



Steps to Growing a Successful School Garden



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Key Words:

Horticulture – the science and art of growing, cultivating, marketing and processing flowers, fruits, vegetables and ornamental plants

Master Gardener– a person who has had extensive horticulture training from an agricultural extension office

Organic gardening – using only naturally occurring substances, such as fertilizers or pesticides of animal or vegetable origin, to aid in crop development

Conventional gardening – gardening that uses synthetic fertilizers, pesticides and herbicides to aid in crop development

Sustainable gardening – a combination of conventional and organic gardening; conventional gardening practices are used as a last resort after organic practices have first been followed

Stolon – a prostrate stem, at or just below the surface of the ground; the stem produces new plants from buds at its tips or nodes

Rhizome – a root-like, horizontal subsoil stem that produces roots below the ground and sends up shoots from its upper surface

Mulch – a protective covering, usually consisting of organic matter such as leaves, straw or bark, placed around plants to retain moisture, maintain soil temperature and control weed germination

Tilth – the physical condition of soil in relation to plant growth; soil with good tilth is loose to the touch, has good air space and is not inundated with water

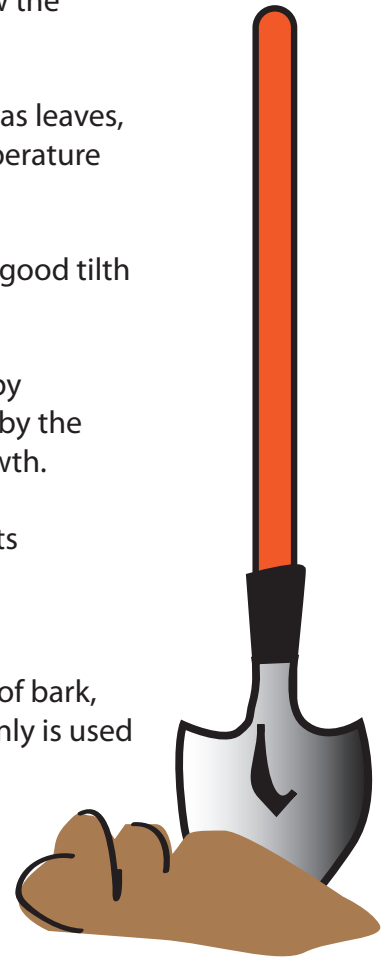
Aeration – supplying the soil with air; aeration usually is accomplished by removing thatch and pulling plugs of soil from the ground; the holes left by the plugs are then filled with sand; air pockets in the soil encourage root growth.

Pesticide – a chemical substance that kills microbial, fungal or insect pests

Herbicide – a chemical substance used to kill plants, especially weeds

Media – generally packaged in bags, gardening media is a combination of bark, peat moss, perlite and nutrients; it has no natural soil in it; media commonly is used in the nursery industry

Transplants – small plants that were previously seeded into seed trays; commercially, these plants usually come in six-packs, although they are grown many ways



Introduction

Growing a school garden can be an exciting, but challenging, initiative.

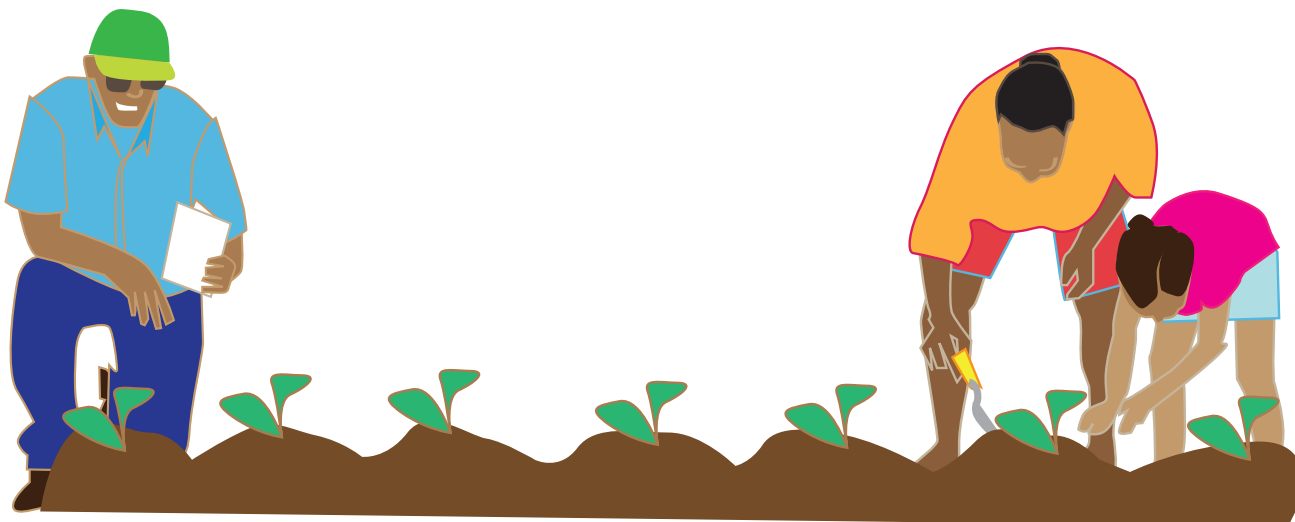
No two school gardens are alike. Your school garden will be unique based upon many things such as student population, age and needs; garden space available; time constraints; and required coursework. Each teacher also has his or her favorite plants to grow. One school garden may focus on vegetables. Another may focus on native plants or butterfly garden materials.

The primary goal of a school garden is to allow the students to grow plants from start to finish. There is no greater reward than watching a tiny seed turn into a beautiful flower or something to eat. (Well, at least that's true for those of us who are horticulturists!)

School gardens have many benefits. The first and most obvious is that the students learn about agriculture. They learn where their food comes from. Students are given responsibilities to care for living organisms. Teamwork, social skills, healthy food alternatives, literature, math, science, art and physical education can all be taught in the garden area.

As an educator, you already have taken the most important steps to growing a school garden. You are showing an interest and encouraging students to become involved. Don't be afraid of failure! Even if you have no horticulture background, you certainly can get the information you need and find people who will help you along the way.

This resource guide is an outline of the things you should be aware of when starting a school garden. As mentioned previously, all school gardens are unique. Use this manual as a guide and allow yourself creative license to grow what you want in the space you have. You may follow all the steps or use information in just a few.





STEP 1: Find a Group of Volunteers

- Parents, school staff members and others from the community are excellent resources for garden volunteers. Everyone has a special talent or a particular interest in life. When selecting volunteers for a school garden, focus on people who enjoy working outside. Volunteers who have construction, horticulture or landscape design experience are great assets. People who enjoy gardening but have no specific training are great, too. Many people like planting a garden. Pick people who will enjoy maintaining the garden.
- Select people who work well with children. The “owners” of the school garden should be the teacher and the students. The students must have an active role in designing, constructing, planting and maintaining the garden.
- Ask cafeteria staff members to get involved with the garden. They can provide kitchen scraps (see list) that can be used in a compost pile next to your garden. They may also take extra produce and incorporate it into the school lunch plan.
- The custodial staff members also are great partners. Custodial staff have access to the water at the school. They will need to know that you are growing a garden so the water supply is not shut off during school breaks and weekends. Some of the custodial staff also may enjoy volunteering in constructing and maintaining the garden.
- Many cities have a Louisiana Master Gardener Program. Master Gardeners are people who have been trained in various horticulture topics by the LSU AgCenter and its Louisiana Cooperative Extension Service. Master Gardeners complete volunteer services hours each year to maintain their affiliation with the program. Click on “Gardener” to obtain phone numbers of county agents in your local area who will connect you with a Master Gardener (or go directly to this link: http://www.lsuagcenter.com/en/lawn_garden/master_gardener/parish_img_programs).
- Collect information from your volunteers. Keeping a record of volunteer phone numbers and preferred volunteer times will help you easily manage your school garden. We have included a sample volunteer information sheet you may use to help with that task. (It’s located on page 18 at the back of this resource guide.)
- Include all volunteers in any garden committee meetings.
- Remember to treat your volunteers as volunteers. These people are only there to help you. They are not paid staff members and should not be expected to do anything outside of what was initially agreed upon. Remember to always thank your volunteers. Allow them to share in the harvest of the garden. Simple thank-you notes from students at the end of the school year also are a nice touch.

