

**IVYLEAF MORNING GLORY**  
**[*IPOMOEA HEDERACEA* (L.) JACQ.]**  
**AND SLENDER AMARANTH**  
**(*AMARANTHUS VIRIDUS* L.)**  
**CONTROL IN BXN COTTON**  
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**Abstract**

During 1995-1997, herbicides were applied preplant incorporated (PPI) either before or after hipping, preemergence (PRE), and postemergence over-the-top (OT) as needed to control a large, mixed population of ivyleaf morningglory [*Ipomoea hederacea* (L.) Jacq.] and slender amaranth (*Amaranthus viridus* L.). Ivyleaf morningglory was effectively controlled with Buctril (bromoxynil) alone applied over-the-top (OT) of cotton in 1995 and 1996 but was not as effective in 1997. Treatments providing effective control of morningglory all years were Command (clomazone) applied preplant soil incorporated (PPI) after bedding followed by (fb) Command plus Cotoran (fluometuron) applied preemergence (PRE) fb Buctril OT and Command PPI fb Cotoran PRE fb Buctril OT. Buctril alone OT did not effectively control slender Amaranth any year. Sequential application of Command, Cotoran, and Buctril provided excellent slender amaranth control at least 2 of 3 years. Staple OT applied after Treflan PPI fb Staple PRE (at 0.032 lb ai/A) provided effective control of slender Amaranth 2 of 3 years. When Staple was applied at 0.063 lb a.i./A following Command PRE, effective slender Amaranth control was obtained only in 1 of 3 years. Cotton stand and yield were not different with any treatment. This was due to timely applications to very small weeds preventing undue weed competition as well as the low growth habit of slender Amaranth.

**Introduction**

The availability of the BXN/Buctril system for controlling weeds in cotton offers growers an excellent opportunity to control morningglory. This is the weed that most farmers in the Mississippi Delta consider one of their most troublesome weeds. The objective of this study was to compare the use of Buctril alone OT with selected herbicides applied sequentially for controlling ivyleaf morningglory and slender amaranth in BXN cotton.

**Materials and Methods**

The experiment was a randomized complete block with four replications. Individual plots were four, 40-inch rows, 40 feet long. All data were obtained from the two center rows

of each plot. No in-season cultivation or supplemental irrigation was used. Soil type was Bosket silt loam with pH 6.3 and 1.0% organic matter. Herbicides, rates and application information are listed in Table 1. Herbicides were applied to the same areas each year using a tractor-mounted boom sprayer. Treatments 2 and 5 were applied after hipping (Table 1). The area was disked and hipped early after which beds were row conditioned, sprayed and again row conditioned at planting. Treatments 7 and 9 were applied to undisturbed soil, disked, and hipped early then row conditioned at planting. Preemergence applications were broadcast at planting. Over-the-top treatments with Buctril or Staple were broadcast applied as weed size and/or population dictated. The sequential use of selected treatments applied PPI and/or PRE and/or OT were compared with Buctril only OT for weed control and cotton response. 'BXN 57' was planted in 1995 and 1996 and 'BXN 47' was planted in 1997. Replanting was necessary in 1996 and 1997 because of poor stands influenced by adverse weather conditions. Replanting was accomplished with a minimum of soil disturbance. An analysis of variance was performed on all data and means were separated using Duncan's NMRT at P=0.05.

**Results**

**Morningglory Control**

Table 2 presents ivyleaf morningglory control results from PPI and/or PRE herbicide applications 15 to 21 days after application. When compared with treatment 1 (check - Buctril not applied on these dates), Command PPI fb Command plus Cotoran PRE and Command PPI fb Cotoran PRE, provided more effective control in 2 of 3 years.

Based on visual control evaluations in late June or early July, morningglory control after all treatments were applied was fair to excellent (75-95%) in 1995, and excellent in 1996 (95-100%) and 1997 (91-100%). The only exception was with Treatment 1 in 1997, which rated 63 percent control on July 7.

**Slender Amaranth Control**

Tables 4 and 5 presents control information for slender amaranth. Slender amaranth control with PPI and/or PRE applications resulted in treatments of Command PPI fb Command Plus Cotoran PRE (all years) and Command PPI fb Cotoran PRE (2 of 3 years) reducing the population below the Treatment 1 check (Buctril not applied yet) (Table 4). Command PRE, Command Plus Cotoran PRE, and Treflan PPI fb Command PRE were very effective when compared with the check all 3 years also (Table 4). After all treatments were applied (Table 5), slender amaranth control based on plant counts resulted in no treatment different from Buctril OT alone in 1995 and all treatments with fewer plants than Buctril OT alone in 1996 and 1997, except the combination of Command PRE fb Staple 0.063 lb/A OT in 1996.

### Cotton Response

Cotton stand was not affected by any of the herbicide treatments (Table 6). The population averaged 46.6, 42.6 and 29.3 thousand plants per acre for 1995, 1996, and 1997, respectively.

