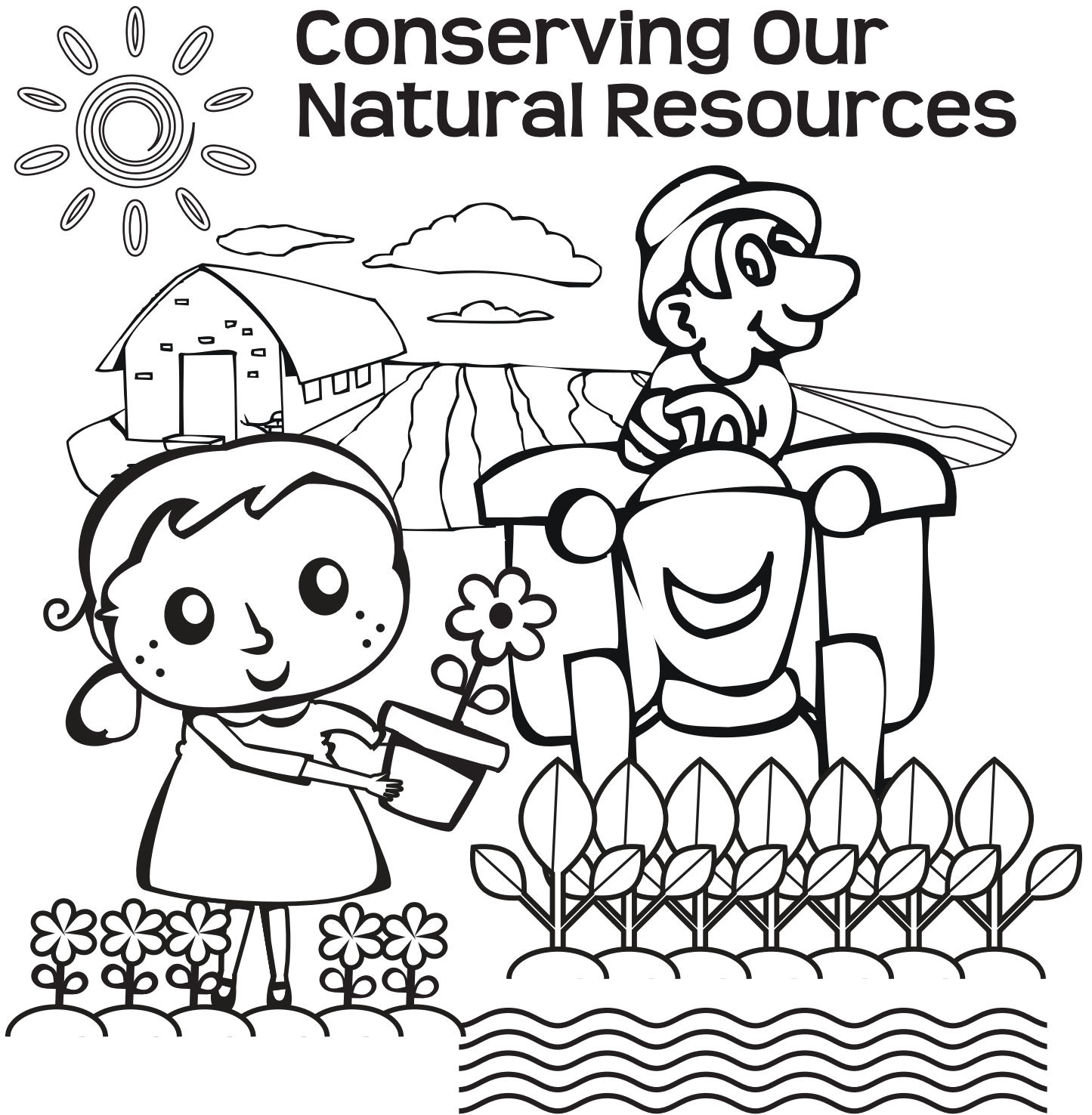




United States Department of Agriculture

Farmers and You: Conserving Our Natural Resources



Natural Resources
Conservation Service

April 2016

Helping People Help the Land

Natural resources are all around us and literally under our feet.

A natural resource is something that is found in nature and can be used by people. Earth's natural resources include soil, air, water, plants, animals, light, stone, minerals, and fossil fuels. People need some natural resources to stay alive. They use others to make their lives better.

