



BC Agriculture in the Classroom Foundation

SCHOOL GARDEN RESOURCE

Learn how to build a garden at your school!

Step-by-step instructions on how start-up and maintain a school garden year-round based on BCAITC learnings from operating The Pencil Patch.



INSPIRED BY



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About Ag Adventures

Ag Adventures is a BC Agriculture in the Classroom Foundation (BCAITC) educational program for K-12 classrooms. All grade levels can participate in the free educational garden tours offered with Ag Adventures. They provide an opportunity for students to get outside, enjoy the fresh air, and get their hands dirty in the soil – all while learning about BC’s agriculture and food story!

Ag Adventures provides education on BC agriculture subjects including soil, pollinators, water preservation, growing zones, the Agriculture Land Reserve, invasive species, greenhouses, crop rotation, and more. Bring your classroom to our two outdoor classrooms filled with nature’s surprises and delights! Ag Adventures take place at two locations:

- Stable Harvest Farms: Langley, BC
- The Pencil Patch: Abbotsford, BC

We are excited to share what we have learned from The Pencil Patch in this School Garden Resource so that you can create a similar experience at your school

About The Pencil Patch



What better way to provide students with the opportunity to visit a working garden than to create one ourselves! Supported by the City of Abbotsford, community and schools come together at The Pencil Patch – a garden for discovery and learning. It also give us the chance to get out of our offices and play in the soil!

Highlights:

- 14 Learning Stations: Provide fun and interactive BC agriculture subjects such as soil, pollinators, water, growing zones, the Agriculture Land Reserve invasive species, dairy, and more.
- Large Garden Bed: Grows pumpkins, corn, beans, and rhubarb.
- Medicine Wheel: This traditional Indigenous concept provides learnings about the interconnectivity of the natural world to people.
- Pollinator Garden: Planted especially to attract and support pollinators.
- The Milk House: A former milk storage location for a 1920's dairy farm, the Milk House now holds the garden’s tools. This site also provides a talking-point for lessons on milk production.
- Raised Harvest Bin and Flower Beds: Showcase carrots, sunflowers, wheat, radishes, and greens as well as dahlias, marigolds, daffodils, lavender, nasturtiums, snapdragons, chamomile, lemon balm, agastaches, and scarlet runner beans (great for hummingbirds)! Plus herb containers display fragrant thyme, sage, chives, mint, and rosemary.

About Stable Harvest Farms



Stable Harvest Farms is an expansive 65-acre farm located in Langley. It was created in 2020 with a vision to grow food for the community and supports local food banks, community kitchens and other charitable organizations to get produce to those in need. The educational part of the farm brings community and schools together to enjoy locally grown produce.

Highlights:

- 14 Learning Stations: Provide fun and interactive BC agriculture subjects such as soil, pollinators, water, growing zones, invasive species, bats, owls, bugs, greenhouse birds, and more.
- Greenhouses: Showcase different ways to grow food all year-round.
- Food Packing Facility: Provides learning on how food makes its way from field-to-table.
- Beehives: Get the inside “buzz” on beekeeping!
- Picnic Area: A grassy area provides plenty of scenic spots to relax and enjoy snacks or lunch.

Getting Started – Your Garden Plan

Before you start building and planting a garden at your school be sure that you have contacted and have support from:

- Your Principal
- The Building and Grounds Supervisor for your school district
- Your Parent Advisory Council
- Other teachers in your school
- Your community – reach out to groups and volunteers for help with the construction of plots and garden maintenance. Groups that may be able help include senior homes, community centres, churches, etc.

We also recommend that you have a clear rationale as to how a garden will support the curriculum at your school.

January

Starting your Garden Plan

First you will need to decide on a location for your garden beds. Ideally, you will want a central location where the beds will have access to full sun and a water line. For some schools, security is an issue. If it's an option for you, a courtyard in school grounds, or a fully fenced area, will help to keep out cats and dogs, and those who may be interested in helping themselves to your fresh vegetables.

- Make a sketch of your designated growing area, and include the placement of your garden beds.
- Decide on whether you want to use raised beds or in-ground beds, or both. Using a combination of raised and in-ground beds provides you with more flexibility during the gardening season. Raised beds allow you to plant earlier in the year, and can help contain invasive plants, such as mint, that spread out rapidly and are difficult to control. In-ground beds provide more space, so are better for growing larger crops, such as **corn** and require less watering in the summer.

