AVG and GA_3 prevent preharvest fruit drop and enhance postharvest quality of 'BRS 189' cashew

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Abstract

The study investigated the effects of individual and combined preharvest applications of gibberellic acid (GA_3, 180 mg L^{-1}) and aminoethoxyvinylglycine (AVG, 180 mg L^{-1}) at 34, 40 and 45 days after anthesis (DAA) on preharvest fruit drop, postharvest quality and antioxidant metabolism of 'BRS 189' cashew. AVG treatment at 45 DAA reduced significantly preharvest cashew drop to 26% while control presented 90% of fruit drop, moreover, without detrimental effects on peduncle and nut physical and physicochemical quality, except for 60% reduction in total antioxidant activity due to 50% reduction in total vitamin C content. GA_3 treatments did not reduce cashew drop significantly when compared to control, although they incremented significantly total cashew weight (27%) due to increases in peduncle weight (29%) and length (14%), especially GA_3 treatment at 40 DAA that also promoted significant increases in peduncle SS/TA ratio (23%) and firmness (33%) due to inhibition of PME cell wall hydrolytic activity. Peduncles treated with GA_3 at 40 DAA also presented statically higher total carotenoid (16%) and polyphenol (59%) contents, despite the reduction in total vitamin C (25%) and total antioxidant activity (70%). Thus, AVG at 45 DAA was effective in reducing fruit drop, while GA_3 treatment at 40 DAA promoted cashew quality with increases in peduncle weight and size, in SS/TA ratio, in firmness and in total carotenoid and polyphenol contents.