

NATIONAL SCIENCE STANDARD

- Personal and Social Perspectives: Science and technology in local challenges
Ecology

OBJECTIVES

The student will:

1. define sustainable farming.
2. identify methods of sustainable farming.

BACKGROUND

The agricultural industry is the one group whose livelihood depends on the environment. Farmers rely on the land to produce food to feed the growing population. Not only is the environment a farmer's lifeblood, it also represents his or her family's future.

According to a poll by the America Farm Bureau Federation, 97.2% of young farmers plan to farm for life, and nearly all of them hope their children will follow in their footsteps. Keeping the farm in the family provides some strong incentive for today's farmers to protect and preserve the natural resources of their land.



WORD POWER

buffers *n.* Something that softens a blow.

conservation *n.* The protection of valuable things, especially forests, wildlife, and natural resources.

cover crop *n.* Crops grown in the off season that add nutrients back into the soil.

erosion *n.* The gradual wearing away of a substance by water or wind.

sustain *v.* To keep something going.

till *v.* To prepare land for growing crops.

refuge *n.* A place that provides protection or shelter.

Farmers recognize that certain conventional farming practices have had a detrimental effect on the soil, water and wildlife.

Sustainable Agriculture

Sustainable agriculture offers new techniques to protect the environment. Sustainable agriculture involves practices that allow a farm to produce food, improve the natural resources upon which agriculture depends while making enough money to keep the farm in operation.



BACKGROUND, CONTINUED...

Some of the many techniques being employed by today's farmer are:

Cover Crops

Growing plants such as rye, clover, or vetch in the off season after harvesting a grain or vegetable crop can add nutrients back into the soil, prevent weed growth and prevent soil erosion.

Conservation Tillage

Tilling prepares the soil for planting by digging and turning the soil that exposes topsoil and its nutrients to wind and weather that will wash the topsoil away. Conservation tillage is a method of tilling that requires minimum soil disturbance. By leaving the soil undisturbed, natural biological activity increases organic matter and improves the soil quality.

Conservation Buffers

The planting of grass and/or trees between cropped areas and waterways. The purpose of these "buffer strips" is to stop water runoff from the fields into the water source. This protects our water supply from chemicals and soil. A buffer provides shelter for wildlife.

Wildlife Refuge

Many farmers plant special food plots for birds and animals and have special areas for wildlife to live.

INSTRUCTIONAL PROCEDURE

1. Review the background materials.
2. Do Activity 1.



ASSESSMENT

Is the class able to identify the difference between sustainable and non-sustainable agriculture?

NAME _____

ACTIVITY 1: THE FUTURE OF THE FARM

Sustainable agriculture means to farm in a manner that the farm can exist for a long time. It requires actions that allow for the farm to preserve its natural resources while also bringing in enough money to keep the farm in operation. This requires balancing the use of chemical and non-chemical farming methods.



For each pair of statements

- Put an **S** (for sustainable) by the statement that is a practice that would help a farm exist for a long time.
 - Put an **N** (for not sustainable) by the statement that would not help the farm to exist for a long time.
- A. _____ Cover the field with a plant that will add nutrients back to the soil and prevent weeds from growing when a field is not being used for food crops.
 _____ Let the weeds grow and kill them with a chemical when it is time to plant a crop.
- B. _____ Turning the soil to get rid of weeds can cause soil to wash into the water source.
 _____ Use the correct amount of chemical to prevent weed growth to avoid tilling the topsoil.
- C. _____ Use a chemical to control insects just because the insect was a problem last year.
 _____ Plant a crop that does not attract the insect that was a problem last year.
- D. _____ Use all the land for crops so that animals don't have a natural food supply.
 _____ Provide an area on the farm where wildlife can live and eat without destroying crops.
- E. _____ Use chemicals only when needed and in the proper amounts.
 _____ Avoid the use of all chemicals even if it results in the loss of half of the all crops to weeds and insects.
- F. _____ Plant green areas with trees between fields and water sources so that chemicals and soil cannot get into the water.
 _____ Avoid green space on the farm so that more crops can be planted.