

## **UATR-FTIR AND HPLC ANALYSIS OF STICKY DEPOSITS**

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### **Abstract**

The Universal Attenuated Total reflectance Fourier Transform Infrared (UATR-FTIR) and the High Performance Liquid Chromatography (HPLC) instruments were used to analyze: (1) artificial honeydew mixes, (2) honeydew contaminated cotton.

With a matching coefficient of 0.91, the FTIR spectra of reconstituted whitefly honeydew (45% of trehalulose) and aphid honeydew (1% of trehalulose) are not significantly different. Furthermore, with a matching coefficient between the FTIR spectra of whitefly honeydew and pure hydrated trehalulose of 0.92, pure trehalulose and whitefly honeydew are not significantly different either. Therefore we can hypothesize that the UATR-FTIR spectroscopy detects only trehalulose vibrations.

The analysis of the scanning electron microscopy micrographs of artificial whitefly and aphid honeydew mixes revealed that trehalulose has the tendency to coat all other sugars present. Therefore, as with the UATR-FTIR spectroscopy the IR beam does not penetrate more than 2  $\mu\text{m}$  the only sugar detected is the trehalulose. This could explain why we could not precisely distinguish between whitefly honeydew and aphid honeydew using UATR-FTIR.

The HPLC analysis of sticky deposits on the High Speed Stickiness Detector aluminum foil showed that for the cotton contaminated with whitefly honeydew, trehalulose was the dominant sugar in the deposits on the aluminum foil. However, for the cotton contaminated with aphid honeydew, other unknown compounds stick on the aluminum foil at high temperature of the H2SD hot plate (53°C) but not at low temperature (27°C).

A complete analysis of the results will be published in the near future.