PGRs on Cotton

Panel Discussion

From Sandy Stewart, 2009

Conclusions from Cotton Specialists' MC Product Trials

- All PGR's examined provided similar plant height reductions
- PGR application did not enhance lint yield
- PGR product selection should be based on individual grower needs as opposed to a specific product
- PGR application decisions should be made on a field-by-field basis each year

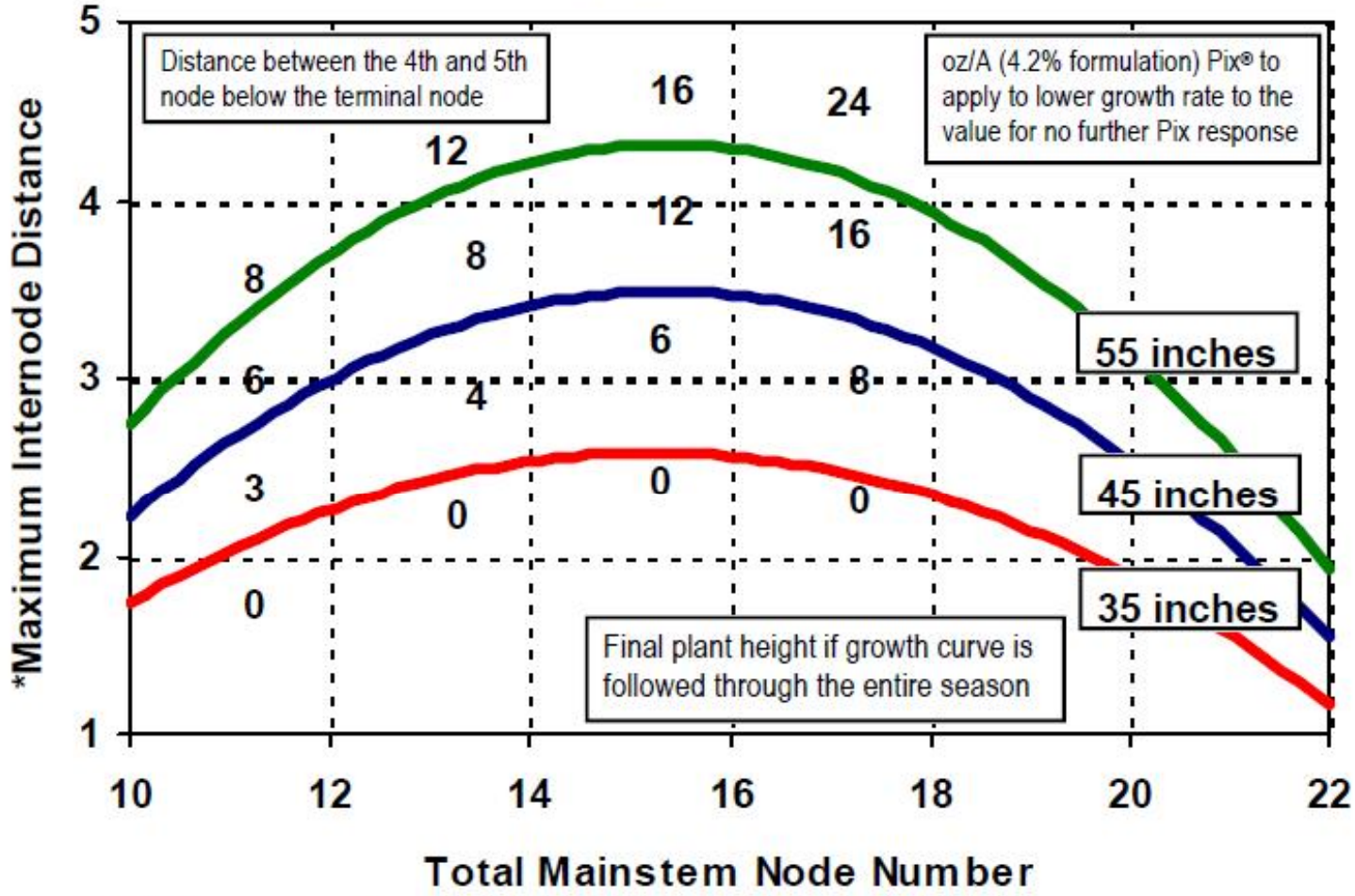
Based on data from 19 locations over two years using 6 varieties.
Trials conducted by Extension Cotton Specialists in 15 states.

