

Siting the School Garden

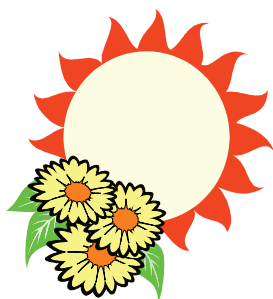
An Overview

Planning and creating a successful school garden, whatever the size, is a multi-faceted project that takes time and the organization and support of your school and community. During the early stages while you are gathering resources, building a team, and planning the learning program that will take place in the garden, it is also essential to go outdoors and learn as much as possible about the existing landscape conditions on the school property. In this way you can site the garden in the location where it has the best chance to succeed horticulturally and academically, and also plan for any modifications that may be required. Here are some things to consider.

Growing Conditions

Temperature and climate conditions vary enormously across the state. The **USDA Plant Hardiness Zone Map** can help you determine the growing zone for your area and the range of temperatures throughout the year. It will also help you find the average number of frost free growing days in your area, and the safe dates for planting and harvest.

Microclimates are variabilities in climate and temperature within a small area, due to geographical features. For example: cold and frost settles into low lying areas, while sites on hilltops and slopes aren't as prone to late spring or early fall seasonal frosts. Spaces surrounded by buildings can also be somewhat protected. A late frost in the spring can kill young seedlings, while an early fall freeze will ruin fruits and vegetables. Farmer's lore tells us that these frosts are most likely to occur just before or after a full or new moon. When in doubt, cover plants overnight with old sheets or other light-weight material.



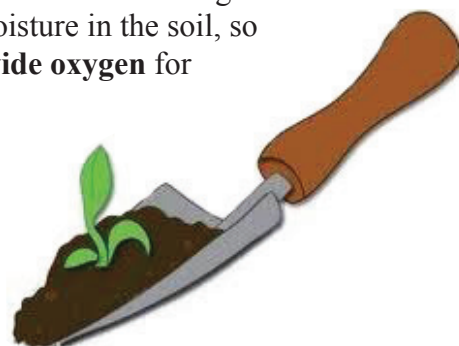
The amount of direct sunlight and the intensity of the sun will impact the health and vigor of plants. Most plants require a minimum of **six-to-eight hours of direct sunlight daily** to flower and produce fruit. The intensity of the sun changes with time of day and season. Afternoon light, as well as southern and western exposures produce more intense light. Observe and document the available light at various times of day during the growing season.

Soil

Soil supports plant life by providing nutrients and a medium for root growth. It's composed of mineral and organic components as well as air spaces. The mineral particles are either **sand, silt, or clay**, with sand being the largest particle and clay being the smallest. All loam soil types are some combination of these three particles.

The **organic component** of soil refers to the bits of decomposing plant material. This organic matter provides nutrients and improves drainage, while also holding moisture in the soil, so it is available to be absorbed by the roots of the plant. **Air spaces provide oxygen** for plant roots and allow water to percolate through soil.

Soil that is high in organic matter is essential for healthy growing plants. Investigate the soil in your school yard; it may vary a great deal across the property. Bring soil samples into the classroom and ask the students to determine the proportions of sand, silt and clay as well as the percentage of the organic content.



Go outside after a rainstorm and **observe the surface drainage of the land**. Look for areas where water channels and washes soil away, or where there are puddles creating a soggy wet space. **Conduct a percolation test to measure internal drainage** by digging a small hole, about one foot by one foot. Then fill the hole with water and monitor how quickly the water drains away. If the water disappears in less than 30 minutes, the soil is extremely well-drained and probably has a lot of sand in it. If the hole still has water in it after an hour, the site has poor drainage and likely has high clay content.



In disturbed areas near buildings, the soil may be compacted by foot or vehicle traffic, which limits the drainage capacity of the soil. In addition, near buildings the topsoil has often been removed and replaced with construction fill. Fill is a combination of subgrade soil and construction materials. This fill will not support plant life without extensive amendments. Lead paints and other toxins may also be present in these soils. It is essential to have soils tested before planting an edible garden. Send soil samples from all areas of your garden to UMass Extension for testing.

