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What's Growing On In Virginia?
Virginia Foundation for Agriculture in the Classroom
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About the Newsletter

What's Growing On In Virginia? is a semiannual publication for Virginia elementary and middle school teachers, published by Agriculture in the Classroom

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For additional information and activities, visit our website at **AgInTheClass.org** or call **804-290-1141**

What's Growing On In Virginia?

AGRICULTURE IN THE CLASSROOM

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THIS ISSUE

Soil is foundation of living things

Soil is 50 percent air and water, 45 percent minerals, 5 percent organic material and 100 percent important.

Soil is what makes things grow. It's the foundation for the fruits and vegetables that keep us healthy, the plants and trees that provide oxygen for healthy air, and the animals that take shelter underground.

So what is soil?

Soil is formed from rocks and minerals that very slowly break down and form organic matter, which is called humus. It is a mixture of mineral and organic matter, air, water and living things.

Soil is made up of finely ground rock particles, which include sand, silt and clay. The texture of the soil and how it looks and feels depends on the amount of each mineral in that particular soil. The type of soil varies from place to place on our planet and can even vary from one place to another in your own backyard.

There are about 500 different soil types in Virginia.

Virginia Soil Types

Soils in our state are enriched by the complex river system running from the mountains in the west to the ocean on the East Coast. The richest Virginia soils are found along the rivers and in the northwest.

In the Appalachian valley area of the state, soils were formed from sedimentary rocks like limestone and shale. This soil is good for agriculture, because it drains well.

The soils of the Blue Ridge were formed from a combination of sedimentary rocks and those formed from molten lava. The soil in these areas is rocky and shallow.

In the Piedmont region, the major rocks are gneiss and granite. Soil formed in these rocks is acid and infertile with sandy loam surfaces.

Soil in Virginiaís coastal plains division formed from sediments that were deposited when the ocean level was much higher than it is now. Soils in the coastal plain have thick, sandy surfaces that make them susceptible to summer droughts.

Varying Levels of Soil

There are also different levels of soil. Animals live in and on the ground level, which is also where plants grow. Next is the topsoil, which is sometimes called the organic layer. This soil is just below the surface.

Next is the subsoil, in which most of the soil's nutrients are found. Deep plant roots seek water in this level.

Below the subsoil is weathered parent material, made mostly of rock particles and minerals. No organic matter is found in this soil level.

Last is bedrock, which is solid rock. It formed before the soil above it and will remain until erosion or an earthquake exposes it to the surface. At that time it will become a new batch of parent material, and the soil-making will begin again.

No matter where you live in Virginia and what kind of soil is beneath your feet, it is important to protect it from erosion.

Prevent Soil Erosion

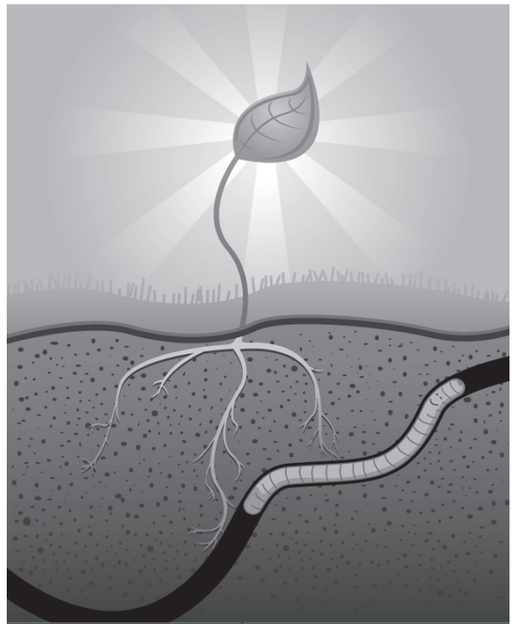
Soil erosion, caused by wind and rain, can change the land by wearing down mountains, creating valleys and making rivers appear and disappear. It is a slow and gradual process that takes thousands, even millions of years. But erosion can be speeded up by human activities such as farming and mining.

Soil develops very slowly over a long period of time but can be lost too quickly. The clearing of land for farming or residential and commercial use can quickly cause erosion. It leaves soil exposed and also prevents development of new soil by removing the plants and animals that help build humus.

