Renseignements détaillés

A novel biofungicide derived from black soldier fly (Hermetia illucens) larval frass

Détails de la recherche

Année de concours :	2018	**Année financière :**	2020-2021
Nom de la personne :	Vandenberg, Grant	**Institution :**	Université Laval
Département :	Sciences animales	**Province :**	Québec
Montant :	190 850,00	**Versement :**	1 - 3
Type de programme :	Projets stratégiques - De groupe	**Comité évaluateur :**	Projets stratégiques - Environnement et agriculture
Sujet de recherche :	Phytopathologie	**Domaine d'application :**	Produits chimiques agricoles (engrais, pesticides, herbicides)
Chercheurs associés :	Derome, Nicolas Dorais, Martine	**Partenaires :**	Premier Tech Ltd

Sommaire du projet

Consumers are increasingly seeking quality produce grown under systems respecting progressively more restrictive environmental guidelines. Organic amendments of diverse origin such as composts or manure are considered a good source of nutrients and are often used as a source of fertilization. In addition to the potential environmental benefits related to the use of organic amendments, they also have demonstrated an ability to control soil-borne plant pathogens. The effectiveness of composts in the suppression of plant diseases has been described in the literature. Considering that various vegetable and ornamental plants are susceptible to fungal diseases caused by a multitude of pathogens, the use of extracts from organic materials may prevent losses resulting from such diseases.Recent efforts by our research group have developed strategies for biotransforming waste organic residues using insect larvae. This approach upcycles food wastes to produce valuable animal feed ingredients. A secondary product of this bioprocess is larval excrement called 'frass', which is rich in organic matter in addition to maco and micro elements that have proven valuable as soil amendments for horticultural crops. This bioresource is also a rich source of unique microbial communities. Recent work from our lab has demonstrated that frass from our insect larvae bioconversion facility significantly inhibits the growth of Pythium ultimum, and economically-important plant fungal pathogen. Filter-sterilization of the frass media resulted in the elimination of this effect, demonstrating that of fungal growth inhibition is a microbial-mediated phenomenon. The current proposal seeks to demonstrate the impact of insect larval frass on disease suppressiveness in horticultural crops, to understand the impacts of frass characteristics on the augemented phytoprotective effects in treated plants. We will employ next-generation metagenomic sequencing to identify microbial communities involved in the observed effects. This work will pave the way for the development of novel biofungicides to assist producers to pursue enhanced sustainable industry development. Les consommateurs recherchent de plus en plus des produits de qualité cultivés dans des systèmes respectant des directives environnementales de plus en plus restrictives. Les amendements organiques d'origines diverses tels que le compost ou le fumier sont