THE INFLUENCE OF DIOECISM IN PALMER AMARANTH ON DENSITIES OF TARNISHED PLANT BUGS IN THE MS DELTA Drew Denton Darrin M. Dodds Chase A. Samples Michael T. Plumblee

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Abstract

The tarnished plant bug [Lygus lineolaris (Palisot de Beauvois)] is the primary insect pest of cotton (*Gossypium hirsutum* L.) in Mississippi, as well as most of the Mid-Southern growing region of the U.S. In 2012, 99% of the cotton acres planted in the Delta region of Mississippi were infested with tarnished plant bugs (Williams 2013).

Palmer amaranth [*Amaranthus palmeri* (S. Wats.)], is a fast growing, broadleaf weed that is very problematic in agriculture throughout the Mid-South and Southeastern U.S. Within the genus Amaranthus, Palmer amaranth is one of 10 dioecious species that are native only to Native America (Steckel 2007). Although Palmer amaranth has invasive tendencies and a history of expansion, its presence as a major agronomic weed pest is somewhat recent (Ward et al. 2013). In 2009, Palmer amaranth was ranked as the most troublesome weed in cotton in the southern United States (Webster and Nichols 2012).

With the proliferation of glyphosate-resistant Palmer amaranth in Mississippi, along with the increasing yield loss and cost to control tarnished plant bugs, this experiment was conducted to determine whether or not dioecism in Palmer amaranth had an effect on densities of tarnished plant bugs. An experiment was conducted in 2015 in the MS Delta to determine the influence of dioecism in Palmer amaranth on densities of tarnished plant bugs. The experiment was initiated in fields with mature Palmer amaranth plants. Locations in the delta consisted of Sidon, Stoneville, Dundee, and Lula, Mississippi. Each of 5 observers randomly sampled 100 male & 100 female Palmer amaranth plants at every location. Tarnished plant bug counts were conducted by visually observing each Palmer amaranth plant. Experiment conducted as a completely random design at each location. Data were subjected to analysis of variance and means were separated using Fisher's Protected LSD at p = 0.05.

Sex of Palmer amaranth had a significant effect on number of tarnished plant bugs observed when pooled over locations with significantly greater numbers of tarnished plant bugs observed on male plants. Tarnished plant bug counts visually sampled from the heaviest weed pressure area (Dundee, MS) on male Palmer amaranth plants were significantly higher in number compared to female plants and locations. Although male Palmer amaranth plants had significantly greater tarnished plant bug counts, all Palmer amaranth should be destroyed, regardless of sex, to prevent buildup of tarnished plant bug populations that could later become a problem. Non-crop areas such as ditch banks or areas where gin trash is dispersed where Palmer amaranth thrives should be of concern due to the potential threat of high populations of tarnished plant bugs.