

The Plants: Impatiens and other floriculture crops:

Host plant resistance: Host plant resistance is the ability of plants to withstand or mitigate attack by insects and is an underutilized alternative to chemical applications. Our laboratory has successfully developed the tools, including a reliable source of aggressive insects, stringent evaluation protocols, and diverse plant germplasm, necessary for an effective host plant resistance-breeding program. The goals of this program are to identify, isolate, and incorporate resistance components into floriculture crops. Using the established thrips colony, plants are inoculated with multiple thrips vacuumed into vials using a modified aspirator (Cloyd et al. 2001). A visual rating scale is used to estimate the amount of feeding damage by thrips along with an image analysis system to quantify feeding damage (Herrin and Warnock, 2002). The development of these evaluation methods is significant because it allows us to efficiently screen crops for resistance. Impatiens cultivars and wild types manually inoculated with thrips express varying levels of resistance (Herrin and Warnock, 2002; Warnock, 2003). This is significant because variation to feeding by thrips indicates that enhancing resistance is possible through breeding and selection. We have developed impatiens populations segregating for resistance to feeding by thrips (US Patent # #6,924,416 for technique on developing resistance to western flower thrips in impatiens crops, 2005). This is the only known impatiens germplasm with improved levels of resistance to feeding by thrips. Proposed research with collaborators will isolate the components responsible for resistance in this impatiens population and identify molecular markers associated with resistance.