**Critical Spring Temperatures for Tree Fruit Bud Development Stages**

### Pome Fruit

<table>
<thead>
<tr>
<th></th>
<th>Apples</th>
<th>Silver Tip</th>
<th>Green Tip</th>
<th>½ 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><strong>Old temp</strong></td>
<td></td>
<td>16</td>
<td>16</td>
<td>22</td>
<td>27</td>
<td>27</td>
<td>27</td>
<td>27</td>
<td>27</td>
<td>27</td>
</tr>
<tr>
<td>10% kill</td>
<td></td>
<td>15</td>
<td>18</td>
<td>23</td>
<td>27</td>
<td>28</td>
<td>28</td>
<td>27</td>
<td>28</td>
<td>28</td>
</tr>
<tr>
<td>90% kill</td>
<td></td>
<td>2</td>
<td>10</td>
<td>15</td>
<td>21</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Pears</th>
<th>Bud Swell</th>
<th>Bud Burst</th>
<th>Tight cluster</th>
<th>First White</th>
<th>Full White</th>
<th>First Bloom</th>
<th>Full Bloom</th>
<th>Post Bloom</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Old temp</strong></td>
<td></td>
<td>18</td>
<td>23</td>
<td>24</td>
<td>28</td>
<td>29</td>
<td>29</td>
<td>29</td>
<td>30</td>
</tr>
<tr>
<td>10% kill</td>
<td></td>
<td>15</td>
<td>20</td>
<td>24</td>
<td>25</td>
<td>26</td>
<td>27</td>
<td>28</td>
<td>28</td>
</tr>
<tr>
<td>90% kill</td>
<td></td>
<td>0</td>
<td>6</td>
<td>15</td>
<td>19</td>
<td>22</td>
<td>23</td>
<td>24</td>
<td>24</td>
</tr>
</tbody>
</table>

### Stone Fruit

<table>
<thead>
<tr>
<th></th>
<th>Apricots</th>
<th>Bud Swell</th>
<th>Bud Burst</th>
<th>Red Tip</th>
<th>First White</th>
<th>First Bloom</th>
<th>Full Bloom</th>
<th>In the Shuck</th>
<th>Green Fruit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Old temp</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>--</td>
<td>--</td>
<td>28</td>
<td>--</td>
<td>31</td>
</tr>
<tr>
<td>10% kill</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>25</td>
<td>24</td>
<td>27</td>
<td>27</td>
<td>28</td>
</tr>
<tr>
<td>90% kill</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>25</td>
<td>25</td>
<td>27</td>
<td>24</td>
<td>25</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Peaches</th>
<th>Bud Swell</th>
<th>Calyx Green</th>
<th>Calyx Red</th>
<th>First Pink</th>
<th>First Bloom</th>
<th>Full Bloom</th>
<th>Post Bloom</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Old temp</strong></td>
<td></td>
<td>23</td>
<td>--</td>
<td>--</td>
<td>25</td>
<td>--</td>
<td>27</td>
<td>30</td>
</tr>
<tr>
<td>10% kill</td>
<td></td>
<td>18</td>
<td>21</td>
<td>23</td>
<td>25</td>
<td>26</td>
<td>27</td>
<td>28</td>
</tr>
<tr>
<td>90% kill</td>
<td></td>
<td>1</td>
<td>5</td>
<td>9</td>
<td>15</td>
<td>21</td>
<td>24</td>
<td>25</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>European Plums</th>
<th>Bud Swell</th>
<th>Side White Tip</th>
<th>Green Tip</th>
<th>Tight Cluster</th>
<th>First White</th>
<th>First Bloom</th>
<th>Full Bloom</th>
<th>Post Bloom</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Old temp</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>--</td>
<td>23</td>
<td>27</td>
<td>27</td>
<td>30</td>
</tr>
<tr>
<td>10% kill</td>
<td></td>
<td>14</td>
<td>17</td>
<td>20</td>
<td>24</td>
<td>26</td>
<td>27</td>
<td>28</td>
<td>28</td>
</tr>
<tr>
<td>90% kill</td>
<td></td>
<td>0</td>
<td>3</td>
<td>7</td>
<td>16</td>
<td>22</td>
<td>23</td>
<td>23</td>
<td>23</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Sweet Cherries</th>
<th>Bud Swell</th>
<th>Side Green</th>
<th>Green Tip</th>
<th>Tight Cluster</th>
<th>Open Cluster</th>
<th>First White</th>
<th>First Bloom</th>
<th>Full Bloom</th>
<th>Post Bloom</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Old temp</strong></td>
<td></td>
<td>23</td>
<td>23</td>
<td>25</td>
<td>28</td>
<td>28</td>
<td>29</td>
<td>28</td>
<td>28</td>
<td>28</td>
</tr>
<tr>
<td>10% kill</td>
<td></td>
<td>17</td>
<td>22</td>
<td>25</td>
<td>26</td>
<td>27</td>
<td>27</td>
<td>28</td>
<td>28</td>
<td>28</td>
</tr>
<tr>
<td>90% kill</td>
<td></td>
<td>5</td>
<td>9</td>
<td>14</td>
<td>17</td>
<td>21</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Tart Cherries</th>
<th>Bud Swell</th>
<th>Side Green</th>
<th>Green Tip</th>
<th>Tight Cluster</th>
<th>Open Cluster</th>
<th>First White</th>
<th>First Bloom</th>
<th>Full Bloom</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Old temp</strong></td>
<td></td>
<td>15</td>
<td>24</td>
<td>26</td>
<td>28</td>
<td>28</td>
<td>28</td>
<td>28</td>
<td>28</td>
</tr>
<tr>
<td>10% kill</td>
<td></td>
<td>0</td>
<td>10</td>
<td>22</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
</tr>
</tbody>
</table>

Old standard temperature represented the critical temperature in Fahrenheit (the lowest temperature that can be endured for 30 minutes without damage). In addition, the chart shows the temperature at which 10% and 90% of normal buds will be killed. These numbers were taken from Washington (WSU), and Michigan (MSU) Extension Bulletins. Apple - WSU EB0913, Pears - WSU EB0978, Sweet Cherries - WSU EB1128, Peaches - WSU EB0914, Apricots - WSU EB1240, Tart Cherries - MSU Research. Rpt. 220

See [Picture Table of Fruit Freeze Damage Thresholds](pdf)

Data Compiled by Mark Longstroth MSUE

---

MSU is an affirmative-action, equal-opportunity employer. Michigan State University Extension programs and materials are open to all without regard to race, color, national origin, gender, gender identity, religion, age, height, weight, disability, political beliefs, sexual orientation, marital status, family status or veteran status. The information is for educational purposes only. Reference to commercial products or trade names does not imply endorsement by MSU Extension or bias against those not mentioned.