GRADES 3 & 4—AGRICULTURE: WHAT IS IT?

NATIONAL SCIENCE STANDARD

- History and Nature of Science: Science as a Human Endeavor

OBJECTIVES

The student will:

1. define agriculture, farming and farm.
2. identify products, food and non-food, of farming.

BACKGROUND

Sometimes it is easy to forget that our food originates from the Earth and not the grocery store.

Agriculture is the huge system of the science and business of cultivating the soil, producing crops, and raising livestock useful to people. Farmers play a very important role in this system, which is responsible for putting food on our tables. Farmers are responsible for growing and collecting our food from the Earth. They also care for the animals that give us meat (beef cattle, pigs, poultry), milk (dairy cattle), and wool (sheep).

Agriculture gives plant crops that are used for food, as well as non-food items. Cotton for clothing and linens comes from cotton plants. Wool for clothing comes from sheep. Corn and soy crops are used to make crayons, chalk, shampoo, lotion, cosmetics, paint, motor oil, and gasoline.

Crops, plants that are grown for food, are grown in large tracts of land called fields. They are measured by acres. One acre is the size of a football field. The average farm in America is 460 acres.

FAST FACT

ONE ACRE IS THE SIZE OF A FOOTBALL FIELD.

THE AVERAGE FARM IN AMERICA IS 460 ACRES.

Plants grow in the soil. Farmers use a machine called a tractor. The tractor can be attached to many different tools to assist in the planting process. A plow pulled by a tractor loosens the hard soil. A cultivator is pulled across the soil to smooth out the field. A seed drill is used to plant the seed. When the crop is ready to harvest (cut and collect), a farmer uses a combine (kŏm´bīn), which is the biggest machine on the farm. It is called a combine because it combines two jobs. It cuts the wheat and separates the grain from the rest of the plant. It is used for grain crops such as wheat and corn.

Once the crop is harvested, it is stored, sold, and distributed to food manufacturers who use it to make food or non-food items we need.

AGRICULTURE: WHAT IS IT?
(CONTINUED)

INSTRUCTION PROCEDURE

1. To set the stage, prepare a basket of common items that come from agriculture. Include products such as:
   - Cotton Underwear
   - Sheets
   - Shampoo
   - Body Lotion
   - Pasta
   - Oil

2. Discuss the importance to the student's everyday life.

3. Discuss the background information.

4. Hand out Activity 1: What is Agriculture?

5. Discuss the vocabulary words. Hand out Activity 2.

WORD POWER

acre *n.* A measurement of land.

agriculture *n.* The science and business of cultivating the soil, producing crops and raising livestock useful to people.

crop *n*. Plants grown for food.

cultivate *v.* To prepare the ground for the preparation of raising crops.

dairy *n.* Concerned with the production of milk.

farm *n.* Tract of land used for agriculture purposes.

farm *v.* Act of growing crops or raising animals.

farmer *n.* A person who cultivates land or crops or raises animals.

harvest *n.* The process of gathering a crop.

livestock *n.* Domestic animals kept for use on a farm or raised for sale and profit.

product *n.* Something produced.

