Colony Collapse Disorder

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Introduction

In today's environmental, health conscious, and social media connected world, CCD & pollinator protection is a weekly news event. In keeping with the times, the pest management industry is paying close attention to this subject, and its impact on the future of mosquito control.

What is Colony Collapse Disorder?

The sudden loss of worker adults from managed hives, leading to the eventual collapse of the entire colony within a few weeks.

Suspected Factors leading to CCD:

- **Pests**
- **Pathogens**
- **Pesticides**
- **Nutritional Deficiencies**
- **Bee Hive Management Practices**

Pests:

- Varroa Mite
  - Recognized as the major factor underlying colony loss in U.S. & other countries, but is not associated as primary factor in CCD in US
- Tracheal Mites
- Small Hive Beetle
- Africanized Bees
- Phorid Flies
- Bee Louse & Wax Moths

Pathogens:

- Viral-Most predominant in US are Deformed Wing and Black Queen Cell Virus
- Bacterial- American and European Foulbrood. Some AF strains have developed Anti-biotic resistance
- Fungal- Chalkbrood, others
- Microsporidia- *Nosema ceranae*
- Other understudied pathogens and parasites

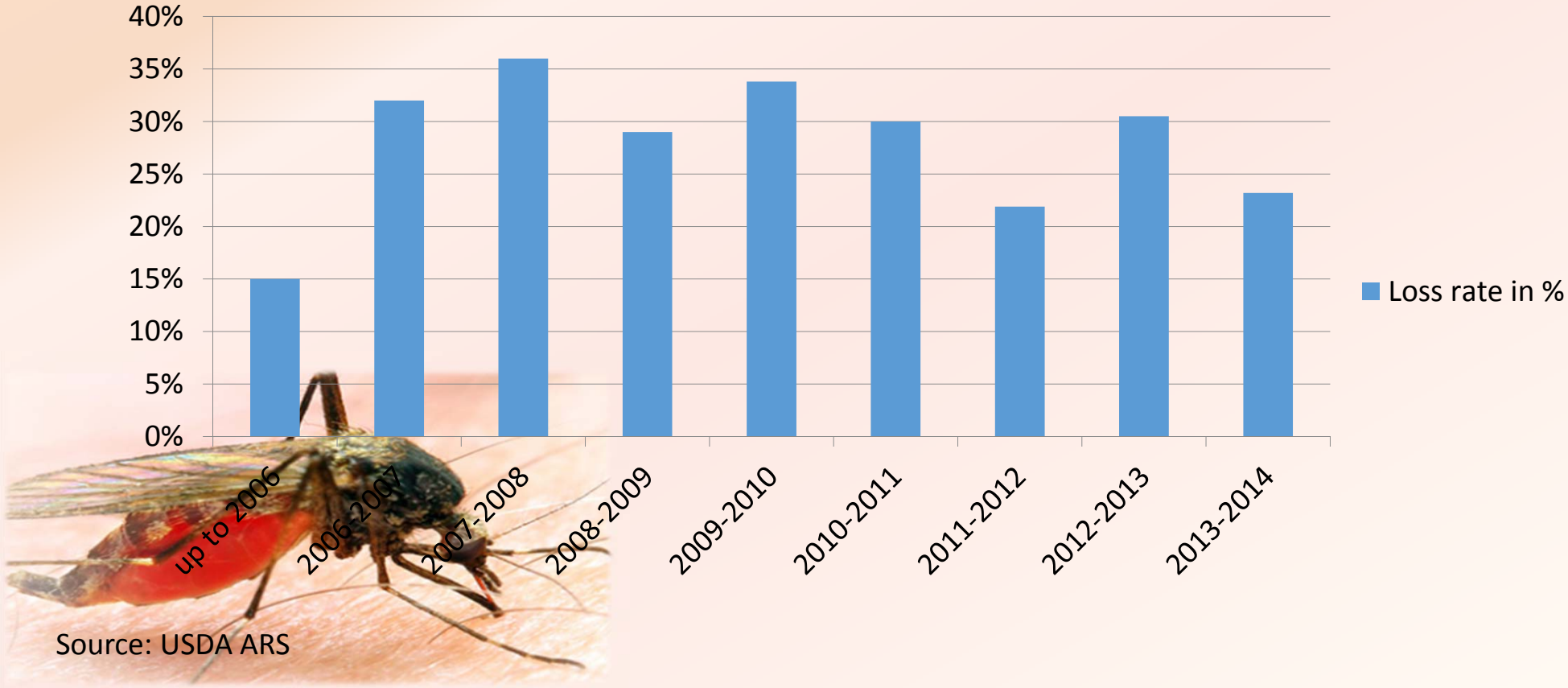
Pesticides:

