Lesson Plan
3 of 5

Soil Conservation Practices

Created: 07/2025 by the National FFA Organization

Description of Lesson: This lesson focuses on sustainable soil conservation techniques used in agriculture, such as cover cropping, crop rotation, no-till farming and composting. Students will analyze the effectiveness of different conservation methods through a research activity and a hands-on tillage experiment. By the end of the lesson, students will understand how these practices help maintain soil health, reduce erosion and improve long-term agricultural productivity.

Thank you to our current partners in sustainability:

Student Learning Objectives:

After completing these activities, students will …

1. Identify and evaluate soil conservation methods.
2. Understand how sustainable practices benefit soil health.

Suggested Grade Level:

Grades 9 and 10 (This lesson is written so instructors can scale up or down based on class needs.)

Suggested Time:

125-155 minutes (*Time requirements may vary based upon student understanding and class schedule.)

Resources/References:

1. Website: USDA NRCS, Soil Health, https://www.nrcs.usda.gov/conservation-basics/natural-resource-concerns/soils/soil-health
2. Video: Real Ag – Soil Conservation and Health, https://www.pbs.org/video/soil-conservation-health-9a9vbw/

Related Resources:

1. AgExplorer Sustainability Systems Focus Area, AgExplorer.FFA.org/focus/sustainability-systems/
2. Introduction to Sustainability Lesson Series, https://FFA.box.com/v/introtosustainability
3. Darling Ingredients Educational Resources, https://FFA.box.com/s/3ko8e9w6zygohv1ewfsnc8byobjzeuxa
4. Valent — Sustainability in Agriculture Lesson Series, https://FFA.box.com/v/sustainabilityinagriculture

Equipment and Supplies Needed:

1. A copy of the "Principles of Soil Health" student activity sheet for each student
2. A copy of the "Real Ag: Soil Health and Conservation" student activity sheet for each student
3. A copy of the "Soil Conservation Practices" student activity sheet for each student
4. Three aluminum pans
5. Soil
6. Water (Spray bottle optional)
7. Mulch
8. Grass or grass seed
9. Three clear plastic containers
10. Books or wooden blocks
11. Computer and projector/TV to display video for students
12. Student devices with internet access
13. Poster board, printer paper or other materials to display student work
14. Tape

Vocabulary:

1. Buffer Strips
2. Compost
3. Conservation
4. Contour Farming
5. Cover Crops
6. Crop Rotation
7. Erosion
8. Mulch
9. Soil Health
10. Terracing

Cross-Curricular Connections:

English/Language Arts
Create written materials to promote and inform others about soil conservation practices.

SAE and FFA Connections:

1. Agronomy CDE, FFA.org/participate/cdes/agronomy/
2. Environmental and Natural Resources CDE, FFA.org/participate/cdes/environmental-and-natural-resources/
3. Proficiency Areas: Environmental Science and Natural Resources Management, FFA.org/participate/awards/proficiencies/
4. Foundational SAE Connections: Agricultural Literacy

Student Activity Sheets:

Direct access to student activity sheets without lesson plan or answer key for easy upload to a learning management system or printing for classwork.

https://ffa.box.com/s/umnu9h73a25gdyy4ohprellcdigzvf6k (Word)
https://ffa.box.com/s/rexg7ssbpsynrfh3hck5voa8qclomg2a (PDF)
https://docs.google.com/document/d/1btMViKqwmfcBEdSARriZeNbTqX9DMbJ-lBSrf6r3IXc/copy (Google)

These Activities Are Aligned to the Following Standards:

AFNR Performance Element

- CS.03. Examine and summarize the importance of health, safety and environmental management systems in AFNR workplaces.
- CS.04. Demonstrate stewardship of natural resources in AFNR activities.
- CS.06. Analyze the interaction among AFNR systems in the production, processing and management of food, fiber and fuel and the sustainable use of natural resources.
- NRS.02. Analyze the interrelationships between natural resources and humans.

