

# Hiding in Plain Sight: Alteration of Plant Odours with Granite Dust

Maclsaac M, Faraone N, Hillier NK

## Background

Insects are able to locate plants through various means, including the detection of specific volatile compounds emitted by plants. The invasive lily leaf beetle (*Lilioceris lili*) is one such pest, defoliating various horticultural varieties of lilies and also posing a threat to native species such as *Lilium canadense*.



## Objectives

This project aims to determine whether the application of a granite dust bio-pesticide, produced locally by Heritage Memorial Ltd. (Windsor, NS), has an impact on plant volatile emissions and the ability of lily beetles to locate their host plants.



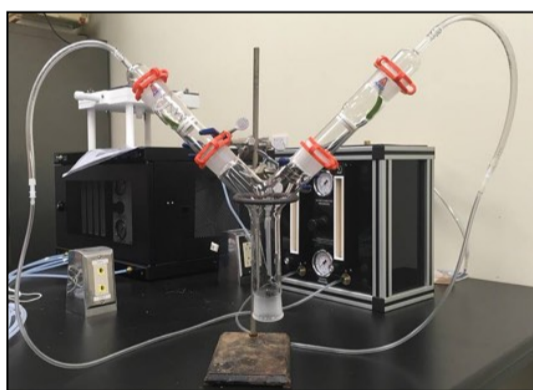
## Volatile collection

Lilies treated with rock dust through soil and/or foliar application will be compared to untreated lilies. Plants are placed inside a sealed plastic bag, where filtered air is pumped through. Plant volatiles, pushed out and trapped in a cartridge, will be analyzed via gas chromatography-mass spectrometry (GC-MS) to evaluate putative variations in chemical volatile production between treatments.



## *L. lili* response to the dust:

Y-tube assays will be performed to study behavioral responses to dust treatments. The lily beetle is exposed to two different treatments and will move toward its preferred odor stimulus. Physiological responses will be evaluated using gas chromatography-electroantennography, where insect antennae are exposed to plant extracts.



## Implications:

Inert granite dust is an alternative to conventional pesticides and offers a sustainable way to use this waste by-product. Understanding impacts of this product on volatile emissions will assist in developing a management plan to identify optimal pest control methods and timing of dust application. This project will also help to further understand how insects interpret variations in plant biochemistry.



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