

**WEED CONTROL AND COTTON (*Gossypium hirsutum*) RESPONSE TO
COMBINATIONS OF GLYPHOSATE AND TRIFLOXYSULFURON**

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Abstract

Greenhouse and field studies were conducted to evaluate potential interactions between glyphosate and trifloxysulfuron on barnyardgrass, browntop millet, hemp sesbania, johnsongrass, pitted morningglory, prickly sida, sicklepod, and velvetleaf control as well as cotton injury and yield. In the greenhouse, glyphosate was tested at 420 and 840 g ae/ha and trifloxysulfuron at 2.5 and 5 g ai/ha on two- and four-leaf plants. Combinations of both herbicides were also evaluated at both rates and plant growth stages. Glyphosate at 840 g/ha controlled all weed species 62 to 99% and better than 5 g/ha trifloxysulfuron. Mixtures of glyphosate plus trifloxysulfuron improved LPOST control of pitted morningglory and hemp sesbania 18 to 22% when compared to glyphosate alone. In field studies conducted at two locations, glyphosate (840 g/ha) and trifloxysulfuron (5 g/ha) were applied alone and in combination to two- to three-leaf and five- to six-leaf weeds. Glyphosate controlled barnyardgrass, johnsongrass, prickly sida, and sicklepod 88 to 100% and trifloxysulfuron controlled these same species 10 to 81%. Greenhouse results were confirmed by field studies, where the addition of trifloxysulfuron to glyphosate improved control of pitted morningglory and hemp sesbania 23 and 57% compared with glyphosate alone. Combinations of glyphosate (840 g/ha) and trifloxysulfuron (5 g/ha) were applied over-the-top and postemergence-directed to three-, six-, and nine-leaf cotton in field studies at two locations. Cotton injury at 2 WAT was less than 13% for all herbicide treatments and less than 5% by 3 WAT. Number of open and unopened bolls and number of nodes per plant was not different across all treatments. Seed cotton yield ranged from 1429 to 1658 kg/ha, and only the sequential over-the-top applications of trifloxysulfuron reduced cotton yield compared to weed-free check. Mixing trifloxysulfuron with glyphosate has potential to improve control of pitted morningglory and hemp sesbania compared to glyphosate alone with little to no reduction in cotton yield.