Title Improving avocado fruit quality through tree nutrition - challenges and prospects

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Abstract

Tree nutrition can affect postharvest quality of avocado fruit. For example, 'Hass' fruit with higher calcium (Ca) concentrations often have less rots and flesh disorders. This has been confirmed by comparing the characteristics of fruit obtained from adjacent trees in the same block, or from trees grown on different rootstocks. The challenge then was to optimise fruit minerals concentrations in existing orchards using soil minerals applications. A four-year programme was conducted on a commercial orchard on sandy loam soil, because of the concern that the more typical, heavier clay avocado soils would inhibit Ca distribution through the profile and require a longer research programme to achieve results. Also microfine gypsum was used to further increase Ca movement through the soil. Minerals concentrations (soil, xylem sap, leaves, fruit skin, and fruit flesh) and yield per tree were measured and related to fruit quality. The results suggested that Ca movement through the soil was more rapid than commonly believed, so that a single Ca application at flowering may not increase soil solution Ca during the whole of the early fruit growth stage. More frequent applications of smaller amounts of Ca achieved the desired effect of significantly increasing soil solution Ca, but even with this strategy there was little increase in fruit Ca concentrations and quality. From these and other studies, we concluded that other factors, such as K, rootstock factors, and tree yield play a significant role in fruit mineral nutrition and quality. Increasing yield by managing tree stress (for example optimising nitrogen) may be a more appropriate way of improving avocado fruit quality.