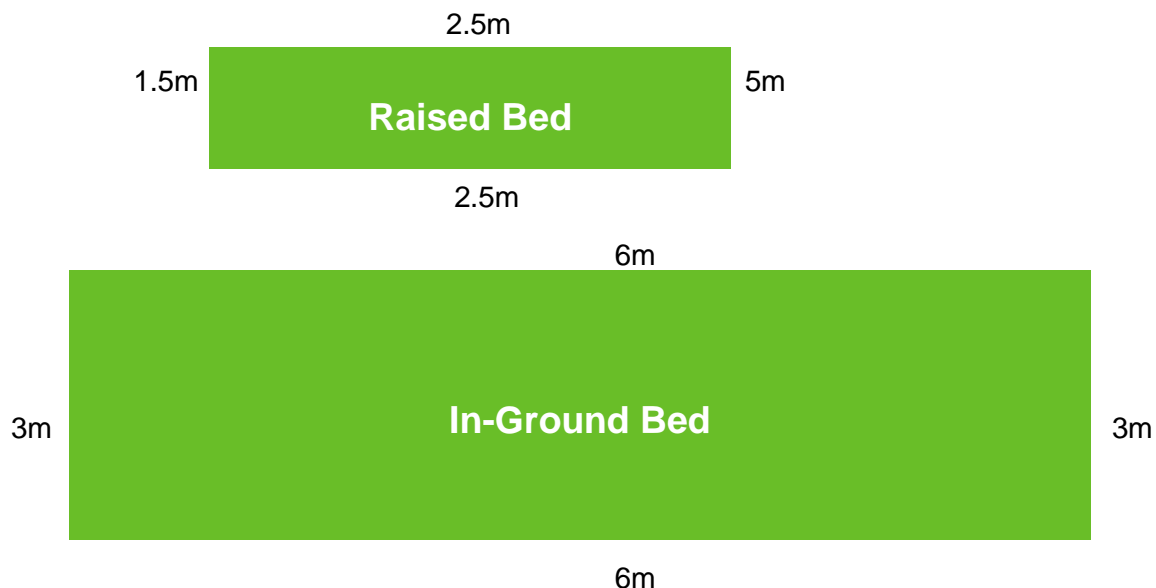
Sizing the Beds

Once you have decided on your combination of raised beds and in-ground beds, measure out your designated growing area(s) and determine the sizes of you garden beds.



*Recommendation: A manageable size for a class of approximately 30 students is 3m x 6m for in-ground beds and 2-4 1.5m x 2.5m for raised beds (see example):

Adjust appropriately based on how much land you have.



Tip: If this is your first year growing a school garden, start small. You can always expand your garden in subsequent years once you have a feel for how much space you have, and the level of support and participation from your school and class(es). Some schools kickoff their growing and garden experience by participating in our [Planting a Promise](#), and/or [Harvest Bin Project](#) programs. Visit www.bcaitc.ca for more information.

Planting in Tubs

For some schools with limited space or less 'gardeners', large plastic tubs are a good alternative to in-ground or raised beds. They take up minimal space, can be easily moved around when empty, and are good for containing aggressive or invasive plants, such as herbs and ornamental grasses.

Tubs that can be used for planting: Heavy black nursery tubs used for growing trees; galvanized water troughs for livestock, etc.



Laying the Ground Work

Soil

Healthy soil is the key to a successful garden. Take a close look at the soil where you plan to plant. Is it part clay, sand or silt? The ideal type of soil is a balance of all three materials. If you are not sure what soil type you have, take a sample to your local garden centre or nursery for analysis and guidance.

If you are purchasing soil for your tubs or to add to your raised beds we recommend a sea soil, which can be found at your local garden centre or nursery.

You may need to improve your soil with well-rotted compost, peat moss or other soil amendments. You should go through this process every year, or every other year, to keep the level of organic matter in the soil high.

Growing Zones

Before purchasing your seeds, identify and familiarize yourself the growing zone for your area. Growing zones are geographic regions that can support specific plants, flowers and trees, and define a minimum range of temperatures that a plant or tree can survive safely in that zone. For example, the Lower Mainland Region in BC is designated as a zone 7.

Seeds



Make a list of what you would like to grow in your garden. If you are a first-time gardener you will discover that not everything can grow in the conditions provided by a school garden. Through trial and error, each season you will learn which plants thrive in your garden, and those that do not. A garden log is a good way of keeping track of the plants that grow well in your garden, and ones to avoid planting

in future seasons. We have compiled a list of plants that have done well in the Pencil Patch Garden. (See March, April and May planting).

