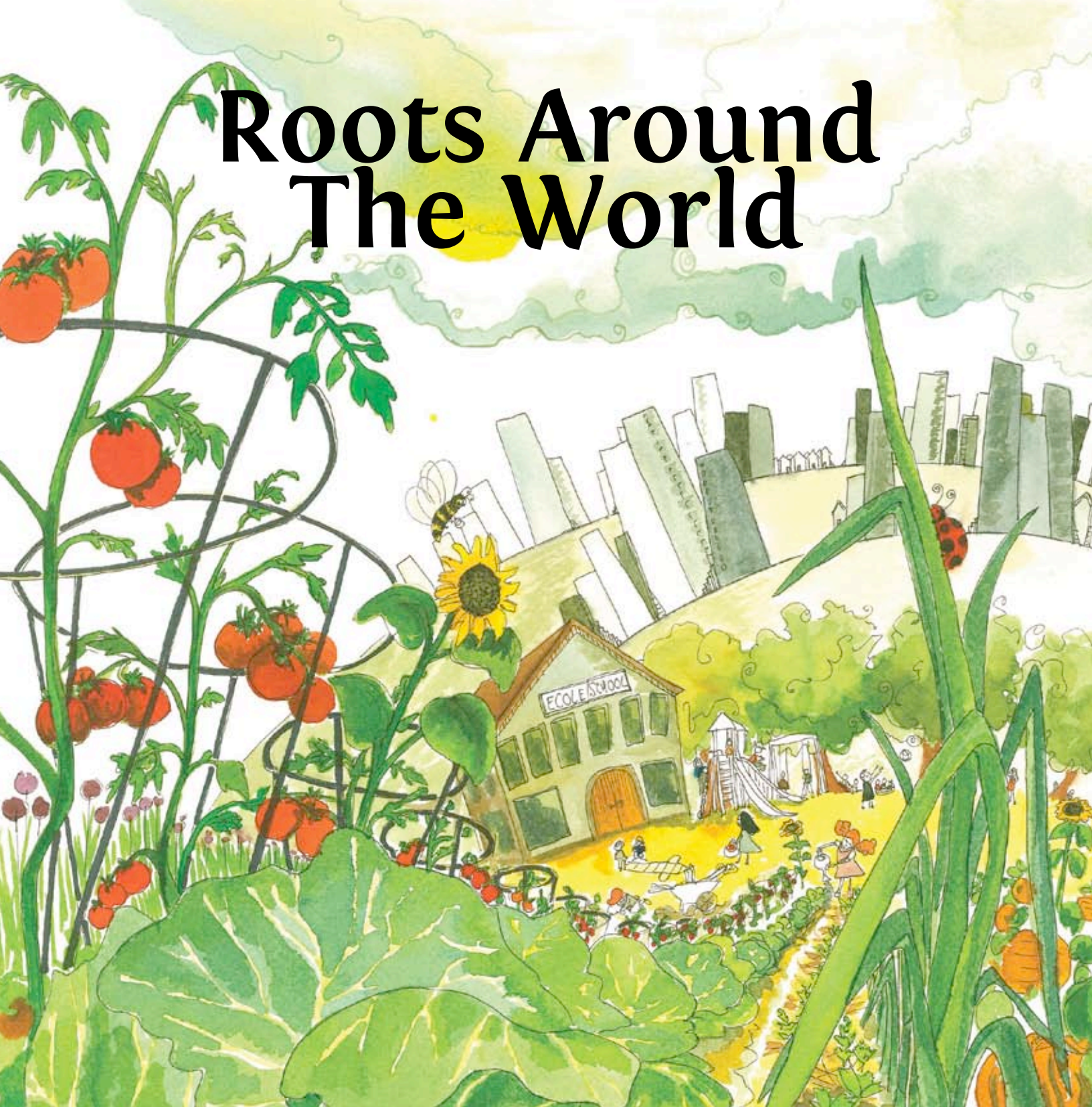


Roots Around The World



A Pedagogical Guide on Urban Gardening: Elementary Cycles 1, 2 and 3 (Grades 1 to 6)

Published by Alternatives and the Rooftop Garden Project





Roots Around the World Pedagogical Guide

CIDA Global Classroom Initiative Project
Elementary Cycles 1, 2 and 3 (Grades 1 to 6)

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AN INVITATION

The Rooftop Garden Project team is proud to present the pedagogical guide *Roots Around the World*. Through a series of practical, critical and creative educational activities, it allows students in the three cycles of primary school to discover and reflect upon what is at stake in urban agriculture. Beautifully illustrated, this guide will take you from the fridge to the garden, from local action to global thinking.

The Rooftop Garden Project has been encouraging citizens to get involved in creating new green, edible spaces for communities, both locally and internationally. At the heart of these communities are their schools, a fertile ground where young citizens “grow”. Because of the generous and creative nature of edible gardening, we believe it is an excellent way to get students to think about their relationship with their physical and social environment.

Beyond explaining how our food goes “from field to table”, we would like to foster a culture of citizen involvement and solidarity. We sincerely hope these educational activities sow the seeds of a community garden project in your schoolyard. A garden that reflects the rich diversity in which plants from all horizons may be cultivated and shared. We would be happy to work with you as you set down deep roots in your community.

Looking forward to gardening with you!

The Rooftop Garden Project team

www.rooftopgardens.ca

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INTRODUCTION

The Roots Around the World guide

The *Roots Around the World* guide is a collection of activities and projects geared towards students in the three cycles of elementary school and the first year of high school that highlights the role urban agriculture plays in the Southern and Northern hemisphere. Through learning about the production and consumption of food in urban areas, youth discover that simple daily actions have a large impact on people's health, their communities and the environment, on a local and international scale.

This educational guide is inspired by Alternatives' urban agriculture project: the Rooftop Garden Project (www.rooftopgardens.ca). Alternatives supports community-based initiatives that work to promote the economic, social, and political rights of people and communities in the North and South that are affected by poverty, discrimination, exploitation and violence. Together with volunteers and institutional and community partners, the Rooftop Garden Project has started urban agriculture initiatives in Montreal and around the world: South Africa, Mali, Brazil, Senegal, Morocco and Cuba. These urban agriculture initiatives are oriented towards citizen involvement in the creation of edible, green, community-based urban spaces.

WHY CREATE A GUIDE ABOUT URBAN AGRICULTURE?

Around the world as many people live in urban as in rural areas. It is predicted that urban populations will surpass rural populations within twenty-five years. With this rapid global urbanization comes increased urban poverty and urban food insecurity. Urban agriculture is one strategy that provides opportunities for people to learn how to produce food, promotes local economic development and builds community across differences in income, race, class, gender and other social, political and economic divisions, while reusing urban wastes and greening the city.

The *Roots Around the World* teaching guide creates opportunities for students to learn about food insecurity (amidst an overabundance of food) in Quebec and internationally, develop relationships with their community and with the world around them, and enjoy the great outdoors – all within their city!

Pedagogical approach and objectives

This guide uses a systemic pedagogical approach. This enables teachers to adopt the broad areas of learning of the Quebec education program in a concrete manner within the classroom. The activities focus on nutrition, health and the environment and situate the student in their family, their community and the world. The practical, community-based projects root the learning in the life experience of the youth. The creation of a collective garden, at the school or in the neighborhood, will further reinforce connections between the class, the school and the community.

Through the activities and practical projects, students will:

- be introduced to urban agriculture and other options within the global food system;
- understand where food comes from, the method used to grow the food, the impacts of importing food, and the waste generated by importation;
- learn about the nutritional and environmental benefits of growing food locally;
- become familiar with recipes and meals from different cultures;
- bring together different members of the community for a shared meal;
- understand the food cycle and ways to reduce and reuse our waste;
- start seeds and use them to the benefit of the community.

The activities proposed in this guide serve to integrate knowledge from different disciplines, including geography, history, ecology and civic education.

How to use this guide

Look over the Activities and Creative Projects

The *Roots Around the World* guide includes three modules, each containing three activities, geared towards the elementary cycles and the first year of high school (or junior high school outside of Quebec). Each module of three activities is each geared towards a specific learning cycle and builds towards a creative project. All of the activities and creative projects can be easily adjusted to fit the needs of any learning cycle. As such, it is suggested that teachers look over the activities and creative projects and use or adapt those they find most interesting and useful for the learning styles, needs, and interests of their students.

Plan when you will be planting seeds

The *Roots Around the World* guide also includes a Seed Starting Activity. This activity (in the annex) provides information necessary for students to learn how to start seeds and care for seedlings, and includes three ways to use the seedlings to benefit the surrounding community. It is important that this Seed Starting Activity is begun in the spring so that the seedlings are ready to be planted outside in warmer weather. See the Seeding Calendar (on page 66) for dates to start specific seeds. It is recommended that the other activities start in the fall or winter and build towards the Seed Starting Activity. A harvest party could be held at the beginning of the following school year.

Talk about the suggestions in the “What Can I Do?” boxes with the students

There is a “What Can I Do?” box at the end of each activity. Talk with the students about these suggestions. Ask the students which things they would be able to do and to add other ideas. Suggest these ideas as things that the students can work on at home, or find ways that the class can engage in these actions together.

Use the Rooftop Garden Project as a resource

The Rooftop Garden Project and other local organizations are available should you need assistance. Be sure to contact us if you have any questions about urban agriculture, container gardening, rooftop gardens or any other parts of this guide!

Overview of Activities

The Chef's Recipe Book (For Cycles One and Two)

Activity 1: History of Maria.

Students learn about different family food traditions and recipes.

Activity 2: Growing Food in Our Own Backyards.

Students create a recipe with ingredients that they can grow in their neighbourhood.

Activity 3: Around the World in a Fruit Salad.

Students make a fruit salad with ingredients from around the world.

Creative Project: Making A Class Recipe Book.

The class prepares a recipe book with their own favorite recipes and others they have learned about.

Seed Starting Activity (See page 61)

The Community Feast (For Cycle Three)

Activity 1: A Food Tour.

Students take a walking tour of their school neighborhood to examine the places that food is grown, sold, consumed and distributed.

Activity 2: Growing Food in Cities Around the World.

Students explore recipes and food preparation techniques of families from around the world.

Activity 3: Seeds Without Borders.

Students learn that populations have always carried seeds with them when they migrate.

Creative Project: Organizing a Community Feast.

The class prepares a community event with student performances and a community meal.

Seed Starting Activity (See page 61)

The Transformation of Waste to Compost (For Cycle Three)

Activity 1: A Tomato's Journey.

Students learn about different agricultural production methods by following the journey of a tomato.

Activity 2: Where Have the Melons Gone?

Students learn about ways food is wasted by the current food system and learn about ways that waste can be reduced and reused.

Activity 3: The People in Our Food Chain.

Students learn about the many different people involved in current food production and distribution, and compare that to ways that food was produced fifty years ago.

Activity 4: In the Garden at Last!

After analyzing the schoolyard, students are invited to draft a plan of a vegetable garden and present it to the community at a kick off celebration at the school.

Creative Project: Composting Organic Waste.

Students start an indoor worm compost bin or an outdoor compost bin.

Seed Starting Activity (See page 61)

Elements of the Quebec Education Program Addressed

	The Chef's Recipe Book				The Community Feast				The Transformation of Waste to Compost				
	Act 1	Act 2	Act 3	Total	Act 1	Act 2	Act 3	Total	Act 1	Act 2	Act 3	Act 4	Total
BROAD AREAS OF LEARNING													
Environmental Awareness and Consumer Rights and Responsibilities													
SUBJECT SPECIFIC COMPETENCIES													
Language	✓			✓					✓				✓
Mathematics, Science and Technology		✓	✓	✓	✓	✓		✓		✓			✓
Social Sciences	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓
Personal Development									✓	✓	✓	✓	✓
CROSS CURRICULAR COMPETENCIES													
Intellectual competencies													
<i>To use information</i>	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<i>To solve problems</i>		✓		✓	✓			✓	✓	✓	✓	✓	✓
<i>To exercise critical judgment</i>			✓	✓			✓	✓	✓	✓	✓	✓	✓
<i>To use creativity</i>	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Methodological competencies													
<i>To adopt effective work methods</i>	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<i>To use ICT</i>						✓		✓					
Personal and Social competencies													
<i>To construct his/her identity</i>	✓			✓			✓	✓			✓		✓
<i>To cooperate with others</i>	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Communication-based competencies													
<i>To communicate appropriately</i>	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

What's at Stake in Urban Agriculture

Urban agriculture is the cultivation of plants, fruit trees, medicinal and aromatic herbs and the raising of animals in cities to increase food access and/or generate income for urban households. In the 1990's more than 800 million people around the world were involved in urban agriculture. Food grown in cities accounted for 15-20 percent of the food eaten by the world population. While in urban centers within low-income countries urban agriculture is widespread, there is much room for further advancement of food production initiatives in Western cities. Through urban agriculture initiatives, people learn to how grow their food and create different structures within which agricultural activities happen on a smaller scale, closer to people's homes.

This guide covers the following themes:

Social Aspects of Urban Agriculture

Health and Nutrition

Much of the food we eat is highly processed and contains many chemical additives. Eating processed foods leads to cardiovascular diseases, which are a major cause of death in Canada. A number of other diseases, including diabetes, high blood pressure and food allergies, occur more often in families who don't have access to enough food. Urban agriculture increases access to healthy food through fresh, local, unprocessed and inexpensive (or free) alternatives to current food trends.

Food Security

Food insecurity happens when people do not have safe, nutritious and culturally appropriate food. Food insecurity exists in countries considered "developing" and "developed". There is enough food produced to feed everyone in the world with at least 3500 kilocalories every day (which is enough calories for everyone). Yet 12.6 % of the world's population (or over 850 million people) is currently undernourished. Through growing food in the city, people who would otherwise not have access to fresh fruit and vegetables are able to do so.

Education

Many people around the world do not know how to grow their own food. Nor do they know where their food came from, or the ways that the food was grown. This is largely because of a shift away from family farms towards industrial agriculture (which uses machines as opposed to human power to grow food). Through learning how to grow food, people become less dependent on fruits and vegetables that come from industrial farms, food banks or food aid programs.

Community Building

From Cairo and Nairobi to London people have become more involved in their communities through working in gardens and other urban agriculture initiatives. Many urban agriculture projects, be they located in "developed" or "developing" countries not only provide food for people, but also provide a place for people to gather, get to know one another, and work towards creating a neighborhood that they want.

Ecological Aspects of Urban Agriculture

Less Use of Fossil Fuels

Unlike industrial agriculture, urban agriculture methods produce food (a renewable resource) without using fossil fuels (a non-renewable resource). This is in part because there is less distance between where food is produced and where it is consumed and so less use of cars, trucks, planes and boats (which run on fossil fuels)

for transportation. Also, most urban agriculture initiatives use organic fertilizers that come from the city (such as animal droppings, tree clippings, kitchen waste, ashes and sand) instead of chemical fertilizers, which are made using fossil fuels (Nugent, 2007).

