

## Working with “High” Cotton

Guangyao (Sam) Wang & Randy Norton  
University of Arizona

Mepiquat chloride based plant growth regulators (PGR) have become a critical management tool for cotton production since they were first introduced by BASF in the 1980s. **Research conducted in Arizona has shown consistent results in terms of plant height control, but lint yield response has proven much more variable.** Under conditions of high crop vigor and low fruit retention, increased yields may be possible. However, in cases of low crop vigor, decreased yields are also possible. In most cases, no yield response is observed. PGRs excel in the control of plant height without inducing crop stress, resulting in a more balanced vegetative and reproductive growth pattern, more open canopy, better spray penetration for pesticides, and improved defoliation. Current cotton PGRs in Arizona include products containing mepiquat chloride (MC), MC mixtures, and other mepiquat-based compounds (see adjacent Table). Some products are MC mixtures with a bacterium, *Bacillus cereus*, with a cell division hormone, kinetin, or with cyclanilide. Mepiquat pentaborate contains mepiquat with the chloride ion being replaced with the boron ion. **A beltwide test of these PGRs showed that all control plant height effectively and to a similar degree, but with yield benefits only about 10% of the time<sup>1</sup>.**

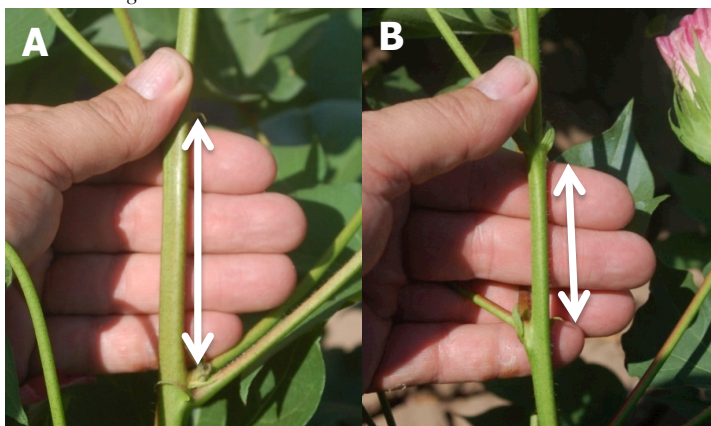
Determining when a PGR is needed can be a difficult decision. The Arizona PGR use guide<sup>2</sup> gives decision-making guidance. PGR labeled rates are 0.022–0.044 lb AI of MC per acre depending on growth pattern of the crop. Near cut-out, up to 0.066 lbs AI per acre may be used. Do not apply more than 0.132 lb AI MC or 0.31 lb AI mepiquat pentaborate per acre during the growing season.

1. <http://www.cottoninc.com/Agronomy/Cotton-Plant-Growth-Regulation/Cotton-Plant-Growth-Regulation.pdf>  
 2. <http://ag.arizona.edu/pubs/crops/ar1211.pdf>



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**Figure 1.** Impact of height-controlling PGR applications on internode elongation. **A**, Untreated with internode distance = 3” (four fingers) **B**, PGR-treated with internode distance = 1.75” (2.5 fingers) and **C**, Overall plant canopy architecture with untreated on left vs. PGR-treated on right.



Product	AI	AI/Gal	Amount of Product	
			Early (in oz)	Late (max. in oz)
Compact <sup>13</sup>	MC	0.35	8–16	24
Mep Star <sup>2</sup>	MC	0.35	8–16	24
Mepex <sup>11</sup>	MC	0.35	8–16	24
Mepex GinOut <sup>11</sup>	MC + kinetin	0.35	8–16	*
Mepex Plus <sup>8</sup>	MC + kinetin	0.35	8–16	24
Mepichlor 4.2%				
Liquid <sup>3</sup>	MC	0.35	8–16	24
Mepiquat <sup>9</sup>	MC	0.35	8–16	24
Mepiquat Chloride <sup>6</sup>	MC	0.35	8–16	24
Mepiquat Chloride 4.2% Liquid <sup>10</sup>	MC	0.35	8–16	24
Mepiquat Chloride 4.2% Liquid Plant Regulator <sup>7</sup>	MC	0.35	8–16	24
Mepit <sup>1</sup>	MC	0.35	8–16	24
Pentia Plant Regulator <sup>4</sup>	mepiquat pentaborate	0.82	8–24	24
Pix Cotton Plant Regulator <sup>12</sup>	MC	0.35	8–16	24
Pix Plant Regulator <sup>3</sup>	MC	0.35	8–16	24
Pix Plus Plant Regulator <sup>3</sup>	MC + <i>Bacillus cereus</i>	0.35	8–16	24
Pix Ultra Plant Regulator <sup>3</sup>	MC	0.35	8–16	24
Pix WSG Plant Regulator <sup>3</sup>	MC	0.9 <sup>†</sup>	0.4–0.8	1.2
Stance Plant Regulator <sup>5</sup>	MC + cyclanilide	0.736 <sup>††</sup>	2–4	*

AI, active ingredient

Gal, gallon

Early, early season

Late, near cut-out

oz, ounces

\*, not specified

†, lb/lb (dry formulation)

††, 0.184 lb/gal cyclanilide

MC, mepiquat chloride

1, AgSaver

2, Albaugh, Inc.

3, Arysta LifeScience North America

4, BASF

5, Bayer CropScience

6, CropSmart

7, Farmsaver.com

8, Griffin

9, Loveland Products

10, MANA

11, Nufarm Agricultural Product

12, Tenkoz

13, Winfield Solutions

