### SCHOOL GARDEN TOOLKIT



### **GREEN MOUNTAIN FARM-TO-SCHOOL**

Green Mountain Farm-to-School (GMFTS) is a non-profit organization in Newport, VT that strengthens local food systems by promoting positive economic and educational relationships between schools, farms, and communities. GMFTS supplies fresh, local food to schools and institutions and gives students of all ages the knowledge and skills they need to make healthy food choice through school gardens, farm-to-school programs, a regional food hub, and mobile learning kitchen. For more information, visit www.GreenMountainFarmtoSchool.org.

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Writer: Green Mountain Farm-to-School staff and AmeriCorps members Graphic Design: Kathryn Hansis Copy Editor: Jon Barker

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Publisher Information: Name Address City, State, Zip Welcome to Green Mountain Farm-to-School's School Garden Toolkit. A school garden is a wonderful place for kids to learn. Whether it's planting, growing, and tending the space or having math and science class, the garden can be an excellent resource to enhance the education of many students. But starting and maintaining a school garden is not always easy. After years of working in this field, we have put together the School Garden Toolkit as a guide for educators, administrators, or community volunteers to help them effectively plan, begin, and maintain a school garden for the years to come. With this guide, a school garden can become an integral part of your learning community.

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### FINDING THE RIGHT PEOPLE

There are many people in the community and in the school that are impacted and can help with your school garden. Think about creative ways to involve as many people as possible.



# FINDING THE RIGHT PLACE

### LOCATION, LOCATION, LOCATION

When scouting for a garden location find a place that is:

- typically in a sunny spot,
- well drained and level,
- protected from wind,
- close to a water source.

### HOW VISUAL DO YOU WANT THE GARDEN TO BE?

- A garden right out in front of the school is a great way to advertise your program and a great reminder for maintaining and harvesting.
- A garden in the back of the school may provide more protection from the road and unwanted visitors.



### WATER

- Although your garden needs water, avoid a location that floods when it rains or where water stands.
- Ideally, a garden should receive about one inch of water a week.
- If you place a rain gauge in the garden, it will measure how much rain falls in a given time so you will know how much water to add every week. Students can record this measurement in garden journal.
- Try to place your garden next to an outdoor water spigot. A rain barrel or water tank near the garden will help, but they will need to be filled at least once a season.

#### LIGHT

- A garden must have six hours of full sunlight a day.
- Pay attention to how the sun tracks and the shade that may be cast from buildings, trees, and shrubs.
- If the location is sloped, a south-facing one is best.

#### SIZE

- Your location will determine how large your garden can be.
- If you want the garden to produce 300 pounds of food for the school it will need to be about 1500 square feet in size.
- A smaller educational garden for the 2nd grade may need a space of about 100 square feet.
- Many schools find success when starting with a smaller garden and expanding it over time.

## **PREPARING THE GROUND**

#### **VERMONT SOIL**

Most of Vermont has a soil like this:

Surface layer: very dark brown with decomposed organic material

Subsurface layer: gray, fine, sandy loam

Subsoil (upper): dark brown, fine sandy loam

Subsoil (lower): brown, channery fine, sandy loam

Bedrock: schist

These soils support a variety of tree species like white birch, hemlock, and sugar maples. They also are valuable for garden production.

#### THE PERFECT GARDEN SOIL

- Holds moisture but
- Drains well
- Is porous but still firm in structure
- Rich in life (worms, bugs, fungi, bacteria)
- Rich in organic matter
- A darker shade of brown
- · Contains good mix of sand, slit, and clay
- Slightly acidic (pH of 6.2 to 7.0)

#### HINTS

- Not many sites start with the perfect soil. Making good garden soil is a process.
- With time, added organic matter, nutrient amendments and patience, a better garden soil will develop.
- Minimizing soil compaction by limiting foot traffic to paths and discouraging heavy machinery will benefit the soil and the organisms living in it.

#### YOUR GARDEN SOIL

First, you need to know your soil type: sandy, silt, clay, or loam (see Feel Test for Soil Type and Soil Testing on following pages)

If you have a fine-textured clay soil, it will hold water and nutrients well, but drain poorly and the soil will warm slowly. The clay can restrict root growth. In order to remedy this, you may need to add more organic matter, top soil, or sand. Also experiment with different cover crops throughout the year to help build biomass.

Improving Clay Soil

- Try to break up the clay with garden forks. If you can, add a big load of half compost and half high-quality screened topsoil (that means nice and dark, not light brown in color).
- When one mixes sandy and clay soil together, the large pore spaces of the sandy soil are filled with the smaller clay particles. This results in a heavier, denser soil with less total pore space than either the sandy or the clay soil alone remember that concrete is made by mixing sand and clay.

If you have a coarse-textured sandy soil, it will not hold water or nutrients well. It drains water quickly and warms up fast in the spring. To remedy the dry conditions, add organic matter in the form of garden compost and manure. Mulch will also help hold water. Try experimenting with different vegetable crops. Roots and herbs like to grow in sandy soils.

#### Improving Sandy Soil

- Use a lot of compost and add it every year preferably an inch covering in spring or fall.
- Raised beds will help you limit the compost to plantings and not walkways.
- Be wary of adding topsoil it can contain anything and will not necessarily help your soil.

# KH to redesign



# FEEL TEST FOR SOIL TYPE



# SOIL QUALITY AND TESTING

Getting a commercial soil test is one way to learn the type and quality of your soil, the pH and get the recommended amendments.

This is extremely beneficial and costs less than \$30. For more soil testing information, contact UVM's Agriculture Testing Lab: http://pss.uvm.edu/ag\_testing/

#### LEAD CONTAMINATION

Most people are aware of the dangers of lead contamination or lead poisoning, but we may not think of lead in our garden soil. Lead can contaminate soil from nearby lead-painted structures that have chipped or pealed into the soil. If you think your garden may have been contaminated in the past, have it tested before children work in the soil or eat the produce. Lead moves very little in the soil and can persist for a long time.

#### ADDING ORGANIC MATTER

Organic matter (OM) will greatly improve the quality of your soil and the quantity of your yield. There are many options and prices to consider. Before you purchase any type of OM, ask for donations from farmers, stores, and compost facilities.

When you add the organic matter, cover the garden with about 2-4 inches and mix it into the soil. It is best to do this when the soil is dry.

#### TYPES OF ORGANIC MATTER

Aged manure: You can ask a local animal farmer if they have any manure to donate. Fresh manure can be added in the fall and aged over winter, but it is recommended for the manure to be at least 1 year old before adding.

Leaves: Ask volunteers to bring in leaves during the fall and add to the garden or compost pile.

Grass clippings (from non-chemically treated lawns): Rake up from the school grounds. Add to garden or compost pile.

Compost: You can purchase compost at several compost facilities, waste management districts, and garden supply stores.

# **GARDEN DESIGN CONSIDERATIONS**

#### PATHS

Students (and teachers) will be more comfortable in the garden if they know where to walk. Plan to make paths that are 3' wide and give students easy access to the whole garden. Try to avoid creating long, unbroken beds with little path access.

Instead of this:



The more access points the students have to the crops growing in the beds, the better. And having a lot of paths, though they do take up valuable growing space, give students an alternative to moving through the garden by jumping over (and onto) beds where plants are growing.

Path Construction: Paths should be at least 3' wide. To prevent weed growth, lay down cardboard along the path and cover it with a thin layer of hay. You can get the cardboard from recycling bins at local grocery stores, and you'll want to remove any tape.

#### **GARDEN BOUNDARIES**

Like clear paths, clear boundaries around the garden make students more comfortable in knowing where they are supposed to be in the garden. The way you construct a boundary will depend on the size of your garden. If you have a large garden, consider constructing the boundary in the same way that you would construct a path: 2' wide with a layer of cardboard mulch covered in hay. This creates a boundary not only for students, but also for weeds, which can be useful if your garden is planted in the middle of a school lawn. If your garden is on the small side, even a narrow boundary of cardboard and hay can have the desired effect on students and weeds.

#### BEDS

Beds should be 3'-5' wide and probably no more than 6' long. You may want to vary the length of your beds, making mostly small beds but building a long bed for crops like potatoes, even adding a circular bed here and there if you so choose. To construct beds without additional costs,

"Measure out a 4-to-5-foot wide bed. On one side of the bed, using a long-handled pointed shovel, dig down and throw the soil into the middle of the bed. Do the exact same thing on the other side." If you are adding Spring Compost, add it to the pile you've made in the middle of the bed and rake in to incorporate. "Smooth the bed over with a rake a number of times, shaping and reshaping the bed. You now have a slightly raised bed with a walk-way on both sides."

#### **PLANTING PLAN**

There are a few things you should keep in mind as you decide where to plant things in your garden.

1. Plant Height and Shade - The tall crops such as sunflowers, peas, beans and corn, should be planted on the north side of the vegetable garden. In this way they will not shade the rest of the vegetable crops. Medium- and low-growing crops should be planted south of the taller crops. The best way of ensuring that medium-sized crops do not shade shorter ones is to plant each crop in its own bed. However, you may want to plant multiple crops in one bed, in which case you can use common sense and a bit of research to avoid shading short crops: crops such as cabbage, cauliflower, broccoli, tomatoes, squash, pumpkins, kale, and turnips shouldn't be planted right next to low crops like radishes, carrots, beets, lettuce, spinach, and parsnips.

2. Crop Rotation - Sometimes diseases, pests, and toxins persist in soil, therefore, it can be helpful to make a point of rotating your crops, moving them from one section of your gardens to another from year to year, but it is not imperative to having a successful garden, especially if your garden is small. If you do want to establish a rotation, there are specific crops to focus on. Tomato and potato blight, potato beetles, and squash beetles return year after year, so the affected crops should be rotated. Sunflowers can produce small amounts of allelopathic toxins (growth inhibitors) which build up over time, so move your sunflowers if you can, too.

### TRELLISES

You'll need trellises for crops like tomatoes, peas, and pole beans. Stakes\* are very effective for tomatoes. Use 5' wooden stakes and attach tomates to them with twine. One stake can support two tomato plants.

Peas do best if they can climb and wind around a long, tall trellis. Stakes and chicken wire are ideal. Space stakes out at 4'-5' intervals and use twine or wire to fix chicken wire to the stakes.

Pole beans are often trellised using the "teepee" method. Draw a circle, around which you will plant the beans. Space stakes out around the circle, approximately one every 2' around the circumference. Bring the tops of the stakes together in the middle of the circle and secure them with twine. Wind the twine down around the "teepee" to give the bean tendrils multiple horizontal levels to grab onto.

\*When using stakes, be sure pound them deep into the ground, using a hammer or a mallet. If your stake is not pounded deep enough, it is likely to tip over once the plant it is supporting grows heavy enough.

# **GARDEN DESIGN CONSIDERATIONS**

#### **KEY POINTS**

- Whether you are designing the garden on your own or in a group of adults or children, the garden should be created with the child in mind.
- Involving students in the garden planning encourages ownership, maintains the kid-element, and makes it unique.
- Make a garden layout map for use in planting/seeding. Thie is great art project. Laminate to save.

#### TILLED GARDEN PLOTS VS. RAISED BEDS

Raised beds work well for school gardens as they allow easy access to the growing area without trampling, and are very easy to dig over and maintain. They are good for a variety of vegetable crops, wildflowers, and bulbs. A variety of materials can be used to make the edge of the garden bed and there are many kits you can purchase online. If they are being constructed, 4x4 wood works well for the wooden sides to prevent bending over time. Do not use pressure treated wood because the chemicals can leak into the soil and be hazardous to the crops. The size of each garden bed is customizable to your space and needs. If you are growing root crops take a look at the deep raised beds as they allow more room for roots to develop.

You may want to line the bottom of the bed with a weed barrier, though it is not necessary. If you do choose to use a liner, make sure it is perforated to allow proper drainage. The garden bed will then need to be filled with a mixture of soil and compost. It is best to used bagged soil to prevent weed seeds being in the top soil. A good formula for making garden soil from bagged products is one part bagged compost, one part topsoil mix, and one part shredded pine bark.

Raised beds can be expensive to build and fill with soil. They will also need to be maintained regularly to make sure they do not rot or break.

Tilled garden beds are initially cheaper to make for your garden. The area will need to be tilled with a rototiller or tractor. The soil will need to be amended with compost. Look for donations from community members. Students and teachers will be able to design the garden each year by customizing the placement of garden beds, paths, and plants. This type of garden is better suited for producing larger quantities of food and creating more student space for sunflower houses or bean teepees.



# **GARDEN DESIGN CONSIDERATIONS**

Tilled beds require tilling every year and weeds can be more of a problem.

#### **KEY DESIGN QUESTIONS**

Is the design inviting? Does it make a child want to enter and explore?

- Try to use a variety of colors, smells, heights, and textures to create an inviting exploratory garden.
- Some examples of kid elements include: a flower border, a sun flower circle, a meeting space, a vegetable maze, stepping stones, a pumpkin patch, and a buttery garden.

Does the garden engage all senses and learning styles?

• Think about planting a variety of colors, textures, and smells.

Does the garden include creative spaces and hidden secret spaces?

- Sunflower houses and bean teepees create spaces that are designed for children to explore and experience without adults.
- Make a corner "test space" for children to try out new plants/varieties

Does the garden include a wide variety of plants?

• The more plants you can grow the more exposure the students have to those fruits and vegetables (see the Appendix on page 29 for Suggested School Garden Crops). Are the garden beds an appropriate size?

• Beds can be built in a variety of shapes and sizes. Make sure that everyone can reach the middle of the bed to plant and harvest. Beds that are too wide are dif cult to work in because children cannot reach the middle.

Is there a clear entrance and exit? Is the garden oriented toward the most commonly viewed direction?

• Trellises, rows of owers, garden signs, and archways can help designate an entrance.

Are the paths wide enough for visitors to easily access all areas? It is easy for people to walk around or sit to weed next to a garden bed?

- Walkways should be at least 3 feet wide to provide enough space for wheelchairs, wheel barrows, and student groups. They should look different than the garden beds by being lower and covered with mulch or shredded bark.
- Before covering the paths, line them with newspaper or burlap to keep weeds from coming through. You could also try to plant them with clover or mixed grass seed if you are able to mow them regularly.

Does the layout account for each plant's growing habit e.g. a large area for full grown pumpkin vines and tall sun!owers on the north side?

- Consider what your plants will look like at the end of the season as you plan your garden design.
- Plant squash and other trailing vines at the edge of the garden.
- Tall plants should go on the north edge of the garden.

Will the garden be easy to weed and maintain ?

- Use mulch in the paths to keep weeds down.
- In garden beds, make sure you plant seeds and seedlings in straight rows to make it easy to distinguish between the crop and a weed.
- Mark all planting rows at both ends.

### **GARDEN THEMES**

Designing a garden around a theme can spark imagination and creativity. A theme can be based on a book, a movie, a specilc purpose, or a visual idea.

