

Hundreds of Thousands of Honeybee Colonies Lost During 2023 – What's Killing Them?

Analysis by [Dr. Joseph Mercola](#)

October 19, 2024

STORY AT-A-GLANCE

- › Varroa mites are devastating honeybee populations, affecting 54.8% of colonies and making bees more susceptible to diseases and harsh conditions
- › Colony collapse disorder remains a significant threat, with 70,650 colonies lost in just three months, despite a 34% decrease from the previous year
- › Neonicotinoid pesticides, particularly thiacloprid, have long-lasting effects on honeybees, disrupting their energy metabolism and gut microbiome even when exposed as larvae
- › Industrial agriculture practices force bees to mature too quickly, shortening their lifespans, while areas with more natural habitats help bees live longer and healthier lives
- › You can help protect bees by avoiding neonicotinoids, supporting organic farming, creating pollinator-friendly spaces and choosing untreated plants for your garden

A U.S. Department of Agriculture (USDA) report on honeybee colonies reveals a troubling trend that could have far-reaching consequences for your food supply and the environment.¹ Varroa mites have emerged as the primary threat to honeybee populations, affecting a staggering 54.8% of colonies during April through June 2024.

These parasitic mites weaken bees, making them more susceptible to diseases and reducing their ability to survive harsh conditions. The impact of varroa mites on your local ecosystem cannot be overstated, as they contribute significantly to colony losses and pose a severe challenge to beekeepers nationwide. Understanding the severity of

this problem and others facing honeybees is crucial, as it directly affects pollination services essential for many crops you rely on daily.

Colony Collapse Disorder: A Persistent Threat

While there's a glimmer of hope with a 34% decrease in colonies lost to colony collapse disorder (CCD) symptoms from January through March 2024 compared to the same period in 2023, the issue remains a significant concern.² CCD, characterized by the sudden disappearance of adult bees from the hive, continues to puzzle researchers and beekeepers alike.

The loss of 70,650 colonies to CCD symptoms in just three months highlights the ongoing struggle to maintain healthy bee populations.³ This mysterious phenomenon not only impacts honey production but also threatens the pollination of countless plants in your garden and local ecosystem. The reduction in CCD cases is encouraging, but it's clear that more research and preventive measures are needed to protect your food security and biodiversity.

The USDA report paints a picture of constant flux in honeybee populations, with significant losses and additions throughout the year. From January through March 2024, beekeepers lost 396,820 colonies, representing a 15% decline. However, they also added 404,100 colonies during the same period, barely offsetting the losses.

This cycle of loss and renewal underscores the challenges faced by beekeepers in maintaining stable populations. The highest number of colonies lost in 2023 was during April through June, with 378,190 colonies lost.⁴ Pesticides were also named as a leading stressor in about 10% of colonies from January through June.⁵

These fluctuations have a direct impact on your local agriculture and ecosystems, as they affect the availability of pollinators for crops and wild plants alike. Understanding this dynamic is crucial for appreciating the efforts required to sustain honeybee populations and the vital services they provide.

Neonicotinoids: A Silent Killer in Your Garden

Common pesticides in your garden are contributing to the alarming [decline in honeybee populations](#). One study shed light on how [neonicotinoids](#), particularly thiacloprid, have long-lasting effects on honeybees even when exposed during their larval stage.⁶

Thiacloprid, once considered less toxic to bees than other neonicotinoids, is now under scrutiny for its significant impact on bee health.

The research reveals that exposure to sublethal concentrations of thiacloprid during the larval phase leads to reduced survival rates in adult bees. The exposed bees showed increased sugar-water consumption without corresponding weight gain, suggesting a disruption in their energy metabolism.⁷

This means that bees exposed to thiacloprid as larvae struggle to maintain their energy balance as adults, impacting their ability to forage and contribute to the colony's survival.

Gut Microbiome Is a Key Player in Bee Health

Your gut health is crucial for your overall well-being, and the same is true for honeybees. The study uncovered that early-life exposure to thiacloprid significantly alters the gut microbiota of adult honeybees.⁸ On the first day after emergence, bees exposed to thiacloprid showed a dramatic reduction in gut microbial diversity. This disruption in the delicate balance of beneficial bacteria could have far-reaching consequences for bee health.

A healthy gut microbiome plays vital roles in digestion, nutrient absorption, metabolism and immunity. By disturbing this ecosystem, thiacloprid indirectly weakens bees' defenses against pathogens and reduces their ability to extract nutrients from their food efficiently.

While the study found that the microbial diversity seemed to stabilize by the sixth day after emergence, the initial disruption during a critical period of development could have

lasting effects on the bees' overall health and resilience.⁹

From Hive to Human: The Ripple Effect of Pesticide Use

You might wonder why the health of honeybees should matter to you. The answer lies in the intricate web of ecological relationships that sustain our food systems. Honeybees are primary pollinators, playing a crucial role in global ecosystems and agricultural biodiversity. Their decline doesn't just mean less honey; it threatens the very foundations of our food security.

Even pesticides considered "less toxic" have long-term effects that disrupt the delicate balance of nature. When you use neonicotinoids in your garden or purchase produce grown with these pesticides, you're unknowingly contributing to a chain reaction that weakens bee colonies.

This, in turn, affects crop yields and the overall health of our ecosystems. So, your individual actions, even at the level of choosing garden products, have far-reaching consequences for the environment and, ultimately, your own well-being.

