Applying knowledge to improve water quality
Pacific Northwest
Regional Water Program
A Partnership of USDA CSREES
& Land Grant Colleges and Universities

Fall 2004
PNWWATER 046

Landscaping to Protect Community Water

Whether you garden on a balcony in the urban core, or on land in rural America, landscape and gardening practices can affect water quality. A birds-eye view of any community shows the gradation from forested hills, through farmland to suburban, urban and industrial land use. It is usually crossed by streams and rivers moving excess water to the low areas where it forms the ponds and lakes.

Natural and Disturbed Systems

In a natural setting, water is intercepted by the canopy of trees, and/or shrubs and low plants so that much of the rain never reaches the ground. The water that does reach the soil soaks in slowly, with any excess slowly seeping toward the low areas where it joins pools and streams. As vegetation is removed at harvest, or for streets, parking lots and buildings, less water is intercepted, more reaches the streams. When cement replaces the forest litter, it prevents water from "soaking" into the ground, where it would seep downward eventually recharging the groundwater. What doesn't soak "in" "runs off" into streams.

The groundwater is the source of water for water supply wells but it also eventually reaches and recharges streams, supplying cool water for fish in the summer months. If the water moves through soil treated with soluble pesticides or fertilizers, both groundwater, then surface water, can become contaminated. It is usually the accumulation of small amounts of pollutants from large areas of land with many uses that creates the problem.

What are pollutants?

A pollutant is a substance in the wrong place.

- Manure can help improve soil quality but can be a pollutant (contributing bacteria and nitrogen) if it is washed off site and reaches community waters.
- Autumn leaf litter is great for protecting soil and plants, reducing water loss and enhancing soil tilth by providing food for worms and microorganisms. But when leaves are raked to the street, they are crushed to "ooze" by parking cars and then are carried with storm water to storm drains.
- Pesticides designed to solve a pest problem may move with soil or air or on grass clippings that are blown to the street. These contaminants may harm fish and the aquatic insects they rely on for dinner.

Landscape and Gardening Practices Can Contribute to Degraded Community Waters

Too much water on the surface runs off carrying bits of debris and dirt along with any nutrients and pesticides (such as "weed killers") attached to the soil particles down ditches, through storm drains or directly into local "receiving waters." There they mix with oil, antifreeze, salts and other contaminants from streets and parking lots. This mix may settle to the bottom or it may stay suspended in the water. Contaminated sediment is costly to remove when the harbors and boat moorages have to be dredged.

Washington State University
Oregon State University OSU
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A Legacy of Leading
Northwest Indian College
University of Alaska Fairbanks
United States Environmental Protection Agency
CSREES Education Research Extension USDA

Pacific Northwest Regional Water Quality Coordination Project Partners

Land Grant Universities

Alaska
Cooperative Extension Service
Contact Fred Sorensen:
907-786-6311
http://www.uaf.edu/ces/water/index.html
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
Extension Service
Contact Mike Gamroth: 541-737-3316
http://extension.oregonstate.edu/
University Publications:
http://extension.oregonstate.edu/catalog/

Washington
Washington State University
WSU Extension
Contact Bob Simmons:
360-427-9670 ext. 690
http://wawater.wsu.edu/
University Publications:
http://pubs.wsu.edu/

Northwest Indian College
Contact: Michael Cochrane:
360-392-4299
mcochrane@nwic.edu or
http://www.nwic.edu/

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, Corvallis Laboratory
http://www.epa.gov/wed/

For more information contact
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Landscape Features

The physical "improvements" to a landscape also can contribute positively or negatively to the quality of local waters.

- Flat terraced hillsides or planted slopes help retain water, while bare slopes speed runoff and may contribute to contamination.
- Impervious surfaces (cement walkways, paved parking) increase the amount and speed of water runoff, while porous surfaces such as crushed gravel or porous pavement slow runoff and help hold water on a site.
- House roofs shed water creating excesses from the downspouts, but if that water is captured and held at the site with a swale or a garden of water loving plants some may even filter down to recharge groundwater.

Community waters aren't degraded by the one-time pollutant or practice, but rather by multiple pollutants accumulating from the many rural, suburban, and urban landscapes that stretch from hilltop to the shore. Each of us can help improve community waters with small positive actions. In future updates these topics will be considered in greater depth with a focus on ways landscapes can enhance rather than pollute our community waters and sources of more information.

To get started, visit the web sites on community water quality protection below:

Idaho Water Quality Publications and Low Input Landscaping
http://info.ag.uidaho.edu

University of Alaska Extension
http://www.uaf.edu/ces/water/index.html

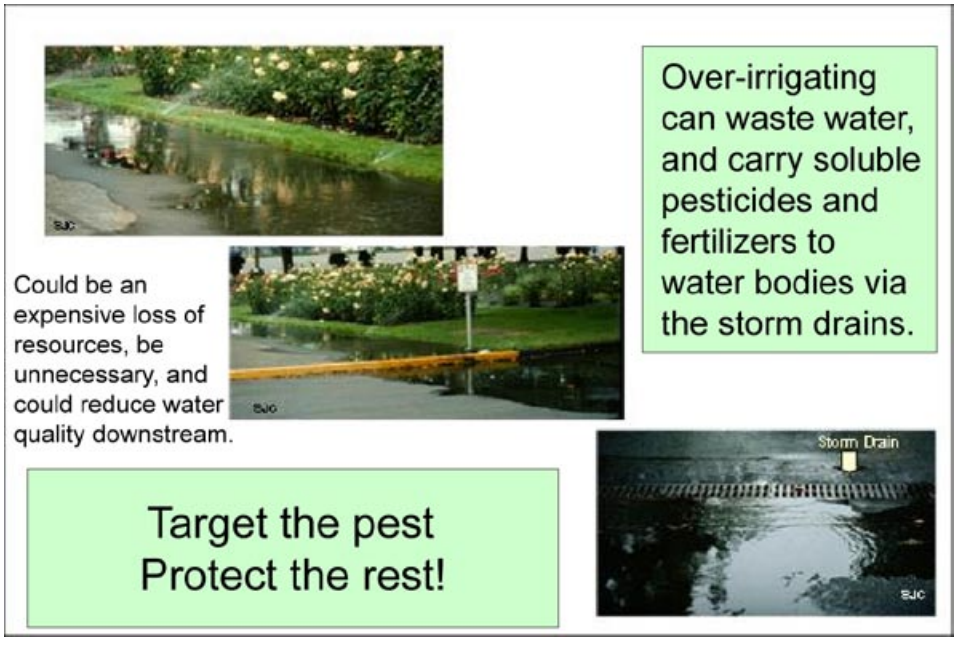
Oregon State University Well Water Program: list of titles on home gardening and water quality. See also the side bar for other topics.
http://wellwater.oregonstate.edu/lawnsgardens.php

Gardening to Protect Groundwater
http://extension.oregonstate.edu/answer.php#garden

Taking Care of Streams in the PNW: A Homeowner's Guide
http://extension.oregonstate.edu/catalog/pdf/pnw/pnw557.pdf

Washington's Water (WSU)
http://wawater.wsu.edu/index.htm

Your Yard and Water Quality: Simple Things Gardeners Can Do To Prevent Water Contamination
http://cru.cahe.wsu.edu/CEPublications/eb1744/eb1744.html



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.