- Dye garden: Plants that can be used to make dye include: black-eyed Susan's, calendula, false indigo, marigolds, and sun owers. Dyes can be made and used to dye yarn, cloth, or even eggs.
- Pizza garden: Incorporate plants used in making pizza like wheat, tomatoes, bell peppers, onions, garlic, oregano, and parsley.
- Alphabet garden: Plant a vegetable, herb, or flower to represent each letter in the alphabet.
- Literature garden: Grow plants from popular children's literature like carrots from Peter Rabbit or beans from Jackand-the-Beanstalk.
- Herb garden: Plant a variety of fragrant herbs such as mint, basil, rosemary, lemon grass, thyme, and oregano.
- Rainbow garden: Include vegetables and flowers to represent every color of the rainbow.
- History garden: Explore a specific time period by including plants that are representative of Colonial America, the Victorian Era, the Middle Ages, etc.

- Butterly garden: Attracting plants include: purple cone flower, bee balm, butterfly bush, zinnias.
- Native American garden: Plant a traditional Native American garden of corn, beans, and squash called the "Three Sisters" (for more information see page 18).
- Multicultural garden: Focus on plants native to other countries and the history around those foods e.g. potatoes, corn, collards, okra, bok choi.
- Sunflower garden: Plant a variety of sun flowers from the small and puffy Teddy Bear to the giant Mammoth.
- Salsa garden: Grow foods to make salsa: tomatoes, chili peppers, onion, cilantro, and tomatillos.
- Kitchen garden: Include vegetables and herbs used for cooking.
- Craft garden: Include plants that can be used for crafts such as gourds, sun owers, pansies, dry beans, or dry corn.
- Victory garden: Use the Victory Gardens of WWII as inspiration and a teaching tool.

## WHAT YOU NEED

#### TOOLS

Find kid-sized tools for the students in your school to use. Giving kids smaller tools to use is safer, easier, and more fun. The brand we have used in the past is True Temper Real Tools for Kids. Make sure the tools you purchase are sturdy and strong, made with wood and metal. A good start to your garden tool kit is 10-20 kid-sized tools:

The adult tools we recommend vary from shovels to garden forks. These are all nice to have, but find the tools you are most comfortable working with and purchase as many as you think you will need. If you have a lot of parent volunteers to help with weeding, you need more hoes. If you have middle school students helping with a potato harvest, you may need more garden forks. Volunteers may bring or donate tools.

Suggested Tools:

- · 2-4 kid shovels
- 4-8 kid hoes
- 4-8 kid rakes
- Adult garden spade: to dig larger holes or paths; to edge the garden
- Adult point shovel: to dig holes
- Adult garden rake: to make garden beds or move soil around
- Adult collinear hoe: to weed in small places
- Adult garden hoe: to weed in larger areas
- Adult spading fork: to turn over compost; to dig up potatoes
- Adult wheel barrow: to move refuse, compost, soil, tools, or plants long distances
- Paint stirrers (kids use to label crops in the garden)



#### **STRUCTURES**

#### Garden Sign

- A garden sign outside the garden will tell everyone that the garden is for and by kids. The school can brainstorm garden names and vote on their favorite one. Have the kids help design, paint, and install the sign. You can use a large piece of plywood and attach it to post. Make sure you dig a deep hole to keep it securely in the ground.
- Kids can sign the back of the sign each year (use markers on white painted back.

#### Trellises

• Trellises can be used for vining plants such as certain types of owers, pole beans, and even cucumbers. They come in a variety of materials and colors and can be set up around the entrance to the garden for happy welcome. These can be hand made.

#### Bean Teepee

• Bean teepees are typically made with 3 or 4 poles, each about 6-7 feet tall. They are staked in the ground in a circle about 4 feet in diameter. By tying the tops of the poles together and planting beans at the bottom of each pole you will make an open bean teepee that kids will love to explore. You can make a more closed version by tying string or twine around the teepee every 1-2 feet. Make sure you leave a "door" and plant seeds around the base of the wall of the teepee.

#### Gate and Fence

• A garden gate will provide a physical barrier between the garden and the rest of the property. It may keep wandering and unwanted visitors out while adding a decorative boarder around the perimeter. If the fence is tall enough, it may keep out larger animals.

#### Compost

- You will have garden waste, so make a plan of where you will put it. It can be a placed in a pile at the corner outside of the garden, a circle made of chicken wire, or a wooden structure.
- Maintained regularly, garden refuse will be turned into a rich, dark amendment for your soil.

#### Tool Shed

- Is there a space to store tools close to the garden? A tool shed can hold garden tools, equipment, and other supplies. The closer it is to the garden, the easier it will be to use and transport your garden needs. Make sure the shed is secured with a lock.
- Maybe a community member(s) can build or contribute this.

#### Work and Rest Area

 Work and rest areas provide a place for student groups to discuss a topic, clean and sort vegetables, work on a craft, or rest outside of the garden. This space could be under a tree, at a picnic table, or a circle of logs or hay bales.



## WHAT YOU NEED

#### WATER SOURCE

If there is a spigot located close to the garden, you will need several watering cans and possibly a hose to water the garden during the spring and summer.

If there is no water source near your garden, you need to install a watering system. There are several watering system options:

- 1. Install a frost free hydrant into an existing water line
- 2. Use rain barrels.

A rain barrel can be attached to a building down-spout. It will collect rainwater. These can be easily made or purchased.

3. Water tank

You can make your own water tank to place near you garden. Be sure that the tank has a cover to prevent accidents and drowning. We recommend using a vertical sap tank (used during sugaring season) and setting it on top of two rows of cinder blocks. The cinder blocks will make the bottom of the tank higher than the ground and therefore easier access to water. Most sap tanks don't have a faucet at the bottom of the tank, but they are inexpensive to purchase and easy to install. With a few watering cans, you will be able to water the garden all season long.

Ask your local fire department if they will fill the watering tank in the spring. In the fall, be sure to drain the remaining water so it doesn't freeze and crack the watering tank. The tank will last longer if it is stored indoors during the winter.



#### **GROW LAB**

Grow labs come in all sorts of shapes and sizes. They provide an opportunity to understand the full lifecycle of a plant by giving students more experience planting and tending to seedlings in our short growing season.

Grow labs can be found in local garden supply stores, science education and kids gardening catalogs, as well as online.

Regardless of which kind of grow lab you purchase, you will need to also purchase:

- A timer to turn on and off
- A spray bottle to mist the seeds and seedlings
- A small watering can
- · Seedling trays in a variety of sizes
- Potting soil



## **GARDEN BEHAVIOR AND SAFETY**

### STUDENTS AND ADULTS NEED TO SHOW RESPECTFUL BEHAVIOR

- a. Respect People: use open and honest communication and have respectful interaction.
- b. Respect the Garden: promote the concept of the garden as an "outdoor classroom." School rules apply, including no littering, pick up trash, walk on paths, stay on task.
- c. Respect Garden Creatures: students should check with the staff about how to handle garden insect and animals. Staff should help students understand and value all insects and animals and their roles in the garden.

# STUDENTS AND ADULTS NEED TO BE SAFE

- a. Ask before picking or eating any garden plants.
- b. Don't add poisonous plants to the garden and be aware of plants that can be irritants.
- c. Students should not climb on garden structures.
- d. Students should remain within eyesight at all times and not be left unattended. In case of an emergency, send two students back to the school for help.
- e. Establish garden boundaries that keep a safe distance from roads.
- f. Be aware of weather conditions and use your best judgment for the health and safety of the students.
- g. Provide sunscreen and water as needed.

## GARDEN TOOLS SHOULD BE USED PROPERLY AND SAFELY

- a. All students must review proper tool safety before each time tools are used.
- Students should use tools for their appropriate jobs in the correct manner.
- c. The tools are for use in the garden only.
- d. Everyone should keep the points of their tools below their waists.
- e. Walk with the tools pointing down.
- f. Set the tools face down when they are not being used.
- g. Students should maintain a "safety circle" (a safe distance from other students) when using tools.
- h. Closed toed shoes must be worn when using garden tools.
- i. Clean all tools at the end of each lesson.
- j. Students should use a watering can to water the garden. Staff should use a garden hose to fill the cans for the students.

## STUDENTS AND ADULTS SHOULD WEAR APPROPRIATE ATTIRE

- a. Students and staff must wear shoes at all times. Closed toed shoes are recommended. If students have open toed shoes, they should be restricted from using tools.
- b. Shirts must be kept on.
- c. Garden work clothes are recommended.
- d. Dress appropriately for the weather.

## TOP TEN PLANTS TO GROW WITH KIDS

#### CARROTS

Carrots are the buried treasure in a children's garden and come in a rainbow of colors – orange, red, yellow and purple. Tiny hands can easily dig carrots with child size shovels.

#### POTATOES

Potatoes are a vegetable that most kids know and love. Spuds come in a rainbow of color – from gold to purple and your own garden of potatoes can be an exciting, colorful scene of endless hunts for tasty, buried treasures. They can be carved into stamps for printing and a Mr. Potato Head can be made by decorating with fruits and vegetables.

#### DRY BEANS

Beans come in different shapes, size and color. Children can create their own teepee with bamboo stakes anchored into the soil. Beans are easy to save for seeds.

#### **CHERRY TOMATOES**

These may be the most fun crop for a child. Kids can pluck them right off the vine for a sweet, healthy snack. They love to pick, eat and watch them grow from tiny plants into a tangled mess. Their favorites are the tiny golden currant, red cherry, and Sungold.

#### **SUNFLOWERS**

A must for a kid garden! The seeds are big and easy for little hands to hold. Kids can plant these to form towering, protective walls around playhouses, castles, tents and meandering mazes, or plant them in a circle for a sunflower house.

#### CORN

Corn is a source of wonder for kids, they find it hard to believe that seedlings will someday produce exploding kernels or a whole harvest of jewel toned ears. While it can be difficult to time sweet corn maturity with the school season, you can try planting popcorn or colored corn for autumn and thanksgiving decorations.

#### PUMPKINS

These win all the popularity contests. Pumpkins of any size, giant or small, are great to watch grow, turn orange and pick when ready. Some can be eaten, others painted, made into jack-o-lanterns or just used as decoration. The seeds are big and easy for little hands to plant and they germinate quickly.

#### GARLIC

While most of the garden is being put to rest in the fall, you can still plant garlic. Big cloves are easy for kids to plant. In the spring when you go to prepare your garden, what a surprise to see this already coming up! Garlic scapes in early summer are a wonderful early harvest.

#### RADISHES

These are a quick and reliable crop to give kids fast results and a good way to interest kids in salads. They come in a medley of colors and scapes with some growing to the size of a baseball.

#### WHEAT

Watch wheat grow and turn from green to a golden color. Kids will enjoy grinding the wheat into flour to make bread.

### ADD HOM ILLSTRATIONS

## WHEN TO PLANT

Some crops thrive in cool weather, but others will die in a frost. For individual plants, look at the seed packet for planting directions. Also see the Appendix on page 30 for the Frost Sensitivity List for a quick list of common school garden crops.

#### FROST

In Vermont, these are the current average frost dates for these towns.

City	Spring	Fall
Bellows Falls	5/28	9/21
Burlington	5/25	9/19
Chelsea	6/23	8/27
Dorset	6/14	9/2
Montpelier	6/3	9/8
Newport	6/6	9/10

You can find the average last spring frost date and the average first fall frost date for your zip code with an easy internet search for "Vermont frost date."



#### HARDINESS

Become familiar with specific plant hardiness. The hardiness zones help clarify which plants will survive in which regions. The U.S. Dept. of Agriculture and the National Weather Service have identified these regions within North America by their 60 year average minimum winter temperatures. See the map for your hardiness zone.

#### TIMING

All plants take a different amount of time to germinate and mature. When planning a school garden, it is sometimes easier to work backwards from when you want to harvest the crop. For example, if you want to have harvestable lettuce when school comes back in session in September, you will want to plant it at the start of August. If you want tomatoes, you will need to start them indoors in April and plant the seedlings in June.

For individual plants, look at the seed packet and add the days to germination and the days to maturity. Using that number, count backwards from the general date you want to harvest the produce. Keep in mind the first possible frost date in the fall. Some plants will die after the first frost. For a general guideline for school garden crops, see the School Garden Seedling & Planting Calendar in the Appendix on page 31.

## **STARTING SEEDS INDOORS**

#### QUICK GROW LIGHT TIPS

#### 1. Use a lot of light!

- Keep the lights on between 12-18 hours per day.
- A timer is helpful so you don't have to remember to turn the lights on and off.
- 2. Keep plants close to the lights!
- Make sure the light fixture is 2-3 inches above the top of the plants (being too far from the light causes tall spindly plants).
- Be sure to move the lights up as the seedlings grow.
- 3. Give them Plenty of Water
- The soil for seeds and seedlings can be kept moist with a mister.
- Soil should be kept moist but not water logged.
- As seedlings grow, they will need more water. Fill the bottom of trays with water and the plant will wick up the water through their roots.
- 4. Keep the Air circulating!
- Keep plants in an area with plenty of air circulation to prevent disease.
- 5. Monitor the Temperature!
- Most plants will need a 65°-75° F range during the day and about 5°-10° cooler at night.

Starting seeds inside will give you a jump start on the growing season for plants that need extra time like tomatoes, peppers, and broccoli. It can a very rewarding and educational experience, but it can also be a lot of work and will require a grow lab. You will need to pay attention to light, soil, moisture, fertilization, and temperature. If you don't choose to start seeds indoors, you will need to buy some of your plants as seedlings from a local garden center.

If you do start seeds indoors, you can determine when to start your seeds by counting back from the last possible frost date in your area.

See the Seeding and Planting Calendar in the Appendix on page 31 for specilc information.

- 8-12 weeks before frost date, plant
- Sweet onions
- Celery
- Herbs
- 6-8 weeks before frost date, plant
- Tomatoes
- Peppers
- Eggplants
- Marigolds
- Nasturtiums
- 5-7 weeks before frost date, plant
- Cabbage
- Broccoli
- Cauliflower
- Brussels sprouts
- Head lettuce
- 2-3 weeks before frost date, plant
- CucumbersMelons
- WICIOIIO

### TO GROW HEALTHY SEEDLINGS, Follow These TIPS:

Containers: You can use almost any container that has small drainage holes on the bottom. Milk cartons, yogurt containers, plastic take-out containers, and paper cups make great pots. You can also purchase a wide variety of planting containers from peat pots to planting trays, or flats. Some plants may need to be upgraded to a larger pot once the first set of true leaves has developed. This will help encourage better growth and stronger stems. You may do this two-step planting with tomatoes, peppers and eggplants.

Soil: Use a mix that is specically labeled as a potting mix. These will contain not much, if any, soil as it is too heavy for good seed growth. Look for mixes containing vermiculite, sphagnum moss, perlite, and ground limestone. Make sure to moisten the soil mixture before you plant in it.

To prepare potting mix, add water before adding seeds. Bring a bucket or a tub, pour in potting mix, and add water until it is damp. If you squeeze the germination mix in your hand and water runs down your arm, it's too wet.

