



**Title: Discover San Diego County Agriculture and Healthy Food Systems**  
**Lesson: The Beekeeping Business - “What’s All the Buzz About”?**

Audience/Grade Level: Students grades 6-12, however, people of all ages will be captivated by this lesson/activity.

Introduction/Purpose: In California, beekeepers are busy keeping up with their bees! The honey is flowing at Chaparral Honey in Valley Center, CA and today we are going to visit with David Winter, who has offered to provide a virtual field trip of his apiculture business where they collect, process, and package up to 12 TONS of honey a day at their processing warehouse, which we are about to show you. The purpose of this activity is to help students and all people become aware of the importance of San Diego Agriculture; in this lesson we’ll learn about the beekeeping industry and how it is so important in agriculture and our environment. The lesson can be modified into a 2-5 day unit.

Learning Objectives:

1. Students will have an understanding of the vocabulary related to the beekeeping business.
2. Students will chart the life cycle of bees and the process of metamorphosis.
3. Students will create a powerpoint or google slides that explains four or more ways that beekeeping enhances the environment.
4. Students will explain the importance of bees in the agriculture industry in written, verbal, and/or other communicative media.
5. Students will have an understanding and appreciation of how nectar/honey gets from the flower to the brood and the consumer in the grocery market.
6. Students will be able to create a powerpoint or google slides illustrating the challenges facing bees and beekeepers that includes Varroa mites, pesticides, and other barriers.
7. Students will have access to resources to do further research in beekeeping.

Warm-up: (+10 minutes)

Look up and write the definitions of bee-related terms (see the next page).

Write all new terms down and provide definitions to be sent to your teacher via google docs, or to be used on an open-note vocabulary quiz.

Lesson: Video 14 minutes - [vimeo.com/480202137/072f1f70c2](https://vimeo.com/480202137/072f1f70c2)

- Video and pictures of hives and processing procedure on the site of Chaparral Honey.  
Intro/purpose 0:00-0:50 min

History of Chaparral Honey	0:50-1:30 min
Beehive, a home for bees	1:30-3 min
Importance to Agriculture	4:30-5 min
Importance to SD Economy	5:00-6 min
How to keep bees healthy	6:00-8:10 min
Environmental benefits	8:15-9:00 min
Bees Life Cycle	9:15-10:30 min
Advice for Aspiring beekeepers	10:30-11:15 min
Honey from beehive to bottle	11:20-13 min
Summary	13-14 min

Conclusion: (optional)

Write a thank you note/letter to David Winter of Chaparral Honey summarizing your new appreciation for bees and the beekeeping business.

**Warm-Up**

Instructions: Write the definitions of the following terms to remember and/or use on a followup assignment, test, and/or trivia game.

**Terms to Know:**

- |                    |                        |                     |
|--------------------|------------------------|---------------------|
| -apiary            | -colony                | -propolis           |
| -apiculture        | -comb                  | -pupa               |
| -bee dance         | -drone                 | -queen              |
| -bee veil          | -extractor             | -royal jelly        |
| -beeswax           | -larva                 | -smoker             |
| -brood             | -metamorphosis in bees | -scout bees & dance |
| -brood box/chamber | -nectar                | -stinger            |
| -pheromone         | -pollination           | -swarm              |
| -venom             | -worker bee            |                     |

(More can be added)

You may want to use this website: <https://bees.techno-science.ca/english/bees/glossary.php> or any other online resource of information.

## Glossary of Bee Terms

**Apiary:** a collection of hives cared for by a beekeeper. Also known as a bee yard.

**Apiculture:** the science of the-keeper.

**Apitherapy:** the medicinal use of honey, pollen, propolis, royal jelly and bee venom.

**Bee dance:** a series of movements made by bees to let other bees know the direction and distance of food or a new home.

