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EFFECT OF INSTRUMENT SETTINGS ON H2SD READINGS

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Abstract

One hundred and fifty cotton bales representing a wide range of stickiness coming from several sources (white fly, aphid or both) were tested on the High Speed Stickiness Detector (H2SD) at different hot plate temperatures and cleaning roll pressures. The 150 bales were tested using the manufacturer's settings for the H2SD, i.e., 53°C for the hot plate temperature and 8.1 pounds for the cleaning roll pressure. In addition, the bales were tested using the following settings:

- 53°C for the hot plate temperature and 4.3 pounds for the cleaning roll pressure,
- 53°C for the hot plate temperature and 12 pounds for the cleaning roll pressure
- 27°C for the hot plate temperature and 4.3 pounds for the cleaning roll pressure,
- 27°C for the hot plate temperature and 12 pounds for the cleaning roll pressure.

The minimum cleaning roll pressure setting, 4.3 pounds, was selected because at lower pressure the aluminum foil is not cleaned efficiently. The maximum cleaning roll pressure, 12 pounds, was selected because at higher pressure the aluminum foil could be damaged.

The results obtained showed that:

- On the H2SD, the attachment force honeydew-aluminum foil increases with increasing trehalulose concentrations.
- The relationship H2SD at 27°C vs. 53°C is non-linear for both cleaning roll pressures (4.3 and 12 pounds). This is probably due to the saturation of the image analysis system. The sticky points are too close from each other to be separated by the software.
- There is a marked interaction between H2SD readings at different temperature and types of contamination. Cotton contaminated with aphid honeydew and having high H2SD readings at 53°C had, in general, very low H2SD readings at 27°C.
- There is no interaction between the types of sugar contamination and H2SD readings for the two cleaning roll pressures tested.
- At 27°C, the highest pressure gives lower H2SD readings (20% in average on raw data). Some sticky spots are removed because of the low attachment force sticky deposit-aluminum foil at 27°C.
- At 53°C, the highest pressure gives higher H2SD readings (8% in average on raw data). The higher cleaning efficiency at this pressure seems to separate merged sticky spots.