

USING POST-DIRECTED HERBICIDES, AIM, ENVOKE AND VALOR, ALONE AND IN TANK MIXTURES WITH GLYPHOSATE FOR BROADLEAF WEED CONTROL IN ARIZONA COTTON

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Abstract

Two experiments were conducted at the University of Arizona Safford Agricultural Center in 2002 to evaluate the herbicides Aim, Envoke, and Valor for post-directed annual morningglory (MG) weed control at the 12 inch tall growth stage and at layby in Roundup Ready cotton. A ½ X or 1 pt/A rate of trifluralin was applied preplant incorporated to all treatments in both experiments. In addition, all plots in both experiments were sprayed topically at the 2 to 3 leaf growth stage of cotton with glyphosate herbicide, 1.13 lb ae/A of Roundup Ultra. The standard comparison treatment in the Aim-Valor experiment was a post-directed application of 1.17 lb ae/A of Roundup Ultramax plus ammonium sulfate (AMS at 17 lb/100 gal) applied at the 12 inch tall cotton growth stage followed by a layby tank-mix application of Roundup Ultramax at 1.17 lb ae/A, AMS and Caparol at 1.6 lb ai/A at the 20 to 24 inch tall growth stage. This treatment resulted in 74% control of large MG (8 to 10 leaf) and 98% control of small MG (2 leaf or smaller) 15 days after the post-directed treatment (DAT) and 91% control of all MG following the layby application. Aim at 0.016 lb ai/A plus crop oil concentrate (COC) at 1% v/v and Aim at 0.025 lb ai/A plus COC applied post-directed resulted in 92 and 94% control of large MG, respectively, and 99 and 100% of small MG, respectively, 15 DAT. Tank-mixing Aim at 0.016 lb ai/A with Caparol at 0.5 lb ai/A or with MSMA at 2 lb ai/A resulted in 97 and 78% control of large MG, respectively, and 99 and 99% control of small MG, respectively, 15 DAT. Tank-mixing Aim at 0.016 lb ai/A with Roundup Ultramax at 0.75 lb ae/A or with diuron at 0.5 lb ai/A resulted in 90 and 85% control of large MG, respectively, and 99 and 99% control of small MG, respectively, 15 DAT. Valor at 0.031 lb ai/A tank-mixed with Roundup Ultramax at 0.75 lb ae/A resulted in 97% control of small MG and 58% control of large MG which was substantially worse than other treatments. Several layby treatments were compared to the standard treatment of Roundup Ultramax at 1.17 lb ae/A, AMS and Caparol at 1.6 lb ai/A which resulted in 91% control of all MG 14 DAT on August 14, 2002. Caparol at 1.6 lb ai/A alone or tank-mixed with Aim at 0.008, 0.016 or 0.025 or with Aim at 0.016 lb ai/A plus Roundup Ultramax at 0.75 lb ae/A all resulted in 92 to 98% control of all MG. In contrast, a Valor at 0.031 lb ai/A plus Caparol at 1.6 lb ai/A layby application resulted in only 75% control possibly because there were more large morningglory present at layby that survived the earlier post-directed Valor at 0.031 lb ai/A plus Roundup Ultramax at 0.75 lb ae/A application. However, Valor at 0.063 lb ai/A plus non-ionic surfactant (NIS) at 0.05% v/v or Valor at 0.63 lb ai/A plus Roundup Ultramax at 0.75 lb ae/A and AMS or Valor at 0.63 lb ai/A plus 0.05% v/v NIS plus Caparol at 1.6 lb ai/A all resulted in 97 to 99% control of all MG at 14 DAT. There was 4 to 8% cotton injury in the treatments that contained Aim or Valor and almost no injury in other treatments. Aim and Valor cotton injury were similar, had no effect on yield, and consisted of small necrotic lesions on the lowest leaves in the cotton canopy and some minor scarring or lesions on sprayed cotton stems. These results indicated that Aim provide excellent morningglory control was a good choice for post-directed applications to 12 inch tall cotton either alone or tank-mixed with other herbicides to broaden the spectrum of weed control. Valor appeared to be an excellent choice for layby weed control and could be used alone or in a tank-mixture with Roundup Ultramax or Caparol depending on the weed spectrum present and the need for residual weed control.

In the Envoke experiment, the standard comparison treatment was a post-directed application of Touchdown at 0.75 lb ae/A plus AMS when the cotton was 12 inches tall followed by a layby treatment of Touchdown at 0.75 lb ae/A plus Caparol at 1.6 lb ai/A when the cotton was about 24 inches tall. This treatment resulted in 74% control of large MG (8 to 10 leaf) and 98% control of small MG (2 leaf or smaller) 15 days after the post-directed treatment (DAT) and 91% control of all MG following the layby application. All of the Envoke post-directed treatments resulted in 95% or better control of small MG plants. Envoke at 0.007 and 0.0093 lb ai/A resulted in 86 and 87% large MG control, respectively, and these rates tank-mixed with Touchdown at 0.75 lb ae/A plus AMS resulted in similar large MG control of 78 and 85%, respectively, which were not significantly different from the Envoke alone treatments. Two types of layby treatments were compared; Caparol alone at 1.6 lb ai/A plus 0.05% v/v NIS and A12474 (trade name Suprend) which is a 1:112 ratio of Envoke and Caparol at 1.28 lb ai/A plus 0.05% NIS. There was little difference between these two treatments when compared across all of the post-directed herbicide treatments with respect to annual morningglory control which ranged from 88 to 92% control. Envoke caused little noticeable injury when post-directed or used at layby and represents a good choice (when registered) for post-directed applications to cotton especially when nutsedge species are present.