



VICTORY GARDENS

Lesson and Activity Suggestions for Middle School **Beneficial Bugs**

Many people are afraid of the beautiful pollinator, the honey bee. The purpose of the honey bee is not to harm, but to help. They collect nectar and pollen from trees and plants. They then move the pollen from flower to flower. Ninety-five different crops are pollinated by bees, which helps to create almost one-third of the world's food supply.

Honey bees use the nectar they gather from flowers to make honey. Honey is the only commercial food produced by insects that is eaten by humans on a world wide scale. Honey bees make beeswax, which is used to make candles, and cosmetics. People also use honey for medical purposes. It has been proven, if you eat honey that was harvested locally, it will help with seasonal allergies.



The earthworm is the unsung hero to farmers and gardeners around the world. They help make the soil awesome to grow healthy plants, which in turn provides food for us. As worms wiggle their way through the soil they increase the amount of water and air that gets into the soil. They break down organic matter, like leaves and grass into beneficial nutrients plants want and need. Earthworms leave behind castings when they eat, which is a very valuable type of fertilizer. They truly are a wiggly wonder!

Resources: <https://www.agclassroom.org/teacher/matrix/lessonplan.cfm?lpid=84>
<https://web.extension.illinois.edu/worms/live/>

Directions: Work on your reading comprehension by reading and interacting with your notes. You may use words or pictures in the space provided to the right of the reading to summarize what you read in each section.

HONEY BEES

A BRIEF HISTORY

HUMANS HAVE BEEN HARVESTING HONEY AS EARLY AS 5000 BCE. FROM WILD HONEY HUNTING TO THE SOPHISTICATED APPLIANCES OF TODAY, THERE HAVE BEEN MANY DEVELOPMENTS & ADVANCEMENTS IN THE FIELD OF BEEKEEPING.


- 2422 BCE** RECORDS OF HONEY HARVESTING FOUND IN ANCIENT EGYPTIAN TOMBS
- 1622** BEES INTRODUCED TO AMERICA BY EUROPEAN SETTLERS
- 1851** LANGSTROTH DESIGNS THE MODERN HIVE FOR BEEKEEPING
- 1945** WWII INCREASES MAX DEMAND, RESULTS IN SPIKE IN BEEKEEPING
- 1982** SHARP DECLINE IN BEES NUMBERS DUE TO PARASITIC MITES
- TODAY** INCREASE IN BACKYARD BEEKEEPING BUT INCREASED THREAT OF CHEMICALS USED IN FARMING

LIFE IN THE HIVE

HONEY BEES ONLY REPRESENT A SMALL PERCENT OF THE 20,000 KNOWN SPECIES OF BEES, BUT ARE WIDELY RECOGNIZED THANKS TO THEIR HONEY PRODUCTION & THEIR ROLE IN POLLINATING COMMERCIAL CROPS.


- 2.62 M** HIVES IN THE US
- 50,000** BEES IN A HIVE
- 1** PER COLONY
- MATES WITH 12-18 DRONES
- CAN LAY UP TO 1200 EGGS A DAY

A BEE PRODUCES




1/8 TSP
OF HONEY IN ITS LIFE

A HIVE CAN MAKE




60 LBS
OF HONEY PER SEASON

DRONES



ONLY JOB IS TO MATE
DIES AFTER SEX

WORKERS



CARE FOR EGGS
FEED LARVAE
ATTEND TO THE QUEEN
CLEAN & GUARD HIVE
FORAGE FOR NECTAR
PROCESS NECTAR
BUILD COMB
BASICALLY EVERYTHING

BEES COMMUNICATE WITH EACH OTHER WITH PHEROMONES

HONEY PRODUCTION

PRODUCING HONEY TAKES A BUTT LOAD OF WORK. VARIOUS TASKS ARE DELEGATED AMONG THE WORKER BEES & THE WHOLE HIVE WORKS TOGETHER TO MAKE DELICIOUS HONEY.

