

CGC1P Unit 2: Natural Resources and Sustainability

Activity 3: Sustainable Agriculture

Overview

Sustainable agricultural practices are important in a world where there is a limited amount of farming land. Sustainable agriculture is possible through low-input farming. In this activity the student will examine organic and conventional farming practices.

Lesson

Arable Land

Arable Land is fertile land that can be used to grow crops, where the soil includes a good mixture of organic material, water, air, and minerals. Sustainable agricultural practices are important in a world where there is a limited amount of arable land. This amount decreases every year.

Declining arable land

The land has been abused over time; meanwhile, population booms. Is there enough land to feed the population?

Factors surrounding agricultural practices today:

1. Good land is flat, has moist, fertile soil and a temperate (not too cold not too hot), sunny climate.
2. Farm land is being lost due to erosion, water scarcity (desertification), mining, roads, salinization (salt build up in the soil) and (sub)urbanization.
 - 80% of the world's farmland has "significant agricultural constraints" (damaged; eroded, lack of minerals, too dry, constantly flooded).
 - 45% of the world's farmland is steeply sloped (fragile soil, easily degraded).
3. Crop production is increasing through irrigation, fertilizer, pesticides, feedlots, genetically enhanced seeds ("Frankenfoods"), and alternative methods.
4. Urban agriculture, gardens, hydroponics, urban renewal, and aquaculture are possibilities, but unfortunately produce low amounts.

Pesticides

Pesticides are cheap (some governments help farmers by supplying money), but they become overused (excess application is regarded as insurance). The effects can be costly:

1. Creating possible health risks (cancer, birth defects, nervous disorders).
2. Disrupting ecological processes (food chain): e.g., pesticides can kill pollinators, weaken bird reproduction, and kill natural predators to pest insects.

Feedlots

Feedlots for livestock are efficient and cut costs, but there are problems:

1. Transporting corn/feed to cattle, hogs, chickens, and washing away manure into waterways (high impact).
2. Hog and chicken farms are major local problems to communities, because they pollute air and waterways.

Sustainable agriculture is possible through low-input farming. An example of low-input farming is organic farming. Organic farmers grow crops or raise livestock without using synthetic pesticides, inorganic chemical fertilizers, anti-biotics, or hormones to fatten cattle, pigs, and chicken.

Organic Farming

Organic Farming is done by:

- a. keeping the soil moist by adding manure, compost, and other organic matter
- b. keeping the soil planted at all times to avoid erosion
- c. alternating different crops to reduce pest populations.

This type of farming not only protects the environment but also reduces the need for water, pesticides, and fertilizers.

Assignment

1. What is arable land?
2. What are some factors surrounding agricultural practices today?
3. What are pesticides and what are the problems associated with their use in agriculture?
4. What are three organic farming techniques? Why is organic farming beneficial?