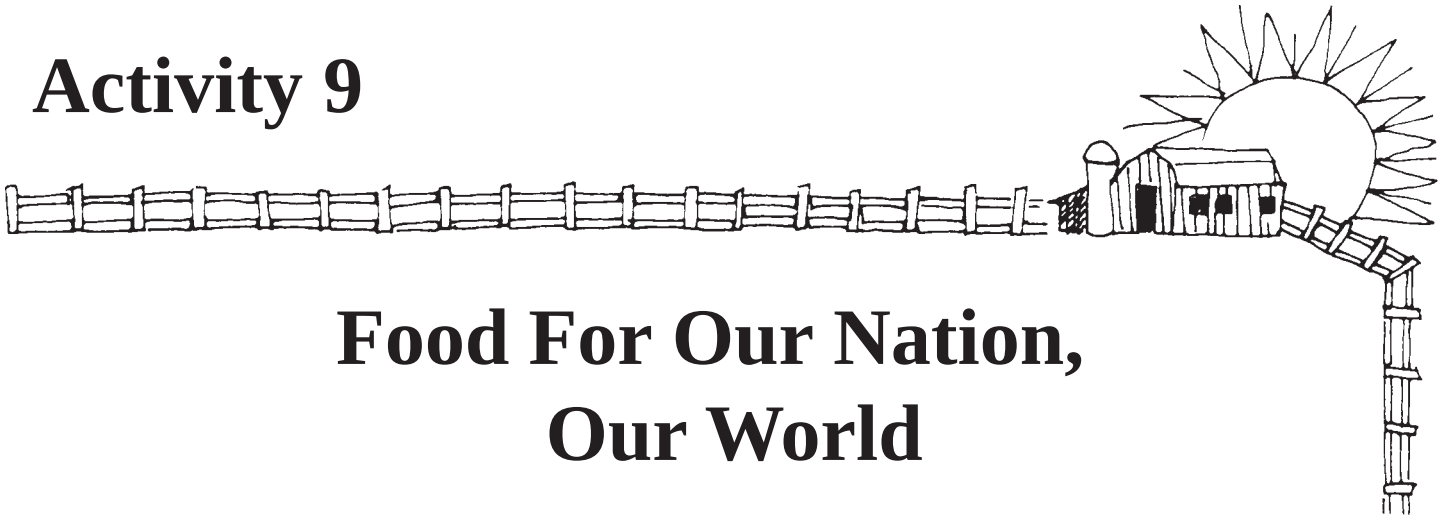
Activity 9



Food For Our Nation, Our World

Activity:

Students use a writing assignment to develop decision-making processes from a point of view other than their own.

Curriculum Fit:

Social Studies - Grade 6
- Focus: Meeting Human Needs

Language Arts - Division Two and Three

Science - Division Three
- Grade 7 - Micro-organisms and Food Supplies
- Grade 8 - Growing Plants
- Grade 8 - Interactions and Environments
- Grade 9 - Diversity of Living Things
- Grade 9 - Environmental Quality

Agriculture Concepts:

Capital & Technology Intensive Nature of Agriculture
Production, Processing & Marketing Systems

Cognitive Level:

Knowledge, Comprehension, Analysis and Synthesis

Materials Required:

Supplied in this lesson

Time Required:

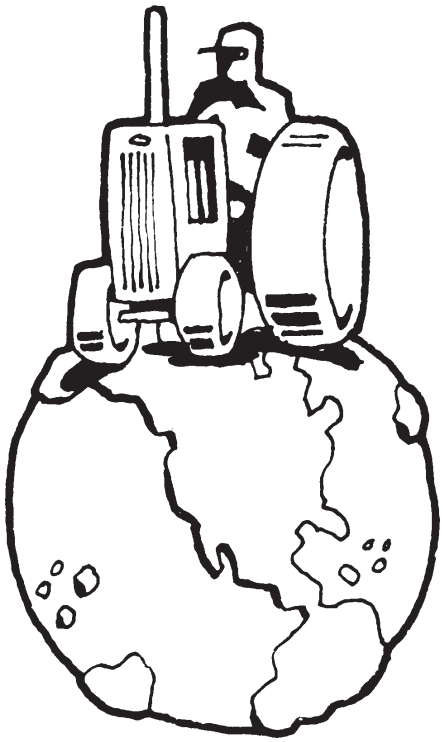
Two class periods.