Organic Fertilizers and Pest Control

Industrial agriculture methods use chemical fertilizers to provide plants with nutrients. These fertilizers leach into water bodies and, because they contain excess amounts of phosphorus, encourage algae to grow very quickly. When quick-growing algae decompose in great quantities, it removes oxygen from the body of water. This kills fish and other water creatures that need oxygen to survive.

Industrial agriculture methods also use chemical pesticides. These pesticides kill not only the insects that are harmful to the plant, but also those that are beneficial and even necessary to the plant, including bees and other pollinating insects. Without these insects, the plants will not be pollinated. Without pollination, fruits and vegetables cannot be produced. Also insects are quickly becoming resistant to chemical pesticides. As such, farmers are continually using larger quantities, or more powerful and more toxic chemicals. This leads to more environmental and agriculture-related problems.

Green Space

The respiratory cycle of plants is opposite to those of humans. While humans breathe in oxygen and breathe out carbon dioxide, plants breathe in carbon dioxide and breathe out oxygen. This is very helpful for humans because too much carbon dioxide causes air pollution. Urban agriculture initiatives also create engaging and calming places to be in the middle of busy cities (Mougeot, 2006).

Economic Aspects of Urban Agriculture

In urban agriculture initiatives everything happens within or close to the city. The production, transformation, trade and/or exchange of the fruits and vegetables, and disposal of the wastes (all of which affect the local economy) happen at the local level. Through selling locally-grown food, people generate income which can be used to benefit local residents and the community. This creates very different ways of operating than those that currently exist, where both food and waste products are shipped long distances and local communities are not often able to determine the job opportunities, food options or community-organizing strategies that are available to them (Smit and Nasr, 1992).

Cities and Urbanization

Within twenty-five years more of the world's population will live in urban than in rural areas (UN-HABITAT, 2004). Urban agriculture ensures that as urban populations grow, people living in cities have local, fresh and inexpensive (if not free) fruits and vegetables.



THE CHEF'S RECIPES



The three following activities are geared towards students in Cycles One and Two.

A **ladybug** will follow us through the three following three Activities and Creative Project. People like ladybugs, the little creature that often makes a home in our gardens. Ladybugs like the diversity of pollen and nectar-filled plants in the garden. They also eat aphids, which attack plants. Ladybugs spend the winter underneath dead leaves or rocks. Over 5000 species of yellow, red or orange ladybugs exist around the world. In North America, there are 450 different ladybug species!



Activity 1: History of Maria

Summary of activity

The class reads a story about a child in Mexico and her family's food traditions. The students share one of their favorite meals with the rest of the class and begin creating the class recipe book.

Objectives

- Introduce students to urban agriculture
- Develop students' understanding that family food cultures are different around the world
- Start to create a recipe book by sharing some of the food that students eat at home

	Required materials
	The Salsa Story (page 17)
	Salsa Recipe (page 18)
	Length of activity
	Two hours, over two class days



Advance preparation

You will be asking the students to talk about a meal that they eat at home. The students probably eat very different meals. This could be because of differences in income, which may prevent families from being able to afford certain foods (including fresh fruits and vegetables), or differences in culture. It is important to approach this activity with sensitivity such that the different meals are appreciated regardless of if they contain fruits and vegetables that are grown in a garden.

Gather salsa ingredients (see “Salsa Recipe”) and prepare salsa in advance. If there is enough class time, the salsa can be prepared with the students.

Steps

- 1 Begin by introducing the activity to the students. Explain that they will be learning about food and food cultures, and over the next couple of classes they will be making a recipe book!
- 2 Next, tell the class that you will read a story about a child their age in Mexico and her favorite food, salsa. The salsa is made from mangoes. Mangoes grow on trees. They are juicy and sweet. Read “The Salsa Story”.
- 3 After reading the story, ask the students what they noticed about the story. Bring out the following points, and ask the following questions:
- 4 Maria helps her parents in the garden. Have you seen a garden where fruits or vegetables are growing? Have you worked in a garden before? If so, what is your favorite activity to do in the garden?
- 5 Maria and her family go to their garden to get the fruit and vegetables that they eat. Where are other places that we get our fruits and vegetables? If we get them from a grocery store, where did they come from before that?
- 6 When we think of where fruits and vegetables grow, we often think of a farm in the country. Yet, there are also a lot of places in the city where we can grow food. Have you seen many gardens where people are growing fruits and vegetables in the city? Where in the city have you seen them?
- 7 Tell the students that they are going to make, and/or eat some salsa similar to Maria’s salsa. At this time, it could be fun to prepare and eat salsa with tortilla chips with the class. If time or space is limited, the salsa may be prepared in advance.
- 8 Follow-up questions to ask the students:
- 9 What is your favorite meal?
- 10 Why is this your favorite meal?
- 11 Have you seen any of the ingredients in the recipe growing in a garden? If so, which ones? If not, why not? (Are the ingredients from far away places? Do you know where they are from?)
- 12 Write all of the examples of meals that the students mention on the board. Be sure to appreciate all of the meals, regardless if the ingredients can be grown in a garden.



WHAT CAN I DO?

- Cook with my parents, grandparents or other family members;
- Learn about meals that are eaten in cultures other than my own;
- Encourage my family to eat together and with other people.

- 13 Ask the class to nominate five meals to include in their class recipe book. Find the recipes for these meals in books or in the Internet.
- 14 Ask students to create an illustration for their favorite meal. The drawing could show the ingredients of the recipe and/or the meal being eaten.
- 15 Save the illustrations to assemble into a recipe book (along with the art that will be created in Activities Two and Three)
- 16 (Optional) Send a letter home with the students asking the parents if they would like to contribute a recipe to the class recipe book.

INFORMATION CAPSULE

The Salsa Story

Maria is a 7 year-old girl who lives in Mexico City, the capital of Mexico. Maria is a curious and helpful child. After school and on the weekends, she likes to help her parents with everything they do. Maria likes to garden with her father in the backyard. She helps him water the plants a couple times a week, pull out the weeds and plant new plants when it is time. Her favorite fruit in the garden are the mangoes. She loves the way the mangoes hang in clusters together, and Oh! how good the fruit tastes! She picks these mangoes to put in her family's special salsa!

Maria also likes to help her parents in the kitchen. On Sundays her mother makes a special batch of salsa using her family's recipe. She makes enough salsa to last them through the week. Maria's favorite way to eat the salsa is with tortilla chips for a snack after school. Maria's mother makes all different kinds of salsa: tomato salsa, melon salsa and mango salsa. The exciting thing is that her mother uses the mangoes and other vegetables and herbs from the garden in their backyard that Maria and her father have grown!

In the morning, when her mother is ready to begin preparing the salsa, she gives Maria the job of going to the garden and gathering all of the ingredients. Since they choose to prepare the mango salsa, Maria knows to pick:

1 bunch of basil

1 sweet red pepper

1 small Jalapeno pepper



Children between 5-8 years old are recommended to eat five servings of fruits and vegetables everyday. Yet fruits and vegetables are not always the most appetizing food for kids. Growing fruits and vegetables themselves lets students develop a fun, educational and interactive relationship with the food they eat.

Materials



Maria climbs up on a ladder to pick a mango from the mango tree in her backyard. She can tell by the color and the smell of the fruit which one is ready to be picked. She asks her father to pick a lime from the lime tree that is beside the mango tree. The limes are high in the tree, and Maria isn't tall enough to reach them, even on the ladder. When Maria brings the ingredients into the kitchen for her mother, they begin preparing the salsa together. Maria helps by washing the basil and the peppers. Then she begins pulling the leaves off the basil so that her mother can chop them up. Maria's mother cuts up the mangoes and red pepper into small chunks and dices up the Jalapeno peppers so that the salsa will be nice and spicy! Maria adds:

1/2 teaspoon of sugar

Then everything is mixed up well and Maria gets to taste it to see if it is yummy. If the salsa meets her approval, it goes into the refrigerator until lunchtime. Maria can't wait to have this week's batch of salsa with tortilla chips for lunch! Sunday lunch is her favorite meal of the week for this reason. When it is time for lunch, the whole family sits down at the table for a big meal. The salsa is served and everyone "oohs" and "ahhs" and remarks the flavor of the mangoes and the chili peppers this week. Maria is pleased and smiles at her mom and dad because she feels like she was able to help them create a delicious salsa. One day, she will be able to make the salsa all by herself!



Mango Salsa
5 large Mangoes
1 cup red Bell Pepper
8 tbsp fresh Basil
7 tbsp Red Wine Vinegar
10 tsp Limejuice
3 tsp Sugar
1 Jalapeno Pepper

Peel the mango and cut it into quarter inch cubes. Cut the bell pepper into quarter inch cubes. Chop the basil finely. Chop the Jalapeno pepper if you are including it.

In a medium bowl, combine all ingredients. Mix well.

Let stand at room temperature a half hour before serving or refrigerate up to 24 hours. This does not hold up well and should be used quickly.

Recipe from www.texmextogo.com



Activity 2: Growing Food in Our Own Backyards

Summary of activity

The class reads a story about a child in Mexico and her family's food traditions. The students share one of their favorite meals with the rest of the class and begin creating the class recipe book.

Objectives

- Learn about fruits and vegetables that can be grown locally
- Create recipes/meals using locally grown ingredients to add to the recipe book

	Required materials
	List of local and imported fruits, for teacher referral
	Photos of two cities around the world, one from a warm climate (e.g. Kampala, Uganda; Mexico City, Mexico) and one from a cold climate (e.g. Montreal, Canada). Find these images from magazines such as National Geographic, or on the Internet.
	Fruit and vegetable cards. Cut out 15-20 images of fruits and vegetables from magazines or grocery store flyers (or have students do this). Be sure that this includes fruits and vegetables from both lists (that which can be grown in Quebec and that which cannot be grown in Quebec)
	An image of a plane, cut out from a magazine or other source.
	Length of activity
	One hour



INFORMATION CAPSULE

The daily pleasures of gardening are simple, inexpensive and profoundly satisfying: eating a head of lettuce that was cultivated with care among friends, taking in the morning perfume of a flower clinging to the banister of a balcony, biting into a strawberry warmed by the sun. Urban agriculture is a veritable way of life and enables the population, collectively or individually, to take pleasure in new, green spaces that meet its needs for relaxation and leisure.

Advance preparation

Collect and cut out photos of fruits and vegetables and cities.



Steps

- 1 Ask the students if they have seen any places where food is grown in their neighborhoods? Where? During what part of the year can food be grown in our city?
- 2 Discuss what plants need in order to grow: soil, nutrients, water, air, sun and space.
- 3 Show students photos of two cities around the world. One from a warm climate and one from a cold climate. Discuss the differences that they see, specifically differences in the vegetation. Ask the class:
- 4 Why are there different types of plants that grow in a warm climate as opposed to a cold climate? Highlight the fact that we live in a colder climate where we can only grow fruit and vegetables during the warm parts of the year and that we cannot grow certain tropical fruits and vegetables.
- 5 Divide the chalkboard or section of a wall into two sections:
 - 1-Fruits and vegetables that can be grown in our city
 - 2-Fruits and vegetables that cannot be grown in our city
- 6 Go through the fruits and vegetables with the class, asking the students to place the fruits or vegetables into the corresponding category.

Discussion

Ask the students the following questions:

How are fruits and vegetables from outside of Quebec transported here? (Plane, train, truck, boat) Put the picture of a plane between the images of food that can be grown in our city and the food that cannot be grown in our city.

Why is this not good for the environment? (The planes, trains, trucks and boats use energy. When this energy is used, it causes pollution in the air and water. Planes particularly use a lot of energy and so cause a lot of pollution. Pollution is not good for animals, people and the environment because, amongst other things, it makes the air harder to breathe and the water unhealthy to drink).

If the fruit did not come from Quebec, do you think that it could have been grown here? (For example, oranges cannot grow in the Canadian climate, but tomatoes can.)



WHAT CAN I DO?

Learn about how to cook with local foods with my parents;

Visit a farmers market to learn about the foods that can be grown locally with my parents;

Ask my parents if we can become members of a Community Supported Agriculture farm;

Learn about the foods that are grown and the meals eaten in a country far away;

Celebrate unusual meals.



INFORMATION CAPSULE

Many fruits and vegetables can be grown outdoors in Quebec from May through October. In warmer climates (in countries that are to the South of Quebec), there are longer and hotter growing seasons. Fruits and vegetables that need a long time and a lot of heat can only be grown in these areas.

Fruits and vegetables that can be grown outdoors in Quebec (between May and October) include: Apples, Asparagus, Beets, Blueberries, Broccoli, Cabbage, Carrots, Cauliflower, Celery, Corn, Cucumber, Eggplant, Garlic, Leeks, Lettuce, Melons, Mushrooms, Onion, Parsnip, Peas, Peppers, Potatoes, Radishes, Raspberries, Spinach, Sprouts, Squash, Strawberries, Tomatoes, Zucchini.

Fruits and vegetables that cannot be grown in Quebec include: Avocado, Cashews, Kiwi, Mango, Papaya, Pineapple, Oranges, and Bananas.

Ask students to name their favorite foods. Point out the fruits and vegetables that are used to make these foods. Vote on one favorite meal to include in the recipe book that contains as many local fruits and vegetables as possible.

Ask the students what solutions they can think of so that less food is transported from far away. Discuss the following options:

Buying local food

Buying food directly from farms

Growing food in a garden

Follow-up

Make a large collage on the wall of a garden including fruits and vegetables that are growing locally and fruits and vegetables that imported by plane or boat.





Activity 3: Around the World in a Fruit Salad

Summary of activity

The class makes and eats a fruit salad using fruit from around the world. Students learn that the foods we eat connect us to the world.

Objectives

- Create recipes/meals using locally grown ingredients
- Inspire students to think about where their food comes from
- Introduce students to world geography through the creation of a fruit salad

	Required materials
	A variety of fresh fruit, including some fruit that can be grown in Québec (e.g. apples, blueberries, raspberries, strawberries) and some fruit that cannot be grown in Québec (e.g. mangoes, bananas, oranges)
	Cutting board
	Knives to cut fruit – be sure that there are some knives that are not too sharp that the students can use
	Large mixing bowl
	Re-usable cups and spoons for students to eat salad
	Large world map placed on classroom wall
	Paper
	Markers, crayons or colored pencils
	Scissors
	Tape
	List of fruits grown in Quebec
	Length of activity
	One hour



INFORMATION CAPSULE

Urban agriculture initiatives have been noted for the important role that they play in people's health and wellbeing. The gardens provide opportunities to learn how to garden. They also engage people in discussions about food and environmental issues and provide inspiration to participate in the community. People who become involved in projects like the Rooftop Garden Project mention how happy the garden makes them, how it provides them with a place to relax, and get physical exercise, and how it gives them hope.

Advance preparation

Ask a few parents or other people in the community to act as class-assistants as this activity involves cutting fruit.

Purchase enough pieces of fruit for groups of three students to have one piece each. Take note of the origin of the fruit (which can usually be found on a sticker on the fruit, on a sign above the fruit or on the box).

Write the name of the country where each piece of fruit comes from on a piece of paper.