- 1. FORAGING**
BEES SUCK UP NECTAR WITH THEIR PROBOSCIS & STORE IT IN THEIR HONEY STOMACH.
- 2. DIGESTING**
AT THE HIVE, NECTAR IS PASSED ON TO OTHER BEES WHO INGEST & REGURGITATE IT REPEATEDLY.
- 3. DEHYDRATING**
BEES STORE NECTAR IN CELLS & FAN IT WITH THEIR WINGS TO REDUCE WATER CONTENT.
- 4. STORING**
BEES SEAL OFF CELLS OF HONEY WITH WAX AT 18% WATER CONTENT. HONEY IS NON-PERISHABLE.

<https://eatsleepdraw.com/>

SOURCES
 INTRODUCTION TO BEEKEEPING CLASS WITH DAN CARR AT BROOKLYN GRANGE FARM
 HONEY INFUSION WORKSHOP WITH ANASTASIA COLE PLANKS AT BROOKLYN GRANGE FARM
<http://www.agriculture.purdue.edu/agcomm/bee/scolumns/archives/05/0511/NOVEMBER11090SLH.html>
<http://www.bek4kids.org/learn/learn-about-honey/>
<http://en.wikipedia.org/wiki/Honey>



TITLE

A BRIEF HISTORY

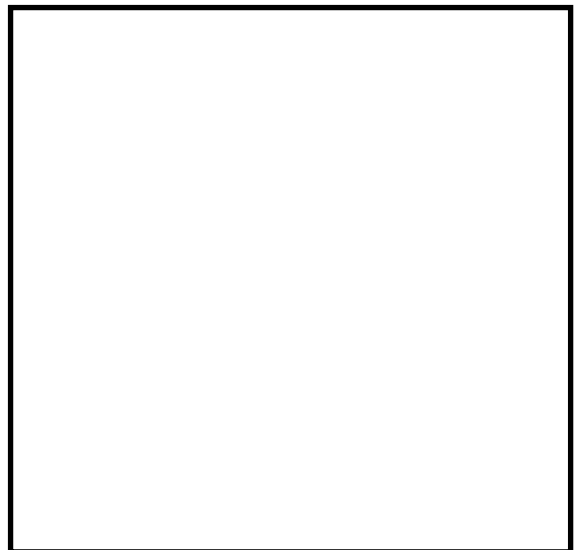
LIFE IN THE HIVE

HONEY PRODUCTION



Earthworms love getting cards in mail like you do! Write a Thank You card to the worms in your Victory Garden. Thank them for at least three super cool things they do to help your garden grow. Include a picture for them to truly feel appreciated!

Dear Victory Garden Earthworms,



Additional Resource on Beneficial Bugs

<https://ktwu.pbslearningmedia.org/resource/vtl07.la.rv.text.colonycoll/colony-collapse-disorder-nature/>

Colony Collapse Disorder | Nature

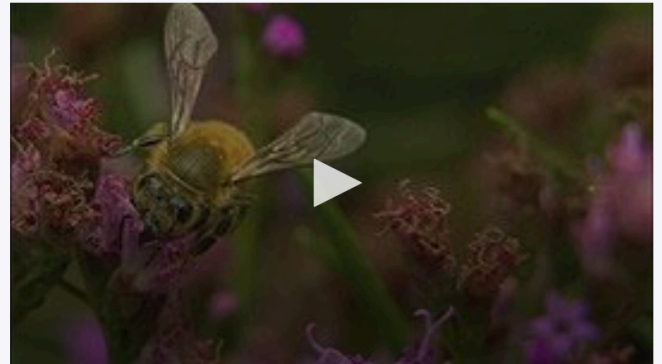
Video Grades: 6-12



<https://ktwu.pbslearningmedia.org/resource/kqed07.sci.life.oate.producers.betterb/the-bounty-of-bees/#.Xqw6GS-z00o>

The Bounty of Bees

Video Grades: 6-8 Collection: [The Importance of Biodiversity](#)



<https://ktwu.pbslearningmedia.org/resource/kqed07.sci.life.oate.ladybug/ladybug-pajama-party/>

Ladybug Pajama Party

Video Grades: 6-12 Collection: [Cool Careers in Science](#)

