

Science Time

Program Content for November 2, 2016

Read the article “Promised bounty of genetically modified crops doesn’t materialize” on page A4 of the Sunday, October 30, 2016 edition of The Seattle Times.

Objective/s

- I can explain how the use of pesticides and crop yields differ between genetically modified crops and those that are conventionally grown.

Next Generation Science Standards (NGSS) connection

- *Cross Cutting Concept:* New technologies can have deep impacts on society and the environment, including some that were not anticipated. Analysis of costs and benefits is a critical aspect of decisions about technology.

Pre-reading and Vocabulary: Define each term and then use it in a sentence to demonstrate your understanding.

1. genetic modification
2. pesticide
3. herbicide
4. insecticide
5. fungicide
6. trait

Comprehension Questions

1. What has been the main controversy over genetically modified crops?
2. What is a more basic (and overlooked) problem than the main controversy you listed above?
3. What were the two main promises of genetic modification?
4. What is a crop’s *yield*?
5. Detail how the promise of crop yields has fallen short for genetically modified crops versus conventional crops.
6. Detail how the reduction of herbicide promise has fallen short for genetically modified crops versus conventional crops. Use data to support your response.
7. How do the harmful effects of eating genetically modified foods compare to the potential harm from ingesting pesticides?
8. How is the industry that makes and sells genetically modified plants and “poisons” winning on both ends?
9. What was the first genetically modified food and what was it supposed to do?
10. Which two crops are driving the overall increase in the use of herbicides?
11. What is Roundup?
12. Explain the trend that is occurring as weeds become resistant to Roundup. Provide an example of the trend you identify.
13. How does the cost of genetically modified seeds compare to the cost of those that are not genetically modified? Provide an example.
14. How have farmers increased their crop yield for thousands of years?
15. How do many European farmers feel about genetically modified seeds?

Science Time is posted to the Web on Wednesdays. Please share this NIE Science Time program with other teachers. To sign-up for the electronic edition for your class, please register

Copyright © 2016 The Seattle Times Company

Prompts and Extensions

1. Learn more about how genetically modified crops are created and the ethical debate surrounding their use by exploring this [website](#).
2. [Watch this detailed report](#) about the first genetically modified food, the Flavr Savr tomato.
3. The last section of the article '*Feeding the world*' details how scientific data can often be used in different ways. For example, the way the NY Times's use of crop yield data was different than the way biotech executives suggested it should be utilized. First, detail this difference. Next, using your background knowledge and outside research as needed, explain which method of data analysis you feel provides a more accurate representation of the differences in crop yields between the U.S./Canada and Western Europe. Areas you may want to research include the geography, climate, and water usage in the regions highlighted as well as other factors you think may be important and related to crop growth. You may also want to look at the data from the reports highlighted in the article above.