

Purpose:

One in every three bites of food requires a pollinator. Through this *Colorado Reader*, students explore six different types of pollinators, as well as the parts of a flower, and learn about the importance of seeds.

Cross Curricular Connections and Colorado Academic Standards:

3rd Grade Science: Life Science

- Organisms have unique and diverse life cycles.
- Being part of a group helps animals obtain food, defend themselves, and cope with changes.
- Sometimes differences in characteristics between individuals of the same species provide advantages in survival and reproduction.

4th Grade Science: Life Science

- Organisms have both internal and external structures that serve various functions.

5th Grade Science: Life Science

- Plants acquire their material for growth chiefly from air and water.

3rd, 4th, and 5th Grade Reading, Writing, and Communicating: Reading for all Purposes

- Apply strategies to fluently read, comprehend, interpret, and analyze various types of informational texts.

How to use:

Pass out one copy of the *Colorado Reader* to each student. Also, make copies of the Student Worksheet (on the back of this page) and distribute to students. Another option is to send these items home with your students (or include in homework/enrichment packets) to complete at home on virtual learning days. Or use during substitute days. Ask students to read the *Colorado Reader*, completing the activities within the *Reader* as they go. They should also complete the Student Worksheet, using the content within the *Reader*. Answers to the activities in the *Reader* are included on this page, should you desire to collect and score responses.

Lesson Plans to go with this Reader

The Agricultural Literacy Curriculum Matrix is an online, searchable, and standards-based database for K-12 teachers. The Matrix contextualizes national education standards in science, social studies, and nutritional education with relevant instructional resources linked to Common Core Standards. Below are a few lesson plans that could be used in conjunction with this *Colorado Reader*. Go to www.GrowingYourFuture.com and click on Curriculum Matrix (on the Home Page or under the Educator's Tab), search each title within the Curriculum Matrix to find these lesson plans.

Farming in a Glove (K-5): Students observe how a seed sprouts and investigate the conditions necessary for germination to occur. <https://agclassroom.org/matrix/lesson/66/>

Flower Power (3-8): Students observe physical characteristics of flowers and explore principles of pollination. <https://agclassroom.org/matrix/lesson/223/>

Honey Bees: A Pollination Simulation (3-5): Students identify the parts of a honey bee, the stages of its life cycle, and its role in pollination. <https://agclassroom.org/matrix/lesson/84/>

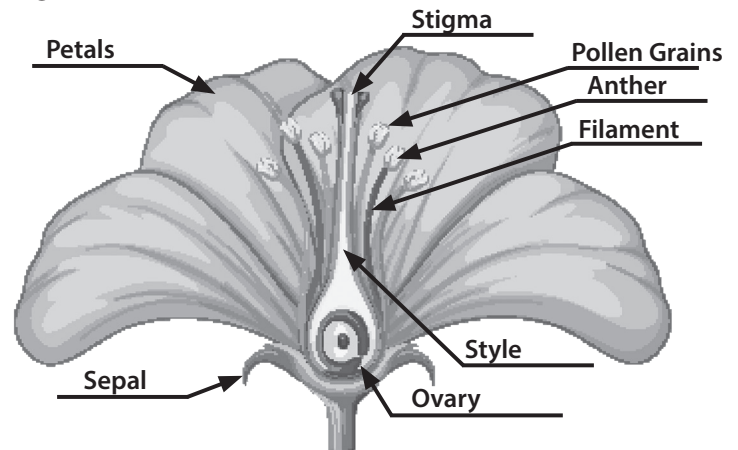
The Beeman (book): Told from the viewpoint of a child whose Grandpa is a beekeeper, this rhyming text offers an accessible and engaging introduction to the behavior of bees. You will learn where bees live, how honey is made, what a beekeeper does, and more. <https://agclassroom.org/matrix/resource/319/>

Use the search word "pollinator" at www.AgClassroom.org/Matrix for additional free lessons and classroom activities (or scan the QR code).



Answers

Page 2 - The Basic Parts of a Flower



Page 4 - Anatomy of a Worker Bee

1. head: c
2. compound eye: j
3. simple eyes: l
4. antennae: e
5. proboscis: m
6. mandibles: k
7. thorax: b
8. wings: i
9. legs: h
10. pollen basket: d
11. abdomen: f
12. stinger: n
13. honey sac: a
14. wax glands: g

Student Worksheet - Vocabulary

- | | |
|--------------------|----------------------|
| 1. conservation: F | 13. vertebrates: W |
| 2. dormant: H | 14. pollenizer: S |
| 3. pollinator: T | 15. embryo: l |
| 4. beeswax: B | 16. mammal: N |
| 5. seed coat: V | 17. germinate: K |
| 6. colony: E | 18. biotic: C |
| 7. pest: P | 19. cotyledon: G |
| 8. insects: L | 20. abiotic: A |
| 9. stamen: U | 21. pistil: Q |
| 10. brood: D | 22. metamorphosis: M |
| 11. endosperm: J | 23. pollen: R |
| 12. nectar: O | |

Page 7 - Bat code phrase
BE A BAT HERO
SAVE BAT HABITAT

Activity: Using the information in this *Colorado Reader*, or your own research, write the correct letter of the vocabulary definition on the line of the corresponding vocabulary word.

Vocabulary words:

1. **conservation** _____
2. **dormant** _____
3. **pollinator** _____
4. **beeswax** _____
5. **seed coat** _____
6. **colony** _____
7. **pest** _____
8. **insects** _____
9. **stamen** _____
10. **brood** _____
11. **endosperm** _____
12. **nectar** _____
13. **vertebrates** _____
14. **pollenizer** _____
15. **embryo** _____
16. **mammal** _____
17. **germinate** _____
18. **biotic** _____
19. **cotyledon** _____
20. **abiotic** _____
21. **pistil** _____
22. **metamorphosis** _____
23. **pollen** _____

Vocabulary definitions:

- A.** relating to nonliving things in an environment
- B.** a substance secreted from glands located on the underside of a worker bee's abdomen
- C.** relating to living things in an environment
- D.** the offspring produced by the colony (eggs and larvae)
- E.** a group living together
- F.** sensible use of earth's natural resources (water, soil, air, minerals, wildlife, wetlands, endangered species, grasslands, forests) while protecting things found in nature
- G.** the first leaf to emerge from a seed
- H.** not active but able to become active
- I.** a human, animal, or plant in the early stages before it is born, hatched, sprouted, etc.
- J.** tissue formed within a seed that contains energy (starch) and protein for the germinating seed
- K.** begin to grow
- L.** a small arthropod animal that has six legs and generally one or two pairs of wings
- M.** the process of change in the form and habits of an organism during transformation from an immature state to an adult stage
- N.** a warm-blooded vertebrate animal of a class that is distinguished by the possession of hair or fur, the secretion of milk by females for the nourishment of the young, and (typically) the birth of live young
- O.** a sweet liquid secreted by flowers
- P.** an organism living and growing where it is not wanted and is causing damage to plants, humans, structures, and other creatures
- Q.** female parts of a flower, including the stigma (where pollen lands), style (stalk-like part between stigma and ovary), and ovary (at the base, develops into the fruit and contains the seeds)
- R.** the fine, powder-like material produced by the anthers of flowering plants
- S.** plant that provides pollen
- T.** agent that moves pollen resulting in the pollination of flowers
- U.** the male part of the plant containing the pollen, anther, and filament
- V.** the protective outer covering of a seed
- W.** an animal of a large group distinguished by the possession of a backbone or spinal column, including mammals, birds, reptiles, amphibians, and fishes