We have to conserve our natural resources since many of them are limited. Conserve means to protect something from harm or destruction. Many people are committed to taking care of earth's natural resources. These people are called conservationists. Conservationist is a long word, but anyone can be one—even you. Let's talk about resources we use all of the time, but probably don't think about very often.

Soil 
the upper layer of earth
in which plants grow

Water 
odorless, colorless liquid that fills the
ocean, lakes and rivers and it falls
from clouds as rain

Plants 
living things that grow in soil or water
and can produce their own food

Soil

Soil is the upper layer of earth in which plants grow. Soil is needed to grow food for animals and humans.

Soil formation begins with large rocks, minerals and humus. Humus is organic matter made up of decayed plant or animal matter. After thousands of years, wind, water and organic material break down the surface rock into smaller pieces. These small pieces form layers of soil called horizons.

Soil Horizons

The O horizon is the top layer. It is made up of plants that have fallen onto the ground.

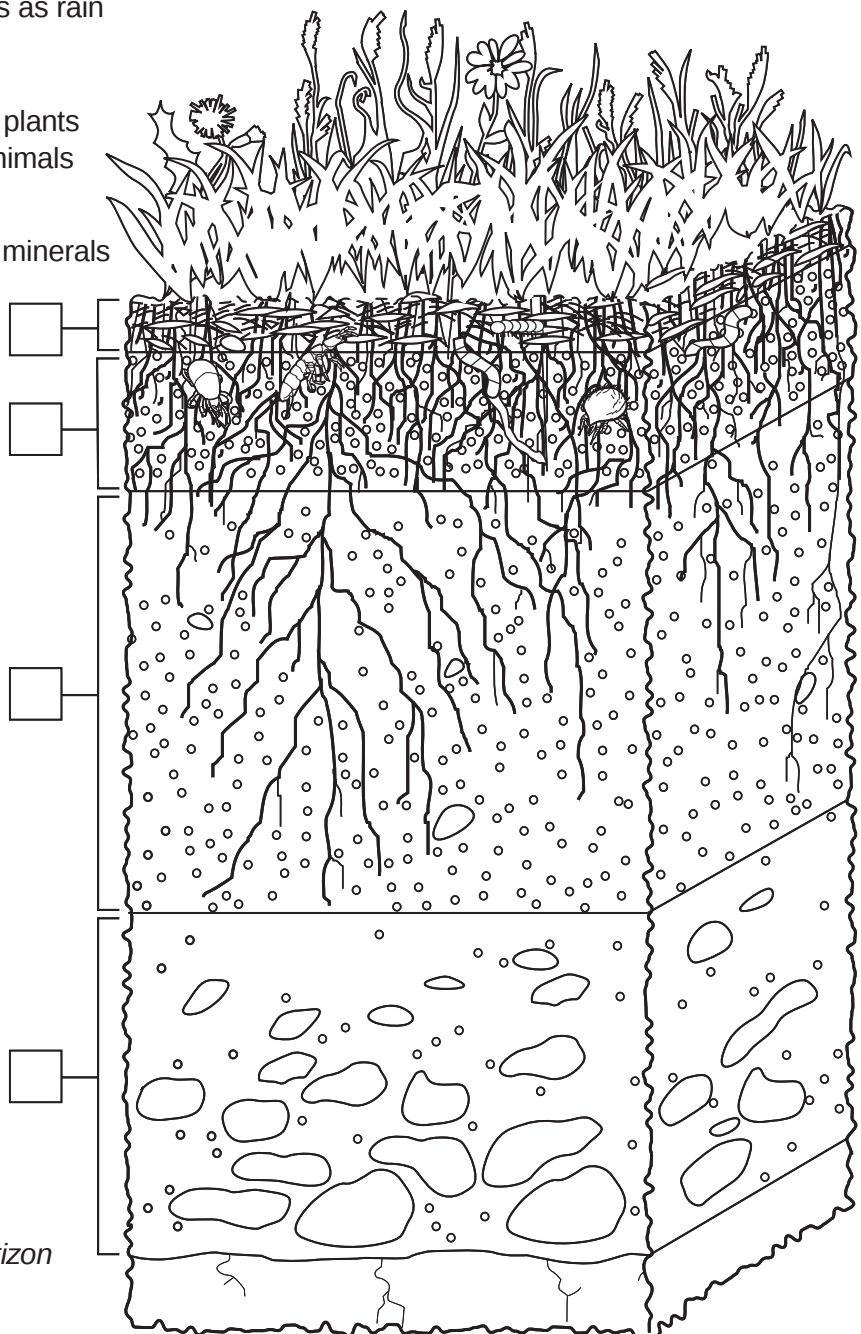
The A horizon is the living layer. This layer is also called the topsoil and it's where the roots of plants grow best.

