

ANNUAL MORNINGGLORY (*IPOMOEA* SPP.) CONTROL IN COTTON

Steven D. Wright, Ron N. Vargas, Gerardo Banuelos
and Tome Martin-Duvall

University of California Cooperative Extension
Visalia, Madera, Visalia and Madera, CA

Abstract

Annual morningglories (*Ipomea spp*) are difficult to control with existing cultural and herbicide programs in cotton. The objectives of these studies in 1997 and 1999 were to evaluate: increasing rates of Staple (pyrithiobac), tank mixes of Staple with Urea-ammonin nitrate solution (32%N) "UAN", tank mixes of Staple with MSMA, increasing rates of Valor (flumioxazin), tank mixes of Valor with Roundup Ultra (glyphosate), and tank mixes of Valor with MSMA. In 1997 all rates of Staple + crop oil concentrate (Agridex) gave partial control of emerged annual morningglory. The addition of 5 gallons/A of UAN fertilizer to Staple increased control in all rates of Staple. UAN fertilizer alone gave some control. Cotton injury was slight for 14 days following treatments. The addition of UAN to Bladex (cyanazine) gave better control of annual morningglory than the Bladex + Agridex, however cotton injury increased. In 1999 Valor + Agridex gave excellent control of emerged annual morningglory, however cotton injury was severe almost killing most plants. The tank mixes of Valor + MSMA and Valor + Roundup Ultra also gave excellent control of annual morningglory. The addition of Roundup Ultra, the tank mixes of Roundup Ultra with Bladex and Goal (oxyfluorfen) also gave excellent control of annual morningglory.

Introduction

Ivyleaf morningglory (*Ipomoea hederacea*) and tall morningglory (*Ipomoea purpurea*) are the predominant species in the San Joaquin Valley. Annual morningglories climb over cotton plants, interfere with defoliation, harvest, and are difficult to control with current herbicide programs. Roundup Ready cotton is limited by its early herbicide timing and cotton injury on later timings. The BXN cotton program is limited by rates. The current labeled rates in California is too low for effective control. Herbicide combinations may be more effective.

Materials and Methods

In 1997, an Acala Maxxa field near Visalia, California was divided into a randomized complete block design with four row plots and four replications. Cotton was 14" tall with 12 nodes. Seedling morningglory was in the cotyledon to small

twining stage. Herbicides were applied in 20 gpa with a Hagie high cycle sprayer at 25 psi using 8002 flat fan nozzles at 2 mph. Treatments were applied June 6 and June 23, 1997. Air temperature and wind speed for the applications were at 75°F and 0-3 mph. Ratings were taken at 7, 14, 21, and 28 days after treatment (DAT).

In 1999, a Roundup Ready field near Tulare, California was divided into a randomized complete block design with six row plots and four replications. Cotton was 9" tall with 9 nodes. Seedling morningglory was in the 3-leaf stage to small twining stage. Herbicides were applied in 20 gpa with a Hagie high cycle sprayer at 20 psi using 2.5 flood jets nozzles at 2.4 mph. Treatments were applied June 24, 1999. Air temperature and wind speed for the applications were at 98°F and 0-2 mph. Ratings were taken at 7, 14, and 21 days after treatment (DAT).

Results and Discussion

In 1997 at the conventional site, Staple + Agridex treatments gave partial control of emerged annual morningglory. The split application did not affect weed control (Table 1). There was little cotton injury with Staple treatments (Table 2). Bladex + Agridex, Caparol (prometryn) + Agridex, and Goal + nonionic surfactant (Latron) gave good control of annual morningglory (Table 1). There was no injury at 28 days after treatment for any treatment. A second flush of annual morningglory came through all treatments following irrigation.

In 1997 all rates of Staple + Agridex gave partial control of emerged annual morningglory (Table 1). The addition of 5 gallons of UN-32 fertilizer to Staple increased control in all rates of Staple. UN-32 fertilizer alone gave some control (Table 1). Cotton injury was slight for 14 days following treatments. The addition of UN-32 to Bladex gave better control of annual morningglory than the Bladex + Agridex, however cotton injury increased (Table 2).

In the 1999 Roundup Ready study Valor + Agridex rates gave excellent control of emerged annual morningglory (Table 3). The combination rates of Valor with MSMA and Roundup Ultra also gave excellent control of emerged annual morningglory (Table 3). All treatments with Valor had a high rate of cotton injury killing most of the plants (Table 6). Roundup Ultra, Roundup Ultra + Goal, and Roundup Ultra + Bladex gave good control of emerged annual morningglory and there was little cotton injury with those treatments (Table 6).

Table 1. Annual Morningglory Control in Maxxa Cotton-Tulare County 1997.

