

Name: \_\_\_\_\_

# CASE

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## Activity 7.2.1 An Egg is Not Enough

### Purpose

Previously, you have learned about the importance of plant genetic material. The transfer of pollen from anthers to stigmas, called pollination, initiates the process of fertilization. How do pollen grains actually reach plant ovules?

For some types of inflorescence, pollen may fall from the anther to the stamen of the same flower to self-pollinate. How do dioecious flowers, such as corn, pollinate? How do plants cross-pollinate in nature?

Why is pollination important? What happens if plant egg cells are not pollinated?

### Materials

#### Per pair of students:

- Computer with Internet access
- *Activity 7.2.1 Pollination Scenario Cards*

#### Per student:

- Pencil
- *Agriscience Notebook*

### Procedure

Through this activity, you will research the various ways that plant flowers receive pollen. Then you will read scenarios describing pollination of 10 different plants and try to determine which method of pollination brought about the results described.

#### Part One – Identify the Agents

1. Your teacher will assign you and your partner a type of pollination to research.
2. Using the Internet, research the assigned various type of pollination. Record your findings in Table 1 on the student worksheet.
3. In the third column, mark whether the plant is most likely self-pollinated, cross-pollinated, or both.

4. Your teacher will direct you when to share researched pollination types. Share your information when it is your turn.
5. As other pairs share their pollination agent research, write a brief description of each in the space provided in Table 1.

### **Part Two – Expose the Agents**

1. Your teacher will provide you and your partner with a set of *Activity 7.2.1 Pollination Scenario Cards*.
2. Read the scenarios given and take note of a few clues that may help you determine how pollination was achieved.
3. Use the information from Table 1 to determine the type of pollination that has taken place. Record your responses in Table 2.
4. Your teacher will lead a class discussion and share the correct pollination agent for each scenario.

### **Conclusion**

1. How does flower shape and structure determine the type of pollination agent?

The flower shape and structure determines the type of pollination agent by the size of the flower color and if its big or not.

2. If no pollination agents were at work, what would the effect on plant production be?

If no pollination agents were at work the effect on plant production would be that the plant will slowly die and eventually won't make any seeds to make good use day.

6. Which type of pollination holds the most value for agriculture? Why do you believe this is so?

One type of pollination holds the most value for agriculture is insects because it is able to carry pollen one plant to another.

7. What other factors may influence pollination rates?

Other factors that may influence pollination rates is water, wind, and animals.

Activity 7.2.1 Student Worksheet

**Table 1. Agents of Pollination**

<b>Pollination Type</b>	<b>Description</b>	<b>Is the plant self-pollinated, cross-pollinated, or both?</b>
<b>Anemophily</b>	wind pollination	

<b>Cantharophily</b>	Cross- pollination of flowers by beetles that feed on the pollen or on some of the juicy tissues of the flower.	Cross-pollinated
<b>Chiropterophily</b>	Bat-pollinated flowers tend to be large and showy, white or light coloured	
<b>Hydrophily</b>	pollen is distributed by the flow of waters, particularly in rivers and streams	
<b>Hymenopterophily</b>	By bees is also referred as melittophily	
<b>Myrmecophily</b>	mutualistic associations with ants / animals that associate with ants	
<b>Myophily</b>	flies that feed on nectar and pollen as adults	
<b>Ornithophily</b>	Bird pollination is the pollination of flowering plants by birds.	
<b>Phalaenophily</b>	moth pollinators are the hawk moths	
<b>Psychophily</b>	Butterfly pollination	

**Table 2. Pollination Scenarios**

<b>Scenario</b>	<b>Clues</b>	<b>Type of Pollination</b>
<b>1</b>	Pollen is found rubbed all over the petals and stigma of a head-type flower.	Hymenopterophily

<b>2</b>	Pollen is found on the top side of multiple flowers in a garden.	Ornithophily
<b>3</b>	Pollen from a large, sweet-smelling, white flower is found inside multiple others.	Chiropterophily
<b>4</b>	Aromatic flower from a night-blooming plant is found on another.	Phalaenophily
<b>5</b>	A tiny trail of bent filaments is observed	Myrmecophily
<b>6</b>	a mile upstream is discovered on the stigma	Hydrophily
<b>7</b>	Pollen was produced by a staminate flower at the top and transported to a pistillate flower located along the stalk of the plant.	Anemophily
<b>8</b>	No pollen was digested. A landing area on the bloom was disturbed.	Cantharophily
<b>9</b>	a low growth-habit plant with closely bunched flowers	Hymenopterophily
<b>10</b>	Dull-colored flower is found with pollen from another plant. Mass of white eggs on the flower.	Phalaenophily