Temperature: The temperature of the soil is very important for seed germination. A soil temperature of 70-75° F is needed for seed growth. Keep soil warm by placing your grow lab near heater or on heat mat. If you keep your seeds near a window, make sure to cover the grow lab at night to insulate against thecold.

Water: Seeds need to stay moist until they germinate, but not overly wet. You can cover your trays with plastic wrap or plastic bags to seal the moisture. Water them with a spray bottle on a regular basis. Once the seedlings sprout, remove the plastic and keep the soil moist. When plants have their first true leaves, water less frequently but more deeply with a watering can.

Fertilizer: While seeds contain everything they need to grow, seedlings will benefit from a fertilizer.

Most potting mixes will contain a time-released fertilizer. If not, you can start feeding the seedlings once a week when they are about an inch tall. Use houseplant food or liquid fish emulsion.

### **STARTING SEEDS INDOORS**

Light: Most seeds do not need light to germinate, but seedlings need light to grow. Keep the light 2-3 inches above the seedlings and move the lights up as they grow. If they are too far from the light source, they will stretch out and become "leggy."

Keep the lights on 12-16 hours a day. A timer is a great tool to help control the amount of light the seedlings get without having to turn them on and off on a daily basis.

If you do not have a grow light, you can "place the young plants next to a south-facing window; just be sure to turn them at least once a week to avoid their bending too much in one direction. If they continually reach for the light, they become leggy and weak."

Hardening Off: Before you transplant the seedlings into the garden, they need to be gradually introduced to the outside environment to prevent shock.

This is called "hardening off." Starting a week before you plan to put plants outside, place the seedlings outdoors every day. On the first day, start with just a few hours in direct sun and gradually increase it to 24 hours on the last day before transplanting.

Air: Germinating seeds need "good circulation to prevent damping off, a common fungus disease of indoor plants." The potting mix we use is of a good enough quality that this shouldn't be much of a problem, but if you are able, you may wish to keep a fan near your germinating seeds and seedlings to keep the air moving around them.

Time: Once they have germinated you will need to alter the conditions so that your plant can grow. You will remove the newspaper covering your tray and provide the plants with light so that they can begin photosynthesizing. The timing varies, based on the plant variety and, to some extent, chance. Your seed packets should give you a germination time range, and you should check regularly for emergence.

#### SEEDING INDOORS WITH KIDS

- 1. Moisten potting mix and stir it up
- 2. Clean seeding containers
- 3. Fill containers with soil up to the top
- 4. Make a small hole in the middle with your finger about twice as deep as the seed is long.
- 5. Cover seeds by sprinkling dirt on top
- 6. Spray seeds with water
- 7. Label the row or container with name of crop and date
- 8. Cover with plastic wrap
- 9. Keep in a warm location
- 10. When sprouts sprout, remove plastic wrap
- 11. Thin seedlings when they are 1-2 inches tall to one seedling per cell.
- 12. Harden off

# **PLANTING TIPS**

All plants have different needs when being planted in the garden. Some prefer to be directly seeded into the garden while others need a head start as transplants.

Some can be planted close together and others need several feet of space. Below are specilc planting directions for certain plants. Also see the Plant Spacing Guide in the Appendix on page 32 for details on plant spacing.

#### **DIRECT SEEDING**

When you are planting in the garden, students need to know how to space the seeds.

- 1. Have students carefully walk through the garden to the bed you will plant using the garden layout map as reference.
- Show the students the string line and explain its purpose. Ask a pair of students to help you set the line up in the bed where the seeds will be planted. If you have enough students, set up two or three string lines at a time in the section of the bed you will plant.
- Discuss seed spacing with the students. If it is every two inches, have them look at a measuring stick and tell you where they will make their holes (e.g. every number, all the even numbers).
- 4. Students should kneel next to the bed facing the string line. Starting at one or both ends, students should place a measuring stick under the string line and make holes correctly spaced.
- When the first student is done making their holes, they can pass the measuring stick on to the next student.
- 6. Give students enough seeds to plant one in each hole.
- 7. When all students have planted, make sure all of the holes are covered and remove the string line.
- 8. Have one or two students make a label with the plant name written on it to place at the end of each row.

#### TRANSPLANTING SEEDLINGS

- 1. Have students carefully walk through the garden to the bed you will plant.
- 2. Show the students the string line and explain its purpose. Ask a pair of students to help you set the line up in the bed where the seedlings will be planted. If you have enough students, set up two or three string lines at a time in the section of the bed you will plant.
- 3. Discuss plant spacing. If the distance is every 12 inches, have them look at a measuring stick and confirm with you where they will make their holes.
- 4. Students should kneel next to the bed facing the string line. Starting at one or both ends, students will place a measuring stick under the string line and make holes correctly spaced. Make the planting hole as deep as the plant's container and about double the diameter.
- Water the plant in the pot before planting, because until the roots start growing, they can't draw water from the soil.
- 6. Remove the plant from the pot. To do this place your hand on the top of the plant, with your fingers around the plant's stem. Turn the pot upside down and gently squeeze it or push the plant out from the bottom with your other hand. If removing plant plugs from a large seed tray, slide the stick plant marker in between the plant and the tray wall. Use the plant marker to "pop it out" pushing the plant from the bottom with your other hand. Don't grab the plant stem. Handle roots carefully and be careful not to break the stem.
- 7. Place in the hole. Set at the same depth as it was in its pot [note stem-root junction]. \*\* Tomatoes are an exception to this rule. You can plant them deeper. Lay the tomato plant horizontally in the hole and cover with soil. New roots will grow along the buried portion of the stem (see page 18 for diagram).
- 8. After planting the seedling, bury the roots by gently pushing dirt around the stem and patting the soil in place.
- 9. Water the seedling well after transplanting.

#### POTATOES

As potatoes grow, it is important to keep covering the bottom of their stems with soil to encourage more potato growth.

- 1. Have students carefully walk through the garden to the bed you will plant in.
- Tell students that potatoes like to have a lot of space. You will need to dig a trench in the ground about 6 inches deep in the middle on the garden bed. If you are planting more than one potato row, make sure they are about 2 to 3 feet apart.
- 3. Once the trenches are dug, have students use garden rulers to plant the potato seeds 8-12 inches apart.
- 4. When all students have planted, the trench should be covered with soil.
- 5. Have one or two students make a label to place in the garden bed.
- 6. Later in the summer, when the potato plants reach 10 to 12 inches tall, use a hoe or shovel to scoop soil from between rows and mound it against the plants, burying the stems halfway. Repeat as needed through the growing season to keep the tubers covered.

### **PLANTING TIPS**

#### THREE SISTERS GARDEN

Growing a Three Sisters garden is a way to connect the students to the history of the Native American Culture. Corn, beans, and squash are three inseparable sisters who grow and thrive together. The corn provides a natural pole for bean vines to climb. Beans fix nitrogen on their roots improving the soil fertility, particularly for the corn.

And the squash vines shade out weeds and prevent rodents from getting to the corn and beans.

When planting, remember that corn needs to be planted in several rows close to one another for adequate pollination.

The beans should be a pole or runner bean so they will climb the corn. A bush green bean will not work as well and will eventually be shaded out. Be sure the squash you plant is a winter squash or pumpkins.

You will need to set aside at least a 10x10 foot square space for your Three Sister's Garden. Here's how:

- 1. Mark off three ten-foot rows, five feet apart.
- In each row, make your corn/bean mounds. The center of each mound should be 5 feet apart from the center of the next.

Note: The Iroquois and others planted the three sisters in raised mounds about 4 inches high, in order to improve drainage and soil warmth; to help conserve water, you can make a small crater at the top of your mounds so the water doesn't drain off the plants quickly. Raised mounds were not built in dry, sandy areas where soil moisture conservation was a priority, for example in parts of the southwest. There, the three sisters were planted in beds with soil raised around the edges, so that water would collect in the beds. In other words, adjust the design of your bed according to your climate and soil type.

3. Plant 4 corn seeds in each mound in a 6 inch square.

4. When the corn is 4 inches tall, it's time to plant the beans and squash.

First, weed the entire patch. Then plant 4 bean seeds in each corn mound. They should be 3 inches from the corn plants. (\*If you use transplanted corn seedlings, it is possible to plant them all at the same time. You may have varied success rates.)

- Build your squash mounds in each row between each corn/bean mound. Make them the same size as the corn/ bean mounds. Plant 3 squash seeds, 4 inches apart in a triangle in the middle of each mound.
- 6. When the squash seedlings emerge, thin them to 2 plants per mound. You may have to weed the area several times until the squash take over and shade new weeds.

### WINTER SQUASH/PUMPKIN AND OTHER VINES

Winter squash and other vines like to be planted in a mound. This gives them more room to grown down and out. You can plant several seeds in the center of each mound.

- Before students go into the garden or with their help, place a measuring stick in the ground so it is perpendicular to the ground. It should be exactly where you want the squash mound to go.
- 2. Break the students into groups of 2-4. Place each group in front of a measuring stick.
- 3. Students should push as much dirt as possible onto the measuring stick reaching the very top. They should make a mountain or volcano around the stick, focusing on getting most of the dirt around the bottom of the stick instead of up the stick.
- 4. Once there is enough dirt to reach the top of the stick and there is enough dirt at the base, remove the measuring stick. Tell students they need to put the stick on top of the dirt mountain. They should gently push down the dirt to make a plateau as wide as the measuring stick is long.

- 5. Once the plateau is made, students should make several holes on the outside of the plateau (one hole per student is fine). Give each student a seed to plant in the hole. Cover it up gently.
- 6. Have each group make a label to place in their mound.

#### TOMATOES

- 1. Have students carefully walk through the garden to the bed you will plant in.
- 2. Show the students the string line and explain its purpose. Ask a pair of students to help you set the line up in the bed where the tomatoes will be planted.
- 3. Discuss with the students the spacing of the seedlings. Tomatoes need to be planted every 15 inches. Have them look at a measuring stick and tell you where they will make their holes.
- 4. Before students start to plant, show them how to plant the seedlings. Tomatoes like to have some of their stems planted. It helps them create more roots that allow them to have a strong hold in the soil. However, if you make too deep of a hole, the roots do not get enough oxygen and CO2. It is best to dig a trench and lay the seedling on its side in the trench. Cover the roots and part of the stem while pushing dirt on the other side to help prop the stem up.
- Students should kneel next to the bed facing the string line working in pairs or small groups. Have students take turns digging trenches, passing seedlings, and planting.
- 6. Have several students make a sign to place in the garden bed.

As tomatoes grow, they need to be trellised to hold them up and prevent disease. You can use tomato cages or other freestanding structures. We, however, recommend the Florida Weave Technique for both its ease and affordability.

### **PLANTING TIPS**

### FLORIDA WEAVE TECHNIQUE

For the Florida Weave Technique, start by driving long stakes at least one foot into the soil every 2-5 plants. Set the stakes in the middle of the row, equally spaced between two plants. Using lightweight twine, tie the first line to an end post about eight inches above the ground. Run the line on the front side of the first set of tomato plants, on the back side of the next post, and then return to the front of the tomato plants. This first string will be run in front of all the plants, and behind all of the posts. Make a full loop around at least every other post to keep the line from slipping. At the last stake, tie off and work down the row, mirroring the first line. This second line will run behind all the plants, and in front of all the posts. The two lines will form figure eights as they are woven. As the plants grow, repeat this process, setting another line about every eight inches. Tuck in wayward branches when necessary, and be sure to maintain tension in all lines. Before long, you'll have a wall of plants ready to bear the weight of a heavy fruit set. Anchor the two end stakes deeply and securely as they are under the most pressure.

#### SUNFLOWER CIRCLE

There are several types of sunflowers–yellow, red, orange, short, and tall. Mammoth sunflowers grow 5 to 12 feet tall and are perfect for a sunflower circle. When they begin to flower in the late summer, it is time for school to start!

- 1. Give each child a measuring stick (12" long).
- 2. Have the students make a line behind you, like a conga line, and follow you through the garden to the sunflower circle bed. Once there, the students should stand on the outside of the circle bed side-by-side spaced out along the whole length.
- 3. Have the students place their measuring sticks down in front of them on the bed to make one large group circle. They can easily make 1-3 holes spaced out where you tell them to (for example, at the 1", 6", or 12" mark). The holes should be as deep as half of their pointer finger.
- 4. Give them as many seeds as holes and have them plant in the holes. Remind them to cover them up when they are done.



**Overhead view:** 

# KH to redesign

## **CARING FOR THE GARDEN**

#### WEEKLY TASKS

- Watering: If it has been dry, the garden will most likely need water. Remember, a garden needs about an inch of water a week. You can use a water gauge to measure the weekly rainfall.
- Weeding: If weeds are controlled early in the season, they will be easier to maintain later in the summer. For most weeds, once they flower, they will easily spread throughout the garden. Plan on spending some time in the garden every week weeding for the first month. For weed identification, see the Appendix on page 43 for Common Garden Weeds.
- Thinning: Most vegetables sown directly in the soil will need thinning. This includes beets, carrots, rutabaga, salad greens, and kale. Refer to the seed packet for the space each plant needs after thinning.
- Tomato Trellising: As the tomatoes grow, they will need to be trellised higher and higher.
- Mulching: Maintain the pathways by replenishing the mulch and clearing them of runaway plants and flowering weeds.
- Pest Control: Periodically check your garden for pests paying close attention to pests' favorite plants like potatoes. Remember that not all insects and garden creatures are bad for the garden. For true pests, the best control method is to remove them and kill them by squishing or drowning. For insect identification, see the Appendix on page 44 for Common Garden Pests.

### SUMMER HARVESTING

Some plants need to be harvested when they are ripe and cannot be saved for the start of school in August or September.

- Broccoli and Cauli!ower: Cut the head off with knife before the flower buds open.
- Cucumbers: Pick when fruit is 4 to 6 inches long.
- Herbs: Pinch leaves or stems, leaving <sup>3</sup>/<sub>4</sub> of leaves on the plant to encourage regeneration.
- Kale and Swiss Chard: Cut or snap off individual leaves at any stage starting with the larger, outer leaf; new leaves will grow.
- Lettuce: Head lettuce should be cut by gripping a bunch gently in one hand and cutting about 1-2 inches from the ground with knife. Mesclum mix or small salad greens can be cut in handfuls.
- Peas: Harvest when peas fill up the pods; pull off vine one at a time.
- Peppers: Pick when they have reached full size and are firm to the touch; gently pull from plant.
- Radishes: Pick when roots are the size of a large marble.
- Spinach: Pick individual leaves by pinching stem; leave some leaves for a continuous harvest.
- Tomatoes: Pick when they are a deep red, orange, or yellow color (depending on variety).
- Zucchini and Summer Squash: Cut or twist off young fruit (about 4 inches); harvest regularly for continuous harvest.
- Deadheading Flowers and Herbs: Flower and herbs will continue to grow if they are "deadheaded." This stops the plant from growing up and encourages it to grow out using new leaves and flowers. To deadhead, pinch below dried up flowers to remove or, if on a long stem, cut at base of stem. If herbs such as basil or cilantro develop flowers, deadhead them as well.