**Bee space:** a specific distance between parts of a hive that allow bees to move naturally within a hive.

**Bee veil:** special netting worn by beekeepers to protect their face from bee stings

**Beehive:** a home for bees.

**Beekeeper:** a person who takes care of bees.

**Beeswax:** a thick substance produced by bees to make their comb cells.

**Brood:** a group of immature bees before they have emerged from their cells.

**Colony:** a group of many bees who live and work together in a hive.

**Comb:** a grouping of 6-sided cells built from beeswax that is used to store food and baby bees.

**Drone:** a male bee. His only job is to mate with the queen.

**Extractor:** device used for removing honey from hive frames.

**Honey:** sweet food made by bees from nectar.

**Honeybee:** an insect who lives in a colony and collects nectar and pollen to produce honey.

**Larva:** the second stage in the growth of a new bee.

**Metamorphosis:** the transformation process from a pupa to an insect.

**Nectar:** a liquid found in flowers and collected by bees and made into honey.

**Pheromone:** a chemical scent released by insects and other animals to communicate messages to other of their species.

**Pollen:** a powder found on flowers and used in plant reproduction. Bees use pollen as a food source.

**Pollination:** the transfer of pollen (from the male part) of one flower to the stigma (female part) of another flower. Pollination is needed for the growth of many fruits.

**Propolis:** a sticky substance collected by bees from trees and other plants which they use to seal cracks in the hive. Also known as bee glue.

**Pupa:** the third and final stage of a new bee's development before it becomes a mature bee.

**Queen:** the only female in the colony who lays eggs to make baby bees.

**Royal jelly:** a very nutritious substance produced by the glands of worker bees and fed to the brood and queen.

**Smoker:** a tool which produces smoke and calms the bees to make it easier and safer for the beekeeper to work with the colony.

**Stinger:** a part of the bee that is used to inject venom (poison) into its enemy. A worker bee can only sting once and then she dies.

**Swarm:** a large group of bees and a queen that escape their hive in search for a new home.

**Venom:** a poisonous liquid secreted by bees defending their colony.

**Worker bee:** a female bee that has many jobs in the hive.

# Assignment #1: Vocabulary Quiz

NAME: \_\_\_\_\_ Date: \_\_\_\_\_

## *Word Bank*

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Beehive Brood Apiculture Metamorphosis Drone Extractor Comb Propolis Smoker  
Swarm

Queen Larva Beeswax Pollen Bee veil Stinger Pupa Pheromone Venom Worker

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1. \_\_\_\_\_ bees are female bees that make up 95% of the beehive and have many jobs including collecting nectar and feeding the queen.
2. \_\_\_\_\_ is the science of the beekeeper and industry.
3. A group of baby or immature bees before they have emerged from the beehive cells is called a \_\_\_\_\_.
4. A \_\_\_\_\_ of wax cells built in a hexagonal shape by workers in their nest to contain young bees to store honey and raise their brood.
5. Bees store honey and \_\_\_\_\_ to serve as food for their young.
6. A worker bee uses its \_\_\_\_\_ once and then she dies.
7. The third and final stage of a new bee's development before it becomes mature is called \_\_\_\_\_.
8. Bees use a poisonous liquid called \_\_\_\_\_ to defend their colony.
9. The \_\_\_\_\_ is the only female who lays eggs to make baby bees.
10. The \_\_\_\_\_ is worn by beekeepers to protect their face from bee stings.
11. \_\_\_\_\_ are the homes for bees.
12. The transformation process that a bee goes through is from pupa to an adult insect is called \_\_\_\_\_.
13. A large \_\_\_\_\_ of bees escape their hives in search of a new home.
14. A \_\_\_\_\_ is a male bee. His only job is to mate with the queen.
15. The machine to remove honey from hive frames is called \_\_\_\_\_.
16. \_\_\_\_\_ is the second stage in the growth of a new bee.
17. The thick substance produced by bees to make their comb cells is called \_\_\_\_\_.
18. A chemical scent called \_\_\_\_\_ is released by insects and other animals to communicate to others within their species.
19. \_\_\_\_\_ is a tool used to calm the bees and makes it easier and safer for the beekeeper to work with the colony.
20. \_\_\_\_\_ a natural substance produced by bees, also known as bee glue, is known to have healing and medicinal qualities.