Steps

- 1 Divide the class into groups of three students. Distribute one piece of fruit and the accompanying piece of paper indicating the country it is from to every group.
- 2 Ask each group to draw a life-sized image of their fruit on paper. Ask the students to write the name inside the fruit and color and cut out the fruit.
- 3 Ask each group to present their fruit to the class and say where it was grown. As a class, with help from the teacher and the class-assistants, locate the country on the world map and ask students to tape the piece of fruit to its country of origin for everyone to see.
- 4 After each group presents their fruit, ask the class the following questions:
How many fruits came from Quebec?
How many fruits came from outside of Quebec?
- 5 In the summer, we can grow all of the ingredients that we need for this salad in our own gardens. In the winter, these fruits and vegetables are shipped to Quebec from hotter countries where the fruit and vegetables can be grown all year round. Do you know the names of some of the countries that can grow fruit and vegetables all year round? (e.g. states in the United States: California, Florida; countries in Latin America: Chili, Mexico, Argentina, Brazil, and Colombia; South Africa and South East Asia, Japan, and China).
- 6 After each group presents their fruit, ask them to peel their fruit. Ask the class assistants to help the students cut their fruit and add it to the large bowl.
- 7 Present the idea that they will be eating the world in a fruit salad and that our food comes from all over the world.
- 8 Serve the salad to the students.
- 9 Eat and enjoy!
- 10 After eating the salad ask the students what kind of fruit salad we could eat with fruits grown in Quebec.
- 11 After the class, assemble the fruit that students have drawn. These drawings can be included in the recipe book (see Creative Project: Making A Class Recipe Book, page 25).

Discussion Points

Since the winters get so cold in Quebec, we are not able to grow vegetables year round. It is helpful for people living in Quebec to get fruits and vegetables from other countries because it means that we can eat fresh fruit and vegetables in the winter.

Sometimes fruits and vegetables from countries with warmer climates are sent to Quebec, instead of feeding people living in the countries where the food came from. Often there are people living in these countries who are going hungry. Ideally, everyone around the world would have enough food. It would be good to find ways to make that happen. This does not mean not eating any food that has come from



WHAT CAN I DO?

Ask my parents if I can help them cook;

Encourage my parents to have potluck dinners where people each contribute a meal and learn about different foods;

Encourage my parents to buy local food.



far away, but it does mean thinking about the food that we are eating and seeing if there are ways to eat food that comes from nearby instead.

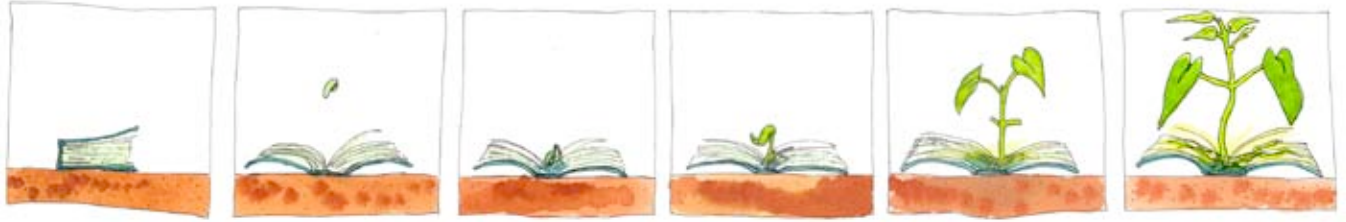
There are different ways to make sure that people around the world have enough food. These include:

Supporting local and international organizations working on food security and food sovereignty (see Resource section)

Contributing to food banks and helping out at soup kitchens

Growing fruits and vegetables in our own gardens and making sure that people around the world can do the same





Creative Project: Making A Class Recipe Book

Photocopy and assemble the materials produced in the three previous activities into a class recipe book. These materials include:

The Favorite Class Recipes (Activity One)

The List of Fruits and Vegetables that come from Quebec and the List of Favorite Class Recipes that can be made with these fruits and vegetables (Activity Two)

The World Map indicating the origins of different fruits and vegetables (Activity Three)

The Fruit Salad Recipe (Activity Three)

Student drawings of food, gardens and people preparing and eating meals.

With parental approval, use the recipe book as a fundraiser. See www.fundraiserhelp.com/school-fundraisers.htm for fundraising suggestions.

Raise money to create a class garden, with proceeds going to purchase all necessary supplies.

Raise money to donate to a community organization that is working on issues of food sovereignty, locally or internationally, of the classes choosing. (See the Resources section for a list of organizations working on food sovereignty and other food related issues.)

Or, display the recipe book at the Community Feast (page 35)



Evaluation Rubric

SKILLS	GRADING					TOTAL
	Low	2	Average	4	High	
BROAD AREAS OF LEARNING						
Develop awareness of his/her environment						
Activity One: Student understands that family food cultures are different around the world						
Activity Two: Student understands that fruits and vegetables can be grown locally						
Activity Three: Student understand our fruits and vegetables come from around the world						
CROSS CURRICULAR COMPETENCIES						
Intellectual competencies						
Student uses creativity to create the image to accompany their recipe						
Methodological competencies						
Student adopts effective work methods						
Personal and Social competencies						
Student cooperates with others						
Communication related competencies						
Student communicates appropriately with others						
SUBJECT SPECIFIC COMPETENCIES						
Activity One: Science and Technology						
Student understands that we eat food from living things						
Activity Two: Geography, History and Citizenship						
Student differentiates between food that can and cannot be grown locally						
Activity Three: Geography, History and Citizenship						
Student is able to place fruit on map of the world						





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THE COMMUNITY FEAST



The three following activities are geared toward students in Cycle Three.

A **honeybee** will follow us through the following three Activities and Creative Project. The bee is especially appreciated for its honey. This insect visits 50-100 flowers in one trip; yet one bee will only produce an average of one twelve of a teaspoon of honey throughout its lifetime. As a pollinator, the bee plays the most important role in nature; the distribution of pollen from flowering plants. This work is essential for agriculture, farmer's fields, gardens, orchards, etc. Bees are indispensable to our food harvest. There are 500 species of bees. Yet, presently, many bee colonies are disappearing. This death of millions of bees is mysterious. Pollution is very likely one of the causes.



Activity 1: A Food Tour

Summary of activity

The class takes a walking tour of the school neighborhood. They visit different places where fruits and vegetables are grown (gardens, backyards), purchased (large supermarkets, corner stores, fruit stores, markets, local farms), consumed (restaurants, fast-food places, cafés, homes), and distributed (food banks, soup kitchens, community kitchens).

Objectives

- Introduce students to the different places where people get food in the city
- Provide an opportunity for students to get to know the neighborhood around the school

	Required materials
	A map of the walking route for each student
	Pencils for each student
	A large piece of paper Cardboard, glue, markers etc.
	Length of activity
	Two hours



Advance preparation

Before touring the neighborhood with the class, do so alone to determine places where fruits and vegetables can be grown (gardens, backyards), sold (large supermarkets, corner stores, fruit stores, markets), consumed (restaurants, fast-food places, cafés) and distributed (food banks, soup kitchens, community kitchens). Plan the route that the class will take on the walking tour. Draw a map of the route that will be taken and mark a few landmarks on the map. Photocopy the map for each student.

Steps

- 1 Tell the class that they will be going on a walking tour of the school neighborhood to find the places where fruits and vegetables are grown, sold, consumed and distributed in the area.
- 2 Ask the students to name possible places where fruits and vegetables can be grown, sold, consumed and distributed.
- 3 Give each student the map of the route, and instruct the class to mark the places that they notice while walking on the map.
- 4 Go for the walk, and ask students to point out places where fruits and vegetables can be grown, sold, consumed and distributed.
- 5 When the class returns, ask students what they noticed from the walk and the maps that they drew.
- 6 Ask the students the following questions:

What are some places that we saw on our walk where food is consumed? What did you learn about some of these places? If you didn't have money, would you be able to get the food that is sold at these places?

What are some places that we saw on our walk where food is sold?

What were the differences between these places? If you didn't have money, would you be able to get the food that is sold at these places?

What are some places that we saw on our walk where food is grown? What did you learn about these places? If you didn't have money, how would having a garden be helpful?

What are some places that we saw on our walk where food is distributed? What did you learn about these places? How do these places help people who do not have very much money?



WHAT CAN I DO?

Look around my neighborhood to find gardens in people's backyards;

Ask my parents to shop at local farmers markets when it is possible;

Ask my parents if there is a community garden in our neighborhood and if we could visit it (or even have our own plot!)

Discussion Points

Inform the students that even though there are a lot of places where food is consumed, sold, grown and distributed, there are still many people who are going hungry.

Talk about the importance of ensuring that people have access to food, regardless of their income. Explain that there are different options available to people who do not have money to buy food. Some of these are food banks, soup kitchens and community kitchens. These initiatives are important. Yet, ideally people would be able to choose the food that they eat.



One way to ensure that people have choice about the food that they eat is to make sure there are gardens in the city where people can grow their own food. Talk about the different ways that our city could benefit from having more gardens:

More green space

Less air pollution (plants take in carbon dioxide)

Local food (means less pollution because of reduced transportation)

A community gathering place

More fresh fruits and vegetables for people living in the city

Discuss the fact that people need to have enough time to put towards the garden and that people who work a lot do not always have time to put towards gardening. This sometimes makes it difficult for people who most need more food (but who work a lot) to put time towards the garden.

Ask the students: What would a city look where people were more likely to be getting all the food that they need? Would there be more soup kitchens? Or more public markets? Or more gardens? Where would the food be grown? Who would be gardening? Who would be eating the harvest from the gardens? How would this change the city?

Using the points above and students' comments create a new map of the city.

Organize a couple of students to present this map at the Community Feast.



INFORMATION CAPSULE

Community Supported Agriculture (CSA) farms are partnerships between local organic farms and consumers. Consumers or “farm members” purchase a season’s worth of vegetables in the spring and receive a weekly organic vegetable basket delivered to their neighborhood. Farm members agree to take the risk of the season – as farmers do every year. In abundant years farm members receive more than they were expecting, and in overly dry or cold, wet or hot years, farm members receive less. The farmer benefits from a steady income at the beginning of the season when most of the purchases on the farm must be made. Farm members receive a diverse range of fresh organic vegetables, developing a relationship with their farmer and supporting a local step towards sustainability. See www.equiterre.org for more information.





Activity 2: Growing Food in Cities around the World

Summary of activity

Students learn about examples of urban agriculture around the world in order to organize a Community Feast.

Objectives

- Introduce students to international examples of urban agriculture
- Offer students an opportunity to share the information that they have learned at a Community Feast

	Required materials “Urban Agriculture around the World” information sheets (page 69)
	Length of activity It is recommended that this activity be carried out over one week, or five class days: one or two class periods in the library/computer lab, two or three class periods for students to prepare for the Community Feast and one class period for the Community Feast.

Steps

- 1 Divide the class into groups of four students. Give each group a different Urban Agriculture around the World information sheet.
- 2 Ask the groups to read their information sheets.
- 3 Take students to the library or the computer lab to research the city on their information sheet.
- 4 Return to the classroom. Ask each group to prepare a presentation to the class to explain the information on their Urban Agriculture Around the World sheets and to share the information that they found about the city.
- 5 Organize a Community Feast where each group presents the information that they have gathered and the class gets a chance to be transported to urban agriculture initiatives in cities around the world. Tell students that this is practice for the Community Feast. Parents, other students and other teachers as well as other community members will be invited to this feast.
- 6 Ask students which examples of urban agriculture they learned about could be applied in our city.



INFORMATION CAPSULE

Urban agriculture is destined to play an ever greater role in feeding city dwellers. It currently feeds 700 million people, a fourth of the world’s urban population. It provides an answer to food insecurity and an avenue for cultural expression and citizen involvement. It also enables people to get a taste of the pure enchantment of growing food for themselves and for the community. In this time of climatic changes and the multiple, harmful consequences of urban living on health and the environment, we need to rethink the way we live. In light of this, urban gardening is a powerful agent for change.



WHAT CAN I DO?

Ask my teacher to organize a class trip to a local farm or a community garden;

Encourage my parents to visit farms if we are taking a trip outside of the city.



Activity 3: Seeds Without Borders

Summary of activity

Students learn that populations have always carried seeds with them when they migrate. The effect is that today we have gardens that are rich and diversified. They discover Native American food heritage and bring it to bear fruit with sunflower seedlings.

Goals

- Realize that a large part of our diet comes from seeds.
- Discover the food heritage of Native Americans and other cultures in our daily diet.
- Introduce students to raising seeds.

	Required materials
	A bag of sunflower seeds
	A seed flat
	Potting soil
Dark space (closet)	
	Length of activity
	Two hours

Advance preparation

- Ask students to bring in seeds from their pantry, to identify the plant that produces them and its origin. Ask them to find an image or a drawing of the plant.
- Buy a bag of bulk sunflower seeds (with the husk, unsalted) to plant seedlings.
- Before the activity, soak the seeds for 24 hours in water.

Steps

- 1 Ask students which seeds they chose.
- 2 Ask students what forms the seeds are used in foods (cereals, popcorn, sunflower seeds; raw, cooked, grilled, dried, popped). They can also be used to make oil when pressed, butter when crushed, flour when ground, seedlings when germinated, etc.).
- 3 Ask students what purpose the seed serves in the plant's lifecycle.
- 4 Ask students if they know how seeds are transported from one region to another: by the plants themselves when they burst open, by traveling by wind, by clinging to animal fur (thistles), in animal feces (bears and blueberries), by drifting on water (coconuts).
- 5 Following this discussion, ask students if they haven't forgotten an important factor for dispersal... human beings! For example, tomatoes come from Mexico, rice from China, apples from Asia, cacao from Mexico and wheat from the Middle East.



WHAT CAN I DO?

In organic seed catalogues, choose plants that you are going to plant in your garden or on your balcony.

Visit the Botanical Garden to discover plants from other places and how they are used in other cultures (e.g., Chinese garden, American Indian garden).

With your parents, germinate seeds at home.



- 6 Explain to students that the European explorers that “discovered” America, like Jacques Cartier, were looking for highly valued plants: spices, sugar. When they crossed the ocean, they expected to find India, and that is why they called the indigenous people of America Indians.
- 7 Ask students if they know vegetables that were used by American Indians and discovered by Europeans when they came here (squash, maple water, beans, corn, Jerusalem artichokes, etc.)
- 8 Without the American Indians, there would be no maple syrup, jack-o-lanterns or popcorn!
- 9 Point out to students that with cultural mixing, the landscape was enriched by new plants and eating habits diversified. Urban gardens have no borders. Seeds from around the world can be planted in them.
- 10 Ask students to display their drawings or images of their plants at the board and to present the country plants come from (situate the countries on a world map).

