

EFFECTS OF VOLUNTEER CROPS ON GROWTH AND YIELD**Reed C. Storey****Daniel B. Reynolds****J. Trenton Irby****Chad L. Smith****Ryan J. Edwards****Amber N. Eytcheson****Mississippi State University****Mississippi State, MS****Abstract**

Since the introduction of glyphosate-resistant crops (GR) in 1996, GR crop acreage has increased steadily. With the increase in GR crop acreage and the number of GR crops that are available, producers may begin seeing volunteer crops from the previous growing season emerging in their current crop. Since a weed is defined as a plant that causes economic, ecological, or aesthetic harm, these volunteer plants could be classified as such. Producers need to know what population of these plants will result in yield losses when allowed to compete with the current crop for specific periods of time.

The objective of this study was to determine how long a low density (1 plants / 10ft), medium density (5 plants / 10 ft), and a high density (10 Plants/ 10 ft) of volunteer corn plants could compete with a cotton crop before resulting in lost yield due to competition.

The study was conducted at two locations: Starkville, MS at the R.R. Foil Experiment Station and in Brooksville, MS at the Blackbelt Experiment Station during the 2011 growing season. The cotton variety planted Deltapine DP 0924 B2RF @ 48,000 seeds/acre and the corn variety that was planted for competition was Pioneer P1184HR. Plot sizes were 4 rows 38" wide x 40 ft long. Corn plants were hand planted in the center two rows of each plot at the specified densities. Treatments were arranged as a two factor factorial in a randomized complete block design with four replications. Factor A was the low, medium, and high populations and Factor B was time of removal 0, 1, 2, 4, 6, 8, 10, or twelve weeks after emergence as well as season long. Data collected consisted of nodes above cracked boll (NABC), plant heights (cm), and yield. The center two rows of each plot were harvested using a spindle harvester. Prior to harvest, all corn plants were removed to prevent harvest loss due to mechanical interference and to ensure that yield reductions could be attributed to the competitiveness of the volunteer crop plants.

As one would expect, plant density interacted with removal time as it related to yield. When allowed to compete full season the higher densities of volunteer crops resulted in greater yield losses than the lower populations. Yield loss was not significant regardless of population if the volunteer plants were removed by 4 weeks after emergence. The low plant population did not result in decreased yield regardless of how long it was allowed to compete with the cotton crop. The medium and high populations resulted in 37 and 56% yield loss respectively, when allowed to compete with the cotton for the entire season.