ASSESSMENT

1. Review "What is agriculture?" Activity 1 and Activity 2.

2. Distribute the items from basket of agricultural products among the students.

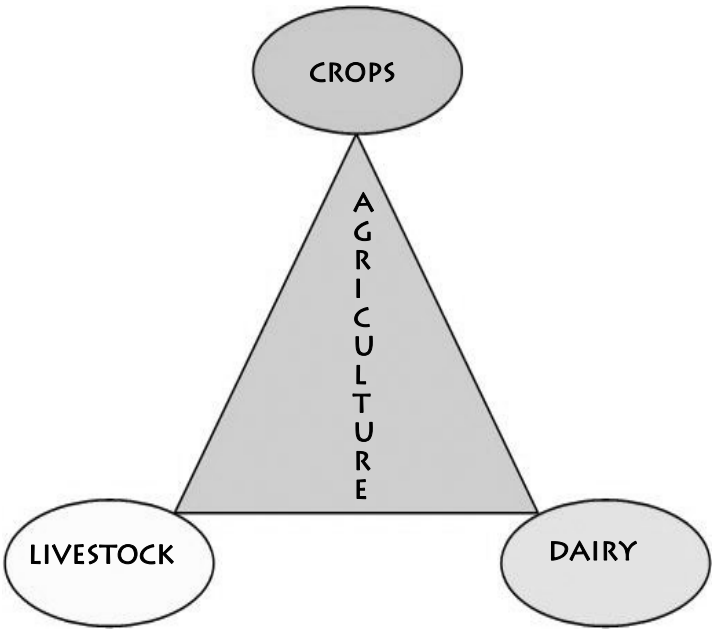
3. Look at the ingredient labels, then have them identify the agricultural product it is derived from.

4. Group the items into edible and non-edible products.

NAME_____

ACTIVITY 1: WHAT IS AGRICULTURE?

Agriculture is the science and business of raising crops or livestock.



LISTING

List common examples of agriculture products in the following categories.

Crops:_____

_____

Livestock:_____

_____

Dairy:_____

_____

NAME_____

ACTIVITY 1: WHAT IS AGRICULTURE? (CONTINUED)

Agriculture is the science and business of raising crops or livestock.

MATCHING

Draw lines to match the agriculture source in Column A to the products in Column B.

A	B
1. timber (trees)	A. cheese
2. dairy cow	B. blue jeans
3. cotton	C. paper
4. wheat	D. perfume
5. flower	E. spaghetti

NAME_____

ACTIVITY 2 — WHAT IS AGRICULTURE?

WORD POWER

Use the Word Power vocabulary words to fill in the blanks.

1. To ☐ ___ ___ ___ is the actual process of growing or raising crops or animals.

2. A person who grows crops is a ___ ___ ___ ___ ___ ___.

3. Corn, soybeans, wheat, and cotton are different types of ___ ___ ☐ ___ ___.

4. A pig is an example of ___ ___ ___ ___ ___ ___ ☐ ___ ___.

5. The science and business of growing food is ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___.

6. Milk comes from a ☐ ___ ___ ___ ___ cow.

WORD POWER

- AGRICULTURE
- CROPS
- DAIRY
- FARM
- FARMER
- LIVESTOCK

Use the letters in the boxes to fill in the spaces.

___ ___ ___ ___

GRADES 4 & 5— A FARM ECOSYSTEM

NATIONAL SCIENCE STANDARD

- Life Science: Populations and Ecosystems

OBJECTIVE

The student will describe how a farm represents an ecosystem.

BACKGROUND

An ecosystem is any group of living and nonliving things interacting with one other. Energy flows through an ecosystem. As one part of the system is growing, another is dying.

In an ecosystem, energy from one part of the system is needed by another part of the system. A farm ecosystem is different from a forest or meadow ecosystem because humans control many of the interactions among the things on a farm.

Soil lays the groundwork for farming. It contains the main nutrients that a farmer's crop needs to grow-nitrogen, phosphorus and potassium. Crops grow by using the nutrients in the soil, water and sunlight.

FAST FACT

A FARM ECOSYSTEM IS DIFFERENT FROM A FOREST OR MEADOW ECOSYSTEM BECAUSE HUMANS CONTROL MANY OF THE INTERACTIONS AMONG THE THINGS ON A FARM.

Crops are grown for human food and animal feed. Feed corn and hay are fed to cattle. Cattle can provide the farm with manure that is added to the soil to replenish nitrogen in the soil. Cattle may also be consumed by people to provide protein in the diet.

After a crop is harvested, the remaining plant material not consumed by animals or human beings is allowed to decay (composted) and added back to the soil to replace nutrients removed during harvest.