Eroded soil eventually ends up as sediment in waterways, which is a form of nonpoint source pollution. It clouds the water, chokes fish and other animals, blocks sunlight for underwater plants and makes it harder to clean up drinking water.

Fortunately, today's farmers try to farm in a way that reduces the amount of erosion and soil loss. Many plant cover crops or use a no-till method of farming to keep the soil in place.

Homeowners can prevent soil erosion as well by making sure soil is covered with plants, groundcover or mulching materials. Trees decrease soil erosion as well by blocking the wind.



Just one square foot of forest soil can be home to as many as 300,000 different living things.

— **"Dirt: Jump into Science"** by Steve Tomecek

A Slice of Soil

Soil is one of our most important natural resources on the earth's surface. Many living things depend on it for food. People do too.

Complete this activity to learn just how little soil we have in which to grow food. You'll need an apple and a paring knife.

1. Cut an apple into four equal parts. Three parts represent the oceans of the world; the fourth part represents the land area.
2. Cut the land section in half lengthwise. Now you have two $^{1}/_{8}$ pieces. One piece represents land such as deserts, swamps, the Antarctic, Arctic and mountains. The other $^{1}/_{8}$ piece represents land where man can live and may or may not be able to grow food.
3. Slice this $^{1}/_{8}$ section crosswise into four equal parts. Three of these $^{1}/_{32}$ sections represent the areas of the world that are too rocky, too wet or too hot, or where soils are too poor to grow food. Plus, we can't grow food on some land because cities and other man-made structures are built on it.
4. Carefully peel the last $^{1}/_{32}$ section. The peel on this small piece represents the amount of soil on which we can grow food. This amount of soil will never get any bigger.

Isn't it amazing that with so little soil, each American farmer is able to feed 155 people!

— from **Illinois Ag Mag Soil**

AITC Senior Education Programmer Tammy Maxey demonstrates the activity.

LESSON PLAN >> PRESCHOOL

CONTENT AREAS:

Physical: non-locomotive skills, manipulative skills

Social: self-control, interaction with others

Cognitive: literacy, print and book awareness

Cognitive: science, life processes

Cognitive: math, measurement

Objective:

to measure ingredients, take turns and talk about soil.

Materials:

- small container of chocolate pudding
- plastic cup
- two chocolate cookies
- plastic bag
- spoon
- two worm-shaped chewy fruit snacks

Download the full lesson at AgInTheClass.org

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Mud Cups

Background Knowledge

Topsoil is important for growing our food. It is made from humus, minerals and other materials that plants need for their survival. Your favorite vegetables, including tomatoes, corn and beans, all grow out of rich topsoil. Worms help churn up the soil as they burrow through it.

It is important to protect our soil from getting blown or washed away. This is called erosion. Rain causes mud to form. A little mud is fun, but too much can wash away the soil we need to grow plants. Farmers are careful to plant their fields in a way that protects the soil.

Procedure

1. Talk to the class about soil. Read them a book about soil such as "Mud" by Mary Lyn Ray.
2. Have students wash their hands.
3. Pass out a plastic cup to each student.
4. Assist students in measuring 1 cup of chocolate pudding and spooning it into the plastic cup.
5. Put two chocolate cookies in a plastic bag.
6. Close the bag securely, and have the students crush the cookies with their hands.
7. Sprinkle cookies over the pudding to form a "crust" on top of the "mud."
8. Place the worms in the pudding (One may be sticking up!).
9. Grab a spoon, and enjoy!

Extension

- Add sprinkles and candies to the "mud" to illustrate humus, minerals and composted materials.
- Create soil layers using vanilla, chocolate and butterscotch pudding to show sand, silt and clay.

A completed mud cup.

Soil Song:

I Love Dirt

(Sung to the tune of "Three Blind Mice")

I love dirt. I love dirt.
It can't hurt
On my shirt.
I love to squirt it with my hose.
I love to squeeze it between my toes.
The fun we have just grows and grows.
Oh, I love dirt. I love dirt.

LESSON PLAN >> ELEMENTARY SCHOOL

SOL:
Science 3.7

Objective:
to demonstrate an understanding of the soil profile.

