LOF Virtual Spring Bloom Meeting
Craig Kahlke, Team Leader, CCE Lake Ontario Fruit Program
May 21st, 2020

• Presentation by Dr. Terence Robinson, Cornell University
• Mario Miranda Sazo, CCE-LOF
• Q & A
Our Sponsor for Today’s Webinar

OESCO, INC.

Supplying Growers, Gardeners and Groundskeeping Professionals. Since 1954.

P.O. Box 540, 8 Ashfield Rd. Rt. 116, Conway, MA 01341

800-634-5557  www.oescoinc.com
Steps in Precision Chemical Thinning:

1. Initial Flower Load
2. Pollen Tube Growth Model
3. Bloom Thinning Spray
4. Carbon Balance Model
5. Petal Fall Spray
6. Carbon Balance Model
7. 10-13mm Spray
8. Carbon Balance Model
9. 16-20mm Spray
10. Carbon Balance Model
11. Target Fruit Number
12. Fruit Growth Rate Model
Bloom Thinning in 2020

- Repeated frosts damaged kings flowers which makes bloom thinning risky.
Honeycrisp - % Buds Damaged
(darker bars indicate kings,
lighter bars indicate laterals)
Gala - % Buds Damaged
(darker bars indicate kings, lighter bars indicate laterals)
Fuji - % Buds Damaged
(darker bars indicate kings, lighter bars indicate laterals)
Bloom Thinning in 2020

- Repeated frosts damaged kings flowers which made bloom thinning risky.

- Bloom Thinning is essential for return bloom of Honeycrisp and Fuji

- **To control biennial bearing in NYS we need to learn to do blossom thinning!!!**

- We use ATS in NY but spray at 60% on PTGM

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Return Bloom (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAA/Sevin @ PF plus Maxcel/Sevin @ 10mm</td>
<td></td>
</tr>
<tr>
<td>ATS @ FB plus Maxcel/Sevin @ 10mm</td>
<td></td>
</tr>
<tr>
<td>ATS @ FB plus NAA/Sevin @ 10mm</td>
<td></td>
</tr>
<tr>
<td>50ppm Maxcel/1pt. Sevin @ 10mm</td>
<td></td>
</tr>
<tr>
<td>7.5ppm NAA/1pt Sevin @ 10mm</td>
<td></td>
</tr>
<tr>
<td>7.5ppm NAA/1 pt Sevin @ PF</td>
<td></td>
</tr>
<tr>
<td>2.0 gal ATS/100gal @ FB</td>
<td></td>
</tr>
<tr>
<td>Unthinned Control</td>
<td></td>
</tr>
</tbody>
</table>

![Graph showing return bloom percentages for different treatments](image)
Chemical Thinning Options

• Bloom
  • Ammonium Thiosulfate (ATS) 2.5%=2.5 gallons/100 gallons
  • Lime Sulfur and Oil
  • Promalin
  • Maxcel
  • NAA (10ppm=4 oz/100 gallons)
  • Amide-Thin
  • Regalia

• Petal Fall (fruits at 5-6mm)
  • Sevin
  • AmideThin
  • Maxcel + Sevin
  • NAA + Sevin
  • Maxcel + NAA

• Fruits at 11-13 mm
  • NAA + Sevin
  • Maxcel + Sevin
  • Maxcel + NAA

• Fruits at 15-20 mm
  • NAA + Sevin
  • Maxcel + Sevin + Oil
  • Ethrel + Oil
Bloom Thinning for 2020:

- Use the Pollen Tube Growth Model to time each spray
  - Measure style length (usually 8-12mm)
  - Begin model clock when the target number of king flowers are open.
  - Spray ATS when model reaches 60% not 100%
  - A second spray will be needed when model again reaches 60%
- If some kings are damaged then let more flowers open before beginning the model clock.
- If more than 40% of kings are damaged the spray NAA at full bloom (80% of all flowers open) to help improve return bloom.
The first blossom thinning spray in the Block should be applied when the pollen tube length has reached 100% of the style length. Entering this spray date resets the model to 0%.
Post-Bloom Thinning for 2020:

- Use the carbohydrate model to avoid over-thinning
  - Both a Web-based version and a mobile phone version (MaluSim) are available
  - Don’t spray when carbohydrate deficits are -50 or less

- Use the degree day calculator in the carbohydrate model to target the best time for thinning (200-250 DD).
  - Spray petal fall thinners when DD=100-125.
  - Spray Rescue thinner between 300-350DD
### Carbohydrate Balance

**Geneva, NY, May 21, 2020**

<table>
<thead>
<tr>
<th>Date</th>
<th>Max</th>
<th>Min</th>
<th>Radiation</th>
<th>Daily Deficit</th>
<th>Av Deficit</th>
<th>DD</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/18</td>
<td>58</td>
<td>55</td>
<td>4.1</td>
<td>-46.55</td>
<td>-18.77</td>
<td>0.0</td>
</tr>
<tr>
<td>5/19</td>
<td>69</td>
<td>54</td>
<td>22.6</td>
<td>-19.68</td>
<td>-24.7</td>
<td>0.0</td>
</tr>
<tr>
<td>5/20</td>
<td>70</td>
<td>49</td>
<td>29.7</td>
<td>0.12</td>
<td>-33.44</td>
<td>0.0</td>
</tr>
<tr>
<td>5/21</td>
<td>71</td>
<td>44</td>
<td>24.4</td>
<td>-2.0</td>
<td>-37.61</td>
<td>10.1</td>
</tr>
<tr>
<td>5/22</td>
<td>74</td>
<td>55</td>
<td>20.4</td>
<td>-36.0</td>
<td>-48.48</td>
<td>24.2</td>
</tr>
<tr>
<td>5/23</td>
<td>75</td>
<td>56</td>
<td>15.6</td>
<td>-57.52</td>
<td>-64.06</td>
<td>38.8</td>
</tr>
<tr>
<td>5/24</td>
<td>78</td>
<td>58</td>
<td>18.1</td>
<td>-72.45</td>
<td>-</td>
<td>54.8</td>
</tr>
<tr>
<td>5/25</td>
<td>78</td>
<td>60</td>
<td>21.9</td>
<td>-75.74</td>
<td>-</td>
<td>71.4</td>
</tr>
<tr>
<td>5/26</td>
<td>82</td>
<td>62</td>
<td>22.3</td>
<td>-95.8</td>
<td>-</td>
<td>89.6</td>
</tr>
<tr>
<td>5/27</td>
<td>80</td>
<td>64</td>
<td>18.3</td>
<td>-108.88</td>
<td>-</td>
<td>107.8</td>
</tr>
</tbody>
</table>

**Text color represents expected thinning efficacy:**
- **Blue** = Mild
- **Green** = Good
- **Orange** = Very good
- **Red** = Excessive

**Legend:**
- **Apply Standard Chemical Thinning Rate**
- **Decrease Chemical Thinning Rate by 15%**
To assess the effectiveness of each spray use the Fruit Growth Rate Model.
1. Assess each block and each variety.
   - If king flower damage is **less** than 40% then
     - Blossom thin Honeycrisp, Fuji and Gala with ATS
     - Wait until petal fall to thin other varieties
   - If king flower damage is **greater** than 40% but the lateral flowers are undamaged then
     - Do not blossom thin
     - Wait until petal fall to thin
   - If total flower damage is greater than 75%, don’t thin this year but adjust crop load by hand thinning.

2. Chemically thin using the “Precision Thinning Program”
   1. Apply a petal fall thinning spray at 100-125 DD.
   2. Assess response by measuring fruitlet diameter and using the fruit growth rate model.
   3. If necessary, apply a thinning spray at 12-13mm (200-250 DD).
   4. Re-assess response with Fruit Growth Rate Model.
   5. If necessary apply a thinning spray at 18-20mm (300-350 DD).

3. Where there has been frost damage, apply **no** thinner to the bottom half of tree.

4. Don’t use surfactants like Regulaid or Oil.

---

**Take-Home Suggestions for 2020:**
Thank You for Your Attention

Questions?