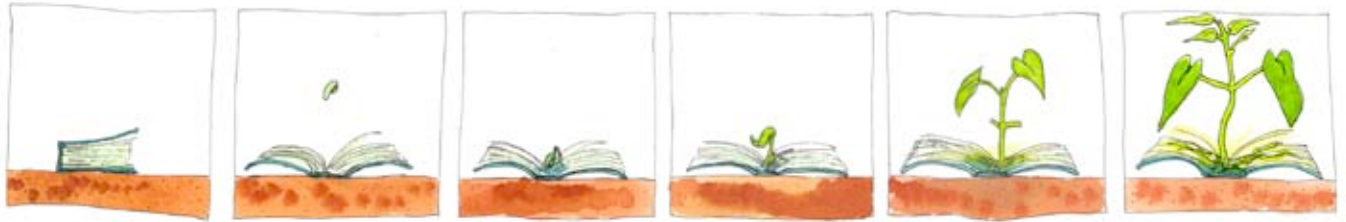
Taking it a Step Further

- 1 Tell students that they are going to sow a field of sunflowers in the closet;
- 2 Put soil in the seed tray (about 4 cm deep);
- 3 Place seeds on the soil and add 6 mm of soil on the surface;
- 4 Moisten with a spray bottle;
- 5 Put the seeds in the dark for a few days until the seedlings have grown to 10 cm;
- 6 Check soil moisture regularly (2 times a day);
- 7 When the seedlings have reached the desired size (10 cm), put them in sun light for a few days, the time it takes for them to turn green;
- 8 Cut the sprouts with a scissors and taste them!
- 9 Repeat the experiment with other seeds (wheat, corn, barley).



INFORMATION CAPSULE

If seeds from many other places can be found in our gardens, plants from Canada have also enchanted people from the entire world. This is true of the sunflower, a plant native to North America that explorers discovered during their long voyages and that they brought back to Europe and Asia. For more than 3,000 years, Native Americans grew this plant to feed and heal themselves. The sunflower is a large annual plant from the composite family. The same family as the daisy! Its Latin name is *Helianthus annuus*. Like all the other plants in this family, the sunflower’s bloom is, in fact, made up of a multitude of small flowers that have been grouped together. All the flowers in its center are produced by seeds. The growth of the sunflower is somewhat special as its stems have developed the ability to turn towards light. This phenomenon is called “phototropism”. When the sunflower is young, it grows very quickly. As it grows, it turns toward the sun. This can be explained by the fact that its stem grows more quickly on the side that is facing away from the sun.



Creative Project: Organizing a Community Feast

This project pulls together the learning and activities from the previous three activities to create a Community Feast.

Create a meal.

Make a meal (e.g. a salad) as a class using vegetables that are the same as the seeds that the class is growing (if they have started seeds), a meal inspired by the urban agriculture initiatives that the class has learned about, or ask parents to bring in a meal that they enjoy.

If another class in the school is doing the activities in Cycle One, they could provide some food (e.g. fruit salad) for the Community Feast (they could also display their recipe books).

Invite people from the community.

Distribute invitations in the neighborhood. Invite parents, teachers, other students, school administrators and other community members (including the people who worked at the places you stopped at in the community).

Present urban agriculture initiatives around the world. (Activity One)

Display the pamphlets or posters created by the students in the classroom. Ask students to present their posters as people walk around the room.

Present the map of a city where people are getting the food that they need. (Activity Two)

Ask five students to prepare a presentation of the city, including explanations of their reasons for how they designed the city.

Display the students' drawings or images (Activity Three)

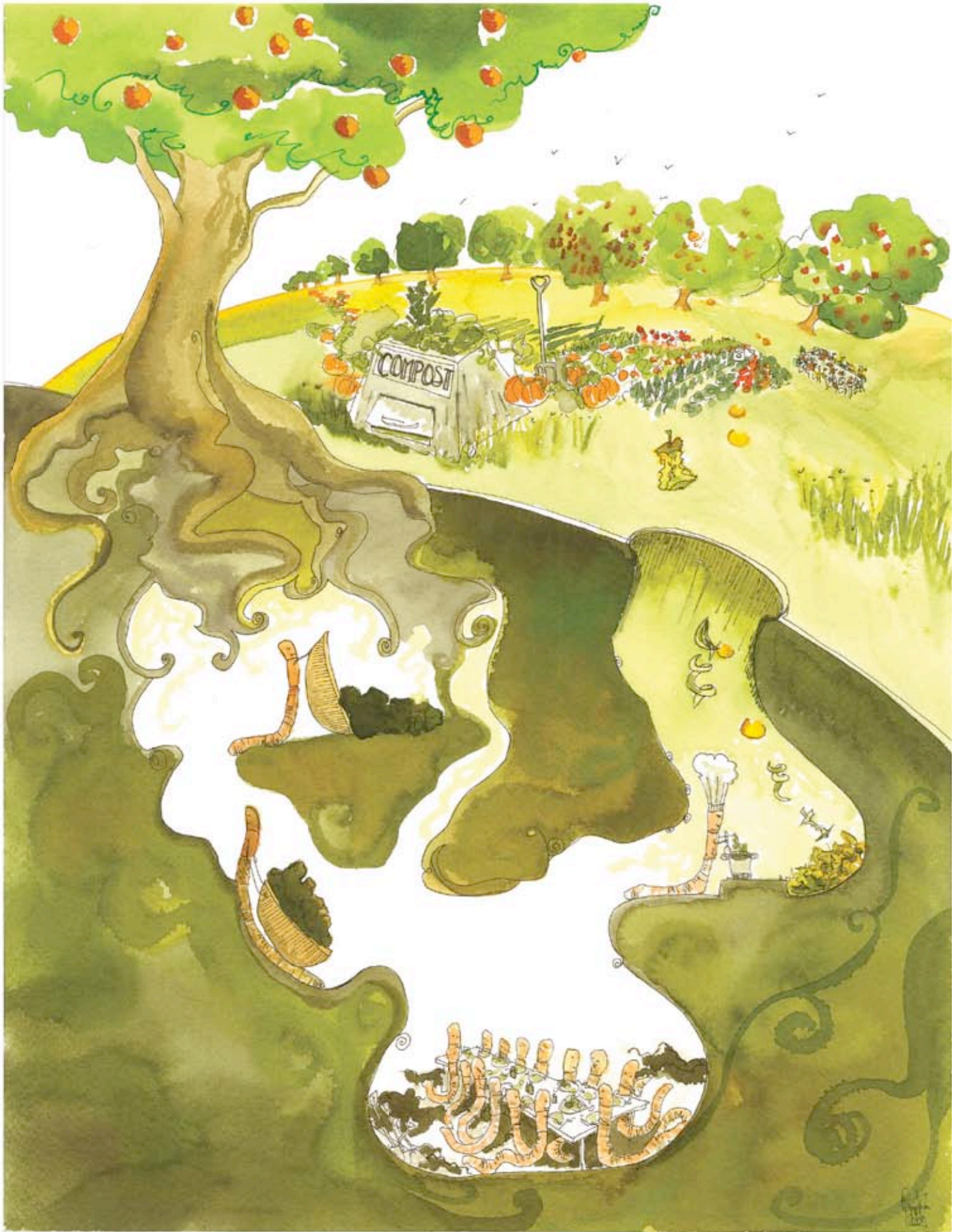
Ask the students to show their drawing of the plant they found in their food pantry. If they planted sunflower seeds in class, share them during the meal, and ask them to tell what they learned about this seed's story.



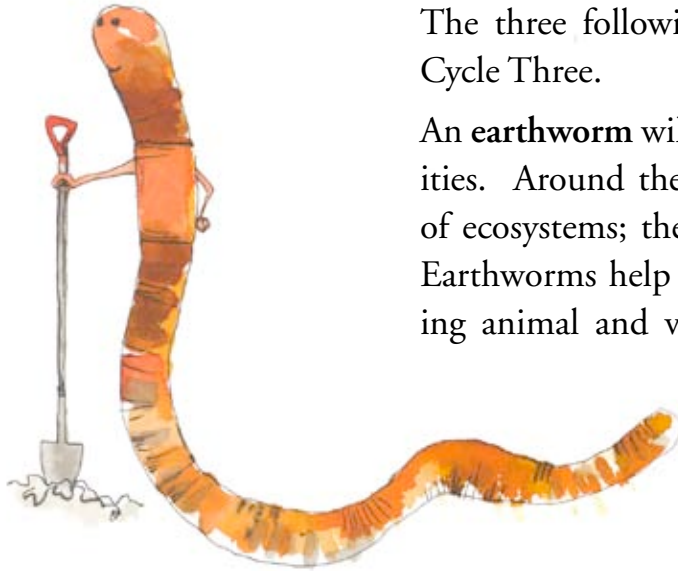
Evaluation Rubric

SKILLS	GRADING					TOTAL
	Low	2	Average	4	High	
BROAD AREAS OF LEARNING						
Develop awareness of his/her environment						
Activity One: Student share the information they have learned at the Urban Agriculture Day						
Activity Two: Student improve their knowledge of the neighbourhood around the school						
Activity Three: Student understands there are dynamic histories to food						
CROSS CURRICULAR COMPETENCIES						
Intellectual competencies						
Student creatively contributes to the Urban Agriculture Fair						
Methodological competencies						
Student adopts effective work methods						
Personal and Social competencies						
Student cooperates with others						
Communication related competencies						
Student communicates appropriately with others						
SUBJECT SPECIFIC COMPETENCIES						
Activity One: Science and Technology						
Student understands the area of urban agriculture that they have researched						
Activity Two: Science and Technology						
Student understands that there are many different places where food can be purchased, bought or given						
Activity Three: Science and Technology						
Student understands edible plants are vegetables adapted to specific regions						





THE TRANSFORMATION OF WASTE TO COMPOST



The three following activities are geared toward students in Cycle Three.

An **earthworm** will follow us through the following three activities. Around the world, earthworms are essential to the life of ecosystems; they have a direct relationship with the earth. Earthworms help transform and aerate the soil by decomposing animal and vegetable waste. They enhance the fertility in the soil. Earthworms are very effective recyclers and produce a very high quality natural fertilizer. This little soft-bodied, legless animal can live four to eight years.

Activity 1: A Tomato's Journey

Summary

Students learn about different agricultural production methods by following the journey of a tomato. They are made aware of the impact of their food choices on their health and the environment. In a creative exercise, they devise and communicate original solutions.

Objectives

- Think about the different ways food is produced and their impacts on the environment and health.
- Raise awareness that a diet based on vegetables grown in the garden is beneficial for the environment.
- Learn the ecological value of our daily choices about food.

Advance preparation

- Buy an imported tomato.



Steps

- 1 Introduce your tomato. Explain that it was grown in x country and that it traveled over 3,500 km (exact distance to Mexico and California) before arriving in class. Ask them to locate the country or region on a world map.
- 2 Tell students that this tomato comes from a very large industrial farm where chemical fertilizers and pesticides are used.
- 3 Ask them if they know the environmental and health impacts of this type of agriculture. Write the answers in a column on the board. Discuss the points covered in the information capsule.
- 4 Next, ask them if they know alternatives to this kind of agriculture and the benefits that come from other methods of cultivating the land. Write their answers on the board. These points are covered in the information capsule.
- 5 Tell them that the character in the next story knows a lot about the advantages of urban agriculture. Read the City Tomato story to them, asking them to participate as indicated in the text.
- 6 Once you have read the story, ask the following questions:
What differences are there between the tomato I brought in and City Tomato? Confirm or add points to the list already on the board. What did you learn from this story?
- 7 Ask the students the following question: **How can you tell where the food we buy comes from and how it was grown? At the grocery store: thanks to signs on the bins and to labels. At the public market: by asking farmers. By producing your own food!**
- 8 To move from thinking to action, ask students to imagine and design a labeling system where you could find the necessary information to make good choices about food.
- 9 In some countries, for example, labels show the number of kilometers traveled, GMOs, organic certification, the region of the country, etc. All these ideas are welcome! Thinking may be done as a class, and creation in small groups.



WHAT CAN I DO?

Ask your grocery store to sell food grown in a healthy and ecological way.

Garden in the backyard or in a nearby garden with your family

Participate in the “Youth Gardens” day camp at the Botanical Garden.

The Story of City Tomato

We are in a community garden in our city. It is spring and gardeners are working the soil and preparing the garden. They have fun working together outdoors in the sun in their neighborhood a few times a week. They are very lucky. They have free time to work in the garden. **(Student – gardeners act out the situation.)**

They plant a seed, water it every week and give it compost as food; and it grows into City Tomato. **(One or some student-tomato(es) act out the situation.)**

City Tomato is a happy plant. It has all the sun, water and food it needs to grow healthy and strong. The gardeners don't rush City Tomato. They give it enough time to grow big, red, juicy tomatoes. In fact they have a lot of time to put towards the garden. Every plant is important to them. This means that the plants grow big and strong. The gardeners spend most of their free time tending to the plants. When they ask their friend Jane to join them in the garden, she says that she cannot. She has to work to make money for her family. The two gardeners are sad. Not everyone has the time that they do to be able to work in a garden. **(The gardeners act out this situation.)**

One day they notice that bugs have eaten some of the tomatoes. They mix dish soap and baking soda from their kitchens in a container with some water. Then they spray this on the tomato. The bugs do not like this, and so, they go away. City Tomato is back to being happy again. **(City Tomato acts this out.)**

When the tomatoes are ripe, the gardeners pick the tomatoes and take them home. They have five tomatoes (or the number corresponding to the students). They prepare a delicious meal with a tomato salad. **(Gardeners act out picking the tomatoes.)**

This is not the end of City Tomato's story. After all of the tomatoes from City Tomato have been picked, fall arrives. The weather gets cold. City Tomato starts to lose some of its leaves and wilt. The gardeners pull up the tomato plant, which has no more tomatoes on it, and put it into the compost. In the compost, the tomato plant breaks down and turns into rich and healthy soil! The next year, the gardeners will take that soil and spread it on the garden. This is very good for the garden, and it makes the plants grow well. It is also good for the environment because instead of using chemicals (which are bad for the environment) to give nutrients to the plants, these gardeners use compost. **(Gardeners act this out with the teacher.)**



INFORMATION CAPSULE

Urban agriculture is the cultivation of plants, fruit trees, medicinal and aromatic herbs and the raising of animals in cities to increase food access and/or generate income for urban households. In the 1990's more than 800 million people around the world were involved in urban agriculture. Food grown in cities accounted for 15-20 percent of the food eaten by the world population. While in urban centers within low-income countries urban agriculture is widespread, there is much room for further advancement of food production initiatives in Western cities.

Urban agriculture is destined to play an ever-greater role in feeding city dwellers. It provides an answer to food insecurity and an avenue for cultural expression and citizen involvement. It also enables people get a taste of the pure enchantment of growing food for themselves and for the community. In this time of climatic changes and the multiple, harmful consequences of urban living on health and the environment, we need to rethink the way we live. In light of this, urban gardening is a powerful agent for change. In Quebec, there are two principal models for organizing community gardens: community gardens and collective gardens. Community gardens are a great way to grow food in the city. Areas of land in the city are transformed into garden plots where people come to garden. The gardeners share tools, extra harvest and gardening tips. Collective gardens are similar, except that the garden is not divided into plots. All of the gardeners work the same large area of land. Together they plant, sow and water the garden, and they share the harvest!



Follow-up

Using the thoughts students shared during the activity, ask students to create an advertisement for growing your own food.