Water



Water is essential for plant growth. To assure a successful school gardening experience for students and garden helpers, water should be readily available and easy to use. Locate outdoor faucets prior to siting the garden. Make sure that you and any garden helpers will have access to the faucet throughout the garden season, including summer vacation. Arrange for a new faucet if one is unavailable. Consider drip irrigation or automatic sprinklers for summer watering needs. Rain barrels can supplement available water, by collecting rainfall from school roofs.

Capacity

Decide on an **appropriate size for your school garden**, that reflects your current human capacity with room to grow. Consider the time and money required to build and maintain beds. It is better to start with a small garden that can be well maintained than one that will overwhelm your skills, time or money.

Accessibility and Visibility

When planning the location for the school garden, consider the **ease of access** from each classroom that will be learning in the garden. Students should be able to reach the garden space for observation and experimentation throughout the school day. If the closest door is locked or has an alarmed panic bar, make sure keys are available and the alarm can be disabled. When using a courtyard, make plans for reentry into the school, so that no one is locked outdoors.

Ideally, the school garden should be also be **visible from each classroom** that is utilizing the garden. Students will be able to make observations throughout the day and develop a stronger connection from the learning in the classroom to the garden. Additionally, the more visible the garden is to the school community, the more support and involvement will be available to help sustain the garden.



Space the beds so that a wheelchair or stroller can fit easily between them. Consider building some tall beds that are reachable by someone in a wheelchair or to an older volunteer who cannot stoop. If parent and community involvement is the goal, consider multi-lingual signs if children at your school have another first language.

Meet in the Garden

Plan to **create a meeting space in the garden** where students can assemble to share their observations and experimentation. Seating can be as simple as hay bales or a picnic table. Make sure that some shade is available under a tree, umbrella or pavilion for those who need protection from the sun. Find opportunities to invite the community to see what you are doing by scheduling events in the garden. Create a welcoming environment for multi-generational use by keeping the needs of elders and infants in mind.



Safety in the Garden

The school garden should be a **safe place for all involved**. Site the garden in an area removed from street traffic, busy driveways, loading docks, open water and other potential hazards. Consider fencing if security is an issue, especially if vandalism is likely during times when garden is unsupervised. You may also need to fence out dogs, deer and other pests. Lock up garden tools, cleaning products and fertilizers. Use only safe and non-toxic products such as horticultural soaps for pest control. Consider the location of first aid kits and fire exits.

Storage and Other Structures

Consider where you will store tools so that they are easy to access from the garden. If there is not a close indoor space, where will you put a shed? Also take into consideration where you will keep potting supplies, curriculum materials, and seasonal items that need to be stored for the winter like row cover, signs or trellises. Consider areas for greenhouses or cold frames. Finally, think forward to the harvest. Consider an outdoor sink and table area so that vegetables can be rinsed and sorted before taking into a kitchen for preparation.

No Soil - No Problem

There are schoolyards that offer no suitable in-ground location for siting the school garden. They provide an opportunity to **expand the garden horizons**. Convert an outdoor patio or rooftop into a container garden. Build raised beds on an abandoned asphalt pad. Add window boxes and raised planters outside the classroom door. Collaborate with a nearby senior center, elderly facility, community garden, public library or other town site to create a common garden. There are sure to be a ready group of summer helpers.

Garden Above the Ground

Gardening in containers provides the means to control the environment, allowing for the optimization of growing culture when those conditions can not be met naturally. Choose containers when soil is unavailable; extremely poor in nutrients or water holding capacity; polluted with toxins or heavy metals; compacted by foot traffic; infested with nematodes and other soil borne pests, or where competition from tree roots limits growth.



Go Vertical: When space is limited consider vertical gardens. Add window boxes outside the classroom or on vertical racks. Use hanging baskets on patios. Build vertical planting walls of wood, stacked with planting boxes lined with sphagnum moss or heavy plastic. Be sure to consider the watering needs of these small containers, and don't forget you can trellis vining crops such as gourds, beans and tomatoes.