From Sandy Stewart, 2009

Mepiquat Decision Aid Chart

Growth Stage	Rate Range	Selected Notes
8-12 Nodes	4-10 oz (2 oz Stance)	-Carries most risk -Be wary of new, shorter season varieties.
Two Weeks Prior to Bloom	8-16 oz (2-3 oz Stance)	-Very effective timing and appropriate for many situations.
Early Bloom	12-18 oz (2-4 oz Stance)	-Very little risk -Pay attention to fruit retention
Full Bloom	16-24 oz (3-4 oz Stance)	-Only high rates are effective. -Good insect and irrigation management is a more effective PGR

Recommended Mepiquat Use Rate*



*4.2% formulation of mepiquat chloride

Figure 1. Recommended mepiquat rate according to total mainstem node number and maximum internode distance between the 4th and 5th node below the terminal node.

Nodes	Internode stretch (in.)(c.)	Growth expected(b)	NAWF	Rate (oz.) Lt. soil	Rate (oz.) Hvy. Soil	Remarks:
8-9	> 2.3	vigorous		10-12	9	monitor H:N ratio
	1.9-2.2	moderate		8	6	
	<1.8	stressed		4-6	0	
10-13	>2.4	vigorous		16-18	13	adjust by H:N;
	1.8-2.3	moderate		13	8-10	adjust by prev pgr oz.
	<1.7	stressed		0-4	0	
14-16	>2.9	excessive	>8	24	16-18	monitor NAWF at 1st bloom >8
	2.5-2.8	vigorous	7-8	20-24	14-16	
	2.0-2.4	moderate	6	16	12	
	<1.9	stressed	5	8	0-4	
17-19	>2.7	excessive	>8	24+	24+	guage by NAWF
	2.4-2.6	vigorous	8	24	20-24	
	?	moderate	7	20-24	16	
	?	stressed	?	8	0-4	
>20	n/a	excessive	>7	24+	24+	guage by NAWF
	n/a	vigorous	7	24	20-24	
	n/a	moderate	6	20-24	16	
	n/a	stressed	?	8	0-4	
continue until NAWF is <2 on lt. soils and <4 on hvy soils						

Suggested Nitrogen Rates for Cotton			
(listed in lbs of N per acre, knifed early side-dress 30-0-0-2 or 28-0-0-4)			
	Variety characteristic:		
	New, tall, fast growth	Others	
Soil Texture:	lbs.	lbs.	
Heavy/clay	75-85	90-110	*may require 25 lbs topdress at early boll set
Mixed	30-40	50-60	*add 15 lbs if cotton following cotton; *may require early boll set topdress
Light/sandy	0-20	25-30	
*for lt. and mixed soils where cotton follows corn, reduce N rates by at least			
10 lbs/acre where corn N rates were >215 on lt. soil and > 225 on mixed soil.			
*Note: lack of timely rain will result in less than optimum nitrogen uptake;			
excessive rain will result in excess nitrogen uptake and growth regulation problems.			

2011 LEARNING CENTER at Scott, Mississippi DEMONSTRATION REPORT

DELTAPINE®

VARIETY X POPULATION X PGR IN COTTON

from previous page

Variety. All four varieties yielded very well in the demo, with average yields ranging from 1848 lbs lint/acre in DP 1137 B2RF to 2245 lbs lint/acre in DP 1048 B2RF. Most of the varieties follow the trend of needing more aggressive PGR management at higher populations but to varying degrees depending on determinancy level (Figure 3).

All varieties in the aggressive PGR system responded similarly with shorter plant height compared to the passive PGR system (Figure 4). Additionally, the average plant height for all 4 varieties in the aggressive treatment was very similar; 55 inches for all varieties but DP 1133 B2RF, and it was 53 inches.

Population x PGR. Important trends were observed when examining population x PGR system. Low populations yielded better in the passively managed PGR system (Figure 1). Mid populations