The exercise can take the form of a written advertisement that will be displayed on the a message board or a TV ad acted out with an original script.



INFORMATION CAPSULE

With the development of large exporting farms, industrial agriculture practices intensified and with them, the harmful impacts on the environment, health and the living conditions of many people. The subject is vast and complex, but here are some points that can be raised in class. Chemical fertilizers spread over soils in large quantities contaminate waterways and the living creatures that make their homes there. Repetitive application of fertilizers exhausts soil and makes it less productive. In some countries, this farming practice contributes to desertification. Single-crop farming practiced on factory farms requires the use of numerous pesticides. Herbicides, insecticides and fungicides are all poisons designed to kill certain life forms (weeds, insects, fungi). Yet, these products also have an impact in the short and long terms on human health. The role they play in causing cancers, poisoning and certain chronic diseases is now recognized. Beyond the agricultural impact of applying chemicals, their fabrication is also something to think about. As products made from petroleum, they help generate greenhouse gases. The factories where these products are produced are highly toxic, veritable biological bombs. Most of them are located in countries in the South where labor is cheap and safety is hard to control. Other, more ecological and responsible ways of farming to produce food exist.

Four basic principles exist to guide our thinking on this issue: Bare, Close, Natural and Fair. These basic rules can help us realize that it is possible to cultivate the land and to distribute food without packaging (Bare), with less transportation (Close), without chemical products (Natural) and that are fair for everyone (Fair), in the North and in the South.

There are many advantages to using these principles: human health, reducing water and air pollution, raising animals, soil conservation, healthy and pleasant living environment for workers and farmers, job creation, protection of rural landscapes. Several factors of these solutions are presented to us when it is time to choose: promotion of organic agriculture, favoring of diversified farming methods, cultivating of our own fruits and vegetables, eating seasonal products, canning food, buying in bulk, buying local food at the market or directly from a family farmer. Many other factors can help us rethink farming and diet.



Activity 2: Where Have the Melons Gone?

Summary of activity

Students learn about the food wasted by the global food system and explore an alternative that reduces and reuses waste.

Objectives

- Introduce students to the ways food is wasted through the global food system
- Examine alternatives that reduce food waste

	Required materials
	One map of the world for each group of 4 students
	One atlas for each group of 4 students
	Paper to draw pictures of the canned fruits or vegetables
	Scotch tape
	<p>Fruits and vegetables from the grocery store. Purchase the following items (or find images of them if they cannot be purchased):</p> <ul style="list-style-type: none"> • Grapefruit (or other fruit from Argentina) • Star Fruit, Litchi Nut (or other fruit from Vietnam) • Avocado (or other fruit from Peru) • Pineapple (or other fruit from Sri Lanka) • Whale, Seal, Caribou, Arctic Char, berries (or other food from Iqaluit) • Raspberries (or other food from Toronto) • Apples (or other food from Vancouver) • Montreal Melons (or other food from Montreal) • Tomatoes (or other food eaten in Chicago, e.g. on pizza)
	Urban Agriculture Around the World Cards
	Length of activity
	One hour



INFORMATION CAPSULE

Fifty percent of food is wasted in the United States. While there is no statistic available for Quebec or Canada, one could assume that the statistics would be similar as the agriculture, manufacturing, and retail practices are similar. Much of this wasted food is left in fields, not harvested, because of a surplus of a certain crop on the market, or because of small blemishes that dissatisfy picky consumers. Fifteen percent of food that Americans bring into their homes is thrown out. Reducing food waste would not only lower farming and manufacturing costs, it would also reduce the use of chemical fertilizers and pesticides, the deterioration of the soil and other negative environmental impacts of industrial agriculture.



Advance Preparation

Figure out the number of students that correspond to 10 percent, 15 percent and 25 percent of the class. For example, if there are 30 students in your class, 10 percent of them would be three students, 15 percent would be five students and 25 percent would be eight students. These numbers will be used when you read the Tale of a Long Distance Industrial Farm Melon.

Find out where your local garbage gets taken. Contact your municipality or city council. Try to answer the following questions:

Where is garbage disposed of?

Does the garbage leave the local area? The province? The country?

What do the areas / communities do with the garbage?

Why are these communities receiving the garbage?



WHAT CAN I DO?

Try to not waste food that is in my fridge (help my parents make a soup stock with food that is less fresh);

Compost my vegetable scraps in an outdoor compost bin or a vermicompost;

Ask my parents to help me make jams and preserves with products that are in season.

Steps

- 1 Inform the class that, over the next few days, they are going to look at the waste that is created by the current way of producing and distributing food as well as how different ways of growing food can reuse and reduce waste.
- 2 Ask the students to read aloud the Tale of a Long Distance Industrial Farm Melon. The number of students in the class represents the number of melons that are grown. Subtract the number of melons in brackets in this story. After reading the story, ask the students the following questions:
How many melons reached the final destination point?
What were the reasons that prevented other melons from reaching their final destination point?
What do the melons look and taste like when they reach the final destination point?
- 3 Ask the students to read aloud the Tale of a Local Community Garden Melon. After reading the story, ask the students the following questions:
How many melons reached the final destination point?
Who got to eat the melons? How was this beneficial?
What were the differences between the melons that were grown far away on an industrial farm and those grown close by in a community garden?
What did the gardeners do with the waste that was created?
How was waste turned into nutrients?
Which melons have more of a positive impact on people and the environment? Why?
- 4 From these stories, draw out the following points:
The global food system wastes nutrients that could feed plants.

The global food system creates greenhouse gases by using harmful chemicals. Industrial agriculture pollutes air and water and destroys the soil balance (which results in less fertile and less productive soils). The global food system wastes food and takes it away from places where people are hungry.

Community gardens provide opportunities for people to grow their own food. In community gardens, people come together to enjoy each other's company while they learn about food. The food from the community gardens is fresh and tastes incredible!

- 5 Talk with the students about garbage. Ask them the following questions:
Do you know where your garbage goes after you put it out on the curb?
Does it leave the area? Where is it taken?
- 6 Tell the story you have discovered about where the garbage goes.

Tale of a Long Distance Industrial Farm Melon

This is the story of a long distance melon. The melon starts out on the vine on an industrial farm in a country that is very far away. As the plant grows, the farmer sprays chemicals on the plant to make it grow faster and to kill the insects that eat the plants. But the chemicals also kill insects that are good for the plants. These good insects eat the enemy insects. Because these good insects are killed, there are more bad insects in the garden. Also, as the farmer sprays more chemicals in the garden, the insects get used to it. This means that the next generation of insects is born with the ability to survive the spray of the chemicals. For these reasons, there are more fruits and vegetables lost to insects now than there were fifty years ago. This is true even though there are more chemicals being used! Today, even with the use of chemicals, insects eat 15 percent of fruits and vegetables before they are even harvested. This 15 percent is wasted. **(Ask the class to calculate the number of melons that have been wasted (by calculating fifteen percent of the students) and ask one student to write this number on the blackboard.)**

After the fruits and vegetables are harvested, they are sent to the market. This involves many different steps. The fruits and vegetables are sent to a large factory to be packaged, then to another large factory to be distributed to different stores, after which they are transported to the different supermarkets and other places that sell food. The fruits and vegetables are often transported long distances, by plane, boat and truck. Along the bumpy road, the fruits and vegetables are often bruised and damaged. So much so that, after all of these rides, another 15 percent of the fruits and vegetables are considered too damaged to sell. This 15 percent is also wasted. **(Ask the class to calculate the number of melons that have been wasted and ask another student to write this number on the blackboard.)**

When the fruits and vegetables that have survived the journey arrive in town, they are distributed to different locations. These locations include supermarkets, convenience stores and fast food restaurant chains. **(Ask the students to divide into three groups. Tell the first group that they have been sent to a convenience store. Tell the second group that they have been sent to a restaurant. Tell the third group that they have been sent to a supermarket.)**



Many of the fruits and vegetables that go to convenience stores do not actually get eaten. People often come to convenience stores wanting to find something that they can eat right away. They are not willing to buy anything that has the slightest blemish on it. More than 25 percent of the food that comes into convenience stores is lost! This food is also wasted. **(Ask the class to calculate the number of melons that have been wasted and ask a third student to write this number on the blackboard.)**

The fruits and vegetables that go to fast food restaurant chains have a somewhat better chance of getting eaten. This is because the fruits and vegetables are good even when there are blemishes. These parts can be cut out and the rest of the fruit or vegetable can be used. Even so, ten percent of the fruits and vegetables that come into fast food restaurant chains are thrown out. **(Ask the class to calculate the number of melons that have been wasted and ask a third student to write this number on the blackboard.)**

Of the fruits and vegetables that are sent to supermarkets, one percent is thrown away. However, this does not mean that these fruits and vegetables will be used once people take them home. Often fruits and vegetables are not refrigerated, or people throw a whole piece of fruit or vegetable out when there is a little bruise on a part of it. Because of these practices and others, people waste 15 percent of the food they buy. **(Ask the class to calculate the number of melons that have been wasted and ask a third student to write this number on the blackboard.)**

(Ask the students to count the number of melons that are left.) How many melons will be able to be eaten?

Tale of a Local Community Garden Melon

This melon also starts out on a vine, but this vine is in a very different place. This vine is in a community garden in our neighborhood. This could be a neighborhood anywhere in the world. There are not nearly as many melons around in this garden. **(Ask 5 students to stand up and act out the work to do in the garden)**

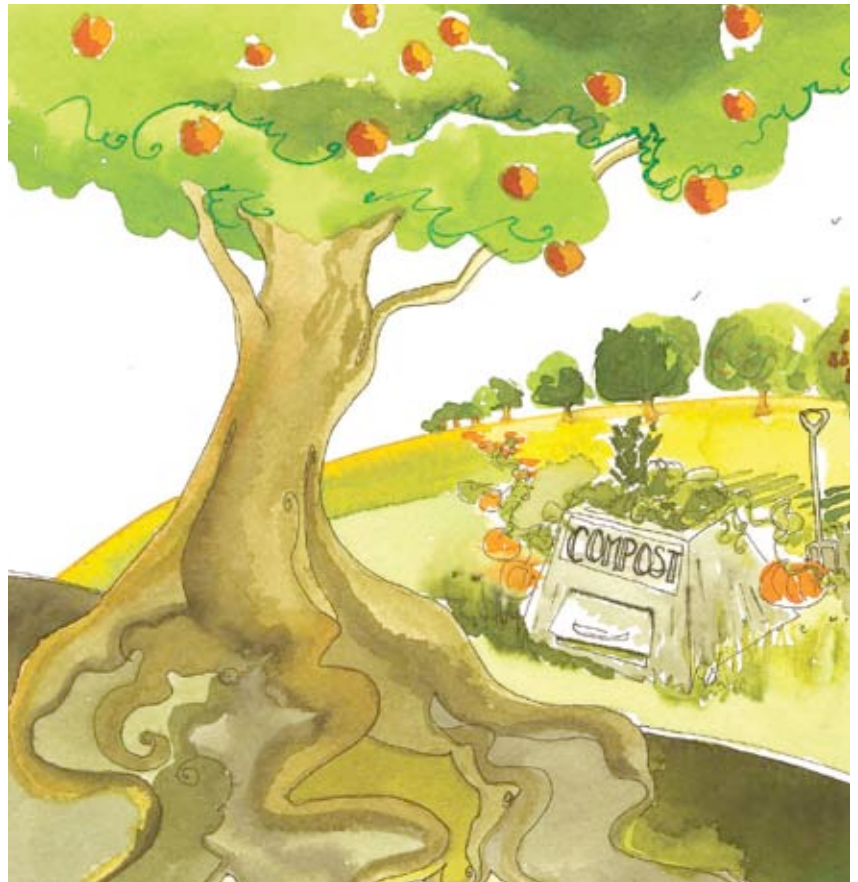
A group of five kids have come together to build a garden in their neighborhood on some land that was not being used. They break up the cement that was covering the ground and they bring in soil. Then, they put a good amount of compost down and dig it into the soil. They plant melon seeds: they plant watermelons and cantaloupe and even a melon that has been grown in Montreal for many years, called the Montreal melon. They plant garlic and onions close to the melons because friends of theirs told them that this would keep away the insects that like to eat the melons. Then, they water the garden.

As the season goes on, their melon plants grow. All of the plants are strong and big! They are even producing flowers. The kids do notice some insects in the garden, but there are many different kinds of insects, and they all seemed to be living quite contentedly in the garden, without harming any of the plants. The kids notice some bees in the garden. The bees brush up against the melon flower to get the nectar from inside the flower. The bees want this nectar because they use it to make their honey. Also, when the bees brush up against the flower, they mix different parts of the flower. When this happens, the flower will be able to turn into a fruit. Soon the melons start to grow and the kids watch as the melons get bigger everyday!

One day, the children come to the garden and find that two of the melons have been eaten! They did not pick them fast enough, and a squirrel had come and taken a bite out of these big beautiful melons! **(Ask other students to act as Jim and other friends who visit the garden.)** The kids did not know what to do. They asked around and found Jim, a friend of one of their neighbors who knew a lot of about gardening. They asked Jim what they should do about the animals eating the melons. Jim was excited! He was having some hard times in his life and felt honored to be considered useful. He taught the kids a lot about gardening, including that the animals would not come into the garden if they sprinkled ground black pepper around the plants because squirrels do not like to walk on the pepper flakes. It worked and the squirrels ate no more of the melons. Jim continued to help out a lot at the garden. He taught them to water the garden everyday.

At the end of the season, the kids harvest a lot of the fruits and vegetables. They haven't lost many at all. They decide that they want to give some of the harvest to Jim, who helped them out so much. They gave two of their melons to Jim. The children heard that there are a lot of hungry people in the world. They know that their garden did not produce enough food to feed many of those people. They decided to give three melons to the local food bank. They invite friends to their garden and cut open the remaining melon to share. The melon is delicious and their friends are amazed that they grew the melons themselves.

They return to the garden the next day to cut up the plants and mix them with soil, to make compost. This will make the soil very rich and fertile – perfect for growing more vegetables next year!





Activity 3: The People in Our Food Chain

Summary of Activity

Students examine the current, global system for producing and distributing food imported from countries in the South. They meet the different people in the food chain and learn about inequalities between them through a story.

Objectives

- Introduce students to methods of producing and distributing food imported from the South
- Develop student awareness of inequality in the dominate food system

	Required materials
	Text: “The Work of People in Our Food Chain” (Day One) “The People in Our Food Chain” signs (Day One)
	Length of activity
	One hour (or two hours over two separate days)

Advance Preparation

Make “The People in Our Food Chain” signs by writing the information on large pieces of cardboard that the students can hold (the information can be found below). Using a graph on the board, it would be interesting to show the difference in amount of money that different groups of people in the food chain earn.

Steps

- 1 What are some of the problems with the current way that food is produced and distributed?
- 2 Inform the class that they are going to examine the methods used to grow and distribute food. To begin, they will look at the processes used to get food from the field to the table.
- 3 Ask the students if they know how many people are involved in this process. Tell them that the following activity is going to introduce them to some of the people involved in the food chain.
- 4 Ask for seven volunteers to play the characters. The other students in the class can read aloud the “The Story of the People in Our Food Chain”. One by one, ask students to step forward and show the poster indicating the amount of money earned by each character.
- 5 After reading the text, ask the students what they noticed about the information on the signs being held by the students at the front of the room. Ask the following questions:

What are some of the problems with the current way that food is produced and distributed?