Seed cotton yield in 1995 was low ranging from 1931 to 2313 lb/A (Table 7). Treatment means were not different. In 1996, seed cotton yields were similar to those of 1995 ranging from 1834 to 2468 lb/A. Treatment 9 (Table 7) resulted in the lowest seed cotton yield (1834 lb/A) but was not different from Treatments 1 (2127 lb/A), 3 (2218 lb/A), and 8 (2066 lb/A). Seed cotton yield with Treatments 1, 3, and 8 were not different from the other treatments (2, 4, 6, 7) which ranged from 2307 to 2379 lb/A. The greatest yield in 1997 resulted with Treatment 5 (3380 lb/A). Seed cotton yield was not affected by the herbicide treatments in 1997 ranging from a low of 2176 lb/A (Treatment 9) to the high of 3380 lb/A (Treatment 5). Low yield with Treatment 9 in 1996 and 1997 (Table 7) resulted from a large purple nutsedge population in these plot areas remaining uncontrolled.

### References

Hurst, H. R. 1997. Palmer amaranth control in cotton 1994-1996. Proceedings Beltwide Cotton Conferences, pp. 804-805.

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Table 1. Application information for controlling ivyleaf morningglory and slender amaranth in BXN cotton.<sup>1</sup> Delta Research and Extension Center, Stoneville, MS, 1995-97.

Preplant incorporation			Application		
Trt. No.	Herbicide	Rate/acre (lb a.i.)	Date(s) (mo/day/yr)	Before/after hipping	
1	None	--	--	--	
2	Command 3ME (clomazone)	0.50	4/3/95 4/3/96 4/3/97	After	
3	None	--	--	--	
4	None	--	--	--	
5	Command 3ME	0.75	4/3/95 4/3/96 4/3/97	After	
6	None	--	--	--	
7	Treflan 4E (trifluralin)	0.75	3/20/95 3/11/96 3/12/97	Before	
8	None	--	--	--	
9	Treflan 4E	0.75	3/20/95 3/11/96 3/12/97	Before	

  

Preemergence			Application		
Trt. No.	Herbicide	Rate/acre (lb a.i.)			
1	None	--			
2	Cotoran 85DF + Command 3ME (fluometuron)	1.25 + 0.25			
3	Command 3ME	0.75			
4	Cotoran 85DF + Command 3ME	1.25 + 0.75			
5	Cotoran 85DF	1.25			
6	Cotoran 85DF	1.25			
7	Staple 85SP (pyrithiobac)	0.032			
8	Command 3ME	0.75			
9	Command 3ME	0.75			

  

Postemergence Over-the-top					
Trt. No.	Herbicide	Rate/acre (lb a.i.)	Application		
			1995	1996	1997
			(mo/day)		
1	Buctril 4E (bromoxynil)	0.50	5/19	5/10	6/02
			6/05	5/24	6/23
			6/27	6/14	
2	Buctril 4E	0.50	6/27	5/24	--
				6/14	
3	Buctril 4E	0.50	6/05	5/24	6/02
			6/27	6/14	6/23
4	Buctril 4E	0.50	6/13	5/24	6/02
				6/14	6/23
5	Buctril 4E	0.50	--	5/24	6/02
				6/14	6/23
6	Buctril 4E	0.50	6/13	5/10	6/02
				5/24	6/23
7	Staple 85SP	0.032	6/05	5/24	6/02
				6/14	6/23
8	Staple 85SP	0.063	6/05	5/24	6/02
				6/14	6/23
9	Buctril 4E	0.5	6/13	5/10	6/02
				6/27	6/14

<sup>1</sup>Planted BXN 57 4/27/95; 4/18, 5/10/96; and BXN 47 5/1, 5/14/97. Preemergence applied day of first planting in 1996 and 1997. Command 4E used in 1995.

Table 2. Effect of PPI and/or PRE herbicide applications to ivyleaf morningglory in BXN cotton, Delta Research and Extension Center, Stoneville, MS, 1995-97.

Trt. No.	Herbicide Trt.			Plants/133 sq ft <sup>1</sup>		
	PPI	PRE	OT	5/18/95	5/27/96	5/29/97
1	--	--	B	26.3 a	*21.3 abc	110.0 ab
2	CM	CM/CT	B	0.5 d	6.0 bc	5.4 b
3	--	CM	B	12.5 bc	18.8 abc	124.6 a
4	--	CM/CT	B	1.3 d	18.8 abc	61.5 ab
5	CM	CT	B	1.5d	4.3c	26.2 ab
6	--	CT	B	3.8d	*8.0bc	38.5 ab
7	T	S	S	12.0	23.3 ab	69.2 ab
8	--	CM	S	7.3	33.5 a	71.3 ab
9	T	CM	B	16.0 b	18.0 abc	132.3a
Days after planting				(21)	(17)	(15)

<sup>1</sup>Values within a column with the same letter are not different according to DMRT (p=0.05).

\* + 1 OT Application

Table 3. Effect of total PPI, PRE, and OT herbicide applications to ivyleaf morningglory in BXN cotton, Delta Research and Extension Center, Stoneville, MS, 1995-97.

