

Grade 3-4: What's in the Field?

National Science Standard

Life Science: Organism and environment

Life Science: regulation and behavior

Objectives

The student will

1. identify the effects of weeds and pests on farmers crops.

Background

Technology is what allows the agricultural industry to address the natural science requirements of producing food with the social science events of less available farmland and an increasing population.

A plant needs nutrients, light and air to grow. Farmers work very hard to maintain an ideal growing environment for the crops. Two natural factors that all farmers have to deal with are weeds and pests.

Weeds are plants that provide no value to the farmer's crop and which grow very fast and tall. If left uncontrolled they will decrease a farmer's yield. The yield is the amount of food a farmer can produce on his land.

The three main reasons weeds harm the farmer's crops resulting in less crop yields are:

1. A weed is a vigorous grower meaning it grows fast and tall. To support that fast growth it robs the nutrients from the soil that are needed for the crop.
2. A common weed, thistle, can grow very quickly to be 10 feet tall. This weed and others can surround the farmer's plants blocking our needed sunlight.
3. Weeds block out needed air circulation. Proper air circulation is needed to prevent disease.

Weeds are constant problems for farmers. This is because each acre of farmland in the U.S. contains millions of buried weed seeds. Many weed seeds can survive in a dormant condition in the soil for several decades. Each year some of these seeds germinate. Once the weed has grown it will produce more seeds that will drop and remain in the soil.

Pests are always looking for food and would destroy almost half of the farmer's crop if they could. Weeds would decrease up to 65% of the amount of food grown.

Word Power:

- Dormant (adj.): When plants or seeds are dormant, they are alive but not growing.
- Insect (n.): A small creature with three pairs of legs, one or two pairs of wings, three main sections to its body, an exoskeleton, and not backbone.
- Pest (n.): An insect that destroys or damages flowers, fruits, vegetables or grains.
- Germinate (v.): When seeds of beans germinate, they start to grow shoots and roots.
- Weed
- Yield (n.): To produce something. *The field yielded 90 tons of potatoes.*

Name _____

Activity 1: Where's the Carrot?

This is a picture of a field of carrots.



On the left are carrots growing without weeds. On the right are carrots infested with weeds.

The carrots need nutrients from the soil, light from the sun and good air circulation to grow. If the weeds are also using the same nutrients in the soil to grow what will happen to the carrots.

1. Will the weeds make it harder to harvest (pick) the carrots? YES or NO
2. Where are the weeds getting the food necessary to grow?
 - a. from the air
 - b. from the soil
 - c. they do not need any nutrients to grow
 - d. from the rain
3. Because the **weeds** are using the available nutrients from the soil what effect might this have on the carrots.
 - a. there will be more carrots grown
 - b. there will be fewer carrots grown
 - c. the carrots will be smaller than normal
 - d. the carrots will be larger than normal
4. Weeds shade the carrot leaves. Without enough _____, the carrots cannot use the process of photosynthesis to produce food for growth.
 - a. food
 - b. sunlight
 - c. water