OREGON ENVIROTHON

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

There is vast research and scientific estimates that the population of the Earth will reach approximately 9 billion people 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 forests.

Oregonians are increasingly interested in knowing where their food comes from and how it was produced. They enjoy important crops grown in Oregon, including blackberries, raspberries, apples, sweet cherries and pears, many of which require pollination by bees and other organisms to be productive. Oregon farmers must find ways to sustain ecosystems that provide services such as pollination, which contribute to produce abundant food that their consumers want to eat.

Students will learn the concepts of how agriculture and the environment are interrelated. Students will demonstrate how research and technology can be employed to increase food production in Oregon while protecting the environment.

Students should focus on three primary concepts:

I. **Conservation**
Understand the importance of sustainable farming systems to conserve natural resources, mitigate climate change, reduce erosion, protect water quality and quantity, improve soil quality, and promote pollination from native pollinator species.

II. **Pest Management**
Understand integrated pest management techniques that cooperate with ecosystems to prevent insect, disease and weed problems.

III. **Technology**
Understand the role of new technology to increase farm efficiency and minimize impacts on the environment. Technologies include biotechnology and plant breeding, precision agriculture, UAV-drones and Geographic Information Systems (GIS).


LEARNING OBJECTIVES:

1. Define sustainable agriculture, including comparing and contrasting sustainable practices on large and small farm operations.
2. Understand the importance of moving toward sustainable farming systems to conserve natural resources, mitigate climate change, reduce erosion, protect water quality and quantity, and promote pollination.
3. 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.
4. 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.
5. Understand the role of new technologies that help provide more efficient agriculture production such as agricultural biotechnology, precision agriculture and using UAV (drones, GIS, etc.).Understand the risks and benefits of the technologies.
6. Understand integrated pest management and biological pest control techniques used to prevent insect pest, disease and weed problems.
7. Knowledge of the role pollinators play in agriculture, forestry and natural systems, along with ways to attract them.
8. Understand the differences of local, regional and national food systems that are vital to grow food for an ever-increasing world population.