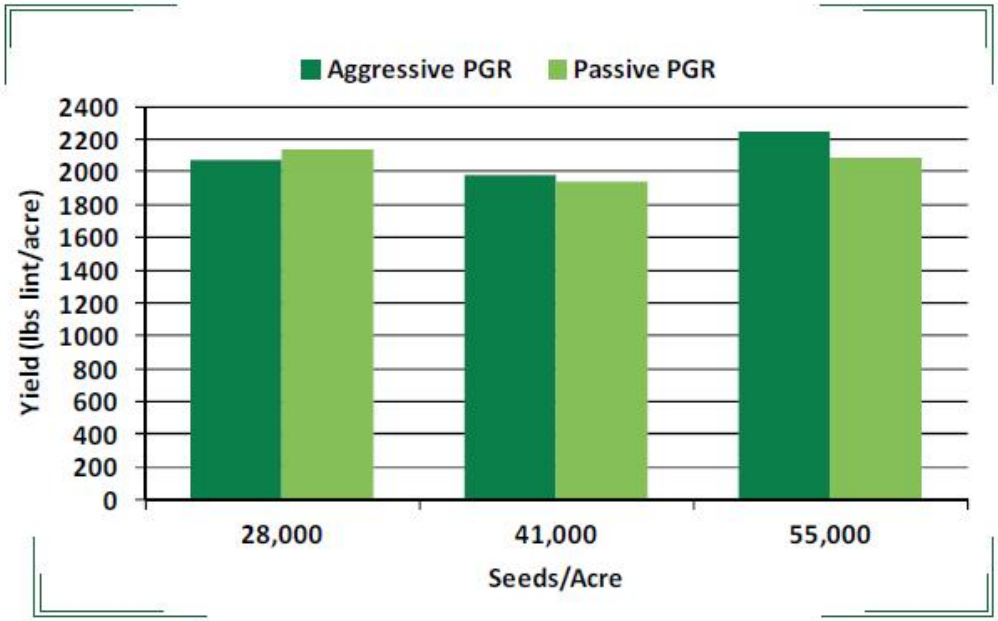


Figure 1. Effect of PGR regime on cotton lint yield at each seeding rate.

VARIETY BY SEEDING RATE BY PGR IN COTTON

- In 2012, the passively managed plots outyielded the aggressively managed plots by almost 200 lbs lint/acre (Figure 2). This can be attributed to a good crop with relatively high retention and fall weather that allowed a strong finish. With good conditions the plants continue to develop and successfully set fruit on more nodes. This ultimately allows for higher numbers of harvested fruiting forms and the associated higher yield. The aggressive PGR regime stops this development and reduces yield in some seasons. An early fall has the same impact by stopping bolls from developing to the harvestable stage before heat units decline in the fall.
- In all three varieties, the aggressively managed plots yielded as much or more at higher seeding rates than at lower seeding rates (Figure 3). This indicates that higher populations may require more aggressive PGR management as plants may have more vegetative growth to compete for light. This competition allows the plants to stay in the vegetative growth phase longer and delays fruiting. PGRs help rebalance the vegetative verses reproductive growth and, in many cases, this can help increase yields in higher populations. However, this is highly moderated in the interaction of environment by variety and only careful, timely scouting can measure the need for PGR intervention.
- The passively managed plots yielded as much or more at lower

2012 was a season without great potential for excess vegetative growth. This type of season is often characterized by relatively high whole plant fruit retention, moderate/timely rainfall during the season, and good weather to finish the crop. The 2012 data suggests the optimal seeding rates for the cotton products can be safely adjusted in various cropping systems without a yield penalty or causing great complications in growth management.

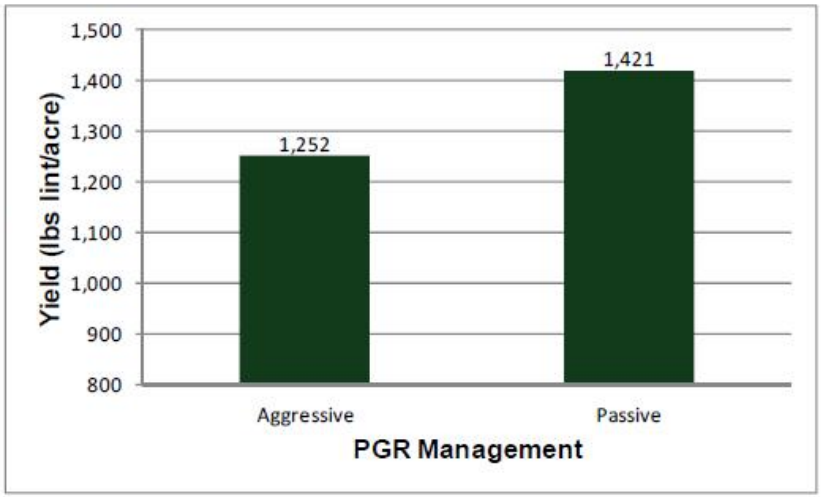


Figure 2. Average cotton yield by PGR management.