WHAT CAN I DO?

Encourage my parents to buy fair trade products

Who benefits the most through this way of growing and distributing food? Why? Who benefits the least? Why?

- 6 Discuss the following points with the students:
Much of the food we eat is grown on large-scale farms. These large farms can sell fruits and vegetables at low prices because large corporations own the farms. These same corporations own many other parts of the industry.

Small-scale farms are being put out of business because they cannot compete with the low prices created by the large farms.

Many of the fruits and vegetables that are grown in less wealthy countries are sold to wealthier countries. This happens even when people living in poorer countries do not have enough food for themselves. This often means that, even though a lot of food is being grown around the world, there are people going hungry.

The people who make the most money are not the people who work on the farm but the people who own the farm and other businesses.

The people who make the least money are those who are actually doing the farm work of growing the fruits and vegetables. These workers usually have to go to the supermarket in the nearby town to buy their fruits and vegetables. Since they do not get paid very well, they often cannot afford to purchase much of the food in the supermarkets.

Many people who live in cities in both wealthy and poor countries can also not afford to purchase the food that is sold in grocery stores and do not have land on which they can grow their own food.

- 7 Ask the students: **Do you think the current way of growing and distributing food enables peoples in all countries to be fed?** Ask students if they can think of solutions to problems in the current system. Bring up the following solutions:

Buy local, fair trade and organic products

Taking it a Step Further (Day 2)

In order to compare the current global system with the past, this activity is greatly enhanced when a meeting is arranged with a senior member of the community that cultivated the land.

By virtue this person's relationship to the land, the guest will attest to the fact that that more family farms existed in his or her youth, that more people bought their fruits and vegetables directly from the farmer or the market, and that people knew how to grow fruits and vegetables. This information enables students to understand that the dominant system for growing and distributing food in place today has not always existed.



INFORMATION CAPSULE

Food sovereignty and the right to food

Food Sovereignty is a political approach to food security, which emphasizes that food security is only possible when nations have the power to determine their own agricultural and food policies. This involves recognition by states around the world of people's right to food. It also requires that small-scale farmers have access to resources so that they can produce food and so that local food networks can function sustainably. Those in support of food sovereignty advocate that when local populations determine how their community is fed, everyone will have food security. They also highlight that food sovereignty is the best way to protect agro-ecological diversity and maintain local food systems. Those who oppose food sovereignty argue that food security cannot be achieved within national borders and requires international trade, both for access to a diversity of fruits and vegetables and to bring the down the price of food (through trade liberalization).



Prepare questions for the guest:

What do you remember about how food was grown or produced when you were young?

Where did your food come from?

What are the main changes that have taken place since that time?

What were the advantages to this way of growing and producing food?

What were the disadvantages?

Steps

- 1 Explain to the students that 50 years ago, more food was grown locally. Inform them that a guest speaker is going to talk to them about ways food used to be grown and transformed into products in his or her childhood.
- 2 Introduce the guest speaker.
- 3 When the guest speaker has finished speaking ask the students if they have any questions.
- 4 When the students have finished asking their questions, ask them the following questions and write their answers on the board:
 - What did you learn from the guest speaker?
 - How has the way that food is grown and distributed changed over the past 50 years?
 - What worked well about the way that food was grown in the past?
 - What did not work well? Why?
 - Do you think that we could use the same techniques now that were used 50 years ago? If so, why? If not, why not?
 - Are there specific things that we could learn from the way that food was grown in the past even if we can't use the same system?



INFORMATION CAPSULE

Food sovereignty is the right of all peoples to healthy food that respects their cultures and is produced using sustainable and environmentally respectful methods as well as their right to define their own food and agricultural systems.

Nyéleni Declaration, Mali,
February 2007

We uphold that food sovereignty in each nation is the power to control its agricultural policy and manage its domestic market. For us, it is the only way to recognize the essential importance of agriculture in each society, to foster an adequate diet for all populations and to stop dealing with the exportation and importation of agricultural products with regard only to the interests of countries in the North.

Declaration of Québec:
Responsables aussi du monde
(Also Responsible for the World),
(AQOCI), November 2007

Text: The Working Conditions of People in Our Food Chain

In your grandparents' generation a lot of people knew how to grow the products needed to feed them because they often lived on farms. Kids grew up helping out on the farm or in the garden and learned how to grow food themselves. Other people lived near a farm: they could go to their neighbor's place to pick their fruits and vegetables or to get their eggs and milk. This has changed a lot in the past 50 years. Now, not nearly as many people know how to grow food. This is largely because far fewer families own farms, and there are many people involved in the process of the food chain. The food chain is all steps to bringing food from the field to the table.

Let's look at all the people involved in this food chain. While these people all put a lot of work into the process, they do not all get paid equally. Let's take the example of a can of pineapples. This can of pineapples has followed a long path to get to our tables. The pineapples would have started either in Costa Rica, the Ivory Coast or the Philippines. (Locate these countries on a world map.) We will assume that a can of pineapples costs one dollar. We will see how that dollar is divided amongst the people involved in the production and distribution of the can of pineapples.

Ask students to name the first person involved in the production of pineapples, or the pineapple food chain.

The **Farm Worker** is the first person involved in the production of our canned pineapples. This worker works long days (an average of 16 hours a day... which is equal to two school days in one!), doing hard physical work around unsafe chemicals. They are often not able to afford to buy the food that they are growing. In Canada, many farmer workers like this one come from other countries to work on farms because few Canadians choose to work on these farms. The farm worker from the South earns an average of one cent for every dollar that is spent at the grocery store on cans.

Ask one student to stand up and hold the Farm Worker sign, which indicates that they earn one cent for every can of pineapples sold.

Ask students to name the second person involved in this chain.

The **Farm Owner** is the second person involved in the production of our canned pineapples. Often farms are owned by large businesses. These businesses buy up small farms and small businesses so that they own more and more of the businesses that produce our food. These businesses include ones that sell seeds, make chemical fertilizers and pesticides and build machines. The person who owns the farm (or who owns the company that owns the farm) does not usually do the physical farm work.

Ask one student to stand up and hold the Farm Owner sign, which indicates that they earn 19 cents for every can of pineapples sold.



Ask students to name the third person involved in this chain.

The **Manufacturer** is the third person involved in the production of our canned pineapples. This person takes the pineapples and cuts them into little pieces, after removing the peel and the core, of course. A machine does most of this work but a person must ensure that the machines work well.

Ask one student to stand up and hold the **Manufacturer sign**, which indicates that they earn three cents for each can of pineapples sold.

Ask students to name the fourth person involved in this chain.

The **Packager** is the fourth person involved in the production of our canned pineapples. This person packages the pineapples into cans, the cans into boxes and the boxes into crates.

Ask one student to stand up and hold the **Packager sign**, which indicates that they earn four cents for every can of pineapples sold.

Ask students to name the fifth person involved in this chain.

The **Wholesaler** is the fifth person involved in the production of our canned pineapples. This person is the businessperson who buys the pineapple products from the producers.

Ask one student to stand up and hold the **Wholesaler sign**, which indicates that they earn 17 cents for every can of pineapples sold.

Ask students to name the sixth person involved in this chain.

The **Retailer** is the sixth person involved in the production of our canned pineapples. This is the person from whom we purchase the canned pineapples at the supermarket, at the corner store or at the fast food restaurant.

Ask one student to stand up and hold the **Retailer sign**, which indicates that they earn 15 cents for every can of pineapples sold.

Ask students to name the seventh person involved in this chain.

The **Publicist** is the seventh person involved in the production of our canned pineapples. This person creates publicity for the packages and advertisements to try to sell more canned pineapples.

Ask one student to stand up and hold the **Publicist sign**, which indicates that they earn four cents for every can of pineapples sold.

Ask students to name the eighth person involved in this chain.

The **Consumer** who purchases and eats the product is the eighth person involved in the pineapple chain.

Ask one student to stand up and hold the **Consumer sign**, which indicates that they paid one dollar for the can of pineapples.

What happened to the rest of the money?

- Nine cents pays for packaging.
- Six cents pays for transportation (which includes moving raw materials to storage and processing facilities, distribution centers and, finally, the grocery store or restaurant).
- Five cents pays for electricity, natural gas and other fuels used in food processing, wholesaling, retailing and running food service establishments.
- Five cents pays the cost of repairing or replacing old equipment and buildings.

- Four cents pays rent for warehouses and other facilities for processing and selling food.
- Eight cents pays for interest on loans, business taxes and other miscellaneous expenses.

The People in Our Food Chain Signs:

- FARMWORKER: Earns 1 cent
- FARM OWNER: Earns 19 cents
- MANUFACTURER: Earns 3 cents
- PACKAGER: Earns 4 cents
- WHOLESALER: Earns 17 cents
- RETAILER: Earns 15 cents
- PUBLICIST: Earns 4 cents
- CONSUMER: Pays 1 dollar

This information came from “Your Food Dollar (and cents)”, an activity created by Oklahoma Ag in the Classroom. See www.agclassroom.org/ok.



Activity 4: In the Garden at Last!

Summary



After analyzing the schoolyard, students are invited to draft a plan of a vegetable garden and present it to the community at a kick off celebration at the school.

Objectives

- Learn to design a garden, to work as a team and to give an oral presentation.
- Encourage children to take action and to get involved in their community.

Advance Preparation

Ask students to bring in measuring tapes.

	Required materials
	Map of the school yard (ask the school administration for one or make a sketch)
	Paper, pencil, measuring tape, geometry set
	List of plants that grow in Quebec
	Length of activity
	Four 2-hour periods



Steps

Day 1

- 1 Explain to students that they will be drawing their plans for the ideal garden for the schoolyard. Name the main steps to accomplish this goal: analyze the schoolyard, take measurements, locate the future site for the garden, choose the fruits and vegetables and their placement, and finally, draw the ideal garden.
- 2 Divide the class into teams of five and give a blank map of the schoolyard to each team.
- 3 To analyze the site, tell them to mark the following elements on their maps: sunshine – identify the places that are in full sun or shade (if the sky is cloudy that day, ask the schoolyard supervisors what they know about the sun's path), dominant winds, existing vegetation, fences, water supply, storage spaces, high traffic zones, what they like and what is already in the yard and what they are less fond of.
- 4 Tell them to measure the elements they deem important in order to properly indicate them on the map (for example, the distance to the water supply, the storage space's dimensions, the height of the fence).
- 5 Tell students that the location chosen for the garden must fulfill the following criteria:
It must be in the calmest and sunniest part of the schoolyard;
It must be at a reasonable distance from a water point (hoses are 25 or 50 feet long);
It must be out of range of balls;
Ideally, there must be an outside storage space nearby (a salt box that can be closed is enough);
- 6 Accompany students to the schoolyard and help them do the analysis, write down their observations on the map and choose the location for the garden;
- 7 After doing the work, return to class and ask each team to present their analysis and their choices of locations. Display the analyses on the wall for everyone to see the locations chosen by other teams.

Day 2

- 1 In class, inform students that after carrying out the analysis of the schoolyard and choosing the site of the future garden, they must now draw and plan their vegetable garden;
- 2 Distribute paper on which to draw the garden to the teams;
- 3 Ask the same teams to work from their analysis, their plan and their choices for location;
- 4 Ask the students for guidelines for drawing the garden: if the chosen site is in the grass, explain to students that it is better to grow plants in mounded rows that are as wide as two lengths of a child's arm (this way, children can access the center of the row without walking on the mound). Pathways between mounded rows should be left to avoid stepping on plants;



- 5 If the site is paved, suggest students use containers with a water reservoir. With containers, they can decide to arrange the garden as they like;
- 6 Ask students to list the plants they will need as well as to choose the varieties of fruits and vegetables in the list that grow in Quebec (see the information capsule on page 20);
- 7 Ask students to draw their garden on a piece of paper and to make a list of plants and the necessary quantities on another piece of paper;
- 8 Display the drawings with the lists of vegetables in a visible area at school.

Day 3

- 1 Inform students that they have to organize a vernissage to present the garden plans exposition;
- 2 Ask students to vote for their favorite plan. The team that drew the chosen plan must present its ideas in an oral presentation at the garden kickoff celebration;
- 3 Choose another team to present the analysis.
- 4 Invite the school administrators, parents, people from the neighborhood and elected officials to come to the kickoff;
- 5 Ask the class to decide who will take care of the garden over the summer and who will get the harvest.

Day 4

- 1 Prepare the vernissage with the class. Don't forget to decorate and to provide juice;
- 2 At the kickoff, ask the people present if there are volunteers to take part in a garden committee that will work to carry out the project.

Taking it a Step Further

- 1 Creating a garden committee.
- 2 Read Guide to Setting up Your Own Edible Rooftop Garden (available for free on our website www.lesjardins.ca) for a better understanding of the potentials of container gardening.
- 3 Set up your garden with the help of the committee and outside groups.
- 4 Plant the seedlings grown in class in the grower with a water reservoir (see the file in the annex).
- 5 Look for financing for greening the schoolyard.
- 6 Once the garden has become a reality, cook the harvest when school starts in the fall.





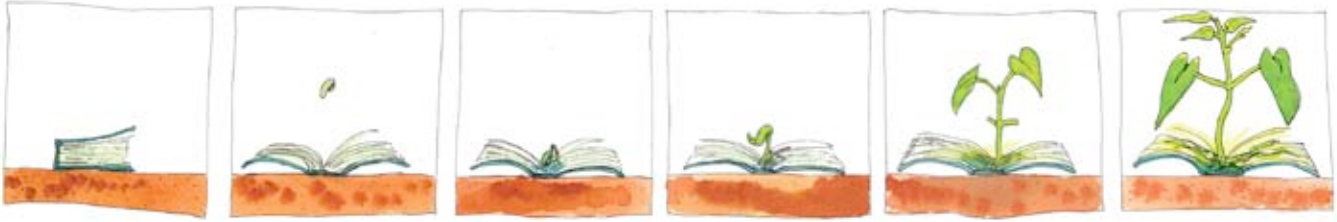
INFORMATION CAPSULE

As students are absent during summer vacation, setting up a vegetable garden in the schoolyard requires the entire community's involvement. Collective gardens' community organization model is entirely appropriate in this context as it allows for shared learning (see the information capsule on page 31). In caring for a vegetable garden, parents and children are often on equal footing.

The involvement of parents, neighbors and children in the collective garden project and the authorization of access to the schoolyard during summer favors the school's influence in the community, and therefore, good social development for children. To insure the garden's durability, it is important that one individual not shoulder the project. It is essential to create a permanent garden committee (or to appoint the school's green committee to do so) so that the garden continues to play its educational role year after year. This committee should be made up of a minimum of two teachers, two parents and two students.

