

Friend of Foe: Blueberry Pollinators as Mummy Berry Vectors, Matthew Grieshop,
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Mummy berry, *Monilinia vaccinii-covmbosi*, is an important fungal pathogen of blueberries, that lacks effective OMRI approved fungicides. Mummy berry relies on insect pollinators to move spores from infected leaves to flowers. One reason mummy berry is a difficult pathogen to manage is how little is known about pollinator-pathogen interactions, especially pollinator identity. Identifying the pollinators responsible for vectoring the pathogen will improve our understanding of the pathogen's phenology and could contribute to improved disease management strategies. A new research model system using digital video recorders (DVRs) and video cameras was developed to investigate the pollinator-pathogen interactions of mummy berry in blueberries. Video cameras were set up in each of three southeast Michigan blueberry fields during spring 2008. At each site cameras were focused on one of three types of subjects: shoot strikes (source of mummy berry secondary spores), flowers, and and healthy leaves. Approximately 5,400 hours of video footage was recorded in the field, and then reviewed and analyzed in the laboratory. Insects in the video clips interacting with the subjects were identified to "morpho" species, and behavior was categorized (i.e. approach, contact, or feed) and quantified. The broad types of insects observed in the video footage were flies, bees, ants, wasps, and beetles. Flowers had the highest number of insect interactions, and bees constituted the majority of interactions. Even though shoot strikes had a smaller number of insect interactions, a greater diversity of "morpho" species visited them as compared to flowers or healthy leaves. Flies constituted the majority of interactions with shoot strikes. Bees contacted shoot strikes in 3% of interactions and flowers in 68% of interactions. Flies contacted shoot strikes in 49% of interactions and flowers in 28% of interactions. The rarity of bees physically contacting shoot strikes suggests that they are not important vectors of the mummy berry pathogen. Flies may be providing pollination service to blueberry plants, but they are also the most likely vectors of mummy berry due to frequently contacting shoot strikes and blueberry flowers. Thus, organic blueberry growers may not need to be concerned with commercial or native bees contributing to outbreaks of the mummy berry pathogen. This data adds to the understanding of the phenology of mummy berry and has the potential to improve disease management with further study. This field based video camera system has proven to be an invaluable tool to investigate insect-pathogen and insect-plant interactions and relationships. This research system is proving to be a valuable research tool and has already been applied to two additional organic pest management systems: mating disruption and soil surface biological control of insect and weed pests.

Pictures:

