

Introduction to Michigan Cherries and their Annual Cycles - Lesson 1 Worksheet Part 1-

1. What did you learn from the Pure Michigan video and from your teacher about Michigan agriculture?

- There are 200 varieties of crops grown in Michigan
- Michigan is the country's # 1 producer of cherries.
- Michigan (especially Northern Michigan) grows 75 % of the nation's tart cherries.
- Michigan's cherry industry is a \$ 72 million industry.

2. Take notes on the radio clip about Michigan cherry trees.

a. When are cherries most vulnerable?

These trees are the most vulnerable just before their white blossoms unfold, at the so-called "water bud" stage.

b. What caused damage to cherry blossoms in 2012? (Add to your notes after discussion.)

2012 was a very warm spring. This caused cherry trees to bloom earlier in the spring, which made them susceptible to spring frost. The frost damaged nearly the entire crop.

3. What could be causing the cherries to bloom earlier in some years? In other words, what could be driving the cherry's cycle from bud, to blossom, to fruit?

Name at least three potential drivers of the cherry tree's annual cycles and provide a short explanation for your reasoning. (Add more after class discussion.)

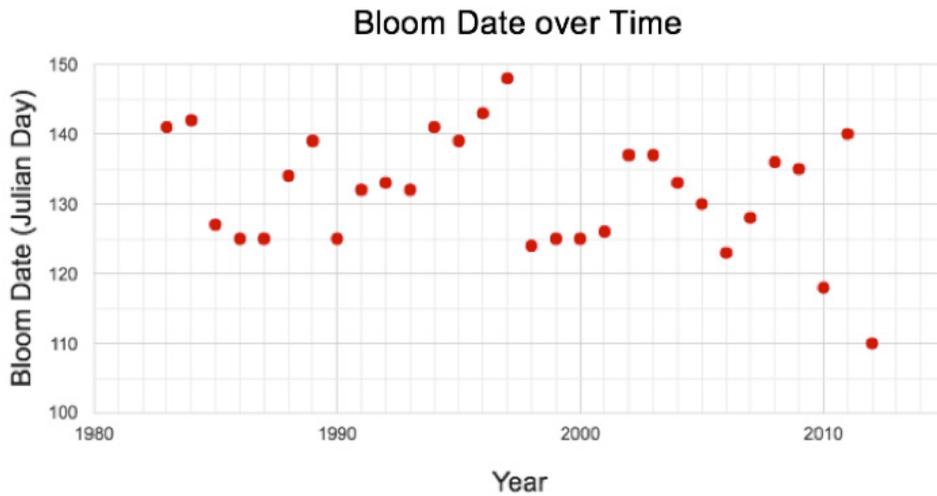
- Temperature
- Precipitation
- Sunlight

iv. Other potential explanations?:

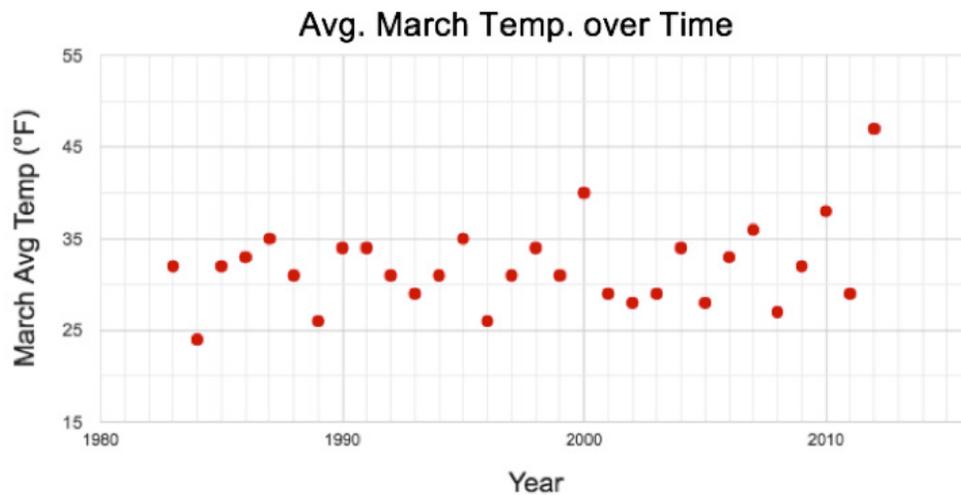
Student answers may vary: (climate, frost events, farming methods/inputs, soil quality, pollination).

Climate Change and the Future of Michigan Cherries: - Lesson 1 Worksheet Part 2 & Homework -

Graph 1 - Bloom Date over Time



Graph 2 - Avg. March Temperature over Time



1. What do these two graphs tell us? What trends do you see?

Graphs show average March temperature & Bloom Date by year. Students could note things like: the graphs are almost inverses of one another, dots start out closer together and seem to spread out over time on each graph.

2. Which years stand out on the graph? Why?

2012. They may note other years, such as 2010.

Climate Change and the Future of Michigan Cherries

Lesson 1 Worksheet Part 2 & Homework continued

TEACHER KEY

3. Do you see evidence on these graphs to support the claim that there is a relationship between warmer March temperatures and earlier bloom dates? If so, why? If not, why not?

Students confirm that 2012 was a very warm March and that the bloom also occurred very early that year. Looks like perhaps when average March temperatures are warmer, the cherries bloom earlier, and when average March temperatures are cooler, the cherries bloom later. Students may note other dates. Look for a justification for their response.

HOMEWORK

- How else could we graph the data to better see the **relationship** between **Avg. March Temperature** and **Bloom Date**?
- If we plotted both sets of data (Data Table 1 and 2) on **ONE** graph, what would that look like?

GRAPH FOUND ON SLIDE 29

- Fill in the graph information to the best of your ability. What would be the:
 - X axis/independent variable? **Average March Temperature**
 - Y axis/dependent variable? **Bloom Date**
 - Units? **Degrees Fahrenheit & Julian Day**
 - Title of your graph? **Bloom Date of Cherries in MI as a function of Avg. March Temp.**

