

**Grades:** 4  
**Subjects:** Science, Social Studies

**Objectives:** Students will...

1. Be able to discuss the importance of nutrients in the soil through the food web activity.
2. Better understand the importance of soil for food, clothing, and life in general.

**Materials:**

yarn  
index cards  
hole punch  
markers  
scissors  
Ball of string  
*I'm connected To Soil* handout

**References:** Dirt: Secrets in the Soil. Utah Ag in the Classroom, USU extension.

## **Activities:**

### **I. Web Of Nutrients (30 min)**

1. In this activity, students will look at the connections in a forest ecosystem. Make cards with the names of different ecosystem components written on them. Punch holes on the top corners of the cards. Attach a string to the cards so students can wear them around their necks. Possible ecosystem components for your cards include: soil, bacteria, fungi, earthworm, coyote willow shrub, cottonwood tree, woodpecker, bat, deer, mouse, owl, bark beetle, beaver, coyote, spider, gopher snake, rabbit, clover, columbine, honeysuckle, lichens, maple tree, Douglas fir, violet, poison ivy, rotten log. Be sure to make a card for soil, to emphasize the role that soil plays in holding nutrients for other ecosystem components. If you have time include a picture of the components on the cards.
2. Have the students make a circle and sit on the floor, or, if weather and time permit, go outside and form a circle on the grass. Begin by asking where the nutrients are stored within a forest community, leading to the idea that nutrients are stored in the soil.

3. Tell the students you are going to hand out web cards with names of plants and animals and other things found in a forest. Start by asking the student with the soil card to

hold the end of the ball of string, since that is where nutrients are stored. Ask the students: who can get nutrients from the soil? Have the “soil” student choose another student that connects with the soil. The soil student would then pass the ball, while holding on to an end, to a student who gets nutrients from the soil, such as a maple tree. Have the “maple tree” student wrap the string around one hand and pass the ball on to another student who represents an organism or plant that connects to the maple tree, such as a woodpecker, who may rest in the tree. The “woodpecker” student would then wrap the string around his or her hand, and then make a connection to another component and pass the ball along. Have the students continue the process until all components are included in the web. The ball of string can always be tossed back to the “soil” student if a student can not find someone else related to them.

6. Pose a scenario to the students where one of the ecosystem components is lost, for example all the maple trees are infected with a fungus and die, or all the woodpeckers catch a disease and die. Have the “lost” component gently tug on the string. Have everyone who feels the tug raise a hand. Ask the students to evaluate how the loss of one component affects the entire ecosystem web. You can extend it further by having the group of students who were connected to the “lost” component tug the line themselves. Again, ask those who felt this second tug to raise their hands.

7. Ask the students what happened when just one component was removed from the forest ecosystem, explaining that any components that connect to that link are affected by its removal. Ask the students what they have learned about the relationships between the many parts that make up an ecosystem and have them relate how everything within the ecosystem is connected to the soil.

## **II. I’m Connected To Soil** (20 to 30 min.)

1. Provide each student with the *I’m Connected To Soil* handout.
2. Students will write two things they have used today in the top two spaces on the handout.
3. To complete the handout, have the students list connections back to the soil for the two items they listed, as shown on the attached example.

## I'm Connected To Soil

On the two top lines, list two items that you use or need everyday. Then create a "Soil Web", by adding arrows and tracing back how each item is connected to the soil.

Me

Eat corn

Wool sweater

Buy at store

Buy at Store

Corn delivered

Factory

Corn harvested

farmer sells sheep wool

Corn planted

Sheep eats grass

Soil

## I'm Connected To Soil

On the two top lines, list two items that you use or need everyday. Then create a "Soil Web", by adding arrows and tracing back how each item is connected to the soil.

Me

_____	_____
_____	_____
_____	_____
_____	_____

Soil