

Global Classroom Initiative

“Connecting Classrooms and
Communities for Global Awareness”

**Additional Resources
In Global Awareness for
Agriscience 801**

February 2007

Introduction

The intent of the following lessons is to provide students/teachers with additional resources in support of the following curriculum outcome as described in the P.E.I. Department of Education Curriculum Guide for Agriscience 801A:

Determine the significance of international interdependence as it relates to agricultural sustainability

Global issues

- *describe the conditions of desirable living spaces*
- *compare the developed and developing nations in relation to agriscience and the surrounding issues*
- *identify some significant world population trends*

These outcomes are covered to some extent within the activities described in the current curriculum guide: Appendix 5: “Who are the Lucky Ones?”; Appendix 7: “World: A community of 1000”; and Appendix 8: “A World of Jeopardy: Food Quiz.”

IMPORTANT NOTE:

THE LESSONS IN FOLLOWING UNIT ARE DEVELOPED AT TWO LEVELS IN ORDER TO MEET THE DIVERSE LEARNING LEVELS IN THE AGRISCIENCE CLASSROOM.

Level 1 is designed for students who need very specific tasks in order to achieve.

Lessons 1-6, pages 2-32

Level 2 is intended to provide challenging activities for the independent learner.

Activities 1-10, pages 33-48

Caution to teachers regarding web site URLs:

At the time of publication, the web sites contained within this module were functioning and appropriate in content. However with time, there is always a possibility that the URLs have moved, become non-functional, or corrupted. Teachers are advised to check out each URL before distributing to students to ensure that the integrity of the site is intact.

Caution regarding use of resources:

In each of the Global Classroom Units, references have been made to organizations that assist others around the world, or articles and news clippings have been included as resources. While care has been taken in their selection, teachers are reminded to use their professional wisdom and judgement when using the resources. Materials, as is common practice, should be pre-viewed before use by students. Organizations and media, however noble the cause, will represent their own agendas; thus students and teachers must critically evaluate each source.

Lesson I - Drought: A Challenge that a Farmer May Face in Kenya

Estimated time to complete: 1 class for research, 1 to make posters

THEME: Lack of access to water due to drought has a major impact on the lives of many farmers and their families in Kenya and other countries in the eastern part of Africa.

Students will locate the following internet site: <http://www.unicef.org/childalert/hornofafrica/>
This site is a multi-media report on how the drought is impacting life for people in “The Horn of Africa”. Several topics are listed at the left side of this web page.

Student Instructions:

1. Click on the interactive map: *drought cycle*. Make sure you have the map displayed high enough on the screen so you can read the information at the bottom. Click on the arrows under the map to move forward or to review the previous information.

Answer the following questions on the worksheet:

a. Where is the Horn of Africa?

Why do you think this area has been given this name?

What countries are included? (5 in all)

What is a pastoralist?

How many are there in this area?

Note: Kenya is considered to be in East Africa, although on the above UNICEF site it is included as part of the Horn of Africa.

b. This area has two rainy seasons.

Describe the long rain - when does it normally happen?

When does the short rain normally happen?

In what ways are these rains important to the pastoralists?

c. What happened in 2006 to the expected rains?

Look at the bar graph. About what percent of Kenya was affected by the drought?

In 1998 to 2000 how many people in the area died due to that drought period?

d. When the rains returned in the late spring of 2006, what challenges were faced by the farmers and their families even though there was now enough rain?

2. View the following videos and photo essays that are listed in the left of the home page above:

Photo essay: Child Pastoralists

Video: Malnutrition

Video: Falling Behind

Video: Conflict for Resources

Video: The Burden on Children

Video: Disease

Video: The Burden on Mothers

3. NOTE: Since November 2006 several countries in the Horn of Africa (such as Somalia, Kenya, Ethiopia), that had not yet recovered from several years of extreme drought, have been now hit by much higher than normal rainfall in the short rainy season. This has in turn created more problems for local people.

Read the articles, “*Up to 1million people threatened by flooding in southern Somalia, UN warns*”, “*Flooding affects over 100,000 people in Dadaab, Kenya*”, and “*Threat of disease outbreaks as flooding persists*” which explain the problems resulting from too much rain. Find and describe at least six problems caused by too much rain.

4. Assignment:

Part 1 - Write two pages of notes in point form about the impact of drought (or of too much rain) in the Horn of Africa. Include ways in which drought or flooding impacts children, health/disease, nutrition, mothers, and the future prospects for the family. These notes are to be handed in with the poster.

Part 2 - Using the information you gathered from the video, make a poster showing some of the effects of lack of rain **or** the impact of too much rain.

Guide for Assessment of Research and Poster

Part 1 - Research (25 marks)

- 2 pages of point form notes are to be passed in with the poster
- notes are to be included from:
 - answers to questions (a completed work sheet)
 - a photo essay (Child Pastoralists)
 - video sites (words under pictures)
 - article

Part 2 - Poster on 11" x 17" Paper (50 marks)

- evaluation criteria:
 - title (1)
 - 5 sketches (10)
 - 20 facts (20)
 - 5 colours/shading (5)
 - creativity (4)
 - effort (10)

Name: _____

Activity Sheet: The Impacts of Drought and Flooding

1. Using information given on the video clips, answer the following questions on the impact of drought

a. Where is the Horn of Africa? _____
Why do you think this area has been given this name? _____

What countries are included? (Five in all) _____

What is a pastoralist? _____

How many are there in this area? _____

b. This area has two rainy seasons.
Describe the long rain - when does it normally happen? _____

When does the short rain normally happen? _____

In what ways are these rains important to the pastoralists? _____

c. What happened to the expected rains early in 2006? _____

Look at the bar graph. About what percent of Kenya was affected by the drought? _____

Between 1998 to 2000, how many people in the area died due to that drought period? _____

d. When the rains returned in the late spring of 2006, what challenges were faced by the farmers and their families even though there was now enough rain? _____

2. Since November 2006, several countries in the Horn of Africa or east Africa (such as Somalia, Kenya, Ethiopia) that had not yet recovered from several years of extreme drought have been hit by much higher than normal rainfall in the short rainy season. This has in turn created more problems for local people.

The following article, "*Up to 1 million people threatened by flooding in southern Somalia, UN warns*" explains some of the problems resulting from too much rain.

Find six problems caused by too much rain. _____

How do you think too much rain affects farmers in Kenya? _____

Lesson II - Protecting Soil and Water: A Challenge for a Farmer in P.E.I.

Estimated time to complete: 1 - 2 classes

Theme: A challenge for farmers in P.E.I. and other provinces is protecting our soil and water supply. Currently P.E.I. has much more water and arable soil than many parts of the world. This resource must be protected to ensure future supply.

Student Instructions

Part A: Protecting our water supply

1. Go to the following web-address:
http://www.agr.gc.ca/pfra/flash/index_e.htm
2. Find the section, Robocow: Operation H₂O
3. Click on "View Flash" to watch this video (Use "pause" as necessary).
- 4. Assignment:** From this video clip, answer the following questions, by completing the Robocow Activity Sheet that follows this lesson.
 - a. What water safety hazards did Robocow find on the farm?
 - b. What were the solutions for each hazard?

Part B: Conserving our Soil and Water

5. Go to the following web-site for the Eastern Canada Soil and Water Conservation Centre.
<http://www.ccse-swcc.nb.ca/bmp/index.cfm>
For teacher information, the relevant information from this web-site is included with this lesson.
It is important to note that the following agencies have supported the development of this site:
 - New Brunswick Agricultural Council (funding - Canadian Adaptation and Rural Development)
 - Agriculture and Agri-Food Canada
 - New Brunswick Department of Agriculture, Fisheries and Aquaculture
 - several cooperative producer and farm organizations
6. Click on "Soil Conservation".
7. Click on "Features" to view the 5 main sections and other information associated with these sections.

8. Assignment:

Use this information to make a make flow chart on a large piece of paper.

Include the following:

- title
- 39 pieces of information from the site (main sections and corresponding subsections)
- 1 sketch for each of the 5 main sections

Summary Activity for Lessons 1 and 2: Comparing and Contrasting Prince Edward Island and Kenya

- A. Write a page about the importance of farmers' contribution to a prosperous community, referring to Kenya and P.E.I.

