What is the water cycle? The water cycle describes the existence and movement of water on, in, and above the Earth. Earth’s water is always in movement and is always changing states, from liquid to vapor to ice, and back again. The water cycle has been working for billions of years, and life on Earth depends on it continuing to work.

Where does all the Earth’s water come from? Primordial Earth was an incandescent globe made of magma, but all magmas contain water. Water set free by magma began to cool down the Earth’s atmosphere, and eventually the environment became cool enough so water could stay on the surface as a liquid. Volcanic activity kept and still keeps introducing water into the atmosphere, thus increasing the surface-water and groundwater volume of the Earth.

Read more about the water cycle here: https://water.usgs.gov/edu/watercyclesummary.html

Could the Irish Potato Famine Happen Again?

Ireland was not always dependent on potatoes, but in the decades leading up to the famine, more farmers started growing potatoes. As a crop, potatoes are inexpensive and high-yielding. As a food, they are packed with calories and nutrients. The Irish potato famine occurred in the mid-1800s, the result of a fungal disease.

The potato famine began in September 1845 as leaves on potato plants suddenly turned black and curled. The blight disease spread like wildfire. A single infected potato plant could infect thousands more in just a few days. Potatoes dug out of the ground at first looked edible, but shriveled and rotted soon afterward. The results were devastating, as starving tenant families nationwide were evicted from their lands. By 1851, an estimated 1.5 million Irish had died from the effects of the famine.

How are scientists ensuring that this won’t happen again? Read more here: https://soilmatter.wordpress.com/2018/03/01/the-irish-potato-famine-could-it-happen-again/

Help Stop the Spotted Lanternfly

First encountered in the United States in Pennsylvania in 2014, the spotted lanternfly (Lycorma delicatula) had spread to New York, Delaware, and Virginia by early 2018. The invasive insect threatens Tree of Heaven as well as grapes, hops, and fruit trees.

Like other leafhoppers, the lanternfly feeds on plant sap, which damages the plant, but greater harm comes as a result of the honeydew that the insect excretes in abundance. This sweet, sticky fluid promotes the growth of sooty mold, which is extremely damaging to fruit crops.

Anyone sighting spotted lanternfly is urged to report it to their state agriculture department or local extension office (photo credit: Credit: Pennsylvania Department of Agriculture).

For more information, visit https://goo.gl/kA6Vjj

Looking for useful tools to help teach your class about soils? The Soil Science Society of America (SSSA) has many resources to help you talk to students about soils:

• I "Heart" Soils Rulers
• I "Heart" Soils Stickers
• 12 Soil Orders Poster
• Soils Unit Overview (new)
• Soils Overview
• Magnetic Bookmarks

Please let us know the grades you teach, how you plan to use the materials, and how many of each item you would like shipped. Requests may be emailed to membership@soils.org. Note that due to limited resources, we may limit quantities.

See more information at http://www.soils4teachers.org/
The Law of the Minimum, also known as Liebig’s Law, means that, “Plants grow in response to the most limiting factor.”

Justus von Liebig’s “Law of the Minimum” states that yield is proportional to the amount of the most limiting nutrient, whichever nutrient it may be. From this, we may conclude that if the deficient nutrient is supplied, yields may be improved to the point that some other nutrient is needed in greater quantity than the soil can provide, and the Law of the Minimum would apply in turn to that nutrient.

See a great YouTube video demonstration about the Liebig’s Law of the Minimum here: https://www.youtube.com/watch?v=smGqNLWDA

The formation of the northern and southern lights—known as aurora borealis and aurora australis—begins with solar flares from the sun. The solar flares eject groups of electrons from the sun that act as a “wind” and flow toward the Earth.

When the solar wind of electrons reaches the planet, they first encounter Earth’s magnetic field, referred to as the geomagnetic field. This magnetic field will deflect the electrons. With this deflection, the electrons move around the planet and hit near the polar regions where the magnetic field is weakest.

Views from space show the auroras as rings of light that are centered around the geomagnetic poles. They appear to those on Earth as curtains of light due to the structure of the magnetic fields. The most common colors seen are green and blue, but the auroras can also show pink and orange hues, depending on the interactions of photons, particles of light.

Learn more and watch a video here: https://bit.ly/2tSf2

Forest soils are an important natural resource in the United States. Almost one-third of U.S. soil is in forests. These include highly managed forest plantations, farm woodlots, national forests and parks, urban forests, and vast wilderness areas. All these different types of forests require healthy soils to thrive and to provide goods such as timber and fuel. Forests even provide “services,” like recreation and clean water.

Healthy soils help ensure healthy forests. Trees that receive sufficient nutrients and water from the soil will grow better, and be more resistant to insects and disease.

Trees are long-lived organisms! It is easy to think that trees and forest soils can take care of themselves. But, humans have changed the way forests are used. Unlike us, trees cannot leave when conditions are not to their liking. Therefore, management of forest soils is important. Forest managers work to minimize compaction and disturbance, ensuring that nutrient supply is balanced with the needs of the trees, and protecting the organisms that live in the soil.

Read more about why forest soils need to be managed here: https://bit.ly/2jWqyCP

Visit the website https://oceanservice.noaa.gov/kids to discover activities and resources for children from the National Oceanic and Atmospheric Administration. There are videos, group activities, origami, outdoor and tabletop challenges, and a other projects that are fun, entertaining, and educational.

Adults will find information on the website, also; just click around to find images, podcasts, news stories, and links to research. According to the NOAA website, “The National Ocean Service provides data, tools, and services that support coastal economies and their contribution to the national economy.”
Plants can propagate in two ways: sexually and asexually.

Sexual propagation is through seeds. Some plants, seedless plants, can have natural vegetative structures. They propagate asexually in a natural, unforced way. For example, potatoes and onions produce bulbs and tubers. So if you take an onion and plant it in the soil, you can produce a new onion plant that is not coming from a seed, but is coming from a bulb.

Learn more about seedless plants and watch a video here: https://morgridge.org/blue-sky/how-do-seedless-plants-start

Find links to science fair projects that have previously won competitions, as well as some other projects and lesson plans, on The Entomological Foundation website.

Choose one of the examples and modify it for your own project. The projects are divided by elementary, middle, and high school levels.

Examples include: Are Crickets Scared of the Dark? Are Insect Pollinators Choosy About Colors? (elementary school); Why do Plants Make Spices? Effects of Temperature on Rate of Development of Insects (middle school); How do the Patterns on Butterfly Wings Develop? Exploring Animal Behavior Through Eight Eyes (high school).

According the its website, The Entomological Foundation is “building a future for entomology by educating young people about science through insects.”

Visit The Entomological Foundation website here: https://entfdn.org/resources

Solve this riddle: You can find me at your workplace/school, home, or local park. I support you at outdoor sports games. I am with you when you take your dog for a walk or when you stop for a summer picnic. Who am I? The answer is turfgrass!

Turfgrasses are a unique set of grasses that tolerate mowing and traffic. They are different from tall grasses you might see in a prairie...or along a beach.

Scientists have studied, and reported on, the best practices for turfgrass care. Not all grass species are maintained the same; you can search for more specific details on these steps by contacting your local extension educator or browsing science-based information specific to your state and its climate.

Read about proper mowing, fertilizing, and other lawn care tips here: https://bit.ly/2rHJr8p