Take to the Rooftop and plant a container garden. Find out which roofs at your school are accessible and structurally able to hold extra weight. Plant in containers of soil or lite-weight bagged soil-less media.

Summer Success

One of the biggest challenges educators face when contemplating a school garden is maintenance during the summer. When planning the garden be sure to engage many different members of your school and local community. This will provide a team that can step forward to offer support during the summer. Here are some other solutions from successful school gardens.

- * Enlist the **aid of parent volunteers** to share the work. Create a summer schedule in spring and ask families to sign up to adopt the garden for one week during the summer. Reward them with the chance to harvest during their assigned week.
- * Develop a **garden apprenticeship program** for the school garden and mentor a student from a local high school or youth group.
- * Hire **student interns** to take care of the garden in summer. Write a job description and conduct interviews.
- * Schedule a **work day in the garden one day each week** during the summer. Invite students, parents, teachers and community groups to join you in caring for the garden.
- * Invite a **local summer camp** to utilize the garden as an outdoor educational classroom, or organize your own summer garden camp.
- * Plant a **moveable garden** in containers and send the garden home with students for the summer.
- * **Mulch heavily** to reduce weed competition and hold moisture in the soil so less watering is needed.
- * Install **drip irrigation** under mulch and engage custodial staff to turn water on a few hours a week.
- * Plant **drought-tolerant plants** that can survive without watering.
- * Plant a **fall garden** and harvest in the spring. **Or schedule your garden to match the school season.** Use primarily fall and spring maturing crops. Harvest early things like peas, radish, lettuce and strawberries in the spring, and long season crops like pumpkins, corn and collards when school is back in session in the fall.”



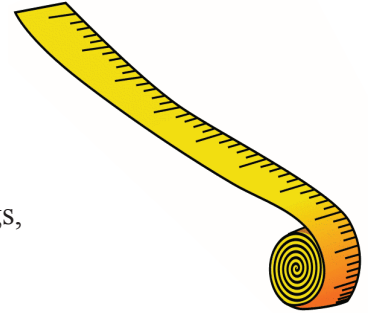
Map Your Site

A **base map** can serve as a foundation to guide the garden planning process. You and your students can measure and draw this yourselves or start with the legal plat of survey for the property and build from there using direct field observation.

Determine the dimensions of the site and locate the corners. Mark any buildings, walkways, play equipment, large trees, etc. The more detail you add the better.

Ask students to **use a tape measure** to determine the distances between each feature. Then scale down and mark the features on the map. This is a terrific opportunity to teach students about measuring. Then they can use the school-yard mapping as a real-world experience.

Now use the base map as the **foundation for your garden design planning**. Map shadows throughout the season, note the locations of entry ways, water sources, water drainage patterns and existing plants. Map current use patterns such as informal walkways, public and wildlife access points and play spaces.



Time Line

Set a time line for the development of your school garden program. For example:

Spring: Gather community and administrative support. Organize gardening workshops and community work days to build the compost bin, and other structures such as a storage shed. Take soil tests, make your site map and start observations in order to determine your garden site. Set up indoor grow-lights to start spring plants and plant container gardens.

Fall: If installing an in-ground garden, dig and cover crop or mulch the determined garden site. Build raised beds for raised bed gardens. Start your school composting program. Paint a sign for your garden and hold a fall harvest cooking event at the school to encourage excitement and support for the garden.

Winter: Make first year garden planting, maintenance and harvest plans. Gather supplies, seeds, source perennials and tools. Organize community volunteers and caretakers.

Spring: Plant your school vegetable garden and school yard perennials!



Form a Support Team

The first step in the development of a successful school garden is the formation of a support team of allies to plan, develop and care for the garden. This planning committee will include teachers, administration, kitchen and custodial staff, as well as interested parents and students.

Meet regularly. Start by outlining the goals and objectives for the school garden. Why do you want the garden and how will it be used? Write a mission statement to help guide the garden project and future decisions. These planning elements will serve you well later in seeking donations or writing proposals.



