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Mitigation of Whitefly Honeydew Levels on Cotton Lint via Thermal and Citric Acid Treatment

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Contamination of cotton lint by insect honeydew can interfere with carding, roving, and spinning processes at the mill, and thus presents a major concern for the textile industry. Several methods exist for the detection of insect honeydew on cotton lint, but there are currently no methods available for the remediation of insect honeydew contamination. The objective of this study was to determine the effectiveness of a heat-activated catalyst in decreasing the honeydew level of a contaminated cotton sample. Cotton lint heavily contaminated with whitefly honeydew was treated with citric acid and subsequently subjected to elevated temperatures for varying periods of time. Sugar concentrations on the cotton lint were analyzed as a function of temperature and heat duration using high-performance anion-exchange chromatography. Levels of honeydew sugars decreased for catalyst-treated cotton compared with untreated cotton when heated at a temperature of 160°C. Chemical treatment of contaminated cotton in conjunction with elevated temperatures may be the basis of a potential method for the mitigation of stickiness on cotton prior to processing at the mill.

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