

# Plant Lesson: Salt Effects on Farming

Water and Plant Survival, Lesson 4 of 4

Created By	Grades	Subjects	Duration
Emily Townsend	K, 1st, 2nd	Art, Science	≈ 105 minutes

## Lesson Overview

<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>Why does salt affect a plant's growth?</li> <li>How can communities grow plants in salty soil?</li> <li>How can I share what I learned and make an impact on my community?</li> </ul>
<b>Learning Outcomes</b>	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>explain salt's impact on plants in their experiment.</li> <li>connect their experimentation to farming around the world.</li> <li>share their learning through art and writing.</li> </ul>
<b>Summary</b>	<p>In this lesson, students reflect on how salt affects plants, learn how some communities are finding ways to grow plants in saltier conditions, and create a mural to share their learning with the community.</p> <p><b>Inquire:</b> Students reflect on the results of the experiment in Lesson 3 and the effects of salt on plants.</p> <p><b>Investigate:</b> Students read about the effects of salinity on crops around the world and consider the requirements for plant survival in a different context.</p> <p><b>Inspire:</b> Students combine knowledge from Lessons 1-4 of the unit and create a mural to educate their community.</p>

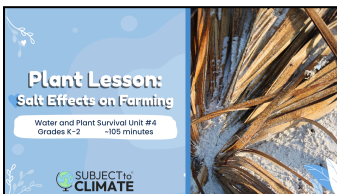
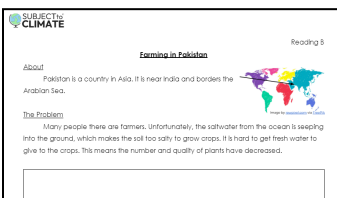
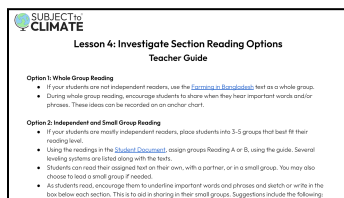

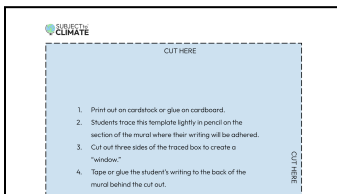

## Instructions

<p><b>Inquire</b> ≈ 15 minutes</p>	<ul style="list-style-type: none"> <li>Before class, teacher prepares materials as outlined in the Additional Prerequisites section.</li> <li>Teacher tells students to draw a faint line about <math>\frac{1}{3}</math> of the way up their paper (landscape view) following the example in the Teacher Slideshow. The line represents the ground.</li> <li>Teacher tells students to think about a plant to paint. It might be a plant in their yard, a plant in a nearby park, or even one of the plants from their experiment in class.</li> <li>Students spend 5-6 minutes painting pictures of plants. The line represents the ground, so anything they paint below the ground is what the plant looks like under the soil.</li> <li>Teacher tells students they will be increasing the soil's salinity like they did during the experiment from Lesson 3 of the Water and Plant Survival unit.</li> <li>While students are painting, teacher uses the prompts in the Teacher Slideshow to discuss the results of the experiment. Don't discuss for too long because the students' paintings need to stay wet for the next step. Teacher poses the following questions: <ul style="list-style-type: none"> <li>Why do you think the plants reacted to the salt in this way?</li> <li>What does salt do?</li> </ul> </li> </ul>
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	<ul style="list-style-type: none"> <li>• Students make predictions to explain the results of the experiment.</li> <li>• Teacher hands out the salt. Students sprinkle the salt over their painting and let it sit. The salt will absorb some of the water and the color.</li> <li>• Students discuss what happened to the painting and relate this to why it is a problem for plants (salt takes the water they need).</li> <li>• Once the paintings are dry, students can brush off the salt into the trash.</li> </ul>
<p><b>Investigate</b> ≈ 30 minutes</p>	<ul style="list-style-type: none"> <li>• Teacher poses the following questions and tells students that they will read a text to learn the answers to these questions. <ul style="list-style-type: none"> <li>◦ How does sea level rise affect crops?</li> <li>◦ Can farmers grow plants in salty soil?</li> </ul> </li> <li>• Students read about crops in places around the world that are being developed to withstand salty conditions. Teacher chooses from the following reading options: <ul style="list-style-type: none"> <li>◦ Whole Group Reading: <a href="#">Farming in Bangladesh</a> is a good option for students who are not yet reading independently. Students can read the high-frequency words (in Lato font) while the teacher reads the content-specific words (in Chewy font). This can be done with the whole class or in small groups.</li> <li>◦ Independent or Partner Reading: Farming in Bangladesh and Farming in Pakistan found in the <a href="#">Student Document</a> are offered at two different reading levels. Use the <a href="#">Teacher's Guide</a> to assign independent readers an appropriate level.</li> </ul> </li> <li>• Teacher uses the prompts in the Teacher Slideshow to lead students through a discussion about the readings. <ul style="list-style-type: none"> <li>◦ If the class read the text together, students can discuss the questions with a neighbor and then the whole group.</li> <li>◦ If your students read the text independently or with partners, pair up students who read about different countries to answer the discussion questions in the Teacher Slideshow orally. They can discuss the answer with each other and then share out with the whole group.</li> </ul> </li> </ul>
<p><b>Inspire</b> ≈ 60 minutes</p>	<ul style="list-style-type: none"> <li>• Students reflect on what they learned about farming in salty conditions.</li> <li>• Student groups consider how to add this information about farming to their mural using the Mural Planning Sheet in the Student Document.</li> <li>• Students create their mural using their plan from Lessons 2-4 of the Water and Plant Survival unit. <ul style="list-style-type: none"> <li>◦ Teacher may assign sections to students based on their plan.</li> <li>◦ Teacher may lightly sketch shapes to show students the scale change of the drawing to the mural size.</li> </ul> </li> <li>• Each group member chooses a part of their mural to write more about. This is to make the mural interactive, in a similar way to the <a href="#">video</a> from Lesson 2, where the mural's virtual features led viewers to additional information.</li> <li>• Using the Individual Writing Sheet in the Student Document, students write or dictate an explanation to add to the mural.</li> <li>• Once the mural is complete, students mark off the location for the information using the <a href="#">Mural Cut-Out Template</a>. They should place the cut-out in a location that matches their information. For example, if the information is about farming, the cut-out location may be</li> </ul>

