

# SCHOOL GARDEN TOOLKIT



Community Food Initiatives would like to thank all the teachers, school staff, volunteers, and students who support School Gardening projects in our area and nation-wide. We would also like to thank our partners for their support of this project:



## **Rural Action**

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# ABOUT CFI



Community Food Initiatives (CFI) is a 26-year-old organization serving families and individuals in Appalachia Ohio. The mission of CFI is to foster communities where everyone has equal access to healthy, local food. CFI's vision is a resilient region in which everyone in our community has access to an equitable, inclusive, and thriving local food system. CFI is the only organization in the area routinely donating local produce to food pantries, managing low-cost community garden plots, supporting

School Gardens and teaching youth to grow food, and offering gardening and cooking workshops. All of these programs come together to build a stronger community where citizens are empowered to grow and cook their own healthy, whole foods, despite the barriers of poverty ever-present in our region. CFI is building capacity to reach more communities across the region by increasing collaborative efforts to fight food insecurity.

Our programs include:

- The Donation Station fights hunger while supporting the local food economy. We collect donations and purchase food from local farmers to distribute to food pantries feeding those who are hungry today.
- The Discovery Kitchen educates the public and food pantry patrons on how to create simple, delicious meals using local, seasonal ingredients.
- Donation Station Development provides organizational and logistical support for communities interested in replicating the Donation Station as a way to improve food security and support local farmers.
- Community Gardens provide space for neighbor interaction, skill sharing, and the growth of local food for families. We manage community gardens that provide people with the space, tools, water, mulch, and opportunities to interact with other local gardeners.



- Gardening and Culinary Workshops provide hands-on opportunities to learn about gardening, food preservation, cooking, and much more.
- SEO FOODLINK maps emergency food networks and compiles data on Southeast Ohio into an online resource hub to inform and empower neighboring communities.
- School Gardens teach school children about the importance of healthy, fresh foods while reaping endless benefits. We partner with local schools to provide resources, technical support, and consultation to make School Gardens available as a classroom activity.



# INTRODUCTION TO SCHOOL GARDENING

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***“WHEN I SEE THE CHILDREN EXCITED AND ENGAGED IN THE GARDEN, FOCUSED ON THEIR WORK AND PLAY, IT MAKES ALL OF THE WORK WORTHWHILE.”***

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*Laura Bennett, preschool teacher,  
Chauncey Early Learning Center*

School Gardening activities enable students to learn about gardening, the environment, food, and nutrition. While gardening, students develop practical life skills and engage in physical activity. As outdoor learning labs, School Gardens offer a unique, multi-sensory, inquiry-based education. The creative and often playful approach of School Gardening instills confidence and enthusiasm for life-long learning. They are a wonderful way to use the school backyard as a classroom, reconnect students with the natural world and the true source of their food. It teaches them

valuable gardening and agriculture concepts and skills that integrate with several subjects, such as math, science, art, health, environmental studies and physical education.

As of 2017, about 27% of public elementary schools had a School Garden, according to research by the Robert Wood Johnson Foundation. Because of the increased evidence of their all-encompassing benefits to communities, they have been increasing in popularity over the last decade. With children’s obesity rates on the rise and their nutrition under assault by junk food, School Gardening offers children opportunities for outdoor exercise while teaching them useful skills. There is mounting evidence that active learning in less structured, participatory spaces like gardens is more likely than ever to transform a child through several avenues.

The benefits to School Gardening are endless and include:

- Increased willingness to try fruits & vegetables
- Increased fruit & vegetable consumption beyond the school setting
- Improved healthy nutrition choices
- Increased physical activity
- Improved health-related knowledge and healthy lifestyle choices



- Improved student achievements
- Instilled appreciation and respect for nature that lasts into adulthood
- Improved environmental attitudes, especially in younger students
- Improved social skills and behavior

Several studies have shown that School Gardens can be key in shifting children's nutritional practices:

- A 2017 evaluation of FoodCorps (conducted by the Tisch Center for Food, Education, and Policy at Teachers College, Columbia University) found that schools that which provide frequent, high-quality opportunities for hands-on nutrition learning, students eat up to three times more fruits and vegetables at school lunch — regardless of whether or not that food was grown in their School Garden.
- The effects extend outside of the school day, too. A 2018 randomized control study (by Nancy Wells at Cornell University) found that children whose schools provided regular School Garden lessons had more access to low-fat vegetables and fruit *at home* than children without that curricula.

Why do gardens have such an impact on children's eating habits?

- Unlike lectures or worksheets on healthful practices, gardens provide an experiential, hands-on learning environment, where kids get the chance to smell the leaves of the tomato plant, dig up their own carrots, and eat kale right off the plant. Working in a garden is a real-world activity; it engages students and encourages them to explore and reason independently.
- Maintaining a School Garden necessitates that nutrition lessons become a consistent, built-in part of students' educational experience.
- That repeated exposure can also build the emotional connections to foods that are essential to behavior change. When children spend days, weeks, or months growing their food, they feel proud of and connected to it — which is key to trying new dishes with an open mind.



# SPOTLIGHT: ATHENS EARLY LEARNING CENTER, CHAUNCEY, OHIO

During her last few years of teaching, Preschool teacher Laura Bennett had become more interested in increasing plantings near the school playground, focusing mostly on growing pollinator flowers to provide habitat for butterflies. Much of this interest stemmed from her increased concern that children were not spending enough time outside and were seemingly disconnected from nature and their food sources. She wanted to create a natural “playscape” that would include a School Garden. She started researching articles, community resources, and spaces where these programs were already in existence, and with the help from Community Food Initiatives and Rural Action, built four small vegetable beds on what used to be a grass covered, unused space.

Over the past four years, the garden has increased with size annually, now taking up the entire area along one side of their building. Teachers have become comfortable in the space and are supportive of the benefit of the garden experiences for the children. Their School Garden has become an “outdoor classroom” and the children have a sense of ownership of the space. Students enjoy hunting for critters with magnifying glasses, creating “compost stew,” saving seeds, spreading mulch, and are oftentimes found harvesting and eating sweet peppers and cherry tomatoes with big smiles on their faces.





# OVERCOMING SCHOOL GARDEN BARRIERS

We find that some of the barriers to developing and maintaining School Gardens successfully are as follows:

- Lack of funding
- Lack of time (time for classes to use the garden and also time for staff training)
- Lack of (teacher) gardening knowledge/confidence
- Lack of volunteers
- Lack of space
- Lack of staff commitment
- Summer maintenance concerns



There are many creative ways to overcome School Garden barriers for a successful School Garden program. Those involved with successful School Gardens have found positive ways to overcome these barriers, such as the following:

## Start by building a “Garden Team”

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***“BEFORE STARTING, TAKE TIME TO THINK ABOUT WHAT YOU REALLY WANT YOUR GARDEN TO BE. WHAT ARE YOUR GOALS? WHAT DO YOU ENVISION AS A SUCCESSFUL SCHOOL GARDEN? DO YOUR RESEARCH. THINK ABOUT HOW A SCHOOL GARDEN CAN ALLOW FOR MEANINGFUL EXPERIENCES FOR THE NUMBER OF CHILDREN THAT WILL BE USING IT.”***

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*Laura Bennett, preschool teacher,  
Chauncey Early Learning Center*

Different forms of organizing that get the entire community involved in the garden are often essential to overcoming School Garden barriers. Holding a meeting of interested community members and inviting anyone that is affected by, benefits from or works in the garden to form a “Garden Team” can be a good start.

Parents, teachers and staff (including the maintenance staff) are obvious invitees to a Garden Team formation meeting. Often overlooked community members that are good to invite include local neighbors that own a truck or have a nice yard; these people have assets to share that could benefit the garden, students and teachers. Other good candidates to include in the meeting are people from local businesses such as hardware stores, garden stores, local food industries and farmers markets. Other local organizations to potentially involve in a meeting are local non-profits, extension agents, food pantries, and environmental organizations. Many states now have a “Farm to School” program they are hoping to grow that can be a great resource for your School Garden project.

A Garden Team should be an organizational structure that outlasts any one person, parent, teacher or administrator, and will therefore contribute to the sustainability of the garden. This team can be crucial to filling in the gaps of the time, volunteers and resources gaps that are common to School Gardens.

## **Explore Funding Options**

Check with your PTO to see if they would be willing to fund your project. Reach out to state partner organizations for resource support. Don't forget about the families of your students, frequently parents are more than willing to contribute to a cause with numerous benefits for their children! Parents are also a great resource for extra tools they may have laying around they could donate as well as networking connections—perhaps they are employed by a business that would support your project or know someone working for one. Check with your local businesses as well as big home/garden stores, for oftentimes they have funding available to support projects like School Gardens.

Another idea is to hold fundraisers, perhaps directly related to gardening such as selling transplants or potted flowers for holidays, or focusing more on the health benefits such as a “fun run” or a wellness-oriented celebration. Evaluate your available time and resources and estimate how much money you hope to make in order to choose the type of fundraiser that will work best for you.

Most School Gardens rely heavily on donations of funding, labor and materials from school and community members to fill gaps on funding. Other ways to overcome the funding gaps can be obtaining grant funding from government organizations to offset costs. Many thriving School



Gardens utilize corporate grant programs, such as the Lowe's Outdoor Classroom Grant Program. Because of the increase in popularity of School Gardens, many mini-grant opportunities are out there! Check <http://grants.kidsgardening.org/> and <https://communitygarden.org/resources/funding-opportunities/> for current funding opportunities.

## **Create a Volunteer Network**

Though some of your volunteers might already be part of your "garden team," invite others to join in order to maintain a wide variety of time availabilities, interests, and skillsets. Families of students are great and should be included, but reaching out to the community beyond the actual school helps to strengthen the School Gardens immensely. Remember that growing your School Garden will not only benefit your students but also the entire community.

Keep in regular contact with not only your School Garden team, but also your list of potential volunteers. Be sure it is up-to-date and that the volunteers feel like they know what is happening in the School Garden and they will be more likely to jump on potential opportunities. Remember to implement both formal and informal methods of thanking your volunteers--a little bit of recognition can go a long way.

## **Choose an appropriate garden type**

There is no reason that lack of space should be a barrier to a successful School Garden! If you feel there is no physical room for a garden at your school, think again because a School Garden can be anything from potted plants on a windowsill or buckets on the walkway up to an entire tilled field. As you plan, there are two very important things to keep in mind: Your School Garden should be both fun and functional. Make sure your design will result in a garden that will fulfill your needs and help you accomplish your curricular goals. Keep it simple. Dream big, but start with a plan that is manageable for your school.

## **Offer training and updates for staff**

Usually we hear from teachers that they are not taking their students out to the garden because "they are not gardeners," "they are not sure what to do," or "they don't want to mess anything up." These barriers can be avoided by offering simple trainings, or even making School Gardening part of professional development (While the inner-workings of this will vary greatly by district, we found

that there can be several required “professional development days” a year that are an ideal time to offer a garden-related training).

Send a survey out to teachers, ask them what would be helpful information for them to know about how the School Garden grows. If possible, at the start of the school year, offer staff a quick training in the garden to give them an introduction to what is going on out there and a chance for them to ask questions. Throughout the year, keep them updated on what is going on in the garden, either physically in the garden if they have the time, or if not, via email. Ideas of what to include in this regular update are:

- a list of tasks needing to be done in the garden their students could help with
- ideas for seasonally-appropriate garden activities (include links to scavenger hunts, taste tests, garden games and other fun ideas)
- a map or key so teachers know what is what
- recipes for easy snack ideas kids could help make utilizing the available produce (this could be as simple as “try pairing a cherry tomato with a basil leaf” or more complicated as in “here is a recipe or local salsa”)

## **Provide Easy Access to Curriculum materials**

Teachers regularly feel overwhelmed with the set of state and federal standards they are required to fulfill and report they do not have any “extra” time to deviate from the norm by taking the time to take children out to the garden. We believe that by having detailed lesson plans available in a user-friendly format, each clearly laying out how it fulfills the needed requirements for standards, teachers will find it easier to utilize the garden more as an outdoor learning lab. Garden-based lessons are now widespread over the internet and can be accessed easily.

## **Integrate the garden into other classroom lessons**

Many creative teachers incorporate garden maintenance activities into the School Garden curriculum to assist with garden maintenance, and double dip for both hands-on learning and volunteers. For example, as a biology lesson, students can weed the garden and learn to identify the weeds. Or, as a useful math exercise, students can water the garden and then figure out how much water they used.

While some School Gardens are run by a single teacher or volunteer, the most successful School Gardens get the whole school involved, too. Students can make predictions and conduct experiments in the garden during science, plot out the dimensions of the garden in math, or learn about the history and politics of food access in social studies, for example.

Studies show that School Gardens are especially effective when the following happen: their use is linked to classroom curricula; the lessons involve opportunities to taste, prepare, or eat garden produce; students are engaged in garden visits frequently and throughout the school year; and they are offered together with other health-related activities such as family cooking nights, farm field trips, and taste tests in the cafeteria. For a School Garden to succeed, it must be well-integrated, meaning it fosters meaningful educational experiences for students, and is valued as part of the school's culture.

## **Send updates home to families**

The amount of information students report to their parents as far as answering the question, "what did you do at school today?" can often leave parents without a whole lot of feedback. We have found that directly sending information home to families regarding their School Garden is a much more reliable way to create and sustain enthusiasm. Create a "Garden Newsletter" of sorts, perhaps printed on bright paper or including an eye-catching illustration to ensure it won't get lost in the stack of papers parents receive regularly. Tell them what is growing currently, what sorts of lessons were taught that month, where the harvested produce went, and what vegetables the kids are excited about eating. Tell them what materials would be helpful to have donated and be sure to mention volunteer opportunities.

## **Have a plan for summer**

Be sure to create a summer plan for maintaining the garden well ahead of time. We suggest recruiting families to volunteer in the spring-time, when enthusiasm for the garden is at its peak. Send home flyers offering families the opportunity to "adopt a week" and they will oversee garden maintenance during summer months. Clearly spell out the expectations and the benefits. Create and distribute a calendar that identifies who is responsible for caring for the garden each week, as well as contact information if they should have questions or a problem. Offer a short training for families in the School Garden itself, demonstrating how and when to water, weed, harvest. Remember to have a plan of what they are to do with the harvest (Perhaps they get to take it

home, or maybe it will be donated to a local organization who can distribute it to those in need. Check out how we do that through CFI's Donation Station at: [https://communityfoodinitiativesorg.presencehost.net/what-we-do/donation-station\\_discovery-kitchen.html](https://communityfoodinitiativesorg.presencehost.net/what-we-do/donation-station_discovery-kitchen.html) ).

Community groups are often an enormous asset to School Garden maintenance over the summer months. Think about contacting service-oriented as well as outdoor-based groups such as Boy/Girl Scout troops, Rotary clubs, 4H, FAA, and summer camps offered for children. Sometimes groups will "adopt" the garden for the entire summer, or perhaps they are available to fill in on certain weeks when needed.

