EFFECTS OF WEED SIZE ON SEQUENTIAL APPLICATIONS OF DICAMBA AND GLUFOSINATE

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Abstract

Commercial launch of XtendFlex cotton technology allows producers to make postemergence applications of dicamba, glufosinate, and glyphosate. Weed size is a vital component of a postemergence chemical weed control program as it helps in managing the troublesome weeds at a critical time. Weed size can effect herbicide efficacy and interactions among herbicides. Field experiments were conducted at Keiser, AR in 2019 & 2020, at an on-farm site near Crawfordsville, AR in 2019, at the Lon Mann Cotton Research Station, Marianna, AR in 2020, and at the Milo J. Shult Agricultural Research & Extension Center, Fayetteville, AR in 2020. The objective of the experiments was to determine the effects of weed size on sequential applications of dicamba, dicamba plus glyphosate, and glufosinate. All the experiments were implemented as three-factor, randomized complete block designs with factor-A being herbicide treatment (Xtendimax fb Liberty, Liberty fb Xtendimax, Xtendimax + Roundup fb Liberty, and Liberty fb Xtendimax + Roundup), factor-B being timing of sequential application (3-day and 14-day interval), and factor-C being weed size (3- to 4-inch and 14- to 16-inch) and treatments were replicated four times. A total of five-site years of data were collected. Xtendimax + Roundup fb Liberty at 3-day and 14-day interval, and Liberty fb Xtendimax + Roundup at 14-day interval provided a control above 90% on 3- to 4-inch of Palmer amaranth at 28 days after the final application (DAFA). Xtendimax + Roundup fb Liberty at 3-day and 14-day interval was found to be most effective treatment and highly consistent in controlling the Palmer amaranth of labeled and above-labeled sizes at 28 DAFA. Sequential applications caused a higher mortality at 28 DAFA to 3- to 4-inch of Palmer amaranth when compared with 14- to 16-inch of Palmer amaranth. By optimizing the multiple herbicide site of action at critical time period of weed management helps in mitigating the herbicide resistance development.