STEP 2: Find Funding

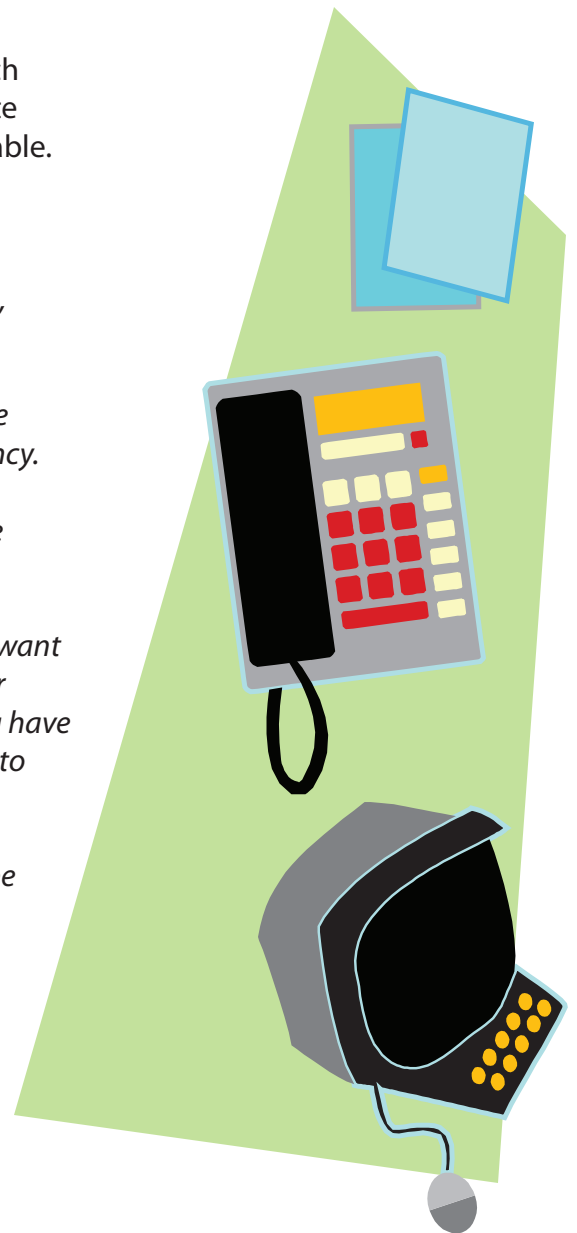
- Gardens don't require a large amount of money to start. Some items, such as equipment, can be borrowed. Big expense items would be a tractor or tiller to initially cultivate the garden space. These can be borrowed from parents or local businesses. You do not necessarily need raised beds or fancy pathways to have a functional garden space. Garden items needed are listed on page 35 of this resource guide. That list will give you an idea of some of the things you can purchase to make the school garden successful. All items do not need to be purchased; some are lofty ideas like greenhouses. Applying for a small grant or receiving a small donation of even \$200 can cover the initial expenses for seeds, fertilizers and staking materials.
- Finding a grant can be as easy as using an Internet search engine and typing in "grants for school gardens" to locate school garden grants. You will find there are many available.
- Below are tips on writing a grant and being selected:

Read the directions and follow them carefully. For example, if the guidelines state that the organization will only fund vegetable plants, don't ask for materials to grow a school butterfly garden. As great as your idea may be, it will not be funded if it does not match the wishes of the granting agency.

Turn the grant application in on time. Late applications are NEVER selected.

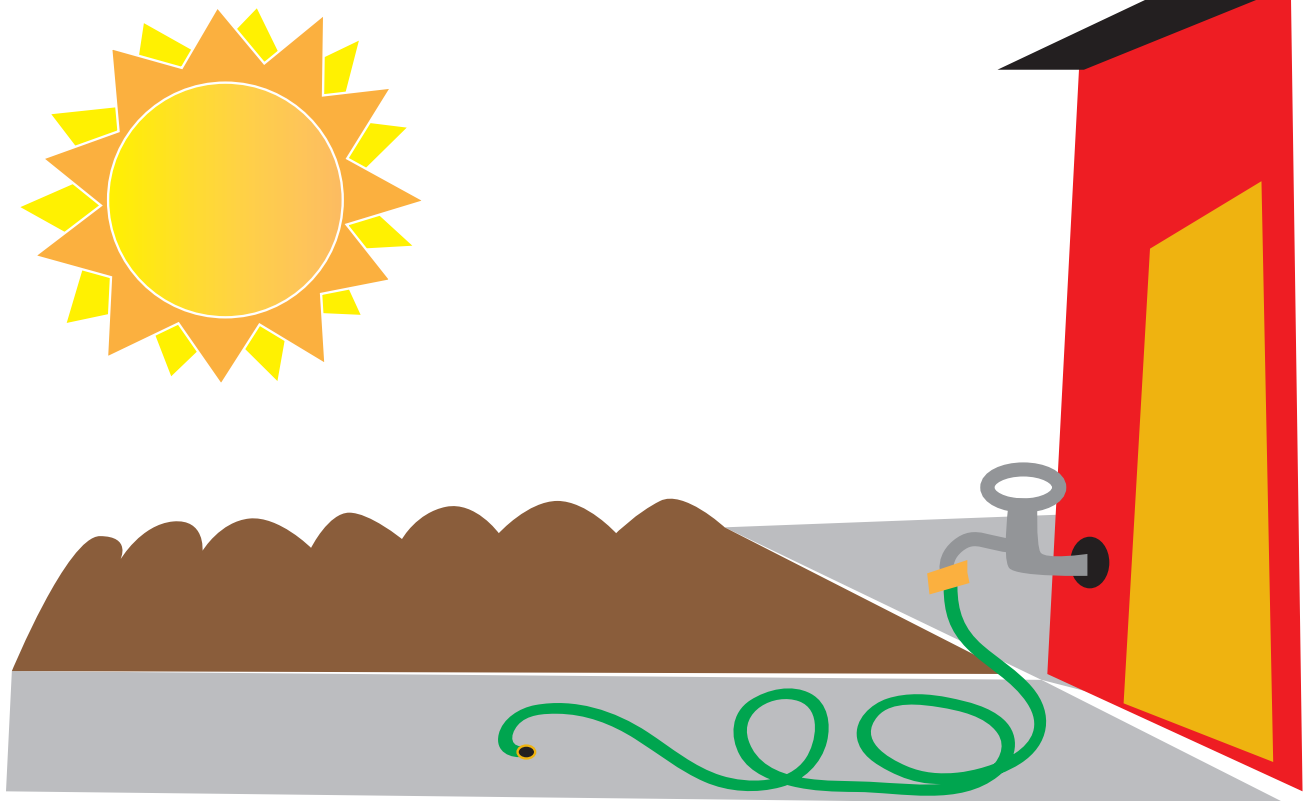
Indicate partners in your garden grant. Granting agencies want to fund something that will be successful. Show that two or three teachers are interested in the project. Report that you have contacted your local extension agent or Master Gardeners to help with the school garden.

Be thorough. Explain what you wish to do and how it will be accomplished. Just informing the granting agency of your garden idea is not enough; include how you will start and maintain the garden program.



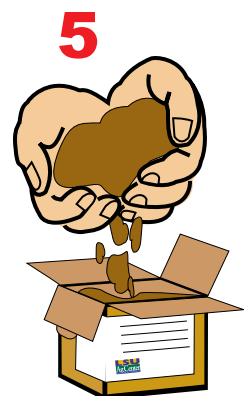
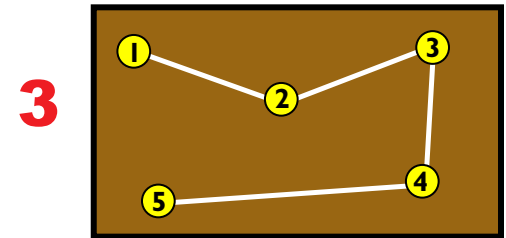
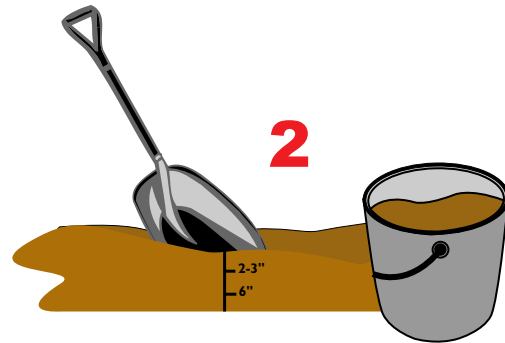
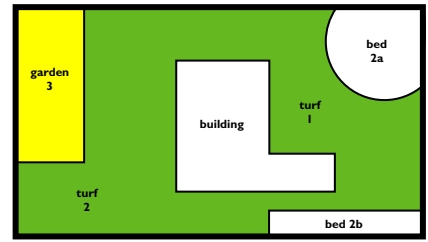
STEP 3: Select a Site

- Choose a sunny location. When growing a vegetable garden, at least six hours of sunlight a day are recommended.
- Choose a location within walking distance from your classroom – the closer the better. More weeds will get pulled and more plants watered if you can see them!
- You must have a water source near your garden!
- Try to avoid areas that are heavily populated with weeds.
- Choose a well drained location. Vegetables do not like to be saturated with water.
- Start small, but leave space for an enlarging garden. Don't start out so big that you end up overwhelmed. Think about the number of students in your class, the number of volunteers and the time you will spend each week in the garden. Gardening should be fun. You can always increase the size of your garden as you see an increasing interest from the students. Even starting your garden as a few small containers and then moving into an in-ground garden is great if it is a way to slowly teach yourself and your students how to grow plants.



