

Conservation in the Classroom



What happens in Farm Fields During Winter

Grade Levels: 9-12

Duration: 1-2 class periods (approximately 80 min.)

OBJECTIVES

1. Describe key soil conservation practices used during winter, such as cover cropping, mulching, and field rotation.
2. Analyze the benefits of these practices in preventing soil erosion, improving soil fertility, and promoting sustainable farming.
3. Create a visual or interactive presentation that illustrates different winter soil conservation methods and their impact on soil health.

MATERIALS NEEDED:

- [Winter Soil Slideshow](#)
- Whiteboard and markers
- Computers/tablets for research (or printed resources)
- Large sheets of poster paper or digital tools like Google Slides or Canva
- Markers, sticky notes
- A variety of sources for research (articles, videos, websites)

NEXT GENERATION SCIENCE STANDARDS (NGSS)

- Earth and Human Activity: HS-ESS3-1, HS-ESS3-4
- Ecosystems: Interactions, Energy, and Dynamics: HS-LS2-5

ILLINOIS SOCIAL SCIENCE STANDARDS

- Environmental Science/Conservation: 18.A.4a, 18.A.4b
- Sustainability and Resources: 18.B.4

COMMON CORE STATE STANDARDS (CCSS) FOR LITERACY IN SCIENCE AND TECHNICAL SUBJECTS:

- Reading: ELA-LITERACY.RST.9-10.7
- Speaking & Listening: CCSS.ELA-LITERACY.SL.9-10.4
- Writing: CCSS.ELA-LITERACY.WHST.9-10.7

AFNR CAREER CLUSTER CONTENT STANDARDS

- Natural Resource Systems: NRS.01.01., NRS.02.02., NRS.02.04.,
- Environmental Sustainability Systems: ESS.03.02.
- Plant Systems: PS.01.01., PS.01.02., PS.01.03., PS.01.04., PS.03.01., PS.03.02., PS.03.04.

Lesson Outline



INTRODUCTION (10 MINUTES)

Engage: Begin with a brief class discussion about what is happening in and on farm fields during the winter. Ask questions like, “What is happening in the fields right now?” and “What might happen to soil during the winter months when farms aren’t actively growing crops?”. Write responses on the board.

Purpose Setting: Tell students that today they will be investigating what happens in farm fields during the winter months with a focus on soil conservation activities. Emphasize that these efforts protect the soil from erosion, preserve its nutrients, and keep it healthy for future planting. Introduce the activities that the groups will be researching including cover cropping, mulching, erosion control, and nutrient management.

GROUP FORMATION (5 MINUTES)

Divide the class into small groups (3-4 students per group). Each group will research and focus on a specific soil conservation practice used during winter:

- **Cover Cropping** (e.g., planting certain crops to protect the soil and add nutrients)
- **Mulching** (e.g., using organic or synthetic materials to protect the soil from erosion and retain moisture)
- **Erosion Control** (e.g., using windbreaks, terraces, or other methods to prevent soil erosion)
- **Nutrient Management** (e.g. using organic or synthetic nutrients to enrich the soil while reducing excessive nutrient runoff and protecting water quality)

STUDENT EXPLORATION (25 MINUTES)

Distribute the investigation worksheet to each student. Review the worksheet with the class, explaining that each group will investigate their assigned topic by answering these questions:

- What is the soil conservation method your group is researching?
- How does this practice help protect the soil during winter?
- What are the specific benefits of this practice (e.g., preventing erosion, improving soil fertility, promoting sustainable farming)?
- Are there any challenges associated with this practice?
- Are there any local examples that they can think of? Is there a field or farmer nearby that they have seen using this practice?

Give the students approximately 25 minutes to research their topics.

Lesson Outline



SYNTHESIZE AND CREATE (20 MINUTES)

Distribute the presentation rubric to each student. After researching, each group will create a visual or interactive presentation to share their findings with the class. They can choose one of the following formats:

- **Poster:** Create a detailed poster that explains the soil conservation practice, its benefits, and how it works during winter. Include images, diagrams, or key points.
- **Infographic:** Design an infographic or slide deck summarizing the key aspects of the soil conservation method, including how it prevents erosion and supports soil health.
- **Interactive Presentation:** Create a short skit or demonstration that explains the conservation method in an engaging and informative way.

Review the rubric with the class, explaining how to receive full points for each section.

Allow time for students to design and prepare their final product. Encourage collaboration and creativity within the group.

PRESENTATIONS (5 MINUTES PER GROUP)

Group Presentations: Each group will present their findings and their visual product to the class. The presentation should include:

- An explanation of the soil conservation method.
- The benefits and importance of this method for winter soil health.
- Examples of farms or regions that use this method effectively (if applicable).
- Any challenges or considerations that farmers must address when using this method.

After each presentation, encourage the class to ask questions or offer additional insights based on what they have learned. Encourage students to discuss any local examples that they can think of for each practice.

REFLECTION AND EXIT TICKET (10 MINUTES)

Reflection activity: Ask the students to reflect individually on the presentations, considering questions like:

- Why is soil conservation especially important during the winter months?
- How do these practices help farmers in the long term?
- What are some ways these practices contribute to sustainable agriculture?

Exit ticket prompt: Answer the following questions in 2-3 sentences:

- What is one soil conservation method you found most interesting and why?
- How does protecting the soil in winter benefit the overall farm system?

Investigation Worksheet

WHAT HAPPENS IN FARM FIELDS DURING WINTER?



Explain the soil conservation method your group is researching.

How does this practice help protect the soil during winter?

What are the specific benefits of this practice (e.g., preventing erosion, improving soil fertility, promoting sustainable farming)?

What are some of the challenges with this practice?

Presentation Rubric

WHAT HAPPENS IN FARM FIELDS DURING WINTER?



	Excellent (4)	Good (3)	Satisfactory (2)	Needs Improvement (1)
Explanation of the Soil Conservation Method	Clear, detailed, and accurate explanation of the soil conservation method.	Provides a clear explanation of the soil conservation method, with minor details missing or unclear.	Provides a basic explanation, but some important details are missing or unclear.	Explanation is vague, incomplete, or inaccurate, making it difficult to understand the method.
Benefits and Importance for Winter Soil Health	Thoroughly explains how the method benefits soil health during the winter months. Emphasizes its role in preventing erosion, improving fertility, and sustaining soil health.	Explains the benefits of the method for winter soil health, though some points may be underdeveloped or unclear.	Discusses benefits, but the explanation is incomplete or lacks depth in showing its relevance to winter farming.	Provides minimal or unclear explanation of how the method benefits winter soil health.
Challenges or Considerations	Clearly identifies challenges or practical considerations for farmers using the method.	Identifies challenges, but may lack full explanation.	Mentions challenges but lacks clear detail.	Fails to mention challenges or provides minimal explanation.
Clarity & Organization	Well-organized, logical flow of information.	Mostly organized with minor issues.	Some organizational issues or unclear parts.	Disorganized, hard to follow.
Visuals & Creativity	Creative, clear visuals that enhance understanding.	Good visuals, but could be clearer or more relevant.	Visuals used, but not very effective.	Few or no visuals used, or they are unclear.

16-20 points: Excellent – Clear, detailed, and well-researched presentation.

11-15 points: Good – Well-researched, but needs some improvement in clarity or detail.

6-10 points: Satisfactory – Adequate, but missing key components or details.

1-5 points: Needs Improvement – Lacks depth, clarity, or important elements.