Can Western Flower Thrips be Managed Without Insecticides?

Western flower thrips (WFT) is the most damaging insect of greenhouse ornamentals. It feeds on many plant species, causing cosmetic damage and transmitting viral diseases (Fig. 1). This insect is a particularly challenging pest to control because of its tendency to hide in crevices and avoid exposure to pesticide sprays, which are often used. The thought came to us that ultra violet light, often used to eliminate dangerous microbials in areas with food and in laboratory settings with sensitive investigations might actually kill thrips. Why not? If it didn’t work against adult thrips because of their tough outer protective coverings then maybe it might work against the immatures with their softer outer layers. This challenge was initiated 18 months ago with financial help from the American Floral Endowment.

It is our pleasure to report that excellent progress has been made. With help from scientists at Rensaleer Polytechnical Institute (RPI) in New York we constructed a special chamber to allow us to make precise UV treatments without exposing our own eyes to UV light. The next step involved exposing WFT adults and immatures to different dosages of UV. We actually found that at specific levels of UV both adults and immatures were killed. But what about the
impact of these levels of UV on ornamental plants? We randomly selected 5 plants species: roses, African marigolds, Portulaca, mums and Calibrachoa. We tested the impact of different dosages of UV on the immature and flowering stages of each species. Except for the Portulaca, all the other species showed zero damage from the UV exposures. They were saleable. The Portulaca almost immediately dropped all of its leaves but within 3 weeks they had refoliated and appeared normal and healthy (Fig. 2).

Results from our initial efficacy trials indicated that at the most effective dosage of UV light a small percentage of female thrips did survive. It became evident that the survivors fecundity (ability to lay eggs) might be seriously impacted and that they might NOT be responsible for population increases. This was deemed a high priority and we decided to test this hypothesis. Thrips were treated with sublethal dosages of UV light and their egg laying ability carefully monitored. Results indicated that thrips exposed and survived the UV treatments laid fewer eggs than the controls and the total egg laying period was significantly shorter than normal. We feel that female fecundity is reduced to the point where overall WFT populations are reduced.