Trt. No.	Herbicide Trt.			% Visual Control <sup>1</sup>		
	PPI	PRE	OT	7/10/95	6/26/96	7/7/97
1	--	--	B	91ab	100a	63c
2	CM	CM/CT	B	95a	100 a	91b
3	--	CM	B	74cd	95 c	97ab
4	--	CM/CT	B	81bcd	99 ab	98ab
5	CM	CT	B	85a-d	100 a	100a
6	--	CT	B	81bcd	99 ab	100a
7	T	S	S	71d	100 a	99a
8	--	CM	S	80bcd	99 ab	98ab
9	T	CM	B	90abc	97 bc	98ab
Days after planting				(13)	(14)	(13)

<sup>1</sup>Values within a column with the same letter are not different according to DMRT (p=0.05).

Table 4. Effect of PPI and/or PRE herbicide applications to slender amaranth in BXN cotton, Delta Research and Extension Center, Stoneville, MS, 1995-97.

Trt. No.	Herbicide Trt.			Plants/133 sq ft <sup>1</sup>		
	PPI	PRE	OT	5/18/95	5/27/96	5/14/97
1	--	--	B	62.8 ab	*29.5 a	146.1 a
2	CM	CM/CT	B	0.0 b	0.0 b	0.0 b
3	--	CM	B	0.3 b	1.0 b	0.0 b
4	--	CM/CT	B	1.3 b	1.0 b	18.5 b
5	CM	CT	B	0.0 b	3.5 ab	0.0 b
6	--	CT	B	0.3 b	*8.0 ab	0.0 b
7	T	S	S	120.8 a	4.5 ab	1.5 b
8	--	CM	S	7.8 b	30.8 a	13.8 b
9	T	CM	B	0.3 b	0.0 b	2.3 b
Days after planting				(21)	(39)	(13)

<sup>1</sup>Values within a column with the same letter are not different according to DMRT (p=0.05).

\* + 1 OT Application

Table 5. Effect of total PPI, PRE, and OT herbicide applications to slender amaranth in BXN cotton, Delta Research and Extension Center, Stoneville, MS, 1995-97.

Trt. No.	Herbicide Trt.			Plants/133 sq ft <sup>1</sup>		
	PPI	PRE	OT	6/27/95	6/26/96	6/18/97
1	--	--	B	25.8 b	35.3 a	14.5 a
2	CM	CM/CT	B	0.0 b	1.8 b	0.0 b
3	--	CM	B	0.3 b	5.3 b	0.5 b
4	--	CM/CT	B	2.8 b	5.8b	0.3 b
5	CM	CT	B	0.0 b	1.0 b	0.0 b
6	--	CT	B	2.8 b	5.8 b	0.0 b
7	T	S	S	74.0 a	6.3 b	0.5 b
8	--	CM	S	20.3 b	39.8 a	0.0 b
9	T	CM	B	23.3 b	3.3 b	0.0 b

<sup>1</sup>Values within a column with the same letter are not different according to DMRT (p=0.05).

Table 6. Cotton stand with herbicides for morningglory and slender amaranth in BXN cotton, Delta Research and Extension Center, Stoneville, MS, 1995-97.

Trt. No.	Herbicide Trt.			Plants/Acre <sup>1</sup>		
	PPI	PRE	OT	5/16/95	5/27/96	7/11/97
------(thousands)-----						
1	--	--	B	48.1 ab	48.7	32.0 ab
2	CM	CM/CT	B	48.8 ab	45.3	30.8 abc
3	--	CM	B	43.0 b	45.0	25.9 d
4	--	CM/CT	B	44.6 ab	41.6	28.5 bcd
5	CM	CT	B	46.0 ab	50.2	31.0 abc
6	--	CT	B	48.9 ab	49.4	33.0 a
7	T	S	S	51.0 a	45.6	28.8 bcd
8	--	CM	S	44.3 ab	41.9	27.3 cd
9	T	CM	B	44.8 ab	47.1	26.5 d

<sup>1</sup>Values within a column with the same letter are not different according to DMRT (p=0.05).

Table 7. Morningglory and slender amaranth control in BXN cotton, Delta Research and Extension Center, Stoneville, MS, 1995-97.

Trt. No.	Herbicide Trt.			Seed Cotton Yield <sup>1</sup>		
	PPI	PRE	OT	1995	1996	1997
------(lb/Acre)-----						
1	--	--	B	2030	2127 ab	3125 a
2	CM	CM/CT	B	2068	2333 a	3278 a
3	--	CM	B	2004	2218 ab	2815 ab
4	--	CM/CT	B	2215	2307 a	3327 a
5	CM	CT	B	2110	2468 a	3380 a
6	--	CT	B	2122	2347 a	3096 a
7	T	S	S	2313	2379 a	3243 a
8	--	CM	S	1931	2066 ab	3168 a
9	T	CM	B	2056	1834 b	2176 b

<sup>1</sup>Values within a column with the same letter are not different according to DMRT (p=0.05).