2,4-D Choline Herbicide in Muscadine Grape

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Muscadine Grape Association Meeting
Things to Remember – Resources

- Southern Region Small Fruit Consortium
- NCSU Horticultural Science Weed Management
  - Wolfpackweeds.com
- Virginia Tech Weed ID
  - [http://www.ppws.vt.edu/weedindex.htm](http://www.ppws.vt.edu/weedindex.htm)
- CDMS for pesticide labels
  - [http://www.cdms.net/LabelsMsds/LMDefault.aspx?t](http://www.cdms.net/LabelsMsds/LMDefault.aspx?t)
- NCSU Plant Disease and Insect Clinic
  - [http://www.cals.ncsu.edu/plantpath/extension/clinic](http://www.cals.ncsu.edu/plantpath/extension/clinic)
How does muscadine grape tolerate 2,4-D
How does muscadine grape tolerate 2,4-D choline when applied to row middles?

• Will it affect…?
  – Crop growth
  – Yield
  – Fruit quality

• Why 2,4-D choline?
  – Minimal drift
  – Excellent weed control

Crop Injury from Drift of 2,4-D Formulations

Sosnoskie et al. 2015
Major Weed Concerns

Photos: http://oak.ppws.vt.edu/~flessner/weedguide/
Materials and Methods

• Commercial farm in Lincoln NC
• Herbicides applied to vegetation-free strip under vine row on both sides
  – May 31 and July 27, 2018
• 2 vines per plot
• Each treatment replicated 4 times
  – 1, 2, 3, 4 pt/A
• Data collected
  – Visual injury
  – Growth parameters
  – Estimated yield (weight)
  – 50 mature berries from each plot for analysis of brix and titratable acidity
Results

• Crop injury
  – Very little difference
Results

- Crop injury
  - Very little difference
- Yield
  - No difference

<table>
<thead>
<tr>
<th></th>
<th>Harvest 9/11/18</th>
<th>Harvest 9/18/18</th>
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</thead>
<tbody>
<tr>
<td><strong>Application rate (kg ai ha⁻¹)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.53</td>
<td>402</td>
<td>420</td>
</tr>
<tr>
<td>1.06</td>
<td>369</td>
<td>407</td>
</tr>
<tr>
<td>1.60</td>
<td>410</td>
<td>409</td>
</tr>
<tr>
<td>2.13</td>
<td>401</td>
<td>419</td>
</tr>
</tbody>
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**P value**

- Application timing
  - 5/31/2018 (App A): 0.924
  - 7/27/2018 (App B): 0.864

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<td>5/31/2018 (App A)</td>
<td>401</td>
<td>410</td>
</tr>
<tr>
<td>7/27/2018 (App B)</td>
<td>403</td>
<td>418</td>
</tr>
</tbody>
</table>

**P value**

- Application timing
  - 0.871
  - 0.535

**R*T P value**

- Application timing
  - 0.884
  - 0.345

*Means within columns are not significantly different according to Fisher’s protected LSD (α = 0.05)*
Results

• Crop injury
  – Very little difference
• Yield
  – No difference
• Fruit quality
  – No difference

<p>| Effect of 2,4-D choline application rate and timing on muscadine grape fruit quality&lt;sup&gt;a&lt;/sup&gt; |
|----------------------------------|------------------|------------------|------------------|</p>
<table>
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<tr>
<th>Application rate (kg ai ha&lt;sup&gt;-1&lt;/sup&gt;)</th>
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<th>Harvest 9/18/18</th>
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<tbody>
<tr>
<td>0.53</td>
<td>13.8</td>
<td>14.8</td>
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<td>13.1</td>
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<tr>
<td>2.13</td>
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<td>14.6</td>
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P value | 0.264 | 0.165 | 0.425 | 0.799 | 0.347 | 0.575 |

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<tr>
<td>7/27/2018 (App B)</td>
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</tbody>
</table>

P value | 0.242 | 0.559 | 0.739 | 0.328 | 0.330 | 0.325 |

R*T P value | 0.514 | 0.212 | 0.826 | 0.983 | 0.681 | 0.612 |

<sup>a</sup>Means within columns are not significantly different according to Fisher's protected LSD (α = 0.05)
<sup>b</sup>SSC = soluble solids content
<sup>c</sup>TAtitratable acidity, measured g tartaric/100 ml
Future Research

- Repeat study on same plots from 2018
- Conduct same study at a vineyard in eastern NC
- Conduct same study on young/non-bearing vines
QUESTIONS?

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