OR

- B. Discuss the following questions in a group (may be assigned individually) and submit your own answers.

1. Compared to Kenya, is it as important that our farmers are able to grow lots of food? Yes or no? State 2 reasons to support your answer.
2. List 3 things that you think might happen in P.E.I. if farmers were not able to produce food to eat and sell.
3. Compared to Kenya, state 4 ways in which farming is easier in P.E.I..
4. Besides adequate rainfall, what is important for Kenyan farmers to be successful?
5. Why is it important for farmers (and all citizens) to act in ways that protect our water and soil?
6. List 8 soil conservation methods that PEI farmers can use to protect our soil.
7. List 6 ways that you personally can contribute to the protection and conservation of our water.

Summary of Video:

Robocow: Operation H₂O (A description of the Flash video can be found on above site).

It's a bird. It's a plane. No, it's RoboCow. Able to leap tall silos in a single bound, this animated environmental advocate uses her ground-scan radar vision to detect on-farm perils. Like the best of all super heroes, she maps out solutions to hazards like improperly stored chemicals, pesticide run-off and stream contamination. Once her mission is successfully accomplished, she flies off to seek other pastures in need of greening. This Flash animation, conceived to make students from grades six to 10 aware of best farm management practices, won an award of merit from the Association for Media and Technology in Education in Canada based in Etobicoke, ON.

FOR TEACHERS: Two other flash videos are on this site that may be of interest - see descriptions below.

On-farm Surface Water (Flash video)

Obtaining good quality water from farm surface water sources is challenging. The key is protecting and enhancing the water source, and using a series of treatment processes. These treatment processes are called barriers: each barrier reduces specific water quality problems from being passed on in the water. This cover screen shows how a multiple barrier approach can be used on farm dugouts, to obtain high quality water for rural uses. The approach starts with managing the land effectively, aerating dugouts, and using a number of water treatment steps in sequence. The approach could be used on other similar (or better quality) surface water sources. By clicking on each barrier, a new animation will start, explaining each barrier process in more detail. A word of caution: Each barrier must be properly designed, well-operated and regularly maintained. Multiple barriers, like a chain, are only as strong as their weakest link. If one barrier fails, the final water quality will deteriorate and may not be safe for its intended use

Robocow: The Aquifer Connection (Flash video)

It was an average year by all accounts, the rainfall was adequate and the wildlife was doing well. There were no disasters or elections, the economy was doing fine, and day to day life was even to the point where the media had little news to report. The people in the city did their normal bustling to and fro, and for the farmers it was business as usual, growing their crops, managing their livestock, caring for their resources. It was on one of these ordinary days that something appeared on the horizon, rapidly approaching. It had appeared before, at about the time when water quality in the area was beginning to suffer. Once again, things were not as they seemed. Robocow detects problems in the Aquifer.

Name: _____

“Robocow” Activity Sheet

Farm Water Problem detected	Action taken to solve the problem

Water and Soil Conservation - Eastern Canada

Web-site content summary from the Eastern Canada Soil and Water Conservation Centre web-site found at: <http://www.ccse-swcc.nb.ca/bmp/bmp.cfm?numero=1>

Permission has been obtained to copy information from this site.

The “Best Management Practices” describe ways in which Eastern Canadian farmers can play a major role in protecting our soil and water. When clicking on the section, “Best Management Practices”, students will find sections explaining each Soil or Water Conservation practice, and Case Studies demonstrating these best practices.

Under Soil Conservation are the following subtitles:

- Crop rotation
 - Forages
 - Cereal and oilseed crops
- Winter cover
 - Cover crops
 - Mulching
- Tillage practices
 - Conservation tillage
 - No-Till
 - Residue management
 - Tillage erosion control
- Conservation practices
- Soil drainage
 - Surface drainage
 - Subsurface drainage
 - Alleviating soil compaction

In each of these sections and in the Water Conservation section are photos illustrating the methods of soil or water conservation.

Lesson III - Comparing the crops grown in PEI to those grown in Kenya

Estimated time to complete: 2 classes if both activities are completed

Theme: What are the main crops produced and animals raised in the agricultural industry in P.E.I.? What about in Kenya? Are any of these common to both P.E.I. and Kenya? Why do you think some crops can be grown in Kenya but not in P.E.I.? What are the steps in growing potatoes and tea, as examples of crops grown in PEI and/or Kenya?

Student Instructions:

1. View the three sites listed below to identify the main crops that are grown in P.E.I. and Kenya. List them on the activity sheet: “Comparing Crops Grown in PEI and Kenya” as you find them in the text.

PEI crops <http://www.gov.pe.ca/af/agweb/index.php3?number=71208>

Kenya - agriculture <http://www.accesskenya.info/agriculture.asp>

World - by country or crop <http://www.fao.org/es/ess/top/country.html?>

2. When you have gathered the information on crops, answer the questions on the activity sheet
- What crops are in common?
 - Why do you think some crops can be grown in Kenya but not in P.E.I.?
3. Tea and potatoes - Using either the web-sites below or the information sheet obtained from your teacher, complete the research sheet, “How crops are grown and processed” related to **tea** which is grown in Kenya, and for **potatoes** grown in PEI.

Web-sites for tea growth and processing:

http://www.ashworthtea.com/how_manufacture.htm

Article 1

http://www.peets.com/learn/tea_growing.asp

Article 2

<http://www.africantea.com/> (on left side, click on ‘Kenya’)

Article 3

Website for PEI potatoes:

Article 4

<http://www.spudinpei.com/?page=potatoes>

Article 1 - How tea is grown and manufactured

The tea plant, *Camellia Sinensis*, can be grown almost anywhere. The best teas are grown in cooler climates and/or at higher elevations.

Once the tea plant has reached maturity the leaves can be harvested from it for many years. The leaves are harvested, in cooler climates or at higher elevations, four to five times a year. When the plant begins a growth spurt or flush, the picking is started at exactly the right time, to assure that the leaves are large enough, but not too old. Just the top two leaves and the bud are picked for the best black and green teas. Only the buds are picked for some very special teas.

There are two major objectives in the processing of tea. The first is to preserve the tea by driving most of the moisture from the leaves. The second objective is to bring flavor out on the surface of the leaves so that it can transfer quickly to the water during the steeping process.

After picking, the green leaves are spread out to wither between 12 to 18 hours. During the withering process, the leaves lose most of their moisture, becoming soft and pliable. This allows the leaves to be rolled without tearing. Rolling breaks the membranes of the leaves releasing the natural juices to collect on the surface of the leaf. After rolling, the leaves are brought into large, cool, humid rooms to ferment. The fermentation process produces essential oils from the natural juices. The essential oils give each black tea its characteristic aroma and flavor. The fermentation process must be stopped at the point where the aroma and flavor of the tea have fully developed. This is done by firing the leaves in large ovens. The essential oils dry on the surface of the leaves and remain relatively stable until exposed to boiling water during infusion. In the last step of production, the leaves must be sorted by size. During the production process, approximately 80% of tea leaves are broken or crushed so that the finished tea consists of full leaves, broken leaves and smaller particles (fannings) and tea dust. Since the necessary steeping time increases with the size of the leaf, the tea must be sorted into lots of equal leaf size. The large leaves, 20% of the tea, is the best grade, the small broken leaves are the next grade, the fannings and tea dust are used in tea bags.

Any region's growth may be manufactured into green, oolong, or black tea. The growing conditions of a particular region may make tea suited to one manufacture over another.

Source:

http://www.ashworthtea.com/how_manufacture.htm

Article 2 - How tea is grown

The tea plant (*Camellia sinensis*) grows best in a humid tropical or subtropical climate with plenty of rain. Areas that are well-drained, with a high-acidity sandy loam tend to produce the best teas. Higher elevations also yield better quality, perhaps because the evening coolness causes the leaves to grow more slowly, concentrating their flavor.

