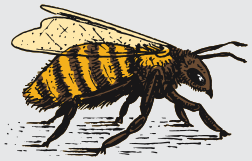
The California Almond Industry and Its Effect on Bee Populations

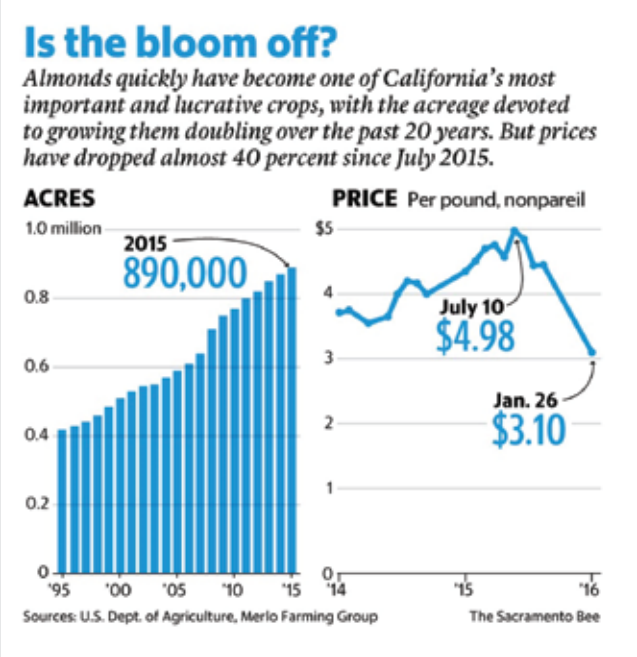
Socio-economic Impacts of the Almond Industry

- Almond farms are a key part of California economy, especially central valley.
- Industry generates over 100,000 jobs in farming and processing.
- They are the U.S.'s largest specialty crop export.
- California's almond farms contribute to distribution worldwide.

BEES IN AGRICULTURE



- 70% of global crop products depends on animal-mediated pollination, which translates to 35% of global food production.
- Honey bees are the primary pollinator across the world.
    - + "60–75% of U.S. commercial honeybee hives are transported to California from as far as Florida and Texas before February to pollinate about 0.9 million acres of almonds"



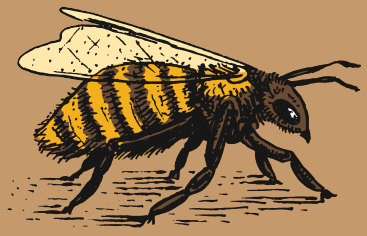
- Economic conditions of limited forage and low honey prices incentivize pollinating for the almond industry.
- Now over 75% of the beekeeping industry pollinates for almond farms.
- Threats to human-managed bee populations also apply to wild ones, and they include:
    - + Pesticides and herbicides
    - + Habitat loss/degradation
    - + Disease
    - + Climate change
- The loss of honeybees would be catastrophic for not just agriculture but for the entire ecosystem.

HOW PESTICIDES SPECIFICALLY EFFECT BEES:

- Pesticides have both lethal and sublethal effects on wild and domesticated beehives that ultimately leads to the destruction of the hive.
- Sublethal effects—indirectly lethal to colonies
    - Diminish abilities essential to hive survival
- All effects lead from bees coming into contact with a surface containing a pesticide
    - This could be another contaminated bee
- Colony Collapse Disorder (CCD)
    - A unique ailment faced by bee populations, is caused when worker bees stop returning to the hive in large numbers, leaving the queen and a small number of drones to starve while trying to raise the broods (immature bees)

Effect of Herbicide use:

- Herbicides are used to remove unwanted plants from farms and other natural areas
    - These areas include roadsides, “right of ways”, forests, and farm/agricultural lands, but also affects wild bee habitats
    - Removes places for hives or nests to be constructed
    - Without habitat it becomes more difficult for bee populations to be sustained
- The use of herbicides also removes food sources from both wild and domesticated bee populations
    - The removal of flowering plants removes food sources for all pollinators creating a positive feedback loop as the pollinators fail to produce more plants



How Can You Help?

Avoid almond products

- Try dairy alternatives such as oat milk and soy milk —finding substitutes to almond products decreases the demand of almond products and ultimately rate of almond production.

Donate

- Donate to organizations that aim to save pollinators **https://www.beelab.umn.edu/**
- University of Minnesota’s Bee Lab is a lead organization in honey bee and native bee research.

  http://www.xerces.org/
- The Xerces Society for Invertebrate Conservation is an international nonprofit organization that protects invertebrates and their habitats.

  http://foe.org/projects/bee-action/
- Friends of the Earth is an environmental political organization.

  https://spikenardfarm.org/
- Spikenard Farm Honeybee Sanctuary uses biodynamic principles in tending their land and the honey bees, while offering many opportunities for education

Create a pollinator-friendly garden

- You can create a habitat corridor with plants that are rich in pollen and nectar that can be as simple as window boxes, flowerpots, and planters.
- Go chemical-free in your garden. Instead of treating with synthetics, use organic products, such as compost, to bolster soil fertility and introduce bugs, such as ladybugs & praying mantises, which keep away pests.
- Plant trees! Bees get the majority of their nectar from tree blossoms. Trees are not only a great food source for bees, but also an essential habitat.
- Create a bee bath! Fill a shallow bowl with fresh water and pebbles and put it in your garden to quench the thirst of the bees.
- Consider making or buying “bee condos”, which have small tube “apartments”, to provide the bees with a safe place to live.

Spread Awareness

- Use an informed voice to spread awareness on the issue!