The B horizon is a tough layer. This layer is called the subsoil. Plants and animals have a hard time getting through the B horizon.

The C horizon It has less living stuff in it than any of the above layers.

Below the soil horizons is the hardest layer of all: bedrock!

Can you write the letter of each soil horizon next to the correct layer in the picture?



Soil Conservation

Soil conservation is a big deal to farmers and ranchers all over the world. Healthy soil improves animal habitat, holds water, and grows nutritious food. While it may be hard to imagine, soil can be lost. It can be washed away by water or blown away by wind. This is called erosion.

How can you prevent erosion?

Make sure the soil has plants growing in it because roots hold the soil in place. Soil with deep plant roots is more likely to stay put when the wind blows or when the rain falls.

Make sure the soil stays covered, either with growing plants or with plant residue. Plant residue is top part of the plant (leaves and stems) that lay on the ground when the plant is no longer growing.

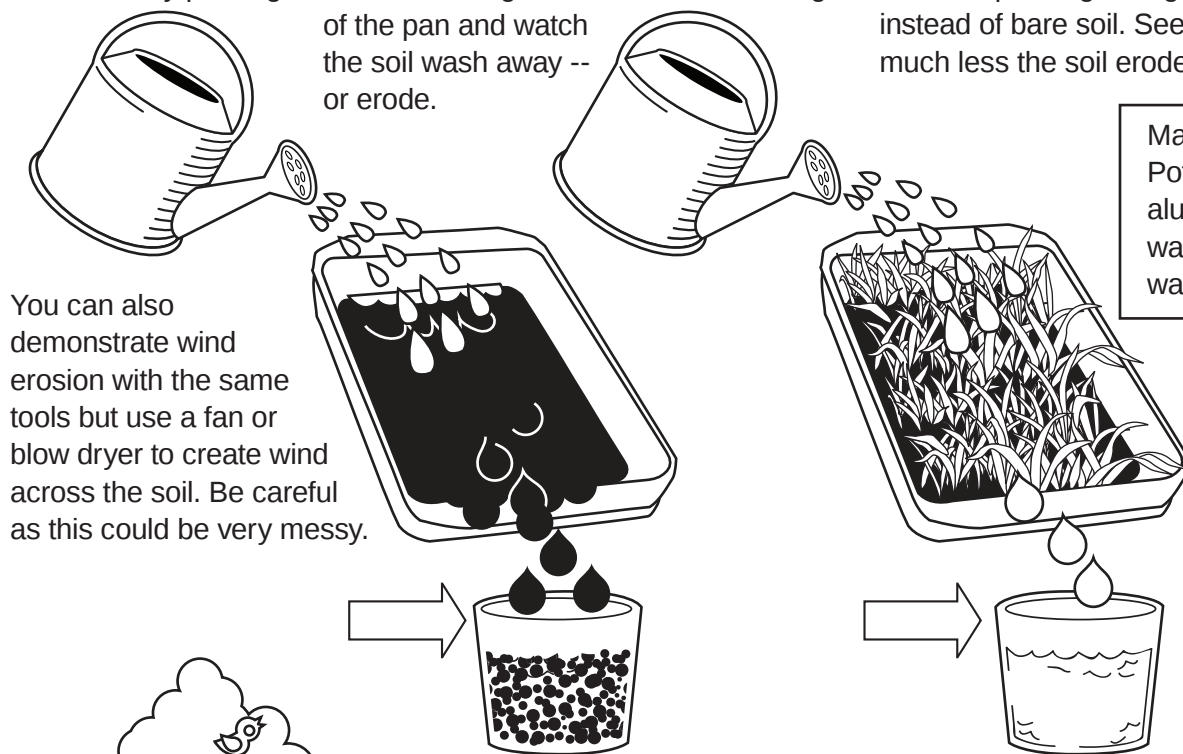
ACTIVITY: Erosion demonstration

Pour potting soil into an aluminum cake pan and then tilt the pan slightly to create a slope. "Rain" on the soil by pouring water onto the higher end of the pan and watch the soil wash away -- or erode.

