# Cotton Replant Decisions In Missouri And South Carolina

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Estimating potential yield loss from early season plant damage in a cotton field can be difficult. Reduced cotton plant populations can be caused by many factors including hail storms, seedling disease infestations, and cut worms feeding. Early-season leaf removal can reduce cotton yield and delayed maturity. Chronic stand losses can occur when hail produces leaf and stem damage followed by wet weather which promotes seedling diseases attacking the roots. The first part of making an estimate of yield loss is measuring stand reduction based on the number of plants lost from an established stand. The second part is estimating leaf defoliation, stem damage, node removed or cutoff.

Field experiments were conducted in 2007 and 2008 at Portageville, Missouri and Florence, South Carolina to evaluate using row skip measurements and plant density to estimate cotton yield losses from early-season destructive events such as hail storms, cutworms, and seedling disease. Plots included checks with 4 seeds planted per ft row (38 inch spacing) and treatments with 50%, 60%, 70%, 80%, and 90% cotton stand losses. Methods of reducing stand were (1) blending glyphosate-resistant cotton seeds with susceptible seeds and spraying glyphosate herbicide on plants (2) hand thinning plants based on random numbers and (3) planting low rates of seeds. Glyphosate spraying and hand thinning were done at early square growth stage. Missouri cotton was furrow irrigated and South Carolina was non-irrigated. Final plant populations in check plots averaged 2.6 plants per ft row across locations. Yields were low in 2007 in South Carolina because of drought. No significant differences in yield were found between stand reduction methods. Relative to the check, yield losses in South Carolina were 15 to 18% in the highest stand reduction treatments. The greatest yield losses occurred at Missouri in 2008. The 10% stand treatment averaged 714 lb lint acre-1 (51%) less lint than the check. In 2007, micronaire, and fiber strength were significantly higher from thin stands in Missouri. The best regression model for estimating yield loss from stand reduction combined plant population and >4 ft long row skips. Number of long row skips performed slightly better than plant population alone. Regression models based on shorter row skips were poor fits to cotton yield.

To assess the total impact of an event such as hail, the impact of both dead and injured plant damage in a cotton field should be considered. The research from Missouri for stand loss showed that the National Crop Insurance hail damage adjustment charts are very accurate on a percent yield loss basis compared to the check. The results from South Carolina indicated that the yield loss is not as severe as the charts predict. Δ

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