There are good insects and bad insects for a farmer. Certain insects like bees can pollinate a farmer's crop. Pollination allows plants to create seeds, such as grains of wheat or kernels of corn. Some insects can kill plants and reduce the amount of food a farmer can grow.

A FARM ECOSYSTEM
(CONTINUED)

INSTRUCTIONAL PROCEDURE

1. Review background information.
2. Explain Activity 1.
3. Review completed activity.

ASSESSMENT

Were all the possible interactions depicted in at least one of the scenes?

Can the class identify the missing interactions? If not, discuss with the class what was omitted.

WORD POWER

compost *n.* A mixture of rotten leaves, vegetables, manure, etc. that is added to soil to make it richer.

crop *n.* Plants grown for food.

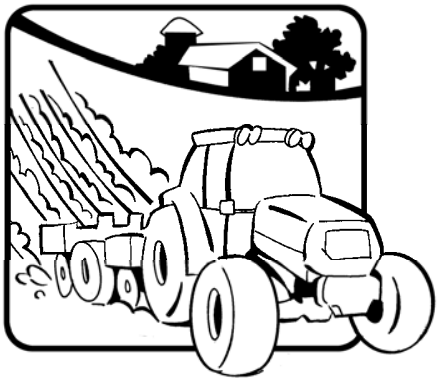
ecosystem *n.* Any group of living and nonliving things interacting with each other can be considered as an ecosystem.

nutrient *n.* Something that is needed by people, animals and plants to stay strong and healthy. Proteins, minerals and vitamins are all nutrients.

pollinate *v.* To carry or transfer pollen from the stamen to the pistil of the same flower or another flower where female cells can be fertilized to produce seed. Insects, birds, the wind, and some animals can help pollinate plants.

protein *n.* A substance found in all living plant and animal cells. Foods such as meat, cheese, eggs, beans, and fish are sources of dietary protein.

soil *n.* Dirt or earth in which plants grow.

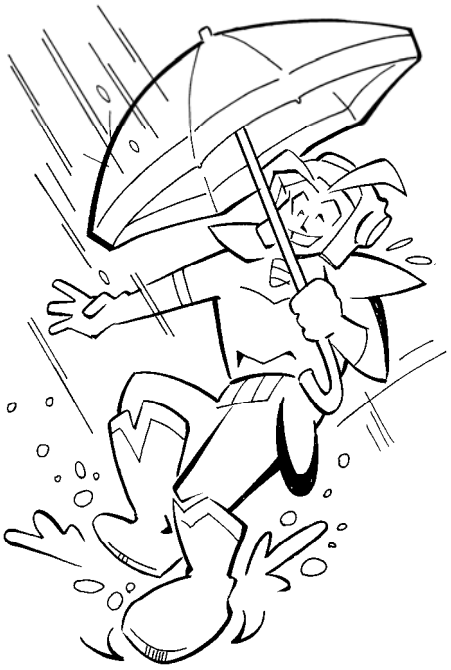


NAME_____

ACTIVITY 1 — A FARM ECOSYSTEM

SUPPLIES

- MAGAZINES WITH GOOD PICTURE OF ANIMALS AND INSECTS. GOOD CHOICES ARE:
  - NATIONAL GEOGRAPHIC
  - HUNTING MAGAZINES
  - FISHING MAGAZINES
  - FARMING MAGAZINES
- MARKERS
- POSTER BOARD
- GLUE



INSTRUCTIONS

1. Work in groups of 3 or 4.
2. Use pictures cut from the magazines to depict a farm ecosystem.
3. With markers, draw arrows between the components that interact.
4. Groups present, to the class, the interactions that are occurring.

GRADES 4 & 5— FARMING CYCLE

NATIONAL SCIENCE STANDARDS

- Life Science: Life cycles
- History of Nature and Science: Science as a human endeavor

OBJECTIVES

The student will:

1. identify the farming cycle.
2. identify the factors from nature and man that affect the farming cycle.