Background — For the Teacher

Often we don't give much thought to where our food comes from. We enter our supermarkets assured that virtually any food we desire will be available and that it will be safe for our consumption. The production of safe, affordable and healthy food is the goal of modern agriculture. Students, as responsible citizens, will be partners in our sustainable food supply in the coming generation. This responsibility becomes important as our available farm land shrinks and our population increases. Our future farmers will be concerned with how to sustain agriculture and produce more food.

Agricultural chemicals have played a major part in increasing yields, reducing losses to pests and providing the abundant supply of food we enjoy today. The agricultural industry is exploring various strategies to improve soil fertility and manage pests using fewer and safer agricultural chemicals, while still maintaining crop yields.

This activity is designed to present the basic facts about the production of our food supply in Canada. Students will learn about the challenge of providing the highest quality food while exercising a commitment to caring for the land. The RAFTS writing assignment will assist students in practising democratic citizenship by allowing them to discuss an issue from a point of view other than their own.



Procedure

Preparation

1. Photocopy the student information sheets.

Introduction

2. Explain that these class periods will introduce students to how food is produced in Canada and what farming practices contribute to the abundance of food we enjoy.

Activity

3. Brainstorm with the class what they expect when they enter the supermarket to purchase food.
4. Distribute the information sheets to the class one at a time.
5. Use the discussion questions provided to emphasize the important points.
6. Distribute the Student Task Sheet --RAFTS writing assignment.

Conclusion

7. Have your students complete the RAFTS writing assignment.
8. Collect assignments for evaluation.
9. Have selected students share their RAFTS assignment with the class.
10. Discuss the shared assignments with the class.

Note: This lesson uses a RAFTS model. For creative students you may wish to make some of the categories totally open ended. The students should have an understanding of the webbing/ brainstorming strategies before beginning this activity.

For Discussion

1. Why are new farming methods needed in producing our food?
2. What role does the use of agricultural chemicals play in producing our food?
3. What type of precautions must be taken with any chemicals that are used by humans?
4. Would it be better to use no chemicals at all in our food production?
5. What are “natural” or “organic” foods? How are these production methods different from traditional methods?
6. How do we decide if a method of producing our food is good or bad?
7. What environmental considerations do you think are necessary in food production?

Related Activities

1. Research how current trends in agriculture have contributed to Canada’s role in feeding the world.
2. Invite an agricultural researcher in to discuss how new technologies have contributed to the quality and quantity of our food supply.
3. Invite an agricultural chemical dealer to visit your classroom to give further insight into how agricultural chemicals contribute to our food production.

Resources

Fertilizers and the Environment, Alberta Agriculture Agri-fax, Agdex 090-1, obtained from the Print Media Branch, 7000 - 113 Street, Edmonton T6H 5T6 or Alberta Agriculture’s District offices.

The Pros and Cons of Pesticides, Environment Canada, available from Provincial Environment Canada offices or Agriculture Canada pesticide information number: 1-800-267-6315.

Fertilizer: Perception & Reality, The Fertilizer Institute, 501 Second Street, N.E., Washington, D.C. 20002 U. S. A.

Pesticides: Something to Think About, The Christian Farmers Federation, 10766 - 97 Street, Edmonton T5H 2M1.

Food For Thought: Facts about Food and Farming in Canada. Ontario Farm Animal Council, 7195 Millcreek Drive, Mississauga, Ontario L5N 4H1

Local Farm Chemical Dealers

Local District and Regional Specialists

Alberta Agriculture, Food and Rural Development, Soils Branch

Our Farm, our Family and our Environment: A Farmer’s Handbook, booklet prepared by Hoechst & Prairie Farm Rehabilitation Administration.