### ORGANIC PEST MANAGEMENT PRACTICES

Insects will find their way into any garden. Your best defense is to be aware of both pests and beneficial insects. If you have a pest problem, focus your prevention and eradication on that specific pest to minimize the effects on the beneficial insects that also live in the garden. See the Appendix on page 44 for Common Garden Pests.

- Grow healthy plants. The best defense against insect attacks are preventive measures. Pests target weak or unhealthy plants, so choose plants that are suited to the conditions in which you are putting them and they'll be less stressed. Don't let plants get too wet, too dry, or too shaded. Use lots of compost, but be sparing with high-nitrogen fertilizers, if you must use them at all. Mulch plants to protect them from drying out.
- Keep soil healthy. The soil in a garden is alive with microorganisms, fungi, insects, water and air. If the soil is healthy, plants will be more able to fight off the damage from insects. Insects usually attack unhealthy plants.
- Plant a diversity of vegetables. Don't encourage a population explosion of one kind of pest. Mix different vegetables, herbs and flowers together in your beds. This keeps pests from zeroing in on a whole crop of their target plant.
- Rotate crops. Plants crops from similar families (like tomato, potato and eggplant) in different garden beds each year. Keeping a garden map each year is important to support this.
- Encourage beneficial insects. The most effective and natural way to control pests is to rely on the food chain. Plant herbs and flowers among your vegetables to lure predatory insects such as ladybugs and green lacewings, which feed on flowers' nectar while their larvae consume pests. Cover potato stems with straw or hay to encourage spiders which will feed on potato beetles as they hatch and rise from the soil. Treat toads, lizards, and garter snacks as welcome allies too.

### **CARING FOR THE GARDEN**

- Observe what is happening in the garden each day so you know what a healthy plant looks like. Look closely at the leaves, stems and flowers of your plants for insects. Have the plants been chewed or broken? Can you see any insects, eggs, or larva? Is there any sign of disease? This is great material for student diaries.
- If you find pests, pick pests and squish them. You can also collect them in a jar and then fill the jar with soapy water. Leave the jar overnight to kill the bugs.
- Clean up the garden in the fall. Removing plant debris at the end of the season will reduce the possibility of pest outbreaks the following season.

### PROTECTING GARDEN FROM LARGE ANIMALS AND PEOPLE

When unwelcome visitors get into a garden, plants can be destroyed, taken, or eaten. To help protect the school garden, try these tips before and after damage occurs:

- · Choose the right location.
- A more visible garden has a smaller chance of being vandalized than one that is hidden.
- Keep the garden away from woods or fields where animals live and hunt for food.
- · Create a welcoming garden.
- Have a clear sign that states it's a school/children's garden.
- Maintain it regularly to show it is well cared for.
- · Ask for community support
- Ask children, parents, the senior center, and community organizations to take part in caring for the garden. The more people who are involved in caring for the garden, the more the community will want to care for and protect it.
- Install barriers.
- A visible barrier, even if it is small, designates the garden as a private place. A short fence or a larger split rail fence installed around the perimeter may help prevent unwanted human visitors.
- Install a tall fence.
- If animal problems persist, consider a chicken wire fence attached to cedar posts.
- Electric fences, while effective, are an unsafe choice for a children's garden.

#### COMMON WEEDS

If weeds are not controlled early in the spring, they will produce seeds and spread more quickly. When eliminating weeds, pull them with the root intact and place in compost pile. If there are seeds, be careful not to spread them throughout the garden while you are transporting the plant. See the Appendix on page 43 for Common Garden Weeds.

#### MAINTENANCE WITH KIDS

It is great to have kids not just plant and harvest the garden, but care for it in the summer months. There is a lot of learning that can happen when pulling weeds, dead-heading herbs, and tying up tomatoes. Make garden maintenance a small part of your time in the garden and make the activities fun. However you decide to include garden maintenance, always keep a close eye on what kids are doing.

- Make weeding a game by having children try to pull the weeds with the longest roots.
- Include maintenance as part of a summer program lesson every day or week.
- List various tasks and have kids pick which activities they want to do.
- Give kids rotating jobs each week.

# **CARING FOR THE GARDEN**

### SUMMER VOLUNTEERS

This volunteer program encourages people in the community to sign up to care for the garden by adopting the garden for only one week in the summer. It is a short time commitment that is extremely beneficial to the garden program. Volunteers and their families only have to visit once or twice in that week to weed, harvest, or do other garden chores. With enough community support and proper garden training, the garden can be maintained for most of the summer.

#### Here's how to start:

- Create a flyer with a signup sheet that asks for contact information and their top three weeks to care for the garden. These signup sheets should be returned to the Garden or Volunteer Coordinator. See an example Volunteer Sign Up Sheet in the Appendix on page 45. The best way to recruit is to:
  - send home the volunteer flyers with student
  - attach it to a newsletter
  - post flyers in common community locations (a general store or post office)
  - talk to people individually about helping

- 2. As people return signup sheets, record their contact information and assign them a week based on your need.
- 3. Conirm the week with the volunteer and invite them to a garden volunteer training at the beginning of summer using a Volunteer Welcome Letter. You can find an example of one in the Appendix on page 46.
- 4. The garden training is a time to introduce everyone to the garden, where things are kept, and what your expectations are. Here are some ideas of things to cover:
  - · How to tend the garden
  - What pests to look for and what to do with them
  - What weeds to look for and what to do with them
  - Give them a copy of the garden map
  - Share the garden journal-where it is kept, why it's helpful, and how to update it. It is also important to put the Garden or Volunteer Coordinator's phone number on the cover in case they have any guestions.
    - Date
    - · Activities completed
    - Anything to address like pests, weeds, harvests, etc.

• Any notable or fun antidotes

- 5. Volunteer communications:
  - Remind volunteers, a week before their adopt-a-week, with a call, email, or postcard.
  - Right after each volunteer's week, be sure to: Ask if there are any concerns with the garden (weed problems, plant concerns, etc.).
  - Thank volunteers for their time.
- 6. At the end of the season, send student-made thank you cards to each volunteer thanking them for their time. Share a recipe, include the harvest numbers, or invite them to a harvest celebration. Make them feel special and appreciated.

## THE FALL GARDEN

#### HARVESTING FOOD

There are many things to do in the fall school garden. When students help, show them how to properly harvest the crop before letting them do it. Here are some other tips:

- Know your frost date! You will have a limited amount of time in the garden, so knowing which crops to harvest first in September and which ones to save until October will hopefully give you a larger yield. See the Appendix page 49 for the Fall Harvest Sensitivity List.
- Set up stations and let kids help with all of the steps with harvesting:
  - Harvest
  - Clean
  - Weigh
  - Record
- Have all of the tools and materials organized before you begin.

#### THE FALL GARDEN

- Record all of the weights of each crop every time you harvest. You can find a blank Harvest Record Sheet in the Appendix on page 50.
- Find out the costs of the produce, especially if it is donated to the school cafeteria. With that information, you can put a quantitative number on the hard work everyone put into the garden.

#### PUTTING YOUR GARDEN TO BED

Harvesting is an important part of putting the school garden to bed, but it isn't the only task. Plants need to be removed, holes need to be filled, and stakes need to be stored. To see a complete list, see the Appendix on page 48 for the Fall Garden Checklist. There are also garden checklists for spring and summer.

### **USING GARDEN FOOD**

Garden produce can be used in all kinds of ways: students can make a dish from scratch, parents can be invited to a Harvest Festival featuring garden food, or it can be donated to a food pantry or school cafeteria.

Most school garden food can be donated to the school cafeteria. In some schools, the Food Service is able to pay for the produce which can help sustain the garden program. In order for the Food Service Director (FSD) and their staff to get the most out of the garden harvest, get their input about what to plant and give them resources or recipes for unknown foods. Here are some other ideas:

- Before anything is planted, ask the FSD what produce they would like and what amounts are most useful.
- Ask the FSD how to store the produce and how to communicate what the cafeteria is receiving.
- When leaving food with the FSD, wash, and remove any debris or unwanted foliage.
- If possible, process the produce to make it easier for the FSD to use in recipes (i.e. shredding zucchini, slicing carrots, pureeing tomatoes).
- Leave a recipe for produce that might otherwise be unused. Parsnips, rutabaga, and kale are typically overlooked crops.
- Share a Freezing and Storage Guide with the cafeteria staff.

# SUSTAINING A SCHOOL GARDEN

#### GARDEN COMMUNICATION YEAR-TO-YEAR

A garden coordinator plans the garden and works closely with members of the school and community. This person experiences successes and failures that may not get communicated to the future garden coordinator unless the information is documented and shared. Here are some suggestions that will help communicate the story of your garden over time.

### GARDEN MEMORY BINDER

Start a binder filled with pages of the garden activities that happen each year. Divide the binder by year and as events happen, place pages in plastic page covers.

Some things to keep track of:

- Photographs of the garden throughout the season
- Photographs of students working in the garden
- Awards received
- Grants written
- Articles about the garden program
- Year End Report (details below)
- Any other important documents or receipts worth saving

#### YEAR END REPORT

The Year-End Garden Report Form can be found in the Appendix on page 53. In this document, you should include the specific garden information that is important to know and share with others. This could include where the garden is, where the tools are kept, how you access water, who has been helpful in the school and community, how the garden is composted, and what the needs are for next year.

#### THREE-YEAR GARDEN PLAN

#### YEAR 1

- Establish garden at school: Determine garden location (soil type, sunlight, view from road, etc.) determine water source
- Establish location of indoor grow room & purchase indoor grow room supplies: Grow Lights, shelves, watering can, spray bottle, shelves, etc.
- Purchase garden tools: rakes, hoes, watering cans, seed flats, plant tags, row signs (paint mixing boards), shovels, trowels, measuring and plant guiding sticks, etc.
- Create garden sign with students
- Plant garden: indoor starts
- Plant garden: transplants & outdoor seeding
- Build portable, moveable trellises, arbors, etc. for beans and other vine crops
- Establish compost bin

#### YEAR 2

- Extend garden size to include permanent herb and flower beds (perennials)
- Establish natural, artistic garden observation area, where a few people can sit and observe and appreciate the garden: rock seats, stump seats, small bench, etc.
- · Purchase and construct garden sheds: storage for tools, journals
- Purchase bulletin board to display at garden shed
- · Purchase wheelbarrows to be stored in garden shed

#### YEAR 3

- Extend garden size to include permanent fruit bushes (blueberries, raspberries) and/or asparagus bed
- Establish gathering area: build sufficient benches and or tables/work tables for gardening and/or outdoor classroom activities
- Establish permanent arbor to provide shade over gathering/outdoor classroom area
- · Establish wheelchair accessibility

## SUSTAINING A SCHOOL GARDEN

#### **A GARDEN COMMITTEE**

Is your garden ready to form a committee to provide coordination and leadership around the garden and education?

Ask teachers, the food service staff, and community members to join a team that will meet regularly to discuss the school garden process, goals, and funding opportunities. The group can plan, make decisions, and secure donations, grants, and volunteer labor. A leader with scheduled term should be set-up.

#### SAMPLE BUDGET

To create an accurate budget for your school garden, over the course of one year take good notes and account for all receipts for each category of expenditures. Once you've established a total for a yearly budget, it will be clear how much fundraising will be required to support your program as you move forward. Here are some categories we recommend:

#### GARDEN COORDINATOR*I* EDUCATOR STIPEND

A garden coordinator and educator can be an indispensable piece of the garden program by seamlessly integrating your program into the school and community. This position can help plan and maintain the garden, apply for grants, recruit volunteers, and organize educational opportunities and student planting. It is also is frequently part-time.

#### TOOLS

Every year there will inevitably be a few repairs that will demand attention from tool replacement to improving the garden structures. Eventually tools, equipment, and garden structures will fall apart, get lost, or break–so plan on replacing them every couple of years.

#### INFRASTRUCTURE IMPROVEMENTS

There may also be improvements projects planned to upgrade the garden and its usage. Often, if materials can be provided, parents are happy to provide the construction know-how and labor.

### EDUCATION SUPPLIES

Invest in your garden program by having proper educational materials to get the most out of the time with students. Garden curriculum, cooking supplies, professional development, books, and general classroom supplies are important investments. Find a home for them in the school (maybe a library corner).

#### **GARDEN SUPPLIES**

Every year the garden will need to be planted, composted, mulched, and cared for. The costs for seeds, seedlings, compost, and hay need to be accounted for in your yearly budget. Some items may be donated from local businesses, farms, and community members, so it is always better to ask for the items you need before you purchase them.

#### **EVENTS**

An annual spring garden training and/or fall harvest celebration is a great way to communicate expectations, acknowledge your volunteers, and to relax and enjoy the garden as a community. You will need food and drinks, plates and utensils, and supplies for activities.

### A SAMPLE YEARLY GARDEN BUDGET

Total	\$500 - \$7,500
Events & Outreach	\$50 - 150
Garden Supplies	\$100 - 500
Education Supplies	\$100 - 500
Infrastructure Improvements	\$1,000 - 5,000
Tools	\$50 - 250
Garden Coordinator/Educator Stipend	\$250 - 1,000

## SUSTAINING A SCHOOL GARDEN

### FINDING FUNDING

Finding money for your school garden program will take effort, but you can ensure success if you look in the right place.

- Write Letters Write letters to parents and community members asking for their support through volunteering their time or giving donations of specific materials or money.
- Local Businesses Your local hardware store is a great resource for garden materials and infrastructure. They can typically offer a discount for schools but may also be able to donate up to a certain amount. Don't forget to look towards other businesses too. Donations that can't be used in the garden could go towards a fundraiser.
- Fundraisers From plant or seed sales to silent auctions, your school can create a yearly fundraiser that focuses on raising awareness and money for the garden program. An example would be a Spring Plant Fundraiser. Students in their classrooms can start seeds and transplant them into larger containers that can be sold to parents and community members for spring vegetable gardens and flower beds. Older age classrooms can create a timeline to follow and keep track of expenses and money earned.
- Grants There are grants available that help support school gardens, but you need to know where to look. Here are some places to start:
  - The Vermont Community Garden Network This organization, located in Burlington, contains a wealth of information about community and school gardens. Sign up for their news, events, and grants on their facebook page. www.burlingtongardens.org/
  - National Gardening Association This national organization based in Vermont has resources, how-to's, and an online store. They offer grants every year.
    www. garden.org
  - Garden ABCs This link lists the names and details for most of the national garden grants that are offered every year. Check this early to make sure you meet the submission dates. www.gardenabcs.com/grants.html

### **EVENTS**

School-wide and community events will help raise awareness of the garden. Thank and acknowledge those who have helped. Celebrate, and advertise any needs or programs you are offering.