There are two important subspecies of the tea plant, the China type and the Assam type. The China type is grown in China, Taiwan, Japan, and parts of Darjeeling, and produces smaller leaves with a softer flavor. The indigenous Assam type is grown in India, Sri Lanka, and throughout the rest of the tea-producing world, producing larger leaves with more strength. Within each subspecies, there are dozens of local varieties created by generations of seed propagation and "clonal" planting using leaf cuttings.

For good quality teas, only the newest growth (two leaves and a bud) is plucked by hand; this process is called "fine plucking." "Coarse plucking" describes the practice of taking three or four leaves with the bud, and while the yield at the end of the day is much higher, the quality is much poorer. As any home gardener knows, repeated tip pinching promotes new growth, so the bushes produce multiple pluckings throughout the year - as few as three in climates with distinct seasonal variability to twelve or more in tropical regions. Raw leaf quality varies greatly with the seasons, and while a given estate may produce dozens of lots of tea each year, only a handful of these may have great flavor.

A typical tea bush may produce over a thousand leaves each year, a seemingly large number until one realizes that a single pound of fully processed tea may contain two to three thousand leaves.

How tea is processed

Black Teas

Plucking starts early in the day, and by noon the pluckers begin returning from the fields to the factory. The freshly plucked leaves are spread out on racks, where much of the leaf's water content is evaporated over the next 8 to 24 hours, in a step known as withering. When the leaves have become soft and pliable, they are ready for rolling.

From the withering racks the soft, green leaf passes to rolling machinery where it is twisted and rolled to break up the leaf cells and liberate the enzymes that will develop the tea's flavor. Varying degrees of pressure are used between rotating brass plates, so as to fully twist the leaf without creating too much damaging heat.

The rolled leaf is then moved to the oxidation table for between two and three hours. Here, upon exposure to air, the newly released juices oxidize, causing the leaves to turn black. This step - traditionally but imprecisely called "fermentation" - gives black tea its characteristic flavor as well as its color.

At the point at which the leaves have reached the optimal oxidation level (according to the style of black tea that is being attempted), the leaves are ready for firing. The fully "fermented" leaf is placed in a thin layer on a moving belt that winds its way through the drying chamber in approximately twenty minutes. At the end of this, the leaf's moisture content should be about 2%, and in the absence of significant moisture the oxidation comes to a halt.

Though nearly done, the tea is not ready to be drunk until it has been graded for size. The rolling process creates leaf particles of all sizes, which need to be separated into consistent sizes for better infusion and flavor. The dried leaf is sent through a series of mechanically shaken sieves, until it is separated into whole leaf, broken leaf, and fannings grades.

Green Teas

Unlike black tea, fresh plucked leaf destined for green tea is not first slowly withered, but goes directly into a de-enzyming stage. There are two basic methods to accomplish this: dry heat and steam. In China, the leaves are typically stirred in a hot metal pan, or in a tumbling heated drum. In Japan, the leaves are typically placed in a rotating cylinder filled with steam. In either case, the process lasts less than a minute, and results in two developments: all enzymatic reactions within the leaf cells are prevented, and it renders the leaf flaccid and pliable for rolling.

With the enzymes neutralized, rolling can proceed without developing black tea color and flavor. For many types of green tea, rolling is accomplished using the same type of machinery as is used with black tea, although with less pressure applied. For many of the finest green teas, rolling is done entirely by hand as an extension of the initial pan-heating, and can result in flat-leaf green teas, ball shapes, curled shapes, etc. The resulting shape is a part of the visual appreciation of the tea, and the methods used to achieve that shape in large part determine flavor.

The leaf is then fired. This can be done in a conventional drier, or the leaf can be pan-fired until fully dry. Finally the leaf is graded according to leaf size. Green teas tend to yield only a small amount of broken leaf and fannings grades.

Oolong Teas

Oolongs are the most time-consuming and difficult teas to produce, although they can be understood most easily by viewing them as a halfway step between green and black tea. First, the leaves are withered, but for a shorter time than for black tea - typically about eight hours.

Then the leaves go through a series of repeated light rollings, partial oxidation, and gentle firings. The leaves are rolled gently by tumbling in bamboo baskets, or rolled in large sacks, or by hand pressure; this results in a bruising of the outside of the leaf, which initiates partial oxidation. After a short period the leaves are given a brief firing to partially reduce the moisture content. This proceeds in a repeating series of stages until the tea is ready for a final firing.

Interestingly, the plucking standard for oolong tea is usually three leaves and a bud. This accounts for the appearance of large, whole leaves even in the highest quality oolongs.

Source:

http://www.peets.com/learn/tea_growing.asp?rdir=1&

Article 3 - Kenya Tea

Evaporating water from Lake Victoria supplies much of the needed moisture for native plants including tea. Kenyan tea is grown at elevations of 5000' to 7000'. The tea bush is an evergreen in tropical climates. Due to that fact there are no First, Second or Autumnal flushes, the tea in the Kericho highlands is picked every 17 days year round.

Source: http://www.africantea.com/African_Tea-Kenya/african_tea-kenya.html

Article 4 - History of the P.E.I. Potato

From the beginning, it was obvious that the Island was an ideal location for growing potatoes. The first Governor of the Island, Walter Patterson, reported in 1771 that the potato harvest was a "phenomenal success". By 1790, small amounts of potatoes were being exported to other colonies. Lord Selkirk further encouraged potato farming. In 1802 Selkirk brought settlers from the Scottish highlands to the area around Orwell Bay. He provided his settlers with potatoes to grow, and for the first few years the Highlanders survived almost exclusively on a diet of potatoes and cod. By 1806, John Stewart, in his book about the Island, could say of potatoes: "Potatoes are raised in great abundance, and in no country better."

Growing the Potato: Settler Style

The early settlers did not grow potatoes in the same way we do today. They did not have the benefit of large fields. The Island was almost entirely covered by a dense forest and settlers had to clear the woods tree by tree in order to make room for their farms. Even after they had chopped down all the trees in a field, the tree stumps, which were firmly rooted in the ground, still remained. Often it would take several years to completely clear a field of tree stumps.

To make the most of their cleared land, settlers took to planting potatoes in among the stumps while their efforts at clearing went on. The seed potatoes were planted, buried with ash and left alone until harvesting time. This method produced a source of food for the settlers and involved very little work. The settlers were left free to focus on other tasks, like clearing the land. This method of potato planting continued well into the 1800's. The letters of Walter Johnstone, written in 1822, describe potato planting among newly cleared tree stumps, and describe the piles of earth covering the potatoes as looking like "mole-hills."

The modern potato industry for which P.E.I. is now world famous really began in the 1920's, after the introduction of two new varieties of potatoes: Irish Cobbler and the Green Mountain and the invention of processing technologies.

Prince Edward Island has been exporting potatoes now for over 200 years.

Potato Growing: Stages

Growth Stage I: Planting to Emergence

- seed pieces are planted
- sprouts and roots develop
- seed piece is the sole energy source for developing plants
- management: focuses on weed control
- activity: cultivation between rows

Growth Stage II: Vegetative Growth

- plants are actively growing, 6-8 inches tall
- leaves and branches form above ground while roots and shoots develop below
- roots begin to take up nutrients from the soil
- photosynthesis is occurring: light is absorbed by the plant to be converted into sugars for respiration to occur. The unused sugars are converted into starch.

