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High-Speed Stickiness Detector Measurement: Effect of Temperature Settings and Relative Humidity

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We selected 150 cotton (*Gossypium hirsutum* L.) bales representing a wide range of stickiness and types of contamination from whiteflies, aphids, and physiological sugars. These samples came from three different growing regions: one known to have large whitefly populations and very few aphids (Area 1), one where both types of insects coexist (Area 2), and one where large populations of aphids exist with very few whiteflies (Area 3). We investigated the effects of the relative humidity of ambient conditions and of the temperature of the hot plate of the high-speed stickiness detector on cotton stickiness measurement. When we lowered the relative humidity (from 65% \pm 2% to 55% \pm 2%), the high-speed stickiness detector readings were significantly lower: 23.2% (on the square root transformed data). We also studied the effects of hot plate temperature settings of the highspeed stickiness detector; nearly all contaminated cottons that were sticky at 53°C were stickier at 67°C. We noticed no interaction between the growing area and temperature. However, at low temperature settings (34°C and 27°C), we noticed significant interactions between the growing area and temperature. For instance, at 27°C, the high-speed stickiness detector readings were lower than the readings obtained at 53°C: 46.4% for Area 1, 54% for Area 2, and 68.7% for Area 3. This suggests that the origin of the contamination (whiteflies or aphids) may affect the high-speed stickiness detector readings.