

Fungi can be used to control filth fly adults and reduce egg laying

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A stable fly (*Stomoxys calcitrans*). Recent research has shown that entomopathogenic fungi can help control adults and can reduce the number of eggs that are laid. Credit: Whitney Cranshaw, Bugwood.org

Stable flies and house flies are a concern in livestock and poultry farming because they can transmit harmful pathogens, and animals can

harm themselves while trying to avoid bites from the flies. Researchers at the University of Florida found that a commercial formulation of the entomopathogenic fungus *Metarhizium brunneum* was effective at reducing house fly and stable fly egg-laying and inhibiting house fly development. Formulations of another fungus called *Beauveria bassiana* were also found to be effective, albeit less so. The findings of the study are published in the *Journal of Insect Science*.

"Most previous studies looked at the effect of the fungi on adult mortality," said Dr. Erika Machtinger, one of the researchers. "In this particular study, we wanted to see how commercial fungal products could affect oviposition in areas treated with the products, and how larvae developed when exposed to the products."

The researchers tested four commercial formulations of entomopathogenic fungi. Three of the formulations contained *Beauveria bassiana* (BotaniGard ES, Mycotrol O, balEnce) and one contained *Metarhizium brunneum* (Met52 EC). Each product was applied to an oviposition site, and the eggs laid by house flies and stable flies were counted. In a second experiment, the products were applied to larval development sites in three different dosage amounts, and the number of larvae that successfully pupated was recorded.

For house flies, all formulations reduced the amount of eggs laid by more than half compared to the control, but application of Met52 EC had the greatest effect. Similar results were seen for stable flies, but Mycotrol O resulted in fewer eggs than the other *Beauveria bassiana* products.

The researchers also measured how many house fly eggs were able to develop to the pupal stage for each product and dose. They found that Met52 EC at medium and high doses decreased the number of house flies that pupated. However, *Beauveria bassiana* products didn't seem to

have any effect unless the dose was high.

"Overall, we found that Met52 EC was the most effective of the tested products at reducing fly oviposition and inhibiting house fly development," Machtinger said. "This is important because while other studies have looked at *Metarhizium brunneum* and found this particular fungus to be pathogenic to adult flies, applying the tested product to oviposition sites may also increase fly control in certain situations as part of an IPM program by limiting the number of eggs laid and by reducing the number of larvae that successfully pupate. However, further studies in the field should be conducted. The organic product, Mycotrol O, was more effective than the other *Beauveria bassiana* [products](#) in deterring stable fly oviposition. These results suggest that the Mycotrol O formulation could be successful for assisting with stable fly management in organic farming situations."

More information: E.T. Machtinger et al, Oviposition Deterrence and Immature Survival of Filth Flies (Diptera: Muscidae) When Exposed to Commercial Fungal Products, *Journal of Insect Science* (2016). [DOI: 10.1093/jisesa/iew032](https://doi.org/10.1093/jisesa/iew032)

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