AG IN THE CLASSROOM

AG FOR LIFE

SCIENCE 9

SUSTAINABLE FOOD JOURNEY

SUBJECT AREA: SCIENCE
GRADE: 9

GENERAL LEARNER OUTCOMES

Unit C: Environmental Chemistry

Students will:

3. Analyze and evaluate mechanisms affecting the distribution of potentially harmful substances within an environment

STUDENT LEARNING OBJECTIVES

Students will:

- describe mechanisms for biodegradation, and interpret information on the biodegradability of different materials

- investigate and evaluate potential risks resulting from consumer practices and industrial processes, and identify processes used in providing information and setting standards to manage these risks

ASSESSMENT

Students will provide evidence of learning by:

- Describing the life of an agricultural product (plant or animal) from farm to fork and investigating how any resulting food waste can be reduced and/or eliminated
- Presenting and explaining their findings to their peers

MATERIALS

- **Food Waste: Big Problem, Simple Solutions** (2:28 min)
- **Leftovers are Feeding Calgary** (2:25 min)
- **Food Wastage Footprint** (3:15 min)
- **Life of a Strawberry - Stop Food Waste - Save the Food** (1:10 min)
- **Website: Move for Hunger** (Move for Hunger is a non-profit organization working to create sustainable solutions)

LEARNING RESOURCES

- Alberta Education Programs of Study

Click **here** for more information on food waste in Canada.

TEACHER INSTRUCTIONS

SUSTAINABLE FOOD JOURNEY

Are we in the middle of a food waste epidemic, that is also an economic and environmental catastrophe?

What do you need to know about food waste?

- 50% fewer apples would be produced in Canada if farmers did not have access to pesticides. Pesticides help protect the health and quality of crops, keep costs down for consumers and reduce food waste. Click here to read more.

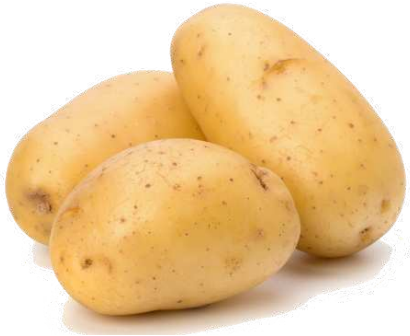
- According to research, $1,766 per household is the annual cost of avoidable food loss and waste in Canada. Click here to read more.

- 39% fewer potatoes would be grown by Canadian farmers if they did not use pesticides to protect their crops. Click here to read more.

As stewards of the future, students need to be aware and get involved with developing creative solutions to our escalating food waste crisis.

Every day in Canada, we waste…

470,000 heads of lettuce
1,200,000 tomatoes
2,400,000 potatoes
750,000 loaves of bread
1,225,000 apples
555,000 bananas
1,000,000 cups of milk
450,000 eggs



Reference: https://croplife.ca/wp-content/uploads/The-Value-of-Plant-Science-Innovations-to-Canadians_RIAS-Inc.pdf

TEACHER INSTRUCTIONS

SUSTAINABLE FOOD JOURNEY

View and Discuss:

As students view the videos below, note and discuss any possible solutions to the world's food waste problem. Another important factor to take note of is what they see as wasted expenses when food is discarded.

Food Wastage Footprint (3:15 min)

Food Waste: Big Problem, Simple Solutions (2:28 min)

Leftovers are Feeding Calgary (2:25 min)

For the assignment, students will be working in groups to describe the life of an agricultural product (plant or animal) from farm to fork and investigate how any resulting food waste can be reduced and/or eliminated.

Their goal is to suggest changes they think are possible anywhere in the food cycle/supply chain that will have a positive effect on consumer practices and industrial processes.

In the following field to fork journey example of strawberries, discuss suggestions students have for food waste solutions.

Life of a Strawberry - Stop Food Waste - Save the Food (1:10 min)

STUDENT ASSIGNMENT

SUSTAINABLE FOOD JOURNEY

People waste food at five levels: production, processing /manufacturing, distribution, retail and consumer. At these levels, three types of food get discarded: food that has gone bad, food we think has gone bad, and food which we know is still consumable, but we no longer want. Even though food waste is biodegradable there are costs involved. Resource expenditures (wasted production, material and labour costs), environmental costs (resource overuse and methane emissions from food in landfills) and social costs (higher food prices, lower quantities, healthcare issues and food insecurity) are all hidden costs of food waste. Solutions discovered and suggested by each level in the food supply chain are necessary to help reduce and/or eliminate food waste and to manage risks that are side effects of the problem.

