

## Ground cover selection

Planting ground covers on slopes or bare areas helps control erosion and runoff because plant roots hold the soil in place, and the leaves protect the soil from the impact of raindrops, reducing soil compaction, and improving the speed with which water soaks into the ground. Ground covers can produce attractive patterns with variations in height, texture, and color. They also conserve soil moisture; reduce maintenance in narrow or odd-shaped areas where mowing, edging, and watering might be difficult; reduce heat, glare, noise, and dust; and block foot traffic without blocking the view. Some ground cover choices for Virginia include:

- Ajuga or Bugleweed (*Ajuga reptans*) – Ajuga form a low, dense carpet of semi-evergreen foliage. Ajuga is tolerant of most conditions as long as drainage is good, but can be invasive.
- Liriope or Lilyturf (*Liriope muscari*, *L. spicata*) – Evergreen ground covers with grass-like leaves; adaptable to a wide range of conditions.
- Ornamental grasses – A large selection is available; most prefer full sun.
- Dwarf Japanese Garden Juniper (*Juniperus procumbens* ‘Nana’) – Forms low, spreading mounds of evergreen foliage. Does best in full sun.

Many other ground covers grow well in Virginia. Contact your local Extension office for suggestions.

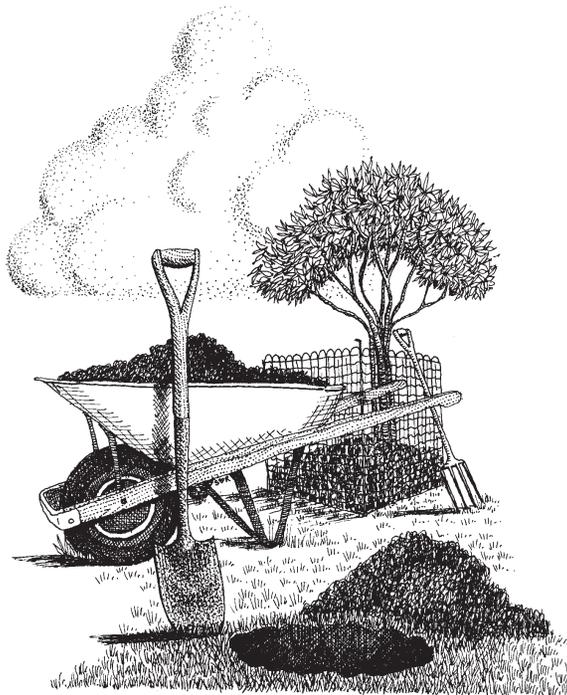
## Building and protecting soil

By caring for and improving your soil, you will help it absorb water more readily, reducing runoff and erosion as well as improving plant health.

- Add organic matter to your soil to improve the speed with which water soaks into the ground, the ability of the soil to hold water, and soil drainage. Leave grass clippings on the lawn and till leaves and compost into flower and vegetable beds.
- Mulch around trees and shrubs to reduce runoff. Mulch protects soil from being hit directly by rain, reducing soil crusting and increasing the speed with which water soaks into the ground.
- Till vegetable rows *across* the slope, rather than up and down.
- Don't leave garden soil bare over the winter. Mulch or plant a cover crop, such as annual rye.
- Prevent soil compaction by keeping can off the lawn and using landscaping to direct foot traffic along walkways—not through the yard.

For more information on selection, planting, cultural practices, and environmental quality, contact your local Virginia Cooperative Extension Office. If you want to learn more about horticulture through training and volunteer work, ask your Extension agent about becoming an Extension Master Gardener.

The original development of this series was funded by ESUSDA Smith Lever 3(d) National Water Quality Initiative Funds and the Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation.



