

FOOD GROWING

Growing food on school grounds is an excellent way for students to learn where their food comes from and how food is grown, prepared and consumed. It also provides the opportunity for discussing the environmental issues associated with large-scale farming, packaging of food in grocery stores and the energy required for transporting food to stores and to our tables at home. Locally grown food is becoming more common in urban areas; people can control the quality of what they are eating by using organic growing techniques, increasing their nutritional health and bringing them closer to the land.



Design details

Practical Tips for Growing Food on School Grounds

- Find a sunny space reasonably sheltered from strong winds, with good drainage and access to water.
- Create garden plots for food plants, incorporate them in a shrub border around the school, or grow them in pots and containers.
- Provide paths between food-growing plots for kneeling, wheelchair accessibility and to accommodate the use of tools and wheelbarrows.
- Use raised beds in high-use areas so plants are less likely to be stepped on and for children in wheelchairs to access.
- Make sure your soil is suited to the food you wish to grow. Soil testing will determine soil pH and determine if any soil amendments need to be added.
- Maximize gardening opportunities during the school year and reduce summer maintenance by choosing plants that can be planted in the spring and harvested in the fall.
- Create links with celebrations and festivals — harvest festivals and cultural food festivals are just two of the unlimited possibilities.
- Choose plants that everyone enjoys eating — experiencing the food you have grown is the most rewarding part of all!

Creating Your Veggie Garden

1 Tools to have on hand

It would be ideal if your school gardening project could purchase, have donated or have access to:

- Four spades, rakes and hoes; and
- A trowel for each person.



You will also want to have easy access to water hoses and watering cans, wheelbarrows and garden carts, cultivators, gardening gloves and plant labels and markers. Remember to provide regular-sized tools for teachers, parents and volunteer community members, and child-sized tools for the various age groups and classes that will be planting and tending the garden.



did you know...

Having a tool shed to store tools and gardening equipment is a helpful addition to a school gardening program. It also allows for better access to tools and equipment during summer months for volunteers.

2 Preparing the site

- Lay out plots and paths with rope or wooden stakes.
- Orient the plots along a north-south axis, that is, with the longest sides running from north to south. This will give plants maximum exposure to the sun and minimize shading problems.
- Arrange plots in rows, squares, rectangles, circles or spirals. Be creative as long as you keep in mind the sun requirements for your plants.
- Make garden plots a maximum of 1.2 metres (four feet) wide so they can be worked from both sides and are easily accessible for younger students.
- Construct raised beds for accessibility, safety or variety, as needed. See the *Container Gardening* fact sheet for more information on building container gardens.
- Prepare pathways using paving stones, gravel, wood chips or mown grass. Make main pathways 1.2 metres (four feet) wide and paths between garden plots a minimum of 75 centimetres (30 inches) wide to allow for wheelbarrows. Make sure the paths meet school safety and accessibility guidelines.
- Edge pathways with stones, bricks or plastic edging so plants do not try to inhabit the pathways and so children understand the boundaries of the garden and their space.



St. James Town West Park

Preparing the soil

- Test your soil pH — soil that is extremely acidic or alkaline may require soil amendments to make it suitable for growing crops.
- Prepare your garden plot by removing weeds (and their roots) once the soil is tilled. For areas where continual weed growth is a concern you may want to prepare your plot in advance by laying black plastic over the site and killing the grass and weeds in the area. Then you can till the garden plot and handpick any remaining weeds that grow back.
- Add organic matter — compost, leaf-mould or well-rotted manure — to enrich the garden soil. Once you have been gardening for a while, the compost from your own garden can be used to provide nutrients for the next year.

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Selecting Plants

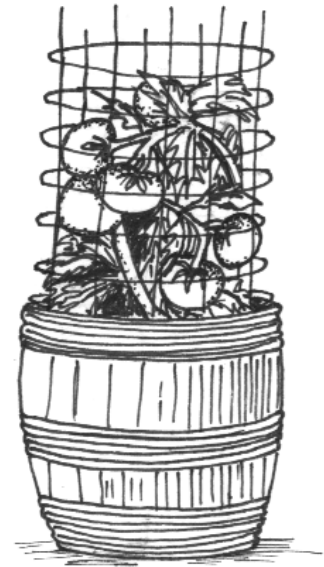
- ☛ Select plants based on the goals of your project (e.g. cultural significance, healthy eating).
- ☛ Research the plants that grow in your area. Differences in temperature and duration of sunlight will determine which crops you can grow. Contact local horticultural clubs or nurseries to find out what grows best in your area and under what conditions.
- ☛ Try companion planting. Companion planting is the system of growing particular combinations of plants together to improve their health and growth. The following list provides a few examples:

did YOU know...

