into a single water body. Whether your home is located directly on the waterfront or miles away, whatever is poured, sprayed or spread on plants or the ground in excess can eventually find its way to larger water bodies through a network of neighborhood streams and storm drains.

## Where Does Your Garden Grow?

We all enjoy the beauty of ornamental landscapes and the harvest of fruits and vegetable gardens. All plants have unique requirements for sunlight, mois-

ture, temperature and soils. Selecting plant varieties best suited to your site and caring for them properly will keep plants healthy, conserve water and save you time and money.

### General Site Considerations for Home Gardens:

Gardens should have well drained soils and receive a minimum of six hours of direct sunlight. If possible, plant your garden on level ground.

### If the garden has to be on an incline:

- Plant across the slope; this way each row acts as a ridge to trap rainfall, reducing soil erosion.
- Consider creating a garden using raised beds.



The Hudson Estuary watershed covers approximately 13,390 square miles. The Hudson River flows from the Adirondack Mountains to New York Harbor.

## Home Landscapes

Your landscape choices can improve the beauty of your property and protect water quality. Start by observing the pattern of water flow across your land and lawn. Does the water run off in heavy rain carrying soil with it and exposing plant roots? If so, your landscape is contributing to water pollution problems. Plant selection, turf areas types of walks and decks, and control of water infiltration and flow all affect runoff. Prevent water from leaving your property and carrying pollutants with it by limiting the amount of impervious surface around your home and by controlling erosion.



Consider using raised garden beds when planting on slopes to reduce runoff and conserve water.



## Reducing the Need for Water

Plants are 75-90 % water and water is necessary for photosynthesis and nutrient transport within plants. Reducing water use in home gardens requires careful observation. Start by measuring natural rainfall. Place rain gauges throughout the landscape. Understanding how much natural precipitation the plants on your property receive and how much water they require to flourish will dictate the amount of irrigation required. Water needs vary depending on the season, the amount of natural precipitation, location of plants in the landscape, plant species and soil type.

### General practices home gardeners can use to conserve water:

- Select low water use plants. Lists are available from your Cornell Cooperative Extension Education Center.
- Consolidate plants requiring similar amounts of irrigation.
- Mulch tilled areas to reduce water evaporation.
- Add organic matter to the soil to increase water holding capacity and improve air and water movement.

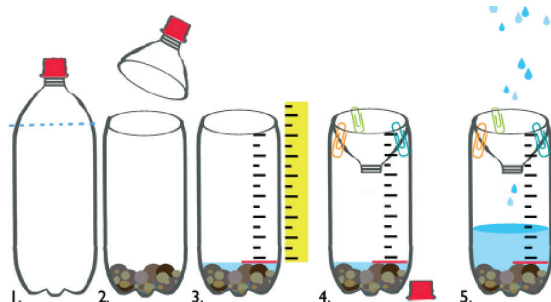
Select drought tolerant plants such as lavender to reduce the need for water. Check with your local Cornell Cooperative Extension for lists of low water use plants.



## Make a Recycled Rain Gauge!

### You will need:

One clean 1 liter plastic bottle, scissors, ruler or tape measure, permanent marker, paper clips or duct tape.



1. Rinse out the bottle and remove the label and cap. Cut the top just below the shoulder where the bottle straightens.
2. Fill the bottom of the bottle with small pebbles and sand for weight, about an inch and a half deep.
3. Pour water into the bottle, just so it covers the sand and pebble floor. This is your saturation line (red line above). Beginning at the saturation line, use a ruler to mark (with a permanent marker) every inch up to the top. You can add dots for  $\frac{1}{4}$  or  $\frac{1}{2}$  inches if you like.
4. Invert the top and place into the vessel to create a funnel for the rainfall. Secure the two parts together with paper clips or duct tape.
5. Place the rain gauge in your garden or on your lawn in an open area, where nothing will block the rainfall. Check your rain gauge every couple of days to measure how much rainfall your yard is getting. Use this gauge to make sure that your yard gets the amount of water that it needs.

## Watering

- Water only as fast as water can be absorbed. If you see puddles stop irrigating.
- Water should be directed to plant roots; avoid hitting the foliage.
- Water when needed not according to a predetermined schedule.
- Follow watering restrictions when and where they exist.

The watering method you use in your garden can make a difference. It is a good idea to water in the morning and not when the day is hottest. Watering in the evening may promote plant disease.

Hand held watering cans or hoses are the most time intensive method of watering. When using these tools, direct the water towards the plant roots not the foliage. Sinking perforated plastic jugs into the ground next to the plant creates a system that will direct water to plant roots.