## **Promote your garden**

Publicize garden progress to keep not only the families and staff informed of your project, but also your local newspapers. Newspapers love to run community-interest stories, and food grown by little hands provides wonderful photo opportunities.

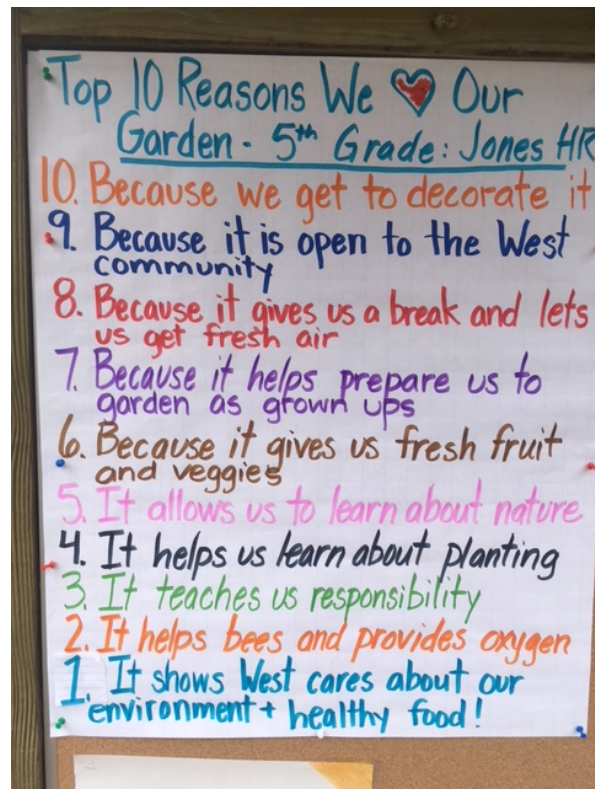
Even if it seems like a small amount, think about sending produce grown in your School Garden to your cafeteria. Be sure and make this obvious to those not involved in the garden, consider asking students to make labels and signs to post when serving garden produce. Reinforcing a connection with the food that students have helped raise will increase consumption and excitement!



# SPOTLIGHT: GARDEN KIOSKS

CFI recently had "garden kiosks" installed at several local School Gardens and their success has been grand! The kiosks, similar to what one may see at a state park, have bulletin boards on both sides, providing oodles of space for various items to be hung. We have seen everything from informational text to student-created artwork, garden maps, recipes, suggested task lists, and more. We have found these kiosks greatly aid in communication between teachers, school staff, gardeners, and the public, while bringing a cheery kid-created element to the garden.

Students have enjoyed seeing their artwork on display as well as finding new, exciting garden information posted. "The students and teachers at Nelsonville-York Elementary love our School Garden. Since the kiosk was installed, that love continues to grow. We have had many classes out exploring, harvesting the produce, hanging information on the kiosk, and learning how it feels to grow their own food. I have had the teachers of these classes stopping in, telling me that their students had a blast and it brings a new kind of enrichment to their days. We look forward to many more days of gardening fun!" says Abbey Koehl, COMCorps Service Member.



# SCHOOL GARDEN READINESS CHECKLIST

## School Garden Readiness Checklist



*A school garden is more than a sunny patch of dirt. Success depends on people, ideas and materials. Use this short checklist to identify your assets, ask questions, and take the next steps.*

**Community Partners to Consult:** These stakeholders have concerns, authority, resources, good ideas, and advice.

- Administration and Board Members
- Grounds Maintenance Staff
- Food Service Staff
- Teachers
- Students
- School Wellness Team
- School Social Workers
- Parents and PTO
- Community Volunteers

**Goals and Purpose:** Establish a purpose for the garden before you build.

- Outdoor learning lab
- Food production, cafeteria or classroom
- Guided recess activity
- Relaxing or recreational green space
- After school activity
- Specific grade levels or classrooms
- Specific academic content areas
- A community space or just for students?

**Location and Material Assets:** Consider logistical needs, but don't forget the garden should be an inviting, pleasant place to be.

- Direct sunlight
- Easy access to water.
- Good Soil (OSU Extension can test your soil.)
- Accessibility to students
- Accessible for delivery of materials
- Tool storage space
- Composting area
- Room for expansion if necessary
- Fencing or security
- Cold weather protection

**Use, Activity, and Management:** Day to day, season to season, year to year how will the garden be used, maintained, and developed over time? Who will be responsible for or involved in the following activities?

- academic instruction
- curriculum planning for the garden
- scheduling time and space in the garden
- physical maintenance of the gardens
- harvesting
- summer maintenance and harvesting
- after school programming
- incorporating garden produce into school lunches
- fund raising
- volunteer coordination

**Support from Community Food Initiatives:** CFI wants to help you make your school garden a success. CFI can provide

- Seeds and Plant Starts
- Gardening Expertise
- Gardening Expertise
- Periodic help with large scale events
- Garden Planning
- Garden curriculum and instruction
- Develop systems and guidelines
- Networking and community building
- Grants

### Contact Community Food Initiatives:

Community Food Initiatives  
94 Columbus Road  
Athens, Ohio 45701  
740-593-5971  
[cfi@communityfoodinitiatives.org](mailto:cfi@communityfoodinitiatives.org)



# SPOTLIGHT: GARDEN RULES SIGNS

It is important to establish a set of “garden rules” for all persons entering your School Garden to follow. Rules help to promote safety and reinforce the garden as a shared space. Consider involving the students in the development of your School Garden rules. Remember to be creative, a sign hand-painted on recycled plywood by students is can be both effective and aesthetically pleasing!

If your budget allows, there are plenty of websites from which to order beautiful “School Garden rules signs.” However, we suggest you build your own list of rules specific to your School Garden’s needs. Here are some suggestions to get your started:

1. Please walk at all times, no running!
2. Be sure to stay on the paths, do not step in the garden beds.
3. Use your garden voice, no shouting please.
4. Listen for instructions from your teacher or garden instructor.
5. Always ask an adult before picking or harvesting from the garden.
6. Respect all living things in the garden: plants and animals.
7. Handle garden tools carefully and safely.
8. Clean and return garden tools to the place they belong.



(Sources: <https://www.upsondowns.co.uk/cross-curricular/garden-signs/garden-rules/evergreen-garden-rules.html> and <https://www.flickr.com/photos/51923368@N05/5506538898>)

# CHOOSING THE CORRECT GARDEN TYPE FOR YOUR SCHOOL

To prepare for the design phase of your School Garden, open your mind to all possibilities. Gather ideas from other existing School Gardens, library books, magazines, web sites, and most importantly the imagination of your students and School Garden team. As you plan, remember to look at the future garden through the eyes of a child. Your students and School Garden staff/team need to be active participants during this phase! Throughout the process, they should feel like valuable contributors. A strong connection during the design process will ensure they become diligent caretakers once the garden is installed. As you plan, be sure to keep in mind that your School Garden should be both *fun* and *functional*. Make sure your design will result in a garden that will fulfill your needs and help you accomplish your curricular goals. Keep it simple. Dream big, but start with a plan that is manageable for your school. Consider developing a multi-year plan, adding a few components each year. While choosing the right type of garden for your space is extremely important, remember that it is the smiling children learning in the garden that makes it beautiful, not the fancy and complicated planting design.

## GARDENS INSIDE THE CLASSROOM

If you do not have a big outdoor space to grow your own food at school, you can still be successful in a limited amount of space— in small containers on the windowsill inside your classroom. These are a perfect choice for teachers wanting to dabble with gardening but are perhaps too short on time, gardening skills/confidence, and/or funds to begin a traditional outside garden. They take up very little space and can still be quite productive if plants are chosen well and cared for properly. Windowsill gardens grow well year-round as long as they have plenty of light. They can be great for growing herbs, edible sprouts, and baby lettuces. They are conveniently located and adverse weather conditions matter not. Windowsill gardens are invaluable instructional tools for hands-on learning about life systems without having to leave the classroom.

## Location

Determine the best location...eastern or southern exposure is ideal. Kids of all ages can observe how the sunlight moves through the classroom, keeping a record of their observations for at least a week. (They can also repeat this each season and notice how the sun's arc changes throughout the year). A successful windowsill garden will need at least 4–6 hours of sunlight on most days. Keep in mind that close proximity to heating and cooling vents has the potential to produce extreme temperature fluctuations and should be avoided if possible. Having a hard time finding a windowsill that fits these requirements? Take matters into your own hands and use an artificial grow light for 6 hours a day.



(source: <https://www.maximumyield.com/growing-on-the-edge-windowsill-gardening/2/2138>)

## Materials

Determine what materials you need to collect by knowing your plan, what do you want to grow (will it be flowers, vegetables, herbs, or perhaps indoor houseplants?). Think about how students will interact with the garden, will they be moving the plants from the windowsill to their desks? These factors will help you decide what kinds of containers to use. (If the plants will eventually be moved outside, consider using rigid trays and containers to minimize problems in transportation). If you plan to use the windowsill garden primarily for germinating seeds, small containers work the best. Six-cell packs from a nursery work well, but it can be fun for kids to collect and reuse recycled materials such as empty egg cartons, yogurt containers, milk boxes, and other materials from home and the cafeteria.

If you plan to keep the plants indoors throughout their life cycle, choose a larger container that is at least 6 x 6 inches. Reused nursery pots, milk jugs with the top removed and coffee cans work well in windowsills. Whatever receptacle you choose for your windowsill garden, be sure that water

can drain away from the plants. Punch holes in the bottom and place a plate or saucer underneath for proper drainage.

When sprouting seeds, use a lightweight seed-starting mix. When filling a container to keep on the windowsill, it is easiest to use an organic soil mix from a nursery.

## **Plant Selection**

If you are wanting to grow plants indoors with the intention of keeping them on the windowsill, consider trying the following:

Baby lettuces, spinach, parsley, dill, basil, chives, thyme, oregano, cilantro, parsley, green onions, kale, chard, and garlic. A fun indoor experiment is carrots planted in a clear container so students can see them growing beneath the soil!

If you are starting plants on the windowsill with the intention of moving them outdoors, consider starting with big seeds. Keep in mind these will quickly outgrow their containers and will need to be transplanted within a couple of weeks of germinating. For this plan, we recommend: beans, corn, sunflower, and peas.

Make sure the seeds have plenty of room to grow. Sometimes for smaller kids, handling tiny seeds can be challenging. If a lot germinate into one spot, encourage students to “thin” them out as they get taller, leaving room for the strongest plants to prosper. Talk about breathing room and making sure the plants don’t have to compete for light, water, and nutrients.

## **Maintaining Windowsill Gardens**

Use room temperature water to water your windowsill garden. Students should check the soil moisture daily and can use a “water meter” (an inexpensive tool found at home/garden supply stores) or can experiment with the carefully testing the water one inch below the surface. If the soil is dry, water it...if not, let it be and remember to “dampen, don’t drown” or too much water can lead to fungus, especially indoors. Ideally students should water in the morning. If the classroom air is quite dry, students can mist/spray the plants frequently.

Encourage students to rotate their plants regularly. This exposes all sides to the sun and encourages even growth.



Despite not being exposed to the elements, indoor plants can still be susceptible to bugs such as aphids, mite, and whiteflies. If students observe their plants becoming infested, research together the best methods of control. The solution is oftentimes as simple as soapy water in a spray bottle! Make sure students verify the bugs have been washed away by checking the underside of the leaves too, not just the clearly visible parts.

If you are growing edible plants, make sure to harvest them when they are ready to eat. If you are sprouting seeds with the intention of transplanting them to a larger outdoor garden, make sure to wait until the plants have their first set of “true leaves” before disturbing them. Then, place the young starts outside for 4–7 days in their original pots before planting them in the garden. This is called “hardening off” and will allow them to gradually adjust to the outdoor conditions.

## CONTAINER GARDENING



If you find at your school that you have little space, poor soil or are perhaps surrounded by blacktop or cement but want to grow outside, consider container gardening. Container gardens are ideal for turning areas that appear to be unsuitable for gardening—narrow corridors, playgrounds, parking lots—into attractive spaces for children to experience gardening. So long as you have sun and water, you can still have a thriving School Garden project!

Gardening in a container can be a great way to “test the waters” at a school new to the School Gardening concept. Containers are a great way to find out how gardening fits in with your school without committing lots of resources. And they are portable! If you are faced with challenges such

as theft or vandalism, they can be moved. If care for the garden over the summer months is of great concern, containers can be taken home by students and interested staff for those long summer months. Bountiful plants in containers can increase your green space in an economical way. They can be a solution for students with impaired mobility as they can be easier to access than an in-ground garden.

The biggest downside to container gardening is the need for frequent watering. Plants growing in containers have a limited volume of soil so they dry out relatively quickly and are much more dependent on a gardener for regular watering than most plants growing in the ground. Especially during hot weather, container plants may need daily watering (Fortunately, in a school setting there are usually plenty of willing little hands eager to have a turn with the watering can!). Thus the easy availability of water is an important consideration when you're deciding where to place your container garden, along with planning for who will be responsible for carrying out this important chore, both when school is in session and over weekend and vacation breaks.

## **Materials—Choosing Containers**

There are an almost endless number of possibilities for containers, ranging from simple plastic buckets to fancy whiskey barrels. Just about any container that has drainage holes is a potential candidate. Be creative, re-use what you have, solicit donations from parents for containers they may have laying around they are hoping to get rid of (a child's wagon! An old wheelbarrow! An animal watering trough!). Have the students brainstorm a list of potential choices and have fun with it.

If you plan to cultivate a variety of plants, your container should be at least 3 feet deep. (Though smaller, shallower rooted plants like lettuce, onions, radishes and herbs can get by in less roomy containers with less soil). A good rule of thumb may be "the bigger the better" as bigger containers will give the roots of your plants more room to roam, and the larger volume of soil will hold on to soil moisture better. But while a larger container may be easier to care for, it will also be harder to move! If you may need to move containers around, make sure they are on wheels if they are too heavy to lift easily.

Make sure the material is safe for children and other living things, with no sharp edges, protruding nails or splinters, or rust. If you are choosing to re-use plastic buckets, be sure they are "food

grade,” as in they do not contain potentially hazardous materials that could leak into the soil, and also that they weren’t once used to contain “questionable” substances. Whatever container you choose, be sure it has been thoroughly cleaned and rinsed with a simple dish soap to ensure a safe start and be sure it has adequate holes for drainage or make them yourself with a drill (think 3-5 per bucket).

Use potting soil or soilless potting mix fill your containers. This type of growing medium will allow for proper drainage and aeration, while retaining adequate moisture. Most container planting mixes are soilless, and are made from a mixture of materials such as peat, coir, bark, perlite, or vermiculite. Kids love to pour water through jars of soil and compare the rates at which they drain. This is a way to involve students in selecting the best soil for their garden. Moisten the mix before you fill your containers; it should be damp, but not dripping wet. Add enough so when the plants are in place, the soil level will be 1-2 inches or so below the rim of the container. If your planting mix doesn't contain fertilizer, you can add some slow-release fertilizer granules to it to keep your plants fed for a couple of months.