Most crops can be grown in containers, however, compact tomato varieties, radish, lettuce, spinach, small bean varieties, strawberries and herbs all tend to do very well in containers.

- ☛ Grow nasturtiums near leaf crops to act as a trap plant for aphids. Nasturtiums grown at the base of fruit trees can also drive away woolly aphids.
- ☛ Provide shade for lettuce with tomatoes, reducing the occurrence of bolting.
- ☛ Grow carrots, cucumbers, radishes and strawberries with leaf crops.
- ☛ Think of growing space. Root crops do not require as much space (and sun) above ground, so grow plants with them that require less root space, but more above ground space: tomatoes with carrots, lettuce with onions, bush beans with potatoes.
- ☛ Repel with smell! Interplant basil with tomatoes to repel aphids and tomato hornworm. For even more deterrence, chop and scatter the leaves of the basil plant around tomato plants. Growing onions with carrots can keep away carrot fly, which is fooled by the strong smell of the onions.
- ☛ Grow brassicas (broccoli, cabbage, brussels sprouts, cauliflower, kale) with aromatic plants: potatoes, celery, dill, chamomile, rosemary, beets, onions and nasturtiums. Brassicas do not do well with strawberries, tomatoes or pole beans.

- ☛ Try growing sprouts. Sprouts are quick and easy to grow and add valuable flavour and nutrition to salads and sandwiches. Sprouts can be grown in the classroom in shallow trays, mesh bags or jars with a mesh cover to complement your garden outdoors.
- ☛ Select plants that can be sown and harvested during the school year. This could include radishes, spring onions, early potatoes, early sown peas, winter spinach, cauliflower, broad beans, turnip, carrots, sprouts and cabbages, leeks, root crops, runner beans, main crop potatoes, pumpkins and squash. Check seed packets and catalogues for times of sowing and harvesting, and select varieties that will be ready at the right time of year.
- ☛ Don't forget about planting herbs to help flavour the soups and salads your school will be creating and enjoying.
- ☛ Think about growing fruit-bearing vines, native berry-producing shrubs (e.g. blueberry and blackberry) or fruit trees.



5

Planting

- ☛ Sow seeds directly into the soil or start the seeds indoors and then plant them when the weather is warm enough. Check the seed package for germination times.
- ☛ Make sure you clearly mark where everything will be planted on planting day.
- ☛ Be sure to give plants enough room to grow. For example, carrots, garlic, peas, onions, leeks and beets can all be planted two to 15 centimetres (two to six inches) apart, whereas peppers, broccoli, cauliflower, cabbage, kale and lettuce need to be spaced 30 to 45 centimetres (12 to 18 inches) and pumpkins and squash require 60 to 90 centimetres (24 to 36 inches) between them.
- ☛ Rotate your crops to conserve soil conditions. Crop rotation involves rotating the place where you grow certain family groups of vegetables (e.g. legumes, brassicas) yearly over a three- or four-year cycle. This helps to avoid a build up of pests and diseases and maintains a balance of nutrients in the soil. The following chart provides an example of a four-year rotation cycle for growing four families of vegetables.

PLOT	1ST YEAR	2ND YEAR	3RD YEAR	4TH YEAR
A	Roots	Potatoes	Onions & legumes	Brassicas
B	Brassicas	Roots	Potatoes	Onions & legumes
C	Onions & legumes	Brassicas	Roots	Potatoes
D	Potatoes	Onions & legumes	Brassicas	Roots

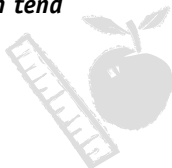


Farming the Woodland First Nations Way

“The Woodland First Nations grew three main crops: corn, bean and squash and they called them ‘The Three Sisters’. Many little hills of soils were created. Fish was used as fertilizer, placed strategically in the centre of each little hill. When the hills were ready, a hole was dug out of the top and four corn seeds were planted inside. When the corn grew to about 15 centimetres, two bean plants were planted with the corn. The corn gave the beans something to climb up and the beans released nitrogen into the soil. Nitrogen is a very important plant food. In between all the little hills of corn and beans, squash was planted. Squash spread very big leaves that shaded the soil, kept it moist and blocked out the sun so weeds couldn’t grow. This method of farming provided fertilizer, plant support and weed control, all naturally!”

