

# Unit 1: Introduction to Sustainability Aquaculture and Resource Management

18 Classes

*Rev. June 2019*

## Essential Questions

- What is sustainability in agriculture and food systems?
- What can farmers and consumers do to move towards sustainability?

## Essential Understandings with Unit Goals

**EU 1:** There are many different farming techniques used throughout the world which may or may not use sustainable practices

- Compare and contrast the goals and the practices used to achieve a sustainable agriculture and food systems.
- Demonstrate awareness of economic, environmental, and community impacts of agriculture.

**EU 2:** Agriculture can impact society in many different economic and environmental ways

- Evaluate the “sustainability” of an enterprise based on how well it contributes economic, environmental, and community benefits.

## Standards

### Common Core State Standards

- **CCSS.ELA-Literacy.RST.11-12.7** Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
- **CCSS.ELA-Literacy.RST.11-12.9** Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.

### Next Generation Science Standards

- **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.
- **HS-ESS3-4.** Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.
- **HS-ETS1-2.** Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

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## MSMHS Academic, Civic, and Social Competencies

**Competency 1:** Read and write effectively for a variety of purposes

**Competency 2:** Speak effectively with a variety of audiences in an accountable manner

**Competency 3:** Make decisions and solve problems independently and collaboratively

**Competency 4:** Apply scientific knowledge and concepts to a variety of investigative tasks.

**Competency 5:** Contribute to a positive learning environment with respect and responsibility

## Unit Content Overview

- Agriculture
- Aquaculture
- Sustainable Farming
- Integrated Farming
- Organic vs Non-Organic farming
- GMOs
- Agriculture Law
- Food Systems

### Interdisciplinary Connections

- AP Environmental Science- Agriculture, GMOs
- AP Human Geography-Sustainable Farming

## Learning Objectives with *TWPS Activities*

Students will be able to...

- Define the term "sustainable" as related to farming
  - *What role does sustainability play in agriculture?*
- Discuss the role of adaptations and technology in the advancement of humanity
  - *What have been the biggest factors that have led to the advancement of humanity?*
- Analyze how humans have manipulated their environment to meet their physiological needs
  - *How have humans changed their environment for the betterment of society?*
- Evaluate the role of technology as it relates to sustainability
  - *How does technology affect the sustainability of an agricultural system?*
- Research examples of ancient agricultural practices
  - *How do agricultural practices from the past compare to current practices?*
- Identify examples of sustainability in working farming, food system and natural resource enterprises

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- *What are some of the biggest impacts commercial farming can have on an environment?*
- Research examples of sustainable agriculture and aquaculture facilities
  - *What are some of the common characteristics found in sustainable aquaculture and agricultural practices?*
- Distinguish between the goals and the practices used to achieve the goals of sustainable agriculture and food systems.
  - *When working as a farmer for a living, what goals would you need to balance to run a successful business?*
- Evaluate the economic, environmental, and community impacts of specific agriculture and aquaculture systems.
  - *What is the public perception of genetically modified organisms versus the reality of their impact?*
- Analyze the laws and policies that impact farmers
  - *Who monitors the food industry and what do they do to ensure that the public is getting a safe product?*
- Design a new law or policy that could improve the level of sustainable farming world wide
  - *Where do you see the biggest need for improved legislation in monitoring agricultural practices?*
- Persuade an audience to pass a new law or policy to improve sustainable farming practices
  - *What has surprised you the most when researching the laws that govern agriculture or aquaculture?*
- Compare and contrast organic and non-organic farming practices
  - *In your opinion, what would constitute as an organically grown food?*
- Communicate the level of sustainability that is achieved by organic farms
  - *What sector of agriculture needs the largest gains in sustainability in the future?*

## Instructional Strategies/Differentiated Instruction

- **HLP** Academically Productive Talk
- **HLP** Writing to Learn (TWPS)
- **HLP** Effective Feedback
- Warm up
- Teacher Modeling
- Student self-assessment
- Flexible Grouping
- YouTube/videos
- Small Group Discussions
- Independent reading
- Collaborative group activities
- Lectures and Note-taking

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## Assessments

### FORMATIVE ASSESSMENTS:

- Warm Up Activities
- Exit Slips
- Summarizing relevant texts
- Homework Checks
- Daily Check-Ins
- Advancement of Humanity Discussion
  - MSMHS Rubric 2: Accountable Tank
- Sustainable Farming Law
  - MSMHS Rubric 3: Problem Solving

### SUMMATIVE ASSESSMENTS:

- Quiz on EU 1 & 2
- Sustainable Farming Law Discussion
- Unit Exam

## Unit Task

**Unit Task Name:** Sustainable Farming Law

**Description:** Students will use the skills and knowledge gathered throughout this unit to create a new law or policy aimed at improving the level of sustainable farming practices happening worldwide. Students will identify a specific practiced that is commonly used (EU 1) and identify the economic, environmental and societal issues with the farming practice (EU 2). They will create a new law and/or policy that will improve the farming practice and defend their law in a discussion with their peers.

**Evaluation:** MSMHS Rubric 3: Problem Solving

## Unit Resources

- Internet databases
- Laptops
- FFA Resources