To show how plant roots prevent soil from eroding, repeat this experiment using soil with grass or other plants growing in it instead of bare soil. See how much less the soil erodes.

You can also demonstrate wind erosion with the same tools but use a fan or blow dryer to create wind across the soil. Be careful as this could be very messy.

Materials:
Potting soil,
aluminum pan,
water, sod,
watering can.

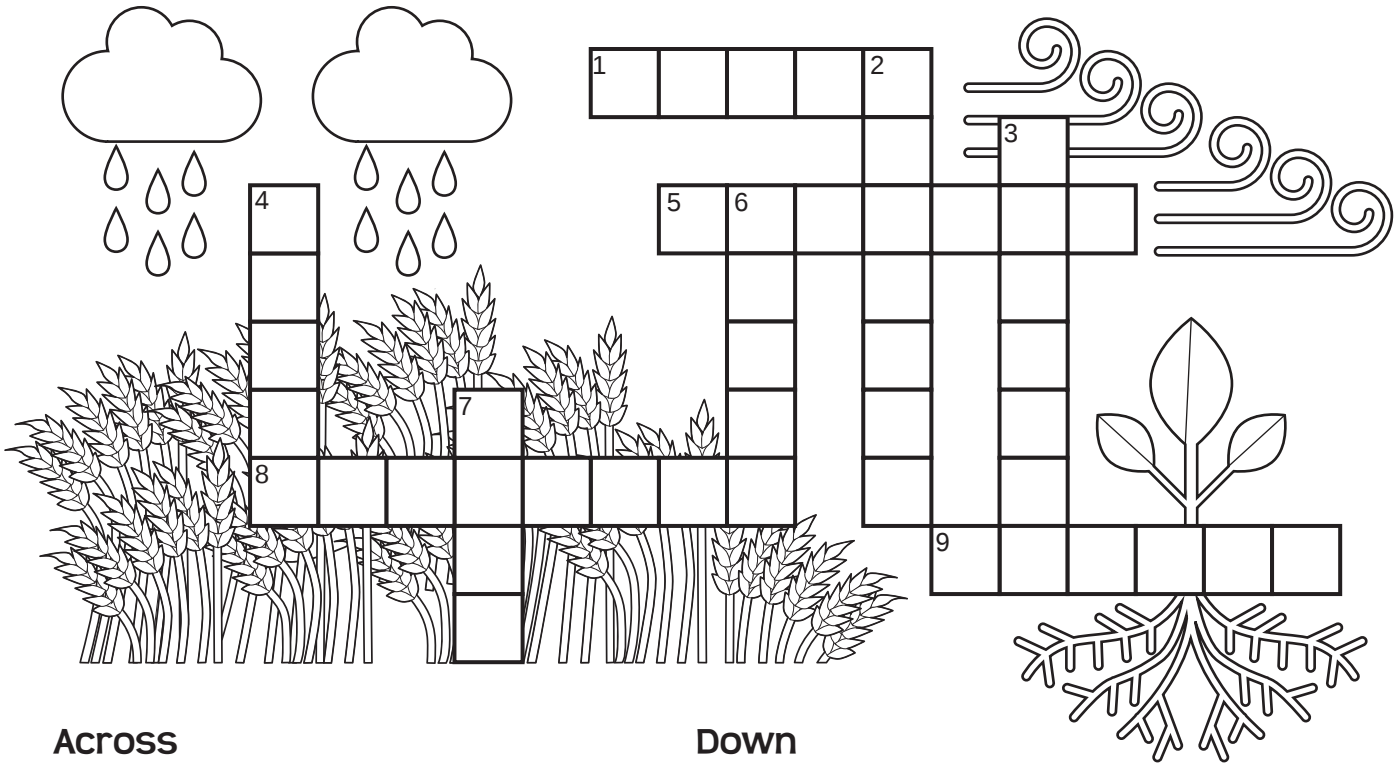


Soil Conservation at Home

The same soil conservation principles apply to your lawn and garden at home. Keep the soil covered with growing plants, plant residue, or mulch (like leaves, grass clippings or straw).

Soil Conservation Crossword

See if you can use what you learned about soil conservation in the crossword puzzle below.



