

## Corn Planting Dates in the Virginia Coastal Plain: How early is early?<sup>1</sup>

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Early-planted corn generally produces higher yields than later-planted corn due to improved utilization of sunlight during the long days of June and July, assuming moisture is adequate. Also, drying costs are reduced as the corn matures in warmer weather and can be allowed to dry-down in the field; and earlier harvest enables growers to begin preparation for the fall seeding of small grains.

However, a significant amount of early-planted corn is replanted in some years in Virginia because of poor stands. The graph in Fig. 1 shows the temperatures during April of 1999 at one location, Camden Farm in Caroline County, VA. Air temperatures for the entire month of April averaged only 56°F and there were 4 nights in which the minimum temperature was below 40°F. Corn that was planted during the first week of April at this site had to be replanted during the first week of May. This experience was similar to that of many growers in the Coastal Plain, especially under no-tillage conditions.

Corn requires a minimum temperature of 50°F to germinate, and even at 55°F germination and growth are slow. Soil temperatures under conventional tillage can be higher than air temperatures if several days of bright sunshine have provided energy for soil warming. But with surface mulches in place for no-tillage production, soil temperatures are generally colder and warm more slowly. **The objective of this publication is to answer the question, “how early is early?” for planting corn in the Virginia Coastal Plain.**

To obtain a general answer to the question of “how early is early?” to plant corn, we have summarized 30 years of April air temperature records for 4 locations in the Virginia Coastal Plain (Figure 2). The locations are Corbin, VA, in Caroline County; Painter, VA, on the Eastern Shore; Holland, VA, in the City of Suffolk; and West Point, VA, in King William County. Examination of these data shows that temperatures generally rise during the first week of April throughout the region, and the average air temperature

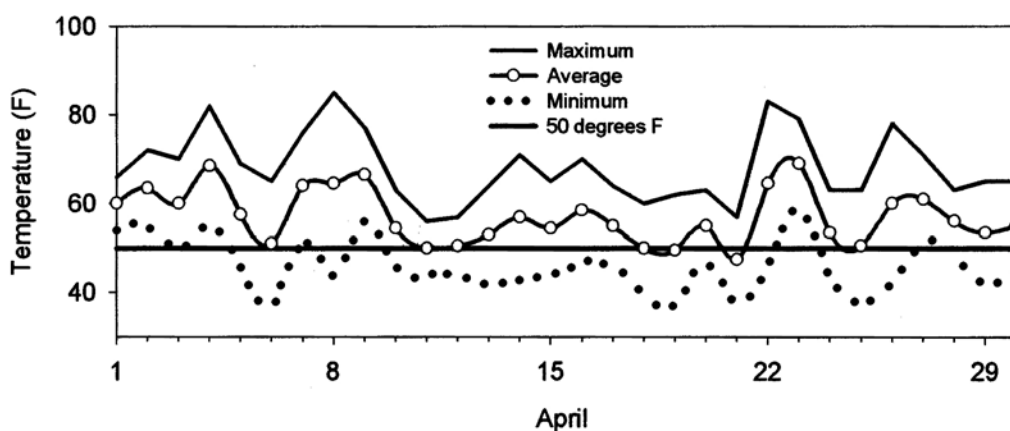


Figure 1: Maximum, minimum and average temperatures for April 1999 at Camden

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is above 50°F at all locations. However, average temperatures decline at all locations during the second week before beginning a steady upward trend. These data are averages and thus indicate that severe cold fronts do move through Virginia in many years during the second week of April. **Also, these data indicate that corn planted during the first week of April can be at significant risk to damage by low temperatures, especially in no-tillage conditions.**

A further analysis of the data is presented in Tables 1-4. The number of days and percentage of days that air temperatures, on-average, will be above the corn growth threshold of 50°F is calculated for the first two weeks and the last two weeks of April at each location. For example, at Corbin, VA (Table 1) if corn is planted on April 1, we expect only 55% of the days during the first two weeks of April to have average temperatures above 50°F. However, for corn planted on April 16, 77% of the days are expected to have average temperatures above 50°F. The risk of stand loss due to low temperatures is much less.

Temperatures at Holland, VA (Table 3) show that for corn planted on April 1, almost 69% of the days during the first two weeks of April will have average air temperatures above 50°F. Temperature data from April 16 until the end of April show that 87% of the days will have temperatures above 50°F.

How can this information be used? Weather forecasts for temperatures are generally much more reliable than precipitation forecasts. Therefore, if the first week of April is warm and soil temperatures have reached acceptable levels for planting, the following 1 to 2-week temperature forecast should be consulted. Planting should proceed if temperatures are steady to rising. **However, planting should be delayed if a significant cold front is approaching, as the data indicate does occur in many years.**

Careful analysis of temperatures for a specific location with reference to long-term averages should aid growers in determining planting dates. Optimizing planting dates enables growers: (1) to obtain the benefits of early planting with reduced risk of stand loss; (2) avoid replanting costs; (3) avoid yield loss from uneven stands that are too good to destroy but not good enough for optimum yields; and (4) avoid the loss of yield for replanted corn compared to “early-planted” corn.