STEP 4: Take a Soil Sample

- Collecting a soil sample is easy. At this point you probably are looking at a patch of grass you would like to turn into a garden.
- First, mark off the boundaries of your garden (1).
- Within the boundaries of your new garden, take four to five shovels of soil (soil samples)(2 and 3).
- Remove grass from the soil samples.
- Put all the soil samples you've collected into one bucket.
- Mix it up (4).
- Take one handful of soil (equivalent to 1 pint) from this bucket and place in a soil sample box or plastic bag (5).
- Print and fill out the soil sample form(6) (which you can find at www.stpal.lsu.edu/Forms/Soil/General_Public_Soil_Sheet.doc). The mailing information is printed on the soil form. Place a check in the routine sample box (which you can order off www.LSUAgCenter.com or obtain from your parish LSU AgCenter Extension Office). The cost for one routine sample currently is \$10.
- Include information on the soil sample form such as what was planted in the location at the time the sample was taken and what you plan to plant in the garden so you can get recommendations for amending your soil. You may say something like, "This area was grass, and we would like to grow vegetables." A general statement is fine.
- The LSU AgCenter soil testing lab will send you general recommendations about how to amend your soil. You probably will want to call your local LSU AgCenter county agent to help you decipher this information.



STEP 5: Remove All Grass and Weeds from the Garden Site



- Purchase herbicide with the active ingredient glyphosate. One of its trademark names is Roundup, but there are other formulations. Spray the glyphosate product within the boundaries of your new garden. Allow two to three weeks for a total “burndown.” All of the vegetation will be yellow. Repeated applications may be necessary to kill all of the existing vegetation.
- Please read and follow all directions on the label of any products you use. The LSU AgCenter recommends that the chemical user read the entire label before spraying herbicides or pesticides. Wear gloves, a long-sleeve shirt and safety glasses when spraying herbicides or pesticides.
- If you would like to kill the vegetation in an organic manner, place black cloth, wet newspapers or cardboard over the grass. Place weights on top of the cloth or paper so it will not blow away. This will kill the vegetation by stopping photosynthesis (by blocking sunlight). Allow a few weeks for the grass to die. Keep in mind this method is slow and not always successful. The weeds will not die anywhere sunlight gets through. You will have to hand till and pull many weeds if you use this method of grass removal.
- Remove all vegetation, including dead grass and roots, from the area. Even small pieces of grass stolons or rhizomes can take root. Leaving small clumps of vegetation in the garden area will promote large weed populations in the future. Take the time now to remove the vegetation to reduce weeds in the future.
- Till the areas to a depth of at least 12 inches using a tractor or tiller. Soil tilth is important to plant growth. The looser the soil, the easier it will be for the plants to root and produce vegetables for the students.

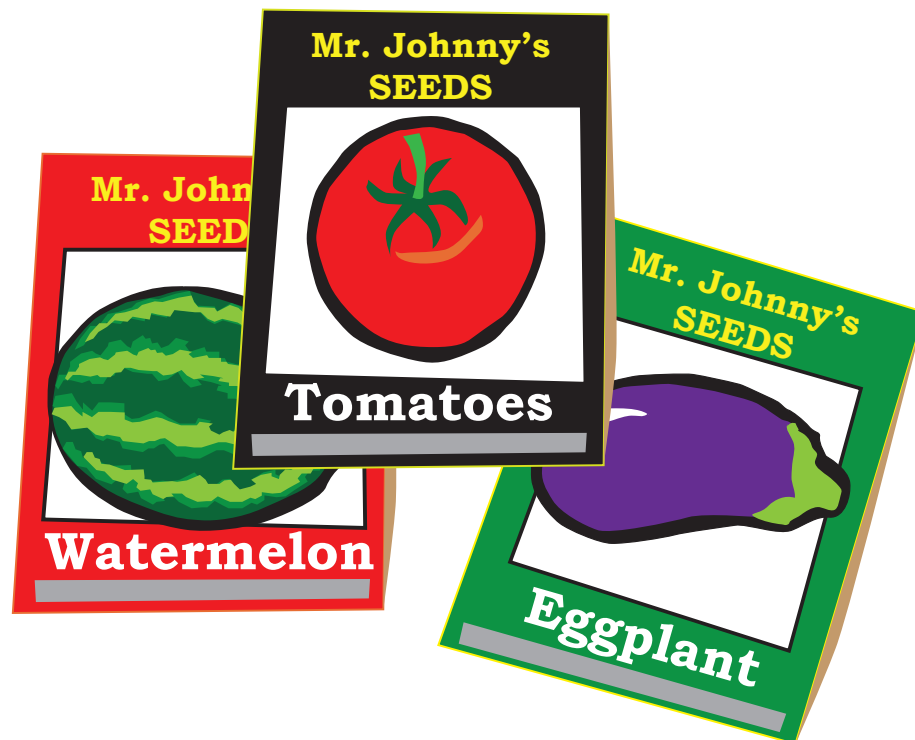


STEP 6: Order Seeds and Plant Seeds in the Classroom or Greenhouse

There are three sources that will help you to determine when to plant your vegetables.

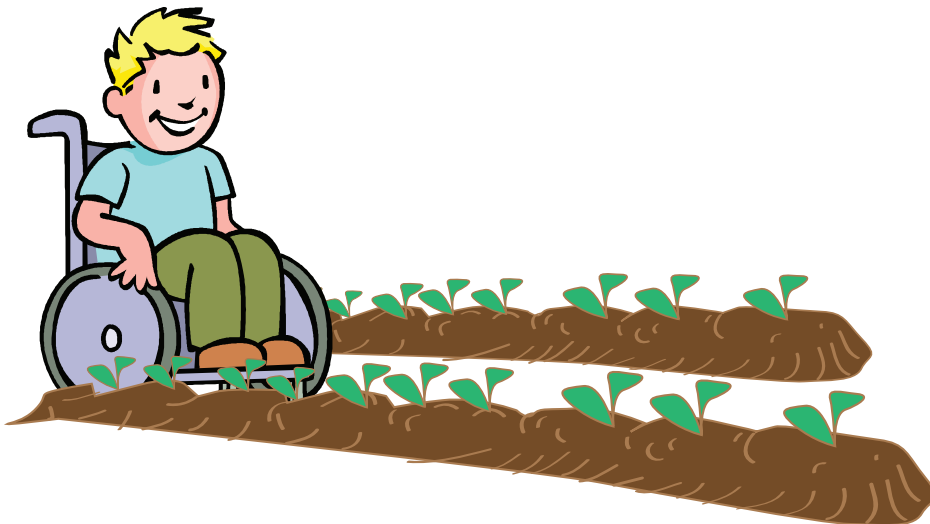
- 1** The first source is a general Louisiana Planting Guide from the LSU AgCenter (on the Web at <http://www.lsuagcenter.com/pub1980>).
- 2** The second is a book published by the LSU AgCenter titled Louisiana Home Vegetable Gardening, publication number 3000. It can be ordered online for \$20 from the LSU AgCenter store at <http://www.lsuagcenter.com/onlinestore>.
- 3** The third source is the School Garden Planting Guide on page 19 of this publication.

See Starting Seedlings in Your Classroom on page 20 for more information. This sheet includes step-by-step guides to planting and caring for vegetable seeds and a list of companies who sell vegetable seeds directly to the public.