- NRS.04. Demonstrate responsible management procedures and techniques to protect, maintain, enhance, and improve natural resources.

FFA Precept

- FFA.PL-A.Action: Assume responsibility and take the necessary steps to achieve the desired results, no matter what the goal or task at hand.
- FFA.PL-B.Relationship: Build relationships, work as a team player and appreciate the talents of others.
- FFA.CS-M.Communication: Effectively interact with others in personal and professional settings.
- FFA.CS-N.Decision Making: Analyze a situation and execute an appropriate course of action.

Common Career Technical Core

- AG3 Examine and summarize the importance of health, safety, and environmental management systems in AFNR businesses.
- AG4 Demonstrate stewardship of natural resources in AFNR activities.
- AG6 Analyze the interaction among AFNR systems in the production, processing, and management of food, fiber, and fuel and the sustainable use of natural resources.
- AG-NR2 Analyze the interrelationships between natural resources and humans.
- AG-NR4 Demonstrate responsible management procedures and techniques to protect or maintain natural resources.

Common Core – Speaking and Listening

- CCSS.ELA-Literacy.SL.9-10.1 Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9-10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

Next Generation Science

- HS-ESS3-1 Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.

Green/Sustainability Knowledge and Skill Statements

- AFNR Career Cluster, Statement 1 - Apply understanding of ecosystems and systems thinking to the management of natural resources to maximize the health and productivity of the environment, agriculture, communities, and society.
- AFNR Career Cluster, Statement 3 - Communicate the impact of green and sustainability principles on agriculture, food and natural resource systems.
- AFNR Career Cluster, Statement 7 - Demonstrate an understanding of green and sustainability trends that are impacting processes and markets in AFNR.

AFNR Career Ready Practices

- CRP.02. Apply appropriate academic and technical skills. Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive.
- CRP.04. Communicate clearly, effectively, and with reason. Career-ready individuals communicate thoughts, ideas and action plans with clarity, whether using written, verbal and/or visual methods.
- CRP.05. Consider the environmental, social and economic impact of decisions. Career-ready individuals understand the interrelated nature of their actions and regularly make decisions that positively impact and/or mitigate negative impact on other people, organizations and the environment.

Partnership for 21st Century Skills

- Communication
- Environmental Literacy
- Global Awareness
- Information, Communications, and Technology Literacy
- Think Creatively

Lesson Plan:

1. **Bell Ringer:** What can agriculturists do to protect their soil? (List as many practices or policies that you can think of.)

2. **Introduction:** *(10-15 Minutes)*
    a. **Teacher Preparation Note:** Prior to class, prepare three aluminum pans of soil.
        i. Tray A – Bare Soil: Fill with soil only, packed gently and leveled.
        ii. Tray B – Mulched Soil: Fill with soil, then cover evenly with mulch or straw.
        iii. Tray C – Vegetated Soil: Use grass sod or plant-covered soil (you can also prep this tray a few days ahead with quick-growing grass seed or use a turf strip from outside).
    b. Begin the lesson with a short review of erosion (what it is, why it's harmful to soils, etc.). Explain that erosion is one of the biggest threats to soil health and that the class is about to see a demonstration of erosion.
    c. Prop the trays up on one end using books or wood blocks so water will run downhill and place a clear plastic container under the low end of each tray to collect runoff.
    d. Begin with Tray A (bare soil). Use a spray bottle or gently pour ~500 mL of water over the soil surface evenly. Repeat the same amount of water for Tray B (mulched) and Tray C (vegetated), using the same method for consistency.
    e. Have students watch how the water flows over each surface and consider the following questions:
        i. How much soil washes off (sediment in container)?
        ii. How muddy or clear is the water?
        iii. How fast does the water run off?
    f. Have a brief discussion about which tray had the most erosion and why. Connect this to farming and agricultural land use and how farmers can prevent erosion by employing various soil health management techniques and transition into the rest of the lesson.

