



DIG IT!

The Secrets of Soil

Importance of Soil

Why is soil so important to life here on earth?

Soil is a key element to how life on our world survives. All living creatures, such as insects, animals, humans, and plants rely on soil to live.

What's soil GOT TO DO WITH IT?

There are many different types of plants that grow in soil. Plants release oxygen and absorb carbon dioxide in a cycle called respiration. Without soil for plants to grow, there would be no oxygen for us to breathe. Some plants are also food - for humans, animals and insects. In a world without soil, we would not have food to eat.

Soil also acts as a filter for the water we drink. Drinking water from aquifers, rivers or lakes often passes through soil which helps filter out some of the impurities.

Soils are also important in ways we don't think about; from the clothes we wear to the houses we live in. Soil provides a place for cotton plants to grow. The fluffy cotton gathered from the plant is used to make thread. The thread is woven into fabric, which is then made into our clothes. Soil provides a place for the roots of trees to grow and absorb nutrients. When the trees are big enough, they are cut and the lumber is used to build our homes.



Without soil, life on Earth may not exist as we know it.

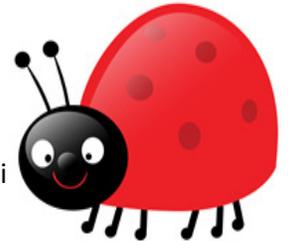
Soil and Life

How do soils make life and lives make soil?

Soil contains bacteria, fungi, and once-living organisms that break down into nutrients and organic matter, important components of soil.

Just like we need clean air to breathe, for soil to be "healthy" it needs clean air as well. Different types

of insects and worms dig for shelter in the soil, making an underground maze of tunnels. These tunnels allow air into the soil, letting the soil and the critters living in the soil to "breathe".



Insects, worms, bacteria and fungi also add nutrients to the soil. They "eat" the dead organic matter in the soil, helping to turn it into nutrients. (To learn more read "Worms Eat Our Garbage" on page 2.)

Soil is Diverse!



There are many different types of soils. Each type of soil tells us a little about the history of the area. The different colorful layers in the soil tell us how it has changed over the years. Almost half of all soil is made of particles from rocks nearby.

Want to learn more? Visit The Smithsonian National Museum of Natural History "Dig It" website! It has information and interactive games!

Visit: <http://forces.si.edu/soils/index.html>

A Rainbow of Soil

F. D. Hole, 1985

A rainbow of soil is under our feet:

Red as a barn & black as a peat.

It's yellow as lemon and white as the snow;

Bluish gray... so many colors below.

Hidden in darkness as thick as the night:

The only rainbow that can form without light.

Dig you a pit, or bore you a hole,

You'll find enough colors to well rest your soul.



(Content and Exhibit photos courtesy of the Smithsonian National Museum of Natural History and Dig it Exhibit)

Earn 5 points! Email us a picture of you at the exhibit!

DIG IT!

The Secrets of Soil

Exhibit at The MAC
Feb. 4 - Sept. 23, 2012

Admission Fees:

MAC Members: Free
Children: \$5
Adults: \$7

MAC NORTHWEST
MUSEUM
OF ARTS
& CULTURE
2316 West First Avenue
Spokane, WA 99201

I ♥ Clean Air Activity at Mobius

Date: February 11, 2012
Time: 10 a.m. - 2 p.m.
Place: Mobius Kids Museum,
808 West Main Ave, Spokane, 99201

Admission: \$5.75, children 12 mo. and younger free, EnivorKids' Club members receive \$1 off admission

Earn 5 points by participating in the Clean Air Event!

Worms Eat Our Garbage!!

Worms are great decomposers. Worms help break down food that you may not have finished eating or that we may not want to eat, like a banana peel. They eat the scraps and turn them into castings or compost. Casting is just a nice word for saying worm poop! Worm poop is what gives the soil the nutrients to help our plants grow!

The food that we eat comes from the soil under our feet! In order to grow our food we need healthy soil and the way we keep it healthy is by adding compost. Compost is what the worms make by breaking down the scraps we feed them. The compost is rich in nutrients and it acts as a vitamin pill for the soil.

Making a composting worm bin is easy and could be made at home or at your school! The best worms for composting are called red wigglers. These worms are best because they can eat up to half their weight in food (table scraps) per day.

Here is how you can start your own worm bin:

A box, bin or large bucket would be ideal for the worms to live in, be sure you can poke holes in it so the worms can breathe and it needs to be dark because they don't like light.

The worms need a bed (shredded paper works best) and they like to live in moist conditions so water will need to be added (paper bedding should be moist, like a wrung out sponge).

The last step is how to keep them comfortable. Food for them to eat will make them happy, anything that comes from a plant will work and remember they don't like their homes too hot or too cold!



Earn 5 points! By sending us a photo of you and your bin

Soil Facts:

- Roots hold soil together and help prevent the soil from wearing away (erosion).
- One teaspoon of healthy soil contains more living things than there are people on the planet.
- Rocks and decaying plants and animals get broken up (decompose) and become part of new soil.
- There are over 70,000 kinds of soil in the United States.
- The process of forming one inch of topsoil takes more than 500 years!
- Soil stores nutrients and minerals that our bodies need. We get the nutrients by eating fruits and vegetables grown in the soil that absorb the nutrients and minerals.
- Only a small bit of the Earth's surface is farmable.

Community Calender

February

4 Dig It! Exhibit opens. See ad above for more information!
11 I Love Clean Air Event @ Mobius Kids 10 A.M. - 2 P.M. See ad above for more information!

