

**SEED COTTON FIRES IN  
STRIPPER HARVESTED COTTON**

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**Abstract**

Seed cotton fires have become a major concern in all areas of the cotton industry including the producer, ginner, dealer, manufacturer and insurance carrier. Surveys of cotton fires across Texas in 1995 indicated that 21% of the fires were found in pickers, 20% in strippers with no field cleaners, and 59% in strippers with field cleaners. Seed cotton is insured from the time the cotton is in the harvester basket until it goes into the gin. The coverage starts again as the lint bale exits the gin and continues until it reaches the warehouse. Industry reports indicate that 90% of all cotton seed fires from 1993 to 1995 occurred prior to ginning. The number of fires reported in baskets also increased during this period where 8%, 45% and 53% of the fires prior to the gin were found in the harvester basket for the years 1993, 1994 and 1995 respectively. The rest of the fires were found after the module was built. One of the major concerns of the industry is the trend in fires from 1993 to 1995 where the number of claims were 72% more in 1994 and 164% more in 1995 when compared to the claims in 1993. One gin reported a loss to premium ratio of 2.8 to 1 for 1995.

Causes of fires in cotton strippers can be divided into three areas: undesirable foreign matter, mechanical failure, and lack of equipment maintenance. The undesirable foreign matter includes stumps, rocks, wire, weeds, and residue from installation of center pivot irrigation systems. This foreign matter is picked up by the heads on the cotton stripper and becomes wedged in the harvesting, conveying or cleaning system on the harvester. The contact of foreign matter and the rotating mechanical devices on the stripper results in a rubbing action which causes intense heat and in turn a seed cotton fire. Mechanical failures include bearing failure, loose sheet metal, and loose feed bar. Bearing failures on the cotton stripper are not uncommon, since these machines contain a number of rotating shafts in the harvesting, conveying and cleaning systems in addition to those used for transmitting power. Some of the bearings operate under very harsh conditions and are more prone to failure than others. Bearing failure on the shafts of the saw cylinders and particularly those on the doffer in the field cleaner have been the source of fire on several machines. Failure of these bearings can cause heating and combustion of the lint. Loose sheet metal due to fastener failure or worn parts can result in the sheet metal coming in contact

with rotating equipment causing excessive heat and fire. A loose feed bar located above the primary saw cylinder has also been the cause of several fires. A number of fires were found to be the result of improperly maintained exhaust systems and lack of general maintenance of the harvester. Cleaning of the machine each day to remove foreign material can help eliminate this hazard. If not properly cleaned, the foreign material can build up around rotating equipment causing excess friction and fire. Once the smoldering material breaks loose, it is picked up at the intake of the fan and introduced into the stream of conveyed cotton.

Reducing the incidence of fires on cotton strippers will require solutions from simple daily maintenance to the redesign of some components on the machine. Daily cleaning of the machine will make maintenance easier and allow inspection of equipment for worn or damaged parts. Physical inspection of the bearings after short periods of operation will help determine if the bearing is heating and/or near failure. Proper operation of green boll separators and header height controls will reduce foreign material picked up by the stripper head. Elimination of wire flags for marking areas of the field will help reduce problems with wire. Encouraging contractors to clean up areas of the field where equipment has been installed will reduce bolts, nuts and other metal components as well as wire being left in the field where it can be picked up by stripper.

Time lost to the producer and ginner during the harvest season due to fires is one concern, but of greater concern is that the insurance coverage from the basket to the gin may become excessively expensive along with large deductibles. It is also possible the insurance could be withdrawn thereby resulting in no coverage of cotton stored between field and gin.