What is conservation agriculture?

Grade Levels
9-12

Estimated time
Two 40-minute sessions

Materials needed
Computer, internet, projector

Purpose
This lesson introduces agricultural best management practices and launches student reflection on their role in conservation. Students will be able to 1) describe advantages and disadvantages of one best management practice 2) define two other conservation practices utilized by Illinois producers.

Introduction
Today, we are witnessing unprecedented support for conservation agriculture activities through increased federal and state spending. What is conservation agriculture? Conservation agriculture aims to maintain or increase yields and profits while also protecting or enhancing soil health, water quality, and other natural resource indicators. This is a great opportunity to help students consider tradeoffs of operation decisions and understand government spending as future taxpayers.

Suggested Sequence
1. Hook
    a. Project image of Pixar character, Wall-e, and ask if anyone recognizes the character? Ask if they can describe who the character is, what he does, or what the movie is about. All humans have left Earth after depleting its resources, mismanaging waste, and neglecting the ecology; Wall-e is the last trash collecting and cleaning robot.
    b. Show video clip of Wall-e finding a plant.
    c. Ask the class what they thought of when they saw Wall-e find the plant and carefully take it with him?
2. Connect the introductory conversation to resource stewardship and conservation, introduce conservation agriculture. Key points to highlight:
    a. Conservation agriculture aims to maintain or increase yields and profits while also protecting or enhancing soil health, water quality, and other natural resource indicators.
    b. Best management practices (BMP), or conservation practices, are methods used to effectively manage land, protect water quality, and promote soil health. See the handout found in Appendix B or NRCS Climate-Smart Mitigation Activities page for lists of practices.
    c. Sustainable, climate-smart, and regenerative agriculture are related terms that are often used interchangeably.
    d. There's a lot of great information online about this including current ag news stories, government agencies, and local extension offices.

- Farm Week Now: search “conservation,” “soil health,” “cover crops”
- NRCS Conservation Basics, NRCS Conservation at Work playlist
- University of Illinois Extension YouTube channel

3. Give the students 5 minutes to explore the online resources.
4. After students explore briefly, instruct students to investigate best management practices and barriers farmers face when implementing them. Students can choose one BMP and create a slide or fact sheet that includes 1) an introduction to the practice 2) graphic or photo that helps the audience understand the practice 3) list of at least 3 benefits of the practice 4) list of at least 3 challenges of or barriers to the practice. Additional guidance to limit practices to a specific geographic area or crop grown can be helpful context for students.
   An activity example can be found in Appendix A. A student handout and rubric can be found in Appendix B**.**
5. Have each student present their best management practice to the class. If there are duplicate practices, have the class or small groups compare the pros and cons listed for a practice.

Extend the Lesson

If there is additional time or you would like to extend the lesson for more critical thinking and writing practice, prompt students to write a paragraph about what they’ve learned about the complexity of decision making on farms (considering economic, social, and environmental sustainability). Other prompts could be “Do you understand why some farmers implement conservation practices? Why or why not?” or “Do you understand why some farmers do not implement conservation practices? Why or why not?”

This lesson can also be extended by adding instruction or a reading activity regarding federal and state spending on conservation &/ climate-smart agriculture. See the initial 2023 issue of the AIM Illinois newsletter for student reading material and for more information regarding this topic.

Recommended Companion Resources

Best management practices videos in the NRCS Conservation at Work playlist and University of Illinois Extension YouTube channel; supplemental reading with Sustainability Illinois Ag Mag, Farm Week Now, NRCS Conservation Basics.

Acknowledgements

Resources referenced are provided by Pixar, Farm Week Now, USDA NRCS, University of Illinois Extension, and Illinois Agriculture in the Classroom.

Author

Kathryn Thuestad, Education and Outreach Coordinator with the IDOA/NRCS Capacity Building Initiative

Appendix A

Activity Example

Prairie Strips

- Small amounts of prairie strategically placed in fields of row crops
- Pros
  - Utilizes otherwise low-yielding acres
  - Increases species diversity in fields
  - Decreases runoff
- Cons
  - Decreases total acres of crops
  - Increases costs to start
  - Requires (in many cases) technical support

Work Cited

"What Are Prairie Strips?" *Iowa State University Science-Based Trials of Rowcrops Integrated with Prairie Strips*, www.nrem.iastate.edu/research/STRIPS/content/what-are-prairie-strips. Accessed 7 June 2023.

Prairie Strips on Tim Smith farm, Eagle Grove, IA.

Photo Credit: NRCS/SWCS photo by Lynn Betts

Example Prairie Strip PDF file and PPT file

Appendix B

Activity Handout and Rubric

Name _____

What is conservation agriculture? Activity

Choose a best management practice (from the list below) to investigate. Next, select one of the activities to show your understanding of the best management practice.

Your final product should answer the questions: What is the conservation practice? What does the practice look like? What are benefits and challenges of the practice? See rubric for requirements.

Lastly, you will introduce the class to your best management practice by presenting with your slide or fact sheet.

Best Management Practice List

conservation cover, conservation crop rotation, residue and tillage management with no-till, residue and tillage management with reduced till, contour buffer strips, cover crop, field border, filter strips, grassed waterways, mulching, stripcropping, vegetative barriers, herbaceous wind barriers, prairie strips, bioreactor, nutrient management, anaerobic digester, waste separation facility, pasture and hay planting, prescribed grazing, range planting, alley cropping, critical area planting, forest farming, windbreak and shelterbelt establishment and renovation, silvopasture, riparian herbaceous cover, riparian forest buffer, wildlife habitat planting, hedgerow planting, tree and shrub establishment, upland wildlife habitat management, farmable wetland establishment

Activity Choices

Slide – Create a slide that effectively describes a conservation practice. This should feature brief text and helpful visual(s). The slide should highlight the key points you will present to the class.

Fact Sheet – Design a single-page fact sheet that effectively describes a conservation practice. This should be easy to read and visually interesting. The fact sheet should highlight the key points you will present to the class.

Name _____

What is conservation agriculture? - Rubric

	5 points	3 points	1 points
Creativity and effort	The student clearly put an extreme amount of effort and creativity into their work! Well Done!	The student put a reasonable amount of effort and creativity into their work. Nice job!	The student chose to quickly complete the work without much effort or creativity.
Presentation	The student holds audience attention seldomly looking at notes. They speak clearly and at an appropriate volume.	The student frequently returns to notes &/ occasionally uses filler words. Their volume is satisfactory.	The student reads straight from notes &/ consistently uses filler words. They are unclear and speak at a low volume.
	3 points	2 points	1 points
Topic choice	The student focused on one, approved BMP.	The student chose more than one BMP.	The student did not select an approved BMP.
What is the conservation practice?	The student thoroughly answers this question. They introduce and define the practice.	The student answers this question. They introduce the practice.	The student does not answer this question. They do not introduce or define the practice.
What does the practice look like?	The student includes a graphic or photo that helps the audience understand the practice.	The student includes a graphic or photo that does not help the audience understand the practice.	The student does not include a graphic or photo.
What are the benefits of this practice?	The student thoroughly answers this question. They list at least 3 benefits of the practice.	The student answers this question. They list 1-2 benefits of the practice.	The student does not answer this question. They do not list benefits of the practice.
What are the challenges of or barriers to implementing this practice?	The student thoroughly answers this question. They list at least 3 challenges of or barriers to the practice.	The student answers this question. They list 1-2 challenges of or barriers to the practice.	The student does not answer this question. They do not list challenges of or barriers to the practice.

/25 possible points

Activity handout and rubric PDF file and PPT file