April

22 Earth Day
28 Arbor Day at Arboretum 11a-2p, Free

Answer to last Fall Newsletter activity!
Turn "LEAF" to "FOOD" in 5 steps:

LEAF --> (1) LEAD --> (2) LOAD --> (3) LORD -->
(4) FORD --> (5) FOOD

Soil and Food

Look at each row and put a 1 for what happens first, 2 for what happens second and a 3 for what happens last.



(Soil and Food activity courtesy of the National Resources Conservation Service, formerly the U.S. Soil Conservation Service)

Soil Sizes

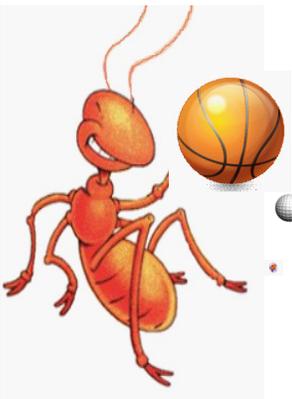
All soils are made of three basic particle sizes. These three different particle sizes (also called soil textures) are **sand, silt, and clay**.

If we were to compare the different sizes of particles:

- **Sand** would be like the size of a basketball,
- **Silt** would be the size of a golf ball, and
- **Clay** would be about the size of the period at the end of this sentence.

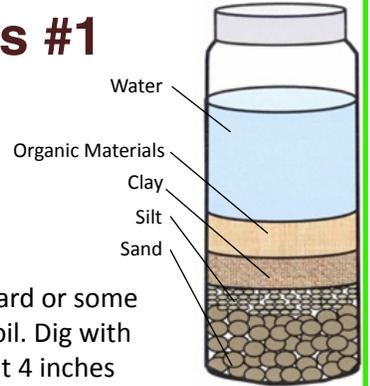
Soils from different locations have different amounts of these three different soil textures. If you took a walk on the beach which soil texture do you think you would find most?

Write the name of the soil texture these are supposed to represent.



Finding Soil Textures #1

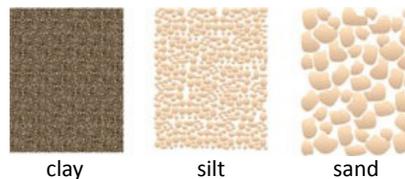
- Materials Needed:
- Plastic or glass jar with a lid (bigger is better)
 - Shovel
 - Soil
 - Water
 - Liquid soap or detergent (optional)



1. Take your jar and shovel out to your yard or some other spot where you can dig in the soil. Dig with your shovel and collect soil from about 4 inches underground.
2. Fill your jar half way to the top with soil.
3. Fill the remaining space in the jar with water. If you have some dish soap or laundry detergent put a spoon full into the water.
4. Put the lid on the jar and shake it up really good. Then, set the jar somewhere where it will not be disturbed.
5. Make observations after; 10 minutes, 60 minutes, and the following day. What happened to the soil in the jar? If you have a science journal at home this would be a great place to make these observations. After a full day of settling, you should see something like this (see pic). **Can you draw and label the layers in your jar? Why do the 3 soil textures settle out in layers like this? Send us a photo of your soil texture experiment.**

Finding Soil Textures #2

The amount of each type of soil particle is important because different soil textures allow water and air to move through them differently. Take a look at the picture showing the three different soil textures. **Which one do you think water would move through faster and why?**





EnviroKids' Club

EnviroKids' Club
c/o National Weather Service
2601 N. Rambo Rd.
Spokane, WA 99224

PRSRRT STD
U.S. Postage
PAID
Spokane, WA
Permit No. 722

**See inside for
Activity Details!**
Members can earn 5 points
by completing each special
EnviroKids' activity that is
marked with a gold star!

EnviroKids'... caring for the Earth

EnviroKids' Club provides its 300+ members with information and activities to explore aspects of the environment: air, water, weather, garbage and recycling, plants and animals. The Club is open to all Spokane County residents who are in grades K-6.

Club members receive a newsletter in the mail four times a year. The newsletter contains activities to complete and ideas for activities at home or in the community. Members who are interested can complete activities and/or participate in some of the events to earn points. Earned points can then be used to trade-in for prizes. **Members need to participate in at least one activity per year to receive newsletters.** For more information, visit www.spokaneenvirokidsclub.org.

To earn points, mail the completed activities

page and this page by April 30, 2012 to: EnviroKids' Club c/o National Weather Service
2601 N. Rambo Rd. Spokane, WA 99224

Complete the activities in the newsletter, fill in this form and send it back to us to earn your points! Do you have a friend or sibling who would like to join Envirokids' Club? Copy this page for them to send in and be added to our mailing list.

Name: _____ Age: _____ Grade: _____ School: _____

Home Mailing Address: _____ City: _____ Zip Code: _____

E-mail Address: _____ Phone: _____

My child has permission to participate in EnviroKids' Club activities that I accompany him/her to and permission is granted to use his/her photo that may be taken at such event, for promoting the Club (newsletter, flyers, ads, website, etc.)

Parent Signature. Please print name, then sign and date

EnviroKids' Club Partners: National Weather Service, Spokane County Water Resources, Spokane Regional Clean Air Agency, Spokane Regional Solid Waste System, WA State Department of Ecology and West Valley Outdoor Learning Center.

Printed on recycled paper. Printing & mailing provided by Spokane Regional Solid Waste System, with partial grant funding from the WA Department of Ecology.