

Late-Season PIX Treatment for Cotton Termination

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Abstract

A field study was conducted at the Maricopa Agricultural Center to evaluate the effect of a late-season application of PIX on Upland cotton termination. A 28 August application of PIX or PIX + Prep had only a small effect on late-season growth and no effect on defoliation or yield.

Introduction

The use of PIX (mepiquat chloride) has become a standard production practice in many cotton farming operations. The value of in this compound in cotton production is related to its growth retardant properties. The grower can use PIX to control the vegetative growth of cotton under conditions where excessive growth is occurring or is expected.

Recently, there has been interest in using PIX to help prepare the cotton crop for harvest, particularly for early harvest. Terminating cotton early (September in central Arizona), can be difficult, since conditions at that time are conducive to vegetative growth and foliage can be very dense. The objective of this test was to determine the effect of late-season applications of PIX on growth, effectiveness of defoliant and regrowth after defoliation.

Materials and Methods

DPL 90 cotton was planted on 12 April, 1991 in moist soil. The plot area received 3 tons/A of manure preplant. During the season, 35 lbs of N/A was applied as urea. The termination irrigation was 19 August. PIX treatments were applied on 28 August in a randomized complete block with 16 replications. Treatments included: 1) PIX at 0.044 lbs. a.i./A; 2) PIX + Prep at 0.044 + 0.011 lbs. a.i./A and; 3) untreated cotton. Treatments were applied with a HiBoy sprayer using 5 nozzles per row and a total spray volume of 21 GPA. The test was defoliated on 3 October using Dropp + Def (0.2 and 1.13 lbs. a.i./A, respectively) and again on 21 October using the same materials. Plots were rated for leaf drop and regrowth 7 and 14 days after defoliation. Average maximum and minimum air temperatures for the 7 day period after application of defoliant (3 October) were 99 and 57°F, respectively. Average maximum and minimum relative humidities for the same period were 61 and 11%. In the 14 day period after the 3 October defoliation 302 HU (86/55°F thresholds) were accumulated and no rainfall was recorded. The cotton from 30 feet of the center 2 rows in each plot was harvested by machine on 1 November. Data were obtained on the number of nodes above white bloom and plant height after PIX was applied.

Results and Discussion

In this test, the plants had a heavy boll load in early August and vegetative growth had slowed before PIX treatments were applied. On 26 August the cotton had an average of just over 3 nodes above white bloom (Table 1). In September the number of nodes above white bloom was similar for all treatments, but in early October the PIX treated plants had fewer nodes above white bloom than untreated plants. The plants produced

very little growth in height after 28 August, regardless of the treatment.

PIX treatments had no effect on cotton defoliation or lint yields (Table 2). However, PIX did reduce both basal and terminal regrowth 14 days after defoliant application.

In the cotton planting used for this test, the plants entered cutout in August and vegetative growth remained slow through September and early October. Under these conditions, PIX had only a small effect on growth and no effect on defoliation. Late-season applications of PIX might be more effective in helping prepare cotton for defoliation in years in which the cotton is growing rapidly in late August and continues to produce vegetative growth in September.

Table 1. Effect of a late-season PIX application on growth of Upland cotton.

Treatment	Nodes above white bloom (no.)			Plant height (inches)		
	26 Aug.	12 Sept.	2 Oct.	26 Aug.	12 Sept.	2 Oct.
PIX	3.1a ¹	1.1a	1.0a	119a	121a	121a
PIX + Prep	3.2a	1.4a	1.2a	118a	119a	121a
Untreated	3.2a	1.7a	1.9a	118a	120a	124a

¹Means followed by the same letter are not significantly different at the 0.05 probability level.

Table 2. Effect of a late-season PIX application on defoliation, regrowth and lint yield of Upland cotton.

Treatment	% Defoliation	Regrowth ¹		Lint yield (lbs./A)
		Basal	Terminal	
PIX	65a ²	2.5a	1.9a	1598a
PIX + Prep	67a	2.6a	1.9a	1623a
Untreated	61a	3.1b	3.1b	1614a

¹Regrowth is based on a scale of 0 (no regrowth) to 5 (heavy regrowth).

²Means followed by the same letter are not significantly different at the 0.05 probability level.