(Modified from Life Spin, *Pocket Sized Farms*)

Consider community garden plots, especially in higher density urban neighbourhoods as a way of involving the community in your school gardening program. These programs can be especially beneficial over the summer months when community members can tend the garden space while using it for their own vegetables.

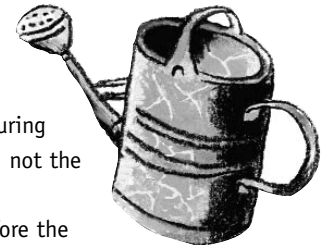


Broadacres Junior School

6

Watering and Maintaining Your Veggies

- Provide frequent and gentle watering to germinate seeds. Once the sprouts emerge, water more deeply, but less often. Remember you can drown your seedlings.
- Water in the early morning when the sun is not at its peak. Watering during midday can burn your plants. Also, remember you are watering the soil, not the plants!
- Allow the soil to just barely dry out once seedlings are established, before the next slow, deep watering.
- Feed your crops with organic plant food (e.g. compost, liquid kelp or worm castings) to help provide nutrients.



- Collect water in rain barrels that are connected to roof leaders (if possible) for hand-watering your vegetables.
- Weed regularly to avoid competition with your crops. Once your plants fill your garden plots the need for weeding will be reduced.
- Make weeding fun and treat it as an opportunity for close-up discovery and observation instead of an arduous task.



Ridpath Public School



Robert Bateman Public School



7

Harvesting

- Growing food provides a great opportunity to share with the community through the Food Bank or Field to Table programs.
- Harvesting is a time for celebration and reflection. Enjoy the good food you have grown. Start thinking about activities for putting your garden to bed for the winter and preparing for next spring.

Variations on Veggie Patches



a) Multicultural Gardens

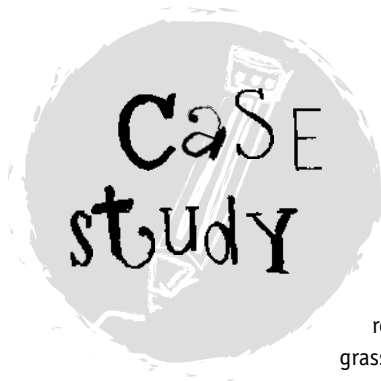
Gardening brings people of all ages, cultures and backgrounds together to share in a common experience. Food growing, in particular, can be a great way to explore and celebrate the various cultures in your school, or community as a whole. Here are a few simple tips for starting a multicultural garden at you school:

- ✦ Have students share what types of fruits and vegetables they eat at home or in their country of origin. From this, the class can develop a list of plants to grow in your school garden.
- ✦ Incorporate vegetables, herbs, fruits and medicinal plants that are used by various cultures. Explore the relationships and uses of each plant type.
- ✦ Create plots that correspond with the foods from different cultures, or mix them together in one larger plot.
- ✦ Design the gardens using the techniques of different cultures. Some examples include: the use of trellises and inter-planting used by Italian and Portugese gardeners to maximize every inch of space; the use of twigs and branches and non-linear patterns of Chinese gardens; and the symmetrical and symbolic planting style of traditional Japanese gardens.
- ✦ Incorporate cultural festivals and celebrations with the planting and harvesting of the foods from your garden.

b) Orchards

An orchard is a fruit garden. Orchards can be just as fun and rewarding as veggi gardens and provide students with fresh fruit for eating and baking. They are also a great place to celebrate a fall harvest!

- ✦ Plant as many trees as you have space for. An orchard can start with as few as two trees.
- ✦ Don't create a monoculture of just one species. As with vegetable gardens, orchards can benefit from a mix of fruit trees.
- ✦ Use heritage species. Heritage species are the original fruit and vegetables that our ancestors grew. They are reproduced using open-pollination (no human modification) which helps to preserve a natural gene pool for future generations.
- ✦ Don't forget about the under-story. Orchards do not have to be maintained with mown turf under neat rows of fruit trees. Think about the open meadows and fields where wild apple trees grow. An under-story of grasses and wildflowers, similar to those species found in a meadow, will provide a home for birds and insects that help pollinate your fruit trees and spread their seed.



Restoring More than a Name *Ossington Old Orchard Public School,* *Toronto, Ontario*

Students at Ossington Old Orchard Public School discovered their school property was previously the site of an old orchard. As part of their extensive school ground naturalization work they decided to restore the orchard. With a little hard work and a lot of good fun, what was once a bare patch of turf grass is now a thriving orchard.