Is Our Food Safe?: A Discussion of Crop Protection in a Modern World, by Edgar W. Faust, Ph.D. for Hoechst Canada.

Facts From Our Environment, a joint publication of the Potash and Phosphate Institute, Potash & Phosphate Institute of Canada and the Foundation for Agronomic Research. 1991.

STUDENT RESOURCE

Sheet One —
Facts About Food Production In Canada

Canadian farm families make up less than 3% of our population.

In 1900, each farmer fed only 12 people and about 50 cents of every Canadian dollar was spent for food.

In the 1990s, each farmer feeds more than 100 people and about 14 cents of every Canadian dollar is spent for food.

The world's population has doubled since 1950 and the land available for farming is shrinking. In the 1970s there were 3 acres of farmland per person; by the year 2000 that figure will be less than three-quarters of an acre. If everyone is to be fed, we will need to increase our food supply by 75%. This can be accomplished through more efficient agriculture.

It is estimated that we are losing 45% of potential food production worldwide, 30% due to weeds, insects and diseases before harvest and 15% after harvest.

The National Agricultural Chemical Association in the U.S. showed that eliminating farm chemicals would cut the production of food in the world by one-third due to losses from insects, rodents, disease and weeds.

If Canada is to feed more people in the world, agricultural science must make further advances. Scientists are looking at creating:

- hardier plant varieties
- better ways of controlling disease and insect pests
- different ways to protect and enhance soil fertility

All food is "natural." Terms like "organic," "biological" and "ecological" refer to a wide range of production methods. At this time, only a small part of our food can be produced using only "biological" or "organic" methods. Yields are often substantially reduced -- which means higher prices for consumers. Farmers may use a combination of production methods, using biological, mechanical and chemical controls.

-from “Food For Thought”

STUDENT RESOURCE

Sheet Two —
Maintaining Soil Nutrients

Farmers are in an important business, the business of growing food for us and for other people in the world. Farmers look for ways to increase and improve crops. They do this for the same reason as any other business, to give people the best product possible and to maintain an economically viable operation. One of the ways they do this is by using agricultural chemicals to add soil nutrients and to control pests that reduce crop yields.

Soil Nutrients and Fertilizers

Plants use nutrients from the soil. The main nutrients that crops need are **nitrogen**, **phosphate** and **potassium**. When crops are harvested some of the nutrients are removed. Farmers replace these nutrients in the soil with fertilizers. We can compare this to your own home. If your refrigerator or cupboards were never filled with food, you would not be able to get the nutrients you need to grow strong and healthy. The farmer replaces nutrients in the soil in two ways: with **organic fertilizers** and with **inorganic or chemical fertilizers**. Both organic and inorganic fertilizers add the same natural nutrients to the soil. It all comes down to chemistry.

Inorganic or Chemical Fertilizers

Inorganic fertilizers or **chemical fertilizers** are man-made products. Scientists take natural elements and change them to make fertilizer. This process allows fertilizer producers to mix the elements to a specific formula for each field. Farmers using chemical fertilizers should have a soil test done to find out exactly what nutrients each field requires. The farmer then has a fertilizer dealer mix the nutrients required for the soil and crop according to the results of the soil test. Chemical fertilizers do not add organic matter back into the soil. **Organic matter** is important: it improves the soil structure to prevent erosion. At harvest, organic matter can be returned to the soil by leaving the crop residue on the land.

Organic Fertilizers

Animal manure is an organic fertilizer that farmers may get either from their own animals or from a supplier located near the farm. Animal manure must be near the farm because it is bulky and hard to transport. The farmer spreads the animal manure on the field and works it into the soil. The amount of nutrients that animal manure provides to plants is difficult to determine but it does provide the soil with needed organic matter.

Another organic fertilizer is **green manure**. To make green manure a farmer grows a crop that is high in nitrogen. When the crop is still green the farmer works the crop into the soil where it adds nitrogen and organic matter.

