

## Second grade field trip at the Eastern Oregon Agricultural Research Center (EOARC)



Dear Parents,

Your child attended a field trip to our station today. We were excited to host these great young minds and we look forward to this event every year. Our guess is your child has already told you about his or her experiences today. It will be interesting to hear what adventure your child talks about the most.

We wanted to provide you with a brief outline of what we covered today as well as a couple of handouts with some more in-depth information, in case you might want to discuss further with your budding scientist. We have adapted some of the work we do into activities that are fun and provide experiences for the ever inquiring minds of second grade students.

EOARC is a cooperative research effort between Oregon State University and USDA-Agricultural Research Service focusing on rangeland ecology and restoration of wildlands, environmentally compatible livestock systems, forage crops, and alternative livestock systems in the sagebrush-steppe of the Great Basin. The Center's research program is unique in the integration of research about beef cattle, rangeland, wildlife, watershed, and forest management. The scientists providing learning opportunities to your child today work to make our resources in this part of Oregon healthy and productive for improving our quality of agriculture resources and the community.

The following table outlines the stations we set up for the second graders.

Activity Title & Presenter:	"Soil Erosion" - Dr. Chad Boyd, Rangeland Scientist, ARS
<b>Description:</b>	Activity to understand and see firsthand the effects of erosion
<b>Learning Objective:</b>	Know what soil is and where it comes from. Why we need soil and 'What is erosion'?
<b>Supplies:</b>	soil, pop cans, plastic tubs, graduated cylinders, water, grass plants & apples
<b>Directions/ Write-up:</b>	This activity demonstrates how erosion occurs and what we can do as stewards of the land to prevent erosion from occurring. General discussion of soil and its importance. What is soil erosion? Apple demonstration to show Earth's surface: 1. Explain experiment – building mountains 2. Break into groups, set up experiments 3. Hypotheses and data Discuss the outcome of the experiment – What did we learn?
Activity Title & Presenter:	"Using Soil to Clean Water" - Dr. Jeremy James, Plant Physiologist, ARS
<b>Description:</b>	This activity is designed to demonstrate how soil can act like a magnet by using positive and negative charged dyes mixed with water

<b>Learning Objective:</b>	Students will understand negative and positive charge by using magnets. Soil is made up of particles with negative charges so when positively charged are in the soil they are attracted to the negative particles and held in the soil. Discuss how this knowledge can be applied to real life situations. Define and discuss 'hypothesis'.
<b>Supplies:</b>	Methylene blue dye, Eosin red dye, soil, graduated cylinders, latex gloves, goggles, Brio train cars
<b>Directions/ Write-up:</b>	Introductory comments about magnets using the Brio trains for students to understand negative and positive charges. Explain how soil can be like a magnet. Determine the hypothesis before conducting experiment. Allow student experimenters to put on gloves and goggles. Have the students follow the procedure. Discuss the results and the implications of different chemicals in the soil.
Activity Title & Presenter:	"Soil is Alive" - Dr. Ann Kennedy, Soil Scientist ARS Pullman, WA
<b>Description:</b>	An experiment to demonstrate there are living microscopic organisms in the soil and the beneficial roles they play in soil.
<b>Learning Objective:</b>	Students will recognize that there are living microscopic beneficial organisms that are important to healthy growing conditions for plants.
<b>Supplies:</b>	soil, petri dishes, clay, loam sand, organic matter in plastic shoe boxes; plants in pots, tootsie rolls and caramels
<b>Directions/ Write-up:</b>	Soil is alive even when it is dry and dusty 1. What is soil made of? 2. Why does dirt smell like dirt? 3. Why is soil organic matter important? 4. What are microbes in soil – there are good and bad microbes 5. How can soil reduce weeds? 6. What do scientists do? Experiment about soil microorganisms
Activity Title & Presenter:	"GPS Candy Hunt" - Dr. Dave Ganskopp, Rangeland Scientist, and Kristen Munday, Range Technician, ARS
<b>Description:</b>	Activity using Global Positioning System units
<b>Learning Objective:</b>	After this activity students will know what a GPS system, How to operate one and what the scientists at EOARC use them for in their research.
<b>Supplies:</b>	candy, Garmin etrex handheld GPS units
<b>Directions/ Write-up:</b>	What does GPS stand for, what they are used for and how we use them as rangeland scientists 1. Students will each receive a handheld GPS unit for this activity. 2. Provide instructions on how to use the systems. 3. Activity to use the GPS units to find hidden candy
Activity Title & Presenter:	"Holey Cow!" - Dr. David Bohnert, Asst. Superintendent, EOARC, Stephanie Falck, Range Technician
<b>Description:</b>	Use a Rumen fistulated steer, a steer with a 'window' into his rumen, to talk about digestion.
<b>Learning Objective:</b>	Activity for students to understand why and how we do digestion studies – to help improve the utilization of forages and feed stuffs that are consumed by cattle in the west.
<b>Supplies:</b>	steer with rumen fistula, latex gloves, step stool
<b>Directions/ Write-up:</b>	Students will be near the steer and offered to check the contents of his rumen one at a time 1. Set ground rules for being around a large animal: Listen to presenter, use quiet voices,