- as plants emerge, some disease may appear (i.e. Rhizoctonia), and planting misses appear
- management: scouting begins for insects (e.g., Colorado Potato Beetle (CPB), aphids, leaf hoppers, flea beetles, and European Corn Borers) and diseases (e.g., blight)
- activity: cultivation involves hilling potatoes 8-13 cm. below top of hill

Growth Stage III: Tuber Initiation

- lasts 10 to 14 days
- tubers form at stolon tips but do not enlarge
- end of stage III happens at the same time as early flowering, buds opening
- management: make sure the plants have plenty of water
- activity: petiole sampling to monitor nutrient deficiencies, scouting continues

Growth Stage IV: Tuber Bulking

- plants are now at full size, rows are filled in
- majority of plant nutrients have been taken up
- tuber bulking, enlarging
- management: maintain soil water availability
- activity: scouting is at its peak to check for disease and pests

Growth Stage V: Tuber Maturation

- vines look quite old--lose colour and leaves
- tuber skins are setting or hardening
- in preparation for harvesting, the vines are killed

Source: PEI Spud-in Ceremony <http://www.spudinpei.com/?page=potatoes>

The Work of a Potato Farmer Throughout the Year

January	February	March
<p>grading, shipping, and packing for processors and/or fresh table market</p> <p>shipping seed to export markets</p> <p>planning current season planting schedule</p>	<p>grading, shipping, and packing for processors and/or fresh table market</p> <p>shipping seed to export markets</p> <p>trade shows</p> <p>planning current season planting schedule</p>	<p>grading, shipping, and packing for processors and/or fresh table market</p> <p>shipping seed to export markets</p> <p>trade shows</p> <p>prepare equipment for seed bed preparation and planting</p> <p>buying seed for current season planting</p>
April	May	June
<p>grading, shipping, and packing for processors and/or fresh table market</p> <p>shipping seed to export markets</p> <p>spring land preparation</p> <p>soil testing, lime and fertilizer applications</p> <p>warm seed in storage (2 weeks prior to planting)</p> <p>late April: plant early maturing varieties</p>	<p>grading, shipping, and packing for processors and/or fresh table market</p> <p>warm seed in storage and cut seed for planting</p> <p>soil testing, lime and fertilizer applications</p> <p>mid to late May: plant late maturing varieties</p>	<p>cultivation of weeds and first hill on potatoes</p> <p>crop scouting begins for weeds, early disease symptoms, Colorado Potato Beetle</p> <p>top dress fertilizer on crop</p> <p>spray program begins for blight</p> <p>roguing potatoes for removal of virus and diseased plants</p> <p>late June: first Agriculture Canada inspection</p>

July	August	September
<p>cultivation of weeds and second hilling on potatoes</p> <p>crop scouting begins for Colorado Potato Beetles and egg masses and larvae, Flea beetles, Potato and Buckthorn Aphids, Corn Borer moths, diseases, Late Blight</p> <p>roguing potatoes for removal of virus and diseased plants</p> <p>continuation of spray program for blight</p> <p>mid July: "new" potatoes harvested for the fresh market</p> <p>second Agriculture Canada inspections</p> <p>top dress fertilizer on crop</p>	<p>crop scouting for Colorado Potato Beetles and egg masses and larvae, Flea beetles, Potato and Buckthorn Aphids, Corn Borer moths, Diseases, Late Blight</p> <p>roguing potatoes for removal of virus and diseased plants</p> <p>continuation of spray program for blight</p> <p>third Agriculture Canada inspections</p> <p>mid August: top kill for seed potato crops</p> <p>harvest equipment maintenance</p> <p>disinfect harvest equipment, pallet boxes and warehouse facilities</p>	<p>continuation of spray program for blight</p> <p>crop scouting is slowing down</p> <p>mid to late September: top kill processing crop</p> <p>mid September: harvest seed crop</p>
October	November	December
<p>early October: second topkill applied</p> <p>harvest the processing crop</p> <p>ploughing land for next season planting</p> <p>grading and shipping current season crop to processors or fresh market</p>	<p>finish harvest</p> <p>grading and shipping current season crop to processors or fresh market</p> <p>soil sampling and lime application</p> <p>clean and disinfect harvest equipment</p>	<p>grading, packing, and shipping current season crop to processors or fresh market</p>

Source: PEI Spud-in Ceremony

<http://www.spudinpei.com/?page=potatoes>

Name: _____

ACTIVITY SHEET 1: Comparing Crops Grown in PEI and Kenya

1. In this box, list the main crops grown in PEI.

2. In this box, list the main crops grown in Kenya

3. What crops are grown in both places? List them here.

4. Why do you think some crops can be grown in Kenya but not be grown in P.E.I.?

Name: _____

ACTIVITY SHEET 2: Tea or Potatoes Anyone?

Using the information from the web-sites or from the printed material, draw a flow chart, diagram or poster to show how steps in growing tea or potatoes.

Try to include all major steps.

Crop described: _____

Lesson IV - Where do the ingredients in your favourite snack food come from?

Estimated time to complete: 1 classes

Lesson adapted from Snack Search found at
<http://www.agclassroom.org/teacher/pdf/cropmap.pdf>

Theme: Even in our everyday lives, we are dependent upon many other countries /regions.

Materials:

- Labels from favourite snack foods
- Web-site access or information sheets
- Activity sheet

Student Instructions:

1. Remove the label carefully from your favourite snack food. On this label you will find an ingredients list. These ingredients are listed in order of amount in the snack (from largest to smallest amount). List the first five ingredients from the label in order on your activity sheet.
2. Using the web-site listed below, for each ingredient find the top five countries that produce this food product. Using an atlas or a map, look at each item and decide which country would be the most likely source for that product if the snack food were to be produced in Canada. Why did you select that country? What other factors might determine whether the product actually came from that country?

World production by country or crop <http://www.fao.org/es/ess/top/country.html?>
(On this United Nations Food and Agricultural Organization site (FAO) you can find the top countries in the world where specific raw materials are produced listed by country or by product.)

Raw materials listed on this site include:

- Nuts - almonds, cashews, peanuts (ground nuts), hazelnuts, pistachios, walnuts
- Other products - cocoa beans, coconuts, cherries, cinnamon, honey, milk of various kinds, oats, soy beans, sugar beets, sugar cane, vanilla

ACTIVITY SHEET

Name: _____

Where do the ingredients in your favourite snack food come from?

SNACK FOOD: _____

From the label, can you find where this snack food is manufactured? _____

Part A.

Main ingredients	Top five countries where this ingredient is grown/ produced
1.	
2.	
3.	
4.	
5.	

Part B. Using an atlas or a map, look at each item and decide which country would be the most likely source for that product if the snack food were to be produced in Canada. Why did you select that country? What other factors do you think might determine whether the product actually came from that country?

Lesson V - A Farm in PEI and Kenya

Estimated time to complete: 1-2 classes depending upon what research is assigned

Theme: Comparison of farming in PEI and Kenya

Materials:

Contact information for farmers in local area (can be generated from the class/school)

Slide show, "Farming in Kenya"

Activity sheet: A Farm Day in PEI and Kenya

Student Instructions:

1. View the slide show, "Farming in Kenya" and answer the questions on the Activity Sheet.
2. Contact a farmer in PE I, asking him or her the same questions that you answered for the slide show for Farming in Kenya.

3. Assignment:

Answer the following questions in sentence form.

- A. Name five ways that farming in PEI is similar to farming in Kenya.
- B. Name 5 ways that it is different.
- C. What was the most interesting thing you learned about farming in Kenya? Describe it.
- D. What was the most interesting thing you learned about farming in PEI? Describe it.

Activity - Farming in Kenya

Name: _____

Answer the following questions after viewing the slide show, "Farming in Kenya":

- 1) What is the size of a typical farm in Kenya?
- 2) What animals might be found on this farm? If there are cows, how many would there likely be?
- 3) What crops are grown on Kenyan farms?
- 4) How is soil prepared for planting?
- 5) Name 5 things you learned about how cattle food is prepared by Kenyan farmers?
- 6) Describe a modern barn in Kenya. What do Kenyan farmers need to do to keep their animals free from diseases caused by insects?
- 7) Describe what a farmer does to get milk to market in Kenya.

On the back of this page

- 8) Write a paragraph to describe the role that women and children play in farming in Kenya.
- 9) In a paragraph, write your main impressions about farming in Kenya. What do you think is most interesting? The most difficult?

Activity - Farming in Prince Edward Island

Name: _____ Person interviewed : _____

Answer the following questions about farming in PEI:

- 1) What is the size of a typical farm in Prince Edward Island?

- 2) What animals might be found on PEI farms? If there are dairy cows, how many would there likely be?

- 3) What crops are grown on PEI farms?

- 4) How is soil prepared for planting?

- 5) Name 5 things you learned about how cattle food is prepared/obtained by PEI farmers?

- 6) Describe a modern barn in PEI. What do PEI farmers need to do to keep their animals free from diseases caused by insects?

- 7) Describe what a farmer does to get milk to market in PEI.