Publication 426-722

[www.ext.vt.edu](http://www.ext.vt.edu)

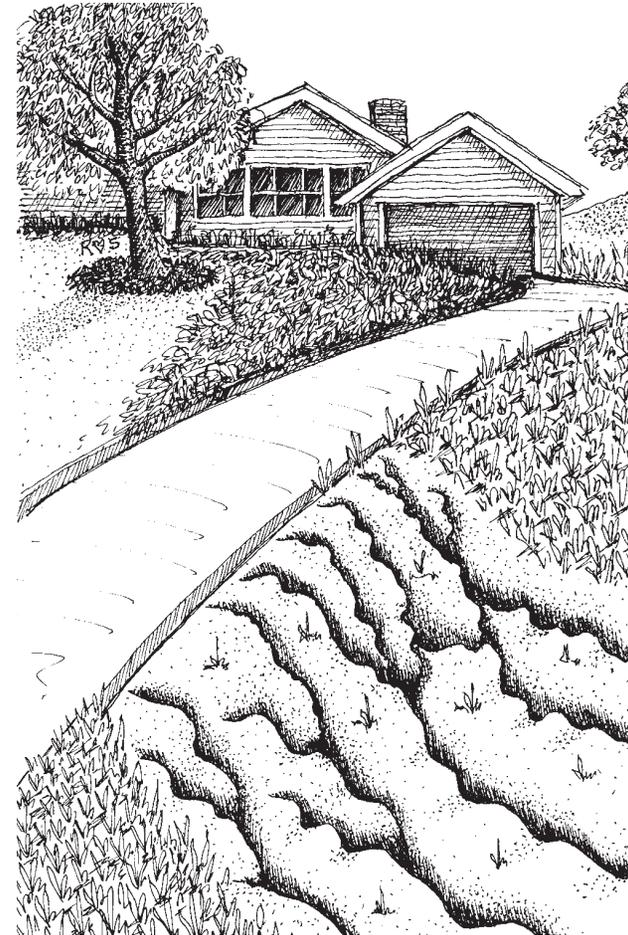
Produced by Communications and Marketing, College of Agriculture and Life Sciences, Virginia Tech, 2017

Virginia Cooperative Extension programs and employment are open to all, regardless of age, color, disability, gender, gender identity, gender expression, national origin, political affiliation, race, religion, sexual orientation, genetic information, veteran status, or any other basis protected by law. An equal opportunity/affirmative action employer. Issued in furtherance of Cooperative Extension work, Virginia Polytechnic Institute and State University, Virginia State University, and the U.S. Department of Agriculture cooperating. Edwin J. Jones, Director, Virginia Cooperative Extension, Virginia Tech, Blacksburg; M. Ray McKinnin, Administrator, 1890 Extension Program, Virginia State University, Petersburg.

VT/0517/HORT-242P

Virginia  
Gardener

# Reducing Erosion and Runoff



 **Virginia  
Cooperative  
Extension**  
Virginia Tech • Virginia State University

## Reducing Erosion and Runoff

Soil *erosion* occurs when soil particles are carried off by water or wind and deposited somewhere else such as into a stream or at the bottom of a bay. Often soil particles are carried by *runoff*, water that does not soak into the ground, but flows over the surface and runs to another area – such as into stormdrains, streams, or lakes. In addition to soil sediment, runoff can wash fertilizer and other pollutants along with it. Sediment makes up most of the pollutant carried by runoff, however, and most of the phosphate and pesticides entering Virginia's waters are attached to these soil particles. Therefore, controlling erosion will make a significant contribution to the control of water pollution. Runoff entering lakes and stream, in addition to carrying pollutants, is water that is needed to soak through the soil to resupply our groundwater. Reducing erosion and runoff is important to protect both our soils and our water supplies. Erosion and runoff in the home landscape also create unsightly bare areas and deposit mud and dust on driveways and walkways that is then tracked into the house.

Erosion begins when rain or irrigation water loosens soil particles. When there is too much water to soak into the soil, it fills surface depressions and begins to flow. With enough speed, this surface runoff carries away the loosened soil. Runoff from roofs and paved areas can contribute to erosion by directing large amounts of water in a short time period to nearby areas that are unable to absorb it quickly enough.