Materials:
- three different types of cereal
- milk
- clear plastic cups, one per student
- bowls, one per group
- re-sealable plastic bags, at least three per group
- dried fruit
- spoons, one per student

Download the full lesson at AgInTheClass.org

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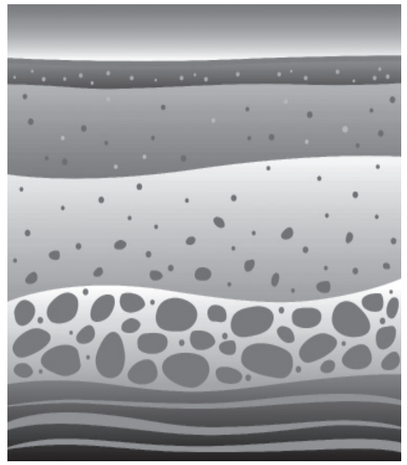
Soil Cereal

Background Knowledge

Soil is one of our most valuable natural resources and is necessary for plants and animals. Plants, which provide us with food, clothing and other materials, live in the soil. Additionally, animals graze in fields and eat feed produced from various plants.

Plants grow in the top layer of earth, which is called topsoil. Topsoil is a product of the two lower layers of soil—subsoil and bedrock. Topsoil is ideal for plant growth, because it contains nutrients deposited by humus, which is the decayed organic matter in soil.

In addition, topsoil is where plants absorb water and air. It is important to take measures to conserve topsoil and prevent erosion, because plants grow poorly in subsoil.



Procedure

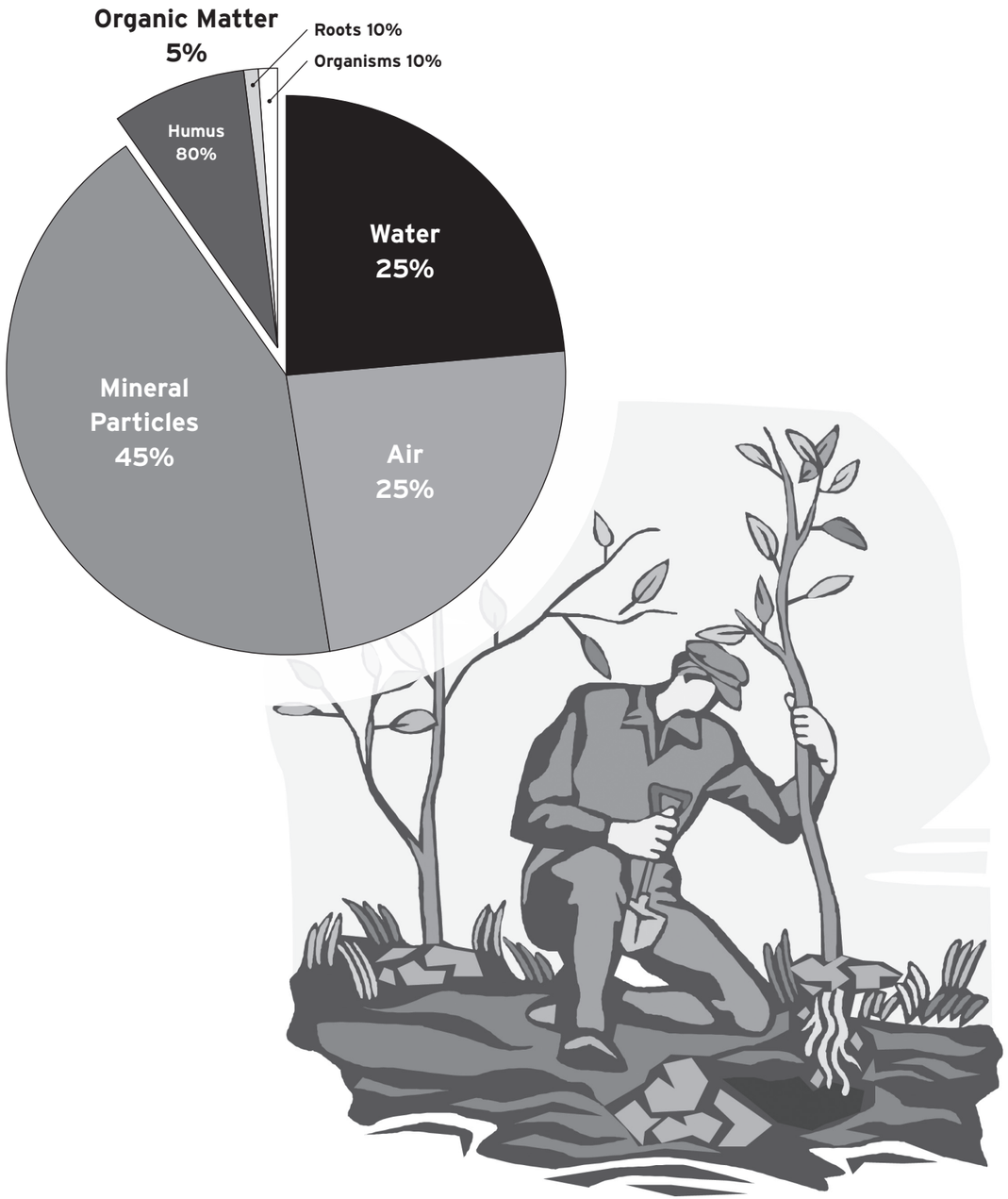
1. Ask students if they have ever heard of the phrase "Digging all the way to China." What would happen if you began digging a hole and kept digging? Would you run out of soil? Would it all look the same?
2. Explain to students that there are three basic layers of soil; this is called the soil profile. If you dug deep enough you would hit solid rock, which is known as the bedrock. Above the bedrock is the subsoil, and the top layer is topsoil. Topsoil contains the most nutrients and is where plants grow.
3. Organize students into small groups. Give each group a sampling of each cereal and dried fruit. The cereal will be the layers of soil, and the dried fruit represents the humus in the topsoil.
4. Have them crush up the cereal in the plastic bags.
5. Give each student a plastic cup. Instruct them to use the crushed-up cereal to create their own soil profile in their cup. Mix some of the dried fruit into the topsoil layer to represent humus.
6. Give each group a small cup of milk. Have them take turns pouring a little bit into their cups to represent rain.
7. Eat and enjoy!