Container gardening using recycled materials (*source: [containergardeninginrv.blogspot.com](http://containergardeninginrv.blogspot.com)*)

## Plant Selection

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**“WE HAVE BEEN GROWING A LOT OF WHAT WE HAVE IDENTIFIED AS CHILDREN’S FAVORITES, PARTICULARLY SWEET PEPPERS AND A VARIETY OF CHERRY TOMATOES. MANY CHILDREN ALSO ENJOY LETTUCE AND SPINACH WHICH WE GROW AS AN EARLY SPRING CROPS.”**

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*Laura Bennett, preschool teacher,  
Chauncey Early Learning Center*

There are lots of choices when it comes to deciding what to grow in containers. Many vegetable crops can thrive in containers as long as they’re properly sized for the plants you’re growing. But the most practical choices are plants that stay relatively compact. For example, pumpkin and squash varieties that produce large, rambling vines are challenging to grow as container crops, but bush varieties that take up much less space can be very successful. The same is true for tomatoes; varieties labeled “dwarf,” “compact,” or “bush,” will adapt most easily to container living. Lettuce and other greens, root crops, bush beans, peppers, onions, cabbage family crops, and many herbs are relatively small plants and are all good choices for container growing.

Interested in flowers as well as food? There is an enormous array of beautiful annual bloomers that will be happy in containers, including marigolds, zinnias, petunias, and strawflowers. Flowering plants will not only add beauty to your garden space, students will soon enough see that they attract pollinators and other beneficial insects as well. Remind students when planting that plant starts are indeed small at first but will grow quite large. Little seedlings oftentimes turn into enormous adult plants! Over-crowding plants can lead to unnecessary stresses for their roots, competition for sunlight and water, as well as increased insect problems. We recommend to not overplant a bucket, but instead give plants ample room to grow and thrive. Keep in mind a single large plant in the middle can be quite successful and eye-catching with some small flowers encircling it. Below is a chart of plants that do well in containers and how much room each requires:

Plant	Light Needed	Min. Container Size*	Number of Plants**	Space Between Plants
Arugula	Full to part sun	1/2 gallon	3-5 plants	3-4 inches
Bachelor Buttons	Full sun	1-2 quart	3-5 plants	3-4 inches
Beans, Bush	Full sun	2 gallons	3 plants	4-6 inches
Beans, Pole	Full sun	5 gallons	3 plants	2-4 inches



Plant	Light Needed	Min. Container Size*	Number of Plants**	Space Between Plants
Basil	Full sun	1 quart	1 plant	
Broccoli	Full sun	5 gallons	1-2 plants	12-18 inches
Calendula	Full sun	1-2 quart	3-5 plants	3-4 inches
Cantaloupe	Full sun	5 gallons	1 plant	
Carrots	Full to part sun	1-5 gallons	8-10 plants per gallon	2-3 inches
Cabbage	Full to part sun	5-15 gallons	1 plant per 5 gallons	12-18 inches
Chard, Swiss	Full to part sun	1 gallon	4-5 plants	4-6 inches
Chard, Rainbow Mix	Full to part sun	1 gallon	4-5 plants	4-6 inches
Chives	Full sun	1 quart	3 plants	
Cilantro	Full sun	1-5 gallons	1 plant per gallon	8-12 inches
Collards	Full sun	1-5 gallons	3 plants per gallon	5-7 inches
Cucumbers	Full sun	3-5 gallons	3 plants	Hill plants in middle
Cucumbers, bush	Full sun	3-5 gallons	1 plant	
Dianthus	Full sun	1-2 quart	3-5 plants	3-4 inches
Dill	Full sun	1-5 gallons	10-12 plants per gallon	8-12 inches
Eggplant	Full sun	2-5 gallons	3 plants	
Hyssop	Full sun	0.5-1 gallon	1 plant	
Kale	Full to part sun	2-5 gallons	3 plants	10-15 inches
Lettuce, leaf	Full to Part Sun	0.5-5 gallons	10-12 plants per gallon	2-3 inches
Marigold	Full sun	1-2 quarts	3-5 plants	3-4 inches
Nasturtium	Full to part sun	1-2 quarts	3-5 plants	3-4 inches
Onions	Full to part sun	2-5 gallons	3-5 mature plants	Thin to 4-5 inch
Onions, green	Full to part sun	1 gallon	10-12 plants	2-3 inches
Oregano	Full sun	1 gallons	1 plant	
Pansy	Part shade	1-2 quarts	3-6 plants	3-4 inches

Plant	Light Needed	Min. Container Size*	Number of Plants**	Space Between Plants
Parsley	Full to part sun	1-2 quarts	1 plant	
Peas	Full to part sun	2-5 gallons	3-6 plant	3-4 inches
Peas, snow	Full to part sun	2-5 gallons	3-6 plants	3-4 inches
Peppers, bell	Full sun	2-5 gallons	1 plant	
Peppers, hot	Full sun	2-5 gallons	1 plant	
Pepper, wax	Full sun	2-5 gallons	1 plant	
Pumpkin	Full sun	1 gallon	1 plant	
Radicchio	Full to part sun	1 gallon	3 plant	
Sage	Full sun	1 gallon	1 plant	
Spearmint	Full to part sun	1-2 quarts	3-5 plants	3-4 inches
Squash	Full sun	5 gallons	1 plant	
Squash, summer	Full sun	5 gallons	1 plant	
Thyme	Full sun	1-2 quarts	1 plant	
Tomato	Full sun	5 gallons	1 plant	
Tomato, cherry	Full sun	2 gallons	1 plant	
Watermelon, sugar	Full sun	5 gallons	1 plant	
Zucchini	Full sun	5 gallons	1 plant	

(source: [http://greyduckgarlic.com/Container\\_Gardens.html](http://greyduckgarlic.com/Container_Gardens.html))

## Container garden maintenance

Container plantings can dry out really fast when the weather gets hot. Some containers, particularly those surrounded by hot asphalt, may even need watering every single day when temperatures are high. Remind students how to test by measuring the soil moisture one inch below and also to add water slowly so that it has a chance to soak in. All that watering can leach nutrients out of the soil quickly, so plants grown in containers may need regular fertilization. You can either mix in slow-release fertilizer pellets at planting time or give your plants a dose of soluble fertilizer, such as fish emulsion, every 3-4 weeks. Certain plants may require a stake to grow up, or a trellis or cage for support. It is always recommended to add said support while the plant is still small and manageable rather than trying to train a full-grown tomato.

# SPOTLIGHT: GARDEN ROW MARKERS

Kids can make their own “row markers” to identify seeds or starts planted in their School Garden. They ways to do this are endless...let them be creative in choosing their medium and encourage the use of bright colors. Some ideas to paint upon include rocks, tree rounds, cardstock (that is then laminated), popsicle sticks, and spoons. Remember to seal their works of art with a clear spray to protect against weather.



(<http://foodstorageandsurvival.com/wp-content/uploads/2017/04/popsicle-sticks-small.jpg>)

(<https://www.pinterest.com/pin/164170348890558400/?lp=true>)

## RAISED BEDS

Schools nation-wide are choosing raised bed gardening to help School Gardening programs thrive. Although they increase the initial investment of time and money, we highly recommend a raised bed situation for School Gardens and here are some of the many reasons why:

- Perhaps the #1 reason from a teachers point of view, is that raised bed gardens cut down on maintenance. They allow young gardeners to spend more time learning in the garden, rather than struggling with excessive weeds
- Raised beds, when laid out accordingly, provide access for a broader range of ages and abilities. If made high enough, the need for bending over is reduced, and if path size is taken into consideration in their design, they can be made handicapped accessible.
- Raised bed gardens give you complete control over soil composition, allowing the opportunity to amend the soil as needed for optimum plant growth
- They protect your soil from foot traffic that is bound to occur with large groups of little feet resulting in squished plants and soil compaction
- They offer flexibility in location and can be installed over soil or paved surfaces
- Raised beds will warm quicker than the surrounding soil in the Spring from the heat of the sun on the sides. This allows you to get going a little earlier as growing depends more on soil temperature than outside air temperature.
- They also provide garden programs with a more permanent presence, encouraging participants and administrators to view the garden as an important resource that should be used often and sustained over time. If properly maintained, raised beds can appear neat and tidy and pleasing to even the most critical eye.



*No green space? Raised beds on concrete*

# Materials

Beds can be square, rectangular, round, triangular... or even a unique shape like a hexagon. The possibilities are endless, although not always practical! The desired size and shape will help you determine the best materials to use. Raised beds can be made from many different materials, including wood, composite lumber, brick, or stone. Think about what is accessible, attractive, economical, and easy to work with. Wood is usually the least expensive option but be sure to avoid pressure-treated wood, as studies have suggested toxins may leach into the soil. There are plenty of companies that sell "kits" to build raised beds that include all of the necessary materials if your school has the money to go that route.

## Comparison of Materials for Raised Bed Garden Structures

Material	Possible Bed Shape/Size	Approximate Cost	Ability to Move	Longevity	Comments
<b>Wood</b>	Rectangular or square beds are the most practical design although any straight-sided structure is possible.	Pine: \$5 (2" x 8" X 8") Cedar: \$7 (2" X 4" X 8") \$10 (1" X 8" X 8")	Yes, as long as wood has not begun to rot.	Pine will last 3 to 5 years. Cedar boards will last 10 to 15 years.	Rot-resistant boards like cedar are the best option. Avoid all treated wood since chemicals may leach into the soil.
<b>Composite lumber</b>	Rectangular or square beds most practical.	\$20 per board (1" X 6" X 8")	Yes	50 Years	Made from a combination of plastic and wood fibers.
<b>Cinder Blocks</b>	Rectangular or square beds are most practical.	\$1.50 per block (8" X 8" X 16")	Yes. Cinder blocks are heavy enough that they do not necessarily need to be fixed with mortar.	Life time (100 + years)	To add to the attractiveness of cinder block beds, the sides can be painted and the top layer can be turned so that soil can be placed in the holes for added planting space.
<b>Wall Block</b>	Any shape or size	\$2 per block (12" X 7" X 4")	Yes. Most wall blocks are heavy enough that they do not necessarily need to be fixed with mortar.	Life time (100 + years)	More attractive than cinder blocks and available in different colors.
<b>Stone</b>	Any shape or size	Pallets of stone can vary greatly from \$150 to \$500	Maybe, if stones are heavy enough that they do not need to be fixed in place with mortar.	Life time (100 + years)	Attractive, but expensive. Smaller stones should be mortared for safety.
<b>Bricks</b>	Any shape or size	\$0.32 (7 ¾" X 2 ¼" X 3 ¾")	No, for safety bricks would need to be mortared.	Life time (100 + years)	Can make for very attractive beds, but installation costs are very pricey unless you can find a bricklayer willing to donate their time for construction.

Think about how much space you have available, and what you want to grow. Although some common vegetables like lettuce can grow in shallow amounts of soil, most raised beds designed to grow a variety of crops should be built between 8-12 inches deep. If you are planting over a paved surface, increase that depth to 18-24 inches.

When determining the width of your raised beds, keep in mind the arm span of young gardeners. For most youth, you do not want the beds to be wider than 4 feet or they will need to step into the bed to plant and maintain it. For preschools and/or schools teaching very young children, 2 to 3 feet wide may be more appropriate. Also keep in mind any special needs of your gardeners.

## **Location**

When choosing a location for your raised beds, take into account how much sunlight the area gets. Ideally you will need a minimum of 6 hours direct sunlight per day for most vegetable crops. Keep an eye on your proposed area for a few days to get an idea of how much sunlight it gets throughout the day, get the children involved and time how long the sun shines on different parts of your site. Don't be discouraged if you do not have a spot with 6+ hours of sunlight, you can still grow a range of shade tolerant herb and salad crops but your choices will be a little more limited

It's a good idea to try to position your School Garden near an outside tap for ease of watering. The easier it is to water the beds the more likely that someone will do it! Keep in mind that if you don't have water access nearby, a rain barrel could be an option.

Once you choose the spot, identify what will have to be removed if you convert this space to a garden. Brainstorm other elements you would like to include in the garden, such as a toolshed, or a compost bin. Do you and the kids plan to create more than one, either now or in the future? If so, is there room to expand? Be sure to leave ample room for walking paths and enough space for kids to push a wheelbarrow (or a wheel chair) between the beds. Make sure you pick a location that is easily accessible, yet not a barrier to traffic flow.

If your garden is a short walk from the classroom, there will be more teacher involvement than if the site is a long trek across the school grounds. A garden close to the classroom is more convenient, more visible, and easier to incorporate into the curriculum on a regular basis.



*Raised beds with mulched paths (source: [www.actionforhealthykids.org/school-garden](http://www.actionforhealthykids.org/school-garden))*

## How

Once your design is finalized, we suggest you use spray paint to mark where the beds will be placed. If planning over grass, begin by covering the bottom with cardboard or a thick layer of newspapers to discourage the weeds and grass from growing up into the bed. The actual construction of the beds is relatively easy, all you need is a few simple tools such as a saw, drill, screws/nails, and some handy grown-ups. A "work party" is a fun way to get the garden started, with parent volunteers as well as students working together. Kids love to do the building but be sure they are wearing eye protection and are being carefully watched the entire time.

For specific instructions on the actual assembly of beds, we recommend this site:

<https://schoolgardening.rhs.org.uk/Resources/Project/Creating-raised-beds>

After the bed frames are placed in their intended spot, it time to fill them with healthy soil. Don't spend all your money on the structure, make sure to plan to have money left over to invest in quality topsoil, garden soil and/or compost. Most plants will grow well in a 50/50 mixture of compost and topsoil.

Paths should be a minimum of 4 feet wide to allow for easy access. Depending on your site and funding availability, there are several options to keep paths tidy and functional. If your site is in a

grassy location, paths could be mowed regularly by school maintenance. If not, consider laying weed barrier (or a free alternative, cardboard!) and covering them with woodchips or gravel. Check with your local arborist company—they may have excess of wood chips they are willing to donate.

Think about your need for a fence. Are there oftentimes animals that visit your area that you need to keep out? If so and you are planning on only a few raised beds, perhaps it would be easiest to put inexpensive chicken wire around them individually. If you are building multiple beds, consider sourcing the funds to install a “real,” more permanent fence enclosing all of them.

## Plant Selection

(see charts in the next section for specifics about how and when to begin growing specific crops)

### Less Sun (at least 3 – 4 Hours a Day)



- Most Leafy Crops and other Salad Greens
- Lettuce
- Spinach
- Kale
- Bok Choi
- Stir Fry Greens
- Mint
- Parsley
- Coriander
- Chives

### More Sun (5- 6 hours – nearly ½ day)



- Peas
- Beans
- Root Crops
- Runner & French Beans
- Potatoes
- Carrots
- Radish



### Lots of Sun (6 hours – over ½ day)



- Fruiting Crops
- Tomatoes
- Squash
- Peppers
- Strawberries

### Raised bed maintenance

Once planted, mulch your beds to help decrease water loss and prevent weeds from growing. In the peak of the growing season, weeds can be fierce! Encourage students and volunteers to keep up on them regularly rather than let them get out of control and feel overwhelmed. While raised beds are a great choice and more maintenance free than a traditional in-ground School Garden, they do require annual maintenance to prosper. If you are using inexpensive wood, be prepared to replace it every 2-3 years. Keep in mind the mulch/gravel on the paths will decompose/sink and will also need to have a top-coat applied perhaps annually. For optimum plant growth, we recommend adding compost to the soil regularly.



