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PROPERLY TIMED FOLIAR-APPLIED GIBBERELLIC ACID (GA_3) INCREASES FRUIT SIZE AND YIELD DURING THE ON-CROP YEAR TO INCREASE CUMULATIVE YIELD

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The goal of the research was to reduce alternate bearing and increase the cumulative yield of large size fruit of the 'Hass' avocado in California. The research used previous results demonstrating (*i*) the effect of crop load on vegetative and reproductive growth of the 'Hass' avocado in California and (*ii*) the response of on- and off-crop trees to foliar-applied gibberellic acid (GA_3) to identify key stages in the phenology of the 'Hass' avocado to be treated with GA_3 during on- or off-crop years. The application times selected corresponded to the following phenological stages and calendar dates: (1) S-3, primary axis meristem convex with four secondary inflorescence meristems initiated; (2) S-4, end of vegetative shoot growth, shoot apices have approximately four secondary axes of the inflorescence present, additional secondary axes are being initiated (November); (3) S-5, early "bud swell" – the total number of secondary axes (10) of the inflorescence are formed, the oldest are beginning to elongate and to initiate flower organs (January); (4) S-8, cauliflower stage of inflorescence, microspores present, integuments forming on the ovule (March); (5) S-11, anthesis-early fruit set and initiation of the spring vegetative flush at the apex of indeterminate floral shoots (April); and (6) end of Stage I of fruit development-beginning of Stage II of fruit development (rapid increase in fruit size) (June-July). Seven 7 different treatments were tested. Annual application of GA_3 (25 mg/L) in June-July significantly increased both total kg and number of fruit per tree and kg and number of commercially valuable large size fruit (178-325 g/fruit) per tree compared to untreated control trees for the on-crop year. The June-July GA_3 treatment resulted in commensurate significant increases in the 2-year cumulative yields of both total and large size fruit per tree with no increase in yield of small size fruit (fruit £ 177 g). No treatment significantly reduced the alternate bearing index.