NATURAL RESOURCES

A **farmer** is someone who works in agriculture and cares for land and/or animals. Farmers rely on natural resources to help them grow food and fiber. Animals are also an important source of food and other things we use every day. Sheep provide us with wool, and pigs and cows give us leather. Animal by-products are used in school supplies, medications, sports equipment, household items and so much more.

Soil & Erosion

Earthworms contribute to soil health. They create large channels and mix organic matter, which in turn enhances root development and nutrient levels.

Soil is a natural resource that is important to farmers. Soil holds roots in the ground so plants can't fall over. It holds water and nutrients that plants use for food.

It is important to take care of the soil so we can use it for many years. It takes about 500 years to form 1 inch of topsoil. Organisms such as seeds, spores, insects and worms live in soil. Soil helps filter pollutants to help keep our drinking water safe.

PRESERVING THE SOIL IS VERY IMPORTANT

Here are some ways farmers protect the soil:

- They keep the ground covered either with plants or a ground cover to keep soil from **eroding**, washing or blowing away.
- They disturb it as little as possible—farmers often use **no-till**, which means they do not plow the soil before planting.
- Farmers **rotate** crops. This means they plant different crops each year to keep from removing all of the nutrients from the soil in a field.

Fun Facts!

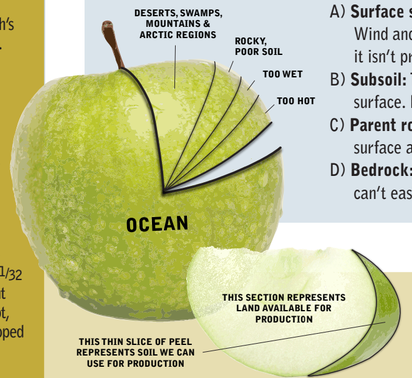
- Soil is a living organism.
- There are more microscopic organisms in a handful of soil than there are people on earth.
- Worms move through soil to help air flow through and make it absorb water.

ACTIVITY

Supplies needed: large apple, world globe and sharp knife

The apple will represent the earth's surface as you see it on the globe.

- Cut apple into 4 equal parts; 3 represent the water and 1 part represents the land.
- Cut the land section in half lengthwise leaving two 1/8 pieces. One represents deserts, swamps, Antarctic, Arctic and mountain regions. The other 1/8 represents land where we can live and grow food.
- Slice the 1/8 section lengthwise into 4 equal pieces making 4 - 1/32 pieces. Three of these represent areas too rocky, too wet, too hot, poor soil or land already developed for housing, shopping centers, highways and entertainment.
- Carefully remove the peel from 1/32 of apple. The small peel represents the soil we can produce food on.



This illustration shows the amount of soil we have to use to grow plants and feed animals.

Soil is made of water, air, minerals and organic matter. It generally consists of texturally distinct layers, also called **profiles**, which can be summarized as follows:

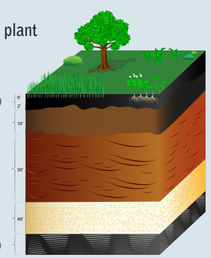
O) **Organic matter:** Surficial organic deposits with layers of plant residues in relatively non-decomposed form.

A) **Surface soil:** Plants, nutrients, and roots thrive here. Wind and water can wash away this valuable layer if it isn't protected.

B) **Subsoil:** This layer is about 12 inches below the surface. Roots and earthworms live here.

C) **Parent rock:** This layer is about 36 inches below the surface and is made up of stones and rocks.

D) **Bedrock:** This layer contains masses of rock that can't easily be removed.

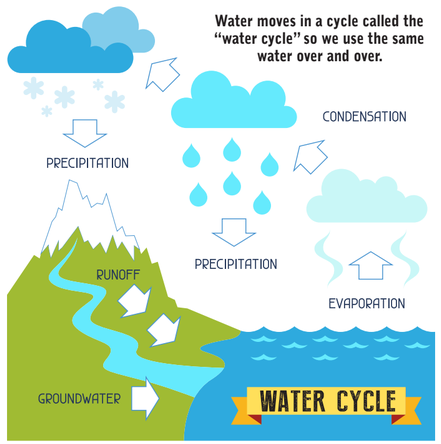


Menfro is a common type of soil, excellent for farmland, found only in Missouri and parts of Illinois.

This special Newspaper In Education supplement is brought to you by Missouri Farm Bureau, Missouri Press Foundation and your newspaper.

Missouri, on average, receives about 43 inches of precipitation per year.

THE EARTH HAS A LIMITED SUPPLY OF WATER



Water moves in a cycle called the "water cycle" so we use the same water over and over.

SOURCE: U.S. DEPARTMENT OF AGRICULTURE

The sun heats up glaciers, rivers and oceans to create **vapor**. When the vapor rises into the air, the process is called **evaporation**.

When vapor in the air cools, it changes back to liquid, forming clouds. This process is called **condensation**. Rain, hail, sleet and snow are **precipitation**. This is when the clouds get heavy with water and it falls back to earth.

Many farmers rely on rainfall to put water in their ponds and wells for their animals and crops. If rain doesn't fall, we have drought. A **drought** can keep crops from growing and maturing. Some farmers irrigate when there is no rain. This method supplies water to crops from a well or nearby stream.

Plants help feed people and provide products we use in our houses and cars and to make clothing. Plants need water to grow. Water helps plants make their own food in a process called **photosynthesis**.

Water is collected in the plant root and then moves through the plant to the leaf. At the same time, the leaves are absorbing carbon dioxide from the atmosphere. The leaves then take the energy from the sun and store it to use later. Photosynthesis converts the water to hydrogen and oxygen. The hydrogen is used to feed the plant, and the oxygen is released into the atmosphere through the leaves.

Water is a colorless liquid that forms seas, lakes, rivers and streams.

Water can be found in three physical states:

- **Liquid** - found in lakes, rivers, streams and swimming pools.
- **Vapor** - moisture that forms in the clouds and in the air. It's what you feel on a hot, humid day.
- **Ice** - water that freezes such as ice cubes and caps at the North and South Poles.

ACTIVITY

Demonstrate how much of the earth's water is fresh and available for human consumption by filling a 1-gallon container with water. This represents all water on earth.

- Pour 1/2 cup of water from the container into a clear bowl to represent all the fresh water on earth (less than 3 percent).
- With an eyedropper, drop one drop of water from the 1/2 cup onto a small plate. This represents the freshwater available to use from rivers and lakes.
- The remainder of the 1/2 cup of water represents deep groundwater.

Water

All living things need water to survive.

Farmers and ranchers need water for their animals and the crops that we use for food, clothing, shelter, fuel, housing and so much more.

WATER IS AN ESSENTIAL NATURAL RESOURCE

AG CAREERS

A **Soil Scientist** studies soil properties, formation, nature, ecology, classification as well as soil management.

One who advocates or acts for the protection of soil is a **Soil Conservationist**.

An **Agronomist** applies various soil and plant sciences to the management of soil and crop production.

A weather forecaster studies the climate and weather of a region; also known as a **Meteorologist.**

Hydrologists study the distribution, conservation and use of water and the atmosphere at the land surface.

Correlates with MO Learning Standards Grades 2-5