

NAME _____

SPECIAL DELIVERY

LESSON 4

FOCUS Seed Dispersal

OBJECTIVE To explore ways plants spread seeds

OVERVIEW Plants use seeds to reproduce. But if the seeds all landed in the same place, they couldn't survive! In this activity, we'll explore some ways that plants spread their seeds around.



WHAT TO DO



STEP 1 Open your seed bags and place the contents on the table beside the apple. Carefully observe each item and make notes about what you see.



STEP 2 Each of these items contains plant seeds in some way. With your research team, discuss different ways you might group the items based on their similarities and differences.



STEP 3 Watch as your teacher cuts your team's apple in half. Examine the inside of the apple closely, then find and remove the seeds. Discuss what you see with your research team. (Remember, good scientists don't eat their experiments!)



STEP 4 After making notes, dispose of your apple as the teacher directs. Place all the other seeds back into the container. Based on what you have observed, predict how each of the "seed packages" you've determined are "dispersed." Discuss your ideas with your research team.

LIFE 93

Category

Life Science

Focus

Seed Dispersal

Objective

To explore ways plants spread seeds

National Standards

A1, A2, B1, B2, C1, C2, C3, E3, F2, F3, G1

Materials Needed

seed bag with seeds - 2
apple
knife (teacher only)

Safety Concerns

3. Poison

Potential for allergic reactions (especially to peanuts). Take necessary precautions.

4. Sharp Objects

Remind students to be careful around the knife.

Additional Comments

Feel free to substitute seeds of local origin that students may be familiar with. Remind students that good scientists don't eat their experiments! (The temptation will be strong for some, especially with the nuts and the apple.)

Overview

Read the overview aloud to your students. The goal is to create an atmosphere of curiosity and inquiry. Help students understand that seeds use a variety of methods to spread.

WHAT TO DO

Monitor student research teams as they complete each step.

Step 4

Check packages to make sure students have returned all materials. Seeds may be reused from year to year if they are kept completely dry.

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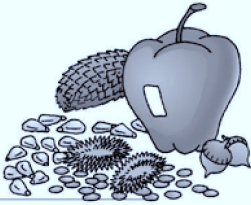
FOCUS: Seed Dispersal

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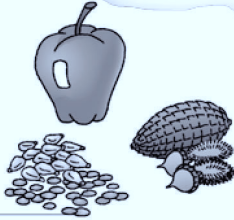
WHAT TO DO

STEP 1




Open your seed bags and place the contents on the table beside the apple. Carefully observe each item and make notes about what you see.

STEP 2




Each of these items contains plant seeds in some way. With your research team, discuss different ways you might group the items based on their similarities and differences.

STEP 3



Watch as your teacher cuts your team's apple in half. Examine the inside of the apple closely, then find and remove the seeds. Discuss what you see with your research team. (Remember, good scientists don't EAT their experiments!)

STEP 4



After making notes, dispose of your apple as the teacher directs. Place all the other seeds back into the container. Based on what you have observed, predict how each of the "seed packages" you've examined gets "delivered." Discuss your ideas with your research team.

LIFE 23

Teacher to Teacher

Scientists have identified over 300,000 different seed plants. The two basic groups are gymnosperms and angiosperms. Gymnosperms (a term meaning "naked seed") include most conifers. The seeds of most gymnosperms have little protection and contain very little food. By contrast angiosperm seeds have both abundant protection and

food. Some angiosperms surround their seeds with a thick layer we call fruit. Others create seeds we call grain. Some angiosperms make a lot of seeds. Modern agriculture is constantly searching for ways to increase both the amount and quality of these seeds which make up most of the world's food supply.

WHAT HAPPENED?

If a plant's seeds all landed in the same place, there wouldn't be enough water, nutrients, or light to go around. Most would die! That's why plants use many different methods to spread their seeds. This gives the embryo (baby plant) in each seed a much better chance of becoming a mature plant.

Some plants rely on wind to spread their seeds. They may produce very light seeds (ash tree), "parachute" seeds (milkweed), or even seeds with wings (maple). Some plants rely on water to spread their seeds. They produce seeds that float (coconuts) or wash away in heavy rains (grasses). Some plants even rely on the movement of animals to spread their seeds. They may produce edible fruit (berries), or tiny hooks (cocklebur) to grab a ride.

WHAT WE LEARNED



Describe the items from the seed bags in Step 1. How many kinds were there? How many of each? How were they similar? How were they different?

answers will vary, but should include descriptions like "rough," "dry and hard," "things you can eat," etc.



Describe the groups your team made in Step 2. What characteristics did you use to sort the seeds?

answers will vary, but should include logical divisions

What Happened

Review the section with students. Emphasize bold-face words that identify key concepts and introduce new vocabulary.