STEP 7: Amend the Soil According to the Soil Lab Recommendations

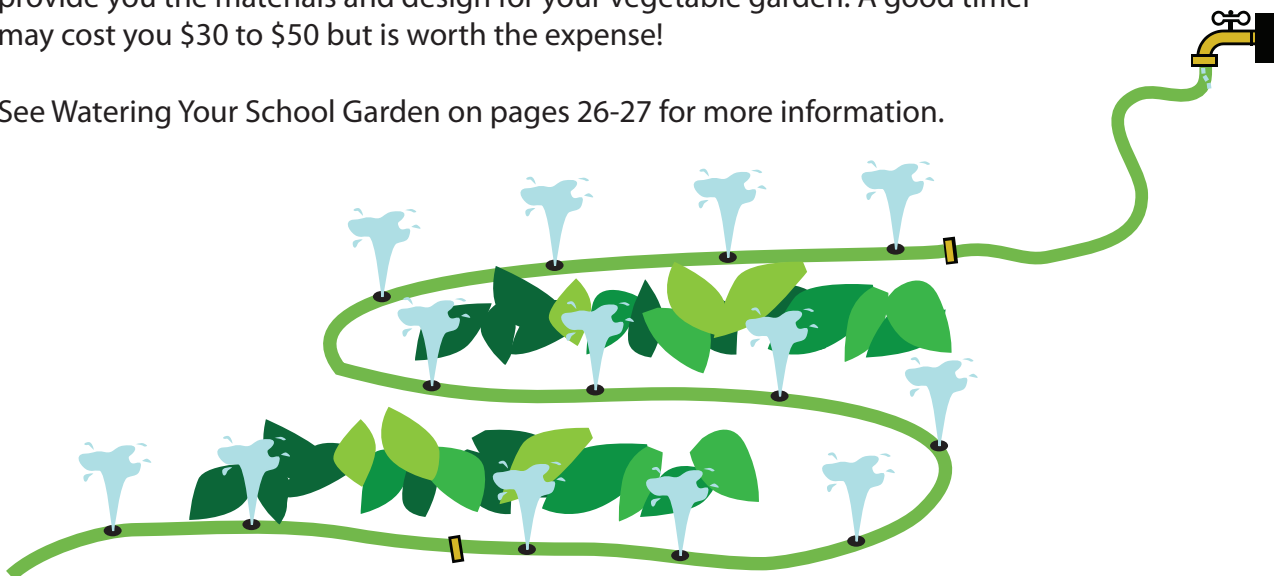
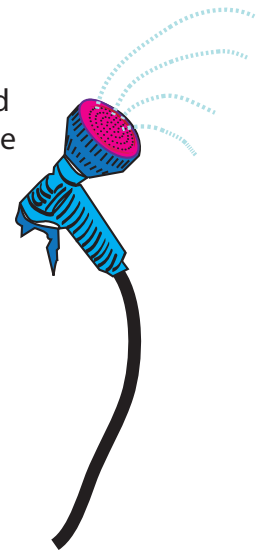
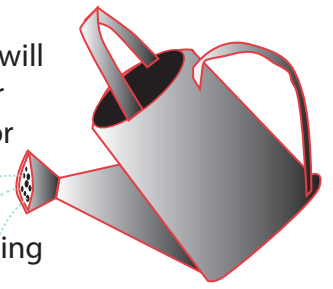
- Ask your local LSU AgCenter county agent to help you interpret the soil lab's recommendations for amending your soil.
- Ideal soil is loose with a crumbly feeling. It has lots of air space and can retain some water.
- General guidelines for amending soil are:
 - **Add organic matter.** This helps improve soil structure. Organic matter is anything that was once living. Types of organic matter that are beneficial to the garden include decomposing grass clippings or leaves, disease-free plant materials and compost.
 - **Break up large clumps of soil.** Till the soil to allow for better drainage and air porosity. Large clumps of soil will prevent small seeds from sprouting.
 - **Add a complete slow-release fertilizer like 13-13-13 or 8-24-24.** Incorporate the fertilizer into the soil. Do not just spread it on top.
- Build your rows. Ideal vegetable garden rows in a school garden are 2 feet across the top of the row. There should be 4 feet of space between rows to allow students to easily work in the garden once the plants have matured. If you teach disabled students, widen row middles to 4-5 feet in width to allow wheelchair access. In Louisiana, rows should be approximately 12-18 inches high. This ensures good drainage from the immediate root zone.
- About two weeks after seeds have sprouted and transplants have been planted, side-dress plants with calcium nitrate. Place 1 tablespoon of calcium nitrate on the side of the row by each plant.



STEP 8: Install Irrigation

Think about how you are going to water your garden. How large is your garden? Small gardens can be managed by hand watering when school is in session. Who will water when school is out? A simple irrigation system on a timer can provide water when students cannot. There are several irrigation systems that are appropriate for school gardens.

- If the school garden is small and you or a volunteer will water it by hand during the week and on weekends, a simple hose and water wand or watering cans will suffice. If no one will be available to water on weekends and holidays, however, an irrigation system with a timer will need to be purchased. Many irrigation systems are simple, inexpensive, and easy to install. For basic systems, you will need a water source near the garden. Local irrigation companies can work with you to customize the design and materials for the school vegetable garden. The most important component is the timer. A good timer may cost \$30 to \$150 but is worth the expense! For example, a simple irrigation system can involve just a timer attached to drip hoses or to a hose and water wand. Generally, you want to water 15 minutes twice a day when the transplants and seeds are first planted. Make sure the water softly hits the soil. Be careful so the water doesn't disturb the seeds or wash the soil off of them. After the plants are established, the watering can be scaled back to about 30 minutes a day about three times a week -- unless there is a lot of rain, which would decrease the need for supplemental watering. A general rule of thumb is that most vegetables need 1 inch of water per week.
- If you do not plan on being there to water your garden on weekends and holidays, you should consider an irrigation system. Irrigation systems are simple and can be inexpensive and easy to install. For basic systems, you will need a hose outlet near your garden. Irrigation companies like PolyDrip can provide you the materials and design for your vegetable garden. A good timer may cost you \$30 to \$50 but is worth the expense!
- See Watering Your School Garden on pages 26-27 for more information.



STEP 9: Plan for Mulch

- Mulching is the key to successful gardening.
- Several types of mulch can be used.
- Black plastic can be laid over row tops. Black plastic prevents weed seeds from germinating because it blocks out sunlight.
- Organic mulches such as leaves, compost, pine straw and grass clippings also can be used. Organic materials add nutrients to the soil as they decompose.
- Other materials like newspapers and cardboard can be placed in walkways and between rows of gardens.
- Mulch reduces weeds by acting as a barrier to sunlight. Mulch holds heat in the ground during the winter. Mulch decomposes, increasing soil tilth by improving nutrient levels, incorporating beneficial organisms and aeration.
- See Mulch for School Gardens on page 24 for more information.



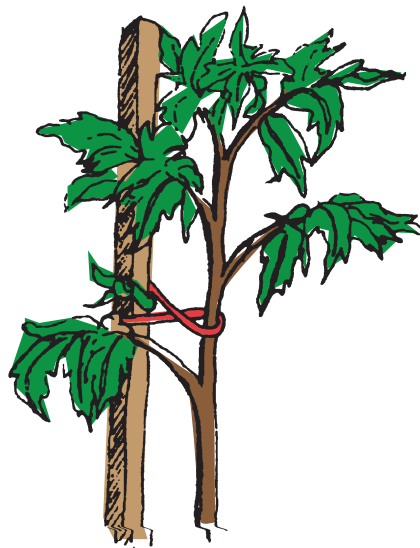
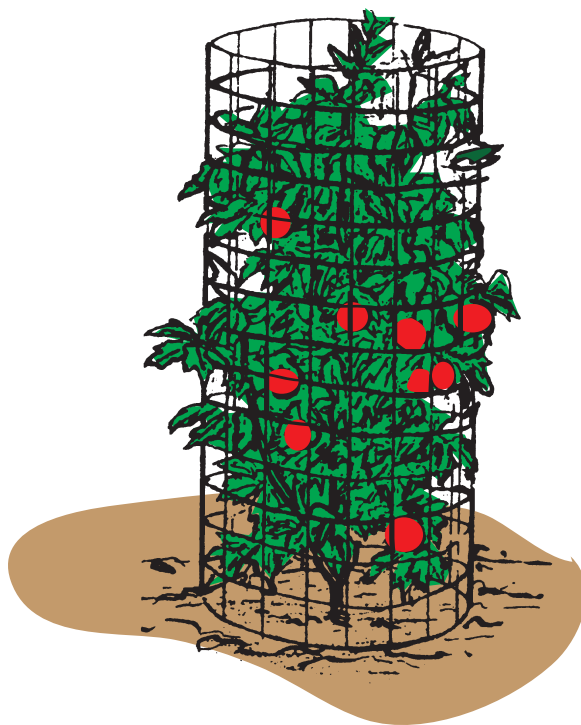
STEP 10: Plant Transplants

- If you have already ordered and planted your seeds, you may have small transplants ready for your garden by this stage.
- Allow students to plant their small vegetables.
- See the School Garden Planting Guide on page 19 and Starting Seedlings in Your Classroom on page 20 for more information.



