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NATIONAL PEANUT BOARD/SOUTHEAST PEANUT
RESEARCH INITIATIVE
FINAL REPORT FOR WORK
DONE UNDER RESEARCH AGREEMENT

Final report

April 30, 2007

INSTITUTION: University of Georgia

PROJECT TITLE: Peanut response to late-season glyphosate applications

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FINAL REPORT:

Field studies were conducted in 2006 to determine peanut response to glyphosate applied at 75, 90, and 105 days after planting (DAP). Rates evaluated were 0, 2, 4, 6, 8, and 12 ounces of Roundup Original- max. The experiment was a three by five factorial with four replications set up as a randomized complete block design. Studies were conducted with AP3 peanut planted at Tifton and Plains GA. Experiments were maintained weed-free by using traditional weed control methods with residual herbicides (Valor, Strongarm, and/or Cadre) and hand-weeding. No other herbicides were applied. All glyphosate treatments were applied with backpack sprayer in order to prevent mechanical damage. Visual peanut injury (on a scale of 0 to 100%, where 0% = no injury with 100% = plant death) was taken 7 to 10 days after application (DAA) after initial application and continued through out the season. At digging, samples were taken by hand-harvesting 100 pods from each plot. Pods were shelled, peanut seed mass determined, and then peanut germination tested. Plots were mechanically harvested to determine yield.

Data indicated that peanut was tolerant to glyphosate at low doses, but did exhibit stunting and chlorosis (Figures 1 & 2). Peanut injury was rate dependent when applied at 75 DAP, increasing with glyphosate dose. At 75 DAP peanut was susceptible to 6 oz/ac and greater. Glyphosate applied to peanut at 90 and 105 DAP exhibited 11 to 35 and 14 to 44% injury for rates exceeding 6 oz/ac, respectively. At 90 and 105 DAP peanut was tolerant to rates of 6 oz/ac and less. Injury to peanut included leaf drop, chlorosis, and some stand loss at rates of 8 and 12 oz/ac (Figure 3). Ratings taken prior to peanut harvest indicated that peanut did not fully recover from 75 DAP glyphosate applications at doses exceeding 8 oz/ac.

Injury data for the 75 DAP treatments was reflected in peanut seed size. As glyphosate dose increased, peanut seed size decreased at Tifton and Plains. This trend was also true for the 90 and 105 DAP glyphosate applications at Plains, but not as pronounced for Tifton. Germination was not affected by glyphosate application at either location.

Peanut yield as a percentage of the nontreated control was reflective of the reductions in seed size: increased glyphosate rate reduced yield at 75 DAP (Figure 6). Reduction in yield occurred linearly for applications made at 75 DAP with greater than 50% losses for Plains and Tifton at 12 oz/ac. This could be attributed to the timing of that application, when peanut was in bloom, or R1 stage of development. By delaying application until 90 or 105 DAP, yield was reduced 10% or greater by 8 oz/ac and higher at Tifton, and 6 oz/ac and higher at Plains.

Figure 1. (Right) Peanut Response to glyphosate at 0, 2, 4, 6, 8, and 12 oz/ac applied 71 DAP (clockwise from top left).

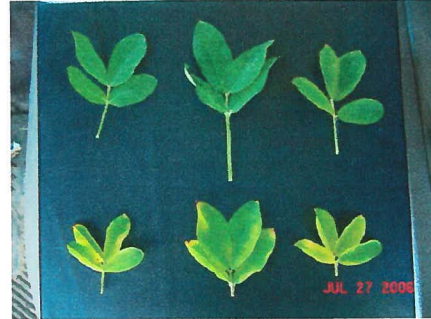


Figure 2. (Above) Peanut response to Roundup WeatherMax at 12 oz/ac applied 71 DAP (picture taken at 91 DAP).