Treatment	Rate/A	14 DAT	21 DAT	28 DAT
Staple	.09 oz	55	51	43
Staple	.14 oz	51	44	23
Staple	.04 oz	43	38	40
B. Staple	.04 oz			
Staple	.06 oz	48	30	45
B. Staple	.06 oz			
Staple	.09 oz	53	44	70
B. Staple	.09 oz			
Staple + MSMA	.09 oz + 2 pt	58	66	84
Gramoxone	.8 pt	73	65	48
Gramoxone	1.2 pt	80	85	50
Gramoxone	1.6 pt	89	85	43
UN-32	5 gal	13	18	5
Bladex + UN-32	2.4 pt + 5 gal	56	45	60
Caparol + UN-32	3.2 pt + 5 gal	83	84	78
Staple + UN-32	.09 oz + 5 gal	58	51	50
Bladex	2.4 pt	83	79	55
Caparol	3.2 pt	86	74	65
Goal	4 pt	78	63	48
Bladex + Goal	2.4 pt + 2 pt	90	83	90
Untreated	-----	0	0	0

Table 2. Cotton Injury in Maxxa Cotton-Tulare County 1997.

Treatment	Rate/A	14 DAT	21 DAT	28 DAT
Staple	.09 oz	0	3	0
Staple	.14 oz	0	0	0
Staple	.04 oz	0	0	0
B. Staple	.04 oz			
Staple	.06 oz	0	0	0
B. Staple	.06 oz			
Staple	.09 oz	0	3	0
B. Staple	.09 oz			
Staple + MSMA	.09 oz + 2 pt	0	3	0
Gramoxone	.8 pt	16	23	63
Gramoxone	1.2 pt	15	30	58
Gramoxone	1.6 pt	23	36	71
UN-32	5 gal	8	0	0
Bladex + UN-32	2.4 pt + 5 gal	9	5	0
Caparol + UN-32	3.2 pt + 5 gal	14	6	0
Staple + UN-32	.09 oz + 5 gal	6	3	0
Bladex	2.4 pt	14	4	0
Caparol	3.2 pt	19	15	33
Goal	4 pt	14	10	0
Bladex + Goal	2.4 pt + 2 pt	15	10	5
Untreated	-----	0	0	0

Table 3. Annual Morningglory Control in Roundup Ready Cotton-Tulare County 1999.

Treatments	Rate/A	7 DAT	14 DAT	21 DAT
Roundup Ultra	2 pt	75	80	91
Roundup Ultra + Caparol	2 pt + 1.6 pt	81	80	88
Roundup Ultra + Bladex	2 pt + 1.2 pt	88	94	96
Roundup Ultra + Goal	2 pt + 2 pt	91	90	94
Roundup Ultra + Dual Magnum	2 pt + 1 pt	79	75	79
Valor	.126 lb	100	100	100
Valor	.188 lb	100	100	100
Valor + MSMA	.126 lb + 2.6 pt	98	100	100
Valor + Roundup Ultra	.126 lb + 2 pt	100	100	100
Untreated	-----	0	0	0

Table 4. Black Nightshade Control in Roundup Ready Cotton-Tulare County 1999.

Treatments	Rate/A	7 DAT	14 DAT	21 DAT
Roundup Ultra	2 pt	79	86	93
Roundup Ultra + Caparol	2 pt + 1.6 pt	85	90	100
Roundup Ultra + Bladex	2 pt + 1.2 pt	79	88	100
Roundup Ultra + Goal	2 pt + 2 pt	86	93	93
Roundup Ultra + Dual Magnum	2 pt + 1 pt	79	91	100
Valor	.126 lb	80	93	99
Valor	.188 lb	90	98	100
Valor + MSMA	.126 lb + 2.6 pt	88	98	100
Valor + Roundup Ultra	.126 lb + 2 pt	75	95	99
Untreated	-----	0	0	0

Table 5. Purple Nutsedge Control in Roundup Ready Cotton-Tulare County 1999.

Treatments	Rate/A	7 DAT	14 DAT	21 DAT
Roundup Ultra	2 pt	37	70	100
Roundup Ultra + Caparol	2 pt + 1.6 pt	45	80	95
Roundup Ultra + Bladex	2 pt + 1.2 pt	45	50	75
Roundup Ultra + Goal	2 pt + 2 pt	82	83	100
Roundup Ultra + Dual Magnum	2 pt + 1 pt	45	75	100
Valor	.126 lb	78	83	89
Valor	.188 lb	80	85	92
Valor + MSMA	.126 lb + 2.6 pt	83	98	98
Valor + Roundup Ultra	.126 lb + 2 pt	85	90	96
Untreated	-----	0	0	0

Table 6. Cotton Injury in Roundup Ready Cotton-Tulare County 1999.

Treatments	Rate/A	7 DAT	14 DAT	21 DAT
Roundup Ultra	2 pt	0	0	0
Roundup Ultra + Caparol	2 pt + 1.6 pt	21	5	3
Roundup Ultra + Bladex	2 pt + 1.2 pt	36	29	25
Roundup Ultra + Goal	2 pt + 2 pt	28	11	3
Roundup Ultra + Dual Magnum	2 pt + 1 pt	8	3	3
Valor	.126 lb	83	90	90
Valor	.188 lb	85	90	90
Valor + MSMA	.126 lb + 2.6 pt	86	93	93
Valor + Roundup Ultra	.126 lb + 2 pt	81	91	91
Untreated	-----	0	0	0