Whether you choose an exceptional lawn, low input lawn, conversion of lawn, or a combination of types—

You can use your understanding of lawn biology, soil systems, and watersheds to maintain your desired yard qualities and improve soil and watershed system health.

Find this information at
yardcarechoices.umn.edu

Yard Care Choices: Study Copy
Twin Cities Household Ecosystem Project
Maria Dahmus and Kristen C. Nelson

Questions? Contact us at yardcarechoices@umn.edu.
Whether you choose an exceptional lawn, low input lawn, conversion of lawn, or a combination of types—

Your yard care choices can improve system health.

Your yard can provide different individual, social, and environmental benefits.

**Individual and social benefits:**
- Creates aesthetic appeal
- Provides places for solitude and socializing
- Provides spaces for kids and dogs to play
- Supports edible landscapes and gardens
- Reduces noise

**Environmental benefits:**
- Holds soil in place
- Improves soil structure
- Absorbs and filters water
- Moderates temperature
- Improves air quality
- Uses carbon dioxide, produces oxygen
- Provides wildlife habitat
- Supports biodiversity

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Your yard is a part of interdependent and interacting systems. The soil system beneath your yard is essential for vegetation growth, and your yard care practices influence soil system health. Your watershed system connects your yard to nearby lakes, streams, and rivers, and your yard care decisions influence water quality.

**Evaluate your choices to improve system health.**
STEP ONE: UNDERSTAND YOUR SOIL SYSTEM

Soil systems contain organisms, organic matter, air, water, minerals, and nutrients. Soils have texture and structure.

**Soil texture** describes the size of particles. Particles range in size from large sand particles, to small silt particles, to very small clay particles. Soils often contain a mixture of particle sizes. The percentages of different sized particles in the mixture determine texture.

A soil test will tell you your soil’s texture and nutrients needed.

Soil texture affects soil structure as well as the storage and movement of water and nutrients. As a result, soil texture influences outcomes of lawn care practices.

**QUICK TEST**

You can determine your soil’s texture simply by feeling it. To do so, follow these steps:

1. Moisten the soil.
2. Move the soil between your thumb and forefinger.
   - Sand will feel gritty, silt will feel smooth, and clay will feel sticky.
3. Try to form the soil into a flat ribbon.
   - Sandy soils will fall apart and clayey soils will form a long ribbon.

**Soil structure** describes the clumping of particles. Without organic matter and living organisms, particles in soil remain separate. Structured particles have spaces between them where air and water circulate, roots grow, and organisms live.

- Organisms, such as microbes and earthworms, eat and excrete organic matter. Their waste is like a glue that binds particles together into aggregates.
- Dead plants and organisms decompose and become organic matter. This process releases nutrients and improves soil structure.

Sandy soils do not easily clump together into aggregates. Therefore, nutrients and water move quickly through sandy soils, beyond the root zone. In contrast, silty and clayey soils may become compacted, with tightly packed particles. This poor soil structure restricts air and water circulation and root growth.

Source: University of Minnesota Extension, Soil Compaction by J. DeJong-Hughes, J. F. Moncrief, W. B. Voorhees, and J. B. Swan: www.extension.umn.edu/distribution/cropsystems/DC3115.html
Why are compacted soils a problem for lawns?

- Water cannot easily infiltrate compacted soils. It may run off lawns and yards, taking nutrients and soil particles with it.
- Plant roots cannot easily grow through compacted soils. As a result, roots don’t access water and nutrients deeper in soil layers. This makes grass and other vegetation thin and patchy, and they require more supplemental fertilizer and water.

Quick Test

Determine whether your soil is compacted with two simple tests:

Test 1:
1. Push a screwdriver or metal rod into the soil (avoid tree roots).
2. If you are unable to push the rod at least 6 inches into the ground, then your soil may be compacted.

Test 2:
1. Dig up a very small section of grass to look at root depth.
2. If roots extend less than 2 inches below the surface of the ground, then your soil may be compacted.

Your management choices can improve soil structure.

If your soil is compacted, aerate it.
- This removes plugs of soil to increase air and water circulation throughout soil.
- September is the best time to aerate.

If you are establishing a new lawn, incorporate organic matter into the soil to improve structure before seeding or sodding.

STEP TWO: UNDERSTAND YOUR WATERSHED SYSTEM

A watershed is an area in which all water drains to the same lake, stream, or river. It connects people, lawns, and yards to the same water body.

When you keep nutrients and soil in your yard, you support healthy watersheds.

Most storm drains flow into nearby lakes, streams, and rivers.
Among yard choices, your mowing, fertilizing, and water management practices can improve watershed health.

Mowing

- Sweep up lawn clippings from impervious surfaces such as driveways, sidewalks, and gutters. This prevents grass clippings, and the nutrients they contain, from entering lakes and streams.

- Mow grass taller to increase root depth. Deeper roots absorb more water, reducing runoff.

Fertilizing

- Sweep up fertilizer from driveways, sidewalks, and gutters to prevent it from entering lakes and streams.

Watering

- Make sure your yard absorbs all the water you give it.
  
  Position sprinklers and hoses to prevent water from running off your yard or landing on sidewalks, driveways, and streets. Runoff takes organic matter to storm drains and then your lake or stream.

- Water in the morning to maximize absorption.

Managing Rainwater

- During a rainfall, your downspouts release a lot of water in one spot at one time. Direct your downspouts away from impervious surfaces and towards vegetation to minimize water and nutrient loss and soil erosion.

- Consider using a barrel to collect and store rainwater from your downspouts to water your lawn and yard.

- Plant or mulch bare ground to prevent soil erosion when it rains. Soil particles contain nutrients. Don’t let them wash away.

- Plant a rain garden to absorb rainwater.

When grass clippings and fertilizer enter storm drains, the nutrients they contain flow directly into nearby lakes, streams, and rivers, accelerating algae growth.
STEP THREE: PRIORITY PRACTICES BASED ON YOUR YARD

Your yard has unique characteristics that contribute to its interactions with soil and watershed systems. Based on your yard’s characteristics, prioritize management practices to prevent soil, nutrients, and water from flowing out of your yard.

To begin, select a troublesome area in your yard for improvement:

If you have a sloped area, runoff and erosion are likely.
- Plant a rain garden at the base of the slope to absorb water and minimize runoff and erosion.
- Install physical structures such as a retaining wall to contain erosion.
- Plant groundcover to absorb water and hold soil in place.

If you found that you have silt or clay soil, be aware of potential soil compaction. Compacted soil leads to runoff and poor vegetation growth.
- Aerate your lawn to improve soil structure.

If you found that you have sandy soil, evaluate your watering and fertilizing practices. Nutrients and water can move quickly beyond the root zone and potentially into groundwater.
- Water lightly and more frequently to minimize water loss below the root zone.
- Use slow-release fertilizer and less fertilizer per application to minimize nutrient loss below the root zone.
- Select plants that thrive in well-drained, sandy soil.
  Consult a plant selector tool for ideas:
  www.sustland.umn.edu/plant/plantdata.asp

If you live near a water body, consider a buffer area from fertilized areas and the water body.
- Avoid fertilizing along the shoreline.
- Plant native vegetation to hold shoreline in place and absorb runoff.
- For more information and ideas on designing buffer areas, see www.sustland.umn.edu/design/water.html

If you have shady areas, bare soil patches and erosion are likely.
- Plant shade tolerant vegetation to hold soil in place.
- Cover bare ground with mulch to prevent erosion.

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Source: SULIS.
www.sustland.umn.edu