Across

1. Clear liquid that falls from clouds as rain and can cause erosion
5. Can happen to soil by wind and water
8. The distinct layers of soil
9. Living things that have leaves, stems and roots

Down

2. The top part of the plant (leaves and stems) that lays on top of the soil and protects it
3. Upper layer of soil that many plants grow in
4. Leaves, grass clippings or straw that you place on the soil to protect it
6. Part of the plant that is hidden underground and takes up water and stores food
7. It's the blowing air that can cause erosion

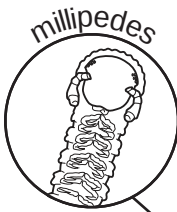
One tablespoon of soil has more organisms in it than there are people on earth.



bacteria



soil mites



millipedes



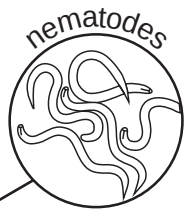
protozoa



fungi



springtails



nematodes

One gram (less than one ounce) of soil contains 5,000 different types of bacteria.



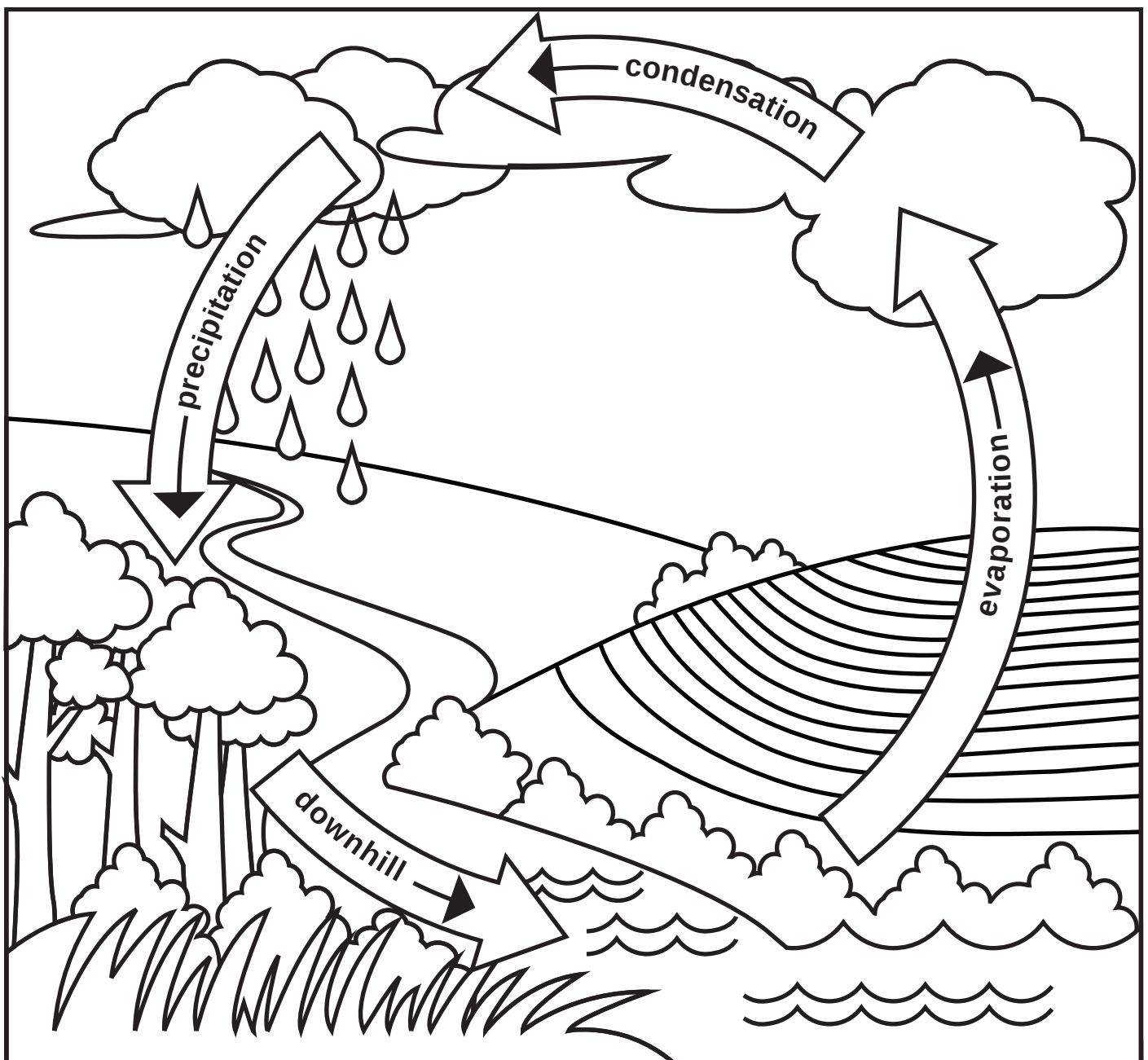
1,400,000 earthworms can be found in an acre of healthy soil.