STUDENT RESOURCE

Sheet Three — Pest Control Management

Pests can become a problem when the natural environment is disturbed to grow food. Pest control management protects crops from weeds, insects and disease-causing fungi that can destroy much of our food supply if not controlled.

Fungicides protect plants from diseases that may be harmful to both plants and humans.

Herbicides are used to control the growth of undesirable plants or weeds that may reduce the yield of a crop.

Chemical Pest Control

The use of chemicals is partly responsible for the abundance of food produced by Canadian farmers. The general term for chemical pest control is PESTICIDES. Pesticides can be divided into three groups. Each group is used to control a specific pest. One of the main problems with the use of pesticides is the ability of pests to develop resistance to chemicals. It is very costly to develop a new pesticide when pests become resistant to an old chemical.

Insecticides control insects that may reduce the yield of the crop.

Integrated Pest Management

Integrated pest management uses a combination of biological, cultural and chemical methods to protect crops. The goal of integrated pest management is to choose the best methods to minimize environmental impact and produce a high quality, economical product.

Cultural Pest Control

Cultural pest control includes using physical or mechanical means to prevent pests from getting established. Farmers have been using this method since farming began. Some examples of cultural pest control are tillage, crop rotation, summerfallow and using weed-free seed. However, over-tillage or summerfallowing exposes the soil to erosion and organic matter loss. This is why cultural controls have to be intelligently applied.

Biological Pest Control

This method of pest control uses other living things, such as predators, parasites or disease organisms, to control pests. Generally, predators or parasites are introduced into an area with the objective of keeping pest populations below levels where they cause a loss of yield. This method of pest control is being pursued by scientists. In some cases it can be very effective.

STUDENT RESOURCE

Sheet Four —
Environmental Issues in Food Production

Environmental Concerns About Fertilizer Use and How Agriculture is Dealing With These Concerns

The use of any fertilizer raises concerns for our environment. The use of chemical fertilizers is blamed for organic matter loss in the soil, causing soil erosion. Fertilizer over-application is blamed for water pollution when excess fertilizer runs off the field into nearby or underground lakes and streams. The agriculture industry needs to respect these concerns and try to improve the way in which fertilizers are used.

It is important to test the soil at regular intervals and apply only the fertilizer plants can use — when they need it the most. Properly used fertilizers supply essential nutrients to crops and prevent soil mining.

When using chemical fertilizers, plant residue should be left to improve soil quality with organic matter. Many farmers are adopting soil conservation practices. This will help ensure Canadian farmers can continue producing quality food while sustaining agricultural resources.

Environmental Concerns About Pesticide Use and How Agriculture is Dealing With These Concerns

There are concerns that pesticides remain in our environment for long periods and that they can harm our environment. Some of the first pesticides did remain in the environment for long periods, and did cause problems in the food chain. New types of pesticides break down quickly and do not remain in the food chain.

In Canada food is regularly checked for pesticide residue. Tests include their effect on the environment and on humans, domestic and wild animals. A farmer cannot buy or use chemicals that are not approved for use.

Pesticides are dangerous and farmers must take precautions when using them. All agricultural chemicals come with warning labels and directions for use. A farmer should wear protective clothing when using chemicals and dispose of empty chemical containers properly. Used according to directions, pesticides are effective and safe. Many Canadian farmers take special training in proper use and handling of agricultural chemicals - for their safety and the safety of all of us.

STUDENT RESOURCE

Sheet Five —
My Role in the Production of Canada's Food

As a citizen of Canada you **DO** have a role to play in the production of your food supply. Below is a checklist of some things you can do to work with farmers as partners in food production.

- ☐ As a consumer, make responsible decisions on food purchases based on the facts.
- ☐ Find out what and why new farming methods are being used to produce our food.
- ☐ Find out what the government standards are for the food sold in Canada.
- ☐ Find out how farmers feel about their contributions to Canada's food production.
- ☐ Find out how chemicals are controlled in Canada and what the industry is doing to improve the chemicals used in food production.
- ☐ When newspapers, television or radio report a story about agriculture, ask yourself this question, "Is that the whole story or is there more?"
- ☐ Encourage politicians and other decision-makers to make decisions that will help keep our food production sustainable for future generations.

