SAVE THE SOIL

CONTENT PACKET

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EROSION AND WEATHERING

KEY TERMS:
Deposition Sediment Soil Particulates Runoff Weathering Mechanical Weathering Chemical Weathering

Background Information:

The Earth is constantly changing. Water, ice, wind, or chemicals wear away at the Earth's surface shaping and forming features such as mountains, valleys, etc. Anyone who has ever stood at the edge of the Grand Canyon can see how powerful the steady process of erosion can be.

In earth science, soil erosion is the process that moves soil particles from one location to another. Several forces in nature contribute to erosion through fluid flow. Water, wind, and ice are considered fluid as they tend to flow from one place to another because of gravity. As they flow, they take soil with them. Weathering goes hand-in-hand with erosion as weathering breaks down and loosens surface minerals of rocks so that they can be carried away in the process of erosion. There are two types of weathering: mechanical and chemical. Mechanical weathering is the breaking down of rocks near the Earth's surface without any chemical change in the rock. The causes of mechanical weathering are many, but, most commonly, mechanical weathering occurs throughout a freeze-thaw cycle of water trapped within the cracks and pores of the rocks. As the water freezes, it acts as a wedge splitting and cracking the rock. As the water thaws, it seeps deeper into the rock to freeze again and continue the process. Chemical weathering occurs as chemical reactions break down rocks into smaller and smaller pieces. Water is an important factor in chemical weathering as it is present in many of the chemical reactions that could occur.

Additional Information:

- Science Friday's "Stream Table": http://www.sciencefriday.com/educational-resources/stream-table/
- Nasco's "Stream Table Kit": https://www.enasco.com/p/SB01704

STREAM TABLES

KEY TERMS:

River Stream Spring Water cycle Sediment Topography

Background Information:

Rivers and streams are flowing bodies of freshwater originating from a spring or from where rainwater or snow collect. These flowing bodies of water run across the land toward an ocean, lake, or another river. As they move across the Earth's surface, they change the topography or the physical features of an area by carrying large quantities of sediment from the land.

To study the erosion caused by a river or stream, students can build model stream tables. Stream tables can also be purchased for the classroom through various retailers. Stream tables can be constructed of many different materials, but are commonly built from large plastic tubs, buckets, and hoses for running water. Tables can be set at various inclines to propel the erosion process and simulate deposition.

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SOURCING FOOD

KEY TERMS:

Distribution Model Food Systems Food Market Structure Locavore Movement Crop Diversity Farmer's Market Direct Marketing

Background Information:

There is a growing curiosity for where the food we eat comes from. Most of the foods that we eat travels great distances to make it to our plates. In the U.S. and in countries around the globe, food is both grown in country and imported from other countries in order to meet consumer demand of fresh products year-round. Knowing where our food comes from and its route from farm to plate can help us make more informed choices about the products we consume. All food raised and grown in the U.S. goes through rigorous safety testing before it reaches the consumer. Locally sourced products may take less time to get to the consumer, however, there is a trade off in seasonality!

Additional Information:

- NPR's "A Map of Where Your Food Originated May Surprise You": http://www.npr.org/sections/thesalt/2016/06/13/481586649/a-map-of-where-your-food-originated-may-surprise-you
- Virginia Cooperative Extension's "Community Food Security and Food Systems": http://ext.vt.edu/food-health/food-security-systems.html
- Amanda Ruth-McSwain's "Eating Green: Coverage of The Locavore Movement": https://open.clemson.edu/joe/vol50/iss5/7/

COVER CROPS

KEY TERMS:
Biodiversity Runoff Nitrogen Chlorophyll Photosynthesis

Background Information:

Plants play an important role in soil erosion control. Cover crops, plants grown to suppress weeds or manage soil quality and erosion, provide great benefits by improving biodiversity — the number or variety of species in a given area are helping to prevent soil erosion by slowing down the velocity of runoff from rain or snowmelt. Aside from erosion control, cover crops help to replace and/or hold nitrogen in the soil. Nitrogen is a necessary element in promoting plant growth as it is a major component in chlorophyll: the green pigment found in all green plants that absorb light energy required for photosynthesis. Photosynthesis is the process by which plants convert sunlight energy to chemical energy.

Additional Information:

- Sustainable Agriculture Research & Education's "Cover Crops": http://www.sare.org/Learning-Center/Topic-Rooms/Cover-Crops
- Michigan State University's "Cover Crops and Nitrogen Scavenging": http://msue.anr.msu.edu/news/cover_crops_and_nitrogen_scavenging
- Minnesota Department of Agriculture's "Cover Crops": https://www.mda.state.mn.us/minnesota-cover-crop-guide

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