When using a sprinkler keep the water pattern even by moving the sprinkler frequently. Be sure sidewalks streets or other paved surfaces are not being watered!

Soaker hoses can reduce runoff and evaporation and generally don't cost more than garden hoses. Trickle and drip irrigation systems are very efficient since they apply water to the plants roots zones as needed.

These watering methods can reduce water use as much as 50-80% compared to overhead irrigation and prevent plant diseases.

## Know Your Soil

Soil is the essential building block for healthy gardens. Its fertility, pH (measure of acidity) moisture content and physical qualities determine how well it will support plant life. Understanding and caring for the soil will result in a more productive garden and landscape.

Well-drained soils that are at least two feet deep are the most suitable for all types of gardens. Soils with a high water table or those with a shallow hard pan layer will likely require site management or modification. Start by having the soil tested. Your local Cornell Cooperative Extension Association may provide this service. Test results will show the level of primary plant nutrients and soil PH.

The report will also recommend fertilizer rates to correct any deficiencies. Information provided in the soil test report will help you avoid unnecessary or ill-timed applications of fertilizers that could damage plants and endanger water quality.



Check with your local Cornell Cooperative Extension office for availability of soil tests.

### Susceptibility to soil erosion depends on:

- Soil Cover : type and percent of cover.
- Soil Type: The most erosion prone soils are silty or sandy.
- Grade: sloping areas are more likely to erode.

## Managing Storm Water

How can we manage our home gardens and landscapes for heavy rainfall? Driving rain and rushing water can carry soil particles, organic matter, fertilizers and pesticides away from gardens and lawns and into groundwater, streams and rivers.

Cornell Cooperative Extension Master Gardeners have constructed rain gardens to capture stormwater runoff and direct the water into garden beds. Rain gardens are specifically designed to soak up rain water or snowmelt coming off of roofs, driveways or patios. When it rains a rain garden fills with a few inches of water, allowing the water to slowly filter into the ground rather than running off into surface water and storm drains.

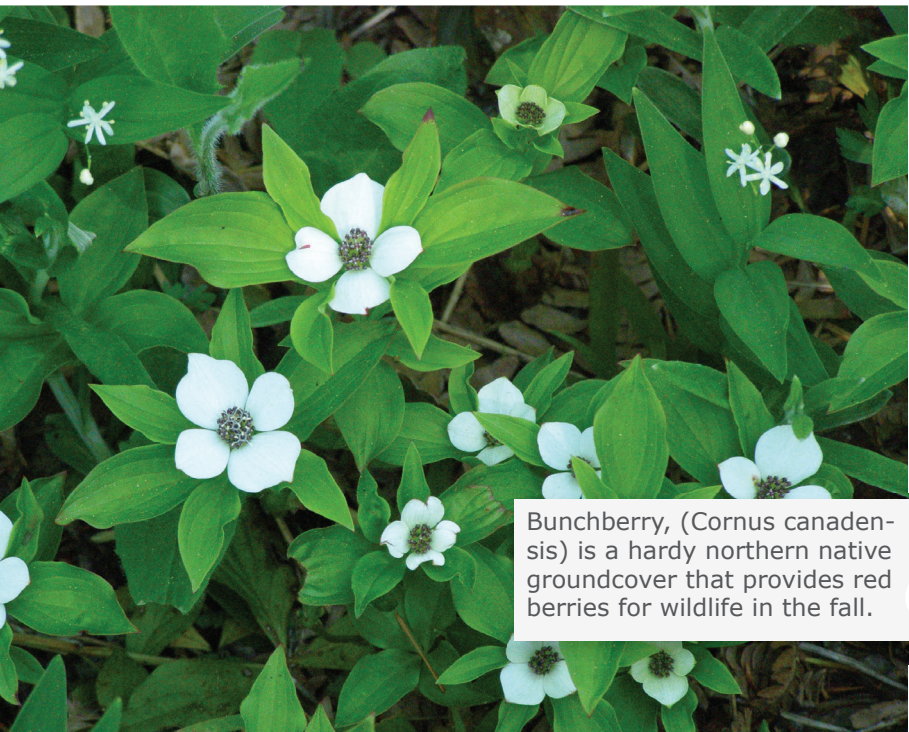


400 square foot garden installed at the town of Saugerties Senior Citizen Center to catch run off from the building and parking lot.





Ulster County Master Gardeners have begun to construct a rain garden at the site of the Xeriscape Demonstration garden at SUNY Ulster. This will help prevent runoff from the parking lot entering, and potentially flooding existing garden beds.



