



## Regenerative Farming

*Total time ~60 minutes*

\*this lesson is assuming the students have already learned the lesson on carbon sequestering and the carbon cycle

### Overview

Students will learn about regenerative farming.

### Objectives:

After this lesson students will be able to:

- Describe the processes of regenerative farming
- Explain the role of carbon capture in regenerative farming
- Explain the difference between organic farming and regenerative farming

### Vocabulary:

- Tilling
- Crop rotation
- Biodiversity
- Rotational grazing
- Carbon capture

### 1.Introduction

Introduce lesson by saying that there are three kinds of farming with different goals

1. Conventional farming goal (profit): Produce as much as fast as possible to earn
2. Organic farming goal (prevention): Produce as much as fast as possible that is healthy food and not harm the environment or people
3. Regenerative farming goal (helping): Produce best healthy food that helps the environment and people

### Discussion (5 min)

- First ask students to discuss what they know about global warming and climate change (some effects of global warming)

### Materials:

- Regenerative farming powerpoint
- Soil sample
- Chalk or markers for the board

### Preparation:

Review speaker notes on the powerpoint, make sure links to the handout are working

### On the Board:

Vocabulary  
Student Reflection Questions

### Suggested Snack:

No suggested snack

### OtherResources:

<https://regenerationinternational.org/2017/02/24/what-is-regenerative-agriculture/>

- What is causing global warming? What do you know about carbon dioxide in the atmosphere? (discuss in groups of 3 for 1 min), have students volunteer their discussions at the end)
- Show the Visual aid with the carbon cycle on projector, briefly explain the different steps (Here's a diagram on the carbon cycle)  
<https://cdn1.byjus.com/wp-content/uploads/2017/10/carbon-cycle-2-1.png>
- Explain that the different arrows on the slide represent how much each type of farming contributes to global emissions

### **Aspects of Conventional Farming (5 min)**

- Explain the definition of tilling: digging up roots and organisms in the soil to prepare for planting
  - Add that tilling releases carbon from the soil into the atmosphere, adding to global warming
- Show conventional farming clip:  
<https://www.youtube.com/watch?v=skfPv8tNU8Y>
  - Time stamp for video: 1:27 - 2:51

### **Aspects of Organic farming (1 min, points on slide)**

### **Aspects of Regenerative Farming (10 min)**

- Pick apart the word “regenerative”:
  - “Re-” means again
  - “-generate” to produce
  - Regenerative means to produce again
  - Give metaphor of lizard regenerating their tails when they fall off
- Explain the different aspects of regenerative farming, focusing on its main goal of maintaining and adding to the biodiversity of a natural community (10 min)
  - Show video on regenerative farming:  
<https://www.youtube.com/watch?v=fSEtiixgRJI>
    - Pause at 1:25 to make sure students understand no-till farming
      - Can explain how there are many organisms and roots inside the soil, keeping it together. Tilling (like using rakes or shovels) messes up this structure, making the plants in the soil less able to absorb nutrients and water.
    - Pause at 2:10 and make sure students understand what overgrazing does to the pasture
      - If cows eat the grass faster than it grows, there won't be enough grass left

- Pause at 2:36 and point out how the cows are being rotated so the grass and soil have a chance to grow
  - At the end of the video: emphasize that like organic farming, regenerative farming doesn't use pesticides or chemical fertilizers, but it focuses on restoring the biodiversity in the area using carbon capture.
- Introduce the idea of companion planting as an ancient technique that was practiced by many cultures, including the Mayans.
  - Ask the students: Did you know regenerative farming practices aren't new? The ancient Mayans used a method of companion planting called the three sisters.
  - Mayan Farming Practice planted 3 crops together that helped each other grow:
    - Beans fix nitrogen into the soil, needed by corn and squash
    - Corn structure lets beans climb
    - Squash creates moist soil, prickly vines prevent pests
  - Benefits of this include:
    - The farmer does not need to use fertilizer or pesticides
    - less damage to the soil

## 2. Activity 1 (15 min):

- Learning Activity: Have students fill the blank table in groups of 3-4 with the different characteristics that they believe fits with each type of farming  
[https://docs.google.com/document/d/1mywBHYqivcGICZ\\_3tpej6hOPw7qy9GipPUzBwmDI3CU/edit?usp=sharing](https://docs.google.com/document/d/1mywBHYqivcGICZ_3tpej6hOPw7qy9GipPUzBwmDI3CU/edit?usp=sharing)
  - Make the same table on the whiteboard after 10 minutes and have a student volunteer write the different points they agreed on.

## 3. Activity 2 (5 min):

- Ask students whether they have any ideas on how to use regenerative agriculture in the garden, using the pictures on the 13th slide. Have students discuss with their elbow partners and pick volunteers to share.

## 4. Closing Activity (15 min)

- Observe three sisters in the garden: corn, beans, squash
- See a sample of soil with roots branching out
  - Point out that till farming would cut off these roots.
- Find an animal in the garden that is participating in regenerative farming. (example: worm, bee, butterfly)
- (Optional): Prepare a bed using regenerative techniques

- Leave roots in and disturbing soil as little as possible

Snack time!

### 5. Student Reflection Questions:

- 1) What are some ways you think regenerative farming can reduce carbon emissions and benefit the environment in general?

Answer: Some examples may be: preserves CO<sub>2</sub> in the ground to be used by crops, uses crop rotation techniques to prevent excess use of fertilizer, rotates grazers so grass is able to grow

### 6. Assessment Questions:

- 1) What is the goal of regenerative farming?
  - a) Use chemical pesticides to mass produce crops
  - b) Actively maintain biodiversity in the farm using sustainable methods
  - c) Use solely natural farming techniques to ensure the health of consumers
- 2) What are the definitions of companion planting, tilling, and biodiversity?

Answers:

- 1) b
  - 2) Tilling: digging up roots and organisms in the soil to prepare for planting  
Companion planting: planting different types of crops next to each other so they can all benefit from the resources  
Biodiversity: variety of organisms and plants living together in the same habitat
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