

Ag Explorer Lesson 11: Evergreen Energy – Christmas Trees & Resource Management

Target Grades: 6th–8th

Length: 35–45 minutes

STEELS Focus Areas

- 3.1 Biological Sciences

 - 4.4 Agriculture & Environment

 - 4.5 Humans & the Environment
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Learning Objectives

By the end of this lesson, students will be able to:

1. Describe the life cycle of evergreen trees and how they grow in different environmental conditions. (3.1.7.A)

 2. Explain how Christmas tree farming supports Pennsylvania’s economy and ecosystems. (4.4.7.A; 4.4.7.C)

 3. Evaluate sustainable practices for growing, harvesting, and recycling Christmas trees. (4.5.7.C)
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Essential Question

How can growing and harvesting Christmas trees be both profitable and environmentally friendly?

Materials Needed

- Diagram: Life cycle of a Christmas tree (seed → seedling → mature tree → harvest → recycling)
 - Handout: “PA Christmas Tree Facts”
 - Photos or video clip from the PA Farm Show tree exhibit or a tree farm
 - Worksheet: “Life of an Evergreen”
 - Poster paper and markers
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Lesson Breakdown (35–45 minutes)

1. Hook: Trees that Celebrate the Season (5–7 min)

- Show photos of Christmas tree farms and decorated evergreens.
 - Ask:
 - “How long do you think it takes to grow a Christmas tree?”
 - “What happens to trees after the holidays?”
 - Explain that Christmas tree farms are renewable and benefit the environment.
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2. Mini-Lecture: The Science of Evergreens (10 min)

Use visuals to explain:

- **Tree Life Cycle:**

- Seeds are planted in nurseries → saplings transplanted → mature in 7–10 years → harvested → replanted.

- **Biology of Evergreens:**

- Needles retain water, allowing survival through winter.
- Photosynthesis occurs year-round in green needles.

- **Sustainability Practices:**

- Trees absorb carbon dioxide and release oxygen.
- Farms replant trees annually to replace harvested ones.
- Recycling programs turn trees into mulch and habitat material.

- **PA Facts:**

- Pennsylvania ranks among the top U.S. producers of Christmas trees.
- Common species: Douglas Fir, Fraser Fir, Blue Spruce, White Pine.

3. Hands-On Activity: “Design a Tree Farm for the Future” (15–18 min)

Instructions:

- Divide students into small groups.
- Task: Draw or design a model Christmas tree farm that balances production and sustainability.

- Include:
 - Growing areas and replanting zones
 - Equipment or workers for harvesting
 - Wildlife habitat area
 - Recycling or composting area
 - Label each part and describe how it protects the environment.
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4. Share-Out & Discussion (5–7 min)

- Groups present their tree farms.
 - Ask:
 - “What makes your tree farm sustainable?”
 - “How do farmers balance profit with environmental care?”
 - “Why are Christmas trees considered renewable?”
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5. Exit Ticket (3–5 min)

Prompt Options:

- “One thing I learned about Christmas tree farming is...”

- “One way tree farmers protect the environment is...”
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Assessment

- Group diagram completion
 - Participation in discussion
 - Exit ticket reflection
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STEELS Standards Alignment

- **3.1.7.A:** Describe how trees grow and adapt to their environments.
 - **4.4.7.A:** Explain forestry’s role in Pennsylvania agriculture.
 - **4.5.7.C:** Evaluate sustainable practices in renewable resource use.
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Extension Opportunities

- Visit a local tree farm or recycling center.
- Research how old trees are recycled or reused after the holidays.
- Compare evergreen species and their environmental benefits.
- Create a PSA encouraging people to recycle their Christmas trees.

Useful Links:

[Welcome to the PCTGA](#)

[Christmas Tree Industry Resources | Penn State Extension](#)

Find Farmers/Products - PA Preferred