**The Relationship Between Agriculture and Food, Fiber, and Energy**

Pillar 2 B (Grades 4th – 8th)

The role of ethics in the production and management of food, fiber, and energy sources.

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| **Websites**: (A) <https://www.scu.edu/ethics/focus-areas/more/environmental-ethics/short-course-in-environmental-ethics/lesson-eleven/> (B) <https://www.scu.edu/ethics/focus-areas/more/environmental-ethics/short-course-in-environmental-ethics/lesson-two/> **Hands On**: Play the game Generate! Found here: <https://www.epa.gov/air-research/hands-activities-and-other-resources-air-quality-and-climate-change-teachers> |

Genetically Modified Foods

STUDENT LEARNING OBJECTIVES

After completing these activities students will...

1. Understand how genetically modified foods are made.
2. Explain the issues surrounding genetically modified food.
3. Express their opinions in an organized fashion using facts and reason.

TIME REQUIRED: 90 minutes

RESOURCES:

1. FFA.org – My Journey
2. Video: What is a GMO? How are GMOs made? Are GMOs safe? (https://youtu.be/1qw\_5i9Gbw8)

EQUIPMENT AND SUPPLIES NEEDED:

1. A copy of the “Let’s Debate: GM Food” information sheet for each group of students.
2. A copy of the “Debate Rubric” for each group of students.
3. Internet access to play the video in real time and for students to research GM foods.

THIS QUICK LESSON PLAN WOULD WORK WELL AS:

1. An introduction to a biotechnology unit.
2. Part of a public speaking unit.
3. Part of an agriculture issues unit.

LESSON PLAN:

Interest Approach:

Show the video “What is a GMO? How are GMOs made? Are GMOs safe?” This video is available on the September 2015 Explore page of My Journey. The direct url is https://youtu.be/1qw\_5i9Gbw8.

Allow students to react to the video. In a short discussion try to determine which students are pro-GMO, anti-GMO or have no opinion.

Activity:

Students will research and debate the topic of GM Foods. Divide the class into groups of four to five students. Make sure you have an even number of “For” and “Against” groups so that each debate only has two teams.

Give each group a copy of the document “Let’s Debate: GM Foods.” This document explains the format of the debate and offers suggestions of websites to use for research.

Suggestion:

If a student has a really strong opinion on the topic have them debate the opposing view. This will be a challenge for them, but will also help them develop strong arguments.

During the debate use the provided rubric to grade each group. You can also have the audience (students not currently debating) determine the winner of each debate.

Tip:

Share the rubric with students so they know how they will be evaluated.

Follow-up:

Have students share what they learned during their research that surprised them or that they did not already know. Also, have students share if their opinion on the topic changed due to the debates.

Let’s Debate: GM Foods

DIRECTIONS:

Use the following information to research GM foods and plan your debate strategy.

DEBATE FORMAT:

1. Affirmative team opening statement (2 minutes)
2. Opposing team opening statement (2 minutes)
3. Affirmative team argument (5 minutes)
4. Opposing team argument (5 minutes)
5. Affirmative team rebuttal (1 minute)
6. Opposing team rebuttal (1 minute)

GM FOOD RESOURCES:

These links are to sites and articles that cover both sides of the GM foods issue.

* http://biomed.brown.edu/arise/resources/docs/GM%20foods%20review.pdf
* <http://learn.genetics.utah.edu/content/science/gmfoods/>
* <https://gmoanswers.com/studies/top-10-long-term-gmo-health-studies>
* http://www.responsibletechnology.org/posts/gmo-health-dangers/

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* <http://learn.genetics.utah.edu/content/science/gmfoods/>
* <https://gmoanswers.com/studies/top-10-long-term-gmo-health-studies>
* http://www.responsibletechnology.org/posts/gmo-health-dangers/

Debate Rubric

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| --- | --- | --- | --- | --- | --- | --- |
| Criteria  | 5 points  | 4 points  | 3 points  | 2 points  | 1 point  | Points  |
| Respect for Other Team  | All statements, body language, and responses were respectful and used appropriate language  | Statements and responses were respectful and used appropriate language, but once or twice body language was not.  | Most statements and responses were respectful and used appropriate language, but there was one sarcastic remark.  | Statements, responses and/or body language were borderline appropriate. Some sarcastic remarks.  | Statements, responses and/or body language were consistently not respectful.  |  |
| Information  | All information presented in this debate was clear, accurate and thorough.  | Most information presented in this debate was clear, accurate and thorough.  | Most information presented in the debate was clear and accurate, but was not usually thorough.  | Some information was accurate, but there were some minor inaccuracies.  | Information had some major inaccuracies or was usually not clear.  |  |
| Rebuttal  | All counter-arguments were accurate, relevant and strong.  | Most counter-arguments were accurate, relevant, and strong.  | Most counter-arguments were accurate and relevant, but several were weak.  | Some counter arguments were weak and irrelevant.  | Counter-arguments were not accurate and/or relevant.  |  |
| Use of Facts/Statistics  | Every major point was well supported with several relevant facts, statistics and/or examples.  | Every major point was adequately supported with relevant facts, statistics and/or examples.  | Every major point was supported with facts, statistics and/or examples, but the relevance of some was questionable.  | Some points were supported well, others were not.  | Most points were not supported.  |  |
| Organization  | All arguments were clearly tied to an idea (premise) and organized in a tight, logical fashion.  | Most arguments were clearly tied to an idea (premise) and organized in a tight, logical fashion.  | Most arguments were clearly tied to an idea (premise) but had limited organization.  | Only some arguments were tied to an idea (premise), and all arguments lacked organization.  | No arguments were tied to an idea (premise), and they exhibited no organization.  |  |
| Understanding of Topic  | The team clearly understood the topic in depth and presented their information forcefully and convincingly.  | The team clearly understood the topic in depth and presented their information with ease.  | The team seemed to understand the main points of the topic and presented those with ease.  | The team seemed to understand the main points of the topic, but didn’t present with ease.  | The team did not show an adequate understanding of the topic.  |  |
| Total Points:  |  |
| Comments:  |  |

Rubric Source: http://course1.winona.edu/shatfield/air/rubrics.htm