On the back of this page

- 8) Write a paragraph to describe the role that women and children play in farming in PEI.
- 9) In a paragraph, write your main impressions about farming in PEI. What do you think is most interesting? The most difficult?

Slide Show Script: Farming in Kenya

Slide 2 - Photo of a corporate wheat farm in Kenya

Slide 3 - Although this corporate farm is in Kenya it does not represent farming in Kenya. Most farms have little land (1-5 acres) and only a few animals.

Slide 4 - sub-title: From the Soil to the Table

Slide 5 - Preparing the land for planting - it is necessary to use heavy hoes to chop the soil into workable pieces before planting - usually women's work in Kenya.

Slide 6 - Some farmers will have a one furrow plough which can be pulled by a team of oxen. Here are two young boys trying to plough.

Slide 7 - The farm wife will germinate tomato seeds under this shield of hay so the sun does not dry out the emerging seedlings.

Slide 8 - Due to deforestation in Kenya, firewood for cooking is very scarce. Women often plant trees as a future source of firewood. After germination of the seeds, they put the seedlings in wire cages to protect them from being eaten by the farm animals.

Slide 9 - Cultivation equipment is not available on most farms so weeding is done by hand, most often by women.
Kenyan farm families must 'live out of their gardens' as store-bought food is too expensive.

Slide 10 - Photo of a home garden

Slide 11 - Corn is the staple food for Kenyans and peas are often planted between the rows and eaten as a protein source for meals.

Slide 12 - Hospitals may have large gardens as they have little money to buy food for their patients.

Slide 13 - Farm plots may be close together on this hilly landscape.

Slide 14 - A Farmers Helping Farmers member is helping to distribute seed donated by Vessey's Seeds.

Slide 15 - Ruuju school garden- As part of the school lunch program students must produce their own food.

Slide 16 - Ruuju school kitchen - Food is prepared in large pots in this wood-fueled stove. Each student takes their turn bringing a stick of wood to school to fuel this kitchen stove.

Slide 17 - School children waiting for lunch to be served. This will often be their most nutritious meal of the day.

Slide 18 - Lunch is served!

Slide 19 - sub-title: Preparing Feed for the Cattle

Slide 20 - Bringing home cattle feed - a farm woman carrying home a heavy load of branches and leaves to feed the farm animals. There are no pickup trucks for such work and few farms would even own a wheelbarrow.

Slide 21 - Napier grass is ready to be chopped for feed or for making silage.

Slide 22 - Forage chopper - this machine consists of a large wheel with two sharp blades. This is very strenuous work usually done by hand. More modern machines may be powered by gasoline or electric motors.

Slide 23 - Napier grass is made into silage by chopping the stems and leaves into pieces about two centimetres long. This is mixed with molasses and put into plastic bags. The farmer shown is tramping down the material so it will be free of air to help prevent spoilage.

Slide 24 - Silage is made during the rainy season for use during the dry season when crop growth is poor.

Slide 25 - Farmers who have land to grow hay do not have the equipment to bale it so must hire a custom operator. This baler has seen a lot of service.

Slide 26 - When a farmer can purchase feed for his milking cows, he buys it one bag at a time. The bag is too heavy to carry, weighing as much as 75 kilograms, so a bicycle may be used.

Slide 27 - Because of the scarcity of land, many farms are zero grazing - the cattle are fed rather than being put in a pasture

Slide 28 - In areas where land is available, young farm boys are usually given the chore of looking after the cattle so they do not wander off.

Slide 29 - Photo - Young man herding his cattle

Slide 30 - Sub-title: Caring for the Cattle

Slide 31 - An old and dirty barn with a mud floor. This makes it difficult to keep the cattle clean and they are more apt to become sick.

Slide 32 - A modern dairy barn with a cement floor to keep the cows clean and a roof for shade on sunny days.

Slide 33 - Tanks provide water for the cows. Water is a scarce resource and none is wasted.

Slide 34 - Cattle dip - in the tropics cattle often become infested with insects. The farm animals are forced to walk or swim through a tank of water to which an insecticide has been added.

Slide 35 - School barn - these young cattle are being kept at a school where they are part of the agriculture course. They also provide milk for the school lunch program. If a family cannot afford school fees (secondary school), the family may give a calf to the school to cover school fees. They may also exchange farm labour for fees.

Slide 36 - Farmers gather in a barnyard for a presentation on animal health delivered by a visiting veterinarian and vet students. This program was sponsored by Farmers Helping Farmers.

Slide 37 - Kenyan farmers may also raise goats, sheep and poultry on their farms. In addition, other crops such as coffee, tea, and macadamia nuts are important cash crops.

Slide 38 - This young child is picking weeds out of a tea field. The picking of the tea leaves is often done by older women.

Slide 39 - In the next slide women are sorting coffee beans. Day labourers have spent the morning picking beans; in the afternoon the beans must be sorted to remove unripe ones. Sorting is considered women's work so the men are sitting nearby watching.

Slide 40 - Photo - Women sorting coffee beans

Slide 41 - Carrying a bag of coffee to the coffee processing plant - the coffee beans (seeds) are set out to dry on the racks seen in the background.

Slide 42 - Sub-title: Milk production

Slide 43 - Milking a cow by hand- usually considered women's work. The average farm has one to two cows which produce an average of 8 litres per cow per day.

Slide 44 - This woman is carrying milk by hand to the collection point very early in the morning.

Slide 45 - Carrying the milk in a can on a bicycle is much easier and faster than by hand.

Slide 46 - Many of these farmers got up at 4:00 AM in order to do the milking and arrive at the collection point in time.

Slide 47 - Photo - At the collection station

Slide 48 - The milk each farmer delivers to the collection point must be weighed and tested before it can be accepted. The farmers will get a milk cheque once a month for all the milk delivered provided it has not spoiled. The cheque is credited to the farmer's account at the sacco (credit union).

Slide 49 - A farmer is waiting for the paper work to be completed after delivering the milk.

Slide 50 - Kenya does not have bank machines in rural areas. The farm wife, who usually does the banking, waits outside until it is her turn.

Slide 51 - Homeward bound - there are few pickup trucks in rural areas so farmers can expect to carry on their backs or heads whatever they buy in town.

Slide 52 - Three happy and healthy farm children!

Lesson VI - How does *Farmers Helping Farmers* assist farmers in Kenya?

Estimated time to complete: 1 class

Theme: Through a web quest activity, students will become aware of how a local non-governmental organization (NGO), *Farmers Helping Farmers*, assists farmers in Kenya. Answers are included after the activity sheet.

Materials:

Access to FHF web-site <http://www.farmershelpingfarmers.ca/>

Activity sheet: Farmers Helping Farmers Web Quest

Student Instructions:

1. View the Farmers Helping Farmers web-site to find the answers to the questions on the Activity sheet: Farmers Helping Farmers Web Quest

Name: _____

Farmers Helping Farmers Web Quest

1. In what year was Farmers Helping Farmers awarded the Agriculture Institute of Canada's International Award?

2. A mature Macadamia nut tree seedling can produce an annual crop worth how much?

3. What materials were used to make a low cost bio-gas generator on the farm of Mrs. Geru in the Embu District? _____

4. In what year did the first UPEI pre-service teachers travel to Kenya to practice teach in the twinned schools in Kenya? _____

5. How much can a Kenyan coffee picker earn in a day —if he/she works very hard?

6. In what year did the Kenyan government allow Kenyan children to attend primary school free of charge? _____

7. What percentage of Kenyan students will have the opportunity to attend secondary school? _____

8. In what year was the Dairy Laboratory at the Wakulima Self-Help Dairy Group officially opened? _____

9. What kind of grass was used to make silage on farms in the Mukurwe-ini District of Kenya? _____

10. How much does a finished bag of silage typically weigh? _____

11. Approximately how many students attend Ruuju school? _____

12. What PEI company donated seeds for the Ruuju School Project? _____

13. Design two questions about other interesting things you found on this web-site that were not mentioned above. (Make sure you also put the answer to your question.)