Water

The water cycle is made up of a few main parts: evaporation, condensation, and precipitation and collection. Evaporation occurs when a liquid turns into a gas. In the water cycle, heat from the sun causes water on earth (in oceans, lakes, etc.) to evaporate and rise into the sky. The evaporated water is called water vapor or gas. Water vapor collects in the sky and forms clouds. You can see vapor as steam from your breath on a cold day or when cooking food on the stove.

As the water vapor in the clouds cools down, the water vapor goes from a gas to a liquid again. Water vapor becomes water and falls to the earth in the form of precipitation. Precipitation is rain, snow, sleet or hail that falls to the ground. Once precipitation falls from the sky, it is absorbed into the soil or runs through creeks and rivers into lakes and oceans. Water evaporates into the sky again, and the water cycle continues.

Color the water cycle.



Water Conservation

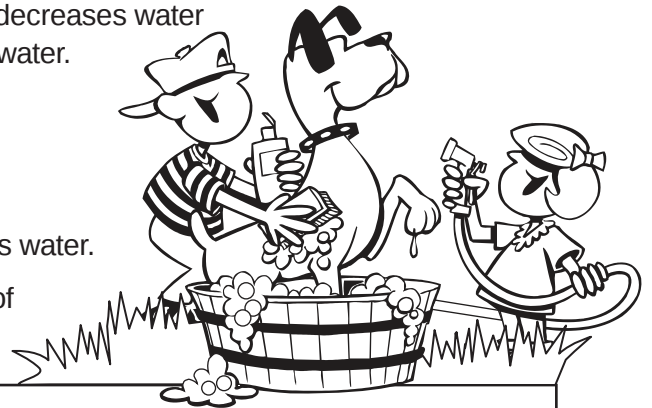
Since water is a limited resource we all depend on for life, it is important to conserve water and use it wisely. Farmers and ranchers conserve water on the land they manage and you can conserve water too.

Three ways farmers and ranchers conserve water:

1. Installing watering systems that use water flow meters to help them measure and control the amount of water they are using for their crops so they only use what the crops need.
2. Planting crops that protect soil that would otherwise be bare. These crops are known as cover crops. Cover crops reduce the amount of water that runs off of the land, allowing the soil to absorb more water and not lose as much water to evaporation.
3. Rotating grazing animals between fields. Rotational grazing keeps plants healthy and their root systems strong. Good grazing management decreases water runoff and makes land more drought resistant, conserving water.

Three ways YOU can conserve water:

1. When you give your pet fresh water, don't throw the old water down the drain. Use it to water trees or shrubs.
2. Wash your pets outdoors in an area of your lawn that needs water.
3. Keep a pitcher of drinking water in the refrigerator instead of letting the faucet run until the water is cool.

