

Conservation in the Classroom



Farming for the Future: Agroecology as a Pathway to Sustainable Agriculture

Grade Levels: 9-12

Duration: 90 minutes

OBJECTIVES

1. Define agroecology and understand its role in sustainable agriculture.
2. Identify principles and practices of agroecology.
3. Discuss the environmental, economic, and social benefits of agroecology.
4. Explore real-world examples of agroecological farming systems in Illinois.

MATERIALS

- [Agroecology Slideshow](#)
- Whiteboard and markers
- Projector and computer for video or presentation slides
- Agroecology Farm Planning Worksheet (one copy for each student)
- Rubric (one copy for each student)
- Chart paper or poster board and markers (for farm planning activity)

NEXT GENERATION SCIENCE STANDARDS (NGSS)

- Earth and Human Activity: HS-ESS3-1
- Ecosystem Dynamics, Functioning, and Resilience: HS-LS2-5
- Human Impacts on Earth Systems: HS-ESS3-4

ILLINOIS STATE LEARNING STANDARDS

- Reading Informational Text (RI): RI.9-10.6, RI.9-10.7
- Writing (W): W.9-10.1, W.9-10.2
- Speaking and Listening (SL): SL.9-10.1, SL.9-10.2, SL.9-10.4
- Language (L): L.9-10.4, L.9-10.6,

AFNR Career Cluster Content Standards

- Agriculture Systems and Technology: AG1.1
- Foundational Pathway Skills: FPS.01.0, FPS.02.02, FPS.04.01, FPS.04.02, FPS.06.01
- Natural Resource Systems: NRS.01.01., NRS.01.02, NRS.01.03, NRS.01.04, NRS.01.05, NRS.01.06, NRS.02.02., NRS.02.03, NRS.02.04., NRS.02.05., NRS.03.01, NRS.04.01, NRS.04.03.
- Environmental Sustainability Systems: ESS.02.03, ESS.03.02., ESS.03.05
- Plant Systems: PS.01.03., PS.01.04., PS.03.03., PS.03.04.

Lesson Outline



INTRODUCTION (5 MINUTES)

Engage: Ask students to think about the following questions: "What do you think is the role of farmers in our communities?"; "How do farmers make decisions about what to grow and how to manage their land?"; "What are some challenges farmers might face as the world changes (e.g., climate change, population growth)?"

Purpose Setting: After a few minutes of brainstorming, explain that today's lesson will focus on agroecology, a holistic approach to farming that helps address some of these challenges.

INSTRUCTION (35 MINUTES)

Engage: Ask students to think about the following questions: "What do you think is the role of farmers in our communities?"; "How do farmers make decisions about what to grow and how to manage their land?"; "What are some challenges farmers might face as the world changes (e.g., climate change, population growth)?"

Share: Review slides 1-13 with the class. (**Tip:** Check out the speaker notes in the PowerPoint for prompts and suggestions.)

Slides 14-15 are optional, use as time allows and if examples would be helpful.

SYNTHESIZE AND CREATE (35 MINUTES)

Distribute the agroecology farm planning worksheet to each student. Review the worksheet with the class, explaining that they will be designing their own agroecological farm. The planning worksheet is just to guide their final product, which is their farm plan that they will create on the poster or graph paper.

Depending on the class, this project can be created individually or in pairs/groups.

Review the key points that they should consider when planning their farm found on slide 16.

Distribute the rubric and review how students can receive full points on the project.

Give the students approximately 25 minutes to plan and create their farms. Extend the time as needed.

Lesson Outline



PRESENTATIONS (2-3 MINUTES PER GROUP)

Have each student / pair / group present their farm plan with class. If needed, prompt students to highlight the following in their plan:

- Biodiversity: What will your system look like? What types and varieties of plants will you grow? Will you incorporate livestock, wildlife?
- Soil Management: What practices will you use to keep the soil healthy?
- Water Conservation: How will you manage water use efficiently & safely?
- Pest Management: How will you manage pests?
- Community Engagement: How will your farm contribute to and participate in the local community?

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.

REVIEW, REFLECT AND EXIT TICKET (10 MINUTES)

Review slide 20 to summarize the lesson.

Reflect (slide 21): Ask students to answer (either in writing or through discussion) the following question:

- How can agroecology help create a more sustainable and resilient approach to farming for the future?

Exit Ticket Prompt: Write a 1-2 sentence reflection on what you learned about agroecology and why it is important for the future of farming.

Agroecology Farm Planning Worksheet

DESIGN YOUR OWN FARM USING AGROECOLOGY PRACTICES.



Biodiversity: What will your system look like? What types and varieties of plants will you grow? Will you incorporate livestock, wildlife? How?

Soil Management: What practices will you use to keep the soil healthy?

Water Conservation: How will you manage water use efficiently & safely?

Pest Management: How will you manage pests?

Community Engagement: How will your farm contribute to and participate in the local community?

Rubric

DESIGN YOUR OWN AGROECOLOGY FARM



	Excellent (5)	Good (3)	Satisfactory (2)	Needs Improvement (1)
Incorporation of Agroecological Principles	Farm design clearly and creatively integrates multiple agroecological principles (biodiversity, soil health, water conservation, pest management, community involvement).	Farm design integrates several agroecological principles with mostly clear and appropriate applications.	Farm design incorporates some agroecological principles but lacks clear or thorough application.	Farm design shows limited understanding of agroecological principles or lacks significant detail.
Creativity and Innovation	Design is highly creative, demonstrating original ideas and thoughtful solutions to sustainable farming challenges.	Design shows creativity and some original thinking in addressing sustainable farming challenges.	Design demonstrates limited creativity, using basic ideas without much innovation.	Design lacks creativity, with minimal effort in generating original ideas or solutions.
Clarity of Project	Project is clear, well-organized, and engaging, with all group members contributing effectively.	Project is mostly clear and well-organized, but some group members do not contribute effectively.	Project is somewhat clear but lacks clarity; some group members contribute minimally.	Project is unclear or poorly organized; minimal participation from group members.
Explanation of Environmental and Community Benefits	Project thoroughly explains how the farm design benefits the environment, local communities, and sustainable food systems and/or crop production.	Project explains how the farm design benefits the environment and communities, with minor gaps in detail.	Project provides a basic explanation of benefits but lacks depth or specific examples.	Project does not adequately explain environmental or community benefits, or explanations are unclear.
Visual and Structural Design	Farm layout or design is detailed, well-structured, and visually appealing, with clear labeling and thoughtful planning.	Farm layout or design is clear and structured, with some attention to visual appeal and organization.	Farm layout is basic with limited structure or visual appeal; some labels or planning elements are unclear.	Farm layout is incomplete, unclear, or disorganized, lacking sufficient detail or structure.

16-20 points: Excellent – Clear, detailed, and thoughtful project.

11-15 points: Good – Good content, 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.