Utilizing IPM PIPE as an Early Detection and Monitoring Tool for Thrips

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Project Summary

Exotic, invasive species cost the U.S. billions annually in eradication, mitigation, and management strategies. Federal and state regulatory entities inspect suspect plant material and provide the appropriate policies that target and restrict movement of high-risk materials; however, staffing limitations and commerce demands only permit a small amount, approximately 3%, of materials to be inspected. Subsequently, numerous exotic species establish each year in the U.S. Thrips (insects in the order Thysanoptera) are excellent invaders due to their small size, cryptic habits, and propensity for hitchhiking on plants or plant products through global trade patterns. Specifically, at least 1000 thrips samples on average are intercepted annually in plant shipments arriving in the U.S. (Morse and Hoddle 2005).

A recent thrips invader, the chilli thrips, *Scirtothrips dorsalis* Hood was found to be established in Florida's landscape in 2005. Due to its widespread distribution in Florida, it is likely to spread via trade and travel pathways to other states across the southern U.S. Subsequent to its detection, it has become a pest of increasing significance for landscape managers, and potentially threatens vegetables and agronomic commodities, such as cotton. *Scirtothrips dorsalis* has been reportedly intercepted in plant shipments to other states, but established populations have not been confirmed. Unexpected pest outbreaks can suddenly disrupt existing integrated pest management approaches in ornamental, agronomic, and vegetable crops, resulting in extensive crop loss to growers or excessive, preventative-oriented pesticide applications. Unnecessary pesticide applications should not only be avoided for environmental reasons, but many thrips pests are known for their abilities to develop pesticide resistance populations. A *S. dorsalis ipm*PIPE during 2008 will critically assist in promoting an early detection, integrated pest management approach.

Scirtothrips dorsalis is an example of an invasive species that will likely be accidentally moved through the U.S. via shipment of ornamental plants; and thus serves as an excellent model organism for monitoring the spread of an invasive, microarthropod species. The *ipm*PIPE platform provides a valuable framework for an organized, extension-based effort to assist ornamental state commodity specialists in providing optimal, reduced risk recommendations to clientele groups. The *ipm*PIPE with *S. dorsalis* will focus on 1) ornamental crops as a sentinel monitoring commodity for the movement of this new invasive species and 2) cotton as an agronomic crop at risk from its introduction. Ornamental crops will be extensively monitored every two weeks during the active growing season (i.e. 6 months to year-round) in states not known to have established *S. dorsalis* populations, including: South Carolina, Georgia, Alabama, Mississippi, and Texas. Each state will provide at least biweekly commentary regarding the occurrence, populations, and extension recommendations in their state pertaining to *S. dorsalis*. Florida will extensively be involved in utilizing the *ipm*PIPE portal for links to up-to-date management information, new host records, and other status reports as a state with an established *S. dorsalis* population. The public interface mapping of *S. dorsalis* data will be generalized for landscape ornamentals, but a complete database of potential hosts will be available to the extension specialists on the restricted portion of the website, with host-specific information added to the public interface at the discretion of the state

specialists. The potential of *S. dorsalis* to move into an agronomic crop, cotton, will also be assessed with *ipm*PIPE. Seedling cotton and early to full bloom cotton will be sampled twice for designated sites. The following participating states will be responsible for providing extension commentary based on field observations: Alabama, Arkansas, Georgia, Mississippi, South Carolina, Tennessee, and Texas.

In summary, our *S. dorsalis ipm*PIPE.proposal immediately delivers a mechanism for communicating (i.e. specialist-to-specialists and from the specialist to the public via the restricted and public WWW sites, respectively) and detecting invasive pests for two major commodity groups-ornamentals and cotton. Expanding *ipm*PIPE to other commodity groups will further enhance its utility and awareness of available resources by end-users. As commodity groups interested in invasive species issues utilize *ipm*PIPE services, it is anticipated that ongoing monitoring efforts will be self-sustaining or readily supported by stakeholders interested in a regional/national perspective extension interface system available to *ipm*PIPE clientele.