Question 1:

Answer: _____

Question two:

Answer: _____

Farmers Helping Farmers Web Quest (ANSWERS)

1. In what year was Farmers Helping Farmers awarded the Agriculture Institute of Canada's International Award? **1999** - background, first paragraph
2. A mature Macadamia nut tree seedling can produce an annual crop worth how much? **\$100 Canadian dollars** - Muchui Women's Group Tree Nursery, Project Impact
3. What materials were used to make a low cost bio-gas generator on the farm if Mrs. Geru in the Embu District? **A 10 metre length of plastic silage tubing, two pieces of sewer pipe and an outlet pipe to collect the biogas** - Embu Dairy, Biogas Generator, paragraph 3
4. In what year did the first UPEI pre-service teachers travel to Kenya to practice teach in the twinned schools in Kenya? **2004** - Karibu Two Easts School Twinning Project, Project Impact, paragraph 3
5. How much can a Kenyan coffee picker earn in a day —if he/she works very hard? **Between seventy to eighty Kenyan shillings, slightly more than 1 Canadian dollar per day** - Global Classroom Initiative, Why is Fair Trade Coffee Important? Paragraph 3
6. In what year did the Kenyan government allow Kenyan children to attend primary school free of charge? **December 2002** - Global Classroom Initiative, Universal Primary Education in Kenya, paragraph 6
7. What percentage of Kenyan students will have the opportunity to attend secondary school? **54% (2005 estimate)** - global Classroom Initiative, Universal Primary Education in Kenya, paragraph 6
8. In what year was the Dairy Laboratory at the Wakulima Self-Help Dairy Group officially opened? **2006** - Support to the Wakulima Dairy Self Help Dairy Group, Dairy Laboratory at Wakulima
9. What kind of grass was used to make silage on farms in the Mukurwe-ini District of Kenya? **Napier grass** - Support to the Wakulima Dairy Self Help Dairy Group, Silage Making Kenyan Style paragraph 3
10. How much does a finished bag of silage typically weigh? **500 Kg.** - Support to the Wakulima Dairy Self Help Dairy Group, Silage Making Kenyan Style paragraph 4
11. Approximately how many students attend Ruuju school? **420** - The Rujuu School Project, Background
12. What PEI company donated seeds for the Ruuju School Project? **Vessey's Seeds** -The Rujuu School Project, Project Impact

LEVEL 2 - Project Activities

Anticipated Completion Time: The amount of time required will depend upon the extent of research completed by individual students or groups and the number and length of the student presentations. (Teachers may select from activities suggested for individual students, groups, or complete an activity with the entire class.)

Required Resources/Materials:

Internet access

Materials for preparation of visual displays:

(for making transparencies, digital presentations, brochures, posters, etc.)

Farmers Helping Farmers Web-site

CD of Kenyan agricultural scenes that may be used by students in presentations

Slide show: “ Farming in Kenya”

***Teacher Note: Some of these activities are more difficult than others. This is done in recognition that even more capable students have varying levels of ability.**

Most challenging - Activities 1, 3, and six

Challenging - Activities 4, 5, 8, 9

Less challenging - Activities 2, 7, 10

The most challenging activities will require substantial research and/or personal contacts with experts in P.E.I. for satisfactory completion.

In Class Activities and Teaching Strategies:

Following is a series of activities that may be used to allow students opportunity to explore/compare/contrast aspects of Agriscience between P.E.I./Canada and a developing country, using Kenya as the example.

A. Students will perform research, using a variety of sources, to ascertain the similarities and differences in agricultural topics between the two locations, or to explore the global situation in relation to a particular topic.

B. Using the information learned about Kenya and P.E.I., or a global situation, students will create an end product that may take many forms/combinations, such as: digital presentation, brochure, poster, written report, or video. Each student/group will be required to ‘teach’ their peers by sharing their newly acquired knowledge.

Activity 1 - Human development trends 2005

Beginning with the following web-site, <http://hdr.undp.org/hdr2006/statistics/> find the Human Development 2006 Reports for Canada and Kenya.

Study the site carefully, learning about the Human Development Index which is used to compare countries around the world.

TASK: Prepare a presentation which describes the Human Development Index, and compares Kenya and Canada's Human Development Index ratings in areas such as life expectancy, adult literacy, school enrolment, income, gender disparity and other factors.

As part of your presentation, describe what conditions you believe would exist in desirable living spaces.

Additional Sources of information - starting points for gaining knowledge

Global issues education- 60 second tours and in-depth views of global issues - rich/poor gap, population, health, governance, food and water security, environment, energy, economy, conflict, possible futures

<http://www.facingthefuture.org/>

Taking IT Global - extensive web-site with very short video on each issues, a short article on each issue and additional articles for further study, and country studies (A youth-oriented site)

<http://www.takingitglobal.org/understanding/>

Short summaries and additional references to projects/studies for the following global issues: population change, food security, gender, governance, poverty, human rights, global economy, governance, aid, conflict and emergencies, tourism

<http://www.id21.org>

Farmers Helping Farmers - web-site

<http://www.farmershelpingfarmers.ca/>

Articles and letters from Farmers Helping Farmers volunteer work teams in Kenya

<http://farmershelpingfarmers.blogspot.com/>

COUNTRY INFORMATION:

Information by country

<http://www.unicef.org/infobycountry/index.html>

World Fact Book - information by country

<http://www.cia.gov/cia/publications/factbook/>

Countries of the world - background information

http://www.theodora.com/wfb/abc_world_fact_book.html

also www.geographic.org

Canada and Africa - a contrast - lessons of comparison

http://www.canadiangeographic.ca/worldmap/cida/lessons/pdf/CG-CIDA_BC_6-8_Africa.pdf

GLOBAL AGREEMENTS

Universal Declaration of Human Rights

<http://www.ohchr.org/english/about/publications/docs/abc-annexes.pdf>

Human Rights - a visual overview

<http://www.takingitglobal.org/themes/hr/>

Rights of the Child Fact sheet

http://www.unicef.org/crc/files/Rights_overview.pdf

UN Millennium Development Goals

<http://www.un.org/millenniumgoals/>

INFORMATION ON KENYA

In-depth country guides -Kenya

<http://www.oneworld.ca/guides/kenya/development>

Kenya statistics from UNICEF

http://www.unicef.org/infobycountry/kenya_statistics.html#14

Activity 2: Food exports and imports - PEI and Kenya

What are the major crops produced in PEI and in Kenya? How much is produced? What crops are exported from PEI and Kenya? Where are they exported to? Log the food products that your family purchases at the supermarket. Where do the products come from? Research to find what foods that we eat come to P.E.I. from other places?

TASK: Find answers to the above questions comparing crops grown, exports and imports to and from Kenya and P.E.I. Present these comparisons in an interesting manner to your peers.

Sources of information - starting points for gaining knowledge

General production statistics:

World -Production by country or crop <http://www.fao.org/es/ess/top/country.html?>

(On this United Nations Food and Agricultural Organization site (FAO), you can find the top countries in the world where specific raw materials are produced listed by country or by product.)

PRINCE EDWARD ISLAND

PEI crops <http://www.gov.pe.ca/af/agweb/index.php3?number=71208>

Prince Edward Island Potatoes www.peipotato.org/why_pei.asp

PEI Department of Agriculture, **Agriculture Information Desk**, at 368-4145 or toll-free 866-734-3276.

KENYA

Farmers Helping Farmers web-site

<http://www.farmershelpingfarmers.ca/>

Articles and letters from various Farmers Helping Farmers volunteer work terms in Kenya

<http://farmershelpingfarmers.blogspot.com/>

International Crop Research Institute for the Semi-arid Tropics

<http://www.icrisat.org/>

International Institute of Tropical Agriculture - Crop and Farming Systems

http://www.iita.org/cms/details/research_summary.aspx?a=86&z=63

summaries of research papers/links

<http://www.id21.org/zinter/id21zinter.exe?a=r&w=0&u=449aa0e4>

Activity 3: Challenges that farmers face

1. Using the site www.canadiangeographic.ca/worldmap, compare the human development index (HDI) trends for Canada and Kenya. What reasons can you give for the decrease in the Human Development index for Kenya from 1990 to 2003? What happened to the HDI for Canada during that same time period?

