Soil Technologies Corp.
Research and Development Department

Research Report

Title: Control of *Botrytis cinerea* with Fungastop

Location: Fairfield, Iowa

Principal Investigators: Laura Tejada, Ph.D.

Test: In vitro

Date: February 2016

Abstract:
The purpose of this study was to test the efficacy of Fungastop[1] in controlling the fungus *Botrytis cinerea,* commonly known as gray mold. Petri dish assays were used to test whether Fungastop could mitigate the growth of B. cinerea in a laboratory setting. After four days, the petri dishes were examined. Results suggest that Fungastop is effective at slowing the growth of *B. cinerea* in a laboratory environment. Petri dishes treated with Fungastop had fewer colonies of *B. cinerea* develop, and prevented the existing colonies from spreading hyphae and conidia across the line where Fungastop had been placed.

Methods:
In a laboratory setting, a pure culture of *B. cinerea* was grown and a blue-tinted potato dextrose agar was prepared. Mycelia that was collected from a sporulating *B. cinerea* colony was mixed with distilled water and pipetted onto one side of each dish. A thin line of Fungastop diluted to the field application rate of 0.5% was spread down the middle of the test Petri dish using a sterilized inoculation loop. Plates were kept at approximately 22° C and left undisturbed with ambient light to allow for adequate growth.
Fungal cultures were isolated by collecting Conidia (asexual spores) from *B. cinerea* from strawberry plants and identified based on their morphology (appearance of hyphae and conidiophores). A pure culture of *B. cinerea* was then grown in the laboratory. (Photo 1)

[1]Fungastop is a natural alternative to synthetic agro-industrial chemicals with antifungal and antibacterial compounds manufactured by Soil Technologies Corp. in Fairfield, IA, USA.

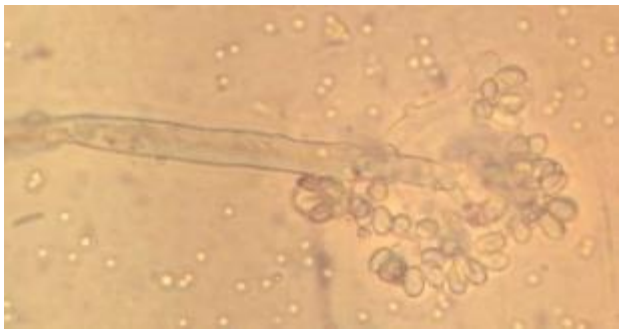

Photo 1: *B. cinerea* conidiophore with visible conidia at 400x magnification.

A blue-tinted potato dextrose agar was prepared using 24g potato dextrose, 24g agar, and 20 drops of blue dye per 1000 mL of water. The blue dye was added to enhance contrast and make mycelial growth easier to observe. The mixture was poured into 25 x 100 mm Petri dishes and autoclaved prior to the start of the experiment to reduce contamination. No antibiotics were added to the medium.

An inoculation loop was used to collect mycelia and accompanying conidia from a sporulating colony of B. cinerea, which were then mixed with distilled water in a sterile test tube. 100 µL of this solution was pipetted onto one side of each Petri dish. This technique was developed in order to prevent the conidia from being dispersed over the entire Petri dish as occurred when an inoculation loop alone was used to inoculate the dish.

A thin line of Fungastop diluted to the field application rate of 0.5% was spread down the middle of the test Petri dish using a sterilized inoculation loop. No Fungastop was added to the control plate. Plates were kept at approximately 22° C and left undisturbed with ambient light to allow for adequate growth. After 4 days, the Petri dishes were examined to observe whether Fungastop had either slowed or prevented B. cinerea growth. (Photo 2)

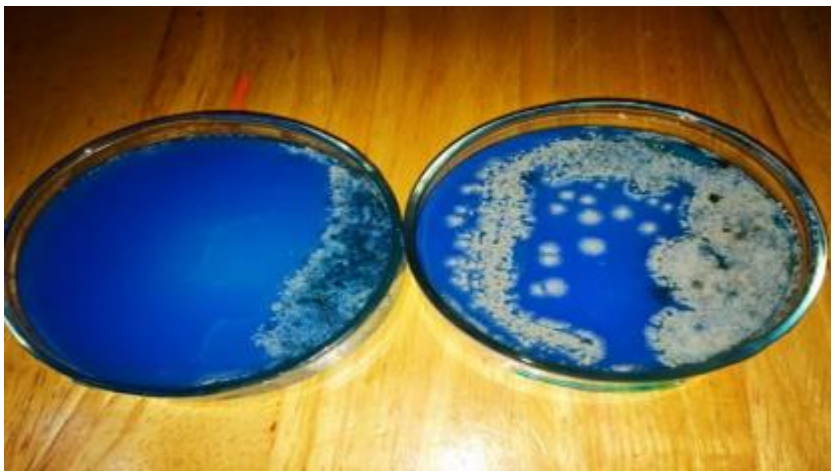

Photo 2: Petri dish with Fungastop on the left, and untreated petri dish on the right.

B. cinerea is visible as whitish against the blue background of the potato dextrose agar plates. Field rate Fungastop (0.5%) was applied in a line down the middle of the test plate, as

illustrated in the Petri dish on the left. The petri dish on the right is the control with no Fungastop added.

Results:
Results suggest that Fungastop is effective at slowing the growth of *B. cinerea*. Petri dishes treated with Fungastop (Photo 3) had fewer colonies of *B. cinerea* develop when compared to the control dish (Photo 4). Treatment with Fungastop prevented the existing colonies from spreading hyphae and conidia across the line where Fungastop had been placed.

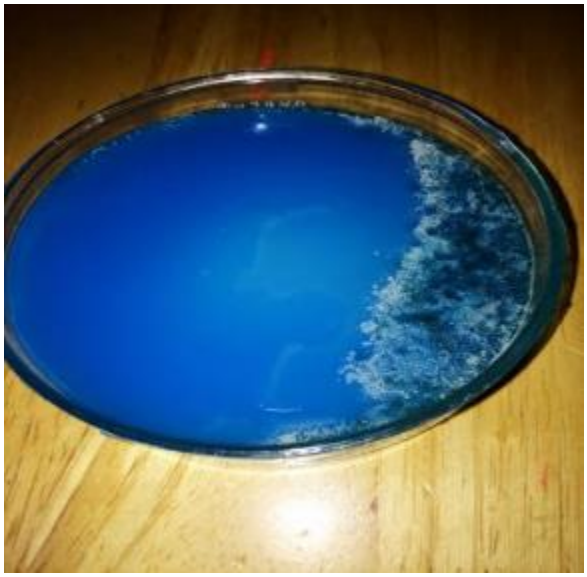

Photo 3: Petri dish treated with Fungastop

Photo 4: Control Petri dish with *B. cinerea* colonies visible throughout.

Conclusions:

Results suggest that Fungastop is effective at slowing the growth of *B. cinerea*. Petri dishes treated with Fungastop had fewer colonies of *B. cinerea*, and prevented the existing colonies from spreading hyphae and conidia across the line where Fungastop had been placed. These in vitro assays show that in a laboratory setting and under controlled conditions, which favored the growth of *B. cinerea*, the field rate dosage of Fungastop was effective at inhibiting the growth of this pathogen.