- Garden Dedication Get the whole school involved in celebrating the planting of the garden! At the end of the school year, invite the school out to dedicate the garden, have a special planting, tour the garden, and wish it luck for the summer. See the Appendix on pages 40 and 41 for the Garden Recognition Ceremony Schedule and Activities.
- Work Parties For getting garden beds made, weeding a large area, or harvesting and processing a fall crop, consider throwing a work party. Community members and students can all meet on a particular day to work together and accomplish a common goal.
- Harvest Festival Celebrate your fall bounty with a harvest festival or dinner. Invite the community, students, and parents to enjoy a meal, a cider press, games, and/or presentations from the kids. You can even have each class make a dish for the harvest meal using garden or local produce.
- New England Grassroots Environment Fund – A non-profit organization dedicated to inspiring, connecting, and supporting community-based environmental projects. Mini-grants available for start-up and on-going needs.
  www.grassrootsfund.org

### THANK YOU CARDS

A good way to encourage garden participation and future funding is to write thank you cards! A thank you goes a long way and is appreciated for many reasons. Thank volunteers, the students who help plant, teachers and food service staff who went above and beyond, and any donors of materials or funds. Photos of the garden and the students, facts about how their donation benefited the program, and student signatures are additions that make each card special.

### APPENDIX

Spring Garden Checklist 28 Suggested School Garden Crops 29 Frost Sensitivity List 30 School Garden Seeding & Planting Calendar 31 Plant Spacing Guide 32 Garden Recognition Ceremony (sample schedule) 40 Garden Recognition Ceremony Activities 41 Summer Garden Manual 42 Common Garden Weeds 43 Common Garden Pests 44 Summer Garden Volunteer Form 45 Summer Volunteer Welcome Letter 46 End of Summer & Fall Checklist 48 Fall Harvest Sensitivity List 49 Harvest Record Sheet 50 Freezing Guide 51 Blanching Produce Guide 52 The Year-End Garden Report Form 53 Gardening & Nutrition Book List for Children 54 Garden Curriculum List and Online Resources 59

# **SPRING GARDEN CHECKLIST**

#### DATE COMPLETED

Tilling, Composting, Bed Maintenance	
Contact Tiller	
Schedule Tiller	
Contact Composter	
Schedule Composting	
Make any raised bed repairs	
Seeding and Planting	
Find and set up Grow Lab	
Start Seeds Indoors	
Design Garden Map	
All School Planting Day and Garden Dedication Ceremony	
Prep Garden for Planting	
Plant Garden with Kids	
Finish Planting Garden	
Volunteers	
Send Home Volunteer Sign Ups	
Hang up Volunteer Flyers	
Host Volunteer Orientation	
Garden Maintenance	
Pole bean teepee built	
Tomatoes staked	
All plants labeled	
Beds weeded	
Pathways mulched	
Compost area tidy	
Journal Entries Made	
Garden mapped	
What you've done	
Thoughts	
What went well	
Problem areas	
Needs	
Pests or disease	
Current garden photo taken	

# SUGGESTED SCHOOL GARDEN CROPS

#### SUGGESTED AMOUNTS FOR A 30X30 GARDEN

Plant	Variety	Amount (by seed packs)
Arugula	Assortment	1
Beans, Pole or Dry	Assortment of Pole and Dry Bush Beans	3
Beans, Bush	Green, Purple, & Yellow	4
Beet	Gold, Red, & Stripped	4
Broccoli	Green	1
Brussels Sprouts	Green & Purple	1
Cabbage	Green & Red	1
Carrots	Orange & Purple	4
Cauliflower	Generic & Romanesco	1
Corn, Decorative	Choose only one variety to plant (Popcorn and Painted Corn do well)	1
Cucumber	Generic	1
Kale	Assortment	2
Kohlrabi	Generic	1
Leeks	Generic	1
Lettuce	Heads and Mesclun mix	3
Pumpkin	Assortment of small and large varieties	2
Radish	Assortment	1
Rutabaga	Generic	1
Spinach	Generic	2
Summer Squash	Yellow, Patty Pan, & Zucchini	2
Swiss Chard	Rainbow	1
Turnips	Purple Tops	1
Tomatoes	Large blight resistant & Cherry	3
Tomatillo	Generic	1
Watermelon	Sugar Baby or some other small variety	1
Wheat	Generic	1
Winter Squash	Assortment	3
Herbs	Basil, Cilantro, Dill, Parsley	5
Flowers	Calendula, Cosmos, Larkspur, Marigolds, Nasturtiums, Sunflowers, Zinnia	7

# FROST SENSITIVITY LIST

This is a frost sensitivity guide, not a planting guide. This will help you determine when you can safely plant your crops. The length of time it takes for your crop to mature and when you want to harvest it will determine your planting date.

### HARDY

Can plant 4-6 weeks before last frost date

Lettuce Peas Radishes Spinach

### MOSTLY HARDY

Can plant 2 weeks before last frost date

Broccoli Beets Carrots Cauliflower Celeriac Kale Onions Parsley Potatoes Rutabaga Swiss Chard Turnips

### FROST SENSITIVE

Can plant on or after last frost date

Basil Bush beans Calendula Cilantro Cosmos Corn Dill Larkspur Leeks Marigolds Nasturtiums Pole beans Sunflower Zinnias

### **FROST INTOLERANT**

Plant 2-3 weeks after last frost date

Cucumber Peppers Pumpkin Summer squash Tomatoes Winter squash

# SCHOOL GARDEN SEEDING AND PLANTING CALENDAR

Knowing your region's plant hardiness zone helps you determine when it is safe to plant without the danger of a killing frost. This can make the difference of whether your garden succeeds or not. The following chart provides guidance on when to plant particular crops in zones 4a - 3b. Determine your plant hardiness zone and adjust planting dates accordingly.

Сгор	Weeks to Transplant	Transplanting Date	April 1-7	April 8-14	April 15-21	April 22-30	May 1-7	May 8-14	May 15-21
Basil	6	May 25 - June 15							
Tomatoes	5-6	May 25 - June 15							
Cherry Tomatoes	5-8	May 25 - June 15							
Cilantro	5-8	May 25 - June 15							
Leeks	4-6	May 25 - June 15							
Kale	4-8	May 25 - June 15							
Brussels Sprouts	4-8	May 25 - June 15							
Cauliflower	4-8	May 25 - June 15							
Cabbage	4-8	May 25 - June 15							
Head Lettuce	3-4	May 25 - June 15							
Spinach	2-3	May 5 - June 15							
Melons	4	May 20 - June 1							
Popcorn	4	May 25 - June 15							
Marigold	4	May 25 - June 15							
Zinnia	4	May 25 - June 15							
Broccoli	3-4	May 25 - June 15							
Pumpkins	3-4	May 25 - June 15							
Summer Squash	3-4	May 25 - June 15							
Sunflower	3-4	May 25 - June 15							

# PLANT SPACING GUIDE

	D = DIRECT SEED T = TRANSPLANT	SPACING	DEPTH TO PLANT	NOTES
Vegetables				
Arugula	D, T	1", thin to 6"	1/4"	
Beans, Bush	D	4", 8" btw beds	1"	
Beans, Pole	D	4 seeds/hill, 16" btw hills	1"	
Beets	D	2"greens; 3"summer; 4"storage	1/2"	
Broccoli	D, T	15-18" staggered	1/4"	
Brussels Sprouts	D, T	16-18", staggered	1/4"	Pinch out growing tip in early August
Cabbage	D, T	12-18"	1/4"	
Carrots	D	2"in rows 6-8" apart	1/4-1/2"	
Cauliflower	D, T	15", staggered	1/4-1/2"	Transplant before 5 weeks old
Celeriac	Т	8", 3 rows/bed	Just cover	
Chard	D, T	4-5", staggered	1/2"	
Corn	D, T	12-15"	1"	Plant 3 x 4 foot area minimum
Cucumber	D	18", trellised; 36", on ground	1/2-1"	
Kale	D, T	16"	1/2"	
Leeks	D	6" in rows	1/4"	
Lettuce	D, T	1/2"-cutting; 6-8"-heads	1/4"	
Onion	Т	3-4"	1/2-1"	
Peas	D	1" supported	1"	Plant if summer program
Peppers	Т	12"	1/4"	
Potatoes	D	12"	3-4"	
Pumpkins	D, T	12-18"	1/2-1"	
Radish	D	1", thin to 4-6"	1/2"	
Rutabaga	D	8"	1/2"	
Spinach	D	12"	1/2"	
Summer Squash	D	12-18"	1/2-1"	
Wheat	D	Scatter	Just cover	Plant 1 x 2 foot area minimum
Winter Squash	D, T	24-36"	1"	
Tomatillos	Т	2 1/2"	1/4"	
Tomatoes	Т	15" supported	1/2"	
Watermelon	D, T	16"	1/2"	

# PLANT SPACING GUIDE

	D = DIRECT SEED T = TRANSPLANT	SPACING	DEPTH TO PLANT	NOTES
Herbs				
Basil	D, T	4-8"	Just cover	Plant a few, pinch growing tip
Cilantro	D, T	6-8"	1/4-1/2"	If it seeds, you have coriander
Dill	D, T	6-8"	Just cover	
Mint	Т	6-8"		Plant in a container in the garden
Oregano	Т	6-8"		
Parsley	D, T	6"	1/4"	
Flowers				
Calendula	D, T	8"	1/2"	
Cosmos	D, T	6-10"	1/4"	
Nasturtium	D, T	10-16"	1"	
Marigold	D, T	12-16"	1/2"	
Larkspur	D, T	6-8"	1/4"	
Sunflower	D, T	12-18"	1 "	Plant in a 2-5 ft circle for a sunflower house
Zinnia	D, T	8"	1/2"	

### Arugula



Make a trench for your seeds by dragging your finger lightly through the soil in a straight line. Plant your seeds 1 inch apart in the trench. That's about the size of two fingers held

1 inch

redesign Green & Purple Beans)



**KH to** 

Poke shallow holes in the soil, 4 inches apart. That's about the size of your hand, from your pinky to your thumb. Plant one bean in each hole, and then fill in the holes.



### Pole Beans



Make little hills out of soil that are about 4 inches wide (that's the size of your hand from pinky to thumb). Your hills should be about a foot apart (that's the distance from your elbow to your wrist. Poke your finger into the soil on the hills to dig 4 shallow holes. Plant 1 bean in each hole, and then fill in the holes.



4 inches



### Beets



Make a trench for your seeds by dragging your finger lightly through the soil in a straight line. Plant your seeds 1 inch apart in the trench. That is about the size of 2 fingers held together.

Cover the seeds lightly with soil.







6 inches

KH to

Make a trench for your seeds by dragging your finger lightly through the soil ght line. Plant your seeds in the bout 6 inches apart. That's about

redesign of your hand from your wrist to the tip of your middle finger. Cover the seeds lightly with soil.

### Carrots



Make a trench for your seeds by dragging your finger lightly through the soil in a straight line. Drop your seeds in the trench, about 1/2 inch apart. That's a very small space, about the size of 1 finger. Cover the seeds lightly with soil.



### Chard



Make a trench for your seeds by dragging your finger lightly through the soil in a straight line. Plant your seeds 2 inches apart in the trench. That's about the size of your wrist. Cover the seeds lightly with soil.



2 inches

### Cucumbers



Poke shallow holes in the soil, 6 inches apart. That's about the size of your hand from your wrist to the tip of your middle finger. Plant one seed in each hole, and then fill in the hol<mark>KH t</mark>O

# redesign



Make a trench for your seeds by dragging your finger lightly through the soil in a straight line. Plant your seeds in the trench, about 3 inches apart. That's about the size of 4 fingers held together. Cover the seeds lightly with soil.









### Pumpkins



Poke shallow holes in the soil, 6 inches apart. That's about the size of your hand from your wrist to the tip of

Pla<mark>ND LU</mark> hol the

you



### Radishes

Make a trench for your seeds by dragging your finger lightly through the soil in a straight line. Plant your

seeds 1 inch apart in the trench. That's a very small space, about the size of one of your fingers.





### Spinach



Make a trench for your seeds by dragging your finger lightly through the soil in a straight line. Plant your seeds 1/2 inch apart in the trench. That's a very small space, about the size of one of your fingers.



6 inches

# **GARDEN RECOGNITION CEREMONY**

The Garden Recognition Ceremony is an opportunity for the whole school (or anyone wanting to participate) to learn a bit about the garden and send it off for a bountiful summer growing season.

### SCHEDULE

### 2:30 PM (OR A HALF-HOUR BEFORE SCHOOL GETS OUT):

- Students and teachers meet at the garden (or the gym if the weather is bad) and form a large circle
- Welcome: Garden Coordinator says a few words about the garden (garden history, impact, how to get involved with garden program and/or summer program)

#### 2:35 CEREMONIAL PLANTING

- Example 1: A bowl of seeds or a special seedling (a perennial works well) is passed around for everyone to touch and wish it luck for the summer, then it is planted into an empty spot in the garden
- Example 2: Everyone gets a few seeds of a crop (like wheat) to sprinkle into a marked off garden plot.
- Rain Storm
- Everyone works together to create a mock rainstorm to "water" the plants all summer long.

#### 2:40 CLASS PRESENTATIONS

• Teachers can help their class prepare a short garden presentation ahead of time. This can be a poem, story reenactment, song, or drawing related to plants or gardening.

#### 2:50 GARDEN TOUR (AND PLANTING ACTIVITIES)

- Selected students lead any interested classes through or around the garden describing what is growing where.
- If teachers are interested (sign up beforehand), they can have their class participate in a planting activity in the garden.

3:00

• End of ceremony – everyone back to the classroom to go home.

# **GARDEN RECOGNITION CEREMONY ACTIVITIES**

#### GROW

- Now that we did all this work to plant the garden, we want to encourage it to grow big and beautiful and provide lots of food for the school.
- Have all the students place their hands out above the garden, wiggle their fingers, and on the count of three, whisper the magic word GROW.
- Tell them that the garden is just waking up and have them repeat GROW, getting louder and louder each time, until we are sure that the garden has heard and feels the support of all the students. Calling upon mother nature to provide a good growing season.
  - 1. Have students gather around the garden so that there is a group along each edge.
  - 2. Explain that now that the garden is planted, it needs several important things in order to grow. We need to call on these different helpers.
  - 3. Assign each edge of the garden with a word and have them repeat it:
    - Sun our plants need lots of sunlight to make food for themselves and grow big
    - Rain we need some rainy days to water our plants so they don't dry out
    - Bees the plants need pollinators in order to make fruit
    - Love we must keep the weeds down, sing to the garden, and make sure it has everything it needs
  - Standing in the middle of the garden, tell the kids that when you point to their edge, they need to shout their word really loudly.
  - 5. Start slowly, pointing to each edge one at a time, then speed it up.
  - 6. You can go in order around the garden, jump around, or both!
  - 7. Finally, to offer one final word of encouragement to the garden, have all the students place their hands out above the garden, wiggle their fingers, and on the count of three, shout GROW.

