

Guardians of the Garden

Unit Overview



DRIVING QUESTIONS:

What foods can be grown in our community? How does weather impact the food we grow? How can we protect our plants from weather hazards?

ANCHORING PROBLEM:

Different types of foods are grown in different regions of the world.

- *Students explore why only certain types of foods can be grown in their community compared with other parts of the world. They compare climate differences between their area and other places, and how this determines which types of plants can be grown.*

Sometimes frost occurs while food plants are growing.

- *Students are introduced to the anchoring problem and ask questions about frost and how it might affect plants. Students investigate how frost forms, and how it affects plants. Students analyze seasonal weather to understand how plants can be protected based on predictable weather patterns. Students then engineer and test solutions to protect plants from the hazard of frost.*

STORYLINE

Section 1: What kinds of foods can be grown in our community?

Students explore the relationship between the climate and the type of food grown in a region by comparing climate differences between their area and other parts of the world.

- **DCI:** Weather and Climate, Types of Interactions of Matter, Structures and Properties of Matter
- **SEP:** Obtaining, Evaluating, and Combining Information, Engaging in Argument from Evidence, Planning and Carrying Out Investigations, Analyzing and Interpreting Data
- **CCC:** Patterns, Cause and Effect

Section 2: How does weather impact the food we grow?

Students are introduced to frost, and ask questions about it and how it might impact plants. Students investigate how water phase changes happen to form frost, and investigate how frost affects plants.

- **DCI:** Weather and Climate
- **SEP:** Analyzing and Interpreting Data, Engaging in Argument from Evidence
- **CCC:** Patterns, Cause and Effect, Connections to Engineering, Technology, and Applications of Science Influence of Engineering, Technology, and Science on Society and the Natural World, Science as a Human Endeavor

Section 3: How can we protect our plants from weather hazards?

Students address the anchoring problem by analyzing weather patterns and engaging in engineering by designing and testing solutions for protecting plants from frost.

- **DCI:** Defining and Delimiting Engineering Problems, Developing Possible Solutions
- **SEP:** Engaging in Argument from Evidence, Asking Questions and Defining Problems, Constructing Explanations and Designing Solutions
- **CCC:** Cause and Effect, Influence of Engineering, Technology, and Science on Society and the Natural World

OVERVIEW

Introducing the ANCHORING PROBLEM and DRIVING QUESTIONS (1 day ≈45 instructional minutes)		
ANCHORING PROBLEM Different types of foods are grown in different regions of the world. (1 day)	ANCHORING PROBLEM Sometimes frost occurs while food plants are growing.	
Section 1 <i>What kinds of foods can be grown in our community?</i>	Section 2 <i>How does weather impact the food we grow?</i>	Section 3 <i>How can we protect our plants from weather hazards?</i>
<i>Total Time: 7-8 days</i> LESSON 1 How do we know what food we can grow where we live? (3-4 days) LESSON 2 Why can't we grow every type of food where we live? (≈4 days)	<i>Total Time: ≈8 days</i> LESSON 3 How does frost form? (≈3 days) LESSON 4 What happens to plants from a frost? (5 days)	<i>Total Time: 11-12 days</i> LESSON 5 How can tracking the weather help us protect food we grow from frost? (3-4 days) LESSON 6 How can we design a solution to protect plants from frost? (3 days) LESSON 7 Which solution do you think works best to protect plants from frost? (5 days)

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