STUDENT ASSIGNMENT

SUSTAINABLE FOOD JOURNEY

Working with your group members, you will describe the life of an agricultural product (plant or animal) from farm to fork, and investigate how any resulting food waste can be reduced and/or eliminated. Suggest changes you think are possible anywhere in the food chain cycle which will have a positive effect on consumer practices and industrial processes. Some things are in your realm of control like potential savings on water costs, but other things such as environmental factors you will have no control over when trying to reduce waste.

You will research and present your findings on Google Slides. Your presentation should be 13 frames including a bibliography slide. Any short videos you want to share or any voice descriptions you want to insert need to be considered when determining the length of your presentation (maximum 15 minutes).

Questions to consider in order to reduce food waste:

- Can producers hire enough skilled laboUr to harvest food?
- What happens to products in the face of a natural disaster (e.g., hail, flood, fire, etc.)?
- Do some products get rejected when they don't meet standards for the retailer?
- What if there is an oversupply of product and no market demand?
- What is food waste doing to the environment (i.e., the release of methane gas)?
- Is there a problem with expiration dates on packaging?
- Are consumers in higher income regions more wasteful?
- What is the environmental impact associated with processing, transporting and storing of wasted food?
- Do consumers buy more than they need?
- What types of technology can be used to increase yields of crops?
- How can the government play a role through regulations, subsidies and quotas?
- Is there a way to reduce the negative effects food waste has on the environment?

Slide outline:

1. Title page.
2. Introduction of product.
3. How your food product is wasted at a production level.
4. Solutions for waste caused at the production level.
5. How your food product is wasted at a processing/manufacturing level.
6. Solutions for food waste caused at the processing/manufacturing level.
7. How your food product is wasted at a distribution level.
8. Solutions for food waste caused at the distribution level.
9. How your food product is wasted at a retail level.
10. Solutions for food waste caused at the retail level.
11. How your food product is wasted at a consumer level.
12. Solutions for food waste caused at the consumer level.
13. Bibliography:

- URLs must be collected for information and pictures. Use the bibliography slide to post URL's as your research progresses.
- Insert audio and/or video you need to further explain the slide content where needed (maximum time for presentation is 15 minutes).

Unit C: Environmental Chemistry
"SUSTAINABLE FOOD JOURNEY"

Objectives	Excellent	Proficient	Satisfactory	Limited
Title Page Slide includes your group names and a eye-catching image.	Fully captures the attention of the audience. Topic has a clear focus.	Captures the attention of the audience. Topic is focused.	Few audience members seem interested. Topic focus is vague.	Audience is not captured. No topic focus.
Preparation	Students created a clear plan and carefully chose roles and tasks for each team member. They managed their time well and worked together to share the workload.	Students had a rough plan and tasks for each team member. They generally managed their time and worked together to share the workload.	Students would have benefitted from more defined role and task assignments as well as overall better time management.	Students did not create a clear plan or assign roles and did not manage their time well.
Organization Introduction (title slide), body content and bibliography.	Students presented findings in an organized manner and interesting sequences that are easy to follow.	Students presented findings with some degree of organization and logical sequence which the audience can easily follow.	Information and graphics are placed haphazardly throughout.	Audience cannot understand the presentation because there is no sequence and information is disorganized.
Information	Students showed a comprehensive understanding of the topic. Their information was accurate and well researched and their assignment was well supported by facts.	Students showed an understanding of the topic. Their information was accurate and their assignment was supported by facts.	Students showed some understanding of the topic, but their research was incomplete and/or their assignment was not supported by facts.	Students demonstrated little or no understanding of the topic. They did not appear to have done much research and their assignment was not supported by facts.
Presentation	Presentation included 13–15 slides. Information on slides was kept short and students expanded on information in attached videos and/or audio.	Presentation included 12 slides. Information on slides contained many sentences and the group had some difficulty explaining ideas beyond the information in the slides and attached videos.	Presentation included 10–11 slides. Information on slides contained many sentences and the group had difficulty explaining ideas beyond the information in the slides and attached videos	Presentation included less than 10 slides. Information on slides contained many sentences and group did not expand on information presented on slides .