#### RAINSTORM

- 1. Students will ask for a good amount of rain over the summer by simulating a rainstorm.
- 2. Tell the students that we are going to use our bodies but not our mouths.
- 3. They should watch you closely and do exactly what you are doing, but only when you are in front of them. You can divide the students into many groups around the garden to make sure they are following you instead of the students ahead of them.
- Walking along the edge of the garden, mime the first action, making eye contact with the group in front of you.
- After everyone around the garden is doing the first action, make your way around again, miming the second action:

Actions:

- 1. Tap palm of hand with one finger
- 2. Rub hands together
- 3. Snap fingers
- 4. Slap hands on legs
- 5. Stomp feet
- 6. Clap hands
- 7. Reverse the order until you are tapping again

#### CEREMONIAL PLANTING OF WHEAT

- Stand in the middle of the garden and asks what the wheat seeds need to grow. What can we make out of the wheat when it's grown? How much could we make out of just one wheat stalk?
- We need the whole school's cooperation and help – each person planting one seed – to get a whole wheat patch.
- Remind students to give the seeds in their hands lots of love and good wishes before they toss it into the soil!
- It's best if you can mark the planting spot in advance (use string line and sticks).

#### Other Suggestions:

- Use the ceremony to unveil the name of the garden.
- Have garden sign ready to unveil by asking art class to paint it as one of their assignments (another way to involve students/classes with garden).
- Plant a perennial tree or plant to commemorate 1 year anniversary, or to commemorate beginning of new garden, so that it will be there in the future for remembrance of the occasion.
- Offer garden tours to visitors given by students explaining or showing:
  - What plants are planted, where plants are planted and why
  - Who planned the garden, who planted the garden and who will care for it and harvest?
  - Where will the produce go?
  - Where is the water source?
- Present awards or certificates to students, teachers, and volunteers who have shown outstanding garden stewardship and/or helped to establish or continue the garden by volunteering time, compost etc.
- Have games for guests to play: relays, potato sack race, etc.
- Have arts and crafts for them to do: face painting, May Day baskets (small baskets with soil for guests to plant flower seeds into).
- Have local snacks for them to eat.
- Pass out brochures/flyers for summer volunteer garden workshops.

### SUMMER GARDEN MAINTENANCE

### **GARDEN TASKS**

**RESEEDING:** If patches of crops are not growing, reseed them as soon as you can. Things you can seed in the summer (late June-July) and still harvest in the fall includes beans, root crops, herbs, flowers, and zucchini/summer squash. Things to seed in late July include lettuce and spinach.

WEEDING: Vegetable beds are labeled so you know exactly what is meant to be growing there. Any weeds that have not gone to seed yet should go directly into the compost pile, not the beds or paths.

**TOMATOES:** As tomatoes grow, weave them through the trellis or tie them up with twine. Also remove suckers as they grow on each plant.

**POTATOES:** Hill potatoes as they grow by pulling up soil and placing it around the base of the plant. This encourages potato growth higher up on the plant.

**PEST CONTROL:** Remove and kill potato beetles and other insects that are eating plants. Please leave insects that are not harming the garden. They make good friends.

PATH UPKEEP: Make sure pathways have mulch and are clear of runaway plants.

**DEADHEADING** Flowers and Herbs: Pinch below dried up flower to remove or, if on a long stem, cut at base of stem. If herbs such as Basil develop flowers, deadhead them as well.

**COMPOST:** Make sure refuse pile is tidy and inside the boarders of the garden. If you have extra time, turn the pile over.

JOURNAL ENTRY: Add notes, including what you've done, any thoughts on the state of the garden, what went well, problem areas, pests or disease you notice.

**PHOTO:** Take a whole garden photo every time you visit the garden to show progress throughout summer. Also take pictures of notable problems or successes (pests, disease, over growth, perfectly trellised tomatoes, etc).

WATERING: If it has been dry, the garden will need to be watered.

HARVESTING: Harvest crops as needed only if they cannot be saved for fall harvesting.

- Broccoli and Cauliflower: Slice with knife before flower buds open.
- Cucumbers: Pick when fruit is 4 to 6 inches long.
- Peppers: Pick when they have reached full size.
- Radishes: Pick when roots are the size of a large marble.
- Tomatoes: Pick when they are a deep red, orange, or yellow color (depending on variety).
- Zucchini and Summer Squash: Cut or twist off young fruit (about 4 inches). Harvest regularly.

### **COMMON GARDEN WEEDS**

If you see any of these weeds in the garden, please pull them and add them to the compost pde. Make a note in the garden journal.



PIGWEED

COMMON PLANTAIN

GALINSOGA

### **COMMON GARDEN PESTS**

If you see any of these pests in the garden, please squash them and make a note in the garden journal. If there seems to be a massive invasion, please inform your garden coordinator.



POTATO BEETLE and EGGS



CABBAGE WORM



JAPANESE BEETLE and LARVAE



CUCUMBER BEETLES



SQUASH BUG and EGGS

# SUMMER GARDEN VOLUNTEERS

### We need your help tending the Albany School Garden this Summer!

Adopt the school garden for one week and visit it 1 or 2 times during that week to weed, water and tend the crops. Take home the food you harvest and have fun while you're doing it!

Yes! I	Reserve your week by want to volunteer in the Albany School	Friday June 3rd. Garden this summer!	
Name			
Dhone	Email	D/	dd me to the
Phone	Entan		Freen Mountain
Please rank y July 4 July 12 July 18	our top choices for weeks you are available 10 July 25-July 31 -17 August 1-7 -24 August 8-14	to volunteer. August 15-21 August 22-28	failing list!
Please retur	n this form to the school office		
Or mail to:	Green Mountain Farm-to-School 194 Main Street, Suite 301, Newport, VT 058	55	
Questions?	Contact 802-334-2044 or office@gmfts.org	-	Green Mountain

please update and let's add note about it being a sample so dates dont matter. Only needs one copy of the sign up, not two. -ksims

# KH to redesign

# SUMMER VOLUNTEER WELCOME LETTER

### DEAR SUMMER GARDEN KEEPER,

Thank you for volunteering to help maintain the School Garden! We are so excited to have this garden that provides fresh produce to the school cafeteria, serves as an outdoor classroom where we learn about local food systems, and is an opportunity to build meaningful relationships with our larger community.

There are many small tasks that can be done in the garden on a regular basis. Please do not feel pressured to complete everything. If any one task or combination of tasks seems too overwhelming, just do what you can. Feel free to bring a friend or child with you. Aside from the necessary upkeep, a garden can be a fantastic place to reflect, relax, observe, and feel closer to nature.

You are welcome to come to the garden as often as you would like during your assigned week. We ask that you contact us by email or phone at the end of the week to check in. You may, of course, contact us at any point with urgent updates. When you do any work in the garden, please note in the garden journal the date and what you did that day. The journal will be in a plastic bag, in a corner of the garden shed. There are also garden tools stored in the shed which you are welcome to use. (Please do not lock the shed.)

We hope you enjoy this opportunity to be in the school garden and to contribute to the health of our students and community. Enclosed you will find a map of the garden, a list of garden tasks, and a photo guide to some garden pests. Please see below for your week of garden management. If you have any questions or concerns, feel free to call or email.

Thank you for your generosity and happy gardening!

Your week to maintain the garden is: \_

## WELCOME LETTER CONTINUED

#### **GARDEN TASKS**

- Watering: If it has been dry, please bring a watering can with you. If the school is open, you can fill the watering can indoors or ask the secretary or custodian for a water key to the outdoor spigot. If the garden has a shed, a watering can will be located inside.
- Weeding: Vegetable beds are labeled so you know exactly what is meant to be growing there. Please put weeds in the compost pile, only if they have not gone to seed.
- Tomato Trellising: As tomatoes grow, weave them through the trellis or tie them up with twine.
- Pest Control: Remove and kill potato beetles and other insects that are eating plants. Please leave insects that are not harming the garden. They make good friends.
- Path upkeep: Make sure pathways have mulch and are clear of runaway plants.
- Harvesting
- Deadheading Flowers and Herbs: Pinch below dried up flower to remove or, if on a long stem, cut at base of stem. If herbs such as basil develop flowers, deadhead them as well.

#### HARVESTING

A number of vegetables in the garden can be harvested throughout the summer, including:

- Broccoli and Cauliflower: Slice with knife before flower buds open.
- Cucumbers: Pick when fruit is 4 to 6 inches long.
- Herbs: Pinch leaves or stems, leaving <sup>3</sup>/<sub>4</sub> of leaves on the plant to encourage regeneration.
- Kale and Swiss Chard: Cut or snap off individual leaves at any stage, starting with the outer leaf. New leaves will grow.
- Lettuce: Pluck individual leaves or cut lettuce by gripping a bunch gently in one hand and cutting about 1-2 inches from the base with a knife. Leave some leaves for a continuous harvest.
- Peas: Harvest when peas enlarge in the pods.
- Peppers: Pick when they have reached full size.
- Radishes: Pick when roots are the size of a large marble.
- Spinach: Pick individual leaves by pinching stem. Leave some leaves for a continuous harvest.
- Tomatoes: Pick when they are a deep red, orange, or yellow color (depending on variety).
- Zucchini and Summer Squash: Cut or twist off young fruit (about 4 inches). Harvest regularly.

Enjoy eating and sharing what you harvest from the garden with the students and other community members, but please DO NOT harvest any root crops other than radishes. Carrots, beets, parsnips, turnips, rutabaga, and other vegetables not listed above will be harvested in the fall for the school cafeteria.

#### WHERE TO TAKE YOUR HARVEST

- Take home with you!
- Summer Program Coordinator
- School Cafeteria: If they are preparing meals for summer sessions
- Local Food Shelf

#### THINGS TO BRING, IF YOU HAVE THEM:

- Watering can
- Knife (for harvesting)
- Tools (hoe, hand cultivator, your favorite weeding tool)
- Hat, gloves
- Sunscreen, bug repellent

# END OF SUMMER AND FALL CHECKLIST

#### DATE COMPLETED

Late Summer Tasks	
Weed beds and paths	
Trellis tomatoes	
Transplant greens into empty beds	
Deadhead flowers and herbs	
Harvest anything that will go bad if not picked	
Make sure refuse pile is tidy and inside garden	
Re-label plant markers as needed	
Kill and/or remove garden pests	
Current garden photo uploaded	
Fall Tasks	
All crops harvested	
All roots, stalks, and remaining debris removed and put in refuse pile or bin	
Refuse pile neat and orderly	
String removed from stakes and teepees and stored in garden shed or edge of garden; broken stakes removed	
Trellises removed and stored	
Plant labels collected and removed	
Rocks removed and piled at base of sign	
Garlic planted and staked garden edge	
Spinach planted and staked at garden edge	
Perennial plants weeded and cut back if needed; leave herbs with all foliage	
Garden tilled	
Garden composted	
Current garden photo uploaded	
Journal Entries Throughout	
What you've done	
Thoughts	
What went well	
Problem areas	
Needs	
Pests or disease	

# FALL HARVEST SENSITIVITY LIST

Frost dates give you an indication of when, historically, your area will receive a frost. Some crops are more sensitive than others to frost and freezing temperatures, so you will want to harvest those items before your area's frost date. The following chart provides guidance on when to harvest particular crops in zones 4a - 3b. Determine your area's frost date and adjust accordingly.

### FROST SENSITIVE PLANTS

Harvest up to ~ 9/15

\*Bush Beans Herbs Lettuce Melons Peppers Radishes Summer Squash Tomatoes (leave green ones for following week) Watermelon Zucchini

### FROST RESISTANT PLANTS\*\*

Harvest between 9/16 - 10/1

Broccoli Cauliflower Onions Potatoes \*Flowers (seed save) Swiss Chard Turnips / Rutabaga

### SAVE UNTIL THE END

(These items can be harvested earlier if time allows.) Harvest after 10/1

Arugula Beets **Brussels Sprouts** Cabbage Carrots \*Flint/Pop Corn (dry & store) Kale **Mustard Greens** Parsley Parsnips \*Pole Beans (seed save & store) Pumpkin Spinach \*Sunflowers (seed save) Wheat (cut and store) Winter Squash

\*Save some plants for seed saving later.

\*\*Harvest all crops that are ready to be harvested; harvest under-ripe and small crops at your discretion.

# HARVEST RECORD

DATE	TYPE OF PRODUCE	QUANTITY	PRICE	DESTINATION

### FRFF7ING GUIDF

Freezing is an important step when preserving fresh foods for future use and to help extend the local harvest year round. We've included this guide on proper freezing techniques to help ensure that produce remains as nutritious as possible!



#### General Instructions

Choose vegetables that are young and tender. Wash well and rinse twice in fresh water each time to remove dirt. Trim away any bad areas, tough stems.

and leaves. Cut into desired s small batches.

Blanching Although freezing slows enzy completely halt it. Blanching, a heat treatment to inactivate the ripening enzymes in vegetables,



Blanching time is crucial and varies with the vegetable and its size. Underblanching stimulates the activity of enzymes and is worse than no blanching. Overblanching causes loss of flavor, color, vitamins and minerals. See the following page for correct blanching times.

preserves their color, texture, and flavor for nine to twelve months in the freezer.

Most vegetables can be either water or steam blanched before being frozen. Start timing the blanching action when the water returns to boiling after putting in the vegetables (see following page for blanching times). After blanching, plunge the vegetables immediately into cold (preferably ice) water for the same time as you blanched the vegetable. This cold bath stops the cooking action.

#### Labeling and Storing

Label packages with the name of the product and the freezing date. To make the most out of your freezer space and to ensure that no frozen produce goes to waste, store your frozen produce in uniform packaging so that it stacks easily. Organize according to date, so that the things that expire the soonest are in the front of the freezer and easily accessible for everyday cooking.

Freeze at 0° F or lower. Most vegetables maintain high guality for 8 to 12 months at 0°F or lower. Longer storage will not make food unfit for use, but may impair guality. If you find that some vegetables did not freeze well, try using them for baking!

It is a good idea to post a list of the frozen vegetables near the freezer and to check off packages as they are used with the date that you run out. This list will serve as a good future reference for what your kitchen uses a lot of and how quickly each item gets used so that next year you can make the most of the harvest season!