If the school does not wish to take responsibility for the garden during summer vacation, it can also offer the garden space to outside gardeners. The participants may then divide the garden into lots or garden individually. Don't forget to involve the maintenance staff, who are indispensable in insuring the success of any project in the schoolyard. For more information, consult the Regroupement des jardins collectifs du Québec's website (www.rjcq.ca).





Creative Project: Composting Organic Waste

Start a vermicompost or an outdoor compost bin to reduce and reuse school waste.

Materials

- Vermicompost bin (see Resource section)
- Worms
- Vegetable scraps
- Newspaper or leaves

Or:

- Exterior compost bin (see Resource section)
- Vegetable Scraps
- Leaves or Straw

Preparation

Read the compost or vermicompost section of the “Compost and Mulch” resource put out by Evergreen: www.evergreen.ca/en/lg/resources/design/design-2.pdf

If you are building an outdoor compost bin, you will need to contact the school administration. It may also be helpful to inform local neighbors, who can help in the construction and/or add their vegetable scraps to the compost. A community meeting will be important to ensure that everyone using the compost is informed about what to include and how to care for it.

If you are building a vermicompost, you might want to discuss it with other teachers and/or the cafeteria in order to reuse more of the school vegetable waste.

Prepare the vermicompost or compost bin.

Information for students

Plants need healthy and fertile soil.

Healthy and fertile soil comes from putting compost or manure into the soil.



INFORMATION CAPSULE

Compost Resources

See the following resources for information about vermicompost:

Your local Eco-Quartier

Local environmental groups

Evergreen: www.evergreen.ca

EnJeu: enjeu.qc.ca

Recyc-Quebec:
www.recyc-quebec.gouv.qc.ca

Écoles Vert Brundtland:
www.evb.csq.qc

Compost can come from our kitchen scraps, which decompose into the ingredients that soil needs to become more fertile.

This creates a cycle in which the nutrients a plant needs can be supplied through compost. The cycle is completed at the end of a plant's life when it is put into the compost.

Unfortunately, that cycle doesn't happen very often. Instead, plants are fed with chemical fertilizers, which cause pollution, and much of the food waste we create is thrown away instead of being used as compost.

Care

The compost will need to be cared for. All of the necessary information is included in the Evergreen resource. See the Compost Resources for further information.



INFORMATION CAPSULE

Wasted Nutrients

The average Quebecer generates 1.5 tons of waste per year but transforms only 43% of it. About one third of residential waste could be composted. In a sanitary landfill, this biodegradable matter decays anaerobically, producing greenhouse gases and toxic liquids capable of contaminating our sub-surface water tables. On the contrary, when these precious resources are composted, they are transformed into a quality supplement for your garden. Reduce your ecological footprint now by taking up the art of home composting.

The Life of Soil

Soil is very important to the health of the plant. Soil contains the nutrients that are needed for the plant. Industrial agriculture methods give nutrients to the soil through chemical fertilizers. Plants take up much of these nutrients. Sometimes plants are left in the field at the end of the season, in which case some nutrients go back into the soil. Often plant stalks are removed at the end of season to make it easier for the farmer to plant seeds first thing the next spring. When manure and compost are used to give nutrients and fertility, plants take up the nutrients they need but leave some for other plants and for other seasons. At the end of the season plants break down and turn into compost. This creates a cycle where plants both take nutrients from the soil and provide nutrients to the soil.



Evaluation Rubric

SKILLS	GRADING					TOTAL
	Low	2	Average	4	High	
BROAD AREAS OF LEARNING						
Develop awareness of his/her environment						
Activity One: Student understand the major environmental impacts of the global food system						
Activity Two: Student understands the negative social and environmental impacts of food waste						
Activity Three: Student is aware of the inequities in the distribution of food						
Activity Four: Student realizes he or she can have an impact on their environment						
CROSS CURRICULAR COMPETENCIES						
Intellectual competencies						
Student uses creativity to portray an urban agriculture initiative						
Methodological competencies						
Student adopts effective work methods						
Personal and Social competencies						
Student cooperates with others						
Communication related competencies						
Student communicates appropriately with others						
SUBJECT SPECIFIC COMPETENCIES						
Activity One: Science and Technology						
Student begins to understand the impact that people have on the environment						
Activity Two: Moral Education						
Student understands issue of food waste and an alternative strategy						
Activity Three: Moral Education						
Student understands the impacts of the global food chain on people involved						
Activity Four: Moral Education						
Student realizes that a collective urban agriculture project requires cooperation						

ANNEX

Seed Starting Activity



Note: This activity must be started between February and June, depending on the seeds that you are planting. See the Seeding Calendar on page 66.

Summary of activity

Students plant seeds and learn about plant needs and the life cycle of a plant.

Objectives

- Introduce students to the needs and life cycle of a plant
- Start seeds with students

	Required materials
	Soil
	Planting containers for each student (e.g. a small pot, a small milk container, etc.)
	Seeds for each student (recommended: tomato, lettuce, sunflower, ground cherry, depending on if you are planting the seeds early or late in the spring. See Seeding Calendar page 66 for details.)
	Spray bottle for watering
	A flat (container) to place the planting containers in. The flat should be long and no taller than the height of the planting containers.
	Large container to mix soil
	Popsicle sticks for each student
	Length of activity
	One hour

Advance preparation

Place the soil in the large container and moisten it. Ensure that all of the soil is moist.

Prepare one area of the classroom for seeding. Lay newspaper or a sheet on a table.

Steps and procedure

- 1 Inform the students that the class is going to start seeds today.
- 2 Ask the students what a plant needs to survive.
- 3 Ask the students to list the life cycle of a plant, starting with a seed.
- 4 With younger students, ask the class to act out the lifecycle of the plant, starting as a seed and ending as a plant that is decomposing. With older students, ask them to name all the different kinds of (and largest and smallest) seeds they know.
- 5 Ask the class to get into groups of four to five students. One by one ask each group to come up to the seed planting area. While one group is planting seeds, have the rest of the class draw a picture of the needs or the lifecycle of a plant.
- 6 As each group of four to five students comes up to the seed planting area, give each student a pot. One by one have each student fill his or her container up with soil. Give each student a seed. Instruct them to put a hole in the middle of the pot of soil with their finger. The hole should be two times as deep as the seed is large. Instruct the students to place their seed in the soil, then to cover the seed up with soil.
- 7 Give each student a popsicle stick, and instruct them to write their name on one side and the name of the seed on the other side (both on the same end). Instruct them to place the stick in the soil at the edge of the pot.
- 8 After all of the groups have planted their seeds, place them in the flat container, mark the date that they were planted on a piece of tape on the container and have a volunteer student water the pots with a spray bottle.
- 9 Place the pots in a window where they will get as much light as possible.
- 10 Every day ask a different student to water the plants. The soil should stay moist.
- 11 Keep the plants in the classroom at least until they have developed a set of true leaves (these are the second set of leaves that grow, the first are the cotyledon leaves).
- 12 Before the plants are planted outdoors, they need to be acclimatized to get used to being outdoors. This means putting the plants outside for approximately fifteen minutes the first day, an hour the second day and a little longer every day for a week. Be sure to not put the plants in direct sun or rain or heavy wind.
- 13 Follow one of the three options below of what to do with the plants, or create your own plan!
- 14 See suggestions for other activities in Information Capsules on pages 64-65.



Option One: Take the Seedlings Home

As the plants grow in the classroom, prepare a booklet about growing their plant for the students to take home to help them (and their parents) take care of the plants.

When they are big enough, send the plants (and the booklet) home with the students. (Alternatively, give them to the parents to take home after the Community Feast see page 35.)

Option Two: Plant the Seedlings in the Community

As the plants grow in the classroom, contact organizations, groups and stores in the community to see who is interested in receiving the plants. Suggestions for who to contact include: CSSS, community centers, youth drop-in centers, retirement homes, day cares, food banks, community-minded businesses. When you have found 3 to 5 places that are interested in receiving the plants, bring the list (and some background information about them) to the students. Alternatively, invite a representative to come and speak to the class. Let the class decide which place will receive the plants.

Prepare a booklet about growing their plant to give along with the plants.

Option Three: Start a Collective Garden in the neighborhood

See the following resources about starting a garden in the schoolyard or the neighborhood.

Evergreen: (“A Crack in the Pavement”: a film produced by Evergreen about schoolyard gardens in Toronto)

Edible Schoolyard: www.edibleschoolyard.org

Jeunes Pousses: www.jeunespousses.ca

Maison du Quartier Villeray: www.mqv.qc.ca

Here are a few very good guides about how to start a schoolyard garden.

“How to Start a School Garden” by the Marin Food Systems Project.
Retrievable at www.sustainabletable.org/schools/projects

“Le guide Pedagogique” by Jeunes Pousses.
Retrievable at <http://www.jeunespousses.ca/ressources/guides/potager>

Happy growing!

Other Seeding Activities

Bring in seeds of all kinds, shapes and sizes and get the students to guess what plant they come from and what fruit/vegetable they produce (e.g. avocado pits, peach pits, tomato seeds, bean seeds, radish seeds, squash seeds, etc.)

Sprout a seed in a glass jar a couple of weeks before this class. Line the glass jar with moist paper towel and place the seeds (beans or other larger seeds are recommended) between the paper towel and the glass of the jar. Cover the outside of the jar with dark paper so the sun does not enter. Keep the paper towel moist. The seeds will germinate; and when you remove the paper from around the jar, you will be able to see the roots growing down and the stem growing up. Bring this into the class to show the students how roots and stems grow.

Set the plants up in a station. Bring in cameras and ask the students to photograph the different stages of the seed sprouting. Make an album of the growth of the plant.



INFORMATION CAPSULE

Soil

“Growing mix is a lightweight alternative to soil sold in the spring at gardening centers, hardware stores and supermarkets. It comes in two categories: garden soil and potting soil.

Garden soil is composed mainly of black soil and is not recommended for containers since it tends to get compacted. It is sold under the names black soil, miracle soil and peat moss.

Potting soil is a mixture of peat moss, vermiculite, perlite and compost that is specially formulated to ensure good water retention and good drainage in pots and containers. This product is also sold under the names potting mix, starting mix, growing mix or transplanting mix. Give priority to mixtures that are very lightweight and do not contain chemical fertilizers.

Compost is a fertilizer made from the decomposition of organic waste. Homemade compost or vermicompost is the ideal addition to your new grower since it will allow you to complete the food cycle in your own home. Many commercial varieties are also available (shrimp, sea weed, sheep and cow manure, etc.), and all of them are effective. Compost should make up 50% to 30% of the mixture’s volume in order to ensure sufficient fertilization in micronutrients. A small quantity of perlite (5 to 10%) can be added to guarantee good drainage if the compost is very dense”.

Planting information

Follow the Seeding Calendar on page 72 to determine when to start the seeds and when they can be planted outdoors.

Purchase local, organic seeds since seeds that have been sprayed with fungicide can be toxic and harmful to skin.

Choose resistant varieties that are adapted to your climate (this information will be in the seed catalogue or can be obtained from the distributor)

Seeds should be planted 2-3 times as deep as the seed is large.

The soil should be gently tamped down (but not compacted) after the seed has been planted. It is important that the seed is in contact with soil, yet it is also important that the air is not completely pushed out of the soil.

The pots should be watered every day. Depending on how hot the classroom is, spray the pots with water 5-10 times. If the pots dry out by the end of the day, spray them again with water.

As soon as the seeds germinate (which happens when the stem appears at the soil level), the pots need to be in as much sunlight as possible.

Before the plants are transplanted outside, they need to be acclimatized. See page 58 for an explanation.

Further information about planting is provided by the Botanical Garden at: [HYPERLINK "http://www2.ville.montreal.qc.ca/jardin/en/info_verte/potager/legumes.htm"](http://www2.ville.montreal.qc.ca/jardin/en/info_verte/potager/legumes.htm) http://www2.ville.montreal.qc.ca/jardin/en/info_verte/potager/legumes.htm

Plant Needs

Plants need soil, nutrients, water, air, sun and space to grow. They take nutrients and minerals from the soil and use water to carry nutrients from the soil up the stem of the plant. Plants use the energy from the sun to transform carbon dioxide from the air and water into the food that they need. Plants also need space for their roots and branches to grow.

Plant Lifecycle

A plant starts as a seed (it also ends as a seed, which explains why this is a 'cycle'). When the seed gets moist, it expands and a root begins to push down into the soil. Then a stem starts to grow through the soil towards the light. When the stem reaches the surface of the soil, it needs sunlight. The stem continues to grow and leaves and branches grow from the stem. The plant continues to need sunlight and moisture as well as nutrients from the soil. Next, flowers form on the end of the branches. These flowers grow into fruit. Inside the fruits are the seeds of the plant. When the fruit falls to the ground, the seeds touch the soil. This begins the cycle again the following year. For further information and activities see: www.evergreen.ca/en/lg/lessons/seed-prod.html

Seeding Calendar

Vegetables	Indoor seeding	Outdoor seeding	Outdoor transplanting
Beans		Late May-Late June	
Beets		Mid-May	
Broccoli	Mid-April		May
Brussels sprouts	Mid-April		Mid to late May
Cabbage	Mid-April		May
Carrots		Mid-May	
Cauliflower	Mid-April		Late May
Celery	Mid-March		Mid to late May
Chard	Mid-April	Mid-May	Mid-May
Corn		Mid-May	
Cucumber	Early May	Late May	Early June
Eggplant	Late March		Early June
Garlic			October or early May
Ground cherry	Late March		Early June
Leeks	Early March		Early May
Lettuce (Leaf)	Mid-April	Early May	Late May
Lettuce (Head)	Mid-April		Late May
Onions	Early March	Early May (<i>tie in bunches</i>)	Early May
Parsley	Early March	Early May	Early May
Peas		Mid-May	
Peppers	Late March		Early June
Pumpkin	Early May	Mid-May	Early June
Radish		May-June	
Spinach		Mid-May	
Tomatoes	Late March- mid-April		Early June
Watermelon	Mid to late May		Early June

"Source: Montréal Botanical Garden. 2008. Indoor seeding: Annuals and vegetables. Horticultural Leaflet Web + Series of the Green Pages of the Montréal Botanical Garden. http://www2.ville.montreal.qc.ca/jardin/en/info_verte/semis/calendrier.htm

The Rooftop Garden Project

With innovative partnerships, mobilized citizens and simple gardening techniques, The Rooftop Garden Project has been inspiring the development of new green, edible spaces for the community in Montreal and around the world since 2004. From the beginning of the initiative, over twenty garden projects have sprouted up, not counting over two hundred flowered balconies. The participation of citizens and the rapid development of new gardens demonstrate that this new type of green space is relevant and packs social, ecological and educational potential. Turning paved spaces into luxurious gardens is indeed a powerful way to make the city greener and its communities healthier.