2. Read the article, “AIDS/HIV and Food Security” found at <http://farmradio.org/english/publications/voices/> and “HIV/AIDS and rural livelihoods” at <http://www.id21.org/zinter/id21zinter.exe?a=10&i=r1tb2g1&u=44aea714>.

HIV/AIDS has dramatically affected the life of farmers in Kenya. However, it is not their only challenge. What are some other challenges Kenyan farmers face? What challenges do Canadian and Prince Edward Island farmers have?

TASK:

Prepare a report/presentation about the challenges that farmers currently face in P.E.I. and in Kenya being sure to refer to the HDI for both areas in your report.

Additional Sources of information - starting points for gaining knowledge

KENYA

Main web-site - <http://www.farmershelpingfarmers.ca/>

Articles and letters from various teams during work terms in Kenya

<http://farmershelpingfarmers.blogspot.com/>

Kenya - agriculture

<http://www.accesskenya.info/agriculture.asp>

Review of Poverty in Kenya

<http://www.ipar.or.ke/poverty.pdf>

Costs and benefits of eliminating child labour in Kenya

<http://www.kippra.org/Download/WPNo.10.pdf>

PRINCE EDWARD ISLAND

Agriculture on PEI

www.gov.pe.ca/af/agweb/index.php3?number=71208&lang=E

PEI Department of Agriculture, **Agriculture Information Desk**, at 368-4145 or toll-free 866-734-3276.

General - summaries of research papers/links

<http://www.id21.org/zinter/id21zinter.exe?a=r&w=0&u=449aa0e4>

Other sources of information/opinions

Learning about hunger in Canada

<http://www.cafb-acba.ca/english/EducationandResearch.html>

National Family Farm Coalition (American source but contains some useful information)

<http://www.nffc.net/what/familyfarm.html>

Activity 4: Challenges to food production

Explore the issues of soil fertility, arable and available land, size of farms, land ownership, water access, and access to labour in P.E.I. and Kenya. Compare and contrast Kenya and P.E.I. in these areas.

TASK: Prepare a presentation in which you compare and contrast P.E.I. and Kenya in terms of a minimum of three of the above topics.

Sources of information - starting points for gaining knowledge

Internet Quiz - How much water does it take to grow a hamburger?

<http://ga.water.usgs.gov/edu/sc1.html>

Global water outlook to 2025 http://www.ifpri.org/media/water_countries.htm#subsaf

The Millennium Development Goals related to water

http://pacinst.org/press_center/the_worlds_water_2004-2005/

Africa - water <http://www.wateryear2003.org>

The case of Mt. Kenya water crisis

<http://www.edcnews.se/Cases/KenyaWatercrisis0209.html>

Stories from Kenya- related to water

<http://www.peacecorps.gov/wvs/educators/enrichment/africa/>

A Teaching Resource on World hunger and Agriculture

http://www.learns.org/projects/food/CD-ROM_sample/index.htm

Farmers Helping Farmers Main web-site

<http://www.farmershelpingfarmers.ca/>

Articles and letters from various teams during work terms in Kenya

<http://farmershelpingfarmers.blogspot.com/>

population and feeding the world, land ownership

<http://www.globalissues.org/EnvIssues/Population/Hunger/Land>

PEI

PEI Department of Agriculture, **Agriculture Information Desk**, at 368-4145 or toll-free 866-734-3276.

soil/water conservation PEI <http://www.gov.pe.ca/af/agweb/index.php3?number=69251&lang=E>

soil management PEI <http://www.gov.pe.ca/af/agweb/index.php3?number=69252&lang=E>

soil erosion PEI <http://www.edu.pe.ca/agriculture/agenvhigh/full.pdf>

irrigation PEI <http://www.gov.pe.ca/roundtable/index.php3?number=69430>

irrigation PEI <http://www.gov.pe.ca/roundtable/index.php3?number=69437>

farming the public right-of-way PEI

<http://www.gov.pe.ca/roundtable/index.php3?number=69415&lang=E><http://www.gov.pe.ca/roundtable/index.php3?number=69380&lang=E>

water quality PEI <http://www.edu.pe.ca/agriculture/agenvhigh/full.pdf>

Agriculture on PEI www.gov.pe.ca/af/agweb/index.php3?number=71208&lang=E

General Web-sites

overview and related links for a variety of global issues including biodiversity, genetically engineered food, human population, natural disasters, nature and animal conservation global warming, climate change, and global dimming

<http://www.globalissues.org/EnvIssues/>

The world's water - includes maps of global access to water and sanitation, as well as many data charts (plus the introduction and opening chapter of "The World's Water 2004- 2005")

<http://www.worldwater.org/2004-2005.html>

Population and feeding the world

<http://www.globalissues.org/EnvIssues/Population/Hunger.asp>

summaries of research papers/links

<http://www.id21.org/zinter/id21zinter.exe?a=r&w=0&u=449aa0e4>

Activity 5. Soil conservation/desertification/ deforestation

While desertification (increase in deserts worldwide) is not a problem for Prince Edward Island, soil conservation and deforestation are issues of concern.

TASK: Using the sources below as starting points, explore at least two of the above topics to compare the extent to which these are issues in Kenya and P.E.I. In addition, search out possible solutions to these issues that are already in place or being considered.

Additional Sources of information - starting points for gaining knowledge

PRINCE EDWARD ISLAND

PEI Department of Agriculture, **Agriculture Information Desk**, at 368-4145 or toll-free 866-734-3276.

Soil erosion PEI <http://www.gov.pe.ca/af/agweb/index.php3?number=71766>

Tillage and Soil erosion PEI <http://www.gov.pe.ca/af/agweb/index.php3?number=1012070>

Forest resources PEI <http://www.gov.pe.ca/roundtable/index.php3?number=69382&lang=E>

Sustainable agriculture PEI <http://www.peisland.com/agrtour/intro.html>

Farm profiles - sustainable agriculture PEI <http://www.peisland.com/agrtour/profiles.html>

Agriculture on PEI www.gov.pe.ca/af/agweb/index.php3?number=71208&lang=E

PEI Soil & Crop Improvement Association

www.soilcc.ca/ggmp/gg_fact/pdf/PEI%20NMP%202004%20c.pdf

KENYA

Farmers helping Farmers - Main web-site <http://www.farmershelpingfarmers.ca/>

Articles and letters from various teams during work terms in Kenya

<http://farmershelpingfarmers.blogspot.com/>

Developing Farm Radio

<http://farmradio.org/english/publications/voices/>

Sustainable Villages- projects in community development using appropriate technology

<http://www.sustainablevillage.com/>

Partners in Africa

http://www.sustainablevillage.com/partners/partners_africa.html

Environment -Kenya

<http://www.oneworld.ca/guides/kenya/development#Environment>

General:

Conserving biodiversity for development

<http://www.ilri.cgiar.org/>

Biodiversity facts and figures/articles

<http://www.scidev.net/ms/biofacts/>

Biodiversity basics

<http://www.biodiversity911.org>

UN Convention to combat desertification

<http://www.unmillenniumproject.org/index.htm>

Summaries of research papers/links

<http://www.id21.org/zinter/id21zinter.exe?a=r&w=0&u=449aa0e4>

The Earth Charter - Seeds of Change - education for a sustainable future

http://www.sgicanada.org/earthcharter/pdfs/Seeds_of_Change.pdf

Activity 6: Trade - Access to markets

Read the article, “Why is Fair Trade Coffee Important?”, found at <http://farmershelpingfarmers.blogspot.com/>. This report was written by a member of a Farmers Helping Farmers educational team (Global Classroom Initiative) researching in Kenya in 2006. Using this article as a starting point, explore the challenges that farmers in developing countries have in marketing what they produce.

Research market access in P.E.I using the sources and contact information listed below and any other resources you can find.

TASK: Prepare a report or presentation on market access and marketing challenges for P.E.I. and Kenya.

