

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

# CASE

## 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?

Certain flower structures are made for different types of pollination like dandelions.

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

It would be useless and both flowers and insects/animals will be extinct

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

I think the most valuable is **Hymenopterophily because it helps both insects and plants to survive.**

7. What other factors may influence pollination rates?

Some plants like flowers are pollinated by bees and they spread the pollen and use the nectar for honey and other things so they can survive

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## Activity 7.2.1 Student Worksheet

**Table 1. Agents of Pollination**

Pollination Type	Description	Is the plant self-pollinated, cross-pollinated, or both?
<b>Anemophily</b>	<b>Anemophily</b> is wind pollination is a form of pollination whereby pollen is distributed by wind.	It is pollinated by da wind
<b>Cantharophily</b>	the cross-pollination of flowers by beetles that feed on the pollen	Its pollinated da beetles (in a yellow submarine)
<b>Chiropterophily</b>	Bat pollination and the bats drink the nectar, and these plants typically offer nectar for extended periods of time.	Plants that are pollinated da bats
<b>Hydrophily</b>	<b>Hydrophily</b> is a fairly uncommon form of pollination whereby pollen is distributed by the flow of waters, particularly in rivers and streams	This is when plants are pollinated by water
<b>Hymenopterophily</b>	This is when plants are pollinated by bees	Plants that are pollinated by bees
<b>Myrmecophily</b>	<b>Myrmecophily</b> refers to ants, though in it is used mainly for animals that associate with ants.	Plants that are pollinated by animals but mostly ants
<b>Myophily</b>	<b>Myophily</b> includes flies that feed on nectar and pollen as adults.	This is when plant are pollinated by
<b>Ornithophily</b>	<b>Ornithophily</b> or bird pollination is the pollination of flowering plants by birds	This is when a plant is pollinated by birds
<b>Phalaenophily</b>	Pollinated by moths	Pollinated by moths

<b>Psychophily</b>	Pollinated by butterflies	Pollinated by butterflies
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**Table 2. *Pollination Scenarios***

<b>Scenario</b>	<b>Clues</b>	<b>Type of Pollination</b>
<b>1</b>	Pollen from multiple plants in a field is found rubbed all over the petals and stigma of a head-type flower. The pollination agent covered a small area.	<b>Hymenopterophily</b>
<b>2</b>	Pollen is found on the top side of multiple flowers in a garden. The caretaker of the garden was only out of sight for a few minutes. The flower's nectar is located deep within a long, thick, and narrow tube.	<b>Myophily</b>
<b>3</b>	Fresh pollen from a large, sweet-smelling, white flower is found inside multiple others. When the pollen was found in the morning, the petals of the flowers have already been curled back up. The flower buds had not opened before the previous evening.	<b>Chiropterophily</b>
<b>4</b>	Pollen from one large, aromatic flower from a night-blooming plant is found on another. The narrow passageway to the nectar supply is surrounded by anthers.	<b>Hydrophily</b>
<b>5</b>	A tiny trail of bent filaments is observed. Pollen produced by stamen within LOL-the disc of the flower was transferred to stigma within the same disc. The pollinator was in search of nectar and pollen for food.	<b>Myrmecophily</b>
<b>6</b>	Pollen from a plant nearly a mile upstream is discovered on the stigma of a flower. No sign of animal interference is found on the scene.	<b>Anemophily</b>
<b>7</b>	Pollen was produced by a staminate flower at the top of the plant and transported to a pistillate flower located along the stalk of the plant. No sign of animal interference is found on the scene.	<b>Phalaenophily</b>
<b>8</b>	Many large, sweet-smelling pink flowers in a large area were discovered to have been pollinated during the daytime. The plant's nectar was harvested by the pollinating agent, but no pollen was digested. A landing area on the bloom was disturbed.	<b>Psychophily</b>

<b>9</b>	The pollen from a low growth-habit plant with closely bunched flowers is found on a neighboring plant. Pollen was found on multiple flowers, stem, leaves and the ground surrounding the plant.	<b>Ornithophily</b>
<b>10</b>	A simple, pale, dull-colored flower is found with pollen from another plant. Both male and female flower structures are easily accessible. The pollination agent consumed pollen and nectar and left a mass of white eggs on the flower.	<b>Cantharophily</b>