The Hidden Toll of Industrial Agriculture on Honeybees

In intensive agricultural areas, honeybees also face a rollercoaster of feast and famine as crops bloom and wither. During food shortages between mass flowerings, researchers found that worker bees start foraging at a younger age — essentially growing up too fast.¹⁰ This premature maturation comes at a steep cost, shortening the bees' overall lifespan.

By analyzing the life histories of over 1,035 individual bees across different landscapes, scientists uncovered how food scarcity pushes young bees to become foragers earlier than normal.¹¹ While this helps the colony gather resources in the short-term, it means each worker bee lives a shorter life.

Over time, this accelerated life cycle threatens the survival of entire colonies. The findings reveal an invisible toll that modern farming practices take on bee populations, even when the effects aren't immediately obvious. Understanding these hidden stressors and embracing alternatives like regenerative agriculture are crucial for protecting the pollinators your food supply depends on.

A Lifeline in the Agricultural Desert

Amid the sea of cropland, patches of wilderness provide a vital refuge for bees. The study, published in *Science of The Total Environment*, found that areas with more semi-natural habitats like meadows, hedgerows and woodlands helped buffer honeybees against the harsh effects of food shortages.¹² In landscapes with abundant natural areas, bees were able to delay foraging and live longer lives overall.

This protective effect was especially pronounced during times of scarcity between crop blooms. Bees with access to diverse wild plants maintained more normal life cycles, avoiding the premature aging seen in more barren agricultural zones.

These oases of biodiversity are critical for supporting pollinator health. Even small increases in natural habitat around farms could make a big difference for bee populations. By preserving and restoring these areas, you can help create a more hospitable environment for the bees that your food system relies on.

The Delicate Balance of a Bee's Lifespan

The researchers uncovered an intriguing trade-off in bee development: workers that start foraging too early or too late tend to have shorter foraging careers overall. The sweet spot appears to be around 14 days old – bees that began foraging at this age had the longest productive lifespans as foragers.¹³

This delicate balance likely relates to the bees' physiology. Those pushed to forage too young may not be physically ready for the demanding job. On the flip side, bees that delay foraging for too long may have limited time left in their natural lifespan.

Understanding this optimal timing could help beekeepers and farmers better support healthy colonies.

The presence of diverse natural habitats seems to help bees hit this developmental "sweet spot" more often. By creating and supporting an environment that allows for more normal bee development, you can support more robust and resilient pollinator populations in your area.

Hope for Reversing Honeybee Decline

While the findings paint a sobering picture of honeybee health in many industrial agriculture landscapes, they also point to achievable solutions. The study showed that even modest increases in semi-natural habitat around crops have significant benefits for bee populations.¹⁴

Simple changes like planting hedgerows, establishing wildflower meadows or leaving some land fallow can make a big difference. These practices not only support bees but also provide habitat for other beneficial insects and wildlife. As a consumer, you can support these efforts by choosing products from small farms that prioritize biodiversity.

You can also create pollinator-friendly spaces in your own yard or community. By advocating for and implementing these changes, you have the power to help reverse the decline of bees and other crucial pollinators.

Take Action to Protect Bees and Your Health

Armed with this knowledge, you have the ability to make a difference. Start by avoiding the use of neonicotinoids and other synthetic pesticides in your own garden. Opt for organic, regenerative gardening methods and support small farmers who practice bee-friendly agriculture. When shopping for plants, ask nurseries if their plants have been treated with neonicotinoids and choose untreated options.

Remember, protecting bee health is ultimately about protecting your own health and the health of future generations. By making conscious choices, you're not just helping to preserve bee populations; you're also reducing your exposure to potentially harmful chemicals.

The research on how thiacloprid affects bee metabolism and gut health serves as a warning sign for human health as well. As you work to create a safer environment for bees, you're also creating a healthier world for yourself and your loved ones. Every small action counts in the fight to preserve our pollinators and ensure a truly sustainable future for all.

Colony Renovation and Conservation Efforts

Meanwhile, despite the challenges, there are signs of proactive measures being taken to strengthen honeybee populations. Colony renovation is a one technique used by beekeepers to maintain and improve the health and productivity of their honeybee colonies.

This process typically involves one of two main approaches: requeening or introducing new bees. Requeening is the practice of replacing an existing queen bee with a new, often younger and more vigorous queen. This helps improve the colony's genetics, increase egg-laying rates and enhance disease resistance.

Alternatively, beekeepers may introduce new bees through nucleus colonies (small, starter colonies) or packages (boxes containing worker bees and a queen). These methods allow beekeepers to strengthen weak colonies, replace lost bees or start entirely new hives.

By regularly renovating their colonies, beekeepers address issues such as declining populations, poor queen performance or genetic weaknesses, ultimately ensuring the long-term viability and productivity of their apiaries.

According to the USDA report, from April through June 2024, 521,790 colonies were renovated, representing 19% of the total.¹⁵ This process helps maintain genetic diversity

and colony health, important factors in building resilience against threats like varroa mites and diseases.

As a consumer and member of your local community, supporting these conservation efforts through informed choices and advocacy makes a significant difference. By understanding the importance of these renovation efforts, you contribute to the long-term sustainability of honeybee populations and the ecosystems they support.

Sources and References

- [1, 2, 3, 4, 15 USDA, Honey Bee Colonies August 1, 2024](#)
- [5 U.S. Right to Know August 1, 2024](#)
- [6, 7, 8, 9 Genes \(Basel\). 2024 Aug; 15\(8\): 1001](#)
- [10, 11, 12, 13, 14 Science of The Total Environment November 10, 2024, Volume 950, 175309](#)