HARVEST DATES AND TREATMENTS AFFECT STICKINESS AND SUGARS IN WEST TEXAS COTTON VARIETIES

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Abstract

Field experiments were done in 1994-1998 to determine the effects of harvest date and harvest-aid treatment on stickiness in diverse varieties and lines being evaluated for West Texas. Insects were aggressively controlled to ensure plant sugars were the only contributors to sticky cotton. In 1994 treatments were early harvested with ethepon (Prep), a boll opening agent, and late harvest following a killing freeze. In 1995, and in subsequent years, timely harvest with paraquat (Cyclone), a crop desiccant, was included. Fiber stickiness was determined by mini-card in cooperation with the International Textile Center in all five years. In 1994 and 1995, reducing substances were measured in the lint. Concentrations of glucose and sucrose in the lint were measured in 1996-1998.

Rainfall shortly before harvest totally eliminated stickiness and decreased reducing sugar levels in three of the five test-years, indicating that under typical conditions, stickiness is a rare event in West Texas. In the other two years, fiber maturity increased and reducing substances and/or glucose levels decreased with date of fiber collection. Contrary to expectations, fiber stickiness was not found with the early-harvest treatment, nor did stickiness correlate with reducing sugar nor glucose concentrations. Rather fiber stickiness was found to be highest when cotton was harvested after a killing frost. These findings suggest the potential for stickiness in West Texas cottons can be reduced by timely use of harvest aids and early harvesting. Such practices would also tend to reduce the possibility of stickiness due to late-season aphids (*Aphis gossypii* Glover).

An analysis combining genotypes across years, in which positive mini-card ratings were found, suggests the 'Deltapine 90' and 'Tamcot HQ-95' had a relatively high propensity for stickiness relative to other genotypes. In contrast, the stickiness potential for TAES G-2 and TAES Stovepipe was low, and that for 'MD-51ne' and 'Paymaster Tejas' was intermediate. Deltapine 90 may be predisposed to late flowering, and therefore production of immature bolls at harvest, on the High Plains environment. TAES Stovepipe may have a low potential for stickiness because its columnar structure could provide for rapid transport of plant sugars. Because the early genotype Tamcot HQ-95 and TAES G-2 differ significantly in stickiness ($P<0.05$), the character of earliness alone does not appear to provide protection against a potential for stickiness.

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