Bunchberry, (*Cornus canadensis*) is a hardy northern native groundcover that provides red berries for wildlife in the fall.



**The same techniques can be applied to residential sites. At home, look for evidence of soil erosion by water:**

- Bare spots in lawns.
- Newly exposed roots.
- Small stones or rocks appearing where there were none previously.
- Deposits of fine soils, usually in low lying areas.
- Widening or deepening of stream channels

### **Cover the Soil**

Bare soil is the primary source of erosion so it is important to reestablish vegetation as soon as possible after the soil is exposed. In heavy traffic areas where plants cannot be used a permanent mulch of stone or hardened walkway may be the only answer. Bark or woodchips can also be effective, but they do decompose so must be periodically replaced.

### **Protect Vegetation**

Protect vegetation where high velocities of water are expected. For example use a concrete splash block at the rain gutter outlet and place large rough edged stones at the outlet of any pipe.

### **Plant the Right Kind of Vegetation**

Observe which plants grow well in similar situations and use them. Many plant species lend themselves to erosion control. Look for those that spread to a dense cover, can grow with a low to medium soil fertility and are fairly drought tolerant. Check with your local nursery for the best selection of ground covers.

## Pest Management

- Pest control choices can impact water quality.
- Good garden management is the best means of controlling pests.
- Many insects are not harmful to plants.
- Try the least toxic pest management control first.

Pests are organisms that harm gardens and landscapes. Insects, fungi, bacteria, viruses, weeds, rodents and other animals can be troublesome. A totally pest free garden is unobtainable. A more reasonable plan is to keep a pest population within a tolerable level, known as integrated pest management or IPM. IPM utilizes a variety of pest control methods using chemical pesticides as a last resort.



Many insects, such as the honey bee are not harmful to plants.

### Know Your Garden : Monitor

Keeping a close watch on your garden will help you detect insect and disease problems early when they are more easily controlled. Regularly inspect the plants for insect and disease damage. Plants can tolerate some pest damage without significant yield loss or quality. Many insects and animals can be beneficial to your garden so don't run for the sprayer or trap at first sight. Contact Cornell Cooperative Extension or a local garden center for proper pest identification. Use the least toxic method of control, i.e. pull the weed, remove the diseased leaf or crush the harmful insect. In some cases biological or cultural controls are appropriate and can supplement physical control of pests.

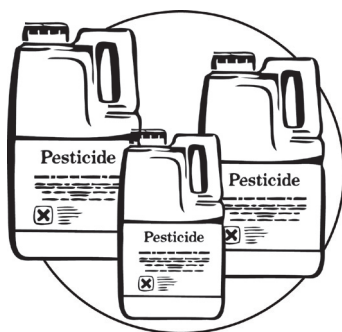
## Pesticide Use

A pest population can become resistant to pesticides if chemicals are overused. Synthetic chemicals should be used only as a last defense, after all other forms of control have been exhausted.

Read the label on a pesticide and reread it each time you use the chemical. Labels provide proper instruction on the mixing application and safe disposal of the chemical. Make sure to time pesticide treatments to be most effective and least disruptive to the pest's natural predators.

### Do not apply the pesticides when:

- It is windy, rainy or when temperatures are high.
- The ground is saturated or frozen.
- The chemical will enter a water body, well or storm sewer.



Product labels often indicate the distance from a water body a chemical can be safely applied

Seek advice to choose the least toxic pesticides, such as pyrethrins, insecticidal soaps or biological (e.g. *Bacillus thuringiensis* B.T.) and milky spore. If a pesticide is no longer effective or wanted contact your town offices for information on hazardous waste disposal programs in your area. Never pour toxic materials into a storm drain.

## Landscaping

- Design the yard to suit your needs and protect water quality.
- Keep rainfall and irrigation water on your yard.
- Use permeable paving materials whenever possible.
- Choose high quality turf grass and low water-use plants.

All plants have their own special requirements in terms of sunlight, moisture, temperature and soils. Choose landscape plants that match the conditions that your site can provide.

It is not wise to grow grass in dense shade, where maintenance is difficult or where intensive traffic can trample the plants or compact the soil.

If you decide to reduce lawn area use ground covers. Planting trees or shrubs can provide screening from neighbors, streets or unwanted views and may also reduce energy costs through providing insulation. This type of landscaping may also provide or increase wildlife habitat.



## Selecting Walkways

Concrete and asphalt seal the land preventing water infiltration and thus creating runoff. The following alternate paving surfaces offer permeability and durability.

