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*Bioinsecticides in Agriculture: The Method of Using Metarhizium anisopliae as Biopesticide*

The purpose of this project was to determine if the fungus *Metarhizium anisopliae*, strain F52 is a viable means of controlling widespread agricultural pests (beetles, cockroaches, tobacco hornworms). To grow and infect test subjects, the researcher activated the *Metarhizium anisopliae* in petri dishes in a water agar for seven days until the fungus was mature and formed green oval conidia. The plates were rinsed with a dilute surfactant and the active fungus was collected and the number of conidia per mL was recorded using a hemacytometer. Each insect type was infected with the fungus through their water source. The test tobacco horn worms weighed 38% less than the controls. The tobacco horn worms that were infected grew at an average percentage of 70.0% while the controls grew on average 106.8%. The weight combined with the visible evidence of worm maturity shows the effects of the fungus on the worms. There was an 8.3% death rate on the infected horn worms. The beetles tested had an average weight loss of -23.2% while the controls lost weight at an average of -7.66% . The weight loss of the darkling beetles also shows evidence of poor health due to the fungus. Looking at the cockroach data, the conclusion is inconclusive. This could be due to their large size as well as large chitinous exoskeleton. Looking at the average percentages of the test group and control group, the control group lost an average of 4.27% by mass while the test group lost an average of 5.64% by mass. This is not a very large difference, therefore leaving the conclusion on the cockroaches inconclusive with more testing needing to be done.