# SPOTLIGHT: RECORD FLOWERS

Having students create art together to decorate their garden is a great way to build enthusiasm and increase your School Garden's aesthetic appeal. At West Elementary School in Athens, OH, students, volunteers, and staff worked together to create what we call "record flowers" to be hung on the School Garden's fence. The outcome is gorgeous and yet the actual crafting of these beauties is surprisingly easy.

## Materials needed:

- Records (easily and cheaply sourced from a thrift store, be sure to buy both large/33's and smaller/45's, keeping in mind that each flower needs both 1 large and 1 small together)
- An oven, oven-proof bowl, cookie sheet, and hot pads (this part can be done ahead of time if desired)
- Acrylic paints, brushes, paint trays, water, smocks (for young artists), rags, clear coat spray
- Assorted knobs and/or drawer pulls and matching screws, washers (also cheap at a salvage store)
- Wire (varies, needed if you are attaching to a fence)

## Procedure:

- "Melt" the records (if doing this project with young students, have this already done before hand) by placing them on an inverted bowl in the oven at low temperature for approx. 4-8 minutes each. Once you pull them out, you can gently shape them to the desired waviness, keeping in mind they can be hot to the touch. Allow the records to cool completely before painting them. There are several videos describing this technique in detail, such as this one: <https://www.youtube.com/watch?v=G-KVx5U5NRA>
- Allow students to paint the records creatively (if working with very young artists, you might want to consider spray painting them a solid color ahead of time to ensure they get fully covered with paint) We recommend bright, vibrant colors and lots of combinations of different patterns and shapes. Remind students that the back of their record will most likely not show.
- Let the freshly-painted records dry completely before spraying them with 2 thin coats of clear sealant (this is especially important if the flowers are going to be installed outdoors. Note this spraying needs to be done outside)
- Assemble the flowers by placing one smaller record inside a larger record and connecting the two with a fitting drawer pull/knob. Use the matching screw to hold it together (you may need a washer depending on the width of your chosen knob).
- Use wire to attach the flowers to a fence, being sure to tuck the pointy ends of the wires away safely.

## Further recommendations:



If art projects are intimidating to you, ask an art teacher to help out with this. A lot of the “crafty” supplies required are readily available in the art room. Mix and match whose 33 gets paired with whose 45. This project is especially effective with a larger number of flowers installed together. Don’t have a fence to install them on? Attach them to sturdy stakes instead, and find some scraps to paint green as “leaves.”



## LARGE SCALE GARDENS

By definition, large-scale gardens encompass more physical space than the other 3 gardens in this guide. Specifics of large-scale gardens will vary from site to site, but their most defining feature is that they are created upon existing soil. Large-scale gardens can offer a variety of spaces for children to explore, experiment, and transform. If developed wisely and managed properly, large-scale gardens also have the potential to become thriving ecosystems and to produce significant amounts of food. Because they are larger in size, they have the ability to provide ample space to allow larger groups of students to work together as well as plenty of space for other outdoor structures (maybe compost systems, tool sheds, and outdoor learning lab areas). Also due to their large size, they encourage plant, animal, and insect diversity.

Disadvantages also come along with size increases as these types of gardens are definitely more challenging to manage. Irrigating, weeding, and harvesting large gardens is a lot of work! Gardeners need to be committed to run a large-scale garden effectively. This is a disadvantage that is often the biggest difficulty for schools. They are also costly to create and maintain, and they usually require more tools. Lots of space means the potential for creating garden structures, which can add wonderful features but also add expenses and more potential upkeep.

## LOCATION

Before you settle on a place to develop your garden, start by learning the history of your site, if possible. This can give you clues to possible hazards to be concerned about, whether it's industrial contaminants, or the likelihood of flooding. Take the students to visit potential sites at different times of day. Have them keep a record of their observations, keeping in mind that most flower, vegetable, and herb gardens need to be exposed to full sunlight for at least six hours a day. Brainstorm other elements you would like to include in the garden, such as a compost bin or toolshed. (If tools must be stored away from the garden site, consider investing in a garden cart to move them easily). Although we recommend for you to start small, it is a good idea to have room to expand as your program grows. Also plan for how materials such as bulk mulch can be delivered to the garden site if needed. Situating the garden for access by vehicles will be most convenient but may not always be an option. Think about the critters you have visiting regularly (both 4-legged and human vandals), and consider whether or not your area will need to be fenced in.

Access to water is essential for garden success, and the closer the water is to the garden, the better. If a water source is not conveniently located, the job of watering can become time-consuming and limit garden growth. Make sure your water source is a potable (drinking water safe) water source to irrigate your edible garden. (Water provided by your municipality is a safe source. If the water you're using comes from a private well or untreated surface water source such as a pond or river, have it tested. Your local health department can provide you with information on water testing.)

If your garden is a short walk from the classroom, there will be more teacher involvement than if the site is a long trek across the school grounds. A garden close to the classroom is more convenient, more visible, and easier to incorporate into the curriculum on a regular basis. The paths throughout the garden should be level. In order for it to be handicapped accessible, paths should be a minimum of 4 feet wide (check with your school district for specific accessibility regulations). Check with your school principal and administrators about long-term plans for your site, don't invest large amounts of energy and money in a site slated to become a new soccer field! Place the garden in a visible location so all students, teachers, parents, and community members can enjoy its beauty, thus adding to their support and enthusiasm for the garden.

## **Soil**

No matter where your in-ground garden is located, it's always wise to start out with a soil test. Nutrient-rich soil with good texture and plenty of organic matter will help your garden thrive. On the flip side, poor soil will frustrate even the most experienced gardener. Determine the texture of your soil (amount of sand, silt, and clay) and test for pH and nutrient content. Have students help by using do-it-yourself soil kits, or contact your local Cooperative Extension Service office for information on soil testing labs. It is also a good idea to test for contaminants such as lead and other heavy metals (Although this type of contamination is often associated with urban soils, it's also possible for suburban and rural area soils to be contaminated as well).

In large-scale gardens, building healthy soil is the highest priority. In nature, it can take hundreds of years for an inch of topsoil to form but fortunately there are ways for us to help encourage healthy soils faster. A soil test will also tell you whether you need to add amendments to adjust the soil pH or add nutrients before planting. Knowing the current level of nutrients present helps you apply the correct amount of fertilizer needed for

healthy crops and avoid over-fertilizing. The use of cover crops and compost also help ensure soil's health.

## How

If the area where you plan to garden is currently growing grass, or other plants, you'll need to plan on removing them and cultivating the soil before planting. (Plan on doing this when it is not too damp to prevent soil damage). While this can be done by hand in small garden areas, larger ones are more easily prepared using rototillers, which can usually be rented economically. Once the planting areas are marked off, it is time to add your pre-measured nutrients and/or compost to those areas.

There's nothing to say that your garden must be one big rectangle planted in straight rows. Large-scale garden beds can be designed in all sizes and shapes; vegetables can be mixed with flowers; and fruit trees and bushes can enhance the landscape. Paths can be left as lawn (if you have maintenance to keep them regularly mowed), or can be covered with weed barrier and woodchips or gravel to ensure a tidier look.

## Plant selection

Nearly any kind of plant that thrives in your geographic area can be grown in large-scale gardens. When considering what kinds of fruit trees, perennial flowers, herbs, and vegetables to grow, consult with local farmers and nurseries before choosing varieties, so you know the specific requirements of each species. Refer to the charts for suggestions on when, how, and which crops to start at specific times.



## Spring Fruit And Vegetable Planting Guide

Crop	Plant Seeds Indoors (weeks before or after last frost)	Plant seeds or transplant outdoors (weeks before or after last frost)	Planting Depth (inches)	Spacing of plants (inches)	Days to Germination	Days to harvest	Good Source of
Beans	3-4 weeks	1-2 weeks after	1	6-8	4-10	60-80	Vit. C, Fiber
Beets	*	2-4 weeks before	1/2	2-4	7-10	50-75	Greens high in Vit. A, C, Iron, Calcium
Broccoli	5-8 weeks before	5-8 weeks before	1/4	15-18	5-10	60-75	Vit. A, C, Folate, Calcium, Magnesium, Fiber
Cabbage	4-6 weeks before	5 weeks before	1/4	18	4-10	60+	Vit. C, Fiber
Carrots	*	2-4 weeks before	1/4	2	10-17	60-80	Vit. A, Fiber
Cauliflower	5-8 weeks before	1-2 weeks before	1/4	15-18	5-10	60-72	
Celery	8-10 weeks before	2-3 weeks before	1/4	6	7-12	75-100	Vit. C, Folate, Potassium, Fiber
Corn	3-4 weeks before	1-2 weeks after	1	12-15	3-10	50-95	Thiamine, Folate, Potassium
Cucumbers	2-3 weeks before	1-2 weeks after	1	12-24	3-8	60-80	-
Garlic	*	6 weeks before	1/2	4-6	10-15	90-120	Vit. A, C, Folate

Crop	Plant Seeds Indoors (weeks before or after last frost)	Plant seeds or transplant outdoors (weeks before or after last frost)	Planting Depth (inches)	Spacing of plants (inches)	Days to Germination	Days to harvest	Good Source of
Lettuce	3-4 weeks before	2-4 weeks before through 3 weeks after	1/4	10-12	4-10	45-60	Vit. A, K, Calcium
Onions	*	3 weeks before through 2 weeks after	1/4	4	4-12	60-85	Vit. C
Peas	4-6 weeks before	4-6 weeks before through 2-3 weeks after	1	4	6-15	55-75	Protein, Vit. B1
Peppers	6-8 weeks before	1-3 weeks after	1/2	10-12	8-20	70+	Vit. C
Potatoes	*	4-6 weeks before	6	10-12	10-15	70+	Vit. C, B6, Niacin, Copper, Potassium, Fiber
Pumpkins	*	After last chance of frost	1	36	7-10	90+	-
Radishes	*	4-6 weeks before	1/4	1	3-10	25-40	-
Spinach	3-4 weeks before	3-6 weeks before	1/4	4-8	6-14	40-60	Vit. A, C, K, Iron
Squash, Summer	*	1-4 weeks after	1	15-24	3-12	60-85	Vit. A, C, Fiber
Squash, winter	*	2 weeks after	½-1	24-36	4-10	80+	Vit. A, C, Potassium, Fiber



Crop	Plant Seeds Indoors (weeks before or after last frost)	Plant seeds or transplant outdoors (weeks before or after last frost)	Planting Depth (inches)	Spacing of plants (inches)	Days to Germination	Days to harvest	Good Source of
Tomatoes	6-8 weeks before	2-4 weeks after	¼-1/2	18-24	6-14	65-85	Vit. A, C, Potassium, Fiber
Cantaloupe	2 weeks before	2 weeks after	1	24-36	7-14	60-90	Vit. A, C, Thiamine, Potassium
Strawberries (Alpine)	3-5 weeks before	*	1/8	6-8	20	85+	Vit. C, Fiber
Watermelon	2 weeks before	2 weeks after	½-3/4	24-36	5-10	70-90	Vit. A, B6, C, Thiamine

(\*means not recommended)

### Spring Herb Planting Guide

Herbs may be harvested at any time once they reach a decent size, as long as you leave enough foliage to keep the plant alive.

Crop	Plant Seeds Indoors (weeks before or after last frost)	Plant Seeds or Transplants Outdoors (weeks before or after last frost)	Planting Depth (inches)	Spacing of Plants (inches)	Days to Germination
Basil	4-6 weeks before	1-2 weeks after	1/8	6-12	7-10
Catnip	6 weeks before	2-4 weeks before	1/8	12-18	5-14
Chives	6 weeks before	After last chance of frost	1/4	8-12	5-14
Cilantro	*	After last chance of frost	1/2	12-18	10-15
Dill	*	1-2 weeks before	1/4	3-12	20-25
Oregano	6-8 weeks before	2-4 weeks after	1/8	8-12	8-14
Parsley	4-6 weeks before	1-2 weeks after	1/4	6	11-27

Crop	Plant Seeds Indoors (weeks before or after last frost)	Plant Seeds or Transplants Outdoors (weeks before or after last frost)	Planting Depth (inches)	Spacing of Plants (inches)	Days to Germination
Sage	4 weeks before	After last chance of frost	1/4	12	12-21
Spearmint	6 weeks before	After last chance of frost	1/8	18	10-16
Thyme	8 weeks before	2 weeks after	1/8	6-12	20-30

*\*Not Recommended*

### Fall Fruit And Vegetable Planting Guide

Crop	Plant Seeds Outdoors (weeks before first frost)	Planting Depth (inches)	Spacing of Plants (inches)	Days to Germination	Days to Harvest*	Good Source Of
Beets	8-10 weeks before	½	2-4	7-10	50-75+	Greens high in Vit. A, C, Iron, Calcium
Broccoli	14-17 weeks before	¾	15-18	5-10	60+	Vit. A, C, Folate, Calcium, Magnesium, Fiber
Cabbage	13-14 weeks before	¾	18	4-10	60+	Vit. C, Fiber
Carrots	13 weeks before	¾	2	10-17	60+	Vit. A, Fiber
Cauliflower	14 weeks before	¾	15-18	5-10	60+	Vit. C, Folate, Potassium
Garlic	Sept.-Nov. with mulch	Depths of clove	4-6	-	160-200	Vit. A, C, Folate
Lettuce	6-8 weeks before	¾	10-12	4-10	45-65	Vit. A, K, Calcium
Onions	Depends on variety	¾	4	4-12	60-120	Vit. C
Peas	12 weeks before	1	4	6-15	55+	Protein, Vit. B1

Plant Seeds						
Crop	Outdoors (weeks before first frost)	Planting Depth (inches)	Spacing of Plants (inches)	Days to Germination	Days to Harvest*	Good Source Of
Radishes	7 weeks before	¼	1	3-10	25+	
Spinach	6-8 weeks before	¼	4-8	6-14	40-75	Vit. A, C, K, Iron
Strawberries, Alpine	5-8 weeks before	1/8	4	20	Next spring	Vit. C, Fiber

## Maintaining a Large-Scale Garden

When maintaining large-scale gardens with children during class time, consider dividing the kids into small groups in order to address the many needs of the garden. One student's weakness is likely to be fellow student's strength!

Plan for summer plans as a large-scale garden will not be successful if it is abandoned for any length of time. We suggest recruiting families to volunteer in the spring from the school to "adopt a week" they will oversee garden maintenance during summer months. Clearly spell out the expectations and the benefits. Hold a short training for families, demonstrating how and when to water, weed, harvest, (as well as what to do with the harvest.) Create and distribute a calendar that identifies who is responsible for caring for the garden each week.

