## Table S1. Monthly weather conditions and historical average values for Fairhope and Prattville, AL during the study period.

<table>
<thead>
<tr>
<th></th>
<th>Fairhope</th>
<th>Historic average†</th>
<th>Prattville</th>
<th>Historical average‡</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean Monthly Maximum Air Temperature (°C)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>March</td>
<td>18.6</td>
<td>22.2</td>
<td>24.2</td>
<td>18.9</td>
</tr>
<tr>
<td>April</td>
<td>25.8</td>
<td>25.7</td>
<td>24.7</td>
<td>24.3</td>
</tr>
<tr>
<td>May</td>
<td>29.7</td>
<td>28.3</td>
<td>29.4</td>
<td>26.4</td>
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<td>June</td>
<td>32.5</td>
<td>32.8</td>
<td>30.1</td>
<td>31.0</td>
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<tr>
<td>July</td>
<td>33.0</td>
<td>31.8</td>
<td>31.2</td>
<td>31.2</td>
</tr>
<tr>
<td>August</td>
<td>33.0</td>
<td>33.7</td>
<td>30.9</td>
<td>31.5</td>
</tr>
<tr>
<td><strong>Overall Average</strong></td>
<td>28.8</td>
<td>29.1</td>
<td>28.4</td>
<td>27.2</td>
</tr>
<tr>
<td><strong>Mean Monthly Minimum Air Temperature (°C)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>March</td>
<td>7.5</td>
<td>10.1</td>
<td>13.9</td>
<td>5.7</td>
</tr>
<tr>
<td>April</td>
<td>13.2</td>
<td>14.7</td>
<td>13.8</td>
<td>12.3</td>
</tr>
<tr>
<td>May</td>
<td>20.6</td>
<td>15.6</td>
<td>17.9</td>
<td>15.6</td>
</tr>
<tr>
<td>June</td>
<td>23.5</td>
<td>23.1</td>
<td>20.1</td>
<td>22.2</td>
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<tr>
<td>July</td>
<td>24.7</td>
<td>23.5</td>
<td>22.5</td>
<td>22.1</td>
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<tr>
<td>August</td>
<td>25.2</td>
<td>23.0</td>
<td>19.3</td>
<td>22.2</td>
</tr>
<tr>
<td><strong>Overall Average</strong></td>
<td>19.1</td>
<td>18.3</td>
<td>17.9</td>
<td>16.7</td>
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<tr>
<td><strong>Cumulative Rainfall (mm)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>March</td>
<td>120.9</td>
<td>103.1</td>
<td>56.1</td>
<td>36.3</td>
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<td>April</td>
<td>47.5</td>
<td>23.1</td>
<td>35.8</td>
<td>103.4</td>
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<td>May</td>
<td>182.1</td>
<td>20.3</td>
<td>186.2</td>
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<td>109.5</td>
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<td>August</td>
<td>218.2</td>
<td>44.7</td>
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<tr>
<td><strong>Overall Sum</strong></td>
<td>725.7</td>
<td>492.5</td>
<td>974.0</td>
<td>1181.5</td>
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</table>

† Period used to calculate historical average at Fairhope: 1950 – 2008.
‡ Period used to calculate historical average for Prattville: 1970 – 2014.
Table S2. Average maximum air temperature, average minimum air temperature, and cumulative rainfall for five time windows corresponding to the two planting dates tested at the two study locations.

<table>
<thead>
<tr>
<th>Location</th>
<th>Year</th>
<th>Time†</th>
<th>Mean maximum Temperature (°C)</th>
<th>Mean minimum Temperature (°C)</th>
<th>Cumulative Rainfall (mm)</th>
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</thead>
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<td></td>
<td></td>
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<td>PD2</td>
<td>PD1</td>
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<td>Fairhope, AL</td>
<td>2010</td>
<td>-I</td>
<td>30.5</td>
<td>31.0</td>
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<tr>
<td></td>
<td></td>
<td>I</td>
<td>31.0</td>
<td>33.5</td>
<td>22.3</td>
</tr>
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<td></td>
<td></td>
<td>II</td>
<td>33.7</td>
<td>32.0</td>
<td>24.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>III</td>
<td>31.9</td>
<td>33.1</td>
<td>23.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IV</td>
<td>33.3</td>
<td>35.0</td>
<td>25.0</td>
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<tr>
<td></td>
<td></td>
<td>Total</td>
<td>32.1</td>
<td>32.9</td>
<td>23.3</td>
</tr>
<tr>
<td></td>
<td>2011</td>
<td>-I</td>
<td>28.1</td>
<td>33.4</td>
<td>15.9</td>
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<td></td>
<td></td>
<td>I</td>
<td>33.3</td>
<td>32.3</td>
<td>21.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>II</td>
<td>32.4</td>
<td>33.0</td>
<td>24.3</td>
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<td></td>
<td>III</td>
<td>32.9</td>
<td>31.4</td>
<td>23.3</td>
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<td></td>
<td>IV</td>
<td>32.9</td>
<td>30.6</td>
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<td>Total</td>
<td>31.9</td>
<td>32.1</td>
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<td>30.8</td>
<td>19.9</td>
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<td>2013</td>
<td>-I</td>
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<td>32.1</td>
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<td>31.9</td>
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<td>31.4</td>
<td>34.2</td>
<td>22.0</td>
</tr>
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<td></td>
<td>Total</td>
<td>30.7</td>
<td>31.9</td>
<td>21.4</td>
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</table>

