HERBICIDE TANK MIXES FOR CONTROL OF GLYPHOSATE-RECALCITRANT KOCHIA.

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Kochia is becoming more difficult to control with glyphosate in western Kansas. Elsewhere in these proceedings, Thompson presents evidence that glyphosate-resistant kochia has developed in this region. We strongly suspect the kochia populations discussed here are resistant to glyphosate but have not confirmed this. Therefore, we refer to them as glyphosate-recalcitrant. Our objective was to test herbicide tank mixes to control these kochia populations. The test site was a field approximately 6 km north of Ingalls, KS, that had been in glyphosate-resistant crops for 4 of the last 5 yr. At this site in 2007, the producer had difficulty controlling kochia in glyphosate-resistant soybeans with repeated applications of glyphosate. Two studies (PRE and POST) were conducted at this site the entire plot area was treated with paraquat applied at 0.6 kg/ha 11 d prior to planting. At planting, kochia had recovered form the paraquat treatment. Corn was planted no till into soybean stubble. Studies were arranged in a randomized complete block design with four blocks. The PRE study had 0.83 kg/ha glyphosate tank mixed with the following treatments applied 3 d after planting (DAP): S-metolachlor atrazine at 1 + 2 kg/ha; S-metolachlor + mesotrione + atrazine at 1.8 + 0.18 + 0.7 kg/ha; acetochlor + atrazine at 2.6 + 1 kg/ha; acetocholor 1.5 kg/ha; acetochlor + isoxaflutole at 1.5 + .03 kg/ha; acetochlor + isoxaflutole at 1.5 + .05 kg/ha; acetochlor + topramezone at 1.5 + 0.12 kg/ha; pendimethalin + atrazine at 0.9 + 1.1 kg/ha; isoxaflutole at 0.03 lb/ai PRE followed by a POST application of topramezone at 0.018 kg/ha with 1% v/v coc and 2% v/v ams; or isoxaflutole at 0.03 kg/ha PRE followed by a POST application of dicamba at 0.28 kg/ha + 0.25% v/v nis. In the POST test, the entire plot area received an application of acetochlor + glyphosate at 1.9 + 0.83 kg/ha 2 d prior to corn emergence. The following POST treatments were applied 16 DAP: topramezone at 0.018 kg/ha with 1% v/v coc and 2% v/v ams; topramezone + glyphosate at 0.018 + 0.83 kg/ha with 1% v/v coc and 2% v/v ams; topramezone + glyphosate at 0.018 + 0.83 kg/ha with 2% v/v ams; dicamba + diflufenzopyr at 0.2 + 0.08 kg/ha plus 2% v/v ams; dicamba + diflufenzopyr + glyphosate at 0.2 + 0.08 + 0.83 kg/ha with 2% v/v ams; fluroxypyr + atrazine at 0.14 + 0.6 kg/ha; fluroxypyr + atrazine + glyphosate at 0.14 + 0.6 + 0.83 kg/ha with 2% v/v ams; bromoxynil + atrazine at 0.28 + 0.6 kg/ha; bromoxynil + atrazine at 0.4 + 0.83 kg/ha; bromoxynil + atrazine + glyhposate at 0.28 + 0.6 + 0.83 kg/ha; dicamba at 0.28 kg/ha with 0.25% v/v nis; dicamba at 0.6 kg/ha with 0.25% v/v nis; dicamba + glyphosate at 0.28 + 0.83 kg/ha with 0.25% v/v nis; or bromoxynil + atrazine + fluroxypyr at 0.28 + 0.6 + .07 kg/ha. Later POST treatments were dicamba + diflufenzopyr at 0.27 + 0.1kg/ha with 0.25 % v/v nis and 2% v/v ams or dicamba + diflufenzopyr + glyphosate at 0.27 + 0.1 + 0.83 kg/ha with 2% v/v ams applied 22 DAP. In the pre test single applications of glyphosate tank mixed with acetochlor alone or acetocholor in combination with topramezone or isoxaflutole failed to provide 90% control. All other tank mixes with glyphosate provided greater than 90% control. In the POST study, kochia survived the first glyphosate treatment. Topramezone alone or tank mixed with glyhposate with out COC or glyhposate tank mixed with less than 0.6 kg/ha dicamba failed to provide 90% control of these escaped kochia. Second applications of a glyhposate tank mixed with all other treatments 16 to 22 DAP provided greater than 93 % control.

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