

4th grade – Healthy Soil is Like Gold

Date: Late October or early November after all the other classes have harvested

Objective: to discover and describe the components of a healthy soil and to experience different techniques to improve soil quality.

Background: Soil is something all of us take for granted. But it is one of the necessary life-sustaining ingredients of our planet. And soil is exciting! Soil formation is a very slow process. Each inch of topsoil requires more than 100 years to form, by the processes of weathering and decomposition. Weathering, caused by rain, wind and freezing and thawing breaks down rocks into tiny particles – the inorganic part of the soil. Bacteria, fungi and other living things slowly decompose nutrients, such as leaves and twigs, recycling them into humus – the organic matter in soil that helps it hold water, air and nutrients. Soil is alive: more than 100 billion microorganisms live in a pound of soil.

Preparation:

- Designate the 3 work station areas in the garden and flag or mark perennials not to pull
- Bring shovels and trowels and empty buckets.
- Gather: bagged manure, cover crop seed, straw or dried leaf mulch
- Gather a small bin or container to make a worm bin, newspaper, veggie scraps and red wiggler worms.
- Designate beds for cover crop, beds for manure mixture and a bed for loading garden compost onto.
- Have power point on thumb drive

Action:

- All class stand in a circle outside the garden.
- Ask students what they see when they look at a plant? Take a few answers. You see only part of the story! The roots travel underground, pushing through the soil, absorbing the nutrients and water that plants need to grow. What kind of soil do plants like?
- Have students put their index finger in the air – now try to poke that finger into the ground where they are standing, near their feet. Now poke the finger into a garden bed. Notice how much lighter the soil is – not compacted.
- Review the garden rules with particular attention to using tools. (keep tools low – the sharp end below the waist; travel slowly with tools; wait until instructed to pick up your tool; put them back where you are told)
- Demonstrate using a trowel or shovel correctly by pointing the sharp part straight down, not across. You will be working to get all the roots out of the soil. Don't flip dirt. If a tool is set down, where should it go?
- Demonstrate for students where to put the plants after they've been pulled
- Let students know they will spend about 10 minutes at this and to listen for your signal to return (coyote call, owl call, bell, chime)

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- Count off 1,2,3 to divide the students into 3 groups to work in a designated area with a volunteer or teacher. Pair up students within these groups and give each pair a shovel or trowel. (*don't pull marked perennials that are expected to stay and will grow again in the spring*)
- All stations in different parts of the garden, pull up old plants. Notice the makeup of the soil and creatures in the soil. – 10 minutes
- Give the signal and pull the group back to a circle.
- Divide the group again - All the ones will spread cover crop seed in designated bed(s). All the twos will mix manure into designated bed(s). All the threes will create a worm bin. To create a worm bin shred newspaper into the bin, add peat moss and enough water to make the bedding feel like a wrung out sponge, add veggie scraps and the worms. If finished and time remains they can all spread mulch on the beds that aren't seeded with cover crop. – 10minutes
- Signal to the group to return to a circle. Have students turn to their neighbor and share one interesting thing they discovered while pulling plants. Return to class
- Watch the power point – 7 minutes
- Have a spokesperson/people from each group stand up and describe what they did in the garden to care for the garden and how they believe it will help the soil for next year
- Ask the class why it is important to take care of our soil. It takes 100 years for decomposers and weather to create just an inch of soil.