

JUVENILE GROWTH DEFOLIATION WITH ETHEPHON PRODUCTS

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Introduction

Late season defoliation of juvenile growth is common problem among dryland cotton farmers in East Georgia. The production season is often typified by late summer droughts causing cotton to “cut-out” and mature. This period is also often followed a period of significant rainfall during early autumn. This situation was further exacerbated in 2004 due to an abundance of rainfall brought in by multiple hurricanes.

The result of these late season rains is a crop with a mature boll load on the bottom of the plant and new or juvenile growth in the top. The amount of this juvenile growth can be quite significant in many situations sometimes measuring greater than 1 foot.

The common practice when dealing with cotton in this state is to apply harvest aids containing thidiazuron (Dropp, Ginstar, Freefall etc.) The efficacy of these products declines as temperatures become cooler. The objective of this research was to examine the performance of several ethephon containing products (Prep, Finish Pro, and CottonQuik) concerning their speed and efficacy in removing this juvenile growth.

Finish Pro contains the additive cyclanilide which is an auxin synthesis and transport inhibitor. CottonQuik contains the additive AMADS which is an ethylene synergist. Both of these products are marketed at a premium to generic products and touted to provide both faster and more effective boll opening and leaf removal than generic products.

Materials and Methods

A large plot trial was established on a dryland field in Burke Co. GA with DP 555 BGRR. Treatments are listed in Table 1. These treatments were selected in an effort to compare identical rates of ethephon from all products. Additionally treatments were constructed to compare increasing rates of “generic” ethephon (Prep) to standard rates of “enhanced” ethephon containing products (Finish Pro and CottonQuik).

Data collection consisted of evaluating juvenile growth removal at 5, 8 , and 12 days after treatment (DAT).

Table 1. Ethephon treatment and rate applied to dryland DP 555 BGRR with significant juvenile foliage, Burke Co., 2004.

Treatment	Product	lb Gal ⁻¹	Rate A ⁻¹	lb ai A ⁻¹
1	Finish 6 PRO	6	1.00 pt	0.75
	DEF	6	1.00 pt	0.75
2	Finish 6 PRO	6	1.33 pt	1.00
	DEF	6	1.00 pt	0.75
3	Prep	6	1.00 pt	0.75
	DEF	6	1.00 pt	0.75
4	Prep	6	1.33 pt	1.00
	DEF	6	1.00 pt	0.75
5	Prep	6	1.50 pt	1.13
	DEF	6	1.00 pt	0.75
6	Prep	6	2.00 pt	1.50
	DEF	6	1.00 pt	0.75
7	CottonQuik	2.28	1.75 qt	1.00
	DEF	6	1.00 pt	0.75
8	CottonQuik	2.28	1.32 qt	0.75
	DEF	6	1.00 pt	0.75
9	Finish 6 PRO	6	2.00 pt	1.50
10	Prep	6	2.00 pt	1.50

Results and Discussion

At 5 DAT the 1.0 and 1.33 pt/A rates of Finish Pro with Def provided significantly better defoliation than all rates of Prep with Def. In addition, when applied with no additional defoliant 2 pt/A Finish Pro provided significantly better defoliation than 2 pt/A Prep. The defoliation response of both rates of CottonQuik with Def were not different from Finish Pro with Def.

By 8 DAT, there was no significant difference in defoliation response between any treatment containing Finish Pro and Prep treatments at rates greater than 1 pt/A containing Def. Only the 1 pt/A rate of Prep with Def provided less defoliation than the Finish Pro treatments. When applied with no additional defoliant 2 pt/A Finish Pro still provided significantly better defoliation than Prep at the same rate.

At 12 DAT, all treatments had provided 75% or greater defoliation except for 2 pt/A Prep alone.

Collectively, these data indicate that the “enhanced” ethephon products as a whole do provide a quicker defoliation response up to approximately 8 DAT. After this time there is no difference in defoliation between the products.

Table 2. Ethephon treatment and rate applied to dryland DP 555 BGRR with significant juvenile foliage, Burke Co., 2004.

Treatment	Product	Rate A ⁻¹	Defoliation		
			5 DAT	8 DAT	12 DAT
			%		
1	Finish 6 PRO DEF	1.00 pt 1.00 pt	67.9 a	80.2 ab	83.4 a
2	Finish 6 PRO DEF	1.33 pt 1.00 pt	67.5 a	75.0 abc	83.2 a
3	Prep DEF	1.00 pt 1.00 pt	42.5 b	63.9 c	79.1 a
4	Prep DEF	1.33 pt 1.00 pt	48.8 b	75.1 abc	83.8 a
5	Prep DEF	1.50 pt 1.00 pt	45.0 b	78.5 ab	78.5 a
6	Prep DEF	2.00 pt 1.00 pt	52.5 b	83.4 a	82.1 a
7	CottonQuik DEF	1.75 qt 1.00 pt	55.0 ab	68.5 bc	77.0 a
8	CottonQuik DEF	1.32 qt 1.00 pt	55.0 ab	73.4 abc	80.4 a
9	Finish 6 PRO	2.00 pt	43.8 b	79.3 ab	71.9 a
10	Prep	2.00 pt	16.3 c	41.5 d	55.0 a
	C.V.		18.91	7.78	10.22
	Pr>F		0.0001	0.0001	0.0633