Assessment of Frost Damage in Peach

Hemant Gohil
Agricultural Agent, RCE of Gloucester County, Rutgers University
Clarksboro, NJ 08020
On April 18 Min recorded temp Elk Twp, South Jersey was 27°F for 4-5 hours!!
# Monitoring the weather and bud development

## Critical Spring Temperatures for Tree Fruit Bud Development Stages

<table>
<thead>
<tr>
<th></th>
<th>Pome Fruit (Apples and Pears)</th>
<th>Peaches</th>
<th>Silver tip</th>
<th>Green Tip</th>
<th>Half inch green</th>
<th>Tight Cluster</th>
<th>First Pink</th>
<th>Full Pink</th>
<th>First Bloom</th>
<th>Full Bloom</th>
<th>Post Bloom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apples</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Old temp</td>
<td></td>
<td></td>
<td>16</td>
<td>16</td>
<td>22</td>
<td>27</td>
<td>27</td>
<td>28</td>
<td>28</td>
<td>29</td>
<td>29</td>
</tr>
<tr>
<td>10% kill</td>
<td></td>
<td></td>
<td>15</td>
<td>18</td>
<td>23</td>
<td>27</td>
<td>28</td>
<td>28</td>
<td>28</td>
<td>28</td>
<td>28</td>
</tr>
<tr>
<td>90% kill</td>
<td></td>
<td></td>
<td>2</td>
<td>10</td>
<td>15</td>
<td>21</td>
<td>24</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peaches</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Old temp</td>
<td></td>
<td></td>
<td>23</td>
<td>--</td>
<td>--</td>
<td>25</td>
<td>--</td>
<td>27</td>
<td>27</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>10% kill</td>
<td></td>
<td></td>
<td>18</td>
<td>21</td>
<td>23</td>
<td>25</td>
<td>26</td>
<td>27</td>
<td>28</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>90% kill</td>
<td></td>
<td></td>
<td>1</td>
<td>5</td>
<td>9</td>
<td>15</td>
<td>21</td>
<td>24</td>
<td>25</td>
<td>25</td>
<td></td>
</tr>
</tbody>
</table>

Michigan State Uni.
Snyder Research Farm
Pittstown, NJ
Damage to Flower buds: Tissue browning indicates injury

Cross-sections of live (top) and dead (lower) peach flower buds showing cold injury. Photo by E. Winzeler.
Frost damage at the bloom stage
Visual observations are generally inaccurate.

Closed flower
Brown Pistil

Open flower
Brown Pistil

Open flower
Green Pistil

Photo, Hemant Gohil, April 5, 2016
Cold-injury to fruitlets

Young nectarine cut to show embryo attachment (funiculus, arrows) to the fruit tissue. A. Cut orientation and location. B. Young embryo with undamaged funiculus. C. Thin section to emphasize embryo and undamaged funiculus. D. Twin embryos with damage within each funiculus; note the brown discoloration. (Photos by H.J. Larsen.)
Late Freezes can cause button peaches,
Multiple frost events = damage at all stages

https://www.growables.org/information/LowChillFruit/peach.htm
Should you be fruit thinning this year?

- You should be in a hurry to fruit thin this year! Wait, only if you see some fruits have stopped getting bigger and distinctively smaller then maybe you want to thin.

- You may have to be with crew members, as one grower puts “it will be a weird thinning this year”.
Reflections..

• Best passive frost protection tool – Site selection.

• Late blooming varieties tend to survive frost more than other varieties. There are few notable varieties like Gloria – which is not only late blooming, but has extended bloom and it is heavy bloomer.

• Most of varieties from Rutgers Tree Fruit Breeding program are late blooming compared to varieties from other breeding program.
Reflections..

• Flower survival was best on trees carrying light crops and trees that were bloom-thinned the previous season (Ross and Marini, Virginia Tech).

• The fall application of ethephon to increase flower bud cold tolerance and slightly delay bloom was reported by some to reduce damage.

• Drip irrigation, in combination with a weed-free strip under a tree, raised the temperature of the orchard floor by 3-5°F (Snyder and de Melo-Abreu, 2005).
Educational material on Frost Protection

• FROST PROTECTION IN ORCHARD – METHODS

• FROST PROTECTION: TIPS AND TECHNIQUES
Thank you

Good luck for 2020!