Feb 6, 2025
Severe and Sudden Losses of Managed Honey Bees Across the Nation

As commercial beekeepers in the USA inspect their bees after winter, to transport over 90% of the nation's managed honey bees to pollinate California almonds, they are discovering alarming colony losses. These losses are severe, broad, and may impact food security through inadequate pollination services. *Survey results are still accumulating, but information gathered from 234 beekeepers found average recent losses well over 50%, with a combined financial loss of over $139M. Combined with losses during other times of year, this additional loss puts many beekeepers at a loss rate of 70%-100% over the past 12 months*.

The symptoms of loss are reminiscent of Colony Collapse Disorder (CCD) conditions which occurred in 2007 -2008 when bees suddenly disappeared from their colonies. During recent inspections by field scientists, deceased colonies often died with ample honey stores, leaving small patches of brood, with most or all the adult bees missing. Another symptom has been the rapid dwindling of surviving colonies, often within ten days of passing health inspections.

Similar severe losses were seen two years ago, when beekeepers in Florida lost up to 90% of their colonies, incurring $4.28 million in lost revenue. At that time, these beekeepers worked alongside the USDA-ARS Bee Research Laboratory in Beltsville, MD to sample and identify parasites, pathogens and pesticides involved in the crashes. Chemical exposures were also analyzed, recently presented and are awaiting publication. The effort to sample, analyze pathogens, and calculate economic impacts are well documented here: https://doi.org/10.3390/biology13020117.

In January 2025, beekeepers again discovered sudden losses. In response, surveys were shared to determine the extent of the problem and samples were collected. This effort garnered the participation of many beekeepers, and mobilized a multi-organization working group.

Gathering Information
A collaborative effort between Project Apis m., American Beekeeping Federation, American Honey Producers Association, apiculture extension programs and beekeepers such as Bret Adee allowed for the rapid collection of real time information to determine if these losses were regional or widespread. Surveys and interviews quickly determined these losses are nationwide and severe. The cause has not yet been identified, however the usual causes of loss, including winter management and high levels of parasitic mites, are not currently indicated causes of these losses.

Gathering Samples
The Bee Research Laboratory, USDA-ARS Beltsville, MD, collected samples from commercial operations' surviving colonies and from remnants of dead colonies. Priority

was placed on collection of material that could identify the causes of such severe losses. A wide screening for pathogens and pesticides was conducted in California. Beekeepers provided access to colonies and providing detailed management history of their operations. Field scientists at the USDA-ARS collected dying bees, sampled dwindled colonies, wax and stored pollen from surviving and dead colonies. Thanks to this swift collaborative effort, a comprehensive analysis of pathogen, parasite and chemical residues will be performed. In addition to the disease and pesticide analyses from Beltsville, USDA-ARS, laboratories in Tucson, Baton Rouge, Davis, Stoneville, and Logan will apply their expertise analyzing field data, weather patterns, and chemical risks as factors in these sever losses. Samples will be analyzed for:

- Known Virus levels in dying and surviving bees
- Parasitic Varroa mite genes of resistance to Amitraz treatment (with assistance from the USDA ARS Baton Rouge Bee Lab)
- Pesticide residues in adult bees, wax and pollen
- Genetic screening for novel viruses and metagenomic analyses of composition of microbial communities

Next steps

Samples are being analyzed, and additional information will be shared as it becomes available through social media and updates from the organizations listed below, including:

- A free public webinar will be offered by scientists who collected and analyzed samples in early March through Project Apis m. www.ProjectApism.org.
- Beekeepers involved will receive updates directly.
- Findings that will directly impact beekeeper management, such as amitraz resistance in Varroa samples and clear pathogen signals, will be shared broadly and promptly through public announcements and beekeeping organizations.
- Pesticide residue analysis and RNAseq will be shared through peer review publications.

Beekeepers are encouraged to share their information in the survey before Feb 10
https://forms.office.com/r/YKNpRBGkir
Beekeepers experiencing losses are encouraged to submit ELAP claims right away:
(https://www.fsa.usda.gov/resources/programs/emergency-assistance-livestock-honeybees-farm-raised-fish-elap).

For more information, contact: Dr. Zac Lamas (ORISE Fellow- Beltsville and Field Sampling Coordinator) Zaclamascontact@gmail.com (603) 748-5334

Information provided by:
Project Apis m.
American Beekeeping Federation
American Honey Producers Association
Adee Honey Farms