Consult your local extension office if pest-related problems arise. Always keep in mind that the USDA recommends avoiding the use of herbicides and pesticides in your School Garden due to the potential health risks to school-aged children.

Maintaining fertility is crucial in any garden that produces food. Anytime food is harvested or weeds are pulled, nutrients are removed from the soil. As long as an active composting program is part of maintaining the garden, nutrients will not be depleted too quickly. Additionally, fertility can be maintained in the garden through the use cover cropping and proper mulching.

# SPOTLIGHT: FEDERAL HOCKING GARDEN, STEWART, OHIO

Keith Macartney, secondary school teacher at Federal Hocking in Southeast Ohio, has a father-law whose successful School Garden left a big imprint on him. In 2012, Keith brought up the idea of building a School Garden with a few of his coworkers and his administrator who expressed their support. He then combined classes with the math teacher across the hall and they took their classes out together to break ground in the garden. The students and teachers worked as a team to clear off the sod and make four 10x60 feet rows and thus the Fed Hock School Garden began.

It continued on in a similar fashion for a few years, partner teachers coming and going, but Keith consistently taking his classes out to garden. He continued to do so until the curriculum he taught changed and he found it harder to spend “class time” in the garden. He then decided to make the garden an option for students during their lunch times and has continued to do so with great success.

The produce from the Fed Hock School Garden can be used in many ways. The students who volunteer get the first chance to taste and try things, Keith says “anything that involves eating is popular with (his) students!” When they have larger portions of produce, they turn it over to the school cooks to be added to their recipes or salad bar, which regularly utilizes locally-sourced food.

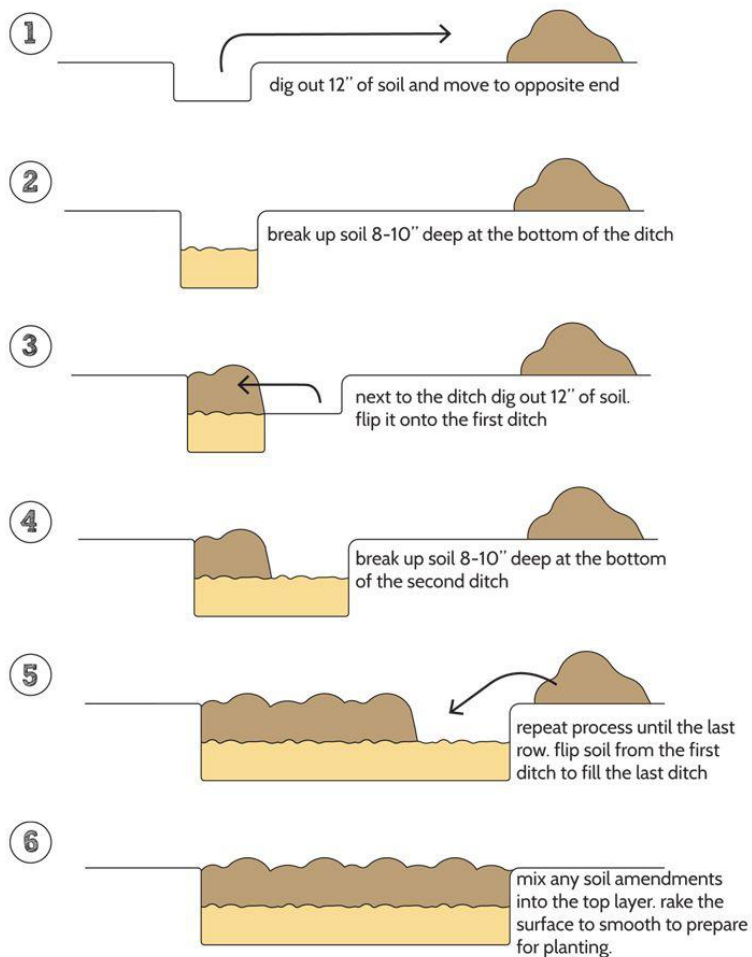
When prompted for advice to those looking to start their own vegetable garden at school, Keith reiterates that the lack of support is the biggest barrier to success. He encourages those looking to start a garden to include as many people as possible including administrators, fellow teachers, and custodians, reminding teachers to “get as many allies in the endeavor as you can!”



*Students at Federal Hocking turning their garden soil*

# SCHOOL GARDEN PLANTING GUIDE

After planning and preparation, the excitement builds to the day when everyone can really “dig in” and get their hands dirty in the School Garden. Depending on the task list and the class size, it is often recommended to split into groups rather than have several little hands reaching into a small space. Remember that hats and sunscreen are always a must for tender faces and bodies!



## Prepare the Soil and Beds

This procedure will vary greatly in time and intensity depending on the size of the project and the location and type of the garden. For indoor spaces or container gardens, this is as simple as adding fresh soil into the chosen containers. For raised beds, remove any woody materials that may remain and simply turn the soil with a shovel or D-handled fork. If you are concerned about the composition or nutrient content of your School Garden's soil, now is the time to add a layer of compost to be tilled into the soil of your raised beds or in-ground gardens. For larger in-ground spaces, we recommend the “double digging method” to sufficiently turn the soil without the use of a rototiller.

(source: <http://thisnaturaldream.com/double-digging-now-chow-later/>)

## Choose your Plants

Consider factors specific to your School Garden such as the amount of space and sunlight the plants will need, their time until harvest, and the taste buds of your students. Keep in mind the dates of your first or last frost date. (Your Cooperative Extension Service office can tell you the frost dates in your area. Refer to our charts below for recommendations).

## Planting Seeds

Most classrooms begin their gardens by planting seeds because they are relatively inexpensive and their growth helps to visualize the full life cycle of a plant. Refer to the back of the seed packet for spacing and depth information for your specific seed type. Have students make holes or shallow trenches of the appropriate depth and place seeds in the holes, covering them lightly with soil. Keep in mind that it is not recommended to plant seeds too close together for crowded plants compete for necessary resources.

Be sure to label your freshly planted seeds with not only the name of the plant but also the date planted, if room allows. Ask responsible students to water the seeds *gently* and be sure they continue to water regularly as weather conditions require to ensure that the soil remains consistently moist until germination.

- **Planting Depth.** Generally, seeds should be planted at a depth that is two to three times their width. Refer to your seed packet for specific planting depths. Keep in mind that some crops either require light to germinate or are too tiny to be buried under soil and it might be recommended that they are simply pressed down lightly with a smooth surface, but not buried.
- **Spacing of Plants.** Plants should be grown a certain distance apart to ensure they do not crowd each other and inhibit healthy growth. Since not all seeds will germinate, seeds should be planted closer than the distance needed by mature plants. Follow the spacing recommended on the seed packet when planting seeds outdoors. If more seeds germinate than expected, you may need to “thin the crop” (remove less vigorous sprouts to give more room to the healthiest plants).

- **Days to Germination.** Temperature and moisture can greatly affect this rate, but in general this number found on your seed packet can tell you how long until you can expect to see sprouts first begin appearing.

## Planting Transplants

If your School Garden is in a region with a shorter growing season, starting plants inside the classroom (or purchasing plant starts) can be recommended to ensure more chances of a harvest by students during the school year. Some vegetables prefer to be sown directly in the garden, while others do quite well being started from seed indoors, check the back of your seed packet for specific recommendations. The best time to start seedlings depends on your choice of plants and your particular climate.

## Suggested Plants for School Gardens

The following charts provide detailed information about crops commonly planted by seed in School Garden.

### Spring Herb Planting Guide

Herbs may be harvested at any time once they reach a decent size, as long as you leave enough foliage to keep the plant alive.

Crop	Plant Seeds Indoors (weeks before or after last frost)	Plant Seeds or Transplants Outdoors (weeks before or after last frost)	Planting Depth (inches)	Spacing of Plants (inches)	Days to Germination
Basil	4-6 weeks before	1-2 weeks After	1/8	6-12	7-10
Catnip	6 weeks before	2-4 weeks Before	1/8	12-18	5-14
Chives	6 weeks before	After last chance of frost	1/4	8-12	5-14
Cilantro	*	After last chance of frost	1/2	12-18	10-15

Crop	Plant Seeds Indoors (weeks before or after last frost)	Plant Seeds or Transplants Outdoors (weeks before or after last frost)	Planting Depth (inches)	Spacing of Plants (inches)	Days to Germination
Dill	*	1-2 weeks Before	1/4	3-12	20-25
Oregano	6-8 weeks before	2-4 weeks After	1/8	8-12	8-14
Parsley	4-6 weeks before	1-2 weeks After	1/4	6	11-27
Sage	4 weeks before	After last chance of frost	1/4	12	12-21
Spearmint	6 weeks before	After last chance of frost	1/8	18	10-16
Thyme	8 weeks before	2 weeks After	1/8	6-12	20-30

### Spring Fruit And Vegetable Planting Guide

Crop	Plant Seeds Indoors (weeks before or after last frost)	Plant seeds or transplant outdoors (weeks before or after last frost)	Planting Depth (inches)	Spacing of plants (inches)	Days to Germination	Days to harvest	Good Source of
Beans	3-4 weeks	1-2 weeks after	1	6-8	4-10	60-80	Vit. C, fiber
Beets	*	2-4 weeks before	1/2	2-4	7-10	50-75	Greens high in Vit. A, C, iron, calcium
Broccoli	5-8 weeks before	5-8 weeks before	1/4	15-18	5-10	60-75	Vit. A, C, folate, calcium, magnesium, fiber
Cabbage	4-6 weeks before	5 weeks before	1/4	18	4-10	60+	Vit. C, fiber



Crop	Plant Seeds Indoors (weeks before or after last frost)	Plant seeds or transplant outdoors (weeks before or after last frost)	Planting Depth (inches)	Spacing of plants (inches)	Days to Germination	Days to harvest	Good Source of
Carrots	*	2-4 weeks before	1/4	2	10-17	60-80	Vit. A, fiber
Cauliflower	5-8 weeks before	1-2 weeks before	1/4	15-18	5-10	60-72	
Celery	8-10 weeks before	2-3 weeks before	1/4	6	7-12	75-100	Vit. C, folate, potassium Fiber
Corn	3-4 weeks before	1-2 weeks after	1	12-15	3-10	50-95	Thiamine, folate, potassium
Cucumbers	2-3 weeks before	1-2 weeks after	1	12-24	3-8	60-80	-
Garlic	*	6 weeks before	1/2	4-6	10-15	90-120	Vit. A, C, folate
Lettuce	3-4 weeks before	2-4 weeks before through 3 weeks after	1/4	10-12	4-10	45-60	Vit. A, K, calcium
Onions	*	3 weeks before through 2 weeks after	1/4	4	4-12	60-85	Vit. C
Peas	4-6 weeks before	4-6 weeks before through 2-3 weeks after	1	4	6-15	55-75	Protein, Vit. B1
Peppers	6-8 weeks before	1-3 weeks after	1/2	10-12	8-20	70+	Vit. C

Crop	Plant Seeds Indoors (weeks before or after last frost)	Plant seeds or transplant outdoors (weeks before or after last frost)	Planting Depth (inches)	Spacing of plants (inches)	Days to Germination	Days to harvest	Good Source of
Potatoes	*	4-6 weeks before	6	10-12	10-15	70+	Vit. C, B6, niacin, copper, potassium, fiber
Pumpkins	*	After last chance of frost	1	36	7-10	90+	-
Radishes	*	4-6 weeks before	1/4	1	3-10	25-40	-
Spinach	3-4 weeks before	3-6 weeks before	1/4	4-8	6-14	40-60	Vit. A, C, K, iron
Squash, Summer	*	1-4 weeks after	1	15-24	3-12	60-85	Vit. A, C, fiber
Squash, winter	*	2 weeks after	1/2-1	24-36	4-10	80+	Vit. A, C, potassium, fiber
Tomatoes	6-8 weeks before	2-4 weeks after	1/4-1/2	18-24	6-14	65-85	Vit. A, C, potassium, fiber
Cantaloupe	2 weeks before	2 weeks after	1	24-36	7-14	60-90	Vit. A, C, thiamine, potassium
Strawberries (Alpine)	3-5 weeks before	*	1/8	6-8	20	85+	Vit. C, fiber
Watermelon	2 weeks before	2 weeks after	1/2-3/4	24-36	5-10	70-90	Vit. A, B6, C, thiamine

*\*Not Recommended*

## Fall Fruit And Vegetable Planting Guide

Crop	Plant Seeds					Good Source Of
	Outdoors (weeks before first frost)	Planting Depth (inches)	Spacing of Plants (inches)	Days to Germination	Days to Harvest*	
Beets	8-10 weeks before	½	2-4	7-10	50-75+	Greens high in Vit. A, C, iron, calcium
Broccoli	14-17 weeks before	¼	15-18	5-10	60+	Vit. A, C, folate, calcium, magnesium, fiber
Cabbage	13-14 weeks before	¼	18	4-10	60+	Vit. C, fiber
Carrots	13 weeks before	¼	2	10-17	60+	Vit. A, fiber
Cauliflower	14 weeks before	¼	15-18	5-10	60+	Vit. C, folate, potassium
Garlic	Sept.-Nov. with mulch	Depths of clove	4-6	-	160-200	Vit. A, C, folate
Lettuce	6-8 weeks before	¼	10-12	4-10	45-65	Vit. A, K, calcium
Onions	Depends on variety	¼	4	4-12	60-120	Vit. C
Peas	12 weeks before	1	4	6-15	55+	Protein, Vit. B1
Radishes	7 weeks before	¼	1	3-10	25+	
Spinach	6-8 weeks before	¼	4-8	6-14	40-75	Vit. A, C, K, iron

(planting guides adapted from "*Gardens for learning: planting your school garden*" The California School Garden Network, 2006).

# SPOTLIGHT: TASTE TESTS

## Taste tests



Taste tests are a great way to expose students to new foods and help food service directors identify new items to incorporate into the menu. In 2018, Rural Action partnered with the Athens City County Health Department's Creating Healthy Communities Coalition, Community Food Initiatives, and Live Healthy Appalachia to host taste tests for Athens City School and Trimble Local School Districts. Partnering with your local health department and local non-profits can help expand capacity and bring multiple elements to the project. For example, CFI was able to talk to students about the School Garden, Live Healthy Appalachia had well-tested kid friendly recipe "pumpkin hummus", and the health department helped Rural Action create marketing, including a bulletin board survey where

students vote on how they liked the recipe using a sticker with a logo tailored to the school district. Taste tests build awareness in the schools while also creating an opportunity for Farm to School partners in the cafeteria, classroom, and garden to work together.



# COMPOST SYSTEMS

## What is Compost?

Compost is defined as decomposed organic matter, from garden and kitchen waste and rich in nutrients for gardens. Vegetables are only as healthy as the soil they were grown in. By making your own compost, you can grow healthier produce, reduce your yard and kitchen waste and improve your School Garden soil.

Compost works by micro-organisms in the organic matter working with bacteria, fungi and insects to break down the materials and convert them into useful soil. Compost is finished when it is dark brown with a soil-like consistency. It will have a sweet musty smell (not rotten). The time required to make compost will depend on composition and pile temperature. Start early, for it typically takes between six weeks to one year to mature.

