

## **AVOCADO CANOPIES: MAINTAINING PRODUCTION FROM SMALLER TREES**

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### **Introduction**

Inconsistent yields and large tree size are a feature of most avocado industries. Reduced margins and increased safety regulations will inevitably require a move away from "large tree" orchard systems.

This poster outlines three entry points for the development of better tree structure for increasing production from smaller trees with 'Hass' avocado. Longer term options of "dwarfing" rootstocks and improved fruiting cultivars are not discussed here.

### **Propagation systems**

Research is in progress to develop hormonal sprays (gibberellin + cytokinin) that promote the development of single-leader trees in the nursery. Timing of application is critical to achieving maximum shoot growth without a reduction in root growth. Once established in the nursery, a well-feathered, single-leader avocado tree should maintain this growth form when planted in the field, with minimal pruning and training.

### **Tree training**

If single-leader trees are not available from the nursery, then work by Gray Martin and the University of California at Riverside, has demonstrated an alternative "tree training" method. Here, secondary branches on trees supplied by the nursery are trimmed and the remaining primary stem pegged to the ground 24 hours after planting. A new growth axis develops from near the apex of the bend, and if the root system is large enough to promote rapid growth, then this new axis becomes the dominant, single-leader. In California, trees with this growth form have begun fruiting at the end of their second year when they are less than 2m tall. This approach needs to be confirmed in New Zealand conditions.

### **Restructuring large trees**

Research in the Bay of Plenty, over five years, has demonstrated methods for restructuring large 'Hass' trees. Using these methods it was possible to produce sustainable yields of 15 t/ha from trees 4m tall, and 17 t/ha from trees 6m tall. These

compare with 19 t/ha from "unpruned" trees over the same time period. All trees were at 9x10m spacing and were 12 years-old at the end of the trial.

Orchard contour and timing of tree thinning in "unpruned" blocks will determine the significance of these results. However, yields from "unpruned" trees will decline as they become crowded or trees are thinned to wider spacing. And "safe" harvesting of fruit from trees higher than 6m can only be done if orchard blocks are flat and not sloping.