## Answer Key for Vocabulary Quiz:

(This is a follow up activity after students have completed the Warm-up on Day One and can easily be edited as needed.)

1. Worker
2. Apiculture
3. Brood
4. Comb
5. Pollen
6. Stinger
7. Pupa
8. Venom
9. Queen
10. Bee veil
11. Beehive
12. Metamorphosis
13. Swarm
14. Drone
15. Extractor or Centrifuge
16. Larva
17. Beeswax
18. Pheromone
19. Smoker
20. Propolis

*The following activities are optional ideas that could reinforce the Chaparral Honey video.*

## **Assignment #2: Slide Presentation**

Choose a topic below and create a powerpoint or google slide presentation related to the content of the Chaparral Honey video. The project can be done individually or in teams and should include a minimum of 6 slides per person, with the last slide citing all resources used to present the information.

### **POSSIBLE TOPICS:**

- What are the challenges facing bees, beekeepers, and apiary businesses?
- Why are bees so important to agriculture and crops in California?
- How do bees help the environment? (include a minimum of four benefits)
- Explain the life cycle of bees and all the stages in a colony/beehive.
- How does honey get from the flower, beehive, processor, to the package?
- If you want to become a beekeeper, what steps do you need to take?

### **Example Presentation Outline for Students:**

- Title Page
- Introduction of what is in the ppt/google slides
- Content/Body of Information
  - 
  - 
  - 
  -
- Conclusion (what do you want your viewers to remember/take away)
- Reference page (high school students should be able to cite sources in APA citation format; if not, that could be another worthy lesson)

### **Assignment #3: Speech/Essay**

Read the [2020 Beginner Beekeeping Guide](#), by Backyard Beekeeping. Students must be prepared to give an impromptu 2-3 minute speech or written essay on any subject listed.

- Ten or more tools/equipment to get started
- Building your own hive and how to install bees
- What's a Nuc and Spring/Summer Tasks
- Catching Swarms/ Wild vs Local Honey Bees
- Preparing for the Queen and taking care of the brood
- Spring Cleaning, Hive Maintenance, and Keeping Bees Healthy
- Pollination, Bee Health, and Environmental Concerns
- Everything needed for a successful season (Spring-Fall)
- Honey Extraction, Processing, and Packaging
- Winterizing here and exporting to colder climates
- Natural comb building and starting your own beehives
- By-products (candles, beeswax, propolis, and more)
- Nutritional and medicinal benefits of honey

## Online Resources

Canada Ag and Food Museum - Bees, a Honey of an Idea  
Find a helpful glossary of terms here, for the warmup.

[bees.techno-science.ca/english/bees/glossary.php](https://bees.techno-science.ca/english/bees/glossary.php)

Backyard Beekeeping (Site to download Beginner Beekeeper Guide 2020)

[backyardbeekeeping.iamcountryside.com](https://backyardbeekeeping.iamcountryside.com)

UC Cooperative Extension - Beekeeping in San Diego County

[ucanr.edu/sites/sandiegobees/](https://ucanr.edu/sites/sandiegobees/)

San Diego Beekeeping Society (has many lesson plan ideas)

[sandiegobeekeepingsociety.com](https://sandiegobeekeepingsociety.com)

San Diego County Department of Ag, Weights and Measures (Detailed local regulations and tips for aspiring beekeepers)

[sandiegocounty.gov/awm/bees.html](https://sandiegocounty.gov/awm/bees.html)

On behalf of San Diego Ag in the Classroom, we would like to thank David Winter and staff for making this video lesson possible. If you would like to send a Thank You note, the address is: Chaparral Honey, 14814 Cool Valley Road, Valley Center, CA 92082



*Do you have other ideas for how to incorporate this video into classroom learning? Please send an email to [SanDiegoAITC@gmail.com](mailto:SanDiegoAITC@gmail.com)!*