THE EFFECT OF REMOVAL TIME AND DENSITY OF VOLUNTEER CORN POPULATIONS ON COTTON GROWTH AND YIELD

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Abstract

Since the introduction of herbicide-resistant cropping technologies, there has been an increase of herbicide-resistant volunteer plants from the previous growing season. Volunteer plants can potentially cause yield reductions and may impact harvest efficiency. In 2012, 73% and 80% of corn and cotton acres planted were herbicide-resistant. Glyphosate resistant volunteer corn has been reported to cause cotton height and yield reductions from season long interference, in a glyphosate based herbicide system. Three experiments were conducted in Mississippi in 2011 and 2012 to determine when volunteer corn should be removed to prevent cotton yield loss at a low (4 plants/12.2 m row), medium (20 plants/12.2 m row) and high (40 plants/12.2 row) corn density. Corn was hand planted into the center two rows of a four row cotton plot. Corn was removed by hand at 0, 1, 2, 6, 8, 10 and 12 weeks after emergence or remained for season long interference. Cotton height decreased at the medium and high corn densities and as the time of removal after emergence was prolonged. Seed cotton yield decreased from 2,540 lb/a at the low corn density to 1,890 lb/a at the high corn density. Seed cotton yield reduction was not affected at the low density at any removal time; however, corn removed after 6 and 4 weeks caused significant seed cotton yield reductions at the medium and high corn densities, respectively. Corn density and removal time affected cotton height and yield. Seed cotton yield was reduced when volunteer corn remained in the field past 4 to 6 weeks at the higher volunteer corn densities. However, because the corn was hand removed, the results of the experiment do not account for the lag time of plant death following a herbicide application, nor does the yield account for picker efficiency.