REDUCING JAPANESE BEETLE IN RED RASPBERRY

PS-300 Lab Spectroradiometer & MI-220 Infrared Meter

Researchers at Pennsylvania State University used an Apogee PS-300 spectroradiometer to measure the spectral distributions in high tunnels with different plastic coverings. The transmittances at each wavelength within UV-B (280-315 nm), UV-A (315-400 nm), and visible (400-700 nm) light ranges were summed and compared to outside light levels and were expressed as percentage transmittance for each plastic within each of these ranges. An Apogee MI-220 infrared radiometer meter with a narrow 18-degree field of view was used to measure foliage temperatures. The research was published in the journal of HortScience in January 2019.

The Japanese beetle is a pest that came to the eastern United States more than 100 years ago, and they tend to be most active in the field in full-sun conditions. The plastics on high tunnels can influence the amount and spectral distribution of solar radiation inside the tunnel, which could affect insects. Researchers evaluated the influence of plastics with different spectral transmittance properties on Japanese beetle populations on high-tunnel raspberries. They also examined data collected on foliage temperature to evaluate whether the plastics were associated with temperature changes that might affect plant growth and Japanese beetle populations indirectly. The researchers found that beetles responded to UV-A radiation under the plastics. This research has practical implications: high tunnels have many benefits including disease control and season extension, and UV-blocking coverings on raspberry production may help growers avoid sprays.

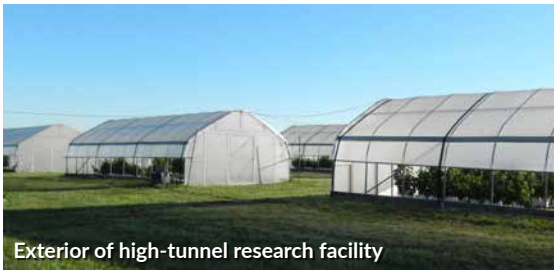
Application Summary

Summary
Reducing Japanese beetle damage on raspberries with UV-blocking plastic.

Apogee Sensors Used
PS-300 Spectroradiometer

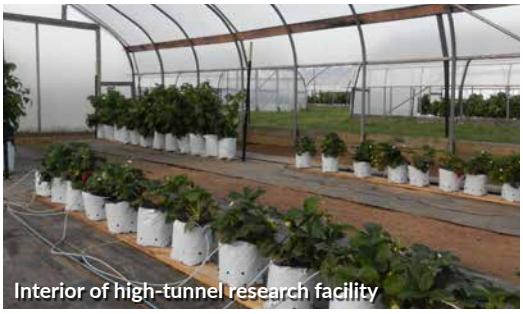
Contributing Organizations
Pennsylvania State University

Reference Article
Cramer, M. E., Demchak, K., Marini, R., & Leskey, T. (2019). UV-blocking High-tunnel Plastics Reduce Japanese Beetle (Popillia japonica) in Red Raspberry. HortScience, 54(5), 903–909. https://doi.org/10.21273/hortsci13820-18



Exterior of high-tunnel research facility

Red Raspberries



Interior of high-tunnel research facility

Rev: 1-Jun-2021