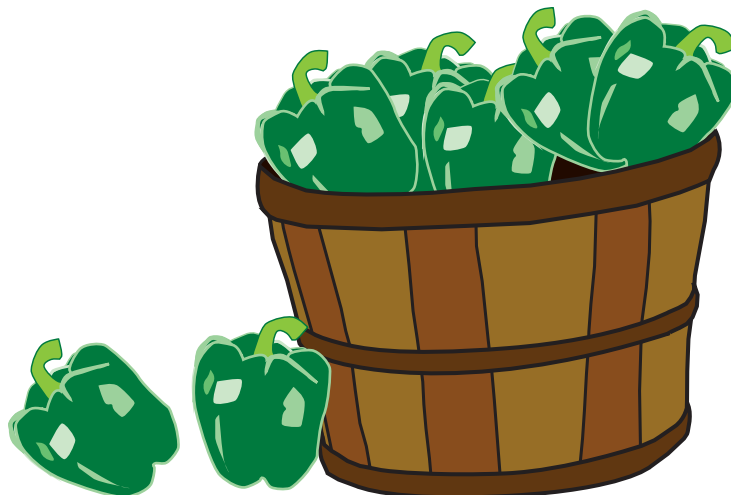
STEP 11: Maintenance

- Now that your garden is set up and your vegetables are in the ground, you can enjoy watching them grow.
- Remember not to let the weeds get ahead of you. Remove weeds when they are small before the problem escalates.
- Water your plants frequently but do not drown them.
- You also need to continually add fertilizer to your garden for strong, healthy plants. There are three attached fact sheets that give more information on weed management, watering and fertilizing in a school garden.
- You may need to stake some of the vegetables in your garden that grow very tall, such as tomatoes, eggplants and cucumbers. The individual crop sheets give general maintenance information.



STEP 12: Harvest

- Students may want to eat what they have grown right there in the garden. Vegetables grown without the use of chemicals could be eaten in the garden depending on the chemicals you have been using and how it was grown, however, some of the produce may need to be washed first. And it is a good idea to encourage students to wash their hands prior to harvesting and eating.
- Before going outside, have a few items to make harvesting easy and fun. Bring some recycled grocery bags to collect the bounty and hand pruners to make sharp cuts so students don't rip out vegetation by the roots!
- Remember, this is harvest time, not dig up the garden time! Many plants will keep on producing as the older fruits are removed.
- After the harvesting is finished but before you go back into the classroom, have students wash all hand tools used.
- Once in the classroom, ask students to rinse their produce with water before eating. This is mainly to remove any pesticides that were used and to remove excess dirt (especially from the underground vegetables).
- Enjoying the harvest can be as simple as providing the students with a few bowls of ranch dressing to dip their vegetables. Encourage the students to try a bite of each thing that was grown.

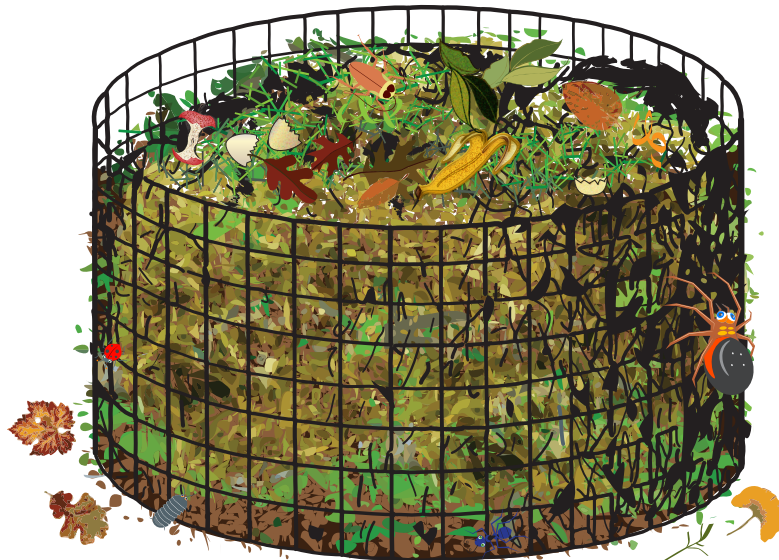


Recommended Cafeteria Kitchen Scraps for a School Compost Bin

1. Egg shells
2. Raw vegetables (that do not have any condiments on them)
3. Fruit, including peel, rinds and pulp
4. Paper napkins
5. Unpopped popcorn
6. Spices
7. Paper towels
8. Potato peelings
9. Coffee grounds
10. Tea grounds
11. Grape stems (all parts)
12. Corn cobs
13. Onion skins
14. Peanut shells

Never add any meat, dairy or milk products to your compost. This will only cause a foul smell and lead to mold growth.

Do not add paper towels or napkins that are coated with milk and dairy products to the compost bin. Napkins or paper towels may be wet, but if they are dry, it is best to shred them so they do not fly out of the bin and litter the school yard.



Volunteer Information Sheet

Name:

Contact number(s):

Address:

Preferred times to volunteer:

Preferred age group to work with:

Any special gardening interests:

Willing to teach lessons as well as help with garden maintenance? (Yes or No)

School Garden Planting Guide

The crops listed are those the LSU AgCenter recommends for school gardens. The listed crops are planted and harvested within the typical school year (September to May). Other crops may be grown in school gardens, but they are planted and/or harvested outside of the normal school year.

Key:

GREEN: Plant seeds in the garden

RED: Plant transplants in the garden (Remember to start seeds indoors ahead of time!)

| Vegetable | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec | Days to Harvest |
|-----------------------|-------|-------|-------|-------|-----|-----|-----|-----|-------|-------|-----|-----|-----------------|
| Beans (snap - bush) | | Green | Green | | | | | | Green | | | | 48-55 |
| Beans (snap - pole) | | Green | Green | | | | | | | | | | 60-66 |
| Beets | Green | | | | | | | | | | | | 55-60 |
| Broccoli | Red | Red | | | | | | | | | | | 70-90 |
| Cabbage | Red | Red | | | | | | | Red | | | | 65-75 |
| Carrots | | | | | | | | | Green | | | | 70-75 |
| Cauliflower | Red | Red | | | | | | | Red | | | | 55-65 |
| Collard Greens | | | | | | | | | Green | | | | 75 |
| Cucumbers | | | 15th | Green | | | | | | | | | 50-65 |
| Lettuce | Green | | | | | | | | Green | | | | 45-80 |
| Mustard Greens | Green | Green | Green | | | | | | Green | Green | | | 35-50 |
| Peas, English | Green | | | | | | | | | | | | 60-70 |
| Peas, Sweet (flowers) | | | | | | | | | | Green | | | 120 |
| Peppers, Bell | | | 15th | | | | | | | | | | 70-80 |
| Potatoes, Irish | | Green | | | | | | | Green | | | | 90-120 |
| Radishes | Green | Green | Green | | | | | | Green | | | | 22-28 |
| Shallots | Red | Red | | | | | | | Red | | | | 50 |
| Strawberries | | | | | | | | | | Red | | | 120 |
| Tomatoes | | | 15th | | | | | | | | | | 60-75 |
| Turnips | Green | Green | | | | | | | Green | | | | 40-50 |

Starting Seedlings in Your Classroom

In Louisiana, the following vegetables should be planted as transplants into a school garden: broccoli, cabbage, cauliflower, bell peppers, shallots and tomatoes. There are several benefits to transplanting these crops rather than direct seeding them into the garden. Using transplants minimizes the number of seeds lost because of weather conditions, extends the growing season (which is important in school gardening when students are out for the summer) and gives students daily opportunities to watch the germination of a seed.

Potential Problems:

Two major factors that need attention when starting transplants for a school garden are 1) light and 2) damping off disease.



Before you begin seeding your transplants, clear a space near a large, well lit window. If you do not have a well lit window, purchase fluorescent lights to place directly above your transplants. Leave the lights on throughout the school day. If at all possible, set the light on a timer for 12 hours per day. Vegetables will not produce fruit without sunlight.

To prevent damping off disease, use a clean, sterile media. Media (bagged potting soil) can be purchased from your local garden retailer. Do not purchase media that has a high percentage of bark in it. Bark ties up nutrients, making them unavailable to vegetable transplants. Use a media that is mostly peat based.

