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EVALUATION OF PGRs USING COTMAN

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Abstract

Plant growth regulators are widely used to control growth and possibly enhance yield. COTMAN is an excellent tool to help understand the impact of PGRs on fruit retention and plant growth. The early-season component of COTMAN, Squareman, summarizes fruit retention and nodal development. All classes of PGRs have little impact on nodal production prior to flowering. Therefore, little if any differences as a result of PGR application are detected prior to flowering with growth curves of COTMAN. These differences more often are observed in measurements relating to plant height. Generally soil moisture levels and tempretures impact growth curves or nodal development greater than any other factor prior to flowering. However, the lack of square retention prior to flowering can have some impact on the growth curve. But its' impact beyond the appearance of first flower is more pronounced. Once flowering occurs and COTMAN users concentrate efforts on Bollman or monitoring nodes above white flower (NAWF), the impact of PGRs are more pronounced. Maintaining a balance between vegetative and reproductive growth is necessary for the progression of NAWF from flower initiation, targeted at 9.25 NAWF, down to cutout, 5.0 NAWF, paralleling that of the target development curve (TDC) in COTMAN. Based on experiments in which growth curves of treated and untreated-plots were compared, the following observations have been made. When growth curves of the untreated-plots are flatter than the TDC, growth-inhibiting PGRs will often result in yield increases while promoting earliness as well. When growth curves are parallel to the TDC, judicious use of growth inhibiting PGRs often has little impact on growth curves and earliness but can still result in numerical yield increases. When rates of PGRs are increased to the point growth curves are altered, earliness is enhanced often at the expense of yield. When growth curves are dropping faster than the TDC, growth-inhibiting PGRs will generally have a negative impact on yield. Although these observations are of plant measurements in response to PGR application, which are near completion as they manifest themselves, they can still be useful in evaluating the impact of PGRs and related products to one another and to the plant. The importance of establishing high yield potential with proper initiation of irrigation and fruit retention prior to flowering should not be overlooked. Perhaps using more sophisticated programs to monitor plant growth in conjunction with COTMAN to help users manage PGR rates and application timings based on a plant concentrations of PGRs may result in adequate control of plant growth while optimizing their effect on earliness and yield.