



Docket Number
20110315

Microbial Control Agents Patent Pending

Laboratory and field results indicated that the fungal pathogen, *Metarhizium anisopliae* #5859 can successfully control Varroa mite and the small hive beetle in honey bee colonies.

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Key Features:

Metarhizium anisopliae #5859 are highly pathogenic to Varroa mite and the small hive beetle. They are safe, do not contaminate honey and honey products and are environmentally friendly.

Field:

Crop Protection/Biological Control

Technology:

Microbial control agents

Stage of Development:

Initial development

Status:

Seeking development support and/or licensing partner.

Patent Status:

Pending

Background:

Honey bees are critical for the success of pollination-based agriculture, which produces about a third of our diet in the United States (US). Without honey bees, there will be no food, no fruits and vegetables. From an economic stand point, crop pollination by honey bees provides nearly \$24 billion each year to the US economy. Honey products and bee venom are important in health food and alternative medicine for the treatments of human diseases such as arthritis, multiple sclerosis, and other auto-immune diseases. The number of honey bee colonies in the US has drastically declined by more than 40% and colony losses occurred concurrent with an increasing demand for the pollination of fiber, fruit, vegetable and nut crops.

Statement of Problem:

The alarming loss of honey bee colonies is mostly attributed to Varroa mite and the small hive beetle. Varroa mite is also a vector of several diseases associated with the devastating disease termed "colony collapse disorder". The control of honey bee pests poses safety concerns to beekeepers, as chemical treatments leave toxic residues in honey and wax and are hazardous to public health and the environment. In addition, Varroa mite populations have developed resistance to the miticides used for control.

Potential Solution:

FAMU has developed a biologically-based fungal product which controls these two major pests of honey bees. This environmentally friendly product is also harmless to honey bee populations. Unlike chemicals, the fungal product does not contaminate honey and honey products; it is safe for human consumption and has worldwide application in increasing healthy food production.

Commercialization Status:

The fungal products are in the early development stage, and R&D is currently funded at FAMU by the National Institute of Food and Agriculture (NIFA). Future work will focus on improving the shelf-life of the product and enhancing the user-friendly delivery methods. We are seeking collaborative partners or licensees in the fungal producing companies to take these novel technologies into commercialization.