#### Remember, frozen vegetables should be cooked without thawing.

# **BLANCHING PRODUCE GUIDE**

Vegetable	Preparation	Blanching Time (min)
Asparagus	Wash. Sort according to thickness. Compost tough part of stalk. Cut into even lengths. Blanch and cool.	Small: 2 Medium: 3 Large: 5
Beans Snap, green, or wax	Wash. Remove ends. Cut as desired. Blanch and cool.	3
Beets	wa ste ste redesign	
Broccoli or Cauliflower	Wash. Trim flowerets to 1-1.5 inches across. Blanch and cool.	Water: 3 Stream: 5
Brussels Sprouts	Select green, firm and compact heads. Trim, wash, and sort ac- cording to size. Blanch and cool.	Small: 3 Medium: 4 Large: 5
Carrots or Parsnips	Remove tops, wash and peel. Cut as desired. Blanch and cool.	Whole: 5 Cut: 2
Corn On-the-cob Whole kernel	Husk, trim, remove silk and wash. Blanch and cool. Blanch corn on the cob. Cool, then cut about 2/3's the depth of the kernel	Small: 7 Medium: 9 Large: 11 4
Greens (all kinds)	Select young, tender leaves. Wash thoroughly. Blanch, cool and drain	2 Collards: 3
Herbs	Wash drain and pat dry. Freeze in a freezer bag to use in cooked dished.	
Melons/Berries	Cut, seed. Slice as desired, spread on tray and freeze overnight. Transfer to a freezer bag for easy storage.	
Peas, green	Use young, tender peas. Shell, blanch, and cool.	1.5
Peas, edible pods	Select flat, tender pods. Wash. Trim. Leave whole. Blanch and cool.	Small: 1.5 Large: 2
Peppers, bell or sweet	Wash, stem and seed. Cut as desired. Spread on a tray and freeze overnight. Pack in a freezer bag for storage.	
Pumpkin or Winter	Cut into pieces and remove seeds. Cook until soft. Remove pulp	

## THE YEAR-END GARDEN REPORT

School Garden Name:	
Person Completing the Report:	Date:
<b>Directions:</b> Complete this report every year giving detailed information	tion. Store it in the Garden Memory Binder.
GARDEN	
Location:	
Size:	
Who planted the garden? (specific classrooms, garden coordin	nator, parent)
Who harvested the garden? (specific classrooms, garden coor	rdinator, parent)
Improvements or Expansions this year:	
GARDEN RESOURCES	
Tool location:	
Key needed? Location of key:	
Water location:	
Key needed? Location of key:	
Seed source:	
Compost source: Tilling contact	t:
GARDEN SUPPORT	
Garden Volunteer recruitment process:	
Names of teachers/staff that help and support garden:	
Names of community members or farmers that help and s	support garden:
Grants & funding received this year:	
What was purchased?	
GARDEN NEXT STEPS	
Garden needs for next year (must happen):	
Garden wants for next year (would be nice to have):	

#### Balian, Lorna. **A Garden For A**

**Groundhog.** Star Bright Books. During the winter, the O'Learys feast on the bounty from their summer garden, and Groundhog hibernates in his burrow home beneath the apple tree. The O'Learys know that the groundhog does not come forth on February 2 to forecast the weather but rather to check if the O'Leary garden is planted. Mr. O'Leary's plan to keep the groundhog out of their vegetables has one flaw, though, which is humorously revealed on the final page.

#### Bunting, Eve. Sunflower House.

Harcourt Books. A young boy plants the seeds in a large circle. He waters them and waits patiently until they grow tall with huge nodding blossoms that form a perfect "sunflower house." He and two friends play in the "house" all summer, even sleeping in it one night, until the leaves turn brown and the stems fall down. Then they fill their pockets with the seeds, the birds eat some, and the rest are left on the ground to grow again next summer.

#### Carle, Eric. Pancakes, Pancakes.

Aladdin Paperbacks. Here's a whimsical and very useful look at the life cycle of the apple tree. With two helpful tree sprites as guides, readers travel from spring, when the apple tree blossoms, through summer, when the fruit grows, to fall and the harvest. Along the way, you'll learn about the life of the tree and the animals that visit - from insects that pollinate the flowers to deer that eat the fallen fruit.

Carle, Eric, The Tiny Seed, Children's Publishing Division. This picture book admirably conveys the miracle of a seed. Flower pods burst and dispatch their seeds on the wind; the air-borne seeds are subject to myriad disasters; and the ones that make it through the perils of the seasons to become mature flowering plants are still susceptible to being picked, trod upon and otherwise damaged. But nature allows for survivors, and so the tiny seed grows into a giant flower, releasing its seeds and continuing the cycle. As he has demonstrated with The Very Hungry Caterpillar and other books, Carle has an extraordinary kinship with nature. Here we have not just the explanation of the life of a flower, but drama, lessons of life and a lovely spirituality.

Carney, Margaret. At Grandpa's Sugar Bush. Kids Can Press Ltd. Alongside his grandpa, a young boy shares the tasks involved in making maple syrup the oldfashioned way. From tapping the trees to boiling the sap, the two spend many hours working side by side in the woods. Their reward is a delicious breakfast of pancakes and "the best syrup in the whole world." This is more than a story about syrupmaking. It is the story of the grandfather's bond with nature and how he transfers this feeling to his grandson. Janet Wilson's rich oil paintings capture all the signs of spring's arrival in the sugar bush and the loving relationship between the boy and his grandpa.

Cherry, Lynne. **How Groundhog's Garden Grew.** The Blue Sky Press. Little Groundhog learns how to plant and tend to his own food garden through every season in this beautifully-illustrated, thoroughly researched picture book by naturalist Lynne Cherry. Little Groundhog, in trouble for stealing from his friends' gardens, is taught by Squirrel to grow his very own. From seed-gathering to planting, harvesting, and eating home-grown fruits and vegetables, children join Little Groundhog in learning about the gardening process. At the end, Little Groundhog invites his animal friends to a Thanksgiving harvest feast.

Cooney, Barbara. Miss Rumphius. The Penguin Group. The Lupine Lady was not always an old woman, a long time ago, she was a young girl named Alice. She loved spending time with her grandfather, an artist, and in the evenings he would tell her stories of his travels and faraway places. Alice dreamed of living by the sea and traveling to distant places, but her dear grandfather told her that there was a third thing that she must do. Alice must also make the world a more beautiful place. That is guite an undertaking for a young girl, but as she grew, she never forgot her dreams and desires. Oh, the adventures that Alice had, but now it was time for her third promise. She would find a way to make the world a more beautiful place. Quite by accident, Miss Rumphius stumbled onto to her way of accomplishing her task. The people called her a crazy old lady, but that did not matter. She knew how she was going to achieve her third and most challenging promise of all. Instilling dreams and aspirations into a young child and watching them flower is a gift to everyone that they will meet. Read this book to a child and at the end, tell them that there is one last thing that they too much do - make the world a more beautiful place.

Creasy, Rosalind. **Blue Potatoes, Orange Tomatoes.** Sierra Club. An introduction to organic gardening which explains how to grow a cornucopia of fruits and vegetables in unexpected colors, outlining simple guidelines for planning, planting, caring for, and troubleshooting a rainbow garden. Also includes some special recipes.

#### Cronin, Doreen. **Diary of a Worm.** Harper Collins Publishers. Written in diary form, this truly hilarious picture book tracks the ins and outs of a worm's life from the perspective of the worm family's young son. Except for the fact that he can't chew gum or have a dog, the boy likes being a worm. He never has to go to the dentist ("No cavities – no teeth, either"), he never gets in trouble for tracking mud through the house, and he never has to take a bath. As long as he can remember Mom's rule "Never bother Daddy when he's eating the newspaper," all is well.

DePaola, Tomie. **Charlie Needs A Clock.** Scholastic Inc. Charlie needs a cloak, and this book tells the story, from start to finish, of how he goes about to make one. It takes readers through the year, from spring sheep shearing through sewing by the winter fire, showing Charlie going through each step to create his own cloak from raw materials.

De Paola, Tomie. The Popcorn Book. Holdiay House Inc. Tomie dePaola seldom fails to delight and this offering is no exception. Kids get together to pop up some pop corn and the little story of their "adventure" is guite funny. Along with the story though, we get a great mini-lesson in the history of popcorn along with some wonderful scientific facts, i.e. why does popcorn pop, how do you store popcorn, etc. It tells us how the early Native Americans cooked and used popcorn as well as those in Central America. There are dozens of lessons that can be created from this little book, great handouts and projects can be made with just a touch of creativity on the teachers part. This can be used in the class room, but it would be great for the home school folks also.

Ehlert, Lois. Growing Vegetable Soup. Reed Business Information, Inc. This is the boldest, brassiest garden book to hit the market, and what a delight. Intensely colored graphics capture the complete growing process from seed to cooking pot, with the focus on the plants. The unseen narrator describes the process of growing vegetable soup, from preparing the tools and digging holes for the seeds to weeding plants; picking vegetables; washing, chopping, and cooking them and finally enjoying the homemade soup while planning to grow more next year. It's a fresh presentation of the gardening cycle with a joyful conclusion, and the added attraction of an easy and tasty recipe for vegetable soup on the flyleaf. A book to help nourish healthy readers.

Forest, Heather. **Stone Soup.** August House LittleFolk. Two hungry travelers arrive at a village expecting to find a household that will share a bit of food, as has been the custom along their journey. To their surprise, villager after villager refuses to share, each one closing the door with a bang. As they sit to rest beside a well, one of the travelers observes that if the townspeople have no food to share, they must be in greater need than the travelers.

#### French, Vivian. Oliver's Vegetables.

Hodder Children's Books. On a visit to his grandparents' house, Oliver wants to eat only French fries. Grandpa tells him that he may look in the garden for potatoes, but that he must eat what he finds, whatever it may be. On the first evening, Oliver pulls up carrots and discovers that he likes them. On successive days he discovers spinach, rhubarb, cabbage, beets, and peas all of which he eats with unexpected enjoyment. On the last evening, he finds the potatoes at last and as he is sitting down to supper his mother arrives. Oh dear! Too bad! She thinks Oliver is still eating only fried potatoes. Oliver and his grandparents laugh delightedly at the irony, and so will small listeners.

#### Galdone, Paul. The Little Red Hen.

Houghton Mifflin Company. This classic story carries a message, not only for children who don't want to help with their chores, but for anyone who hasn't quite got into the gardening mood. This book is all about helping, sharing, and making an effort on your own behalf. I bring it along with me when doing presentations on gardening and food security, and the grownups pick it up read it, and they really get it. Great for families and classrooms. Gibbons, Gail. **Chicks & Chickens.** Holiday House, Inc. Gibbons takes a look at how chicken eggs are developed for human consumption and at how fertilized eggs develop into embryos and !nally into fuzzy little baby chicks. The behaviour of chicks, hens, and roosters is discussed, and descriptions of the different breeds of chickens across America are provided. Once again Gibbons provides a colourful, accessible account of this familiar, domesticated bird.

Gibbons, Gail. Farming. Holiday House Inc. Gibbons depicts aspects of that life with her characteristic bright colors and stylized forms in a conceptual space that is intended to portray not one particular farm but a universal one. Every season brings its own specilc chores, indoors and out, its own crops and its own food. There are the forces of nature, and the ways the farmer harnesses or copes with the elements using mechanical devices. Despite an overuse of the passive voice ("The vegetable garden is planted . . . water is lugged ... !elds are fertilized") this is a good addition to the author's energetic how-to books.

Gibbons, Gail. From Seed to Plant. Holiday House, Inc. The cover of this book has the title written in large, green font and it's not too wordy for kids. The illustration on the front cover is very colorful and would be appealing to young children. The content of this book is excellent. Gail Gibbons provides accurate information about plants in this book in a manner that is suitable for children. She researched the topic and worked with Bob Welch of Shearer's Greenhouses in Bradford, Vermont. At the end of the book she presents an exciting project for kids called A "From Seed to Plant" Project that ties in directly with the book. Additionally, she lists fun facts about seeds and plants. For example, did you know that some plants eat insects? Kids will love the end sections. The illustrations in this book are outstanding.

Gibbons, Gail. The Seasons of Arnold's Apple Tree. Harcourt Books. This book is a must-have for any elementary teacher. This book has been used in Kindergarten class to teach the seasons and the growth of apples. Students love the pictures and really learn the material from the story and reviewing after. This book can be returned to day after day to reinforce the content and students are excited each time. One activity to teach the seasons is to make a "The Seasons of (students name) Apple Tree" book. There can be four pages with a bare tree. At the top the students write "It is summer," "It is fall," etc. Then we would look at our story and describe the picture. Then the students would add orange and red leaves for fall, etc. This book is lovingly recommended to all.

Hall, Donald. Ox-Cart Man. The Penguin Group. The book takes place in what looks to be the mid 19th century. A man that is never named lives on a farm with his wife, daughter, and son. The book begins with the family packing his cart with the various goods they have to sell. There are mittens knit by his daughter, shawls spun and woven by his wife, and birch brooms carved by his son. The book catalogues the items packed away in an oddly riveting fashion. Next, the man travels on foot to a harbor town named Portsmouth. There he sells the items including his beloved ox. There's a shot of the man kissing his ox good-bye on the nose, which is touching. He next goes out and buys an iron kettle, an embroidery needle for his daughter, a knife for his son, and two pounds of wintergreen peppermint candies. The man walks home to his family waiting for him and as the seasons pass they build up their items to sell once more. One favorite line is the last one: "And geese squawked in the barnyard, dropping feathers as soft as clouds".

Hall, Zoe. **The Surprise Garden.** The Blue Sky Press. We're planting the seeds for a surprise garden. Can you guess what we will grow?" Trace the progress of three small children (and various and sundry dogs, ladybugs, spiders, worms, and butterflies) as they loosen the soil, poke seeds in one by one, water the garden, and watch the small green shoots grow. Surprise! The gardeners find carrots and radishes, broccoli and cauliflower, peas, beans, squash, and even a sunflower. When it's harvest time, the children have a garden party to eat all their delicious produce.

Heller, Ruth. **Chickens Aren't The Only Ones.** Penguin Group. Children will enjoy listening to you read this delightful book about egg-laying animals and their unique eggs. The colorful illustrations in this story are vivid and make the book come alive with fascinating detail. The words in rhyme tell this story in an informational, but highly interesting way that will attract children. This book would be an excellent resource for children beginning to learn about egg-laying animals.

#### Henderson, Kathy. **And The Good Brown Earth.** Candlewick Press.

Throughout the seasons, Gram and little Joe work independently but side-by-side on their gardens, planning, planting, watering, weeding, and waiting. At harvest time, both have grown beautiful vegetables-Gram's in neat rows; Joe's "higgledy-piggledy, tangly, FANTASTIC!" Henderson writes in simple, musical poetry that evokes the delicious, "squashy," "squelching" physicality of garden work, and the mixed-media illustrations of a garden teeming with plants and creatures have a waxy texture that, while sometimes indistinct, nicely extends the awe and mystery in the refrain: "The good brown earth got on with doing what the good brown earth does best." Best, though, is Joe's freedom to discover, follow his instincts, and create something wonderful on his own.

Hoberman, Mary Ann. **Whose Garden Is It.** Houghton Mifflin Harcourt. The gardener says the garden belongs to him. But the woodchuck insists that it's his. And so do the rabbit, the butterfly, the squash bug, and the bumblebee. Even the tiny seeds and whistling weeds think the garden just couldn't grow without them. As they stroll through the exquisite plants and flowers, Mrs. McGee and her child listen and wonder: Whose garden is it?

Hooper, Meredith. Honey Cookies. Frances Lincoln Children's Books. For young Ben, nothing is better than his grandmother's honey biscuits. But what exactly goes into making this special treat? Grandma decides it's a good time for Ben to find out. When he learns how to make honey biscuits, he doesn't just find out how to bake biscuits, he also discovers where all the ingredients in the recipe come from and whose help he really needs. Alison Bartlett's warm, vibrant illustrations accentuate Meredith Hooper's simple, lively text. Including an easy recipe for honey biscuits, this is a perfect introduction to food and cooking for very young readers.

