Standley, J.M., Abbate, A.P., Lau, P.W. *et al.* **A scientific note on an invasive pollen provider, tallow (*Triadica sebifera*), as a resource for honeybees (*Apis mellifera*).** *Apidologie* **57**, 73 (2026).

Abstract

Beekeepers are increasingly concerned about potential methods to curb tallow growth; such control efforts may reduce a critical forage resource, ultimately affecting colony productivity. Tallow blooms in late spring, primarily in the southeastern U.S., and is regarded by beekeepers as a producer of quality honey, which promotes colony build-up and provides a source of income for beekeepers. Therefore, the objective of this work was to evaluate tallow pollen relative abundance in the southern U.S. by collecting corbicular pollen during the tallow mid-bloom period in counties in Alabama and Mississippi where tallow is prevalent. The results of this research will provide insights on the importance of tallow pollen to honeybee colonies, providing additional guidance for tallow management and policy decisions.

Plain Language Summary

Researchers showed that honeybees collect tallow pollen in regions where tallow is commonly found, and that it contains adequate protein to meet colony nutritional requirements. The results of our work are of special interest to both the beekeeping community and policy decision makers. Additionally, future research incorporating more sampling locations and investigating alternate forage resources for honeybees if tallow were to be minimized would be of benefit.

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Liu J, Chen J, Wu X. **Core gut symbionts enhance honeybee (Apis mellifera) resilience to flumethrin stress by upregulating host immunity.** Environ Pollut. 2026 Sep 24;410:129215. doi: 10.1016/j.envpol.2026.129215. Epub ahead of print. PMID: 42785622.

Abstract

The widespread use of flumethrin has significantly jeopardized the survival of bees. However, the mechanisms by which bees and their intestinal microorganisms resist flumethrin remain to be elucidated. Therefore, this study aimed to explore the mechanism by which the gut microbiota of bees assist the bee host in resiling flumethrin stress. Bees were exposed to various concentrations of flumethrin (0.01, 0.1, and 1 mg/L) for 14 days, subsequently, performance parameters (body weight, gut weight, and food intake) and gut microbiota diversity and composition were assessed. Then, the performance parameters and mRNA expression of bees colonized by core gut bacteria (Bombilactobacillus mellis, Lactobacillus apis, Snodgrassella alvi, Bartonella apis, and Gilliamella apicola) and exposed to 1 mg/L flumethrin were evaluated. Chronic flumethrin exposure significantly reduced survival rate and gut weight, damaged intestinal structure, and induced gut microbiota dysbiosis in bees. However, gut colonization by B. mellis, S. alvi, and G. apicola significantly improved survival rate, body weight, and intestinal weight in bees. Importantly, G. apicola colonization significantly enhanced honeybees resilience to flumethrin, as evidenced by a significant increase in survival rate from 65.8 to 94.1% after G. apicola colonization. Moreover, bacterial gut colonization significantly upregulated the mRNA expression of immune detoxification genes, including superoxide dismutase, catalase, Toll, defensin-1, and abaecin, in bees. Collectively, these findings indicate that gut bacteria confer protection against flumethrin-induced stress by enhancing host immunity, underscoring the critical role of the gut microbiota in mediating honeybee resilience to environmental pollutants.

Plain Language Summary

Researchers in China investigated flumethrin, a synthetic chemical used in veterinary medicine to kill ticks and fleas on animals, also used in Bayvarol strips (not in US). Flumethrin has a number of detrimental effects on honey bees. Researchers found that the intestinal bacteria of bees can protect honey bees from the effects of flumethrin

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Ozols N, Filipovičs M, Rubene B, Močāne S, Tikuma B, Brusbārdis V, Gailis J, Zagorska V. **Pesticide exposure risks and seasonal variation in honey bee-collected pollen across agricultural landscapes in Latvia.** Environ Sci Pollut Res Int. 2026 Sep 23. doi: 10.1007/s11356-026-38238-1. Epub ahead of print. PMID: 42778771.

Abstract

Honey bees (Apis mellifera) are widely used as bioindicators of environmental contamination and bee-collected pollen reflects pesticide exposure in agricultural landscapes. This study evaluated pesticide residues in honey bee-collected pollen from six Latvian apiaries during 2024 and 2025 flowering seasons, and assessed toxicological risk using the Pollen Hazard Quotient (PHQ). In total, 15 active substances were detected in 2024 and 19 in 2025. Fungicides were the most frequently detected pesticide class in both years, accounting for 51% of detections in 2024 and 54% in 2025, followed by herbicides (38% and 24%) and insecticides (11% and 22%). The highest concentrations were recorded for glyphosate, fluazifop-P-butyl, boscalid, azoxystrobin, acetamiprid, and tebuconazole. Seasonal variation was evident, with higher residue concentrations and PHQ values mainly from mid-May to early July, coinciding with crop flowering and pesticide application periods. Median PHQ values remained below the threshold (PHQ < 50), however several samples in 2025 exceeded this level, with a maximum PHQ of 1173.91 driven by cypermethrin. No consistent descriptive pattern was observed between PHQ values and the proportion of agricultural land or nectar producing crops. This suggests that landscape composition alone did not explain differences in pesticide exposure among the studied apiaries. The results indicate that pesticide exposure is influenced by temporal variation, pesticide toxicity, and local factors such as crop management and foraging behaviour, rather than landscape composition alone. Honey bee-collected pollen proved to be a suitable tool for monitoring pesticide exposure. It also allowed the identification of periods of increased risk in agricultural environments.

Plain Language Summary

Researchers in Latvia quantified pesticide residues in honey bee-collected pollen, and calculated toxicological risk using the Pollen Hazard Quotient (PHQ). Their results indicate that the pesticides presented a moderate risk linked to specific times of year and crop management strategies. This kind of pollen collection and analysis is useful to identify periods of increased risk.

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Lin H, Sullivan J, Webster TC, Huang ZY. **Altered juvenile hormone dynamics mediate earlier foraging in Nosema-infected honey bees.** Biol Open. 2026 Sep 15;15(9):bio062830. doi: 10.1242/bio.062830. Epub 2026 Sep 17. PMID: 42751928; PMCID: PMC13617973.

Abstract

Parasites can profoundly alter host behavior, yet the physiological mechanisms underlying these changes are often unclear. In honey bees (Apis mellifera), microsporidian infection has long been associated with precocious foraging, a life-history shift that can destabilize colony function. Here, we identify the endocrine mechanism linking infection to behavioral maturation. Using Nosema apis, we show that infected workers initiate foraging significantly earlier than controls across four colonies (hazard ratio=2.69, P<0.001). This behavioral acceleration was accompanied by a ∼1.7-fold increase in circulating juvenile hormone (JH) titers, an ∼83% increase in JH biosynthesis by the corpora allata (CA), and increased in vivo JH metabolism, causing elevated JH turnover during infection. Crucially, surgical removal of the CA eliminated the significant effect of infection on foraging, supporting the hypothesis that activation of this gland contributes to the behavioral effects of infection. Together, these results reveal that microsporidian infection accelerates honey bee behavioral maturation by increasing JH turnover through activation of the CA.

Plain Language Summary

Researchers in the United States investigated Nosema infection of honey bees. Nosema causes early (precocious) foraging, where younger nurse bees are shifting to go out and forage early because of the infection. Researchers determined that the Nosema infection activates corpora allata (CA), a small endocrine gland located behind the brain, to produce more juvenile hormone (JH), and this causes early maturation of the infected bees.

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