### Wood Decking

Properly constructed wood decking made of an appropriate material (cedar redwood or treated wood) will last a long time . Spaces between the boards allow for easy infiltration of rainwater. Pea Gravel 2-3 inches deep placed beneath the deck will reduce erosion under the deck.

### Modular Pavers

Stone, brick and lattice paving blocks can be used on well-drained soils when placed on crushed stone or sand.

### Stone or Gravel

Stone or Gravel used over a geotextile fabric or other porous sheeting provides an attractive walkway that permits infiltration.

This gravel walkway permits infiltration and provides an attractive pathway through the garden. Stone choices are available in a wide variety of colors, textures and sizes to suit your landscape.



## Garden Wastes

Gardening and maintaining a yard creates wastes that can be converted into a valuable resource through composting. Yard wastes such as leaves and wood chips can be used as mulch around trees shrubs and other plants. Mulch will conserve water moderate soil temperatures and reduce weed growth. Eventually nutrients within the mulch will be released and the decomposed organic matter will improve soil structure.

Compost, the end product of organic decomposition can be used to improve the soil. Compost can loosen heavy clay soils, enhancing aeration and water infiltration. Soils rich in organic matter also provide a favorable environment for beneficial insects microorganisms and worms.

### All organic wastes are compostable:

- leaves
- grass clippings
- wood chips
- weeds
- garden wastes

A properly maintained compost pile will be odorless pest and rodent free. Your local Cornell Cooperative Extension may have building designs for compost bins and information on composting techniques available.





## Lawns

Be water wise when designing planting and maintaining lawn areas. A dense healthy lawn can help protect water quality, reducing stormwater runoff and soil erosion.

### Turf Selection

Selecting a turf grass variety that is most appropriate for your site will help prevent problems. The right variety will establish a dense turf stand quickly preventing weed encroachment. Tall and fine leaf fescues are considered low maintenance grasses and generally require less water. Some varieties of perennial ryegrass and Kentucky bluegrass also perform well under low maintenance conditions. Familiarize yourself with the different varieties of turf grass available and choose the best variety or mix to suit your lawn site.

### Fertility

Maintain the proper level of soil fertility by following soil test recommendations. Recommended dates for applying fertilizer to the lawn coincide with three holiday periods: Memorial Day, Labor Day and Thanksgiving. These dates also coincide with active periods of grass growth. If you choose only to fertilize once a year, do so in the fall helping the plant store adequate food supply for spring recovery. Never fertilize when the ground is frozen or saturated.

### Mowing

Mow the lawn throughout the growing season at the recommended height for the species of turf grass growing. It is best not to remove more than 1/3 of the grass plant at any one time. Set mower blades at 2.5 to 3 inches. Cutting lawns too short encourages weeds. Leave the clippings where they fall if they are less than one inch in length. Turf grass clippings contain nutrients

## The ONE-THIRD Rule



that are released back into the soil. If the clippings are too long, you can add them to your compost pile. Heavy thatch (decomposing plant tissue greater than one inch thick can restrict water movement into soil. Some species such as fine fescues and Kentucky bluegrass produce thatch. Others such as tall fescues and perennial ryegrass do not. De-thatching is recommended for lawns with one or more inches of thatch and should be done in fall. Use a dethatcher with fixed blades.

Remember to keep lawn equipment well maintained. Dull mower blades can fray grass tips, giving the lawn a whitish brown appearance. Poorly maintained gasoline powered lawn mowers contribute pollutants to surface and ground waters.

It is best not to remove more one-third of the grass plant.

To prevent your lawn from looking dull and ragged, make sure your mower's blades are sharp.



## Watering Lawns

During drought periods when water use is restricted don't water the lawn. Allow the lawn to go dormant naturally. Improper watering only benefits weeds. During dormancy use lawns as little as possible to prevent injury to the grass. Dormant grass will recover quickly with a good soaking rain.



To maintain a healthy, green color, most lawns require about an inch of water per week during the growing season, either in the form of irrigation or natural rainfall. If your grass is the recommended height (not too long), then you will be able to tell that it needs water by noticing that the shape of your footprints remain in the lawn after you walk across it. In mid-summer, grass roots are closer to the soil surface, so watering 2-3 times per week, for a total of one inch, instead of applying the entire inch in one session will allow the roots to take up the most water as possible. How long should you leave the sprinkler on? When you observe the water beginning to puddle or to run off the edge of the lawn, stop irrigating.



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For More Information:  
[www.cceulster.org](http://www.cceulster.org)  
[www.newyorkseagrant.org](http://www.newyorkseagrant.org)