## Why Compost?

- **Health Benefits:** composting your garden increases the nutrients in the soil. These vitamins are absorbed into the produce, which get absorbed by your body. Fresh, organically grown produce is healthier and more flavorful!
- **Drought Protection:** helps the soil hold in moisture, also reducing the need for watering.
- **Soil Aeration:** improves soil structure by creating air pockets, which helps water drain and roots grow.
- **Erosion Protection:** the better the soil quality, the better defended against erosion.
- **Gradual-Release Nutrients:** compost seeps through the soil and as the season warms, different nutrients are released, helping plants throughout their lives.
- **Disease Prevention:** compost is more effective than oil-based chemical fertilizers in combating disease.
- **Environmental Benefits:** by reducing your garbage, your school can reduce the impact it has on the environment. This small step can help communities have less landfills, less pollution, and help deter climate change. Compost helps turn problems into solutions and trash into treasure.



## Single bin

3'x3'x3': this is the ideal size for a compost pile because it's large enough to get warm and small enough to turn with a pitch fork.



## The 3-bin system

A bin can be made out of anything: wire, hay bales, or old wooden pallets. There are also commercial plastic bins available to purchase through hardware stores. If you have the room near your School Garden, we recommend the three-bin system. The first bin is actively used to pile compostable items, the second bin is for partially composted items (move bin one to bin two once it reaches three feet in height). The third bin is for mature compost, ready to add to your soil. Remind students and staff that all garden debris must be chopped into small pieces to ensure compost matures in a timely manner. We recommend using a D-handled pitchfork to add stuff and turn the pile, or to transfer the compost.



For specifics on materials needed and construction of various compost bins, we recommend the following website: <https://compostingcouncil.org/wp-content/uploads/2015/06/BuildingYourOwnCompostingBin.pdf>

## What Can Be Composted?

### Greens

- Kitchen Scraps: collect scraps in a covered container. Nearly all kitchen waste (veggie and fruit bits, eggshells, coffee grounds) can be collected from your cafeterias and classrooms. NO MEATS, DAIRY, FATS OR OILS.
- Grass Clippings and Garden Debris: Check with the school's maintenance crew and if mowing the lawn, the clippings could be brought over to the compost. Be sure to mix

them in well. Garden prunings and young weeds may also be collected. Use a small bucket to collect garden debris when students are working. Keep in mind that weeds and diseased plants need to be completely removed from the garden to protect future soils by spreading the problem.

## **Browns**

- Shredded Paper and Sawdust: newspapers, computer or notebook paper, can be shredded and added to the mix. Students of all ages can find great pleasure in being asked to rip up unneeded papers!
- Leaves: Leaves contain twice the mineral content of manure, making it a supreme addition to your compost bin. Shredded leaves will breakdown faster, so run a lawnmower over them if possible.

## **The Fastest Way To Compost:**

Mix dry browns and wet greens. Browns are another way of saying carbon-rich materials such as leaves, hay, sawdust and paper. Greens are nitrogen-rich things like kitchen and garden waste. The dry browns help make air pockets, making decomposition happen faster.

The Right Mix: use 25 parts browns to 1 part greens.

Chop and shred: smaller bits break down faster. Think small!

Water as needed: Compost piles need to be moist, like a damp sponge. During dry spells, use a hose to remoisten it, helping quicken decomposition. Keeping it moist like a damp sponge to help things break down faster.

Add air! Turning the pile, mixing, or even just stabbing the pile with a pitchfork helps create new air pockets, speeding up the process. The micro-organisms that help make compost need air to breathe. This is oftentimes a favorite garden chore for students!



**The Lowdown on Manure:** Beware of bacteria, such as e coli, that can thrive in manure, even at high temperatures. Beware that crops may absorb anti-biotic residue remaining in the manure. While aged manure can be safe when applied correctly by professionals, we do not recommend using manure for small-scale School Gardens due to these health risks.

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***“MY KIDS LOVE GOING OUT TO WORK IN THE SCHOOL GARDEN AND REALLY LOOK FORWARD TO THEIR TIME IN THE GARDEN. I THINK IT IS REALLY IMPORTANT FOR KIDS TO KNOW WHERE FOOD COMES FROM, AND TO BE INVOLVED IN THE PROCESS OF HELPING THINGS GROW. FROM THINGS LIKE PLANTING AND WEEDING TO LEARNING ABOUT COMPOSTING AND TRYING NEW FOODS, THE GARDEN PROVIDES MANY OPPORTUNITIES TO EXTEND LEARNING OUTSIDE THE CLASSROOM. THERE HAVE BEEN MANY CHILDREN IN MY CLASS TRY NEW VEGETABLES SIMPLY BECAUSE THEY WERE A PART OF THE PROCESS OF HELPING THEM GROW. I LOVE THAT OUR GARDEN PROVIDES FOR SO MANY CROSS CURRICULAR ACTIVITIES AND CONNECTIONS FROM ELA TO SCIENCE AND MATH.”***

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*Lindsey West, Kindergarten teacher, West Elementary*





# Basics of making Compost

## Brown Material

Every good compost pile has about twice as much brown, carbon-rich material like dry leaves, as it does green material.

## Green Material

In order for your compost to heat up and break down into fertilizer, add green, nitrogen-rich material like vegetable scraps.

## Water & Air

Compost should be as moist as a well wrung sponge and well aerated. Turn it regularly to let air in.

## You can make compost in:

Heaps



Bins



Tumblers



Bays



For more information contact: [zerowaste@ruralaction.org](mailto:zerowaste@ruralaction.org) | 740.677.4047

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# SPOTLIGHT: APPLE TREE PLANTING EVENT

On a chilly afternoon in October, Community Food Initiatives staff and volunteers headed to Coolville Elementary School with apple trees, blueberry bushes, soil amendments, snacks, crafts, and a load of mulch. We met up with the students enrolled in their after-school program, Kids on Campus, for a fun afternoon full of getting dirty while learning.

We were lucky enough to have a Certified Arborist volunteer his time to teach the eager students how to successfully plant fruits. They were excited to help him dig in the dirt, amend the soil, spread mulch and water. Not only did they learn *how* to plant fruit trees and bushes correctly, they also learned *why*.

The town of Coolville, located in Appalachian Ohio, has high rates of food insecurity. Having apples and blueberries for all to harvest in front of their local public school is a concept that benefits the entire community. We were excited to be able to help make this (yummy) dream a reality.

We provided 3 “stations” for the students to rotate —the planting station, an art station, and a snack station. For the collaborative art project, we had pre-drawn a basic tree outline on a large piece of paper. Students used apples (cut in half, with a fork for a handle) as “stamps” to dip into various colors of paint and print on the tree which was displayed proudly in the school hallway. Kids and teachers enjoyed fresh apples, blueberries, and apple cider and were given recipes to take home utilizing both the amazing fruits as well as information about proper planting techniques.



# COMPANION PLANTING

Companion planting by definition is simply “any plant that is purposefully planted next to another to enhance growth, beauty or flavor.” Companion plants can do any number of supportive things for vegetable gardens and our ornamental plants and can the concept can be a great asset to add to your School Garden plans.

Benefits of companion planting include:

- **Shade regulation:** Large plants can provide shade for smaller plants in need of sun protection.
- **Natural supports:** Tall plants like corn and sunflowers can literally support lower-growing, sprawling crops such as cucumbers and peas.
- **Improved plant health:** When one plant absorbs certain substances from the soil, it may change the soil biochemistry in favor of nearby plants.
- **Healthy soil:** Some crops, such as bean and peas, help to make nitrogen available. Similarly, plants with long taproots bring up nutrients from deep in the soil, enriching the topsoil to the benefit of shallow-rooted plants.
- **Weed suppression:** Planting sprawling crops like potatoes amongst upright plants minimizes open areas, where weeds typically take hold.

Utilizing companion planting is as simple as using a chart like the one below to determine what plants make effective companions (as well as which plants should never be planted near one another).

Plant	Good Companion	Bad Companion
Beans	Cabbage, Corn, Cucumber, Eggplant, Lavender, Strawberries, Sunflower	Garlic, Onions, Fennel
Beets	Beans, Cabbage, Garlic, Lettuce, Onions	Beans, Peppers, Tomatoes
Broccoli, Cauliflower	Beets, Celery, Dill, Garlic, Geraniums, Onions, Potatoes, Rosemary, Sage	Beans, Peppers, Tomatoes

Plant	Good Companion	Bad Companion
Calendula	Tomatoes (repels tomatoes worms)	None- Calendula is a natural pest deterrent
Carrots	Chives, Leeks, Lettuce, Peas, Rosemary, Sage, Wormwood	Cabbage, Fennel, Strawberries
Chilies	Cabbage, Corn	Plant on garden borders to repel flying pests
Corn	Amaranth, Beans, Cucumbers, Legumes, Marigolds, Melons, Parsley, Peas, Pumpkins, Squash, Sunflowers	Cabbage, Celery, Tomatoes
Eggplant	Calendula, Marigold, Mint, Peas	None
Fennel	Not a good companion plant.	Beans, Carrot, repels fleas
Lettuce	Beans, Carrots, Cucumbers, Radishes, Strawberries	Celery, Parsley
Melons	Corn, Marigolds, Pumpkin, Radishes, Strawberries	Celery, Parsley
Onions, Garlic	Beets, Cabbage, Carrots, Lettuce, Strawberries, Tomatoes	Beans, Leeks, Parsley, Peas
Peas	Grows well with most veggies and herbs	Onions, garlic
Peppers	Basil, Carrots, Eggplant, Geranium, Onion, Tomatoes	Beans, Cabbage, Kale
Potatoes	Beans, Cabbage, Coriander, Corn, Eggplant, Marigolds	Cucumbers, Melons, Pumpkins, Squash, Sunflowers, Tomatoes
Rosemary	Beans, Cabbage, Carrots, Sage	Deters flying pests
Spinach	Broad Beans, Peas, Strawberries	None
Strawberries	Beans, Lettuce, Onion, Spinach, Thyme	Cabbage
Thyme	Cabbage	Deters cabbage worm
Tomatoes	Basil, Borage, Calendula, Carrots, Celery, Chives, Geranium, Oregano, Parsley, Nasturtiums	Cabbage, Fennel, Potatoes

Plant	Good Companion	Bad Companion
Watermelon	Peas, Pole Beans, Bush Beans, Onions, Leeks, Chives, and Garlic. Cabbage, Broccoli, Cauliflower, Carrots, Kale, Okra, Spinach, Sunflowers, Lettuce, and Brussels Sprouts	None

*(this chart is adapted from: [pinimimg.com/originals/38/58/cc/3858/cc2b66b234b2246ac4ba065e2112.jpg](http://pinimimg.com/originals/38/58/cc/3858/cc2b66b234b2246ac4ba065e2112.jpg))*



# SPOTLIGHT: THREE SISTERS GARDENING

Companion planting following the Three Sisters method (corn, beans and squash) is a great example of how a School Garden can explore the obvious standards of science as well as incorporating elements of history and social studies. Native Americans always inter-planted this trio of corn, beans, and squash because they thrive together, much like three inseparable sisters.

By the time European settlers arrived in America in the early 1600s, the Iroquois had been growing the "three sisters" for over three centuries. The vegetable trio sustained the Native Americans both physically and spiritually. In legend, the plants were a gift from the gods, always to be grown together, eaten together, and celebrated together.

Each of the sisters contributes something to the planting. Together, the sisters provide a balanced diet from a single planting.

- As older sisters often do, the corn offers the beans needed support.
- The beans, the giving sister, pull nitrogen from the air and bring it to the soil for the benefit of all three.
- As the beans grow through the tangle of squash vines and wind their way up the cornstalks into the sunlight, they hold the sisters close together.
- The large leaves of the sprawling squash protect the threesome by creating living mulch that shades the soil, keeping it cool and moist and preventing weeds.



Together, the three sisters provide both sustainable soil fertility as well as a healthy diet. Perfection!

# SUCCESSION PLANTING

Succession planting is a way to extend your harvest by staggering plantings of crops or planting varieties with staggered maturing dates. By utilizing succession planting techniques, you can spread your harvest out over a period of time instead of having it all come in at once, essentially getting two harvests out of your School Garden instead of one, maximizing the amount of food gathered from one space. There are four methods of succession planting:

## 1. Same Vegetable, Staggered Plantings

Space out plantings of the same vegetable every 2-4 weeks. Many vegetables fade after producing their initial crop, setting a heavy yield initially, then smaller and smaller yields throughout the summer. For example, rather than planting your entire row of beans all at once and having feast or famine, you can plant part of the row at the beginning of the season and then plant more in about 2-4 weeks. A new crop will be continually coming in. As the first plants start to slow down, you can replant that area with beans or use it for a different crop.

## 2. Different Vegetables in Succession

Some crops, like peas, have short growing seasons and the space they were using can be replanted with a later season crop, like eggplant.

## 3. Paired Vegetables in the Same Spot

Often you can seed the early season vegetable at the same time you are planting. Intercropping, or pairing up plants, is an excellent way to squeeze even more productivity from your vegetable garden.

## 4. Same Vegetable, Different Maturity Rates

An easy way to keep your harvest coming in is to choose more than one variety of a crop and make them early, mid, and late season varieties. Sometimes the seed packet will be labeled like that, and sometimes you will just have to read the "days to maturity" number, but tomatoes, corn, summer squash and several other vegetables can be staggered throughout the growing season this way.

**“I CONTINUE TO RECEIVE A GREAT DEAL OF POSITIVE FEEDBACK AND SUPPORT FROM THE SCHOOL AND THE COMMUNITY IN REGARDS TO THE GARDEN. IT’S REALLY THAT SUPPORT THAT KEEPS IT GOING. PERSONALLY, I REALLY ENJOY THE WHOLE PROCESS OF THE GARDEN AND THE YEARLY RITUALS THAT IT HAS BECOME. IT IS STILL QUITE ENJOYABLE TO HAVE YOUNG PEOPLE TRYING NEW FOODS AND SHARING THEIR STORIES ABOUT GARDENING AT HOME OR WITH THEIR FAMILIES.”**

*Keith Macartney, middle school teacher, Federal Hocking*

## LAST PLANTING DATES FOR SECOND-SEASON CROPS

To calculate the best time to plant your second vegetable crops, look at the first expected freeze dates in the chart below. Choose the date that comes closest to the expected first killing frost in your area. If you do not know the date, call your local county extension agent or go to our Web site at [Almanac.com](http://Almanac.com) for more frost-date information.