3. **Activity 1:** *(15-20 Minutes)* Each student needs a copy of the student activity sheet "Principles of Soil Health."
    a. **Part 1:** Show students the USDA graphic "Principles of Soil Health," which can be found at https://www.nrcs.usda.gov/sites/default/files/styles/half_width/public/2022-06/nrcseprd1850029.png?itok=hUhgV0BV. Have students label the diagram on their page with the titles of each principle only. Briefly discuss each principle as a class and ask students what they believe it means, why it is important and how agriculturists (and all people) accomplish each.
    b. **Part 2:** Divide students into groups of four. Within each group, assign a student to each of the four principles of soil health. They will be responsible for reading their assigned section of the USDA website on soil health and reporting on it to their groupmates. As each student informs their groupmates about their assigned topic, students should summarize that information on their own student activity sheets.

4. **Activity 2:** *(30-35 minutes)* Each student needs a copy of the student activity sheet "Real Ag: Soil Health and Conservation."
    a. Show students the "Soil Health and Conservation" episode of the show "Real Ag," found at https://www.pbs.org/video/soil-conservation-health-9a9vbw/.
    b. As students watch the show, they will be recording 15 key quotes, facts or pieces of information about soil conservation that are shared by the individuals in the show. After the video, hold a brief class discussion about what stood out most to students in the film and what questions they still have about soil conservation practices. They will also record these items on their student activity sheets.

5. **Activity 3:** *(65-75 minutes total; 45-60 minutes for material development, 15-20 minutes for gallery showcase)* Each student needs a copy of the worksheet "Soil Conservation Practices."
    a. **Part 1:** You may choose to have students complete this activity individually, in pairs or in small groups. Students will choose a soil conservation practice to research and create an informative piece about. They may choose to do a poster, brochure, slide show, etc. (as long as it is something that can be displayed for other students to see).
        i. Some topics students may choose from:
            1. Cover Crops
            2. No-Till and Reduced Tillage
            3. Crop Rotation
            4. Contour Farming and Terracing
            5. Compost and Organic Amendments

6. Mulching
7. Buffer Strips
8. Other soil conservation practices you may include based on your state/region

ii. Students should at least cover the following information in their informative piece:
1. Conservation practice (what is it, how is it done)
2. Benefits to their practice (what does it do for the soil)
3. Potential drawbacks to their practice (what negative impacts it could have for farmers or the soil)
4. Visuals (drawings, diagrams, etc. to help illustrate the practice)
5. Real-world example: Include a case study or story of an actual farmer, region, etc. that is using this practice successfully.

iii. Students may reference the provided rubric when creating their informative pieces.

b. **Part 2:** Students will display their final products in a gallery showcase. Students will then browse the different informative pieces and record information about the various practices on their student activity sheets.

6. **Follow-up:** *(5-10 minutes)* Briefly review and discuss each of the conservation practices that were covered in the various posters, brochures, etc.

