## **AMETRYN: A POTENTIAL HERBICIDE OPTION IN COTTON?**

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## **Abstract**

Cotton yield losses due to weed competition can be substantial. Palmer amaranth has become one of the most prolific weed species in cotton production in the United States due to increased incidence of herbicide-resistant biotypes. In 2005, glyphosate-resistant Palmer amaranth was confirmed in Georgia and since has spread throughout the cotton belt causing farmers to rely heavily on older herbicidal chemistries, multiple modes of action, and herbicides with long residual activity. Ametryn, an herbicide that is not labeled for use in cotton, provides good residual control and different mode of action than typical cotton herbicides. Ametryn also has the ability to control Palmer amaranth well. Thus the objective of this research was to evaluate ametryn in a cotton production system for crop injury as well as for Palmer amaranth control.

An experiment was conducted in 2015 in Starkville, MS and Gainesville, FL to evaluate Palmer amaranth control and another experiment conducted in 2015 in Dundee, MS and Marianna, AR to evaluate crop injury. Phytogen 499 WRF was planted in 2-row plots that were 3 m wide x 7.6 m long in a randomized complete block with four replications. Post-emergence application timings were made on 20, 35, and 51 cm cotton and on 5, 10, and 15 cm Palmer amaranth. Herbicide applications consisted of ametryn (Evik) + NIS, ametryn (Evik) + COC, and flumioxazin (Valor) + MSMA + NIS. Data collection consisted of visual cotton injury percentage 7 and 14 days after treatment, plant heights, Palmer amaranth control 14 and 28 days after treatment, and cottonseed yield. Data were subjected to analysis of variance using PROC Mixed procedure in SAS 9.4 and means were separated using Fishers protected LSD at p = 0.05. Visual crop injury was 6% greater when applications of ametryn + NIS or flumioxazin + MSMA + NIS were made on 20 cm tall cotton in Starkville. No cotton injury was observed on 51 cm tall cotton regardless of treatment at 7 or 14 days after treatment in Starkville, but injury was highest in Marianna at 14 days after treatment. No significant differences in cotton height were observed due to treatment or application timing. Applications of flumioxazin + MSMA + NIS had 7% less seed cotton yield compared to ametryn + NIS when applied to 35 cm cotton. No significant differences between herbicide treatments were observed on Palmer amaranth control in Dundee, MS. In Gainesville, FL, applications of flumioxazin + MSMA + NIS resulted in higher percentages of Palmer amaranth control, regardless of application timing at 14 and 28 days after treatment.