Ornamental Grass

Earth & Space Science | Lesson Guide

3rd Grade

Photo Description

This image shows ornamental grass with fluffy, feathery seed heads covered in tiny water droplets. The grass has long, thin leaves and soft, white, fuzzy parts that look like cotton balls. The water drops make the grass sparkle and shine in the light.

Scientific Phenomena

The anchoring phenomenon here is seed dispersal and water collection on plant structures. The feathery, fluffy structures are seed heads designed to catch wind and help seeds travel to new locations. The water droplets formed through condensation - when water vapor in the air cooled and turned back into liquid water on the grass surfaces. This happens because the grass surfaces are cooler than the surrounding air, especially in early morning when dew forms.

Core Science Concepts

1. Seed Dispersal Adaptations - Plants have special structures that help their seeds travel to new places where they can grow
2. Water Cycle in Action - Water changes from gas (water vapor) to liquid (droplets) when it touches cool surfaces
3. Plant Structure and Function - Different parts of plants have specific jobs, like the feathery parts helping seeds fly away
4. Condensation Process - When warm, moist air meets cooler surfaces, water droplets form

Pedagogical Tip:

Use this image to help students make connections between form and function. Have them examine the feathery structures and predict how they might help the plant survive and reproduce.

UDL Suggestions:

Provide tactile experiences by bringing in similar grasses or cotton balls for students to feel the fluffy texture. This helps kinesthetic learners understand how the structure aids in wind dispersal.

Zoom In / Zoom Out

1. Zoom In: At the microscopic level, each water droplet contains millions of water molecules that have clustered together. The feathery structures have tiny barbs and hooks that trap air and create lift, similar to how bird feathers work.

2. Zoom Out: This grass is part of a larger ecosystem where plants, animals, and weather patterns work together. Seeds that successfully disperse help create new plant communities, provide food for animals, and contribute to soil health across the landscape.

Discussion Questions

1. "What do you think would happen to these seeds on a windy day versus a calm day?" (Bloom's: Predict/Analyze | DOK: 2)

2. "How might the shape of these seed heads help the plant survive in different environments?" (Bloom's: Analyze | DOK: 3)

3. "Why do you think water droplets formed on the grass but not on other surfaces nearby?" (Bloom's: Analyze | DOK: 2)

4. "What other plants have you seen that have special ways to spread their seeds?" (Bloom's: Remember/Apply | DOK: 1)

Potential Student Misconceptions

1. Misconception: "The fluffy parts are just decoration to make the plant pretty."
   Clarification: These structures have an important job - they help seeds travel on the wind to find new places to grow.

2. Misconception: "The water drops came from inside the plant."
   Clarification: The water droplets formed from water vapor in the air that condensed on the cool grass surfaces.

3. Misconception: "All seeds travel the same way."
   Clarification: Different plants have different seed dispersal methods - some fly on the wind, others stick to animals, and some float on water.

Cross-Curricular Ideas

1. Math - Measurement and Counting: Have students measure the length of grass blades using rulers and create bar graphs comparing different grass heights. They can also count water droplets on a small section of grass to practice estimation and data collection skills.

2. ELA - Descriptive Writing: Students can write sensory poems or descriptive paragraphs about the grass using words that describe how it looks, feels, and sounds. Encourage them to use adjectives like "feathery," "sparkly," "fluffy," and "delicate" to paint a picture with words.

3. Art - Nature Collage and Texture Exploration: Students can collect dried grasses (or use pictures) to create collages and explore different textures by drawing or rubbing paper over grass to capture its patterns. This connects the visual and tactile elements of plant structures.

4. Social Studies - Plant Uses and Native Gardens: Discuss how people use ornamental grasses in their gardens and landscapes. Explore native grasses in your local region and how they support local ecosystems and communities.

STEM Career Connection

1. Botanist - A botanist is a scientist who studies plants and how they grow. Botanists observe plants like these ornamental grasses to understand how they survive, spread seeds, and adapt to different weather and seasons. They work in gardens, forests, and laboratories to help us learn about the plant world. Average Annual Salary: $63,000

2. Landscape Designer - A landscape designer plans and creates beautiful outdoor spaces using plants, including ornamental grasses like the ones in this photo. They choose plants based on how they look, how much water they need, and how well they grow in different climates and locations. Average Annual Salary: $68,000

3. Environmental Scientist - An environmental scientist studies how plants, water, and weather work together in nature. They observe water cycles, plant growth, and ecosystems to help protect our environment and make sure plants and animals have healthy habitats to live in. Average Annual Salary: $73,000

NGSS Connections

- Performance Expectation: 3-LS4-3: Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.
- Disciplinary Core Ideas: 3-LS4.C - Environmental changes affect organisms, and 3-LS4.D - Variation of traits over time
- Crosscutting Concepts: Structure and Function and Cause and Effect

Science Vocabulary

* Condensation: When water vapor in the air turns into liquid water droplets
* Seed dispersal: The way plants spread their seeds to new places
* Adaptation: A special feature that helps a living thing survive in its environment
* Water vapor: Water in the form of an invisible gas in the air
* Pollination: When pollen moves from one flower to another to help make seeds

External Resources

Children's Books:
- "From Seed to Plant" by Gail Gibbons
- "A Seed Is Sleepy" by Dianna Hutts Aston
- "The Great Kapok Tree" by Lynne Cherry