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THE EFFECT OF CROSS-POLLINATION BY NURSE LIMBS ON HASS AVOCADO PRODUCTION AFTER TOPWORKING

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ABSTRACT

Thirty 20 year old Bacon avocado trees were topworked by bark-grafting to the more profitable Hass avocado cultivar in May of 1994. Nurse limbs of the Bacon cultivar were left on all of the trees to induce more scion growth. Nurse limbs were removed from half of the trees at random but left on the other half of the trees to observe any benefit by cross-pollination. The first Hass crop (1997) after topworking had significantly more fruit on the trees with Bacon nurse limbs. The sum of the three crop years had slightly greater fruit numbers for nurse limb-treated trees, however this was not significant. The study demonstrated that cross-pollination of Hass avocado trees with nurse limbs of the Bacon avocado can significantly increase fruit numbers in some seasons. Climatic and alternate bearing effects may need to be studied, as well as increased tree size compared to nurse limb size as trees grow.

INTRODUCTION

Avocado trees may sometimes be topworked (grafted) over to a more profitable cultivar. A nurse limb of the previous cultivar may sometimes be left on the topworked tree to provide nutrients for faster scion growth. This study tested the possible cross-pollination benefits of the nurse limb to the new scion cultivar.

MATERIALS AND METHODS

Thirty 20-year old Bacon avocado trees were topworked by bark-grafting to the more profitable Hass avocado cultivar in May of 1994. Nurse limbs of the Bacon avocado cultivar were left on all of the trees to induce more scion growth. Nurse limbs were removed from 15 of the trees at ran-

dom but left on the other 15 of the trees to observe any benefit by cross-pollination. Fruit counts were made for all trees for the next three crop years (1997, 1998, 1999) to measure the potential cross-pollination effects of the nurse limb trees compared to control trees.

RESULTS AND DISCUSSION

The first Hass avocado crop (1997) after topworking had significantly more fruit on the trees with nurse limbs (Table 1), however, the 1998 and 1999 crops had lower fruit numbers on trees with nurse limbs. The sum of the three crop years had slightly greater fruit numbers for nurse limb treated trees, however, this was not statistically significant.

CONCLUSION

The study demonstrated that cross-pollination of Hass avocado trees with nurse limbs of the Bacon avocado can significantly increase fruit numbers in some seasons. Climatic and alternate bearing effects, as well as increased tree size compared to the nurse limb size, may have affected the 1998 and 1999 crops.

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Table 1

* Significantly different an the 5% level, paired t-test.

Treatment	1997	1998	1999	Total
Control Trees	169.8*	582.3	190.1	942.2
Nurse Limb Trees	227.5*	566.0	146.9	959.4

Mean Avocado Fruit Counts Per Tree