

# **A COMPARISON OF NURSERY GRAFTED VS. JUNE-BUDDED CHANDLER WALNUTS ON PARADOX ROOTSTOCK AND A COMPARISON OF JUNE-BUDDED CHANDLERS ON TWO DIFFERENT ROOTSTOCKS**

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## **ABSTRACT**

A commercial scale planting of Chandler walnuts was measured to determine if any differences in tree growth could be seen by the end of the first growing season within two comparisons being evaluated. One comparison looked at "nursery grafted" versus "June-budded" trees planted on Paradox rootstock. A second comparison between June-budded Chandlers on Northern California Black rootstock and June-bud Chandlers on Hybrid (Paradox) rootstock was also evaluated. Because this is not a replicated experiment, a scientific statistical evaluation of the data cannot be accurately made. This planting was evaluated merely for the purposes of comparison. Both comparisons involved over three hundred trees planted to alternate rows. With only two trees lost from the original planting, it is felt that the data collected from these trees provides an reasonably accurate estimate of first year growth for a commercial scale planting.

The first comparison showed that although the Chandler on Hybrid (Paradox) rootstock trees, which were nursery grafted, had a consistently larger trunk (rootstock) caliper, this did not correlate to an increase in height or caliper of the main leader. The "June-budded" trees also on Hybrid (Paradox) rootstock consistently produced a main leader of greater height and caliper even though their rootstock (trunk) calipers were consistently lower than those of "grafted" trees.

The second comparison indicated that the June-budded Chandlers on Hybrid (Paradox) rootstock produced main leaders of greater height and caliper than June-budded Chandlers on Northern California Black rootstock. The Hybrid (Paradox) rootstock trunk calipers were also consistently larger than the N.C. Black rootstock trunk calipers.

## **INTRODUCTION**

Growers often have preferences when planting a new orchard site whether to plant two year old nursery grafted trees or one year old "June-budded" nursery trees. It is sometimes assumed that the grafted trees will have a head start over budded trees. The choice of rootstock is also an important decision. Although various arguments for the different benefits of these choices in terms of costs, risks, and disease resistances could be used to evaluate choices, this comparative evaluation only discusses tree growth.

## **PROCEDURE**

The planting site chosen for this trial was the California State University, Chico Farm. The ten acre orchard was planted primarily with the Chandler cultivar on Hybrid (Paradox) rootstock and Chandler on Northern California Black rootstock in alternate rows. The soil texture is clay loam and the site has been primarily farmed dry land with crops such as oat hay and safflower. The site has no previous walnut history and preparation of the site did not include any fumigation. The soil was ripped to six feet in two directions and trees were planted at a 30x30 foot spacing.

To insure proper development of a strong trunk, one growing shoot was encouraged to dominate by

pinching the growing tips of the lateral branches. The remaining leader on each tree was allowed to grow until late October when the trees were tipped at a height of twelve feet to prevent breakage. The orchard did not receive an irrigation until shoot growth was ten inches long, however, more than three inches of rain fell between planting and initiation of shoot growth.

Tree growth was evaluated using the following three criterion: height of the main leader, diameter of the trunk (rootstock), and diameter of the scion. The height of the main leader was measured upward from the lowest point of the scion on October 10, 1996. The diameter of the trunks were measured four inches above the soil surface using an electronic caliper on October 8, 1996. The scion diameters were measured two inches above the base of the graft union using an electronic caliper on October 12, 1996. One hundred and twelve grafted Chandler trees were compared to seventy-six June-budded trees both on Paradox rootstock. Seventy-six June-budded Chandler trees on Paradox rootstock were compared to one hundred and fourteen June-budded trees on Northern California Black rootstock.

## RESULTS AND DISCUSSION

The first comparison (nursery grafted vs. June-budded) showed that although the Chandler on Hybrid (Paradox) trees which were grafted on average had a consistently larger trunk (rootstock), this did not correlate to an increase in height or caliper of the main leader compared to June-budded trees. The June-bud trees on the same rootstock produced, on average, a main leader of greater height and caliper even though their rootstock (trunk) calipers were consistently lower than those of nursery grafted trees. Although measurements were not taken, early in the season (prior to August) shoot growth of the grafted trees was obviously taller than the June-budded trees.

The second comparison (Hybrid Paradox vs. Black) indicated that the June-budded Chandlers on Paradox rootstock produced main leaders of greater height and caliper than June-budded Chandlers on Northern California Black rootstock. Paradox trees also had consistently higher rootstock calipers than the N.C. Black.

## CONCLUSIONS

Although "grafted" trees are thought to have a head start over "June-budded" trees, this does not necessarily correlate to larger trees by the end of the first season's growth. June-budded trees actually had comparatively larger scion calipers and main leader heights than grafted trees by the season's end. The hybrid (Paradox) rootstock consistently produced larger trees in the three criterion used to evaluate growth than the Northern California Black rootstock in this non-replicated comparison. Evaluation of tree growth in subsequent years is needed to determine two important questions: 1) Will differences in tree vigor within these two comparisons level off, continue to demonstrate differences in tree growth in the same proportions as in 1996, or establish even more extreme differences in growth in future years? 2) Will any of the observed differences in tree growth be positively correlated to yield?

ROOTSTOCK COMPARISON & GRAFTED vs. JUNE-BUD COMPARISON IN CHANDLER TREES  
 (Planted March 22, 1996 in Chico, California)

	# of trees evaluated	Mean trunk height(inches)	Mean scion diameter(cm.)	Mean trunk diameter(cm.)
Grafted Chandler on Paradox	112	103.1	25.9	46.1
June-budded Chandler on Paradox	76	114.1	27	39.5
June-budded Chandler on Paradox	76	114.1	27	39.5
June-budded on N.C. Black	114	89.1	21.6	35.6