FIRST EXPECTED FREEZE:	SEPTEMBER 10	SEPTEMBER 20	SEPTEMBER 30	OCTOBER 10	OCTOBER 20	OCTOBER 30
VEGETABLE	PLANT BY . . .					
<b>Beets</b>	June 25	July 5	July 15	July 25	August 5	August 20
<b>Broccoli</b> ( <i>transplants</i> )	*	June 15	June 25	July 10	July 25	August 10
<b>Bush beans</b>	*	*	June 15	July 1	July 15	July 30
<b>Cabbage</b> ( <i>transplants</i> )	*	June 15	June 25	July 10	July 25	August 10
<b>Carrots</b>	June 25	July 5	July 15	July 25	August 5	August 15
<b>Chard</b>	June 25	July 5	July 10	July 20	July 30	August 15
<b>Corn</b>	*	*	June 15	June 25	July 10	July 20
<b>Cucumbers</b>	*	*	June 15	June 30	July 15	August 1
<b>Leaf lettuce</b>	July 20	August 1	August 10	August 20	September 1	September 10
<b>Peas</b>	June 25	July 10	July 20	August 1	August 10	August 20
<b>Peppers</b> ( <i>transplants</i> )	*	June 20	June 30	July 7	July 15	July 25
<b>Radishes</b>	August 1	August 15	September 1	September 10	September 20	September 30
<b>Spinach</b>	July 15	July 25	August 5	August 15	August 25	September 5
<b>Tomatoes</b> ( <i>transplants</i> )	June 15	June 20	June 25	June 30	July 5	July 15
<b>Winter squashes/pumpkins</b>	*	*	June 15	June 25	July 5	July 15

\* indicates a vegetable that probably will not survive as a second crop in your garden

(source: [www.almanac.com/content/fall-garden-planting-fall#](http://www.almanac.com/content/fall-garden-planting-fall#))



# SEASON EXTENSION

Giving students the opportunity to harvest the vegetables they planted before the end of the school year is a great goal. Continuing to be able to reap your harvest after frost hits in the fall. Depending on your geographical location, the length of your school year, and the cooperativeness of mother nature, you can succeed in this goal by using a various method of “season extension.” This allows students to continue enjoying fresh foods.

## Low Tunnels

Low tunnel are an easy way of extending either end of your growing season—either early in the spring or in the autumn once the weather starts to turn colder. Low tunnels great choice for School Gardens for many reasons—they are easy to construct, and they are inexpensive to build! Additionally, they can be easily removed, they are easy for students to operate, and they work!

The supplies needed to build low tunnels can be sourced quite inexpensively either from a store or from common recycled materials. See the following chart for price approximations for low tunnel supplies:

Item	Purpose	Cost	Number per Unit	Total Cost
10ft, 3/4" PVC Pipe	bent into ribs for hoop house	\$2.83	2.5, cut into 5ft lengths for 5 ribs	\$7.10
10ft, 1/2" steel rebar	steaks that hold PVC in ground	\$6.73	1, cut into 12" lengths	\$6.73
Plastic Drop Cloth, 9ft x 12ft, 2mil	Plastic cover for hoop house	\$2.98	1, with excess.	\$2.98
2" x 2" x 8' furring strip	holding down the plastic	\$2.58	2	\$5.16
Duct Tape, Staples, and small hardware	connecting Plastic			Less than \$1.00
			<b>total per hoop house</b>	<b>\$23.00</b>

Low tunnels can be easily constructed using a few sections of PVC pipe and plastic sheeting. Their exact construction process varies depending on the size, shape, and materials your beds are constructed of. For the simplest method over an in-ground garden, push one end of the PVC pipe into the soil and bend the pipe into a semi-circle, putting the other end in the soil on the other side of your garden bed. (To ensure longevity of the low tunnels, pound metal rebar stakes into the soil and then attach the PVC ends over those). Continue making these “arches” over your garden beds every few feet. Plastic or frost cloth can then be draped over and secured to the PVC pipe with either a purchased furring strip or a few strategically placed bricks or rocks.

For raised beds, the ends of the PVC can be secured to the wood encompassing the bed for durability and ease of removal. The methods of building low tunnels are as numerous! We recommend looking at this website for specifics:

[https://www.cleveland.com/insideout/index.ssf/2011/10/eliot\\_coleman\\_maines\\_winter-ha.html](https://www.cleveland.com/insideout/index.ssf/2011/10/eliot_coleman_maines_winter-ha.html)



*(source: Rural Action and Green Edge Gardens)*

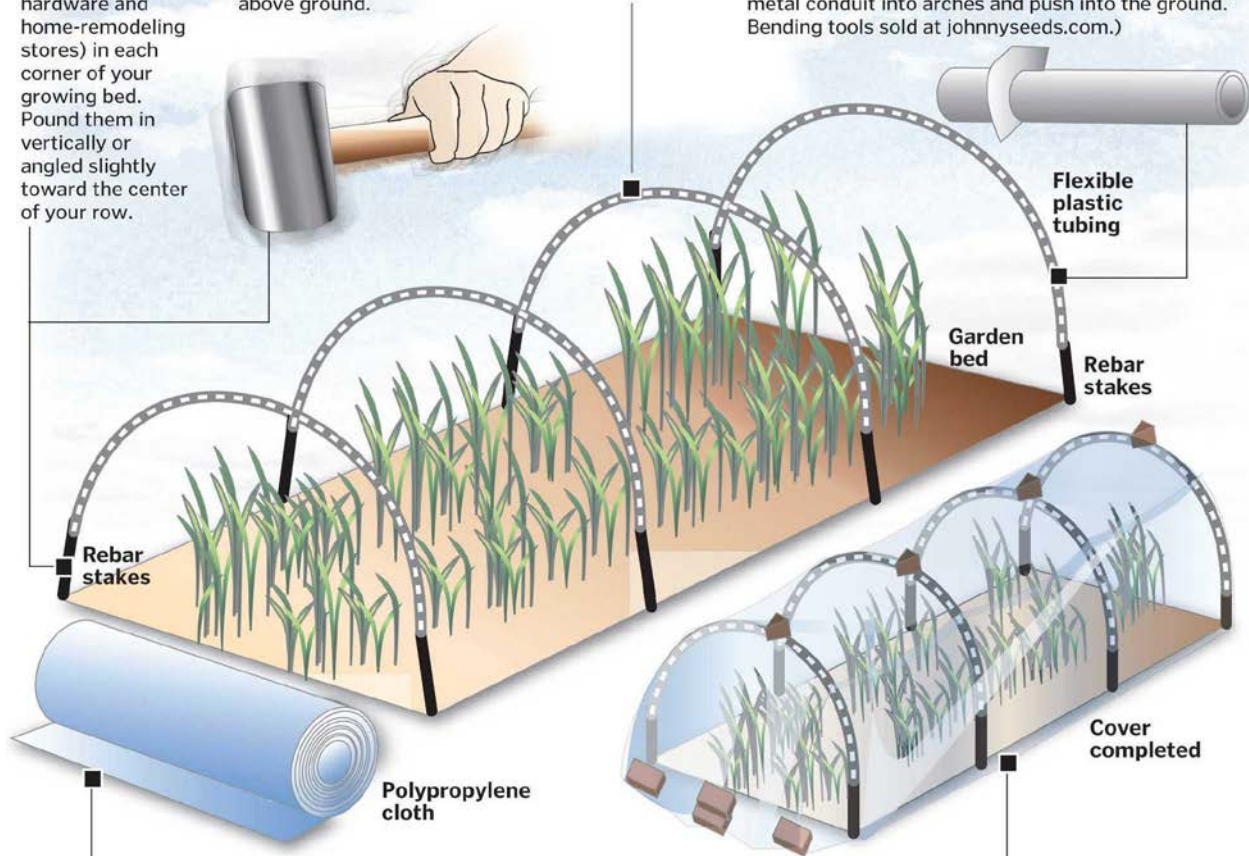
# How to build a row cover for vegetable gardens

Here's a cheap and easy way to protect your plants from wind, frost, pests and too much sun.

**1.** Place 18-inch-long pieces of metal rebar (sold at hardware and home-remodeling stores) in each corner of your growing bed. Pound them in vertically or angled slightly toward the center of your row.

**2.** Add more rebar every 1-3 feet along one side of the bed. Add a row of stakes on the opposite side, directly across from those on the first row. Use a mallet to pound them in, leaving only 8-10 inches above ground.

**3.** Cut pieces of 1/2-inch flexible, gray plastic conduit tubing to slip over rebar and form arches about 18 inches above your plants. (Alternately, scrap the rebar and plastic and bend same-size galvanized metal conduit into arches and push into the ground. Bending tools sold at johnnyseeds.com.)



**4.** Use AG-19, spun-bonded polypropylene cloth to cover the arches and insulate the bed (sold at Johnny's and some farm-supply stores). Cloth should be wide enough to cover arches and have 2 feet extra along the sides, and long enough to leave an extra 4 feet at the end of the row for stacking.

**5.** Secure cloth to ground with landscape pins, sandbags or bricks rolled around the edges of the cloth. Use tight coverage to keep out pests. For winter insulation, add clear plastic sheeting pulled taut and secured at the ends to handle snow. For shade in summer, use burlap or commercial shade cloth.

SOURCES: Eliot Coleman, Carl Skalak Jr., ehow.com.

DEBBI SNOOK, JAMES OWENS | THE PLAIN DEALER

(source: [www.cleveland.com/insideout/2011/10/eliot\\_coleman\\_maines\\_winter-ha.html](http://www.cleveland.com/insideout/2011/10/eliot_coleman_maines_winter-ha.html))

In order for low tunnels to be successful in your School Garden, keep in mind the following:

- Select cold hardy and semi-cold hardy vegetables to grow under your tunnels.
- Be sure the ends/sides of your plastic or frost cloth are secured from drafts with bricks or heavy rocks.
- Instruct students how to open the plastic safely and carefully on sunny, warm days so fragile plants don't "burn."
- Consider using plant starts rather than direct sowing of seeds, for improved, faster germination and an advanced plant age if your growing season is especially short.

- Depending on weather, some cold hardy vegetables could take more time to mature than a semester allows! Leafy vegetables can be picked early if necessary, they will just be smaller.
- Refer to the chart below for recommended crops to plant in low tunnels in early spring with the intent for harvest prior to the end of the school year:

Vegetable	Days to Maturity	Plant to harvest before the end May from seed	From 4 week old starts.
Beets	50 to 80	Mid-March	Mid-April
Kale	50 to 75	Mid-March	Mid-April
Kohlrabi	55 to 65	Late March	Late April
Lettuce	40 to 50	Early April	Late April
Mustard Greens	40 to 60	Mid-March	Mid-April
Parsley	70 to 85	Mid-March	Mid-April
Radishes	25 to 40	Early April	Late April
Spinach	40 to 50	Mid-March	Mid-April
Swiss Chard	50 to 75	Mid-March	Mid-April
Turnip	40 to 75	Mid-March	Mid-April

Refer to the chart below for recommended crops to plant in low tunnels early in the school year with the intent of harvesting well into the colder winter months:

Vegetable	Oct. 20	Oct. 30	Nov. 10	Nov. 20	Nov. 30	Dec. 10
Beans, Snap	Aug. 5	Aug. 15	Aug.21	Aug. 30	Sept. 15	Sept. 30
Beets	Aug. 5	Aug. 20	Sept. 10	Sept. 20	Sept. 30	Oct. 5
Broccoli	Aug. 5	Aug. 20	Aug. 20	Sept. 5	Sept. 20	Oct. 5
Cabbage	Aug. 5	Aug. 20	Aug. 20	Sept. 5	Sept. 20	Oct. 5
Carrots	Aug. 5	Aug. 20	Aug. 25	Sept. 5	Sept. 15	Sept. 25
Chard	Aug. 15	Aug. 20	Aug. 30	Sept. 15	Sept. 25	Oct. 5
Collards	Aug. 15	Aug. 20	Aug. 20	Sept. 5	Sept. 15	Sept. 25
Lettuces	Sept. 1	Sept. 10	Sept. 20	Sept. 30	Oct. 10	Oct. 20

Vegetable	Oct. 20	Oct. 30	Nov. 10	Nov. 20	Nov. 30	Dec. 10
Kale	Aug. 15	Aug. 25	Sept. 5	Sept. 15	Sept. 25	Oct. 5
Mustard Greens	Aug. 20	Sept. 1	Sept. 10	Sept. 20	Oct. 1	Oct. 10
Peas	Aug. 10	Aug. 20	Aug. 30	Sept. 10	Sept. 20	Sept. 30
Radish	Sept. 20	Sept. 30	Oct. 10	Oct. 20	Oct. 30	Nov. 10
Spinach	Aug. 29	Sept. 5	Sept. 15	Sept. 25	Oct. 5	Oct. 15

## High Tunnels

For large-scale School Gardens wanting to extend their harvest even further or wanting to commit to year-round harvesting, high tunnels can be an amazing investment. High tunnels can mean sustainable production year-round and can fill the gaps of produce lacking mid-winter in many climates. Their initial financial investment is large, but their outcome is immeasurable. Our friends at Rural Action, along with a very successful high tunnel operation at Green Edge Gardens, have researched this topic extensively and put together a detailed document entitled “the Green Edge Model of Winter Growing,” explore it here for further, detailed information:

<http://ruralaction.org/programs/agriculture/season-creation-and-education/>



*(source: Rural Action & Green Edge Gardens)*

# SPOTLIGHT: PEACE POLES

Having students work together to create pieces of art to be displayed in their School Garden is a great way to build collaboration skills, increase School Garden enthusiasm, encourage creativity, and intensify the aesthetic appeal of the outdoor space. One successful garden art project we do is what we call “garden peace poles.” They are rather simple to make and their effect is remarkable!

The materials are simply a 4”x4”x8’ piece of lumber and a 4” square “cap” for it’s top (both commonly found at most home stores), acrylic paints, assorted brushes, a clear coat spray, and enthusiastic kiddos (plus perhaps smocks depending on their age). We found it is best to “section” off the pole into several rectangular areas and assign each student (or group) a certain area that is theirs to paint. Encourage them to use bright colors and various designs, perhaps incorporating school spirit with your mascot or vegetables, bugs, plants, other garden/outdoor themes. Once the paint dries, apply a clear/sealant coat and let it rest fully before installing it outdoors. Keep in mind you will need to dig a fairly deep hole to ensure it is safely installed.

For even more effect, install multiple poles at varying heights near the same area. Or paint in this fashion on your existing fence poles to create a brighter, more fun garden area.



# COVER CROPS

Cover Crops are a great way to restore nutrients back to the soil before your next crop planting if weather permits. Cover crops can suppress weeds, build productive soil, and help control pests and diseases. It was once thought that cover crops were only for large-scale farming, but they have recently been proven to be beneficial even in small-settings such as raised beds in a School Garden.

