

Public Abstract

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Title:INFLUENCE OF ENTOMOPATHOGENIC FUNGI FROM FOREST AND URBAN HABITATS ON FOUNDING PAIRS OF RETICULITERMES FLAVIPES (RHINOTERMITIDAE)

In forest habitats, *Reticulitermes flavipes* breaks down woody debris and assists in nutrient cycling of carbon and nitrogen. However, home infestations make this subterranean termite a serious pest. Traditional subterranean termite control methods are expensive, toxic treatments so biological control has been attempted using entomopathogenic fungi, such as *Beauveria* and *Metarhizium*. Previous biocontrol focused mostly on the worker caste inside full colonies. Due to social and physiological defenses, entire termite colonies survived these fungal exposures. Our research focused on colony founding pairs. In this colony stage there are only two termites, the king and queen, present in the colony. Because most termite colonies invading newer homes in Missouri are started by *Reticulitermes flavipes* founding pairs, control of founding pairs may be a novel method of control. Using locally collected *Beauveria* and *Metarhizium*, this research examined mortality and sublethal effects of exposure to spores from forest and suburban habitats on founding pairs. Behavior of founding pairs in the presence of spores, and fungistatic effects of exocrine glands on spore germination were also examined. Forest *Beauveria* spores caused higher mortality than *Metarhizium* spores in no-choice exposures and sublethal effects were also observed. When founding pairs were given a choice to establish in chambers with or without spores, they did not avoid spores. In choice tests, *Metarhizium* spores caused higher mortality than *Beauveria*. *Metarhizium* germination was not affected in the presence of termite body extracts. *Beauveria* germination decreased in the presence of termite head extracts but increased in the presence of termite abdomen extracts.