OWN ROOTED CHANDLER VS CHANDLER ON PARADOX

Janine Hasey, Jim Yeager, Warren Micke, Jim McKenna, Joe Conant

ABSTRACT

In 1997 as in previous years, own rooted ‘Chandler’ had significantly greater trunk circumference, yield and yield efficiency than did ‘Chandler’ on Paradox rootstock. Other than a few poor performing ‘Chandler’ on Paradox, these trees are comparable to the industry standard; growth of own rooted trees is just far superior. Poorly performing trees on Paradox rootstock could be due to diversity within the Paradox seed source which was not tracked. The dollar value per acre is three times more for own rooted trees.

OBJECTIVES

To compare the performance of micro propagated ‘Chandler’ on its own root vs. ‘Chandler’ grafted on Paradox rootstock.

PROCEDURES

In 1991, a trial comparing micro propagated ‘Chandler’ to nursery grafted ‘Chandler’ on Paradox rootstock was initiated in Sutter County. The treatments are: 1) ‘Chandler’ on own root, and 2) ‘Chandler’ on Paradox rootstock. There are twenty single tree replicates per treatment in a randomized complete block design spaced at 25' x 25'. Own rooted trees have not been pruned since the third leaf. Poorly growing trees on Paradox have been pruned to stimulate growth. Evaluations were made on trunk circumference, yield and nut quality. Trunks were measured at 24 inches above the ground in 1997.

RESULTS AND DISCUSSION

The trunk circumference was significantly greater for the own rooted ‘Chandler’ compared to ‘Chandler’ on Paradox in 1995 through 1997 when measured at 24 inches above the ground (Table 1). Yield and yield efficiency have been significantly higher in own rooted ‘Chandler’ from 1995 through 1997 (Table 2). Most of the own rooted trees are extremely vigorous while the trees on Paradox continue to perform below expectations. There are some very poor performing trees on Paradox seedling. In a standard orchard planting most of these trees would have been removed by this age. However, in comparing Paradox seedling rootstocks between the adjacent rootstock plot planted in 1987 to this plot for the same age tree, the yields are similar (31.4 lbs/tree for own rooted vs. 36 lbs/tree in 1993 for the 1987 rootstock plot). Nut quality data was not significantly different (Table 3) although nuts from own rooted trees were worth three cents more per pound than those from trees on Paradox. Catkins were produced in 1997 for the first time on own rooted ‘Chandler’ although fewer than on those trees on Paradox.

Although performance of the own rooted trees has been outstanding thus far, this trial needs to be
continued for several more years. The main deterrent to commercial production of own rooted trees is the difficulty of rooting English walnut from hardwood cuttings.

ACKNOWLEDGMENTS

We are grateful to Joe Conant of the Whitney Warren Ranch for his assistance and continued cooperation on this project.

Table 1. Trunk Circumference (cm) for 1995 - 1997 and 1997 Trunk Cross Sectional Area (TCSA)

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<tr>
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<tbody>
<tr>
<td>OWN ROOTED</td>
<td>38.2 a</td>
<td>50.0 a</td>
<td>59.8 a</td>
<td>294 a</td>
</tr>
<tr>
<td>ON PARADOX</td>
<td>27.3 b</td>
<td>32.7 b</td>
<td>37.9 b</td>
<td>123 b</td>
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Means followed by the same letter in a column are not significantly different (LSD P ≤ 0.05)

Table 2. Yield in lbs./Tree from 1995 - 1997 and 1997 Yield Efficiency (YE)

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<tbody>
<tr>
<td>OWN ROOTED</td>
<td>23.9 a</td>
<td>51.6 a</td>
<td>95.2 a</td>
<td>.317 a</td>
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<tr>
<td>ON PARADOX</td>
<td>9.3 b</td>
<td>17.5 b</td>
<td>31.4 b</td>
<td>.241 b</td>
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Means followed by the same letter in a column are not significantly different (LSD P ≤ 0.05)

Table 3. 1997 Nut Quality, Yield and Dollars/Acre at 70 trees/acre

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>%Large Nuts</th>
<th>%Light Kernels</th>
<th>%Edible Kernel</th>
<th>$/lb.</th>
<th>Yield lbs/tree</th>
<th>$/Acre</th>
</tr>
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<tbody>
<tr>
<td>OWN ROOTED</td>
<td>93.8 a</td>
<td>46.0 a</td>
<td>51.5 a</td>
<td>1.11</td>
<td>95.2 a</td>
<td>7,397.04</td>
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<tr>
<td>ON PARADOX</td>
<td>93.8 a</td>
<td>47.5 a</td>
<td>51.5 a</td>
<td>1.08</td>
<td>31.4 b</td>
<td>2,373.84</td>
</tr>
</tbody>
</table>

Means followed by the same letter in a column are not significantly different (LSD P ≤ 0.05)