COTTON WEED CONTROL AND CROP RESPONSE WITH DIFFERENT METOLACHLOR FORMULATIONS

J. a. Bullington
K.L. Smith
University of Arkansas - Division of Agriculture
Monticello, AR
N.R. Burgos
University of Arkansas - Division of Agriculture
Fayetteville AR
R.C. Doherty
Monticello, AR
J.R. Meier
University of Arkansas - Division of Agriculture
Monticello, AR

Abstract

Metolachlor has been used in agronomic crops since 1974. Since its inception metolachlor has been used to control annual grasses and various broadleaves. Metolachlor is manufactured in two formulations one having both R and S isomers of metolachlor and one have an increased proportion of S isomers. The S isomer has been shown to be more effective in weed control, and the removal of many of the R isomers allows less active ingredient to be applied for equal efficacy. The objective of this research was to determine the efficacy and crop response to various metolachlor formulations.

This project was made up of three trials two field studies and one greenhouse study. The field studies were both conducted at the Southeast Research and Extension Center at Rohwer, AR on a Herbert silt loam, and were designed in a randomized complete block with four replications. The greenhouse study was conducted at the Southeast Research and Extension Center at Monticello, AR, and was designed in a randomized complete block with six replications and one run.

The first study consisted eight treatments using Stalwart at 1.3 lb ai/A and Dual Magnum at 0.975 lb ai/A. Each was tank-mixed with Roundup Original Max at .77 lb ae/A and applied at three timings 3 and 12 inch cotton, and layby. The single application of stalwart or dual tank mixed and applied to 3 inch cotton showed good early season control of palmer amaranth, but control tapered off throughout the season to below 80%. The sequential application applied to 3 and 12 inch cotton provided good season long control of palmer amaranth. The sequential application applied at 3" cotton and at layby, provided tapering control from 100 to 75% prior to layby which pushed control back up.

The second study consisted of 17 treatments using Me-Too-Lachlor and Dual Magnum at six rates, from 0.5 to 1.375 lb ai/A; all tank mixed with Roundup Weather Max. Palmer amaranth control was at 100% 14 days after application (DAA), but dropped to 70% control 28 DAA, before control was increased, by a maintenance treatment of .77 lb ae/A of glyphosate. Products and rates seemed to follow the same general downward trend.

The third study, a greenhouse study, consisted of 44 treatments using Dual Magnum, Cinch, Parrlay, Stalwart, Me-Too-Lachlor, Roundup Weather Max, and Ignite 280. Necrosis was most apparent 4 DAA with necrosis rating from 0 to 25%. Also each product caused significantly more injury when tank mixed with Roundup Weather Max. Greater injury was also noted when any of the products are tank mixed with Ignite 280. By 16 DAA injury was not as apparent and appeared to be merely cosmetic. Weed control between 75 and 100% was achieved using 0.75 lb ai/A of the S isomer formulation and 1.0 lb ai/A of the R & S formulation. More crop injury was shown with the 1.0 lb ai/A of both isomers.