

“Trashing Food Waste with Technology”

Live Stream Pre-Activity



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Lesson Summary

This lesson will provide a broad overview of agriculture including what is grown in Canada and why. Students will be introduced to the term biotechnology in preparation for CALM 2017 Live Stream Event and weigh a variety of perspectives on genetically modified organisms including their impact on the environment, humans and society.

“Minds On” (Diagnostic or Hook)

- Ask students “What is Agriculture?” – popcorn ideas (students call out); write all responses on board
- Ask students to brainstorm a list of the “F’s of Agriculture” (possible responses: food, fuel, forestry, fibre, fruit, farming, flowers, fish, etc). Think Pair Share strategy for sharing.
Ask students to think about what a farm and farmer looks like to them – popcorn word association for “farming”; TA to create mind-map on chart paper. (Possible responses: tractor, pitchfork, plaid, overalls, pigs, etc). This can be revisited at the end of the lesson to see changes in word association after all activities and information has been learned.

1. Canadian Geography and Food

- Talk to students about the factors that go into growing crops. Talk about soil, landforms, climate characteristics such as precipitation, temperature etc. Discuss what arable land is and how geography affects what we grow in an area.
- Break students into 11 groups and assign each group one of the climate regions (indicated on the slides)
- Have each group brainstorm the following things about their assigned region:
 - What are some words you would use to describe the **climate/weather patterns** in this region
 - What are some words you would use to describe the **landforms and soil** in this area?
 - Do you think this area has a lot of **arable land**?
 - What do you think are the region’s top commodities? Why?
- Go through each region and have students share their answers. Briefly discuss their reasoning and show the slide show with the area either blacked out as not arable or highlighted representing agricultural land. Look at the final graph depicting the agricultural land in Canada
- Talk about percentage that is used for urban development etc. until you see how much is used for farm land. Also refer to the percent of land that is used for farm land (see graph).
- Show students the map with top commodities and ask them if they match their initial guesses. Discuss why specific areas have the top commodities that they do (grains and oilseeds in the prairies, greenhouses in the north etc.)
- Use the following questions to guide a class discussion:
 - **How does land dictate what is produced?**
 - **Do you think some commodities are more important than others? Why?**

Materials

Accommodations to simplify

- Break the students into larger groups and choose only large climate regions or combine climate regions

<ul style="list-style-type: none"> ○ Do you think food prices vary across Canada? Across Ontario? Why? ○ What are challenges that Canadian farmers face? How do they tackle these problems? ○ How does consumer demand impact what is produced in Canada? 	
<p>2.An Introduction to Biotechnology</p> <ul style="list-style-type: none"> ● So far we have looked at what is grown in Canada and some of the opportunities and limitations of where these items can be grown. Farmers face a variety of challenges in growing food to support their communities (i.e. temperature, weather conditions, soil conditions, insects & disease, etc). ● Farmers use various technologies to face these challenges. Inform students that one tool used to address these challenges is biotechnology. ● Ask students to define GMO, Biotechnology, etc. Assess their level of understanding and adjust teaching activities as required. ● Play “How GMO’s are created? Papaya story” video https://www.youtube.com/watch?v=2G-yUuiqIZ0. Discuss as a class the reasons GMO’s were created and what steps are taken to create GMOs. Briefly discuss potential bias in the video. ● Provide students with the Plant Biotechnology infographic https://magic.piktochart.com/output/2342011-biotechnology and go through as a class. Outline the different types of genetic modification and facts on the infographic. ● Navigate to the Arctic Apple website http://www.arcticapples.com/ (individually or as a class). Inform students that the Arctic Apple is an example of a genetically modified food that is available to eat! Explore the website to learn more about Arctic Apples – this will be the focus of the live stream event you and your class will be watching. 	<p>Materials</p> <ul style="list-style-type: none"> - Video: How GMO’s are created? Papaya story https://www.youtube.com/watch?v=2G-yUuiqIZ0 - Plant Biotechnology infographic https://magic.piktochart.com/output/2342011-biotechnology - Arctic Apple website: http://www.arcticapples.com/ - For additional resources: http://allaboutfood.aitc.ca http://bestfoodfacts.com http://gmoanswers.com
<p>3.Role of the Consumer</p> <ul style="list-style-type: none"> ● Discuss the role of a consumer. Talk about how consumers have incredible influence as to whether a product remains on the shelf and how important it is to make informed decisions which are based on fact. ● Have student’s come together and do a 4 corners activity. On each wall have “Agree, Disagree, Strongly Agree and Strongly Disagree”. ● Ask students to move to the corner that represents their point of view as consumers: <ul style="list-style-type: none"> ○ I feel comfortable buying and eating food that has been genetically modified ○ I think foods that have been genetically modified should be labelled 	<p>Materials</p> <ul style="list-style-type: none"> - Slides from Biotechnology PowerPoint labelled with a number 2 - All About Food: http://allaboutfood.aitc.ca/article/your-questions-about-biotechnology-answered.php

- After each question facilitate discussion and ask each group why they are standing where they are.
- If time permits go to <http://allaboutfood.aitc.ca/article/your-questions-about-biotechnology-answered.php> and click on questions. As a class discuss each of the questions (click on a question to make it full screen display).
- Finish with the idea that there are many perspectives and no right or wrong answer. It should always be a goal to look at the source and credibility of a statement before taking all you hear as truth. Also discuss the possibility of looking at GMOs on a case by case basis and not treating all scenarios the same or generalizing.

Preparation for the Live Stream Event!

- Once you have completed the lesson and students have had an opportunity to learn more about the Arctic Apple, have each student write down **at least one question** they still have about: Arctic Apples, biotechnology, food security or a related topic.
- Submit your student's questions to: rfrizzell@aitc-canada.ca by Monday March 6th to be answered by the presenter during the live stream event.
- Alternatively, ask your students questions live during the live stream event. Remember to register at <http://www.fmc-gac.com/AITC> When you open the event to view live, you will see a "hand raised" icon that you may use to ask a question.

Leave behind assignment, information etc.

- Watch the live stream event "Trashing Food Waste with Technology" on Tuesday March 7th, 2017 at 12 noon EST. Not available at that time? The live stream will be available for viewing at any time beginning Friday March 10th at <http://www.fmc-gac.com/AITC>
- Participate in the live stream event by asking questions
- Complete the Post-Activity with your class following the event to continue the learning experience.

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