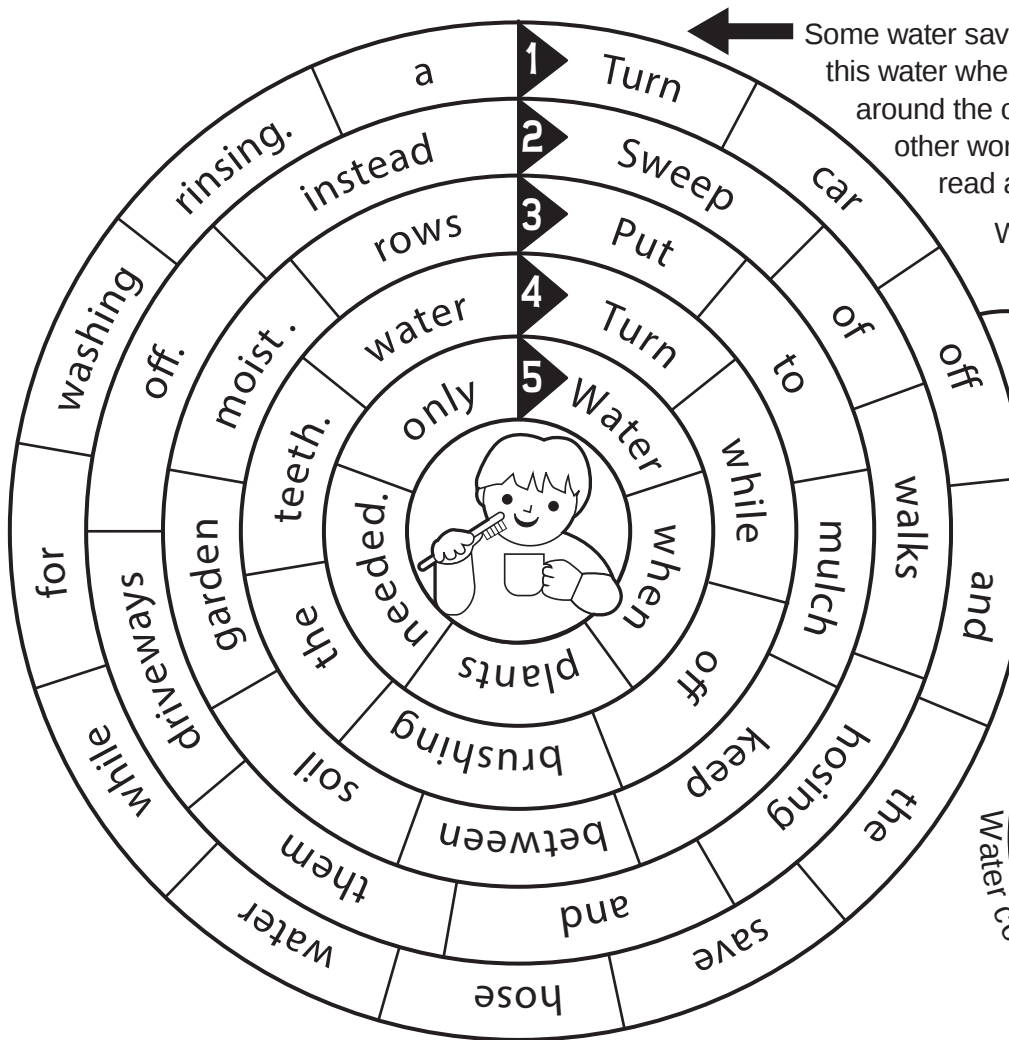


All these words have something to do with water conservation. Find and circle them in the word puzzle.

AIR
ANIMALS
CONSERVATIONIST
CONSERVE
CYCLE
DROUGHT
EARTH
ENERGY
EROSION
FARMERS
GAS
HUMANS
LAYERS
LIQUID
MINERALS
NATURAL
NRCS
PLANTS
PRECIPITATION
RESOURCES
ROOTS
TOPSOIL
WATER

S	O	M	Q	T	M	A	E	L	A	W	L	N	C	N
E	U	Y	I	S	Q	I	I	R	A	A	A	E	O	E
L	L	B	E	I	Y	O	N	T	Y	T	T	I	N	A
C	R	A	S	N	S	G	E	E	U	U	T	G	S	R
Y	S	O	A	O	P	R	R	R	R	A	K	A	E	T
C	E	E	O	I	I	S	A	E	T	A	G	S	R	H
S	F	R	A	T	R	L	C	I	N	N	L	N	V	A
L	O	O	W	A	S	N	P	E	Y	E	J	S	E	Z
A	L	S	Y	V	I	I	T	H	G	U	O	R	D	I
M	G	I	F	R	C	R	E	S	O	U	R	C	E	S
I	T	O	O	E	F	A	R	M	E	R	S	S	G	N
N	V	N	R	S	N	R	C	S	T	N	A	L	P	A
A	D	P	G	N	P	L	I	Q	U	I	D	Z	U	M
A	M	X	M	O	Y	O	D	I	L	O	S	D	X	U
B	V	T	H	C	K	S	T	S	D	A	O	E	X	H

Spin Around for Conservation Tips



Some water saving tips are spinning around in this water wheel. For each numbered tip, go around the circle clockwise, reading every other word. Keep going until you've read all of the words in that tip.