A few examples of good cover crops are soybeans, peas, beans and other leguminous crops, for these sorts of plants act as “alchemists” of sorts to fix nitrogen back into the depleted soil. Garden and Home stores offer “mixes” of seeds specifically for cover crops, check with your local extension office for recommended mixes for your geographical location. Encourage students to prepare the soil for cover crops by clearing any remaining plant matter and running a hard rake over the soil to loosen it up. Planting cover crops is as easy as (gently!) throwing the seeds into an open area of soil. Experimenting with cover crops in a School Garden:

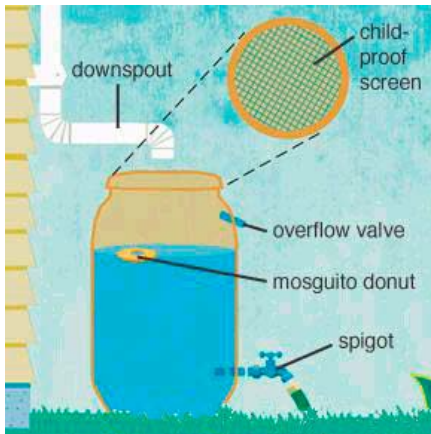
- Let students pick a few mixes or types of crops to experiment with and try different ones in different spaces. Which grows most successfully?
- Encourage students to note the differences between garden beds that had cover crops planted versus those that were left bare over the winter.

In the spring, make sure to kill cover crops before seeding occurs (or else seeds will be put back into the soil and will create competition with the crop you want to grow). Encourage students to “turn them into the soil” in early spring, and wait 2 to 3 weeks before planting vegetables or flowers for the decomposition of the green material can tie up soil nitrogen. Below are 2 websites that are great resources for a more in-depth understanding of cover crops:

<https://www.walnutcreekseeds.com/index.html>

<https://catalog.extension.oregonstate.edu/sites/catalog/files/project/pdf/fs304.pdf>

# RAIN BARRELS



If a water source is not available in your School Garden, consider installing a simple rain barrel. A rain barrel is a small, aboveground storage tank that collects rainwater from rooftop gutter downspouts, and stores it for use in the garden. All schools have roofs, so the chances are high that your school could make one work. Be sure to check in with the maintenance personnel before installing one to make sure the downspout is as it should be. Rain barrels are available for

purchase pre-made or are relatively easy to construct by following the detailed instructions found on either of these websites:

<https://itc.tamu.edu/files/2018/05/ec2001.pdf>

<https://water.unl.edu/documents/Build%20Your%20Own%20Rain%20Barrel%20opt.pdf>

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***“I NOTICE THAT THE MORE TIMES THE CHILDREN ARE IN THE GARDEN, THE DEEPER THEIR INVESTIGATIONS.”***

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*Laura Bennett, preschool teacher, Chauncey Early Learning Center*



( source <https://www.plt.org/story/page/4/>)



# SPOTLIGHT: LIVE HEALTHY KIDS

School Gardens can be easily integrated into a Farm to School program with the help of strong community partnerships. In Athens County, Farm to School partners with the Live Healthy Kids program to bring local foods into the classroom. Live Healthy Kids is a hands-on, cooking and nutrition education curriculum created by Live Healthy Appalachia that familiarizes students with new whole foods, empowers students to make healthy choices and encourages daily physical activity. The program aims to develop students' preferences for new fruits, vegetables, whole grains and plant-based proteins that can be grown in school and community gardens and introduced to the classroom. Students learn about local foods while gaining exposure to cooking skills and recipes that can be recreated with their families beyond the classroom.



# CURRICULUM

In order for schools to readily adopt a School Garden curriculum easily, it is imperative that the lessons match the standard requirements from the Department of Education. We at Community Food Initiatives have put together lessons that are available for free download from our website, [www.Communityfoodinitiatives.org](http://www.Communityfoodinitiatives.org). There you will find lessons broken down into the following age groups:

- Preschool
- Kindergarten
- First Grade
- Grades 3-2
- Grades 4-5
- Middle school
- High school

Each lesson is laid out in a user-friendly manner and lists the standards areas covered, recommended ages, time frame, materials needed and optional worksheets, as well as variations on the lessons. As we continue to expand our School Garden programs, we will be testing out new lesson plans regularly and updating the website with new additions so be sure to check back periodically.

# FARM TO SCHOOL

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***“THE KIDS LOVE THE GARDEN AND ARE EXCITED TO GET TO GO OUTSIDE TO WORK. THE BEST PART IS WHEN THEY GET TO SHARE THEIR HARVEST TO BE USED IN THE SCHOOL SALAD BAR. THEY ARE BEAMING WITH PRIDE WHEN THEY DELIVER IT TO THE CAFETERIA STAFF. THEY ALSO LOVE HAVING ‘SALAD PARTIES’ IN OUR CLASSROOM.”***

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*Leslie Jones, 4/5th grade teacher,  
West Elementary*

## **What is farm to school?**

One of the many benefits of having a School Garden is the ability to serve School Garden-grown food in the school cafeteria. This opportunity is one of many encompassed in the national farm-to-school initiative, which seeks to strengthen local food systems by introducing more fresh, local foods into school cafeterias. Farm to school supports local economies by supporting local growers and producers who draw on the unique resources of the region and emphasize seasonality. Farm to school also supports communities and schools by providing opportunities for parent and community member involvement and increasing student participation

in school meals. Lastly, farm to school programming supports students by exposing them to health and nutrition-focused curricula, improving their understanding of local food systems, and improving their chance of developing lifelong healthy habits and health-conscious decision-making.

The USDA website contains tremendous amounts of information about farm to school and can be found here: [www.fns.usda.gov/farmentoschool](http://www.fns.usda.gov/farmentoschool)

Farm to School can include at least three different processes:

- **Procurement:** Local foods are purchased, promoted and served in the cafeteria or as a snack or taste-test.
- **Education:** Students participate in educational activities related to agriculture, food, health or nutrition.
- **School Gardens:** Students engage in hands-on learning through gardening.



In Southeast Ohio, three organizations are involved in the above aspects of Farm to School programming:

- **Rural Action:** Through its Sustainable Agriculture Program, Rural Action has worked on farm to school procurement since 2010. The procurement work that they have done requires **processing, aggregation and distribution**. Rural Action owns and operates the Chesterhill Produce Auction in Morgan County, Ohio where many small producers bring produce to be auctioned off--this **aggregates** the availability of produce to the point where there is enough capacity to serve wholesale markets such as schools. Since our local food system is seasonal, in order to supply schools with local produce, methods of season extension must be created. Rural Action purchases local produce through the Chesterhill Produce Auction at the peak of the season and works with partners and volunteers to **process** the produce by freezing and vacuum sealing for winter **distribution**. This is done under professional food service supervision in coordination with the School Food Service Directors, School Administration, and Cafeteria personnel.

Regardless of the aspect of Farm to School programming it is always dependent on creating a network of **stakeholders**. In addition to those listed above, this includes parents, students, community members, and officials.

The marketing component of Farm to School procurement can be an important outcome for the producers involved. This can be done by creating Farm to School posters for cafeterias, and other signage that highlights the farmer.

- **Live Healthy Appalachia:** through it's Live Healthy Kids program. Live Healthy Appalachia works to establish healthy and plant based eating habits by teaching its curriculum to second graders in a way that fits with school curriculum guidelines (see Live Healthy Kids Spotlight).
- **Community Food Initiatives:** through our School Garden programs, educational workshops, and educational materials such as this School Garden Toolkit.



## How to use School Garden-grown produce in the cafeteria

Food safety measures need to be taken into account when designing and maintaining your School Garden. The USDA does not require that School Gardens be GAP-certified (Good Agricultural Practices). However, keeping in mind the science-based principles outlined in GAPs can help you manage food safety in your School Garden. Key points to consider are:

- Location of your garden-- away from potential sources of contamination
- A map of your garden kept on file, so as to be able to trace where crops are harvested from.
- Harvest records---what crop from where and when, and who was the end user.
- Building materials used to construct raised beds (see raised bed section, "materials").
- Water and soil quality (have them tested to be sure, contact your extension office to do so). Since most schools have municipal water, water is not generally a problem, and tests can be obtained for free from your provider.
- Where harvested foods will be washed and/or prepared, is it in the classroom or in the school cafeteria? Cafeteria workers are certified in food safety but teachers may need to be taught and reminded about how to wash fresh produce.
- What types of containers will be used for harvest, make sure they are clean and readily available for little hands.
- Cleanliness of "harvesting hands"—students or others collecting produce from the School Garden should be encouraged to wash their hands well before collection. Some schools

might consider building this simple, inexpensive hand washing station (see next page or visit <http://tinyurl.com/y4m8q3zw>)

- For more information on School Garden Food Safety, view this link: <http://tinyurl.com/y2836t4t>



*Showing foodservice staff a raised bed at Trimble Elementary.*

# How to build a field hand washing station in 10 easy steps for under \$20

Michele Schermann, University of Minnesota Agricultural Health and Safety Program

Jill Randerson, Kidzibits, Inc.

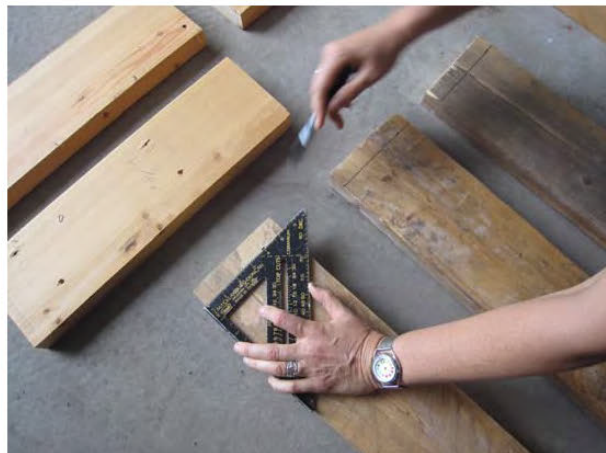
Field handwashing stations can be rented from the sanitation companies or you can purchase field handwashing stations from various sources. They are easy to build with a few purchased, found and salvaged materials.

## 1. Get some wood. Make the sides.



For this stand, we used 4 - 36" 2X6  
4 - 18" 2x6" for the sides of the stand. We decided a stand 36" high would be good for handwashing. You can choose any height you wish.

## 2. Square off the ends and cut them to the right sizes for your space and what you need.



### Materials list.

1. **Water container** -- the blue container holds 5 gallons of water and has an open/close valve. Available at big-box home hardware store in the camping section. \$9.99
2. **Soap.**
3. **Trash can** with a lid so paper towels don't blow around in the wind. We used an old rag container found in the barn.
4. **Water catching bucket** (5 gallon bucket)
5. **Dishpan.** Another found item, is the "drawer" under the water container and holds single use paper towels. You can use whatever you want for this. Doesn't need to be a dishpan.
6. **Wood** (salvaged). 2x6's, 2x4's, and plywood for the top, sized to fit.
7. 60 2.5" screws.
8. **Bungee cord**



This is how the sides will look. They aren't screwed together yet. At this point we decided to use the dishpan as the drawer because we had one and wouldn't need to purchase anything else. The top cross piece was placed slightly below the very top to create a lip for the dishpan "drawer" to slide on.  
←



**3. Screw the crosspieces in place.** We used 2.5" screws, 4 on each end (16 total per side, 32 for both sides). We drilled holes before we drilled the screws.



Here you can better see how we placed the top cross piece down from the top to be the dishpan drawer slide.

Now we have our sides built.





4. Figure out how wide to cut the width-wise crosspieces. Placing our dishpan on the “drawer slides” we measured and determined that crosspieces of 14.5” would work. We cut 4- 14” pieces of wood. This time we used 2x4s.



5. Screw the bottom widthwise crosspieces onto the other crosspieces. You could also turn them the other direction and screw them into the side pieces. With the crosspieces turned flat, they make a bigger flat area in case you want to put something on those pieces.

6. Screw the top widthwise crosspieces in place. Notice that these are turned up and down (vs flat like the bottom pieces) and screwed through the side supports. They are low enough so that the dishpan drawer fits in the remaining space.



7. Next, cut a scrap of plywood, old countertop, or some other flat material (not glass) to fit the top of the stand.



#### 8. Screw the top in place



#### 9. Install your dishpan drawer. That is where you will have the single use hand towels.

Bungee cord a 5 gallon drinking container on the top. Supply soap. (see photo on the first page if you forgot what this looks like)

**10. Get the rest of the parts together.** Put a bucket underneath the spigot of the water container to catch the water. You might want to put a rock in the bottom of the bucket if you are in a windy area. Have a trash can handy for the used towels. One with a lid will keep the used towels from flying all over the place.

#### Final notes

This is just an idea plan. You can make this any size you want and with any materials. You could change the boards and install a paper towel dispenser under the top, or you could mount a paper towel roll holder on the side. If you do that, you will need to remember to remove it when it rains so you don't get all your paper towels wet. If you really want to be fancy, you could cover the top of the stand with a vinyl covering so that it will stay dry and won't warp. Cut vinyl (oilcloth) slightly bigger and staple on to the bottom side of the top.

Of course this thing won't last forever, but for a seasonal handwashing station in the field it works very well. Remember to use clean potable water for handwashing, not rain water or other water.

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2011. Developed by the University of Minnesota Agricultural Health and Safety Program team. Funding through a partnership between the MN Fruit and Veg Growers Association and the USDA-Risk Management Agency.

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# SPOTLIGHT: APPLE CRUNCH DAY

Apple Crunch Day is a fun way to support local orchards and get kids excited and informed about local foods! As part of the Great Lakes Apples Crunch effort, Rural Action worked with schools, PTOs, National Community Service members, school nurses, wellness groups, and local nonprofits to distribute 6,500 apples to six school districts in Athens County in 2018. Apples were sourced from Cherry Orchards in Crooksville, OH and washed at Hocking College in Nelsonville, OH before making their way to students. Schools used a variety of creative ideas to make it an informative as well as fun event. The local orchard received \$1,854, and the economic and health benefits of Farm to School projects that take place in the classroom, cafeteria, and community were addressed and enriched. For more information about how to successfully implement Apple Crunch Day in your school district, you can contact Tom Redfern at Rural Action, [tomr@ruralaction.org](mailto:tomr@ruralaction.org) and visit <https://www.cias.wisc.edu/applecrunch/>



# REFERENCES

This School Garden guide incorporates text and ideas from the following websites:

<http://foodcorps.org>

<http://www.vegetablegardener.com>

<https://www.almanac.com>

<https://www.nybg.org>

<https://kidsgardening.org>

<https://science.howstuffworks.com/innovation/edible-innovations/food-preservation.htm>

<http://www.countyhealthrankings.org>

<https://growing-minds.org>

<http://csgn.org>

<https://www.annies.com>

<https://www.thespruce.com/succession-planting-1403366>

<https://www.fns.usda.gov/farmentoschool>

<https://www.canr.msu.edu/outreach/index>

<https://www.walnutcreekseeds.com/index.html>

<https://www.thespruce.com/succession-planting-1403366>

<https://schoolgardening.rhs.org.uk>

<https://www.cleveland.com>

<https://growingsafergardens.files.wordpress.com>





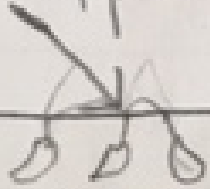
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Date: \_\_\_\_\_

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What grows in a garden.

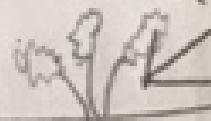
Sweet potatoes



Sunflower



Kal



One thing that is a plant can grow in a garden.

Sweet potatoes, or a Sunflower,  
Or a Kal plant.