† The five time windows cover the period from 14 days before silking (-I) to physiological maturity (end of interval IV). -I = 14 days before silking, I = 14 days following silking, II = from day 15 to day 28 after silking, and III = from day 29 to day 42 after silking, IV = variable in length starting at day 43 after silking and ending at physiological maturity.
‡ PD1 and PD2 represent planting date at mid-March and mid-April, respectively.
Table S2 (Continuation). Average maximum air temperature, average minimum air
temperature, and cumulative rainfall for five time windows corresponding to the
two planting dates tested at the two study locations.

<table>
<thead>
<tr>
<th>Location</th>
<th>Year</th>
<th>Time†</th>
<th>Mean maximum Temperature (°C)</th>
<th>Mean minimum Temperature (°C)</th>
<th>Cumulative Rainfall (mm)</th>
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<td>PD2</td>
<td>PD1</td>
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<td>Fairhope</td>
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<td>-I</td>
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<td></td>
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<td>32.8</td>
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<td>32.7</td>
<td>32.6</td>
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<tr>
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<td>III</td>
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<td>32.4</td>
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<td>33.5</td>
<td>23.5</td>
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<td></td>
<td>Total</td>
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<td>32.6</td>
<td>22.3</td>
</tr>
<tr>
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<td>-I</td>
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</tr>
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<td>32.6</td>
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</tr>
<tr>
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<td>33.8</td>
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<td>Total</td>
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<td>32.3</td>
<td>21.7</td>
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<tr>
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<td>34.8</td>
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<td>Total</td>
<td>32.8</td>
<td>32.9</td>
<td>21.3</td>
</tr>
</tbody>
</table>

† The five time windows cover the period from 14 days before silking (-I) to physiological maturity (end of interval IV). -I = 14 days before silking, I = 14 days following silking, II = from day 15 to day 28 after silking, and III = from day 29 to day 42 after silking, IV = variable in length starting at day 43 after silking and ending at physiological maturity.
‡ PD1 and PD2 represent planting date at mid-March and mid-April, respectively.
Table S3. Analysis of variance for corn grain yield growing at different planting dates and planting densities in Fairhope (2010 – 2014) and Prattville (2013 – 2014), Alabama.

<table>
<thead>
<tr>
<th>Effect†</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>Pr&gt;F</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD</td>
<td>0.0001</td>
<td>0.0016</td>
<td>0.0217</td>
<td>0.0051</td>
<td>&lt;0.0001</td>
<td>0.0235</td>
<td>0.2325</td>
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<tr>
<td>D</td>
<td>0.5484</td>
<td>0.0240</td>
<td>0.0003</td>
<td>0.0002</td>
<td>&lt;0.0001</td>
<td>0.0008</td>
<td>&lt;0.0001</td>
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</tr>
<tr>
<td>PD × D</td>
<td>0.3845</td>
<td>0.8404</td>
<td>0.8345</td>
<td>0.2142</td>
<td>0.9297</td>
<td>0.2561</td>
<td>0.7712</td>
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</tr>
</tbody>
</table>

Yield Least Squares Mean Estimates (kg ha\(^{-1}\))‡

<table>
<thead>
<tr>
<th>PD</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD1§</td>
<td>7889 a</td>
<td>3096 b</td>
<td>7962 b</td>
<td>8564 a</td>
<td>8380 a</td>
</tr>
<tr>
<td>PD2</td>
<td>6996 b</td>
<td>4603 a</td>
<td>8538 a</td>
<td>6913 b</td>
<td>6426 b</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>D</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1¶</td>
<td>7592</td>
<td>4013 ab</td>
<td>7573 b</td>
<td>6949 b</td>
<td>6294 b</td>
</tr>
<tr>
<td>D2</td>
<td>7319</td>
<td>4089 a</td>
<td>8206 ab</td>
<td>7710 a</td>
<td>6953 b</td>
</tr>
<tr>
<td>D3</td>
<td>7417</td>
<td>3793 ab</td>
<td>8544 a</td>
<td>8022 a</td>
<td>7982 a</td>
</tr>
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<td>D4</td>
<td>3502 b</td>
<td>8677 a</td>
<td>8274 a</td>
<td>8382 a</td>
<td>8814 a</td>
</tr>
</tbody>
</table>

† PD = Planting date, D = Plant density.
‡ Least squares means in the same column followed by different letter are significantly different at P ≤ 0.05 (Tukey test).
§ PD1 corresponds to mid-March planting (recommended planting date) and PD2 to mid-April planting date.
¶ D1, D2, D3, and D4 correspond to plant densities of 44,480, 54,360, 64,250, and 74,130 plants ha\(^{-1}\).