STUDENT RESOURCE

Sheet Six —
Vocabulary

Biological Pest Control: the use of living organisms to control pests which attack crops.

Cultural Pest Control: the use of physical or mechanical methods to control pests.

Fertilizer: a substance added to the soil to increase the amount of nutrients available to the plant. Fertilizers can be broken into two different kinds.
Organic: comes from animal manure or plant sources.
Inorganic: man-made from natural elements and purchased from a farm fertilizer dealer.

Fungicides: a group of chemicals that protect the crop from diseases.

Green Manure: a crop high in nutrients that is worked into the soil while still green.

Herbicides: a group of chemicals used to control the growth of undesirable plants in a crop.

Insecticides: a group of chemicals used to control insect pests.

Integrated Pest Management: a combination of chemicals, cultural and biological methods to control the pests that reduce crop yield.

Nitrogen: one of the main nutrients needed for crop growth. Nitrogen promotes the development of healthy green foliage and contributes to overall plant health.

Organic Matter: a component of soil that improves soil structure. It helps provide a good environment for plant roots.

Pesticides: a general term for chemicals used to control pests.

Pest Control Management: strategies used by food producers to protect crops from pests.

Phosphorus: one of the main nutrients needed for the growth of strong, healthy roots and the development of flowers, fruit and seeds.

Potassium: one of the main nutrients needed for the balancing effect on plant growth. It promotes strong root and stem development.

Soil Nutrients: chemicals within soil that provide plants with the nutrients needed for proper growth.

Student Task Sheet

Sheet One —
How Food Is Produced In Canada — What Do You Think?

Present your view of how food is produced in Canada. Begin by brainstorming all the ideas, words and images that indicate your view. Then choose a

R A F T S

R	-	**Role**	(Who is Speaking?)
A	-	**Audience**	(Who are you speaking to?)
F	-	**Form**	(Type of writing)
T	-	**Tense**	(Past, present, future)
S	-	**Strong Verb**	(Purpose)

Consider these possibilities, or if you have another idea, discuss it with your teacher.

ROLE
Farmer
Consumer
Provincial Minister of Agriculture
Parent
Ecologist
Supermarket owner
Organic farmer
Young person from the city
Young person from the farm
People listed under Audience
Your own choice

AUDIENCE
Farmer from Africa
Voters
Third World youth
Grandparent
People listed under Role
Your own choice

TENSE
Past
Present
Future

FORM
Letter
Newspaper article
Editorial
Dialogue
Speech
Short story
Series of Radio Ads
Song
Diary
Interview
Your own choice

STRONG VERB
Explain
Persuade
Narrate
Compare
Apologize
Request
Complain

Hand in a statement of your **RAFTS** for feedback. Prepare a first draft and ask someone to help in proofreading. Ask that person to look for a clear role, audience and strong verb (purpose).

Student Task Sheet

Sheet Two —
RAFTS Assignment

NAME: _____

Please identify your choices below, and hand in this form along with your work.

Role (Who is Speaking?) _____

Audience (Who are you speaking to?) _____

Form (Type of writing) _____

Tense (Past, present, future) _____

StrongVerb (Purpose)_____

About this assignment, I want you to know that:

_____
_____
_____
_____

TEACHER RESPONSE:

The main strengths I see in this writing are:

Weak	**Good**			**Excellent**
Role clearly presented, point of view, words	1	2	3	4	5
Audience addressed - considered thought and language	1	2	3	4	5
Form clear and consistent	1	2	3	4	5
Tense consistent	1	2	3	4	5
Strong verb (purpose) - clear idea/feelings	1	2	3	4	5
Mechanics	1	2	3	4	5

Total _____**/30**

In your next writing, please work on:

_____
_____
_____
_____