	<p>over a field with crops.</p> <ul style="list-style-type: none"> <li>The teacher cuts flaps in the mural where students indicated and pastes their writing to the back. The flap will cover the writing until it is lifted.</li> <li>Teacher can post murals around the room or in another school location.</li> <li>Students read and view each other's work.</li> </ul>
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## Accompanying Materials

<p><u><a href="#">Teacher Slideshow</a></u></p> 	<p><u><a href="#">Student Document</a></u></p> 	<p><u><a href="#">Teacher Guide</a></u></p> 
<p><u><a href="#">Farming in Bangladesh: Read Aloud</a></u></p> 	<p><u><a href="#">Mural Cut-Out Template</a></u></p> 	<p><u><a href="#">Vocabulary Cards</a></u></p> 

## Teaching Tips

<b>Positives</b>	<ul style="list-style-type: none"> <li>This lesson creates a collaborative learning environment for students to share information about their learning with their community.</li> <li>Students do an art experiment to learn how salt affects plants.</li> <li>Students think about plant adaptations and changes to landscapes over time.</li> </ul>
<b>Prerequisites</b>	<ul style="list-style-type: none"> <li>This is lesson 4 of 4 in our K-2nd grade Water and Plant Survival unit.</li> <li>It is necessary to prepare materials for the Inquire section before class: <ul style="list-style-type: none"> <li>Distribute 3 containers of water to each group.</li> <li>Add 2-3 drops of food coloring to each container to make red, yellow, and green paint. Alternatively, students can use watercolor paints.</li> <li>Distribute paintbrushes or manipulatives to paint with (ex. plant material, grasses, leaves, sponges, or Q-tips).</li> <li>Distribute cardstock for each student.</li> <li>Prepare a small container of salt for each table, but do not distribute it until it is time for students to sprinkle the salt on their paintings.</li> </ul> </li> <li>In the Investigate section, students will read about farming in Bangladesh and Pakistan. The texts explain that both countries are in Asia, but you may want to show students where the countries are located on a globe or a world map to give them a more precise understanding</li> </ul>

	<p>of the countries' locations.</p> <ul style="list-style-type: none"> <li>Students need a large section of butcher paper for the final version of their group's mural. Additional materials may include markers, paint, or crayons.</li> </ul>
<b>Differentiation</b>	<ul style="list-style-type: none"> <li>Students can read on their own using the leveled texts about Bangladesh or Pakistan, or the teacher can read aloud to the whole group using the Farming in Bangladesh slides.</li> <li>Students can dictate their ideas to an adult to write about the mural.</li> <li>Students can answer specific questions about the mural one by one or work to put their ideas in paragraph form using either option in the Individual Writing Sheet.</li> <li>Possible extension: Share the mural with a group or organization in the community by displaying it in the neighborhood, in a city building, in a store, or in another school.</li> </ul>

## Learning Standards

Primary Standards
National Core Arts Standards (NCAS)
VA:Cn10.1.Ka Create art that tells a story about a life experience.
VA.Re7.2.Ka Describe what an image represents.
Next Generation Science Standards (NGSS)
K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.
2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.
Supporting Standards
Common Core English Language Arts Standards (CCSS.ELA)
ELA-LITERACY.W.K.2 Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.
ELA-LITERACY.W.1.2 Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure.
ELA-LITERACY.W.2.2 Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.
National Core Arts Standards (NCAS)
Cr3.1.2a Discuss and reflect with peers about choices made in creating artwork.