THE APPLICATION OF PGR-IV ON COMMERCIAL COTTONCROPS DURING THE BOLL FILLING PERIOD J. A. Hickey Micro Flo Company, Taft, TX J. A. Landivar Texas A&M Agricultural Research & Ext. Ctr. Corpus Christi, TX

<u>Abstract</u>

The use of plant growth regulators (PGRs) in commercial cotton production is a widely accepted practice. Both retardant and promoter PGRs are commonly applied to either control rank vegetative growth, or to improve fruit retention and enhance yield. Typical applications of PGRs begin at pinhead square and continue to the Early bloom period. An on-going replicated plot study at Texas A&M, College Station, applying 2 oz/A PGR-IV at pinhead square, early bloom and early bloom plus two weeks has shown a trend for increased yields of 85 lb./acre from 1990 to 1995. The additional application beyond early bloom has consistently increased yields. Additional studies in Arkansas (Oosterhuis) in 1994 of producer fields provided evidence of earlier maturity and increased yields. Fields were split and received a single late application of 4 oz/A of PGR-IV at 4 weeks after first flower. Lint yield was significantly increased from 1038 lb./acre to 1140 lb./acre, and this was associated with increased harvestable boll numbers and upper canopy boll weights. Replicated plot research in 1994 applying PGR-IV @ 4 oz/A at 3 weeks after first flower increased yield form 551 lb./acre to 606 lb./acre. In 1995, PGR-IV @ 4 oz/A at 4 weeks after first flower at two locations increased yield from 1118 lb./acre to 1178 lb./acre and 908 lb./acre to 1015 lb./acre, respectively. In 1996, additional testing was initiated to validate these late season applications (LSA). Under the supervision of professional crop consultants in Arkansas, Louisiana, Mississippi, Missouri, and Texas rate response data was collected from split fields that had either a 4 oz/A or 6 oz/A application of PGR-IV at first flower plus 3 weeks. Results for the 4 oz/A by state. (# of locations) lint increase, were; AR (24) - 64 lb., LA (12) - 42 lb., MS (29) - 49 lb., MO (9) -54 lb. and TX (16) - 71 lb. Results for the 6 oz/A by state, (# of locations), lint increase, were; AR (22) - 62 lb., LA (11) - 62 lb., MS (33) - 86 lb. and TX (6) - 91 lb. Two year average for 4 oz/A are; AR (51) - 93 lb., LA (43) - 65 lb., MS (56) - 84 lb., and TX (42) - 87 lb. Replicated plot research (Landivar) applying 4 oz/A PGR-IV at bloom and bloom plus 10 days increased yield from 756.0 to 839.7 lb./acre, with significant differences being noted in ALT 5 measurements indicating increased plant vigor. An additional plot evaluating sequential applications of PGR-IV and mepiquat-chloride substantiated the effect on ALT 5. Significant differences were noted after PGR-IV applications on the ALT 5, with yield being increased from 847.1 lb./acre to 924.0 lb./acre the difference not being significant. The trend for yield increases at Texas A &M, College Station, continued with 2 oz/A PGR-IV applied at pinhead square, early bloom, and early bloom plus 2 weeks. Two treatments tank mixed with adjuvants/surfactants significantly increased lint yield, at 99.6 and 93.0 lb./acre above control. Treatment without adjuvants/surfactants increased yield by 74.1 lb./acre.

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