Specific seed varieties are available online from these nurseries:

- West Coast Seeds: <https://www.westcoastseeds.com>
- Stokes Seeds: <https://www.stokeseeds.com/ca>
- McKenzie Seeds: <https://mckenzieseeds.com>

You can also purchase seeds from local nurseries in early spring. Seed companies have a wealth of information on choosing, planting, growing and harvesting crops. When selecting your seeds, also think about when the plants will be ready for harvest. A school garden needs crops that mature in early summer so that students can harvest them before the end of the school year.

Be sure to purchase new seed every year. Older seed from previous growing seasons may not germinate and will also be more susceptible to disease.

February

Get ready for the gardening season.

Tools

Take an inventory of tools available at your school. Purchase any new tools you'll need for the coming growing season. Some tools to have on hand:

- Work gloves/garden gloves (to protect gardeners' most important tools – their hands)
- Hoe
- Steel garden rake
- Spading fork
- Hose with spray nozzle attachment
- Wheel barrow
- String for measuring garden areas
- Wooden stakes for labeling crops
- Hand tools for students (trowels, rakes)
- Watering cans for students

March

Prepare garden beds for the season.

Soil Amendment

When you first start a garden, and after every summer of growing crops, you need to replenish the nutrients in your soil. Gardeners call this 'amending' the soil.

First, cover the soil with a layer of well-rotted compost or manure (about 5cm to 10cm). Have your students mix the amendment into the top layer of soil. This loosens up the soil, adds organic matter and will give you better growing results. Since heavy rains in the Lower Mainland make the soil acid, you can also add a small layer of garden lime to the amendment to sweeten the soil. For in-ground beds, that are lower to the ground, and at greater risk of frost, wait until April to begin working the soil. This also gives the soil more time to dry out in preparation for planting.

Seeds

Using the list you made in January, order or buy your seeds from local nurseries.

Planting

Early March Planting

If you have access to a greenhouse, or even sunny windows in your classroom, you can start some plants early in seed trays, which you can then transplant to tubs or garden beds in April. Some plants that can be planted early include:

- Swiss Chard
- Lettuce
- Peas
- Green Onions

Planting Guidelines

Check the back of each seed packet for specific instructions on planting depth and spacing, number of days to maturity, etc.

Growing an assortment of grains can be beneficial for educational purposes to show students the many types of grains we grow in BC and Canada. Seeds for growing wheat, barley and oats can be purchased from local feed stores.

Crop Rotation

Growing the same, or related crops, in the soil for many seasons in a row depletes it of nutrients. Crop rotation helps maintain a balance of nutrients, organic matter and microorganisms necessary for healthy soil. A good rule of thumb for organic gardening, and good yields, is to try to rotate plant families from one season to the next. For example, if you grew carrots the previous two seasons in the same area, the next season plant lettuce.

April – May Planting

When	Transplant	Direct Seeds
April	Swiss chard (Northern Lights variety) Lettuce (Black Seeded Simpson, Butter Crunch varieties) Green onion sets Peas (Knight, Spring varieties)	Potatoes (Warba variety) Spinach (Sardinia variety) Radishes (Sparkler variety) Carrots (Nantes) Sweet peas Beets (Ruby Queen variety)
May	Herbs (mint, chives, rosemary, basil, sage, cilantro, parsley). Flowers annuals	Corn (Gourmet Sweet variety) Pumpkins (Field Trip variety) Sunflowers (Giganteus variety) Beans <ul style="list-style-type: none"> • Scarlet runner beans (Scarlet Emperor variety) • Pole Beans (Blue Lake variety) Grains (available at nurseries or feed stores) <ul style="list-style-type: none"> • Wheat • Oats • Barley • (Tip: label each crop, as they look very similar until they mature).
June		Plant second crop of carrots for the fall

Preparing to Plant

Using a garden rake, spading fork, or shovel, turn the soil so that it's loose and easier for students to make rows and plant the seeds.

Fertilizer



Mix in a *slow-release fertilizer* (water-insoluble nitrogen (WIN) fertilizers which last for 8 to 12 weeks) into the soil to maximize growth of your crops. Slow-release fertilizers are available at your local nursery. Be sure to water the plants and surrounding soil after you have mixed in the fertilizer. Check the bag for the slow release formula 6-8-6.