BACKGROUND

A farmer has to cultivate (prepare) the ground for planting, plant the seeds, nurture and protect the crops and finally harvest at the end of the season.

Planting

Before planting a farmer must prepare the ground by opening up or "tilling" the soil. The next step is to plant the seeds. Planting involves digging a straight line or trench, dropping the seeds at precise increments, then covering them up again with dirt. Planting usually occurs in early spring, often in April.

Growth

The amount of time it takes a crop to mature varies according to the crop type. Between 60 and 90 days is common. The crop needs nutrients, air, light, and the right temperature to grow.

Harvest

Once the crops are mature, they are harvested or picked. Harvest time occurs before the onset of winter during the months of September through November .

INSTRUCTIONAL PROCEDURE

1. Review the background material.

2. Conduct Activity 1.

3. Have the students complete Activity 2.

ASSESSMENT

Review cause and effect paragraphs and sequencing activity.

WORD POWER

cultivate *v.* To prepare the ground for the preparation of raising crops.

harvest *v.* To collect or gather up crops.

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

plant *v.* To put a plant or seed in the ground so that it can grow.

NAME_____

ACTIVITY 1 — THE FARMING CYCLE

SUPPLIES

- 3 SMALL POTS
- POTTING SOIL
- SEEDS

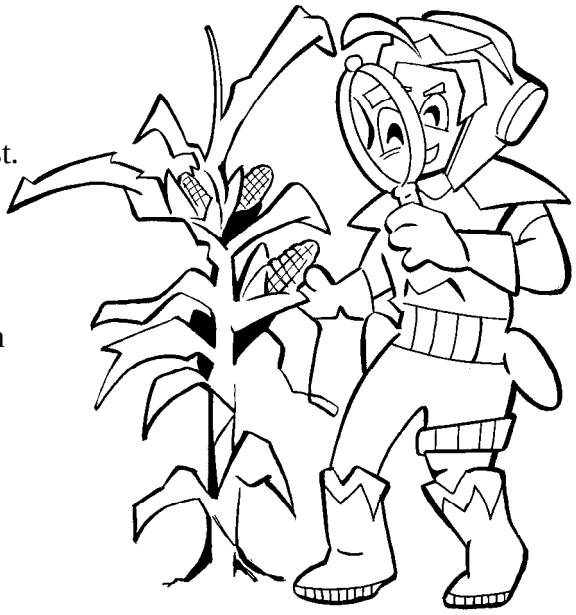
GROWING CONDITIONS

1. Fill each pot with the same potting soil.

2. Plant the same kind of seed in each pot.

3. Water each pot.

4. Store the pots in the following manner:
   - Keep one pot in a sunny warm spot in the classroom. Keep soil moist.
   - Keep one pot in a cool spot but with light. Outside if it is spring or fall. Keep soil moist.
   - Keep one pot in a covered box in a warm spot. Keep soil moist.



5. Keep an observation record for each pot. Check each pot weekly. Date and note observations on observation record.

6. Observe the difference in the seeds sprouting and growth over 2-4 weeks.

7. For the plants that grew slowly or not at all, discuss what factors caused this to happen.

8. Write cause and effect statements for the results observed.

NAME_____

ACTIVITY 2 — THE FARMING CYCLE

SEQUENCING

Number these sentences (1-10) in their correct order.

It is winter, and the temperatures are freezing.

_____ Soon, the seeds start to sprout.

_____ Next, the farmer plants the corn seeds.

_____ First, the farmer plans what crops he will plant for the year.

_____ After summer arrives, the corn grows to 6 feet tall.

_____ The season changes to summer with long days and warm to hot temperatures.

_____ Finally, the temperature is cool and the days are shorter.

_____ Next, the farmer purchases the corn seeds.

_____ So the corn is ready to harvest (pick).

_____ Spring arrives and the temperature begins to warm up.

_____ So the farmer can till his field.