

# Harney Silt Loam

**Make healthy dirt.**

## OBJECTIVES

Students will:

- Ĥ learn that harney silt loam is the state soil of Kansas
- Ĥ know that soil is made of crushed rock, dirt, water, and plant debris
- Ĥ know that all soils are not the same and that some are better than others for growing plants

## OTHER MATERIALS

- ' Dirt in a clear glass or jar so the class can easily see and recognize it as dirt.
- ' Cheesecloth or an old dish towel or tea towel.
- ' Enough rock (limestone or sandstone work best) or a piece of brick to equal one cup once it is smashed. Do not use asphalt as it contains petroleum products.
- ' 1 cup peat moss
- ' 1 cup plant leftovers such as fruit or vegetable skins or trimmings, tea leaves, or coffee grounds.
- ' 4 broken or crushed eggshells.
- ' Water, enough to wet the mixture.
- ' A bowl or container to mix the ingredients in.
- ' Hammer.
- ' Blender.
- ' Spoon or stick to stir the mixture with.
- ' Sunflower seeds, one per student.
- ' Paper cups to use as flower pots, one per student.

## TEACHER PREPARATION

- ' Collect the materials needed for the lesson.
- ' Read through the lesson and decide if the rock or brick will be smashed by the students in class or if you will smash it in advance and then demonstrate the process to the class.

## HISTORICAL BACKGROUND

Some people consider soil to be Kansas's most valuable resource. Soil is why many nineteenth-century immigrants came to Kansas and why buffalo found Kansas so hospitable.



Combined with the state's climate and water supply, soil supports our number one industry today: agriculture. Harney silt loam was adopted as the Kansas state soil on April 12, 1990, when Governor Mike Hayden signed Senate Bill 96. Five years of strong grassroots efforts are responsible for obtaining this recognition. Because of the state's unique soil legacy and the completion of the state's most comprehensive soil inventory by the USDA Soil Conservation Service, it was proposed that a typical prairie soil be selected to serve as an acknowledgment to the great agricultural heritage in Kansas. It also serves as a standard against which other soils can be compared.

Kansas has more acres of prairie soils than any other state, and harney silt loam possesses the ideal qualities of a prairie soil. Prime farmland has the best combination of physical and chemical characteristics for producing food and fiber. Almost four million acres in twenty-six west-central Kansas counties contain harney silt.



The name "harney," meaning people, is adopted from "harahey," a traditional Wichita Indian term for "Pawnee Indian" stemming from when Coronado journeyed across Kansas.

Soils are not easily renewed in nature. It takes many hundreds of years for an inch of topsoil to develop under prairie grasses. Unprotected crop fields can lose an inch of topsoil in just one or two years if exposed to wind and water erosion.

Source: This information was taken from *State Soil of Kansas - Harney Silt Loam*, published by Soil and Water Conservation Society chapters and the Kansas Association of Professional Soil Classifiers.

## VOCABULARY

Loam	Soil that is easy to crumble consisting of a mixture of varying proportions of clay, silt, and sand.
Mineral	A substance found in nature that is not a plant or an animal. Salt, coal, and gold are minerals.
Silt	Fine particles or pieces of sand, clay, dirt, and other material. Silt is carried by flowing water, as in a river, and eventually settles to the bottom.
Symbol	Something that stands for something else. Symbols are used to communicate words, emotions, directions, etc.



## ACTIVITY

- 1) Hold up the container of dirt and ask the class what it is, where it can be found, and how it is used. Make sure that someone mentions that plants need soil in order to grow.

Ask if dirt is important. What would happen if there were no dirt? If there were no dirt would anything in our lives change? Again, make sure there is a discussion about what would happen to the plants. Without plants (there would be no vegetables or fruit to eat) what would happen to us?

Explain that dirt is very important in our lives. It may not be something we think about everyday, like our families, or toys, or pets, but it is still part of our lives everyday. Dirt is needed to grow the food we eat. Animals eat grass that grows in dirt.

- 2) Ask how many have heard of the term "junk food." What does it mean?  
® *Junk food is food that is not very healthy. It is usually potato chips, candy, hamburgers, french fries, etc.*

If junk food is not very healthy then what are some healthy foods? Have the class list a few. Make the point that healthy food is needed for people to be healthy and for children to "grow up big and strong."

Explain to the class that just as there are foods for people that are healthy and not healthy there are dirts for plants that are healthy and not healthy. This is because plants get some of the food they need to "grow big and strong" from the dirt they're planted in. (They also need other things including sun and water.)

- 3) Ask the class what is in dirt.  
® *Tiny pieces of rocks and minerals, air, water, and pieces of dead plants and animals that are all mixed together.*

Explain that dirt takes a LONG, L-O-N-G, time to make. The process happens as rivers and rain wear away at rocks, plants and animals die, and all of this gets mixed together. Tell them that as a class they are going to try to make some dirt. Explain that you can do it quicker than nature can because you have the use of hammers and nature does not.

- 4) At this point either  
± Show the class the rock or brick that was smashed in advance, and demonstrate how it was smashed.

OR



- ± Show the class the rock or brick, and then completely wrap it in the cheesecloth or towel. Let the class take turns using the hammer to pound the rock or brick until it is smashed into tiny bits about the size of grains of sugar.

Place the smashed rock or brick into the mixing bowl and add equal amounts of crushed rock and peat moss. (The peat moss conditions the soil and helps it hold water.)

Place the plant leftovers and eggshells into the blender, and chop them up. Add this plant and eggshell mixture to the smashed rock and peat moss. Stir them together.

Add enough water to make the dirt mixture moist and mix it all together again.

You have dirt!

- 5) Ask the class how they will know if they were successful in making healthy dirt.

® *Plant something and see if it grows.*

Place the mixture into containers (one per student). Let each student plant a sunflower seed in his/her "flower pot." Provide them with sunshine and moisture and see if they will grow.

- 6) Pull the class together as a group and review what you've discussed.

- ± Dirt is important for growing plants. It provides food for the plants.
- ± There is healthy dirt and "junk food" dirt.

Tell the class briefly that in Kansas dirt is so important that one type of dirt, harney silt loam, was named the state soil of Kansas. Because Kansas grows so much food and raises so many cattle (cattle eat grass) people thought that it was important to have a state soil. Hopefully the dirt the class made will be as good as harney silt loam.