Spring Maintenance Schedule



Weeding

As your crops continue to grow, set up a weeding schedule of 1-2 times a week. If the weather is warm, extra weeding may be necessary.

If the weather is warm and rainy, extra weeding may be necessary.

- Technique: carefully hand-weed around the crops, and use a hoe between rows. Weed your garden when the weather is hot and sunny as this kills the roots of the weeds and keeps them from growing back

Tip: Pull out weeds when they are small. If you wait until they are larger, they will choke out plants and minimize the production of your crops.

Watering

Make sure crops are well watered. Although spring is usually a wet season, there can be years that are unseasonably warm and require extra watering.

Fencing

Depending on the location of your garden, you may want to invest in some fencing around the beds to keep out unwanted pests such as rabbits. Using chicken wire is an inexpensive and easy way to protect your crops. This can be found at any home improvement store.

Thinning the Rows

To ensure a good yield from your crops, you should ‘thin out’ crops such as carrots and beets once during the season when the plants are still small (1 to 1.5” tall). Thinning the rows simply means selectively pulling out some of the plants that are growing too close together so that the remaining plants have enough space to ripen to the optimum size and shape.

Harvesting

Harvest Schedule:

Depending on how warm the spring is in your region, you may be able to harvest lettuce and spinach as early as May. The following is a general schedule that will vary depending on the weather and your zone.

June

- **Lettuce** – break off the leaves at the base of the plant
- **Swiss Chard** – break off the leaves at the base of the plant
- **Radishes** – grasp each radish by the base of the green top and pull
- **Green Onions** – grasp each onion by the base of the green top and pull
- **Spinach** – break off leaves at the base of the plant

July to September

- **Beans** (Harvest in July for eating, and in September to collect the seeds)
 - **Scarlet Runner Beans** – use two hands to break off the stem at the top of each bean
 - **Pole Beans** – use two hands to break off the stem at the top of each bean

September to October

- **Sunflowers**
 - Cut the heads off the sunflowers before the fall rains begin. Sunflowers are ready for harvest when the plant becomes wilted, dry and brown, and the underside of the head turns yellow. Cut off the heads, leaving a few inches of the stem intact, and bring them inside for a few days to allow the seeds to dry. Harvest the seeds when dry. Tip: To prevent losing seeds during drying, place each sunflower head in a brown paper bag, securing around the stem with a piece of string or twine. Turn it upside down and hang it in a warm, dry spot with good ventilation.
- **Carrots**
 - Grasp each carrot by the green tops and pull out of the ground. Carrots can be harvested until first frost.
 - Tip: Loosening the soil with a garden trowel or fork, or watering the soil first, makes it easier to pull up carrots without separating the root from the green tops. Pull out a couple of test carrots first to check that they are at the right size for their variety and ready for harvesting.
- **Pumpkins**
 - Harvest when completely orange and stems are still firm

Summer/Fall Maintenance Schedule

June

Watering

Set up an irrigation system or plan for watering. Make sure plants are continually well watered, especially those growing in planters or pots, since they dry out more quickly than in-ground beds. Recommendation: Ask your summer volunteer gardeners to join you a couple of times for watering and weeding to familiarize themselves with your garden and crops – they might enjoy participating and sharing in an early harvest too!

July

Water as necessary

Weed regularly

Train beans to grow on arbor or pole by gently lifting any vines on the ground and twining them around an arbor or pole.

August

Water as necessary

Weed regularly

September

Clean up any old summer crops

- For in-ground and large raised beds, plant fall rye as a cover crop for the winter
 - A cover crop will enrich the soil, replacing nutrients and hold the soil in place during the winter

October/November

Garden clean up

- remove old crops as they die off Don't forget, the dead plants and weeds that you clean out now become valuable additions to your compost pile
- start a compost program if your school does not already have one – find a local resource – We have a partner in Net Zero Waste <https://www.netzerowasteabbotsford.com/#home> to help us with our composting
- clean and store garden tools for the winter
- start planning for next year

Other School Garden Resources



Healthy Eating at School:

<http://healthyeatingatschool.ca/in-the-garden>

Environmental Youth Alliance:

<https://eya.ca/our-programs>

The Evergreen Foundation:

<https://www.evergreen.ca>

For more tips on gardening, get in touch with your local Master Garden Club, which can be found at your local garden centre.

