Horticultural and Chemical Practices Influencing Fruit Quality with Reliance and Swenson Red Table Grape Cultivars

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'Swenson Red'
This project is funded, in part, by:

• Leopold Center for Sustainable Agriculture

• Iowa Fruit and Vegetable Growers Association

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Proposed Research Focus

• Evaluate cluster removal, berry thinning, and GA application effects on:
  • Fruit yield and size
  • Cluster appearance
  • Fruit quality
Cultivar Background

‘Swenson Red’

Developed by Elmer Swenson in cooperation with the University of Minnesota.

• Ripens early and is hardy to –30°F.
• Used for fresh eating, juice and wine production.
• Large red berries, thicker skinned.
‘Reliance’

Released by the University of Arkansas in 1982.

• Very hardy seedless table grapes.
• Red fruit are very thin skinned and achieve high sugar levels.
• Flavor and eating quality are excellent.
Horticultural Practices

- 30 + 10 balanced pruning system used
- Spray schedule according to Extension recommendations (Pm 1375)
- Shoots positioned in July to open up canopy
Cluster Thinning (Removal)

Adjusts crop size by removing clusters and keeping primary clusters
Tail Thinning (Berry thinning)

• Tail thinning alters the shape of the cluster

• Clusters which are naturally long will be more compact when tail thinned

• These clusters are more attractive due compactness and fuller berries
Chemical Treatment - GA

- Seeded grapes (‘Swenson Red’) produce GA
- Seedless grapes ‘Reliance’ benefit from applying GA
Harvest - ‘Swenson Red’

- Control
- Cluster thin
- No cluster thin & 1/3 tail thin
- Cluster thin & 50% tail thin
Harvest - ‘Reliance’

Control

Cluster thin & tail thin

No cluster thin & tail thin

Tail thin & GA
# Results - Swenson Red

<table>
<thead>
<tr>
<th>TRT</th>
<th># Cluster / Vine</th>
<th>Yield / Vine (kg)</th>
<th>Berry Wt. (g)</th>
<th>Berry Diameter (mm)</th>
<th>Total Soluble Solids (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cluster thin</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No tail thin</td>
<td>62.4 bc</td>
<td>13.68 ab</td>
<td>3.71 a</td>
<td>17.9 ab</td>
<td>20.08 a</td>
</tr>
<tr>
<td>1/3 tail thin</td>
<td>54 c</td>
<td>10.5 b</td>
<td>3.72 a</td>
<td>17.76 ab</td>
<td>19.78 a</td>
</tr>
<tr>
<td>1/2 tail thin</td>
<td>57.2 bc</td>
<td>10.2 b</td>
<td>3.85 a</td>
<td>18.32 a</td>
<td>19.84 a</td>
</tr>
<tr>
<td><strong>No Cluster thin</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No tail thin</td>
<td>91.2 ab</td>
<td>16.86 ab</td>
<td>3.26 b</td>
<td>17.22 b</td>
<td>18.22 b</td>
</tr>
<tr>
<td>1/3 tail thin</td>
<td>100.6 a</td>
<td>20 ab</td>
<td>3.82 a</td>
<td>18.13 a</td>
<td>19.66 a</td>
</tr>
<tr>
<td>1/2 tail thin</td>
<td>103.6 a</td>
<td>17.88 a</td>
<td>3.55 ab</td>
<td>17.8 ab</td>
<td>19.48 a</td>
</tr>
</tbody>
</table>
## Results – ‘Reliance’

<table>
<thead>
<tr>
<th>Treatment</th>
<th># Cluster / Vine</th>
<th>Yield / Vine (kg)</th>
<th>Berry Wt. (g)</th>
<th>Berry Diameter (mm)</th>
<th>Total Soluble Solids (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cluster Thin</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tail thin</td>
<td>GA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+</td>
<td>-</td>
<td>36.00 cd</td>
<td>2.80 c</td>
<td>2.30 a</td>
<td>14.90 ab</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>42.50 bcd</td>
<td>3.93 bc</td>
<td>1.95 ab</td>
<td>14.41 ab</td>
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<tr>
<td>+</td>
<td>+</td>
<td>33.50 d</td>
<td>0.70 c</td>
<td>2.13 ab</td>
<td>14.69 ab</td>
</tr>
<tr>
<td>-</td>
<td>+</td>
<td>29.50 d</td>
<td>0.47 c</td>
<td>1.32 b</td>
<td>12.86 b</td>
</tr>
<tr>
<td><strong>No Cluster Thin</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+</td>
<td>-</td>
<td>56.00 abc</td>
<td>5.58 abc</td>
<td>2.65 a</td>
<td>15.70 a</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>68.50 a</td>
<td>11.45 a</td>
<td>2.70 a</td>
<td>15.62 a</td>
</tr>
<tr>
<td>+</td>
<td>+</td>
<td>68.67 a</td>
<td>9.68 ab</td>
<td>2.23 a</td>
<td>13.71 a</td>
</tr>
<tr>
<td>-</td>
<td>+</td>
<td>57.50 ab</td>
<td>5.07 abc</td>
<td>2.31 a</td>
<td>14.92 a</td>
</tr>
</tbody>
</table>
Conclusions

‘Swenson Red’

• Yields were similar between treatments.

• Smallest berries were from control vines (no cluster thinning or tail thinning).

• Largest berries from cluster thinned and tail thinned vines.
Conclusions

‘Reliance’

• Need to repeat in 2003 for better estimates of yield.

• GA applications enhanced maturity date and berry weight.