



Key Topics & Learning Objectives

Agriculture and the Environment: Knowledge and technology to feed the world

KEY TOPICS (KT):

1. Understanding how agroecosystems function and the services they provide.
2. Understanding the importance of soil health as the foundation of a healthy ecosystem.
3. Understanding sustainable agriculture on large and small farm operations, as well as the indicators of sustainable farming.
4. Understanding how sustainable and best management farming practices enhance and protect soil health, water quality and quantity, and biodiversity; as well as manage insect pests, disease, and weeds.
5. The differences of local, regional, and national foods systems that are vital to grow food for an ever increasing world population; and the importance of each food system.
6. New technologies that help provide more efficient agriculture production.

LEARNING OBJECTIVES:

1. Understand how agroecology applies ecological principles to agricultural systems by considering productivity, ecosystem impacts, and social responsibility.- **KT #1**
2. Understand the indicators of soil health, including physical, chemical and biological properties and its role in the agroecosystem- **KT #2.**
3. Define sustainable agriculture, including comparing and contrasting sustainable practices on large and small farm operations- **KT #3**
4. Understand the importance of moving toward sustainable farming systems to conserve natural resources, mitigate climate change, reduce erosion and

protect water quality and quantity; as well as and promote pollination- **KT #4**

5. Understand farm management practices to build soil organic matter, such as: composting, crop rotations, cover crops, conservation tillage, and management intensive grazing systems to improve soil health.- **KT #4**

6. Understand best management practices that improve water quality and reduce water use such as conservation tillage, cover crops, plant selection, precision agriculture, water re-use, and sub-surface drip irrigation.- **KT #4**

7. Understand integrated pest management and biological pest control techniques used to prevent insect pest, disease, and weed problems.- **KT # 4**

8. Knowledge of the role pollinators play in farming and ways to attract them.-**KT#4**

9. Describe the economic, social, and environmental benefits of sustainable agriculture to local communities, as well as to regional and global food systems.

KT #5

10. Understand the role of new technology: agricultural biotechnology; precision agriculture; using UAV (drones, GIS, etc.) to increase farm efficiency for food production.- **KT #6**

11. Understand the risks and benefits of agricultural biotechnology.- **KT #6**

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