Koontz, Robin. **Composting Nature's Recyclers.** Picture Window Books Publication. Dead leaves, food scraps, and grass clippings for lunch? Small animals, fungi, and bacteria called decomposers turn trash into a tasty compost treat. Learn more about compost and how you can use it in your garden or yard.

#### Lin, Grace. The Ugly Vegetables.

Charlesbridge Publishing. The neighbor's gardens look so much prettier and so much more inviting to the young gardener than the garden of black-purple-green vines, fuzzy wrinkled leaves, prickly stems, and a few little yellow flowers that she and her mother grow. Nevertheless, mother assures her that these are better than flowers. Come harvest time, everyone agrees as those ugly Chinese vegetables become the tastiest, most aromatic soup they have ever known. As the neighborhood comes together to share flowers and ugly vegetable soup, the young gardener learns that regardless of appearances, everything has its own beauty and purpose.

McCloskey, Robert. **Blueberries For Sal.** Penguin Group. This simple story of a mother and daughter picking blueberries, and a mother bear and baby bear eating blueberries, does a perfect job depicting the sweetness of the mother/child relationship. It shows the protective nature of loving mothers and the security a child feels when with his/her mother. And it's a great example of two little families preparing for winter by picking (or eating, as the case may be) blueberries.

McKy, Katie. **Pumpkin Town.** Houghton Mifflin Harcourt Publishing Company. What happens when a town has an accidental abundance of pumpkins? What do José and his well-intentioned brothers do with a mountain of pumpkins? An EXPLO-SION of pumpkins? Step into Pumpkin Town and see!

Naslund, Gorel Kristina. **Our Apple Tree.** Roaring Brook Press. Here's a whimsical and very useful look at the life cycle of the apple tree. With two helpful tree sprites as guides, readers travel from spring, when the apple tree blossoms, through summer, when the fruit grows, to fall and the harvest. Along the way, you'll learn about the life of the tree and the animals that visit - from insects that pollinate the flowers to deer that eat the fallen fruit.

Older, Jules. **Cow.** Charlesbridge Publishing. This book will tickle the "funny bone" of any young reader (not to mention any adults in the neighborhood) and provide them with all the information they ever wanted to know about one of Mother Nature's most amazing creatures. If you like cows, ice cream, great pictures, or just a good laugh, you'll love COW. Ever wondered why an ice-cream sundae isn't called an ice-cream Thursday? Having trouble telling a Jersey from a Holstein? Confused about the difference between a cow and a bull? COW has the answers and much, much more.

Priceman, Marjorie. **How to Make an Apple Pie and See The World.** Dragonfly Books. An apple pie is easy to make... if the market is open. But if the market is closed, the world becomes your grocery store. This deliciously silly recipe for apple pie takes readers around the globe to gather ingredients. First hop a steamboat to Italy for the finest semolina wheat. Then hitch a ride to England and hijack a cow for the freshest possible milk. And, oh yes! Don't forget to go apple picking in Vermont! A simple recipe for apple pie is included.

Reynolds, Aaron. Chicks and Salsa. Bloombury U.S.A. Children's Books. What happens at Nuthatcher Farm when the chickens get tired of the same old chicken feed? The rooster hatches a plan! With a pinch of genius, a dash of resourcefulness, and a little pilfering from the farmer's garden, the chickens whip up a scrumptious snack of chips and salsa. When the rest of the barnyard gets a whiff of the spicy smells and want to join in, it can mean only one thing ... FIESTA! But when the big day arrives, all their spicy southwestern supplies are gone! Could Mr. and Mrs. Nuthatcher have caught on to the flavor craze?

Richards, Jean. A Fruit Is A Suitcase For Seeds. Millbrook Press. Richards's carefully worded information provides an excellent introduction to seeds, their purpose, and growth that should be easy for young children to grasp. On each page, one or two short lines of text appear beneath a large painting. Hariton's use of bright watercolors adds sensual appeal to her illustrations of various fruits, vegetables, animals, and habitats. This cleverly presented book can be used as a readaloud discussion starter, as a prelude to planting seeds and observing their growth, or in preparation for dissecting fruits and vegetables in order to find the seeds inside.

Rockwell, Lizzy. **Good Enough To Eat.** Harper Collins Publishers. This picture book about healthy eating begins at the beginning: food is necessary for one's wellbeing and it tastes good, too. Six categories of nutrients are introduced: carbohydrates, protein, fat, water, vitamins, and minerals. Digestion is described, as is the Food Guide Pyramid. Five recipes are given at the end. Every bit of information is illustrated with a large or small picture, sometimes accompanied by labels or dialogue balloons.

Rohmer, Harriet & Gomez, Cruz. Mr. Sugar Came to Town. Children's Book Press. Grandma Lupe's tamales are the favorite food of all the children in town until Mr. Sugar comes riding in on his magical truck full of sweets. Suddenly the children won't eat anything but double-chocolate sundaes, raspberry cream pie, and fudge bars. Before long they're so roly-poly they can't see their feet, and their teeth are full of black holes! It falls to Grandma Lupe to unmask Mr. Sugar and to show the children why something that feels good may not be good for them. Adapted from a puppet play by the Migrant Farm Workers Outreach Program in California's Central Valley, this fanciful tale treats the themes of substance abuse and nutrition in an amusing, whimsical way.

Sears, William, M.D., and Sears, Martha, R.N. Eat Healthy, Feel Great. Little, Brown and Company. What a wonderful resource for parents who are trying to "do the right thing" - to teach their children healthy eating habits in the midst of a society that promotes the fast, processed, and packaged. Dr. Sears categorizes food into green light/yellow light/red light groups, and it's a concept children readily understand. The text is simple and clear, and the message is presented in a fun way. This book would be a big help to any parents interested in changing their families' eating habits for the better. There are parts in the book that are just for parents: they explain nutrition, as well as make suggestions on how to incorporate more "green light" foods in the family's meals.

Siddals, Mary McKenns. **Compost Stew.** Crown Publishing Group. From eggshells to wiggly worms, this delightful recipe in bouncy verse features items – some familiar and some not so – that are fit for the home compost bin and will nourish Mother Earth. Vibrant collage illustrations use recycled and found materials to further a timely message. And to keep young environmental chefs fully informed about composting do's and don'ts, there's a note in the back about what's not fit for the bin.

Stevens, Janet and Crummel, Susan Stevens. **Cook-A-Doodle-Doo.** Harcourt Books, Inc. Take an old family recipe, add four funny friends, mix in some hilarious cooking confusion, and you have a delicious picturebook treat for children of all ages!

#### Stevens, Janet. Tops & Bottoms.

Harcourt Books. Hare solves his family's problems by tricking rich and lazy Bear in this funny, energetic version of an old slave story. With roots in American slave tales, Tops & Bottoms celebrates the trickster tradition of using one's wits to overcome hardship. "As usual, Stevens' animal characters, bold and colorful, are delightful... It's all wonderful fun, and the book opens, fittingly, from top to bottom instead of from side to side, making it perfect for story-time sharing."

Titherington, Jeanne. **Pumpkin Pumpkin.** Greenwillow Books. Jamie plants a pumpkin seed in the spring and, after watching it grow all summer, carves a face in it for Halloween! But best of all, he saves some seeds that he will plant again next spring.

Tomecek, Steve "The Dirtmeister". **Jump Into Science – Dirt.** National Geographic Society. What is soil? Who lives in dirt? How does earth help things grow? The answers are within this fun and fact-filled picture book. Just follow the gardening star-nosed mole in the colorful outfits...and dig in!

### KH to add book covers

## **GARDEN CURRICULUM LIST**

**Big Ideas: Linking Food, Culture,** Health. and the Environment Center for Ecoliteracy. Written by The Center for Ecoliteracy, with a foreword by Michael Pollan - Center for Ecoliteracy, 2008. This book offers a powerful conceptual framework and serious food for thought for teachers and students in grades K-12. It encourages students to systemtically look at the connections forged between something so basic as food choics, and both personal and environmental health. Clustered according to gradegroup level (K-2, 3-5, 6-8, and 9-12) each "big idea" is accompanied y essential question, sample activities, and key concepts drawn from the Benchmarks for Science Literacy.

Digging Deeper: Integrating Youth Gardens Into Schools & Communities. Joseph Kiefer, Martin Kemple and Melanie Menagh – American Community Gardening Association, Foodworks 1998. Digging Deeper shows simply and clearly how school gardening is an ideal vehicle to meet high educational standards and achieve learning results so necessary for future generations to live sustainable on this planet.

Four-Season Harvest: Organic Vegetables From Your Home Garden All Year Long. Eliot Coleman - Chelsea Green Publishing Company, 1999. It's also a book full of valuable information on how to harvest fresh vegetables and salad ingredients literally year-round - yet without an expensive greenhouse or indoor light garden set-up. Coleman combines succession planting (small sowings three or more times, rather than one big endeavor) with cold-frame growing in the winter months. He includes how-tos for building simple cold-frames. Given the fact that he lives in Maine, his advice seems all the more reliable.

French Fries and The Food System: A year-round curriculum connecting youth with farming and food. Sara Coblyn – The Food Project, 2001. French fries and the food system features powerful, original lessons written and developed by the Food Project's growers and educators to develop a deep understanding of and appreciation for the land and local food systems. Gardening With Children. Monika

Hannemann, Patricia Hulse, Brian Johnson, Barbara Kurland, and Tracey Patterson – Copyright 2007 by Brooklyn Botanic Garden, 2007. Offers a groundbreaking handbook that helps parents, teachers, and community gardeners introduce kids to the pleasures of gardening. In addition to growing common plants from seed, children will become more aware of nature's cycles and earth's ecology, and enjoy a variety of fun projects.

**Gardening Wizardry for Kids.** Patricia L. Kite - Barrons Juveniles, 1995. More than 300 extraordinary experiments and projects with apple seeds, beans, potatoes, fruit pits, vegetables, herbs and everything that grows. Contains a glossary, reading list, full-color, how-to illustrations, and a bonus chapter that lists seed catalogs that kids can obtain from sources in the U.S. and Canada, mostly free. Perfect for home or classroom.

Green Thumbs: A Kid's Activity Guide to Indopor and Outdoor Gardening. Laurie Carlson – Chicago Review Press, 1995. Kids will be creating their own gardens in no time with a guide to indoor and outdoor gardening projects that offers a way for kids to get exercise and fresh air, and to learn about nature all at the

same time. Healthy Foods From Healthy Soils: A hands-on resource for educators.

Elizabeth Patten and Kathy Lyons – Tilbury House Publishers, 2003. Healthy Foods from Healthy Soils invites you and your students to discover where food comes from, how our bodies use food, and what happens to food waste. You'll participate in the ecological cycle of food production, compost formation, and recycling back to the soil. This happens while helping children understand how their food choices affect not only their own health, but farmers, the environment, and your local community.

### How to Grow a School Garden: A Complete Guide for Parents and

**Teachers.** Arden Bucklin-Sporer and Rachel Kathleen Pringle – Timber Press, 2010. A school garden can change a child's life, and this book is a totally comprehensive guide to planning, building, and maintaining a vibrant and engaging school garden. For educators who are trying to make a difference, this complete guide explains everything needed to know to create a sustainable school garden. Includes activities that are fun, accessible, and inexpensive.

#### How to Teach Nutrition to Kids.

Connie Liakos Evers, MS, RD – 24 Carrot Press, 2006. How to Teach Nutrition to Kids promotes positive attitudes about food, fitness and body image. The book features the MyPyramid Food Guide and hundreds of fun, hands-on nutrition education activities aimed at children ages 6-12.

Insectigations: 40 hands-on activities to explore the insect world. Cindy Blobaum – Chicago Review Press, 2005. Bursting with more than 40 experiments, art projects, and games, this wonderful introduction to hands-on insect science encourages kids to raise mealworms, use math to measure bug strength, make an amplifier for insect sounds, and more. Kids will love learning gross facts about insects while gaining solid information about the natural world.

Math in the Garden: Hands-on Activities that bring math to life. Jennifer M. White, Katharine D. Barrett, Jaine Kopp, Christine Manoux, Katie Johnson, Yvette McCullough - The University of California and The National Gardening Association, 2006. Gardens are magical settings filled with aromas, colors, and patterns that excite the imagination and awaken the senses. This engaging curriculum uses a mathematical lens to take children on an education-filled exploration of the garden. Dozens of hands-on activities hone math skills and promote inquiry, language arts, and nutrition. All were developed to support mathematics and science standards and were extensively trial-tested by educators and youth leaders nationwide.

### **GARDEN CURRICULUM LIST**

Project Seasons: Hands-on activities for discovering the wonders of the world. Deborah Parrella – Shelburne Farms, 1995. The investigative activities in Project Seasons integrate science, agriculture, and environmental themes to show how all living things are interconnected. Students explore plants, worms, soil, farm life, water cycles, and more through the school-year seasons.

Ready, Set, Grow: A Guide to Gardening with Children. Suzanne Bales – Hungry Minds, Inc., 1996. Offering countless project ideas that will entertain both children and adults, an activity guide is filled with listings of the easiest, quick-result plants and vegetables, as well as fun and informative gardening ideas. Roots, Shoots, Buckets & Boots:

**Gardening Together with Children.** Sharon Lovejoy – Workman Publishing, 1999. Learn how to make everything from a pizza garden, to a sunflower house, to a moon garden. Chock full of helpful hints, clever and artistic touches, and intriguing "recipes", this idea book will spark creativity and a lifelong fascination with gardening.

Schoolyard Mosaics: Designing Schoolyards and Habitats. National Gardening Association, South Burlington, VT. NGA created Schoolyard Mosaics in collaboration with educators featured in our school garden registry who have engaged students in transforming schoolyards into wildlife habitats, square-foot gardens, multipurpose outdoor classrooms, and a variety of theme gardens. The book offers advice on involving students in the planning and design process, building community support, and integrating the project with your curriculum and learning goals. Also includes 11 garden plans - from butterfly oases to history gardens - with companion stories on each project, suggestions for implementing a variety of thematic gardens, and an extensive resource section.

#### The Growing Classroom:

Garden-Based Science. Roberta Jaffe - Pearson Learning, 2001. Based on The Life Lab Science Program, this source book presents a hands-on "living laboratory" or garden-based approach to science education. A wonderful collection of classic garden activities, The Growing Classroom is a teacher's manual featuring step-by-step instructions and strategies for setting up a garden-based science program and outdoor classroom activities. Topics include planning a garden laboratory, facilitating investigative lessons on ecology and nutrition, and involving the community. Includes an expanded gardening resource section. This curriculum is a teacher and NGA staff favorite!

### **Online Resources**

Edible School Yard http://edibleschoolyard.org/

Green Mountain Farm-to-School http://www.greenmountainfarmtoschool.org/

National Gardening Association http://www.garden.org/

Vermont Community Garden Network http://www.burlingtongardens.org/