

The Issue:

Run-off pollution occurs with each rainfall and snowmelt when water flows over land picking up soil and pollutants and depositing them in streams, ponds, wetlands, lakes, and rivers. Run-off pollution can result in excess algal growth, fish kills, reduced tourism, impaired drinking water, and more. It is environmentally and economically costly.

Run-off pollution can include:

- **Sediment** (soil erosion from cropland, construction sites, stream banks & soil washed from driveways, streets, roofs, & other impermeable surfaces)
- **Fertilizers/Nutrients** (lawns, crops, feedlots, plant waste, faulty septic systems)
- **Pesticides** (herbicides, insecticides, fungicides, rodenticides, etc.)
- **Plant waste** (grass clippings, tree leaves, garden debris, shrub prunings, etc.)
- Oil/antifreeze
- Household chemicals (solvents, paint, paint thinners, cleaners, etc.)
- Faulty septic systems (human waste, nutrients)
- Pet waste (dogs and cats)

In most towns and cities, storm water from rainfall or snowmelt flows to storm drains and then directly to surface water. It is not treated to remove pollutants. Many towns and cities in Nebraska are now required by the Environmental Protection Agency's Clean Water Act to reduce pollution in storm water.

Our activities can contribute to run-off pollution. We need to do our part to protect water quality from our own homes and businesses. Best management practices can reduce the amount of pollutants from property and prevent or slow down run-off.

Lawns and Nonpoint Source Pollution

Are lawns a significant source of run off pollution? Due to a lack of research, the answer to this question at this time is "maybe". What is known about run-off pollution and about lawn fertilization and pesticide use trends and behaviors; as well as knowledge of the nutrient cycle, indicates run-off pollution can and does occur from lawns.

Environmental Benefits of Lawns

A properly maintained lawn can provide many environmental benefits including:

- Reduces soil erosion. Up to 90 percent of the weight of a grass plant is in its roots, making it very efficient in stabilizing soil and preventing erosion.
- Reduces run-off by slowing down water as it flows over property. Healthy, dense lawns can absorb rainfall six times more effectively than a wheat field and four times better than a hay field.
- The cooling effect of an average size lawn is equal to about 9 tons of air conditioning, greater than a typical home's central air conditioning unit.
- Turfgrass traps much of an estimated 12 million tons of dust and dirt released annually into the U.S. atmosphere.
- A turf area just 50' x 50' absorbs carbon dioxide, ozone, sulfur dioxide and other gases and releases enough oxygen for a family of four.

Run-Off Pollution From Lawns

Following are the most likely causes/sources of run-off pollution from lawns:

- Overfertilization and nonjudicious use of pesticides
- Applying fertilizers and pesticides just prior to a heavy rain event
- Leaving fertilizer and pesticide granules and grass clippings on impervious surfaces such as driveways, sidewalks and streets where rainfall carries them directly to surface water
- Dumping of waste fertilizers and pesticides into storm drains
- Compacted soils leading to increased run-off of water rather than infiltration into soil
- Overwatering leading to run-off and to increased leaching of nitrogen/pesticides

Best Management Lawn Care Practice Checklist:

Irrigation

- ✓ Apply enough water to wet the soil 4" to 6" deep without run-off occurring. Water again when the lawn shows sign of needing irrigation (darker bluish green cast; footprints left in the grass).
- ✓ Avoid excess irrigation that runs off the lawn; or leaches nitrogen out of the root zone. It is not necessary to wet the soil much deeper than 4" to 6" for most lawns.
- ✓ Avoid irrigating impermeable surfaces such as driveways.
- ✓ Check automatic irrigation systems on a regular basis for uniform watering.
- ✓ Core aerate lawns in September or April to relieve soil compaction and allow irrigation water and rainfall to soak in rather than run-off of the property.

Mowing:

- ✓ Leave grass clippings on the lawn to increase soil organic matter content and reduce the need to fertilize with inorganic fertilizers.
- ✓ After mowing, sweep grass clippings from impermeable surfaces so rainwater does not carry them to surface water.
- ✓ Use sharp mower blades; mow Kentucky bluegrass at 2.5 to 3" tall and turf-type tall fescue at 3 to 3.5" tall; mow often enough so no more than one-third of the grass blade is removed at one time.

Fertilization

- ✓ Have a soil test taken to determine which nutrients are needed in what amounts.
- ✓ Do not over-fertilize. Apply the amount of nutrients plants need and time applications for when turfgrass is actively growing.
- ✓ Do not apply fertilizer to cold (temperatures below 40 degrees F.) or frozen soils.
- ✓ Calibrate fertilizer spreaders to ensure applying the correct rate.
- ✓ Do not fertilize sidewalks, driveways, and streets.
- ✓ Sweep granules off impermeable surfaces and onto the turf so rainwater does not carry them to surface water via storm drains.
- ✓ Avoid fertilizing when heavy rainfall is in the forecast.
- ✓ Leave grass clippings on the lawn to increase organic matter content of soil.
- ✓ Select fertilizers with a combination of fast release (water soluble) and slow release (water insoluble or WIN) nitrogen sources.
- ✓ Water in fertilizers soon after application.

Cultivation

- ✓ Core aerate lawns in September or April to alleviate soil compaction and encourage a healthy root system.
- ✓ Power rake lawns in September or April if true thatch exceeds one-half inch. Thatch is the reddish brown "mat" of rhizomes, roots, and grass stems found between the soil and grass.

Pest Management

- ✓ Use best management practices for a healthy turf that will be less susceptible to diseases, insects & weeds.
- ✓ Positively identify lawn problems before selecting a control method.
- ✓ Use the least toxic approach that will effectively control the problem.
- ✓ Do not apply a pesticide unless you know:
 - The cause of the problem (Is it a pest or environmental, i.e. heat stress?)
 - Control is actually necessary for economic reasons.
 - A pesticide is the most effective control method to use.
 - The timing is right for a pesticide application to control the specific pest.
- ✓ Use pesticides responsibly:
 - Read and follow label directions for application
 - Apply on an as needed basis, rather than a routine “just in case” basis.
 - Use spot treatments versus broadcast treatments to reduce the amount of pesticide used.
 - Use appropriate application equipment and calibrate applicators to apply the correct rate.
 - Do not apply pesticides when heavy rainfall is in the forecast.
 - Sweep pesticide granules off impermeable surfaces and onto the turf.
 - Do not dump unused pesticides or pesticide waste down storm drains.
 - Purchase pesticides in small amounts and mix only the amount needed.
 - Store and dispose of excess pesticides safely.

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