Containers:

There are several options when purchasing containers to grow your transplants. The first type is typical plastic flats or cell packs. The best sized cell pack is a jumbo six-pack that usually has 36 cells per flat, meaning that you will grow 36 plants per flat. You also can use peat pots or peat pellets, which are planted directly into the ground. They are made of compressed peat moss. Peat pots and pellets have advantages and disadvantages compared to plastic flats and cell packs. Peat-based containers are environmentally friendly. They degrade in the ground after being planted, and students are less likely to injure roots because they do not have to remove transplants from the containers. Disadvantages of peat-based containers are that they more expensive than plastic cell packs and flats and they cannot be used over and over again. (Retailers of containers are listed on page 22.)

Seeds:

Remember to think about varieties that are suited to your area when purchasing seeds. Most seed companies label their seeds with growing zones. Louisiana is in growing zones 8 and 9. The majority of the state is located in zone 8. The southern portions of the state (south of New Orleans and all along the coast line) are in zone 9. You will need to order seeds that survive in these growing areas.

Only purchase seeds from reputable sources. You want your students to succeed in the garden. There are so many factors you will have combat that you do not want to start your project with poor quality seeds. Things to look for when purchasing are age of the seed. Only buy fresh seed. Last year's seed is old and will not have as high a germination percentage rate as fresh seed. Seed retailers must have kept the seed in cool storage before you purchased them. Seed stored on shelves is not as fresh as seed stored in a refrigerator. (Seed sources also are listed on page 22 in this material.)

Timing:

Starting seeds at the proper time is a key to getting your transplants into the garden at the right time. The chart below includes several vegetables recommended by the LSU AgCenter that are commonly planted using transplants. It also shows the number of weeks in advance you will need to start your transplants. This, of course, means you must prepare make the appropriate preparation so you can plant at the right time.

| Transplant Seeding Guide | | | |
|---------------------------------|---|-------------------------|---------------------|
| Vegetable | Days to Emerge | Proper Soil Temperature | Weeks to Transplant |
| Broccoli | 5 | 60-70°F | 5-7 |
| Cabbage | 4-5 | 55-60°F | 5-7 |
| Cauliflower | 5-6 | 60-65°F | 5-7 |
| Bell Pepper | 7-8 | 70-80°F | 6-8 |
| Shallots (cloves) | Purchase shallot cloves from your local garden retailer | | |
| Tomatoes | 6-7 | 70-80°F | 5-7 |

How To:

Once you are ready to start seeding, divide the class into groups of three to four students. Each group should have containers, soil, seeds, labels, markers and access to water. It is best to seed transplants in an area that can get messy. Students should water the media in the pots before planting their seeds. The Students' Guide to Growing Vegetable Transplants work sheet on page 23 gives students step-by-step instructions for growing vegetable transplants.

Watering:

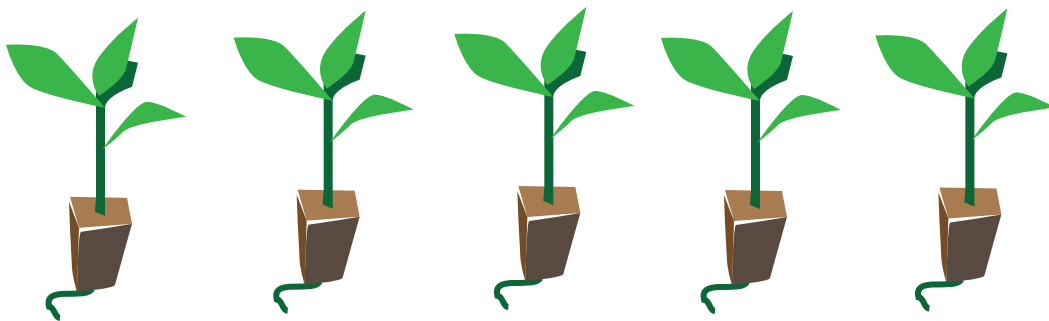
After the students have planted seeds in all of their containers, you will need to discuss watering the transplants. Vegetable transplants like to be moist, but not wet. Too much water will cause damping off disease.

Damping off disease can be identified by looking at the base of the seedling. If it looks like it has been pinched and is leaning over, it has the disease and will never grow. It is best to pull the seedling and throw it away to avoid contaminating other seedlings.

Be sure water can drain from the containers. Do not overwater. Place your finger into the soil. Does it feel dry? If so, you will need to water. If it feels wet, however, do not water.

Never let your transplants wilt. Wilted plants are stressed and will not produce as much as plants that were not stressed. Keep a watering can or spray bottle near the transplants in your classroom. Before the seeds emerge from the soil, it is best to lightly mist them to prevent the seeds from washing away. After the seedlings have emerged and have their first true leaves, you can water with a watering can or hose.

| Container Companies | Seed Companies |
|--|-------------------------|
| Johnny's Selected Seeds | Burpee |
| Growers Solution | Johnny's Selected Seeds |
| Peaceful Valley Farm and Garden Supply | Stokes Seed Inc. |
| Novosel Enterprises | Twilley Seeds |
| Burpee | Harris Seeds |



Students Guide to Growing Vegetable Transplants

Group Name: _____

Vegetables Seeded: Make a list of the vegetables your group is seeding in the box below.

Materials Needed: Make sure your group has containers, planting media (soil), spray bottles, seeds, labels and permanent markers.

Step-by-Step Directions:

1. Fill the containers with media (soil). Do not pack the media into your containers; they should be loosely filled.
2. Water your containers. Allow the water to drain from the bottom of the container. The soil should feel moist and not have any dry spots, but you do not want water sitting on top of your soil.
3. After the excess water has drained from your containers, plant seeds into each container. You should plant two seeds per container. Plant seeds only as deep as they are wide. Lightly cover the seeds with media. Do not leave the seeds exposed.
4. Make your labels. You should write your group name, date and type of vegetable you planted on your label. Place your label into your container.

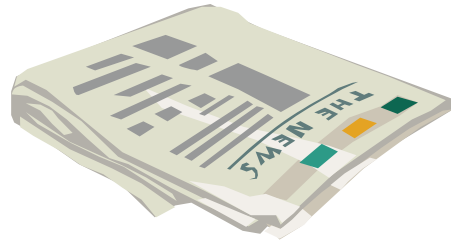
Group Name _____ Date _____
Vegetable _____

5. Place your seeded containers in the area designated for growing transplants in your classroom. This should be near a bright window or under fluorescent lights.
6. Water your transplants weekly until you take them out into the garden. Until your seeds emerge, mist them with water daily. After you can see several leaves, water them with a watering can.
7. About two weeks before you plan on planting them into the garden, move your seedlings outside into a shady location. After one week in the shady location outside, place them into a sunny location outside. Remember to continue watering your transplants. This is called "hardening your transplants." Hardening transplants allows them to adjust to the outside weather conditions before they are planted into a garden. Hardening your transplants will give you stronger, healthier plants that will produce more vegetables.

Mulch for School Gardens

Mulches are excellent sources of nutrients and are weed barriers for your school garden. Work with students to collect mulch. Ask students to bring mulch from home. These are potential mulch materials that they may have at home.

- Grass clippings
- Brown leaves
- Pine needles
- Newspapers
- Cardboard (large pieces only)



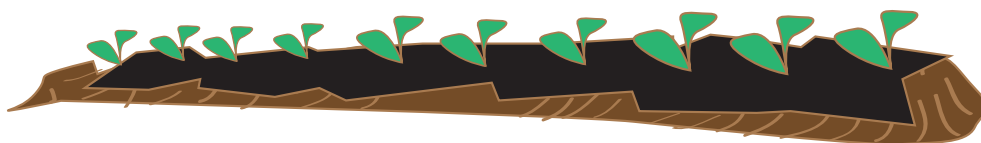
Only add mulch to your row middles in the spring. If you add mulch during fall, it will not decompose as rapidly and may tie up valuable nutrients that are needed for growing vegetables.

You may also want to consider black plastic over your rows as a mulch. Black plastic prevents weeds from germinating and holds in moisture and heat. Because it holds in heat, you will need to paint it with a 3-to-1 mixture of water and white paint during the spring so your soil temperatures do not get too high. You also will want to lay drip irrigation underneath the black plastic. Follow these simple steps to lay black plastic in your garden:



Laying Plastic

1. Black plastic can be purchased at local nursery and hardware stores.
2. Build your rows.
3. Dig small trenches on either side of the rows.
4. Lay your irrigation lines.
5. Roll plastic over the top of each row.
6. Tuck the edges into side trenches. Cover with soil that was removed from the trench. Pull the plastic tight as you go down the row.
7. Bury the plastic on the ends of the rows.
8. Poke holes (only as big as the width of the transplant) along the side of irrigation line on either side of the black plastic.
9. Plant your transplants or seeds into the holes.
10. During the spring, paint the plastic with a 3-to-1 ratio of water to white paint.