In September 2003, the City of Montreal's Department of Social Development mandated Alternatives to evaluate and develop rooftop vegetable gardens. After many experiments, the project adopted gardening with growers. Thanks to a 14-litre water reservoir, our Ready-to-Grow kits facilitate the rapid development of gardens while optimizing the growth potential of plants with a constant supply of water and oxygen. This system has numerous advantages for the urban gardener: it encourages home composting, has two to four days of water autonomy, is mobile and adaptable and allows soil quality to be tested at a reasonable price. Our Guide to Setting up Your Own Edible Rooftop Garden, available on our website www.lesjardins.ca, shows you how to build your own grower with a water reservoir using recycled materials. From an educational standpoint, the results are remarkable. Numerous youths from day camps have come to put their hands in the earth of our gardens. The Patro le Prévost, the ITHQ, the FACE School and the École Buissonnière all took advantage of our gardens to let the children discover the pleasure of gardening in the city. Students from McGill University and the UQAM also had the chance to garden in the city thanks to the gardens planted on the roofs of their institutions. We sincerely hope these experiences will multiply, particularly in educational institutions.

To inspire collective gardens to be set up in schoolyards, here are just a few examples of our models:

Santropol Roulant Garden, Montreal

This large vegetable garden has been the main demonstration garden for the project since 2004. It is intimately linked to the Santropol Roulant activities, a meals-on-wheels program in the Plateau Mont-Royal borough. All food production is used to supply the meal-on-wheels kitchen. Managed by a team member, it is maintained by a socially engaged volunteer community that comes to garden in small groups at set times, three times per week. A site for food production and edible rooftop gardening experimentation, it is also a place used for project promotion and public activities. Thanks to the garden's size and visibility, we can hold large events there. This luxuriant, productive green space attracts many visitors and inquisitive people.



Jardin le Prévost, Montreal

This linear garden has been set up on the terrace at the Patro le Prévost, a community and recreational center situated in the underprivileged Villeray neighborhood in Montreal.

The garden has transformed a previously unused space. Visible from the library and accessible to the numerous visitors that come to the center, the garden is cared for by volunteers. It is part of the collective gardens of Villeray at the Maison de quartier Villeray (which is responsible for food security projects in the neighborhood) and activities at the Patro le Prévost. Both a collective garden and an activity area for day camps, the site provides fresh vegetables to a meals-on-wheels program and offers stimulating and educational activities for the neighborhood's young people. As an addition to the traditional collective gardens, container gardens have great potential to inspire participants who would like to raise vegetables at home.



Jardin les Pénates, Quebec

This garden is a model for the self-managed, residential rooftop garden. Easily accessible by way of an outdoor staircase, it is also the ideal demonstration garden for Quebec City. The garden has proven to be a complete success by becoming a site of experimentation and discovery for participants with no concrete gardening experience prior to the project. The experiment was to see how a group of residents active in their social setting would organize themselves and ensure the garden's upkeep. Many children also participate in activities on the roof. A community composting project is in the works.



Golden Age Gardens

Golden age gardens give elderly residents the chance to get involved and be active in a community by participating in a collective activity that brings about social cohesion, a sense of belonging to a project and to a group as well as the feeling of being useful.

The production of fresh and organic fruits and vegetables is also at the heart of the program. For some residents, it's a way to "get back to the land" and the opportunity to share and transmit their agricultural knowledge to younger generations. Gardening also provides physical benefits as it is good exercise in itself. Finally, seniors take pleasure in gardening outdoors with the community and participating in a project focused on cultivating plants, adding life to the residence.





Public Markets



The Rosario Habitat Program: Rosario, Argentina

In the city of Rosario there are both very poor and very rich neighborhoods. The Rosario Habitat program works in the poorer neighborhoods. This program helps set up gardens and public markets in the poor neighborhoods. People in the community come together to garden. They make jams and preserves from the harvest in the gardens. The fruits (such as apples, peaches, pears, kiwi and oranges) are made into spreads and jams. Fruits, vegetables and jams and preserves are sold at these markets. People earn money from selling the products that they grow and make. This is a way for people to make money from products that they grow and make fruits and vegetables into delicious preserves.

*Making the Edible Landscape project,
Minimum Cost Housing Group.*



Public Markets



Nourrir Montreal: Montreal, Canada

There are many neighborhoods in Montreal where people cannot buy fresh fruits and vegetables. It costs over \$6 per person each day to eat healthy food. This adds up to a lot of money. Nourrir Montreal is an organization trying to find ways to make healthy food available to people who do not have much money. This organization has organized public markets in September and October in schoolyards in nine less wealthy neighborhoods around Montreal. The fruits and vegetables are sold directly from the farmer at lower prices. The markets include games for kids, information kiosks for community organizations and live music. They are a great opportunity to learn about local food and buy some inexpensive fresh fruits and vegetables.





Vegetables



Greenhouses: Inuvik, North West Territories

In Inuvik, the weather is cold. In July the warmest temperature is around 20°C. In January the temperature drops to -30°C. There are only a few months when the temperature is warm enough to grow fresh vegetables. Inuvik is also far away and can only be accessed by plane. Due to this, the cost of transporting fruits and vegetables there is high. A community greenhouse has been built so that people living in Inuvik can have more fresh fruits and vegetables. There are two areas in the greenhouse: community garden plots, where Inuvik residents (including Elders and people from community groups) come to grow vegetables for themselves, and a commercial greenhouse, where vegetables are produced for sale. There are classrooms for workshops and gardening classes. The greenhouses are helpful because Inuvik residents have more fruits and vegetables to eat. The problem is that the Inuvik diet does not traditionally include many fresh fruits and vegetables. People living in Inuvik have always eaten mostly seal, whale, caribou and arctic char. In the summer months they would also eat some berries. Some people living in Inuvik are concerned that the greenhouses will encourage people to eat less traditional foods. These foods are an essential part of the Inuvik culture.

Information available at www.cityfarmer.org/inuvik.html



Vegetables



Rooftop Gardens: Montreal, Canada

Everywhere you look in cities you see concrete buildings. Rooftop Garden projects see this as an opportunity to grow food on the flat roofs of urban buildings. This creates lush, productive, calm areas for gardening. Rooftop gardens reuse containers and rainwater to grow plants and produce healthy organic food. The Rooftop Garden Project has a garden at McGill University in downtown Montreal. All of the vegetables harvested from this garden are given to the Santropol Roulant meals-on-wheels program. This program prepares and delivers food to elderly people and others who cannot leave their homes. Volunteers at the garden learn how to grow food and about how the food chain works. Rooftop gardening helps people, communities and the environment. In the long term, the Rooftop Garden Project hopes to turn the city into a garden and city residents into gardeners.

Information available at rooftopgardens.ca





Animals



Raising Guinea Pigs: Lima, Peru

In Lima, guinea pigs are raised for food, to sell and to keep as pets. This is an ancient tradition in Peru. Families produce 10-30 guinea pigs, on average, for the family to eat and to sell. They sell them to neighbors and friends in the area. There are also small guinea pig farms in the area around the city. These farms hold thirty to fifty small animals. The guinea pigs are fed kitchen waste scraps and some grass. The guinea pigs, and other small animals (like quail) are kept on the flat roofs of houses and in backyards.

Information available at www.ruaf.org/node/83



Medicinal Plants



Traditional Medicinal Plants: Colombo, Sri Lanka

In Sri Lanka, growing edible plants is a tradition. Knowing of how to use plants as medicine is also part of Sri Lankan tradition. Many people in cities grow medicinal plants and herbs. This creates an income for poor urban residents and so helps the communities. It also provides natural and inexpensive remedies for people living in the area. Growing medicinal plants in the city also helps restore the lands. There are many different medicinal herbs that grow in Sri Lanka. Polpala leaves are used as a tea to help kidney troubles. Gotu Kola leaves are prepared as a tea that provides many different necessary vitamins. The gel from inside the leaf of the Komarika (Aloe Vera) plant is used to moisturize skin and heal wounds.

Information available from [Making the Edible Landscapes brochure](#) (p.7) – Minimal Cost Housing Group (McGill)





Nut and Fruit Trees



The Fruit Tree Project: Vancouver, Canada

Many people in Vancouver, British Columbia have fruit trees in their backyards. Unfortunately they do not always have time to harvest it and so, much of these delicious and nutritious fruits go to waste. Through the Fruit Tree Project in Vancouver, British Columbia people who have lots of fruit on their backyard fruit trees are paired with people who have the time and energy to harvest it. Most of the fruit harvested is donated to community organizations and people who do not have enough fresh fruit. The Fruit Tree Project works with local community kitchens to offer canning workshops so that people can learn how to preserve the fruits in the jams and sauces.

*Information available at www.vcn.bc.ca/fruit/home.html,
www.vcn.bc.ca/fruit/images/vftp_2006_harvest_report.pdf*



Aquaculture



Family Ponds: Cuba

In Cuba, families build small ponds to produce fish. Sometimes a couple of families work together to build the ponds and produce the fish. The ponds are dug in their backyard (or on common land of the people who are involved) or made out of concrete. Water in the ponds must flow in and out. Sewage or industrial farms must not pollute the water coming in. Sometimes people collect rainwater in barrels and feed this water into the ponds. This is a simple, effective and environmentally friendly way of providing water to the pond. The fish eat animals and water vegetables that live in the pond. There are enough fish produced to feed the families (and provide them with a constant source of protein, which is needed to stay healthy). Children, family members and neighbors often come together to work on the ponds, harvest the fish and share meals.

Information available at www.ruaf.org/node/608





Aquaculture



Fish-Production Systems: Hanoi, Vietnam

In Hanoi, Vietnam people produce fish in areas just outside of the city. These fish-production systems create jobs for poorer people living in these areas. The fish produced is a nutritious and inexpensive source of food for people living in Hanoi. Ten to twenty percent of the freshwater fish that is eaten in Hanoi, Vietnam comes these fish-production systems. These systems are good for the environment because they reuse and recycle urban waste and wastewater.

Information available at www.papussa.org/publications.html



Bread



The Dufferin Bread Ovens and Farmer's Market: Toronto, Canada

The Dufferin Bread Ovens and Farmer's Market in downtown Toronto is a place where people can come to bake their own bread, create and eat fresh pizzas and leave with free sourdough starter (to make their own bread at home). People watch and learn about how to bake bread and come to the space to create festivals and hold community events. Nursery schools come to visit and birthday parties are often held next to the ovens. People have picnics in the summer time and the bread and pizza making continues through the winter! Once a week, people can come and bake their own pizzas, with tomato and cheese toppings.

Information available at dufferinpark.ca/oven/wiki/wiki.php?n=Overview.FrontPage





Bees



The Chicago Honey Coop: Chicago, U.S.A.

There has been much concern lately about the number of bees dying for unknown reasons. Bees are essential to agriculture because they pollinate plants. Without pollination, plants will not produce fruits and vegetables. In Chicago, Illinois a group of beekeepers came together to create the Chicago Honey Coop. This cooperative trains under-employed people to work in the small business of raising bees and selling honey. The Chicago Honey Coop has over 100 hives on the west side of the city and on the roof of City Hall. The honey coop has been operating for three years. It does not use chemicals and produces natural honey. The members own the coop. The honey is sold at local farmers markets where the people buying the honey get to meet the beekeepers. Raising bees in the city is one way of “greening” the city and ensuring that bees continue to survive.

Information available at chicagohoneycoop.com



RESOURCES

Urban Agriculture

Bhatt, Vikram and Rune Kongshaug. (2005). *“Making the Edible Landscape: A Study of Urban Agriculture in Montreal.”* Montreal: Design group for low cost housing.

Levensten, M. (2005). *Farming in the city*. www.cityfarmer.org

Centre d'écologie urbaine: www.urbanecology.net

Maison de Quartier Villeray: www.mqv.qc.ca

Toitures végétales. *Implantation de toits verts en milieu institutionnel*.

Étude de cas : UQAM (contacter <http://www.urbanecology.net/>)

Rooftop and Container Gardens

Alternatives. (2008). *Guide to Setting Up Your Own Edible Rooftop Garden*. www.rooftopgardens.ca

Perrier, Yves. (2006). *Toits-jardins : Comment transformer un toit plat résidentiel en oasis urbain*. <http://guidesperrier.com>

McGee, Rose Marie Nichols and Maggie Stuckey. (2002). *The Bountiful Container*. New York: Workman Publishing Company, Inc.

Ecological Gardening

Gagnon, Yves. (2003). *La culture écologique pour petites et grandes surfaces*. Saint-Didace, Quebec: Les Éditions Colloïdales.

Ellis, Barbara W. and Fern Marshall Bradley. (1996). *The Organic Gardener's Handbook of Natural Insect and Disease Control*. Emmaus, Pennsylvania: Rodale Press.

Montreal Botanical Garden. <http://www2.ville.montreal.qc.ca/jardin/biblio/carnet.htm>.

Equiterre: www.equiterre.org

Greening Schoolyards

Evergreen: www.evergreen.ca

LifeCycles Project: www.lifecyclesproject.ca

The Edible Schoolyard: www.edibleschoolyard.org

Compost

Martin, Deborah L. and Grace Gershuny. (1992). *Rodale Book of Composting: Easy Methods for Every Gardener*. Emmaus, Pennsylvania: Rodale Press.

La ferme pousse-menu. www.pousse-menu.com

Recyc-Quebec: www.recyc-quebec.gouv.qc.ca

Écoles Vert Brundtland: www.evb.csq.qc

Community and Collective Gardens

Stiegman, Martha. (2004). *Au coeur de notre quartier, un guide pratique pour le démarrage et l'animation d'un jardin collectif*. www.actioncommuniterre.qc.ca

Education

Capra, F. (1999). *Ecoliteracy: The Challenge for Education in the Next Century*. www.ecoliteracy.org/publications/pdf/challenge.pdf

Dawson, Justine. (2002). *Where in the World...does your food come from? A series of lessons on the global food system and local alternatives for the elementary school level*. Lifecycles Project Society. www.lifecyclesproject.ca/resources/where_in_the_world.php

Farm Issues

Justicia for Migrant Workers. www.justicia4migrantworkers.org.

Equiterre. www.equiterre.org.

Union Paysanne. www.unionpaysanne.com.

Global Issues

Lappé, F.M., Collins, J. and Rosset, P. (1998). *World Hunger: 12 Myths*. 2nd Edition. New York, NY: Grove/Atlantic and Oakland, CA: Food First Books

LifeCycles Project. *Food Miles*. www.lifecyclesproject.ca/initiatives/food_miles

Organic seed suppliers in Quebec

Les jardins du Grand-Portage (Y. Gagnon) <http://www.intermonde.net/colloidales/>

La Société des plantes: <http://www.lasocietedesplantes.com/>

Les jardins de l'écoumène: <http://www.ecoumene.com/>

Food Security and Food Sovereignty

Alternatives: www.alternatives.ca

Equiterre: www.equiterre.org

Food First: www.foodfirst.org

Inter Pares: www.interpares.ca

L'union des producteurs agricoles: www.upa.qc.ca

Other Quebecois and Canadian Organizations

CIDA (Canadian International Development agency): www.acdi-cida.gc.ca

City Farmer: cityfarm@interchange.ubc.ca

The Rooftop Garden Project

liberating spaces for healthy cities



The Rooftop Garden project allows citizens to produce their own food, green their neighborhoods and build healthy communities.

If you would like to get involved in our gardens or obtain more information about the project and gardening, visit our website:

www.rooftopgardens.ca



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