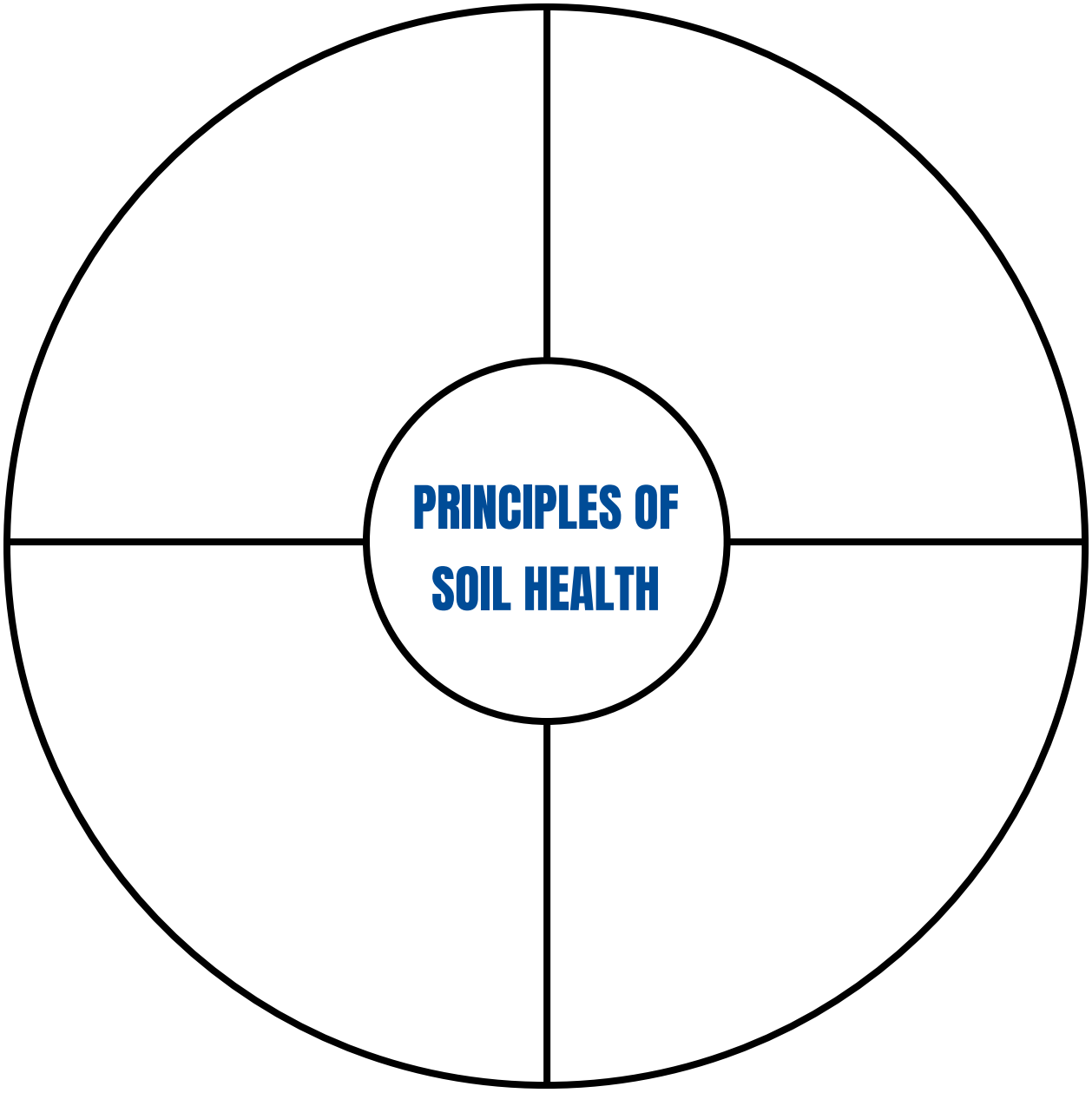
7. **Exit Ticket:** Which soil conservation practice do you believe would be most effective in our area? Why? (This question is also at the end of the "Soil Conservation Practices" student activity sheet.)

Name: _____

Principles of Soil Health

Aligned to the following standards:
CS.03; CS.04; CS.06; NRS.02; NRS.04; FFA.PL-A; FFA.PL-B; FFA.CS-M; FFA.CS-N; AG3; AG4; AG6; AG-NR2; AG-NR4; CCSS.ELA.SL.9-10.1; CCSS.ELA.RST.9-10.3; CRP.02; CRP.04; CRP.05

Directions:
Label the diagram below with the four principles of soil health. Then, research your assigned principle to present to your groupmates and record important information that your groupmates relay to you in each section.