Sources of information - starting points for gaining knowledge

KENYA/Trade or markets in general as a global issue:

Farmers Helping Farmers Main web-site <http://www.farmershelpingfarmers.ca/>

Articles and letters from various teams during work terms in Kenya

<http://farmershelpingfarmers.blogspot.com/>

The Trade Justice Movement is working toward making trade and business fair to everyone in the world. <http://www.tjm.org.uk/>

Distribution of wealth, etc <http://www.miniature-earth.com/>

Trade related issues -causes of poverty, Third World Debt, Free Trade, corporations, Consumption and Consumerism, Sustainable Development, Fair Trade

<http://www.globalissues.org/TradeRelated/>

Food and trade <http://www.oxfam.org.uk/coolplanet/kidsweb/food.htm>

Fair Trade

<http://www.ifat.org/whatisft.shtml>

<http://www.tenthousandvillages.ca/>

The world bank - economic prospects/projects, features etc. by country

<http://www.worldbank.org/>

Poverty - causes

<http://www.globalissues.org/TradeRelated/Poverty.asp>

Human development reports by country

http://hdr.undp.org/statistics/data/hdi_rank_map.cfm

International trade/socio/economic data - statistical data locators

<http://www.ntu.edu.sg/lib/stat/statint.htm>

Source for statistical data

<http://www.rba.co.uk/sources/stats.htm#internat>

“Milking it” -Small farmers and international trade

<http://www.oxfam.org.uk/coolplanet/milkingit/>

UN Food and Agriculture Organization-understanding food insecurity, the human costs of hunger, economic costs of hunger, food security in an urban future, supermarkets and small farmers + web casts+ related news stories + fact sheets + links to additional information

<http://www.fao.org/newsroom/en/focus/2004/51786/index.html>

Economy - Kenya

<http://www.oneworld.ca/guides/kenya/development#Economy>

Summaries of research papers/links

<http://www.id21.org/zinter/id21zinter.exe?a=r&w=0&u=449aa0e4>

PRINCE EDWARD ISLAND

PEI Department of Agriculture, **Agriculture Information Desk**, at 368-4145 or toll-free 866-734-3276.

Why P.E.I. potatoes? www.peipotato.org/why_pei.asp

Agriculture on PEI www.gov.pe.ca/af/agweb/index.php3?number=71208&lang=E

Activity 7: Learning about new farming techniques

TASK: Using the resources below, compare and contrast how farmers in Kenya and in PEI learn new farming techniques. What types of training is available to Kenyan/P.E.I. farmers? What training methods/techniques are used? How are the training techniques similar /different in each region?

Additional Sources of information - starting points for gaining knowledge

PRINCE EDWARD ISLAND

PEI Department of Agriculture, **Agriculture Information Desk**, at 368-4145 or toll-free 866-734-3276.

Agriculture and the Internet <http://www.peifa.ca/internet.htm>

Programs and services PEI <http://www.gov.pe.ca/af/agweb/index.php3?number=69578&lang=E>

Farm-Net training <http://www.gov.pe.ca/af/agweb/index.php3?number=1005255>

Agriculture on PEI www.gov.pe.ca/af/agweb/index.php3?number=71208&lang=E

KENYA

Developing Countries Farm Radio Network is a Canadian-based, not-for-profit organization working in direct partnership with approximately 250 radio broadcasters in more than 35 African countries to fight poverty and food insecurity
<http://farmradio.org/english/>

Radio-a lifeline in developing countries
<http://www.plan-international.org/action/participation/radio/lifeline/> and
<http://farmradio.org/english/radio.asp>

Community development and radio
<http://www.oneworld.ca/article/archive/4168>

Farmers Helping Farmers Main web-site
<http://www.farmershelpingfarmers.ca/>
Articles and letters from various teams during work terms in Kenya
<http://farmershelpingfarmers.blogspot.com/>

education for rural people
http://www.fao.org/sd/erp/index_en.htm

Activity 8: Diversification of crops PEI/Kenya

TASK: Using the resources below and any others you can find, prepare a presentation on the importance of crop diversification in both P.E.I. and Kenya. In addition, report on what is being done in both places to encourage diversification.

Sources of information - starting points for gaining knowledge

KENYA

Farmers Helping Farmers Main web-site <http://www.farmershelpingfarmers.ca/>

Articles and letters from various teams during work terms in Kenya
<http://farmershelpingfarmers.blogspot.com/>

Information on Kenya - history, geography & environment, people & society, fact file, Oxfam in Kenya
<http://www.oxfam.org.uk/coolplanet/kidsweb>

FAO - Sustainable Development Department - by detailed topic
http://www.fao.org/sd/index_en.htm

Summaries of research papers/links
<http://www.id21.org/zinter/id21zinter.exe?a=r&w=0&u=449aa0e4>

PRINCE EDWARD ISLAND

PEI Department of Agriculture, **Agriculture Information Desk**, at 368-4145 or toll-free 866-734-3276.

Managing landscape and biodiversity PEI
<http://www.gov.pe.ca/roundtable/index.php3?number=69384&lang=Ehttp://peiefp.ca/index.php>

Enhanced Environmental Farm Plan PEI www.ecopei.ca/sustain.html

PEI Soil & Crop Improvement Association
www.soilcc.ca/ggmp/gg_fact/pdf/PEI%20NMP%202004%20c.pdf

Activity 9: Impact of farming to the economy and community

What is the impact on the family, community or the economy of a successful small farm in Kenya? Using the web-blogs and the Farmers Helping Farmers web-site, research to determine the impact that even a one cow farm has on both that family and the community. What impact does agriculture in P.E.I. have on the economy of this province?

TASK: Prepare a presentation on the impact of farming on the development of an area.

Sources of information - starting points for gaining knowledge:

UNDP Drylands Development

<http://www.ke.undp.org/>

www.undp.org/drylands/iddp.html

SOS Sahel - Dryland farming projects in Kenya

<http://www.sahel.org.uk/programmes/kenya.htm>

Desert Margins Program - Africa

<http://www.dmpafrica.net/index.htm>

Reducing poverty -case studies

<http://info.worldbank.org/etools/reducingpoverty/index.html>

Interactions between ecological issues and social and economic development

<http://www.albaeco.com/sdu/>

Farmers Helping Farmers - Main web-site

<http://www.farmershelpingfarmers.ca/>

Articles and letters from various FHF teams during work terms in Kenya

<http://farmershelpingfarmers.blogspot.com/>

PEI

PEI Department of Agriculture, **Agriculture Information Desk**, at 368-4145 or toll-free 866-734-3276.

Agriculture on PEI

www.gov.pe.ca/af/agweb/index.php3?number=71208&lang=E

Activity 10: A typical farmer in P.E.I . and Kenya

What is it like to be a farmer in PEI and in Kenya?

Use the slide show, “Farming in Kenya” as a starting point. Through interviews with Farmers Helping Farmers members who have worked in Kenya, interviews with Prince Edward Island farmers and internet research, consider the way of life, working conditions, daily routine, role of women and family, use of equipment and technology, labour needs and any other aspects that you find interesting.

TASK: Prepare a presentation which contrasts and compares the daily life of farmers in PEI and Kenya.

Possible sources of information for gaining more knowledge

KENYA

Farmers Helping Farmers Main web-site

<http://www.farmershelpingfarmers.ca/>

Articles and letters from various teams during work terms in Kenya

<http://farmershelpingfarmers.blogspot.com/>

The introduction of this document gives a good overview of stats for rural life in Kenya

<http://www.farmafrica.org.uk/documents/47.PDF>

Stories/photos/maps from Kenya & other countries- related to water

<http://www.peacecorps.gov/wws/water/africa/resources/index.html>

Stories from Kenya - related to water

<http://www.peacecorps.gov/wws/educators/enrichment>

<http://www.peacecorps.gov/wws/educators/enrichment/africa/countries/kenya/kenyastories.html>

International Livestock Research Institute - research articles, new clippings regarding the impact/importance of livestock in relation to poverty, economic growth, health and other global issues + slide shows on various topics

<http://www.ilri.org/>

PRINCE EDWARD ISLAND

PEI Department of Agriculture, **Agriculture Information Desk**, at 368-4145 or toll-free 866-734-3276.

Agriculture on PEI

www.gov.pe.ca/af/agweb/index.php3?number=71208&lang=E