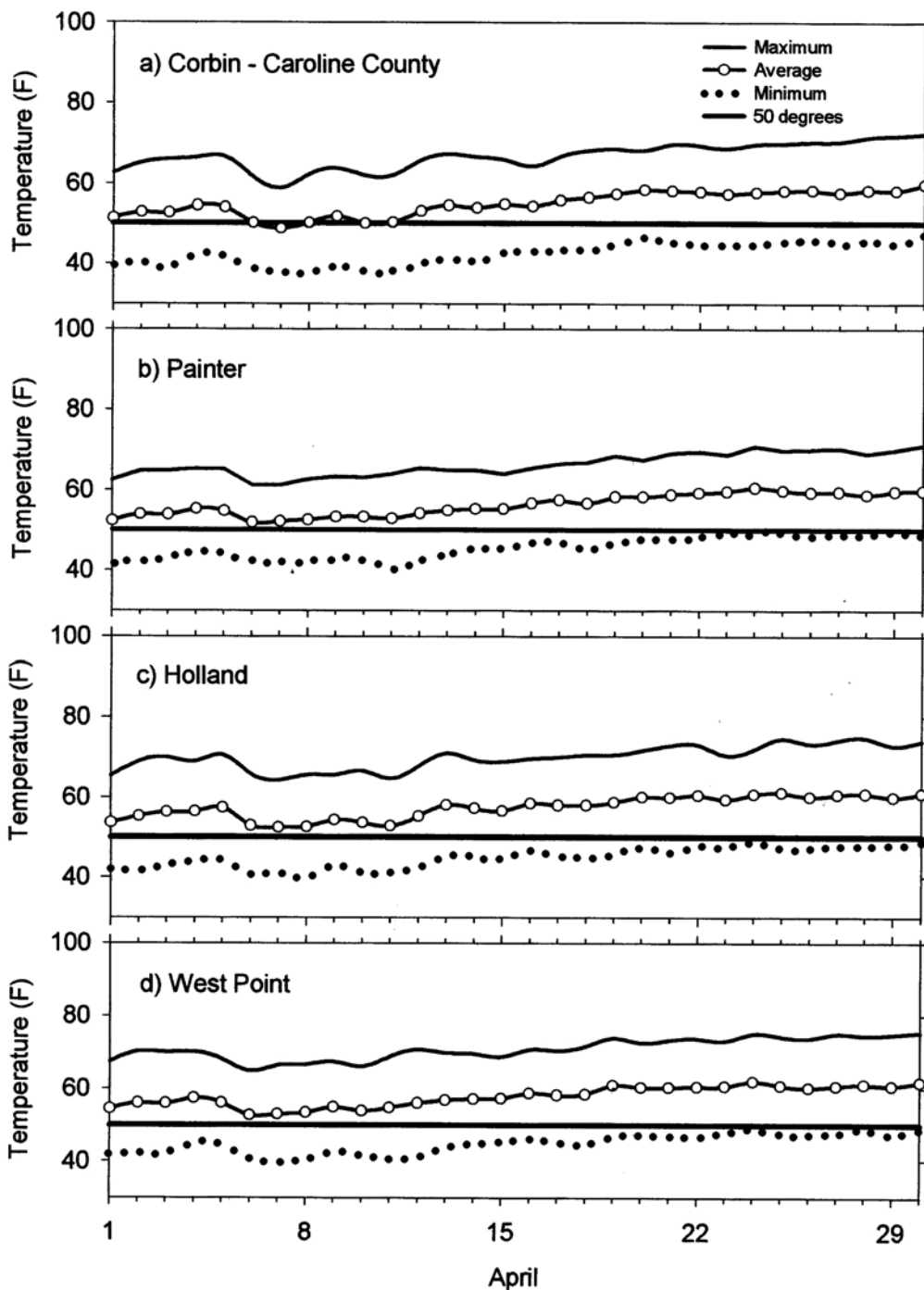


Figure 2: Maximum, minimum and average temperatures (30 years) during April for four locations in the Virginia Coastal Plain

**Table 1: Corbin, VA<sup>1</sup>**—Number of days above 50°F as a percentage of days remaining for the first two weeks and second two weeks of April.