As the committee plans what the school garden will look like and how it will be used, it will also begin to develop a list of resources and materials needed to accomplish these tasks. Once the garden is in place the committee will continue working to oversee development and maintenance, evaluate success, troubleshoot and organize volunteers and community support.

Seek assistance from the community for advice and support in building and maintaining the garden. Parents, local gardeners and professional horticulturists and builders can locate plants and materials, assist with construction and planting, provide useful technical information and even help you to raise funds. Be clear as to why you are involving the community, what you need and how and when you plan to utilize these services. Offer an orientation.

Consider hiring a garden teacher to provide consistency and coordinate garden time with the school staff and volunteers. Send garden project updates regularly to keep the attention of those within the school and without. Include the school superintendent and other officials, parents and the greater community.

Garden Activity Ideas

1. Create a journal to track the progress of the school garden from planning to harvest. Ask students to write their own garden journal.
2. Include students in the garden planning process. How do they want to use the plants in their garden, for: flowers, food, wildlife, experimentation or to beautify the school grounds?
3. Ask students to research requirements of the plants they want to grow. How tall does each one grow? What needs does each have for soil, light, water and temperature?
3. Consider creating a themed garden such as: Colonial American; Native American; Three Sisters; wildlife attracting; woodland native; biodiversity and seed preservation; plants from the students native lands, or fruits and vegetables for eating and nutrition.



Study Gardening

The following organizations provide workshops, training and display garden that can assist with your gardening efforts. Your local nursery, garden center or farm may also assistance or training.

Berkshire Botanical Garden
www.berkshirebotanical.org

**Massachusetts Audubon Society
Drumlin Farm**
www.massaudubon.org

Massachusetts Horticultural Society
www.masshort.org

Master Urban Gardeners Boston
www.bostonnatural.org/MUG.htm

NOFA
www.nofamass.org

URI Master Gardeners
www.urimastergardeners.org/

Western Mass Master Gardeners Association
www.wmassmastergardeners.org/

Worcester County Horticultural Society
www.towerhillbg.org

Resources for Siting the School Garden

Local and National Organizations

Massachusetts Department of Agricultural Resources

www.mass.gov/agr

Massachusetts Flower Growers Association

www.massflowergrowers.com

Massachusetts Nursery & Landscape Association

www.mnla.com

Mass. Department of Environmental Protection

Bureau of Waste Prevention - Composting
www.thegreenteam.org

National Gardening Association

www.garden.org & www.kidsgardening.org

UMass Extension

www.umassextension.org/index.php/information/gardening

UMass SoilTesting www.umass.edu/soiltest/

URI Soil Testing

www.uri.edu/ce/factsheets/sheets/soiltest.html

USDA Food and Nutrition Program

www.fns.usda.gov - Grow it Books

USDA Plant Hardiness Zone MAP

www.usna.usda.gov/Hardzone/ushzmap.html

US Botanic Garden - Planning & Planting

www.schoolgardenwizard.org

Other Curriculum & Resources Websites

American Community Garden Association

www.communitygarden.org
<http://communitygardennews.org/gardenmosaics/index.htm>

American Horticulture Society www.ahs.org

California Agriculture Foundation

Gardens Curriculum
www.cfaitc.org/gardensforlearning

Junior Master Gardener Program <http://jmgkids.us>

New York City's School Garden Program

<http://growtolearn.org>

Project Life Lab Science & School Gardens

www.lifelab.org

Soil & Water Conservation Society www.swcs.org

School Garden Transformations

www.schoolgrounds.ca/projects.html

USDA Natural Resource Conservation Service

www.nrcs.usda.gov and <http://soils.usda.gov/>

Rodale's Ultimate Encyclopedia of Organic Gardening.
Fern Marshall Bradley, Barbara W. Ellis, Ellen Phillips.
2009 Rodale Press

Information for this resource guide was taken from the resources listed above.



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Please Visit the Massachusetts Agriculture in the Classroom Website to tell us how you used this Siting the School Garden Resource for the School Garden.



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