

What is a GMO?



Modified CASE Activity 4.1.1

These modified lessons are from the Curriculum for Agricultural Science Education (CASE). Each lesson has been modified to showcase how soybeans can be used for the applications/activities. The Nebraska Soybean Board supports the CASE model for Nebraska Agricultural Education and the majority of this lesson is copyrighted by CASE and its partnering affiliates.

Objectives:

- Explain ethical and moral questions that arise from the science of genetically modifying organisms.
- Explain that organisms are genetically modified to improve agricultural products by inserting genes into cells.

Anticipated Length:

Three 50-minute class periods

Lab Materials:

- Computer with Internet access
- Laboratory Notebook
- Pen
- Agriscience Notebook

Teacher Notes:

Make sure all lab material are available



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Background

Genetically modified organisms, or GMOs, are a hot topic around the world. Some people believe it is the only way mankind will be able to feed a continually expanding world population. Others believe GMOs are mutant organisms that are dangerous and should not be consumed or even developed. What are your thoughts? Have you developed your beliefs pertaining to this expanding field of biotechnology?

Procedure

Answer the following questions, in your Laboratory Notebook, pertaining to your knowledge and perceptions of genetically modified organisms. When asked, share your opinions of what you believe the term genetically modified means.

Part One – Setting the stage

1. Watch the introduction of Genetic Engineering: The Journey of a Gene <https://ge.unl.edu/journey-of-a-gene/> where Sudden Death Syndrome is discussed.
2. Briefly discuss why traditional plant breeding is not the only approach being taken in finding a soybean variety that is resistant to Sudden Death Syndrome.

Part Two – Personal Perceptions

Record your responses to the following questions in your Laboratory Notebook.

1. When you hear the term genetically modified, what do you envision?
2. What do you believe are the benefits of GM foods?
3. What do you believe are the concerns of GM foods?
4. What industries do you believe are significantly impacted by GM products?
5. At what point do products become genetically modified, when selective breeding begins or when manipulation of genetic material using biotechnological practices occurs? Why do you believe this is so?

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6. Why do you believe there is controversy over the use of GM products as food?
7. Do you believe product development companies have an obligation to inform consumers that their products (or product parts or ingredients) are genetically modified? Discuss your beliefs.

Part Three – Published Perceptions

Return to *Genetic Engineering: The Journey of a Gene* (<https://ge.unl.edu/journey-of-a-gene/>) to conduct research on what others believe about GM foods. At the site, go to *Risks and Benefits*. Watch the videos in *A Two Sided Argument*. Determine each of the positions and describe their top discussions pertaining to biotechnology and GMOs in your Laboratory Notebook.

Part Four– Class Discussion

Your teacher will facilitate a class discussion. Share your beliefs and findings as appropriate. Upon the conclusion of the discussion, develop a personal definition of genetically modified organism and record in your notebook.

Part Five – Responding to producers

In groups of four, create a response to the following two groups:

- A producer has taken a heavy loss due to Sudden Death Syndrome in his field. The farmer would like to plant a new variety of soybeans, one that is resistant to Sudden Death Syndrome, but is wondering about the safety of GMOs and the availability of markets accepting the soybeans at harvest time.
- An anti-GMO advocate is protesting outside of grocery store, telling consumers that GMOs are harmful and are spoiling the food supply.

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1. How does your background influence your perceptions?

2. What information that you researched influenced or changed your perceptions?

3. Why might your perceptions differ from your other classmates?