Write the five tips in the spaces below.

The average person in the United States uses anywhere from 80-100 gallons of water per day. Flushing the toilet takes up the largest amount of this water.



1. _____

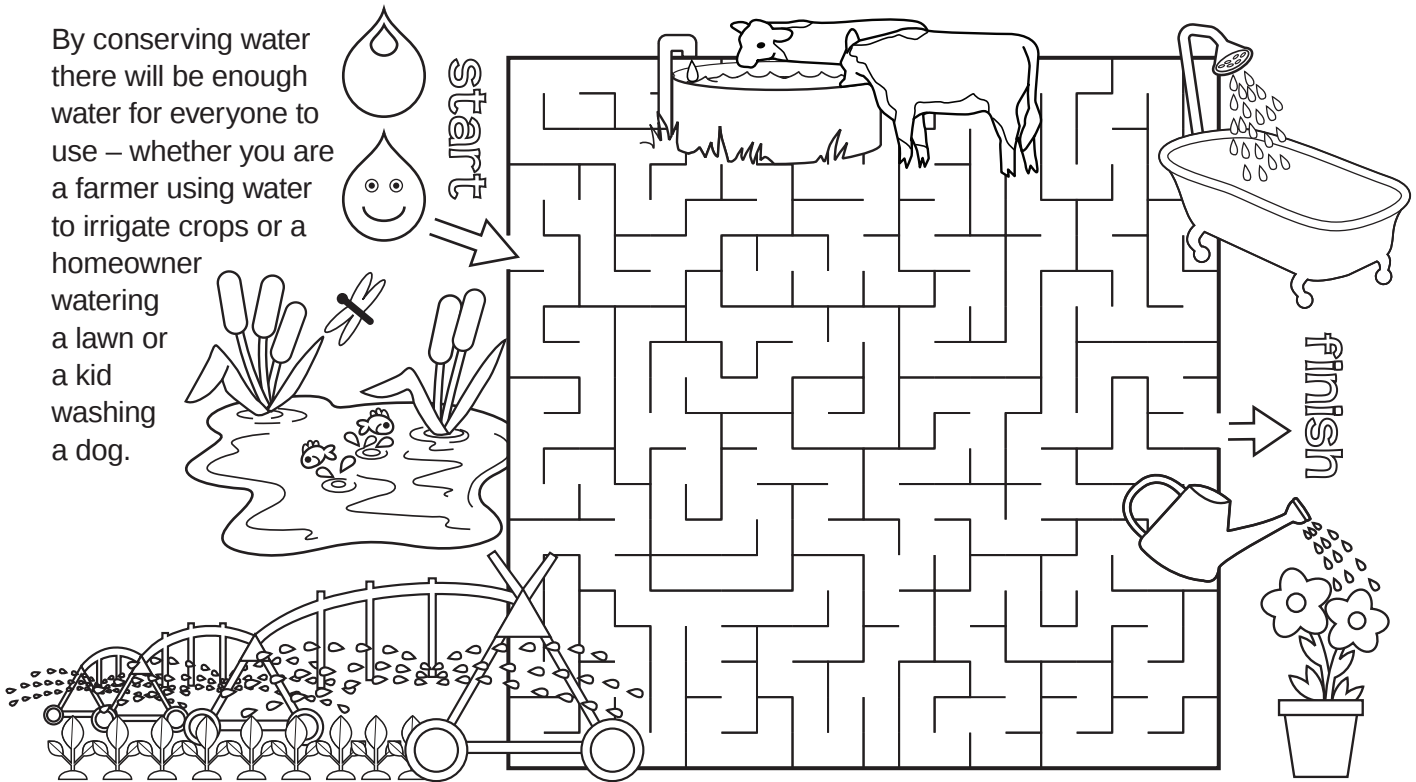
_____.
2. _____

_____.
3. _____

_____.
4. _____
_____.
5. _____
_____.

Water Conservation Maze

By conserving water there will be enough water for everyone to use – whether you are a farmer using water to irrigate crops or a homeowner watering a lawn or a kid washing a dog.



1. Turn off the hose while washing a car and save water for rinsing.
2. Sweep walks and driveways instead of hosing them off.
3. Put mulch between garden rows to keep soil moist.
4. Turn off the water while brushing teeth.
5. Water plants only when needed.