- Direct application to crops
- Direct application to seeds (seed coating)
- Application drifts to flowering plants adjacent to hives

Nutritional Deficiencies:

- Nutritional stress- on overwintering colonies reduces the lifespan of adult workers by four days
- Pollen- key protein source & bee bread is the dominant amino acid source in honey bee diet

Historical Overwinter Rate Loss:



Source: USDA ARS

Beehive Management Practices:

- Pollination Services
- Current research states that pollination of the Almond Crops in CA requires ~60% of all managed bee populations in US.
- Medical Care and nutrition

Survey Respondents:

- Information self reported by beekeepers
- Estimated 2.6 million managed colonies in US
- October 2013
  - 7,200 respondents or 21.7%
- Previous winter
  - > 6,000 respondents or 22%

Does anyone else have questions about CCD info? Because, I do.

- Information is for managed (commercial) colonies only.
- Why aren't the other 78-80% of managed hive owners responding?
- If 100% of the data is from only 20-22% of the source, should we bank all of our actions on the data?

CCD & pollinator protection when performing mosquito control?

Mosquito Control Principles

- Inspection
  - Treatment sites
  - Pollinator presence
- Removing breeding sites and resting sites if possible
- Larvacide
- Adulticide
- Homeowner Communication

Mosquitoes and Homeowner Communication

- We ***don't*** guarantee "No Mosquitoes"
- We ***don't*** guarantee "No disease transmission"
- The homeowner ***does*** have an important role to play
- We ***can*** make realistic claims that our Mosquito Management Program will reduce mosquito populations and make a difference
- We set the proper ***expectation***.
- Quality ***paperwork*** is the key to effective homeowner communication.

Protecting Pollinators

Care should be taken when applying materials near flowering shrubs and trees.

<u>Remember</u>:
We are protectors of public health and property while still **CARING FOR OUR ENVIRONMENT**

Control Strategies

- Mist Blowers
- Misting Systems
- Truck Mounted Units (hose and reel: not truck mounted ULV)
  - Apply at lowest pressure to still be effective
  - Maintain larger droplet size
  - Inspect your target sites

Current:

- We do not use Neonicotinoids for mosquito control.
- We do use Synthetic Pyrethrin
- Current label language regarding pollinators
    - “this product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow to drift to blooming crops if bees are visiting the treatment area.”

Topics for Consideration:

- **Note:** Pollinator protection will be a top priority for all services. With this in mind, all mosquito services should include the following:
  - Attempt to contact the property owner on site prior to service
  - Inspect the area of the property to be treated looking for:
    - Foraging Pollinators
    - Flowering vegetation
  - Write/highlight on the service ticket:
    - Vegetation where pollinators are foraging and no treatment was performed to those areas
    - If there were or were not any pollinators foraging in any of the areas at the time of service
  - Attempt to contact the property owner prior to departing to explain the service and any areas where service was not performed due to pollinator foraging activity.

“What ifs”:

- EPA does nothing else other than the current neonic language
  - Stay on current course
- EPA creates language affecting Pyrethroids
  - Move product use to straight PY product
- EPA creates language affecting Straight PY:
  - Move to Botanicals
- EPA creates language affecting any product with pollinator toxicity
  - Move to straight IGR
  - Trust new research will provide a solution
- New sugar-based baits coming to market