EVALUATION OF SEVERAL MEPIQUAT PRODUCTS ON COTTON GROWTH, YIELD AND FIBER QUALITY IN THE BLACKLANDS AND HIGH PLAINS OF TEXAS

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Abstract

Growers and practitioners continue to have interest in the use of mepiquat-based plant growth regulator products. In 1980 BASF introduced the first mepiquat-based product into the market -- PIX. Following patent expiration of PIX, numerous mepiquat-based products were made commercially available. Recently, BASF (Pentia – mepiquat pentaborate), Bayer CropScience (Stance – mepiquat chloride + cyclanilide) and Dupont (Mepex GinOut – mepiquat chloride + kinetin) introduced new products. All these products perform a similar function in that they reduce gibberellic acid synthesis in cotton plants. The reduction in gibberellic acid results in reduced cell expansion and thus shorter internode length. Plants treated with mepiquat-based products exhibit shorter, more compact architecture and deeper green canopy coloration. However, enhanced earliness and increased yield are not consistently recognized. The purpose of this research was to assess the effects of several mepiquat-based plant growth regulators on cotton growth and lint yield in the Brazos River Valley and High Plains regions of Texas. Sites were located in south-central Texas in the Brazos River Valley near College Station (Burleson County) and in the Southern High Plains near Halfway, Texas (Lubbock County). Treatments were applied at match-head square (MHS) and 14 days later (14DL) and included Mepex (8 oz. – MHS and 10 oz. – 14DL), Mepex Ginout (8 oz. – MHS and 10 oz. – 14DL), Pentia (8 oz. – MHS and 10 oz. – 14DL), Stance (1.5 oz – MHS and 2 oz. – 14DL), Stance (2 oz. – MHS and 3 oz. – 14DL), and Stance (2 oz. – MHS, 3 oz. – 14DL, and 3 oz. – cutout). Each treatment was replicated 4 times in a randomized complete block design. Both locations were planted to FiberMax 9063 B2RF. Treatments were applied with a self-propelled Lee Spider Sprayer. Data collected included plant height measurements, main stem nodes, and lint yield. Trials were harvested on October 10 and November 2 at the College Station and Halfway locations, respectively. The center two rows of each plot were machine harvested (picker-harvested at College Station and stripper-harvested at Halfway), seed cotton samples were weighed, ginned and lint yields determined. Agricultural Research Manager 7 was used to perform statistical analyses. At both locations the untreated check yielded similarly to the various mepiquat-based products included in the study and numerically was one of the highest yielding treatments. At the Burleson County site, no significant differences were observed for any measured parameter. All plant growth regulator treatments significantly reduced plant height compared to the untreated check at the Lubbock location. At this location, Stance (2 oz - MHS, 3 oz. – 14DL, and 3 oz. - cutout), the only treatment which received an application at cutout (NAWF = 5), significantly reduced lint yield compared to several treatments. This cutout application in combination with earlier high rate multiple applications had a negative effect on lint yield under the environmental conditions at this location, the reasons for which are unclear.