

CHAPTER 19**HANDOUT****Bananas and Biodiversity****BLM 19.0.1**

Read the following news story, and then answer the questions.

On Sunday May 21, 2006, Robin McKie, the science editor of the *Observer*, a weekly on-line publication of the *Manchester Guardian*, filed a report speculating on a possible crisis in the world food supply.

Convenient for handling and eating, with a tab for wrapper-removal, a pleasing taste, an obvious sell-by-date mechanism (its skin turns black), and perfectly biodegradable, the banana is considered by many to be the perfect food. Sales of the fruit have recently reached all-time highs and more than 95 percent of UK households buy bananas every week. Only lottery tickets and gasoline sales outstrip them.

There is trouble on the horizon, however. According to reports by biologists, the banana could be on the way to extinction. Or, to be more specific, the Cavendish—the variety sold in stores throughout Britain and around the world—may be in danger.

According to Ann Vezina, of the International Network for the Improvement of Banana and Plantain, virtually all bananas traded internationally are this variety, and biologists have discovered that several predators—such as the black Sigatoka fungus—are attacking the Cavendish.

Fungi such as the black Sigatoka are extremely dangerous. However, the situation is compounded by the biological heritage of the Cavendish. It is sexless, seedless, and sterile and can only be bred by growing plants from identical cuttings. All Cavendish bananas are clones, which means they are genetically identical.

The fungi are not hampered by the same lack of genetic diversity. They are constantly developing new combinations to attack the Cavendish's natural defences. Once a fungus develops a variation that is successful in its attack on one stand of bananas, that fungus population will spread like wildfire through the rest in the plantation.

"One thing we can be sure of is that the Sigatoka won't lose this battle," said Dr Emile Frison, of the Consultative Group on International Agricultural Research.

This story of the supermarket banana once again highlights the workings of natural selection. In fact, this looming crisis is a repeat of the fate of the Cavendish's predecessor. In the 1950s, the banana of choice was the Gros Michel, until it was wiped out by Panama disease. And that fact has triggered alarm among biologists—small plantation managers have discovered that the Panama fungus—which the Cavendish was formerly immune to—has begun to attack and kill Cavendish plants.

Scientists are looking for new varieties of wild banana plants that could be grown instead of the Cavendish or whose genes could be introduced to strengthen the Cavendish's defences in its battle against the Panama, Sigatoka, and other diseases. But these attempts may be doomed to failure, as the UN Food and Agriculture Organization (FAO) warned this month. Wild banana plants species are being wiped out at an alarming rate as natural forests are destroyed across the sub-continent.

"Due to eco-system destruction, it is probable that many valuable gene sources have now been lost," said FAO Agricultural Officer NeBambi Lutaladio. Many of the genes that could have saved the Cavendish are likely already gone. For example, India's lost bananas include a variety that might be able to confer genetic resistance to Sigatoka. Today that species exists as a single plant, found in the Indian Botanic Gardens in Calcutta.

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1. How are small, isolated populations such as the sage grouse, wood bison, or peregrine falcon like the Cavendish banana?

2. Why have the suppliers of foods such as bananas so carefully bred the biodiversity out of their plants? Name some examples of foods that have been managed the same way as bananas. Name at least one food you have seen in greater varieties.

3. When you return from a trip out of the country, you are usually asked if you visited any farms and reminded of regulations that forbid bringing foreign soil or plants into the country. Do you think this is an effective way to protect Canada's crops and wildlife from biological threats? Why or why not?
