



## FACT SHEET 4.1

# UNDERSTANDING YOUR SOIL

The soils that help support your hobby farm serve as more than just the physical medium needed to grow healthy crops. The most productive soils are alive with microbial activity that work together with the soil structure, nutrients and your plants to provide the balanced environment needed for a successful garden.

Your soil is an ecosystem that cycles nutrients between the organisms in your soil and your plants to ensure a healthy garden and a high-quality harvest. Soil is composed of:

- Minerals
- Water
- Gases
- Organic matter
- Microorganisms

Healthy soils that support good microbial activity need the right amount of:

- Dark organic matter
- Microbial life
- Aeration
- Drainage
- Water retention



## GET TO KNOW YOUR SOIL

<b>COLOR</b>	Soils dark in color are generally rich in organic matter that support microbial activity; light and grey soils often lack organic material and proper drainage.
<b>TEXTURE</b>	Soil texture regulates how water, air, nutrients, microorganisms and plants interact in the soil and is determined by the amounts of sand, silt, clay and organic matter. Healthy soils have an ideal texture of 30-50% sand, 30-50% silt, 20-30% clay and 5-10% organic material.
<b>STRUCTURE</b>	Soil structure impacts the movement of air and water through soil. Healthy soil structure is generally loose and crumbly. Overly compacted soils can inhibit root growth and prevent infiltration of water, limiting water available for plant growth and potentially causing erosion.
<b>SMELL</b>	Healthy soils should have an earthy smell while soil with an offensive odor can indicate a disruption in its microbial balance.
<b>PH</b>	Soil pH on a scale of 1-14 measures the acidity and alkalinity of the soil with 7 being neutral, less than 7 being acidic, and greater than 7 being alkaline. Most home garden plants prefer soil that is neutral or slightly acidic, however, there are exceptions and it's best to research the individual plant's preference to ensure the soil pH is correct for optimal health.



### WATER QUALITY BENEFIT

Healthy soils have good water retention capabilities and improve drainage resulting in reduced erosion and stormwater impacts to nearby surface waters.

Microorganisms are the primary decomposers of organic material in soil. Decomposers generally include:

- Bacteria
- Algae
- Fungi
- Earthworms
- Nematodes

Healthy balanced soils are more likely to:

- Be less susceptible to erosion and stormwater runoff that can impact nearby waterways.
- Contain the water retention capabilities needed to support plants, particularly during dry conditions.
- Have the ability to adapt to changes in environmental conditions.
- Be able to adjust to changes in nutrient availability as plants grow.
- Defend against the threat of disease and pests.

**BY EVALUATING AND UNDERSTANDING THE PHYSICAL AND BIOLOGICAL COMPONENTS OF YOUR SOIL YOU SHOULD BE ABLE TO MORE ACTIVELY AND EFFECTIVELY IMPLEMENT YOUR NUTRIENT MANAGEMENT PROGRAM TO PRODUCE A HIGH-QUALITY HARVEST.**



### DID YOU KNOW?

One teaspoon of healthy soil can contain 100 million to 1 billion healthy bacteria.



### HELPFUL LINKS

[www.ag.umass.edu/crops-dairy-livestock-equine/fact-sheets/healthy-soils](http://www.ag.umass.edu/crops-dairy-livestock-equine/fact-sheets/healthy-soils)  
[www.nrcs.usda.gov/wps/portal/nrcs/main/national/soils/health](http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/soils/health)

