

Improving Fruit Set and Yield of 'Hass' Avocado with Potassium Phosphite
or Potassium Phosphate
Applied During Bloom

Continuing Project; Year 2 of 4

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Benefit to the Industry

The results of this research will provide avocado growers with the answer to the question of whether or not they should spend the extra money to supply P or K to the canopy or through irrigation in the spring to improve fruit set and yield. The results of the research will provide a management strategy for improving yield and evening out alternate bearing.

Objectives

The main objective of this project is to improve fruit set and yield in the 'Hass' avocado by supplying nutrients that might be limiting during fruit set due to competition between individual setting fruit and between setting fruit and developing vegetative shoots at the time they are most needed but are not adequately supplied by the roots or from reserves in the leaves or branches.

The specific objectives are: (i) to compare the efficacy of applying potassium phosphate versus potassium phosphite to the canopy of the 'Hass' avocado at a single site during bloom to increase yield and net return to the grower over control trees receiving potassium phosphate or potassium phosphite via irrigation; and (ii) to disseminate the results of this research to avocado growers through talks at grower meetings and publications in grower magazines and the California Avocado Society Yearbook.

Summary

Flowering and fruit set of the 'Hass' avocado occur predominantly at a time of low root activity, reduced transpiration, low photosynthesis and low temperatures which negatively impact flower opening, pollination, fertilization and fruit set. As bloom progresses, there is increased competition between setting fruit and developing vegetative shoots at a time when roots are still inactive so the competition for water and mineral nutrients becomes more intense. Singularly and in combination, these factors reduce fruit set.

The objective of this project is to determine the efficacy of fertilization of the 'Hass' avocado with potassium phosphate versus potassium phosphite applied to the canopy versus through the irrigation during early bloom to increase fruit set in order to increase yield and net \$ return to the grower. In addition, the project will demonstrate whether or not foliar application of P and K is a more cost-effective management strategy than making a spring application of these nutrients to the roots through the irrigation system over the long term. The research will answer the question of whether the foliar application of one or both sources of P and K gives an immediate increase in yield, whereas one or both sources of P and K applied to the soil provides a benefit only after some elapse time. The research results will also provide data indicating whether foliar P and K treatments can be used to even out alternate bearing and thus, whether or not they should be used in conjunction with soil applied P and K.

Each year, we make the applications, collect leaves for leaf analysis and harvest the fruit and determine yield and quality parameters, statistically analyze the yield and leaf analysis data and make a cost:benefit analysis. This year will be our first harvest for this project.