1. How does each of the principles above impact soil health?
    a.
    b.
    c.
    d.

Name: _____

Aligned to the following standards:
CS.03; CS.04; CS.06; NRS.02; NRS.04; FFA.PL-A; FFA.PL-B; FFA.CS-M; FFA.CS-N; AG3; AG4; AG6; AG-NR2; AG-NR4; CCSS.ELA.SL.9-10.1; CCSS.ELA.RST.9-10.3; CRP.02; CRP.04; CRP.05

Real Ag: Soil Health and Conservation

Directions:

As you watch the video "Real Ag: Soil Health and Conservation," (https://www.pbs.org/video/soil-conservation-health-9a9vbw/) record 15 key quotes, facts or pieces of information about soil conservation shared by the individuals in the show. Answer the reflection questions after your class discussion.

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.

Reflection Questions:

1. What stood out to you most in the film?

2. What questions do you still have about soil health?

Name: _____

Soil Conservation Practices

Aligned to the following standards:
CS.03; CS.04; CS.06; NRS.02; NRS.04; FFA.PL-A; FFA.PL-B; FFA.CS-M; FFA.CS-N; AG3; AG4; AG6; AG-NR2; AG-NR4; CCSS.ELA.SL.9-10.1; CCSS.ELA.RST.9-10.3; CRP.02; CRP.04; CRP.05

Part 1

Directions:

Use this sheet and the questions below to help you research and plan your informative piece (brochure, poster, slide show, etc.)

1. What is your selected conservation practice?

2. What types of tasks, practices, tools, etc. are involved in your selected conservation practice?

3. What are three benefits to your selected conservation practice? (What does it do for the soil?)
    a.

    b.

    c.

4. What are three potential drawbacks to your selected conservation practice? (What negative impacts could it have for farmers or the soil?)
    a.

    b.

    c.

5. What is a real-world example of an actual farmer, region, etc. that is using this practice successfully?

6. Why should producers adopt this conservation practice?

Name: _____

Part 2

Directions:

Use the table below to record information about the different conservation practices that your classmates researched. (Use additional paper as needed.)

Conservation Practice:	
Benefits:	Drawbacks:
Conservation Practice:	
Benefits:	Drawbacks:
Conservation Practice:	
Benefits:	Drawbacks:
Conservation Practice:	
Benefits:	Drawbacks:
Conservation Practice:	
Benefits:	Drawbacks:

Name: _____

Conservation Practice:	
Benefits:	Drawbacks:
Conservation Practice:	
Benefits:	Drawbacks:
Conservation Practice:	
Benefits:	Drawbacks:
Conservation Practice:	
Benefits:	Drawbacks:
Conservation Practice:	
Benefits:	Drawbacks:

Which soil conservation practice do you believe would be most effective in our area? Why?

Name: _____

Soil Conservation Practices Rubric

Category	Excellent (5 points)	Good (4 points)	Needs Improvement (2-3 points)	Missing (0-1 points)
Content Accuracy	All facts are accurate and clearly explained.	Minor errors or unclear sections	Several inaccuracies or vague explanations	Very little accurate information
Required Elements	Includes all required sections with detail	Missing one minor section	Missing one or two key sections	Missing most of the required content
Visuals	High-quality, relevant and engaging visuals	Good effort with visuals	Visuals are minimal or unclear.	Little or no visuals used
Organization and Clarity	Very well organized and easy to follow	Mostly organized with minor issues	Hard to follow in parts	Disorganized and confusing
Creativity and Effort	Shows creativity and strong effort	Good creativity and effort	Some effort shown	Minimal effort or incomplete
			Total Score	**/25**