Weed Management in the School Garden

Depending on your school's policies regarding use of chemicals, you may have several options for managing weeds in your school garden.

If it is going to be a "no-spray" garden, you will need to control weeds through:

1. Mulching
2. Hand pulling
3. Cultivation

Before using ANY herbicides (Organic or Conventional) READ THE LABEL, AND FOLLOW ALL DIRECTIONS!!!

If you want to use only organic herbicides to control weeds, you have the following control options:

1. A pre-emergence herbicide is Corn Gluten Meal (Preen Organic)
2. Post-emergence herbicides are:
Scythe; Perfectly Natural Weed, Grass & Moss Killer or vinegar.

If you want to use conventional herbicides to manage weeds, you have the following control options:

1. A pre-emergence herbicide is Preen
2. Post-emergence herbicides are Poast Plus Grass or Roundup



Watering Your School Garden

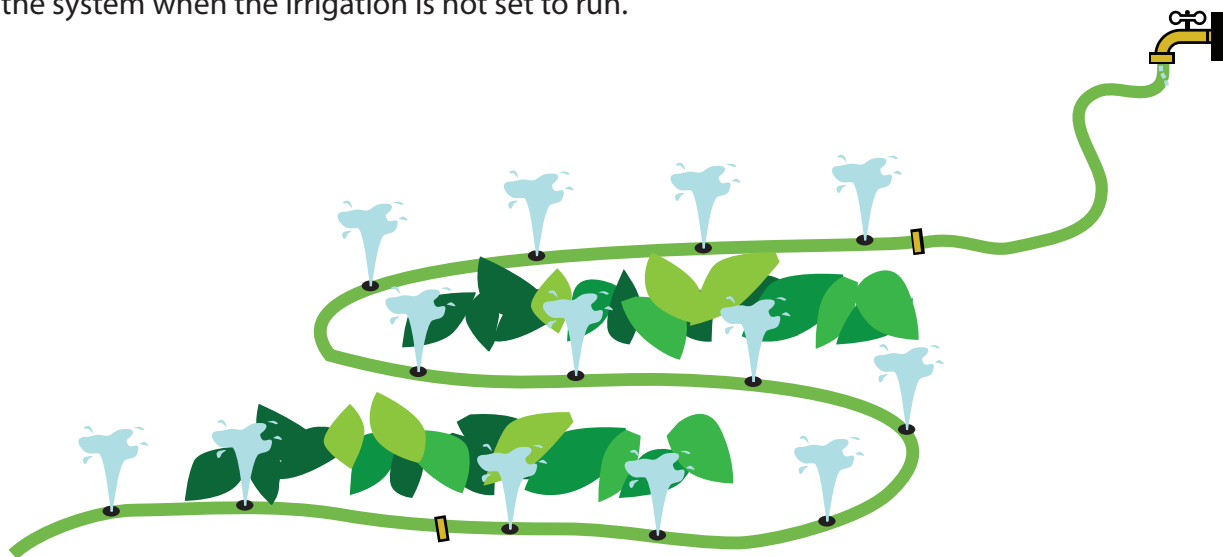
Louisiana typically is a wet state – receiving statewide average annual rainfalls of nearly 60 inches per year. Even with this amount of rainfall, however, it still is a good idea to install some type of irrigation system in your school garden.

Irrigation systems come in handy during the weekends, holidays and summer vacations when students and faculty generally are not at school.

Your school garden can have a simple irrigation system, an elaborate one or a variety of possibilities in between. Your irrigation needs will depend on the size and shape of your garden beds. The different types of irrigation systems are:

1. Drip hoses can be placed in all garden beds.

The first drip hose attaches to the outdoor faucet and then connects to all other drip hoses. The timer should be placed between the faucet and first drip hose. Remember, when using this type of irrigation system, never shut off the water at the faucet. The timer will prevent the water from flowing through the system when the irrigation is not set to run.



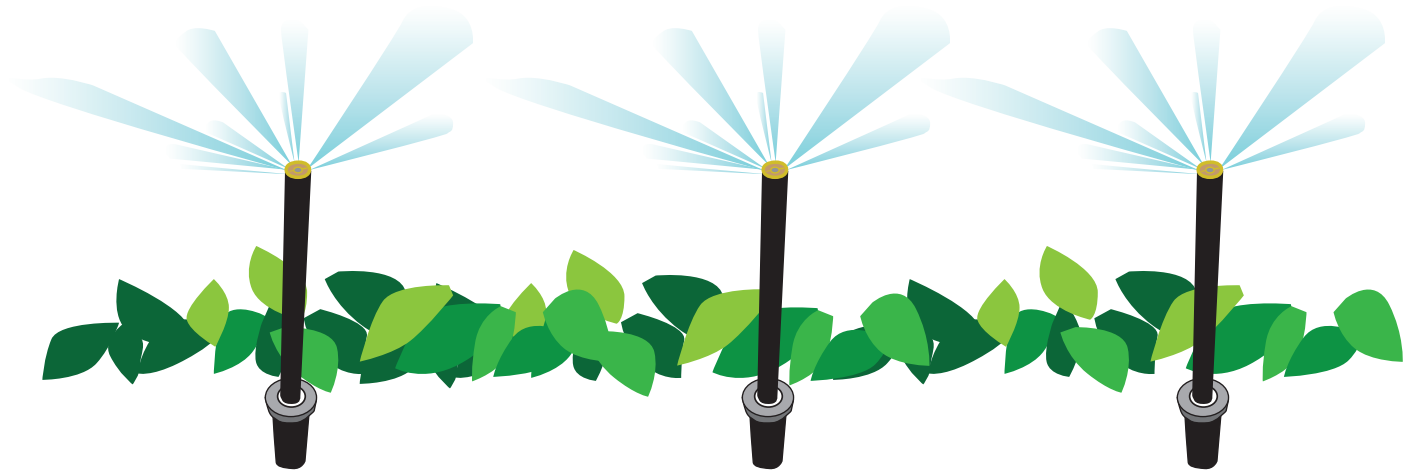
2. Hoses with nozzle and sprinkler attachments can be used in a school garden.

These are easy to use, but there are some disadvantages to this type of irrigation system. You must drag the hose and sprinkler out to the garden each time you water. Leaving it strung out across the school yard can be a trip hazard or may lead to it being mowed over with lawn equipment. It is a cheap and effective irrigation method, however.



3. A riser system.

A timer is connected to an outdoor faucet. From the timer, plastic hoses are laid throughout the beds. Risers with spray nozzles can be installed along the plastic hoses, as needed. Risers and nozzles usually screw into one another. The risers are connected to the plastic hoses by using a small tool (provided with the irrigation system equipment) to pop a hole in the plastic hose. The riser is then connected to the hole. Spray nozzles can spray in arrays from 360-degree to 90-degree angles. They also have varying spray diameters. You will need to sketch a drawing of your garden space with all dimensions before going to an irrigation supply store. Irrigation supply stores usually can design a quick irrigation system on the spot.



4. In-ground, pop-up sprinkler systems also can be used in a vegetable garden.

These systems are more difficult to install and require a professionally licensed person for installation. These generally are very reliable systems but can be costly.

Fertilizing Your School Garden

Proper fertilization of your school garden will increase yields, and also decrease plant susceptibility to diseases and insects. Fertilization in the school garden can be simple. You can follow these two steps for your fall and spring school gardens.

STEP 1: Before Planting

Before you plant your garden, you should apply a complete fertilizer. A common complete fertilizer used in vegetable gardens is 13-13-13. It supplies a medium amount of nitrogen, phosphorus and potassium to the plants. Generally, the pre-plant fertilizer is applied one to three weeks prior to planting your vegetables. The pre-plant fertilizer is applied in a band about 6 inches deep in the row. You must have moist soil when planting your transplants after applying the pre-plant fertilizer. You should be able to take a handful of soil and squeeze it, and if it forms a loose ball, there is plenty of moisture in the soil. If the soil is dry when you plant after applying fertilizer, you will burn up your plants!

STEP 2: When the Flowers and Fruit Begin to Develop

As the flowers and fruit start to develop, the nitrogen requirements of vegetable plants increase. That is the time to side-dress. This usually occurs a month after planting. Side-dressing is applying a small amount of fertilizer in between plants along the side of the row (about 8 inches away from the plants) and within the top 4-6 inches of the soil. Like pre-plant fertilizing, you need to apply water soon after you side-dress to prevent the plants from being burned by the fertilizer. Generally, $\frac{1}{2}$ teaspoon of calcium nitrate is put into the side holes every 12 to 18 inches.

