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Second Quarterly Report

Interactions between grape berry moth and its environment affecting pest impact and management

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Main areas of accomplishment in 2nd Quarter:

This project represents the first year of a doctoral program of Ms Pragya Chalise. Ms Chalise has made progress on mastering the methods of rearing grape berry moth, and working with the Botrytis aspects of the project.

Biotic:
1) Determine nature of relationship between grape berry moth and the fungus causing grey mold, *Botrytis cinerea*
In year 1, we successfully established colonies of GBM from Virginia's Shenandoah Valley. In the end of the year, colonies suffered by introduction of a parasitic wasp, and possibly other reasons. However, we were successful in achieving adult flight, mating, oviposition, larval and pupal development, each accomplished in repeated generations. We need to generate new colonies at any rate to prevent lab-adapted strains. Chalise worked with Dr. Anton Baudoin to develop techniques to handle Botrytis inoculation. Specifically, she worked on: 1) Identification of different fungal diseases in plants with special focus on grapes, 2) Maintaining the GBM colony and identification of causative fungal pathogen. 3. Identification and maintaining culture of Botrytis, and 4) Precautions to be taken to maintain a fungal monoculture.

Abiotic:
2) Determine critical daylength required to induce pupal diapause in Virginia populations of grape berry moth
In addition to the GBM colony from Virginia, we obtained insects from the Erie region of Pennsylvania. This is the strain used in earlier Pennsylvania work on induction of diapause. Because adaptation to specific geographical areas is key to this objective, we will need to obtain fresh material in the coming season in order to compare with the Virginia population.

3) Is management of grape berry moth improved by a model based on spring pheromone trap captures?
This objective was not worked on in the first two quarters of the project.

Fig. 1. Plastic rearing tray for grape berry moth larval development. Infested berries are maintained above a metal grid, which allows pupae to exit fruit and reach pupation medium (paper).

Fig. 2. Pail with screen top where adult grape berry moth are allowed to emerge from pupae, and oviposit on grape clusters suspended within.