

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?

Some flowers are too narrow for one agent to get to, and some are too high for others, each agent can access a different type or shape of flower, and some only want to go to some flowers because of their smell or color.

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 of plant production would be extremely negative because not many plants would be able to reproduce without pollination, so the plant species would die.

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

I believe that Anemophily has the most value for agriculture because it pollinates multiple plants at a time.

7. What other factors may influence pollination rates?

Insect population, animal population, and wind current may affect pollination rates because they can't be pollinated if there's nothing to pollinate them.

Activity 7.2.1 Student Worksheet

Table 1. Agents of Pollination

Pollination Type	Description	Is the plant self-pollinated, cross-pollinated, or both?
Anemophily	Wind pollination	Cross-pollination
Cantharophily	Pollination by beetle	both
Chiropterophily	By bat	both
Hydrophily	By water	self
Hymenopterophily	By bees	both
Myrmecophily	By ant	self
Myophily	By fly	both
Ornithophily	By bird	cross
Phalaenophily	By moth	both

Psychophily	By butterfly	both
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Table 2. Pollination Scenarios

Scenario	Clues	Type of Pollination
1	From multiple plants Rubbed Petals and stigma Small area	Hymenopterophily
2	Deep, long, narrow tube Only out of sight for a few minutes Top side	Ornithophily
3	Sweet smelling Buds had not opened Curled back up	Phalaenophily
4	Aromatic large Narrow passageway surrounded by anthers	Chiropterophily
5	Bent filaments In search for food Transferred to same disc	Cantharophily
6	Upstream No animal interference	Hydrophily
7	Top to stalk No animal interference	Anemophily
8	Sweet smelling, pink Daytime Nectar harvested, landing area disturbed	Psychophily

9	Low-growth habit Flower, stem, leaves, ground surrounding	Myrmecophily
10	Consumed pollen and nectar Mass of white eggs Pale, dull colored flower	Myophily