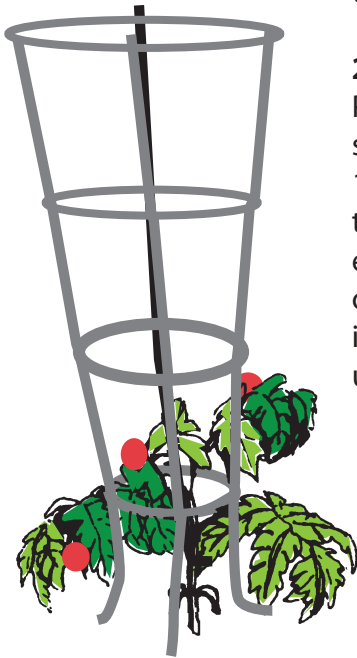


Staking Vegetable Plants

Certain vegetables growing in a school garden will benefit from being staked. Staking a plant gives it extra support when it is heavy with fruit. The proper ways to stake plants are:

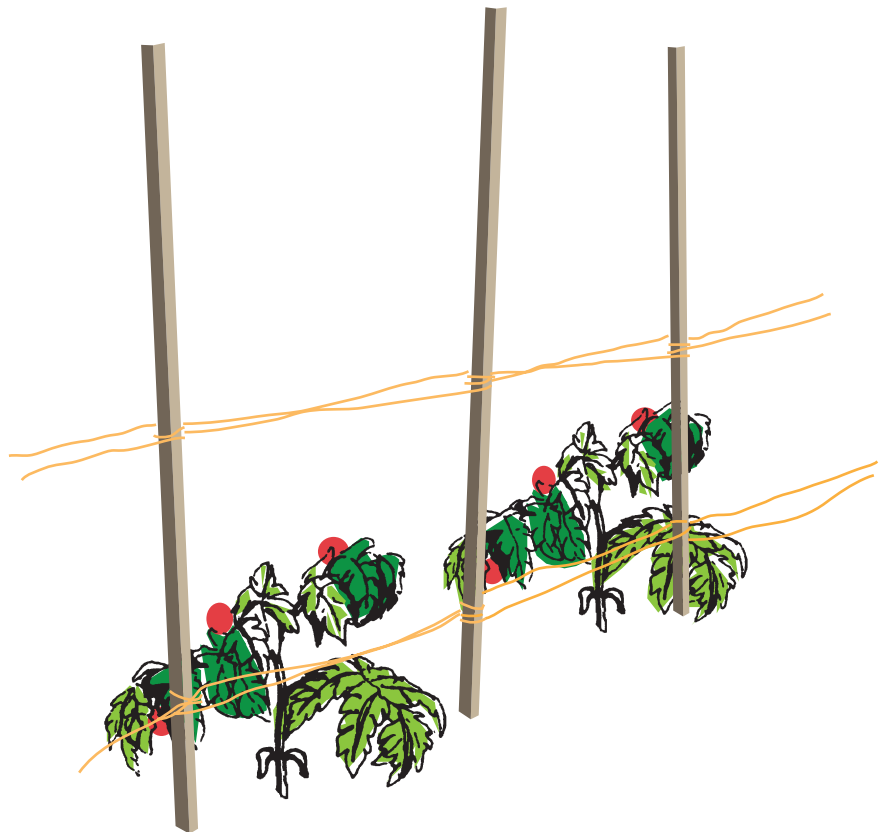
1. Cages

Cages, commonly called tomato cages, are excellent stakes for plants like tomatoes, eggplants and peppers. Tomato cages range in price from \$4 to \$20 each. But they can be reused year after year. They generally are made of heavy wire. The cage is placed into the ground around the plant while the plant is still small. The leaves of the plant will rest along the wire of the cage. In winter conditions, light cloth can be placed around the cage to protect the plant from frost damage.



2. Using stakes and twine:

Plants growing in straight rows can be trellised using rebar or long wooden stakes (generally 5-6 feet tall) and heavy twine. The stakes are driven about 10-12 inches into the ground between every two to three plants. A heavy twine is passed along one side of the stake and wrapped in a loop around each stake until you get to the end of the row. The same process is repeated on the other side of the row. Twine should run along the stakes at 10-inch intervals. It is best to start staking plants before they begin falling over. This usually occurs when plants are a little over 1 foot tall.



Vegetable Cards

Tomato

Lycopersicon esculantum



Staked

Spacing: 24-inches apart

Variety in My Garden:

Radish

Raphanus sativus



Spacing: 24-inches apart

Variety in My Garden:

Bell Pepper

Capsicum annuum



Staked

Spacing: 12-18 inches apart

Variety in My Garden:

Lettuce

Lactuca sativa



Spacing: 6-9 inches apart

Variety in My Garden:

Vegetable Cards

Beans (bush/snap)

Phaseolus vulgaris



Spacing: One bean every 2-3 inches

Variety in My Garden: _____

Beans (bush/pole)

Phaseolus vulgaris



Trellised: Three poles form a teepee and are tied together at the top with string

Spacing: Four to five beans per hill 6-12 inches apart

Variety in My Garden: _____

Beets

Beta vulgaris



Spacing: Plant seeds in a row. Once the plants have emerged, thin them to 3 inches between plants

Variety in My Garden: _____

Broccoli

Brassica oleracea



Spacing: 12-18 inches apart

Variety in My Garden: _____

Vegetable Cards

Cabbage

Brassica oleracea



Spacing: 10-18 inches apart

Variety in My Garden: _____

Cauliflower

Brassica oleracea



Spacing: 10-18 inches apart

Variety in My Garden: _____

Greens

Brassica spp.



Spacing: Plant seed in a row. After the plants have emerged, thin to one plant every 3 inches.

Variety in My Garden: _____

Cucumbers

Cucumis sativus



Trellised

Spacing: Hills (with three seeds) 8-12 inches apart

Variety in My Garden: _____

Vegetable Cards

English Peas

Pisum sativum



Trellised

Spacing: Plant seeds in a row. Once the plants have emerged, thin to one plant every 3 inches.

Variety in My Garden:

Irish potatoes

Solanum tuberosum



Spacing: 12-24 inches apart

Variety in My Garden:

Shallots

Allium oschaninii



Spacing: 6-8 inches apart

Variety in My Garden:

Turnips

Brassica spp.



Spacing: 2-3 inches apart

Variety in My Garden:

Vegetable Cards

Carrots

Daucus carota



Spacing: Place seed in a straight line. After the plants have emerged, thin to 2 inches between plants.

Variety in My Garden: _____

Strawberries

Fragaria spp.



Spacing: 14-16 inches apart

Variety in My Garden: _____

Sweet Peas

Lathyrus odoratus



Trellis on a fence

Spacing: Place seed in a straight line. After the plants have emerged, thin to 4 inches between plants.

Variety in My Garden: _____

Vegetable _____

Scientific name _____

Trellis? _____

Spacing: _____

Variety in My Garden: _____

Materials for a School Garden

1. Tiller (borrow from a parent if not in the budget)
2. Shovels
3. Rakes
4. Trowels
5. Hoes
6. Sprayer (keep herbicides and fertilizers separate)
7. Measuring cups
8. Fertilizer
9. Herbicides
10. Fungicides
11. Gloves
12. Wheel barrow
13. Buckets
14. Hoses
15. Watering cans
16. Irrigation system (not necessary, but you will need a hose and buckets if you do not have an irrigation system)
17. Timer (only if you have an irrigation system)
18. Benches (for students to sit on to use the garden as an outdoor classroom; this is not absolutely necessary but would be helpful in the long run)
19. Storage shed (unless the garden is close to the classroom and the students and teachers can carry supplies back and forth from the garden site)
20. Seeds/transplants
21. Soil
22. Seed trays
23. Labels (for trays and garden spaces)
24. Markers
25. Paints (to make signs in the garden)
26. Rain barrels
27. Compost bin
28. Trellis system (tomato cages or rebar and string for vegetables like tomatoes, peppers, eggplant, cucumbers, gourds etc.)
29. Mulch (not wood chips)
30. Scarecrow (optional)
31. Wood (2 x 12 x length of your choice) for raised beds (2 x 12 x 8s are the recommended size). Three will make one raised bed. Contact a gardening expert if you need instructions.
 - a. Saw, hammer and other tools
 - b. Nails or screws
32. Greenhouse (optional)



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