Ossington Old Orchard Public School — BEFORE



Ossington Old Orchard Public School — AFTER

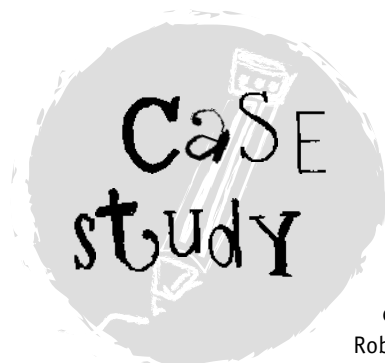
c) Pizza Gardens

- Design your garden in the shape of a pizza. Plant different crops using the outline of each pizza slice, and create paths between each slice.
- Include herbs, spices and vegetables such as basil, parsley, oregano, onion, peppers, tomatoes and garlic to add to your homemade pizza.
- Celebrate with pizza days at school.



d) Animals on School Grounds

Although not practiced in North America, many schools in England have incorporated livestock on their school grounds. For many students in urban centres, this is their only experience with animals and livestock typically found on a farm. Having hens and chickens, cows and goats on school grounds provides a number of natural learning experiences.



Not Your Average School Grounds *Sir Robert L. Borden Business and Technical* *Institute, Scarborough, Ontario*

The naturalized courtyard at Sir Robert Borden has been developing for over six years in an effort to provide high school students with hands-on opportunities to experience nature and explore how healthy ecosystems work. Amidst their 20 by 30 metre courtyard can be found a pond powered by a photovoltaic panel; trees and shrubs providing bird habitat; a wildflower patch; cold-frames for growing their own plants; sculptures and signs; five composters, including a vermicompost container; a rooster and chickens. Yes, chickens! The chickens are used to study reproduction as part of the science curriculum. Students watch incubated eggs hatch into chickens that then make the courtyard their home. For many students this is their only contact with nature and gardening. Students watch tadpoles developing into toads in the pond, and learn how human food systems are a part of natural systems. Over the summer months, the outdoor classroom is shared with the community and a local daycare, Not Your Average Daycare, who help look after the garden and all its inhabitants.



Sir Robert Borden Collegiate Institute

Codes and Safety Standards

- Do not use plants that have poisonous parts (e.g. castor beans, black cherry trees) or may pose allergy problems (e.g. nut trees).
- Do not use chemical pesticides or fertilizers. Use organic fertilizers such as compost (or make compost tea) instead. See the *Compost and Mulch* fact sheet for more information.
- Teach children to never taste any part of a plant unless their teacher says it is safe to do so.
- Create tool rules — tools are not toys. Use the appropriate tool for the task, clean all tools when finished and store tools in a safe, designated place.
- Do not use plastic tools designed for sandbox play. They are not sturdy and will break easily, possibly causing injuries.
- Make sure you have the proper-sized tools for the different age groups that will be gardening.
- Provide plantings in raised beds as well as surface plantings for greater diversity and accessibility.



Where to *gO* from here?

Sources for this fact sheet

- Brown, Maggi. 1996. *Growing Naturally: A Teacher's Guide to Organic Gardening*. Crediton, Devon: Southgate Publishers Ltd.
- Learning Through Landscapes. 1999. "Growing food in school grounds". *Escape* 19: 7-10.
- Life Spin. 1999. *Pocket Sized Farms: Children's Garden Manual*. Volume 1. London, Ontario: Life Spin's Fire Hall 5 Publications.
- Rotteau, Lynda. *School Gardens Workbook*. Goderich, Ontario: Earth Friendly Gardens.
- Thibault, Nicole. 1994. "Multicultural gardening" in *Green Teacher* 38: 14-15.

Organizations and Web sites

- City Farmer, Vancouver, British Columbia: www.cityfarmer.org
- Earth Friendly Gardens, Huron County, Ontario: www.geocities.com/rainforest/vines/GOIG
- Learning Through Landscapes, England: www.ltl.org.uk
- Toronto Community Garden Network and FoodShare, Toronto, Ontario: www.foodshare.net/grow.htm

Example projects

- Broadacres Junior School, Etobicoke, Ontario: (416) 394-7030
- Ossington Old Orchard Public School, Toronto, Ontario: (416) 393-0710
- Phoenix School, Headingly, Manitoba: (204) 889-5053
- Robert Bateman Public School, Ottawa, Ontario: (613) 737-3169
- Robertson Memorial School, Goderich, Ontario: (519) 524-8972
- Ronald Harvey Elementary School, St. Albert, Alberta: (780) 459-5541
- Sacred Heart/Sacre Coeur, Estevan, Saskatchewan: (306) 634-4249
- Sir Robert Borden, Not Your Average Day Care, Scarborough, Ontario: (416) 396-6810