

Name: _____ Hour: _____ Date: _____

4.5 Student Handout: Bananas

A. Phenomenon—Define the Problem. As you watch the video ("[Will Bananas go extinct?](#)"), answer the following questions:

1. Why could Cavendish bananas be killed in a short period of time (what is the problem)?
2. Why was the Gros Michel banana killed off previously?
3. How have bananas been treated against fungal diseases?
4. After the video, what are two additional questions you have or two things you wonder about?
A.

B.

After Video Questions (cause and effect):

1. How can the TR4 fungus (Tropical race 4) disease attack the new Cavendish banana in a way that the banana cannot adapt to?
2. Without researching, what are some solutions you can think of that would help fight the fungus affecting the survival of the Cavendish banana species?
3. What are some unintended consequences of your ideas for helping the bananas survive?

B. Potential Solutions “What would the best solution to this problem look like?”

Criteria (what we want to happen)	Constraints (what barriers are in the way?)

C. Do Background Research

1. Your teacher will provide you with access to articles that describe methods biologists have tried to help bananas survive. Some criteria and constraints have been selected and listed as the titles of each column. After reading the articles, fill out each box in the table to indicate how well each method meets the criteria or constraints, and then share your table with your group.

	Who should pay for this solution? Why?	Is this a long-term solution ? Why?	Does this solution cause ethical problems (hurt the environment, humans, etc.)? Why?	What other problems could occur? Is this solution doable? Why?
Transgenics				
Fungicides				
Bio-Control				

Artificial Selection (Breed a new type of banana)				

D. After Research Questions

1. Based on what you have learned, what do you think is the best way for the banana plant to resist the TR4 fungus?
Note: Different students may reach different conclusions on this question.
2. Why do you feel the solution you chose is the best option? (Is it the best solution according to the criteria in section B above?)
3. Would this solution work for all species facing similar threats? Why or why not?
4. What are the possible unintended consequences of your chosen solution (does it cause any unintended effects)?

Optional Final Assessment question: Pick one of the following fruit diseases: Citrus greening of oranges, vanilla beans and black rot, apples and fire blight, tomato mosaic virus, or cacao plant (chocolate) pod rot disease.

These fruits face similar threats to their existence as the banana. Explain the threat and the potential solutions scientists are pursuing for that disease.

Students must create a slideshow for each disease and answer each of these questions.

1. What is the disease?
2. What does the disease do?
3. What are proposed solutions for the disease?
4. What are the constraints and barriers to the solutions?

The slideshow needs to be organized and informational. The slideshow will be presented to the class.