

Key Topics & Learning Objectives

(Based off of the NCF Envirothon 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**

~September 6, 2018

2019 Key Topic Resources

The resources selected for the 2019 NCF-Envirothon Current Issue are intended to express a diversity of perspectives related to the topic, “ Agriculture and the Environment: Knowledge and Technology to Feed the World.” The views and opinions expressed in the articles below represent the views and opinions of the authors themselves, not the NCF-Envirothon or NC Envirothon staff or committee members.

Please note that PDF versions of the articles are included for ease of printing. Hyperlinks embedded within these PDFs are included for reference only, and are NOT official resources of the 2019 NCF-Envirothon competition. Hyperlinks to the articles’ original forms are included at the bottom of the PDFs where applicable.

To view the “2019 Key Topic Resources” please click on the “Green Button” below.

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Agriculture and the Environment : Knowledge & Technology to Feed the World

There are many articles that estimate the population of the Earth to be approximately 9 billion by the year 2050. One of the primary concerns for the agricultural industry is how will farmers be able to grow enough food to feed this growing population, while also protecting natural resources such as soil, water, air, wildlife, and forestry resources.

Students will learn the concepts of how agriculture and all natural resource areas are interrelated, and how the use of new technologies are key to increase food production. Key topics will include:

- Understand the importance of moving toward sustainable farming systems to conserve natural resources, mitigate climate change, reduce erosion and protect water quality and quantity, and promote pollination;
 - Comprehension of farming practices that build soil organic matter such as composting, crop rotations, cover crops, conservation tillage, and management intensive grazing systems to improve soil health;
- Understand integrated pest management and biological pest control techniques used to prevent insect pest, disease, and weed problems;
- Understand the role of new technology: agricultural biotechnology; precision agriculture; and using UAV (drones, GIS, etc.) to increase farm efficiency for food production.



Agriculture is the art and science of cultivating the soil, growing crops and raising livestock. ... Higher-technology farming involves crop rotation, which requires knowledge of farmable land.