Curriculum Connections Chart

Grade	Big Ideas	Curricular Competencies	Content
Science K-3	<ul style="list-style-type: none"> • Plant and animals have observable features. • Daily and seasonal changes affect all living things. • Living things have features and behaviours that help them survive in their environment. • Observable patterns and cycles occur in the local sky and landscape. • Water is essential to all living things and it cycles through the environment. • Living things are diverse, can be grouped and interact in their ecosystem. 	<ul style="list-style-type: none"> • Demonstrate curiosity and a sense of wonder about the world. • Observe objects and events in familiar contexts. • Make exploratory observations using their senses. • Make simple measurements using non-standard unit. • Experience and interpret the local environment. • Represent observations and ideas by drawing charts and simple pictographs, and provided tables. • Make and record observations. • Consider some environmental consequences for their actions. • Communicate observations and ideas using oral or written language, drawing or role-play. • Biodiversity in the local environment. 	<ul style="list-style-type: none"> • Basic needs of plants and animals. • Adaptations of local plants and animals. • Weather changes. • Seasonal changes • Classification of living and non-living things. • Names of local plants and animals. • Knowledge of First Peoples- local First Peoples knowledge of the local landscape, plants and animals. • Water sources including local watersheds. • Water conservation.
Career Education K-3	<ul style="list-style-type: none"> • Communities include many different roles requiring many different skills. 	<ul style="list-style-type: none"> • Identify and appreciate the roles and responsibilities of people in their schools, families, and communities. • Recognize the basic skills required in a variety of jobs in the community. 	<ul style="list-style-type: none"> • Roles and responsibilities at home, at school, and in the local community. • Jobs in the local community.

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Grade	Big Ideas	Curricular Competencies	Content
Social Studies K-3	<ul style="list-style-type: none"> We shape the local environment and the local environment. shapes who we are and how we live. Healthy communities recognize and respect the diversity of individuals and care for the local environment. 	<ul style="list-style-type: none"> Acknowledge different perspectives on people, places, issues, or events in their lives (perspective). 	<ul style="list-style-type: none"> Characteristics of the local community that provide organization and meet the needs of the community. Relationships between a community and its environment. Natural and human-made features of the local environment. How people's needs and wants are met in communities. Relationship between humans and their environment.
Science 4-7	<ul style="list-style-type: none"> All living things sense and respond to their environment. Machines are devices that transfer force and energy. 	<ul style="list-style-type: none"> Demonstrate curiosity about the natural world. Observe objects and events in familiar contexts. Experience and interpret the local environment. Sort and classify data and information using drawings or provided tables. Identify some simple environmental implications of their and others' actions. Communicate ideas, explanations, and processes in a variety of ways. 	<ul style="list-style-type: none"> Sensing and responding: other animals, plants Machines: constructed Local types of earth materials The nature of sustainable practices around BC's resources
Career Education 4-7	<ul style="list-style-type: none"> New experiences, both within and outside of school, expand our career skill set and options. 		<ul style="list-style-type: none"> Factors affecting types of jobs in the community.
Social Studies 4-7	<ul style="list-style-type: none"> Natural resources continue to shape the economy and identity of different regions of Canada. 		<ul style="list-style-type: none"> Physiographic features and natural resources of Canada. Scientific, philosophical and technological development.

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Grade	Big Ideas	Curricular Competencies	Content
Science 8+	<ul style="list-style-type: none"> • Humans can play a role in stewardship and restoration of ecosystems. • Human practices affect the sustainability of ecosystems. • The distribution of water has a major influence on weather and climate. • Human activities cause changes in the global climate system. • Sustainable land use is essential to meet the needs of a growing population. 	<ul style="list-style-type: none"> • Transfer and apply learning to new situations. • Experience and interpret the local environment. 	<ul style="list-style-type: none"> • Sustainability of systems. • Human actions and their impact on ecosystem integrity. • Restoration practices. • Evidence of climate change. • Water as a unique resource. • Global water security: conservation of water. • Soil characteristics and ecosystem services. • Land use and degradation. • Land management. • Personal choices and sustainable living.
Social Studies 8+	<ul style="list-style-type: none"> • The physical environment influences the nature of political, social, and economic change. • Interactions between human activities and the atmosphere affect local and global weather and climate. • Human activities alter landscapes in a variety of ways. 		<ul style="list-style-type: none"> • Scientific and technological innovations. • Changes in population and living standards. • Climate, weather and interacts between humans and the atmosphere. • Characteristics of global biomes, including climate, soil and vegetation. • Natural resources and sustainability. • Global agricultural practices.