### Signs of erosion

- Tree roots, small stones, or rocks become exposed.
- Small rills or gullies begin to show.
- Soil splashes on windows and outside walls.
- Stream channels widen or deepen.
- Sediment collects in low areas or on pavement.

### Signs of runoff

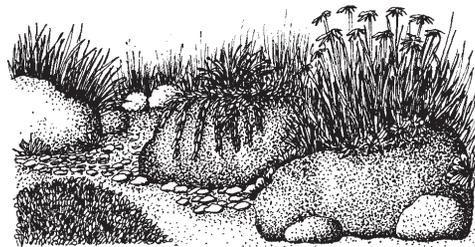
- After a rain, you may observe runoff as water flowing over the soil surface or collecting in low spots on your property
- Anywhere you see signs of erosion, there is most likely runoff.
- Notice any paved areas on your property or on neigh-

boring properties. If these are not porous, rain will run off into an adjacent area.

- Runoff may be supplying some of the water that collects on your property. Look for runoff sources on your property or your neighbor's, such as pavement, compacted soil, or roofs.
- Even if water does not collect on your property, you may be contributing to runoff onto adjacent property or into storm sewers and thus into our lakes and streams. Examine any paved area or area where water puddles, and try to observe where water runs during a rain.

### Why control runoff and erosion?

- Runoff can wash sediment, fertilizers, and pesticides into waterways.
- Nitrogen and phosphorus from fertilizers carried by runoff into our waters have been associated with many environmental problems, including excessive algae growth, depletion of the water's oxygen supply, and suffocation of aquatic organisms.
- Groundwater supplies much of Virginia's water, and it needs to be recharged by water soaking through the soil rather than running off.
- Erosion removes valuable topsoil and clogs waterways and reservoirs with sediment.
- Runoff can contribute to flooding problems "downstream."



### Use plants to reduce erosion

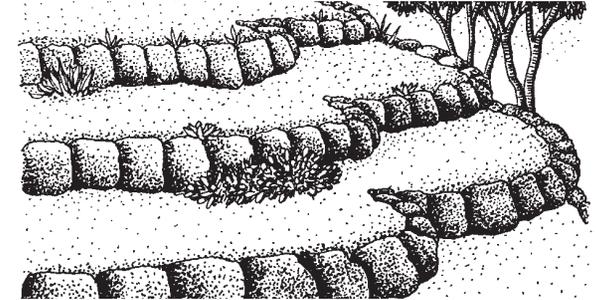
Landscaping not only adds beauty and value to your property, but also helps control erosion by reducing the amount and speed of runoff. Ground covers are one of the best erosion controls and include any plant material that covers the ground surface so the soil cannot be seen from above and rain does not strike directly upon it.

Turfgrass is one important type of ground cover, but many other low-growing herbaceous and woody plants

work well and, once established, require less fertilizer, pesticide, and other maintenance than turf.

### Handling steep slopes

Steep slopes can be easily eroded and, even if erosion is controlled, may allow water to collect in undesirable areas, such as near house foundations. There are many ways to reduce erosion and runoff, as well as control the direction of drainage.



Plant a vigorous ground cover to reduce erosion and increase water penetration into the sod on the slope. Turf is often impractical here because mowing is difficult and dangerous on steep terrain.

- Build terraces or a retaining wall. These catch runoff, giving water time to soak into the ground, and also make attractive planting beds. Be aware that changing soil level near well-established trees can seriously damage their root systems.
- Slope terraces by about 2 percent perpendicular to the incline to direct drainage to one side or the other.
- To redirect excessive runoff, install perforated drainage pipe just below surface level across the direction of the slope. Drainage pipe should be laid perforated side down at a 2 percent slope in a gravel bed. The end of the pipe must be protected from clogging and must direct the water to an area able to handle it.