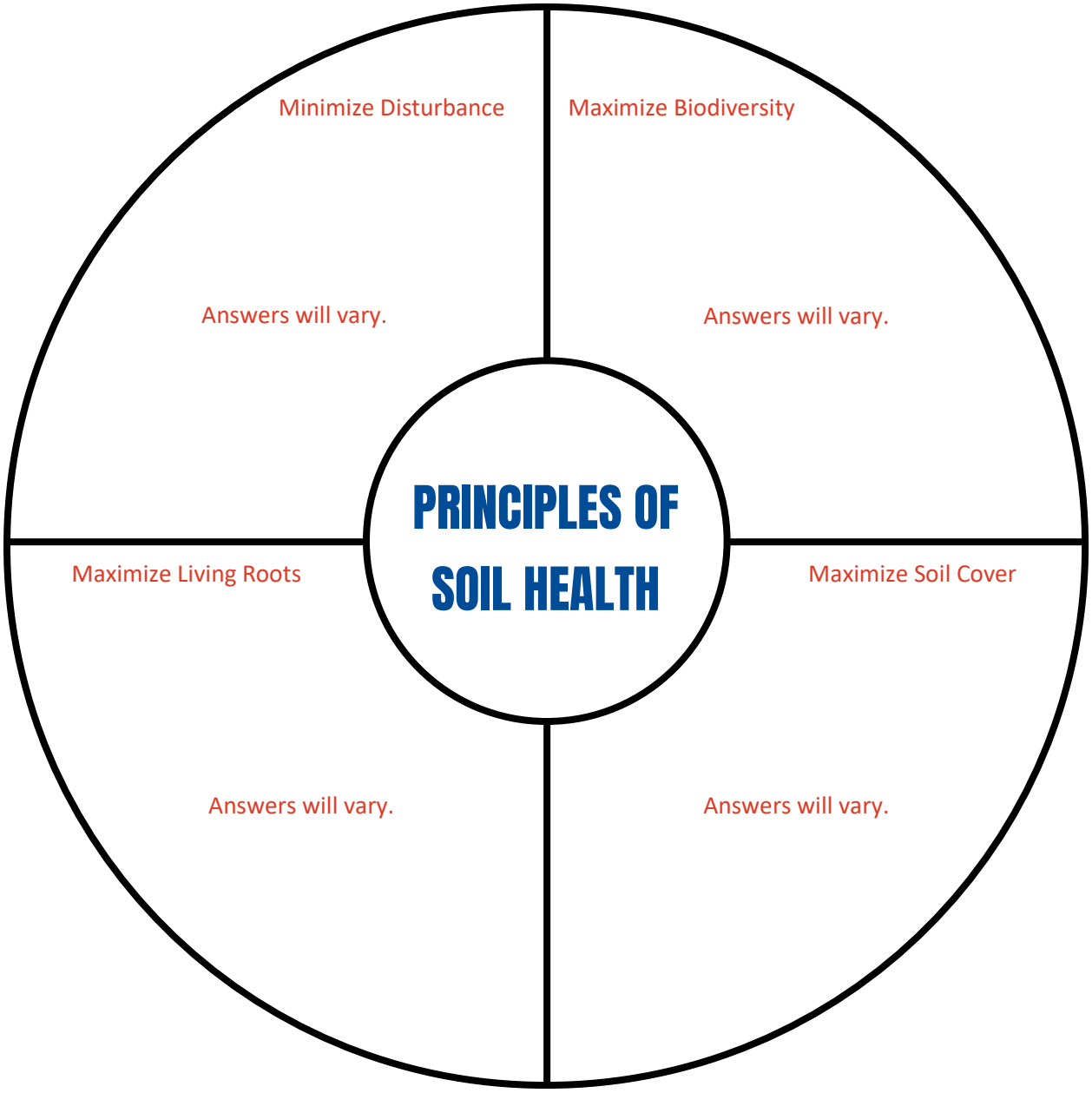
Notes:

Name: _____

KEY: Principles of Soil Health

Aligned to the following standards:
CS.03; CS.04; CS.06; NRS.02; NRS.04; FFA.PL-A; FFA.PL-B; FFA.CS-M; FFA.CS-N; AG3; AG4; AG6; AG-NR2; AG-NR4; CCSS.ELA.SL.9-10.1; CCSS.ELA.RST.9-10.3; CRP.02; CRP.04; CRP.05

Directions:
Label the diagram below with the four principles of soil health. Then, research your assigned principle to present to your groupmates and record important information that your groupmates relay to you in each section.



