

Experiential Learning in IPM using Spotted Wing *Drosophila* as a Model System

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My AAP scholar project will meet the Agri-Food Systems priority by providing hands on training on the development of Integrated Pest Management (IPM) monitoring and or cultural control tactics and the development of proposals and research/extension projects to be carried out in the scholar's home country. While at MSU the scholar will collaborate on ongoing research developing monitoring programs for Spotted Wing *Drosophila* (*Drosophila suzukii*) (SWD) a serious pest of temperate small fruit in Asia, the Americas, Europe and Africa. SWD will provide an excellent model system for the AAP scholar, because we can develop research under both field and laboratory environments and it has a similar life history to numerous fruit flies that attack tropical fruits and vegetables (*Bactrocera* spp. flies).

Research on the development of monitoring systems will involve laboratory evaluation of prototype insect traps as well as baits based on yeast volatiles and fruit wastes. A unique aspect of this research is that we are targeting the insect during the Fall, Winter and Spring with the goal of providing growers with a means of predicting when during the growing season SWD is likely to begin damaging crops. This is very meaningful research because growers in Michigan are beginning management programs "blind", leading to either pest outbreaks or the over application of insecticides. As part of this research we will evaluate novel trap designs made from readily available materials and baited with yeast/sugar mixtures and or rotting fruit wastes using both laboratory and field approaches.

Recent research has demonstrated that SWD readily reproduces on a wide range of fruit wastes in the Fall and Spring months prior to the availability of fresh fruit on farms. Thus the AAP scholar will collaborate on research evaluating cultural controls involving fruit wastes. These approaches will include: exploring whether Fall, Winter and Spring traps using rotting fruit wastes could be used to intercept SWD before it moves into fruit fields and the development of fruit waste sanitation protocols (i.e composting) to limit the development of SWD on fruit wastes.

Throughout their time at MSU I will also mentor the AAP scholar on development of scientific publications as well as grant proposals. My expectation is that the scholar will produce at least one co-authored paper based on research collaborations and identify and develop at least one grant proposal that addresses a serious pest management problem in their home country. Thus, the mentoring I provide will include: experimental design, scientific writing and how to identify relevant funding agencies. By working directly with myself and one or more of my graduate and undergraduate research assistants the AAP scholar will be provided opportunity to develop their own mentoring strategies for when they return to their home country. I will also provide the AAP scholar with the opportunity to make presentations in one of the two regular courses I teach or at events associated with the MSU Sustainable Food and Farming Systems program (I serve as the director for this program).