

## **OPTIMIZING BAIT STRATEGIES FOR *DOLICHODERUS THORACICUS* CONTROL**

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**Abstract** The invasive ant species *Dolichoderus thoracicus* has become a significant pest in Taiwan, posing threats to agricultural production, native ecosystems, and public health. This species relies exclusively on trophic eggs for nutrient distribution, which poses unique challenges for bait-based management strategies commonly developed for ants utilizing trophallaxis. Additionally, its symbiotic associations with honeydew-producing insects exacerbate its impact, leading to population outbreaks and substantial crop damage. Effective and targeted control strategies are urgently required. This study assessed the efficacy of three commercial baits with distinct active ingredients—fipronil (0.01% w/w), boric acid (2.74% w/w), and imidacloprid (0.03% w/w)—to identify a suitable formulation for controlling *D. thoracicus*. Foraging activity monitoring revealed no significant repellency among treatments. Mortality bioassays demonstrated that imidacloprid induced the fastest direct toxicity, while fipronil and boric acid caused slower mortality. Horizontal transfer experiments showed that fipronil significantly increased recipient mortality compared to the control, likely due to its contact toxicity. In contrast, boric acid and imidacloprid did not result in significant mortality among recipient ants. The results indicate that fipronil's horizontal transfer efficiency makes it a suitable insecticide for managing *D. thoracicus*. However, further field studies are needed to determine optimal application rates and treatment durations for effective colony suppression.

**Key words** formicidae, horizontal transfer, trophic eggs, bait efficacy