1. How does each of the principles above impact soil health?
   a. Answers will vary.
   b.
   c.
   d.

Name: _____

Aligned to the following standards:
CS.03; CS.04; CS.06; NRS.02; NRS.04; FFA.PL-A; FFA.PL-B; FFA.CS-M; FFA.CS-N; AG3; AG4; AG6; AG-NR2; AG-NR4; CCSS.ELA.SL.9-10.1; CCSS.ELA.RST.9-10.3; CRP.02; CRP.04; CRP.05

KEY: Real Ag: Soil Health and Conservation

Directions:

As you watch the video "Real Ag: Soil Health and Conservation," (https://www.pbs.org/video/soil-conservation-health-9a9vbw/) record 15 key quotes, facts or pieces of information about soil conservation shared by the individuals in the show. Answer the reflection questions after your class discussion.

1. Answers will vary.
2. Answers will vary.
3. Answers will vary.
4. Answers will vary.
5. Answers will vary.
6. Answers will vary.
7. Answers will vary.
8. Answers will vary.
9. Answers will vary.
10. Answers will vary.
11. Answers will vary.
12. Answers will vary.
13. Answers will vary.
14. Answers will vary.
15. Answers will vary.

Reflection Questions:

1. What stood out to you most in the film?
   Answers will vary.
2. What questions do you still have about soil health?
   Answers will vary.

Name: _____

KEY: Soil Conservation Practices

Aligned to the following standards:
CS.03; CS.04; CS.06; NRS.02; NRS.04; FFA.PL-A; FFA.PL-B; FFA.CS-M; FFA.CS-N; AG3; AG4; AG6; AG-NR2; AG-NR4; CCSS.ELA.SL.9-10.1; CCSS.ELA.RST.9-10.3; CRP.02; CRP.04; CRP.05

Part 1

Directions:

Use this sheet and the questions below to help you research and plan your informative piece (brochure, poster, slide show, etc.)

1. What is your selected conservation practice?

   Answers will vary.

2. What types of tasks, practices, tools, etc. are involved in your selected conservation practice?

   Answers will vary.

3. What are three benefits to your selected conservation practice? (What does it do for the soil?)
   a. Answers will vary.
   b. Answers will vary.
   c. Answers will vary.

4. What are three potential drawbacks to your selected conservation practice? (What negative impacts could it have for farmers or the soil?)
   a. Answers will vary.
   b. Answers will vary.
   c. Answers will vary.

5. What is a real-world example of an actual farmer, region, etc. that is using this practice successfully?

   Answers will vary.

6. Why should producers adopt this conservation practice?

   Answers will vary.

Name: ___________________________________

Part 2

Directions:

Use the table below to record information about the different conservation practices that your classmates researched. (Use additional paper as needed.)

Conservation Practice: Answers will vary.	
Benefits: Answers will vary.	Drawbacks: Answers will vary.
Conservation Practice: Answers will vary.	
Benefits: Answers will vary.	Drawbacks: Answers will vary.
Conservation Practice: Answers will vary.	
Benefits: Answers will vary.	Drawbacks: Answers will vary.
Conservation Practice: Answers will vary.	
Benefits: Answers will vary.	Drawbacks: Answers will vary.
Conservation Practice: Answers will vary.	
Benefits: Answers will vary.	Drawbacks: Answers will vary.

Name: ________________________________

Conservation Practice: Answers will vary.	
Benefits: Answers will vary.	Drawbacks: Answers will vary.
Conservation Practice: Answers will vary.	
Benefits: Answers will vary.	Drawbacks: Answers will vary.
Conservation Practice: Answers will vary.	
Benefits: Answers will vary.	Drawbacks: Answers will vary.
Conservation Practice: Answers will vary.	
Benefits: Answers will vary.	Drawbacks: Answers will vary.
Conservation Practice: Answers will vary.	
Benefits: Answers will vary.	Drawbacks: Answers will vary.

Which soil conservation practice do you believe would be most effective in our area? Why?

Answers will vary.