*If a plant's **seeds** all landed in the same place, there wouldn't be enough **water**, **nutrients**, or **light** to go around. Most would die! That's why plants use many different methods to spread their seeds. This gives the **embryo** (baby plant) in each seed a much better chance of becoming a mature plant.*

*Some plants rely on **wind** to spread their seeds. They may produce very light seeds (ash tree), "parachute" seeds (milkweed), or even seeds with wings (maple). Some plants rely on **water** to spread their seeds. They produce seeds that float (coconuts) or wash away in heavy rains (grasses). Some plants even rely on the **movement** of animals to spread their seeds. They may produce edible **fruit** (berries), or tiny hooks (cocklebur) to grab a ride.*

What We Learned

Answers will vary. Suggested responses are shown at left.



What is the baby plant inside a seed called? Name three things that it needs to survive.

a) embryo

b) water, nutrients, light



List three different methods plants use to disperse their seeds. Give an example of each.

a) wind: milkweed, maple, etc.

b) water: coconut, some grasses, etc.

c) animal movement: fruit, burrs, etc.



A plant produces many more seeds than it needs to replace itself. Based on what you've learned, why is this necessary?

only a small percentage of seeds survive to produce another plant

Conclusion

Read this section aloud to the class to summarize the concepts learned in this activity.

Food for Thought

Read the Scripture aloud to the class. This parable offers a great introduction to a wonderful method Christ used to help common people understand difficult topics! Discuss this parable and others.

Journal

If time permits, have a general class discussion about students' journal entries. Share and compare observations. Be sure to emphasize that "trial and error" is a valuable part of scientific inquiry!



To ensure survival, plants must spread seeds over great distances. Seed dispersal methods include wind, water, and the movement of animals.



Matthew 13:1-23 This parable describes some of the hardships seeds face. Some are eaten up, some sprout in poor soil and don't live long, some are choked out by other plants, and a few fall on good soil where they grow and prosper.

Jesus told parables about common things to help his listeners understand spiritual things. This parable reminds us that hearing God's word is not enough. For God's love to grow and prosper in our hearts, we must let Jesus in to prepare the way. The more time we spend with Jesus, the more open our hearts become to the power of God's presence.



My Science Notes

26 LIFE

Extended Teaching

- 1.** Research how modern agriculture enhances food production. Have students compare this to farming methods used in primitive countries. Make a bulletin board comparing the two methods.
- 2.** Invite a representative of the FFA or local agricultural cooperative to visit your class. Discuss the broad range of careers in modern agriculture.
- 3.** Get church members to donate old garden catalogs. Challenge your students to cut out and sort pictures from these catalogs according to seed types. Make a bulletin board showing the results.
- 4.** Invite a forest service representative to visit your classroom. Discuss the ecological role of gymnosperms. Look at ways they contribute to the economy. Discuss the balance between the two.
- 5.** Research world hunger and what students can do to help. Sponsor a food drive in your community to help increase the resources of a neighborhood food pantry or similar facility.

True/False (Circle T for true, F for false.)

- T F **1.** Seeds from different kinds of plants are identical.
- T F **2.** An important function of seeds is to allow plants to reproduce.
- T F **3.** All plants use identical methods to spread their seeds.
- T F **4.** Another name for a baby plant is an embryo.
- T F **5.** Wind, water, and animals all help to spread seeds.

Multiple Choice (Fill in the circle beside the best answer.)

- 6.** Which of the following is not vital to plant survival?
- ☐ a. light
 - ☐ b. warmth
 - ☐ c. rocks
 - ☐ d. water
- 7.** What might happen if a plant could not scatter its seeds?
- ☐ a. The new plants would grow close and support the parent plant.
 - ☐ b. The new plants would provide extra nutrients for the parent plant.
 - ☐ c. There would be no noticeable effect.
 - ☐ d. The new plants would be too crowded and die.
- 8.** Which of the following seeds are most likely to be spread by wind?
- ☐ a. light, fluffy seeds
 - ☐ b. seeds that float
 - ☐ c. seeds with hooks
 - ☐ d. large, seed-filled fruit
- 9.** Which of the following seeds are most likely to be spread by water?
- ☐ a. light, fluffy seeds
 - ☐ b. seeds that float
 - ☐ c. seeds with hooks
 - ☐ d. large, seed-filled fruit
- 10.** Which of the following is least likely to be spread by an animal?
- ☐ a. light, fluffy seeds
 - ☐ b. nuts
 - ☐ c. seeds with hooks
 - ☐ d. seed-filled fruit