	<p>keep movements slow, only one person at a time near the steer.</p> <ol style="list-style-type: none"> <li>2. Explain how the animal came to have the hole in his side, what to expect, why this procedure is done, and explain the smell and why this does smell.</li> <li>3. Demonstrate the procedure.</li> <li>4. Offer to anyone who would like to check the contents of the rumen, one at a time.</li> </ol>
<b>Activity Title &amp; Presenter:</b>	“How a Plant Grows” Relay - Lori Ziegenhagen, Range Technician, ARS Helpers – one teacher and 2 helpers
<b>Description:</b>	Plant activity with different plant parts and their role in a plant’s growth in an activity that has the kids running in a relay.
<b>Learning Objective:</b>	Purpose of this station is to provide hands-on activity to show how food and water moves through a plant; students will learn plant parts.
<b>Supplies:</b>	a grassy area for a relay race, flagging to mark off the relay track, signs to mark the relay track, sugar packets, 10” balloons barely filled with some water (on grass they do not pop!!), 2 large boxes (for water balloons), 2 small boxes (for sugar packets), enough small plants that the students can touch and feel the parts—I usually get pansies or flowers in 6-packs from the store
<b>Directions/ Write-up:</b>	<p>Students first each take a plant and then sit in a circle holding the plant to get directions.</p> <ol style="list-style-type: none"> <li>1. Name different parts of the plants, ask students if they know the plant parts.</li> <li>2. Discuss what each of the different parts do and how a plant grows. Transporting water from roots to stems to leaves and then sugar from leaves to stems to roots; the leaves use sunlight and air to produce food and grow.</li> <li>3. Divide the class into three groups: Roots, Stems and Leaves. Roots hang out in the soil and pass water balloons to the stems. The stems run the water up the relay track to the leaves at the “air” end of the track. The leaves collect the water and give the stems sugar packets. The stems then run the sugar packets back down to the roots.</li> <li>4. We do this for a period of time. If the roots run out of water, we “make it rain” and tell the students to all grab some balloons up in the “air” and run them back to the “soil”.</li> <li>5. At this point we all rotate positions and each student gets to run.</li> <li>6. Continue to remind students of what each plant part is doing. Have fun and get into it!</li> </ol>
<b>Activity Title &amp; Presenter:</b>	“Well-mannered Cows” - Dr. Reinaldo Cooke, OSU Extension Beef Specialist and Flavia Cooke
<b>Description:</b>	This activity is set up to show how scientists determine what the behavior of a cow can tell a rancher about how she will perform.
<b>Learning Objective:</b>	The purpose of this activity is to introduce students to how a cow’s behavior can be evaluated and how this information can help livestock producers.
<b>Supplies:</b>	portable chute, timers, ‘human’ cows
<b>Directions/ Write-up:</b>	<ol style="list-style-type: none"> <li>1. No animals are used in this activity.</li> <li>2. Introduce the subject of cattle behavior and how their behavior can be evaluated and what this tells a producer about the cow.</li> <li>3. Set up activity of people substituting as cows going through a chute.</li> <li>4. Have students participate as ‘cows’ to evaluate their behavior.</li> </ol>

Thank you for the opportunity to spend time with your child. If you have any questions or comments about the field trip and activities or the research we do, we’d love to hear from you; please call 541-573-8900 or stop by at 67826-A Hwy 205 (about 5 miles south of Burns) during regular business hours.