Extension

Bring in extra cereal to represent the different soil particles – sand, silt and clay. Crush it to appropriately represent the particle size.

Lesson adapted from **Utah Agriculture in the Classroom**

THE SEGMENTS OF SOIL



MIDDLE SCHOOL LESSON: **Why Buy Dirt?**
http://www.AgInTheClass.org/Teachers/Documents/why%20buy%20dirt.pdf

LITERARY CORNER

Importance of soil is explained in books

A Handful of Dirt, Raymond Bial, Walker Books for Young Readers, ISBN 0802786987

Diary of a Worm, Doreen Cronin, Harper Collins, ISBN 006000150X

Dirt: Jump Into Science, Steve Tomecek, National Geographic Children's Books, ISBN 9781426300899

Dirt: The Scoop on Soil, Natalie Rosinsky, Picture Window Books, ISBN 1404803319

Mud, Mary Lyn Ray, Houghton Mifflin Harcourt, ISBN 9780152124611

Soil, Christin Ditchfield, Children's Press, ISBN 0516293680

AITC Program Highlights

Preschool lessons added to AITC website

Attention, preschool teachers! In addition to now offering prekindergarten workshops, AITC has expanded its online curriculum to include more than 35 lessons designed for preschool teachers. Favorites include "Peek-a-Boo Barn" and "Buzzy Bees." To download these and other fun activities, visit the teacher page on our website, **AgInTheClass.org**.

Farmers and other ag professionals to read in local schools

Join AITC in celebrating agriculture throughout March! National Agriculture Week is March 13-19, but AITC wants the celebration to last all month. We are encouraging people who are involved in agriculture to read to children in their local schools. It's not too late to have someone from your community come to your class. Contact us at **aitc@vafb.com** for more information.

Plan summer and fall staff development now

Now is the time to start planning your summer and fall staff development. AITC provides high-quality professional development workshops for preschool and elementary educators and middle school science teachers. Workshops include fun, hands-on activities and cross-curricular lessons. E-mail **aitc@vafb.com** for more information and to schedule a workshop for your school or division.