Day in April	Number of days until April 15	Number of days above 50°F expected	Percentage of days	Day in April	Number of days until April 30	Number of days above 50°F expected	Percentage of days
1	15	8.3	55.3	16	15	11.6	77.3
2	14	7.8	55.7	17	14	10.9	77.9
3	13	7.3	56.2	18	13	10.2	78.5
4	12	6.7	55.8	19	12	9.5	79.2
5	11	6.1	55.5	20	11	8.7	79.1
6	10	5.6	56.0	21	10	7.9	79.0
7	9	5.0	55.6	22	9	7.2	80.0
8	8	4.5	56.3	23	8	6.4	80.0
9	7	4.1	58.6	24	7	5.8	82.9
10	6	3.6	60.0	25	6	5.0	83.3
11	5	3.1	62.0	26	5	4.1	82.0
12	4	2.6	65.0	27	4	3.3	82.5
13	3	2.0	66.7	28	3	2.5	83.3
14	2	1.3	65.0	29	2	1.7	85.0
15	1	0.7	70.0	30	1	0.9	90.0

<sup>1</sup>Based on average temperature data for the 30 years (1970-1999) at Corbin, Va.

**Table 2: Painter, VA<sup>1</sup>**—Number of days above 50°F as a percentage of days remaining for the first two weeks and second two weeks of April.

Day in April	Number of days until April 15	Number of days above 50°F expected	Percentage of days	Day in April	Number of days until April 30	Number of days above 50°F expected	Percentage of days
1	15	9.2	61.3	16	15	12.9	86.0
2	14	8.7	62.1	17	14	12.1	86.4
3	13	8.0	61.5	18	13	11.3	86.9
4	12	7.4	61.7	19	12	10.5	87.5
5	11	6.7	60.9	20	11	9.6	87.3
6	10	6.0	60.0	21	10	8.9	89.0
7	9	5.4	60.0	22	9	8.1	90.0
8	8	4.8	60.0	23	8	7.2	90.0
9	7	4.3	61.4	24	7	6.4	91.4
10	6	3.7	61.7	25	6	5.4	90.0
11	5	3.2	64.0	26	5	4.5	90.0
12	4	2.7	67.5	27	4	3.6	90.0
13	3	2.1	70.0	28	3	2.7	90.0
14	2	1.5	75.0	29	2	1.8	90.0
15	1	0.8	80.0	30	1	0.9	90.0

<sup>1</sup>Based on average temperature data for the 30 years (1970-1999) at Painter, Va.

**Table 3:** Holland, VA<sup>1</sup>—Number of days above 50°F as a percentage of days remaining for the first two weeks and second two weeks of April.

Day in April	Number of days until April 15	Number of days above 50°F expected	Percentage of days	Day in April	Number of days until April 30	Number of days above 50°F expected	Percentage of days
1	15	10.3	68.7	16	15	13.1	87.3
2	14	9.7	69.3	17	14	12.3	87.9
3	13	9.1	70.0	18	13	11.5	88.5
4	12	8.3	69.2	19	12	10.7	89.2
5	11	7.6	69.1	20	11	9.8	89.1
6	10	6.7	67.0	21	10	8.9	89.0
7	9	6.2	68.9	22	9	8.0	88.9
8	8	5.6	70.0	23	8	7.1	88.8
9	7	5.0	71.4	24	7	6.3	90.0
10	6	4.4	73.3	25	6	5.4	90.0
11	5	3.8	76.0	26	5	4.5	90.0
12	4	3.2	80.0	27	4	3.6	90.0
13	3	2.4	80.0	28	3	2.7	90.0
14	2	1.6	80.0	29	2	1.9	95.0
15	1	0.8	80.0	30	1	0.95	95.0

<sup>1</sup>Based on average temperature data for the 30 years (1970-1999) at Holland, Va.

**Table 4:** West Point, VA<sup>1</sup>—Number of days above 50°F as a percentage of days remaining for the first two weeks and second two weeks of April.

Day in April	Number of days until April 15	Number of days above 50°F expected	Percentage of days	Day in April	Number of days until April 30	Number of days above 50°F expected	Percentage of days
1	15	10.4	69.3	16	15	13.7	91.3
2	14	9.7	69.3	17	14	12.8	91.4
3	13	9.0	69.2	18	13	11.9	91.5
4	12	8.3	69.2	19	12	11.1	92.5
5	11	7.5	68.2	20	11	10.1	91.8
6	10	6.8	68.0	21	10	9.3	93.0
7	9	6.2	68.9	22	9	8.4	93.3
8	8	5.7	71.3	23	8	7.5	93.8
9	7	5.1	72.9	24	7	6.7	95.7
10	6	4.5	75.0	25	6	5.7	95.0
11	5	3.9	78.0	26	5	4.7	94.0
12	4	3.1	77.5	27	4	3.8	95.0
13	3	2.4	80.0	28	3	2.8	93.3
14	2	1.6	80.0	29	2	1.9	95.0
15	1	0.9	90.0	30	1	0.95	95.0

<sup>1</sup>Based on average temperature data for the 30 years (1970-1999) at West Point, Va.