2021 and 2022 Water Year: Impacts and Response Actions in WA Tree Fruit

Bernardita Sallato C.
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Cherry production
Apple production

- Driven by environmental conditions – Temperature
Spring Frost 2022

- March – April cold spells
- April Minimum Temp anomaly (-3.0 F)
- A week of cold winds
• April 12th
• 10% death with Temp 27 – 31 F
• Probability for upcoming lows – 56.9 – 92.5 Regina
  – 3.7 – 53.7 Sweetheart
Spring Frost 2022

Apples
Cold Spring 2022

• 2022 April – May

• Pollination

• Honeybees don’t work below 55 F
• Fruit quality
• Unpredictable pest and diseases
• Variability - Ripening
Pre harvest Rain 2022
Sweet cherry 2022

- Loss production
- 43% less shipments
- High price $$
Summer Heat

- Next year’s buds
- Fruit maturity
- Tree growth

[Map image showing temperature anomaly in Washington, with a color scale indicating temperature departure from normal in °F.]

Current Product:
PRISM > Temperature Anomaly 2 Month > Washington

WestWide Drought Tracker

https://wrcc.dri.edu
Post Harvest Heat 2022

Doubles 2023

Whiting, WSU
Heat 2022
Crop losses

- Bitter pit 2022 + 36%
- Sunburn ± 15%
- Storage ??
Irrigate

- Offers little benefit
- Can damage trees
- Water often not available
Expensive, only work during advective frost

Wind Machines
Expensive to operate, inefficient, concerns over air pollution

Heaters
Netting
Heat protection

Change in tissue temp (F)

-9
-6.75
-4.5
-2.25
0
2.25

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Whole-canopy</th>
<th>Sun-exposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shade net</td>
<td>-2</td>
<td>-2.25</td>
</tr>
<tr>
<td>Surround</td>
<td>-2.25</td>
<td>-2.25</td>
</tr>
<tr>
<td>Over-tree sprinkler</td>
<td>-6.75</td>
<td>-6.75</td>
</tr>
<tr>
<td>Under-tree sprinkler</td>
<td>-6.75</td>
<td>-6.75</td>
</tr>
</tbody>
</table>

Whiting, 2010
What is needed

Forecasting
Innovating solutions
Protective solutions

7.9 F improvement in LT10

Whiting, 2022
Thank you

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