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The following schools are the 1st set of pilot schools:

Breckinridge-Franklin Elementary
Central High School
Cochran Elementary
Engelhard Elementary
Fern Creek High School
Foster Traditional Elementary
Indian Trail Elementary
Johnson Middle School
King Elementary
Rangeland Elementary
Wellington Elementary

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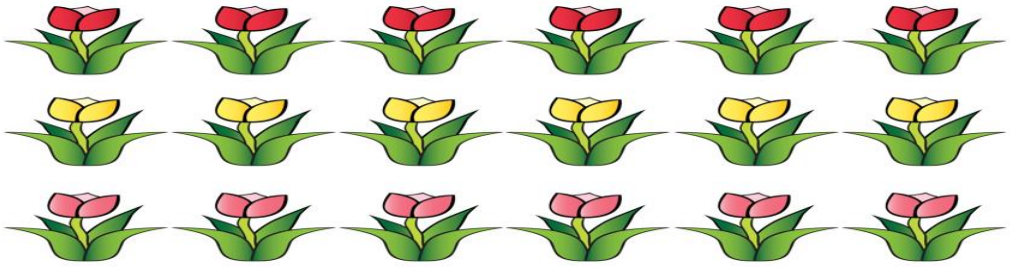
"Inch by inch, row by row, we're going to make this garden grow….."

(taken from The Garden Song)



Introduction: Why Build a School Garden?

In many urban areas, children are surrounded by concrete, brick and asphalt. A school garden program can bring nature and agriculture to life. Gardening can encourage physical fitness, proper nutrition, and enthusiasm for learning. It can bring communities together by involving local neighbors, senior citizens, parents, students and local businesses. A garden is a great tool for helping students to understand nature, build a sense of responsibility and belonging, and teaching conservation and preservation of the environment.

Many educational goals can be achieved through a gardening program. School gardens can help students find the answers to many of their questions regarding nature, processes, changes, and the environment as well as stimulate problem solving, and inquiry about other things. A school garden is a valuable tool to help students turn book knowledge into real experiences. Gardens can support curriculum objectives in all program areas, including science, mathematics, social studies, language arts, health, physical education, and other subjects. It can enhance a child's whole educational experience and is the perfect teaching tool to address different styles of learning.

A way to sustain the school gardens is to use the harvest as a fundraiser. Once students begin to harvest their crops, they can decide what they want to do with the products (another great lesson opportunity in economics).

Some suggestions are:

- Sell the edibles back to the school cafeteria. *
- Grow flowers to sell to the community to help raise money to keep the garden going.
- Sell or distribute to the local community.

*see appendix for *Selling Procedure*, form A

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I. Getting Started

1. The first step is to obtain permission from the school administration to use a plot of land for the garden. School administrators can contribute to the success and longevity of the garden. Changes in teaching staff and students will occur, so therefore it is imperative to have administrative support. However, with that said, you must get commitment from current staff to ensure success of the program. School gardens are a collective effort and should involve students, parents, and the community, as well.

2. Make initial contact with the groundskeeper and custodian at your school to inform them of the project. Ask them if they would like to join your committee to address any campus needs or requirements. Assure them that your garden project will not require additional work for them.

3. Complete the Building Modifications (BG1) Form and return for approval as instructed. A copy of this form is included in appendix under *Request Forms* (B) and can be found on JCPS website under *Forms* section in Maintenance department at: http://www.jefferson.k12.ky.us/Departments/Maintenance/BuildingModification.html

4. Make yourself familiar with the policies and regulations for school gardens. The following are some of regulations that should be followed. (See appendix, form C)

- Only raised beds may be used in Jefferson County schools for food gardens. Digging directly into the ground is not permitted for growing edibles due to unknown soil contaminants.

  Under the *JCPS Soils and Hygiene Plan (March,2007)* it is stated:

  > "Garden Areas: Vegetable gardens grown for ***human consumption*** and all gardens used by students in Pre-K, P1 and P2 shall be in raised beds or containers. These shall be **lined** with commercial grade landscape fabric, and back filled with **clean soil**. The perimeter of the soil **bed shall not be made of railroad ties or CCA pressure treated lumber**. It is suggested that landscape edging such as sturdy recycled plastic/wood composite lumber, recycled rubber and /or plastic be used instead. In these areas proper hygiene practices as described herein must be followed."

- Soil used in the gardens must be approved by JCPS Safety and Environmental Services. The following soil mixtures which have been approved at this time are: *Fafard 3B Mix ,Pro-Mix,Gagel's Mushroom Soil, and Peterson-Earth First (see attached addendum for MSDS and additional information).*

The JCPS *Soils and Hygiene Plan, March, 2007 states:*

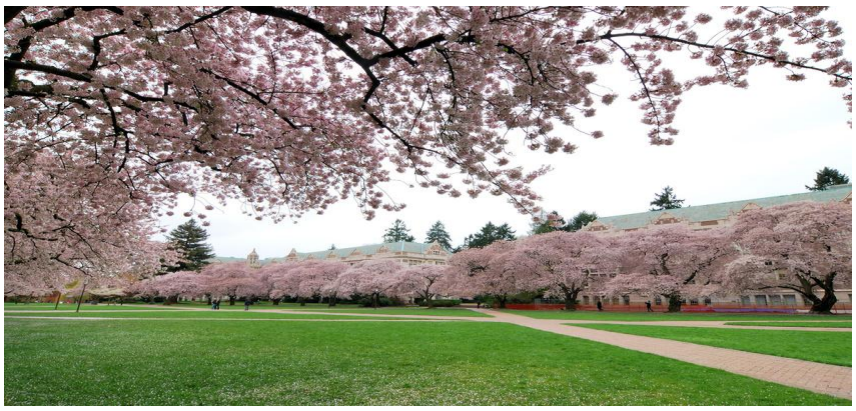
> "General Soils Information: In-service information regarding gardens, agricultural soil testing and proper gardening procedures including some health and safety facts available through the Kentucky Cooperative Extension Service office will be distributed by the JCPS Environmental Education office. For questions concerning this JCPS Soils and Hygiene Plan, contact JCPS Safety and Environmental Services, CB Young Service Center, 485-3698."

- Students should use gloves while working in the garden. Proper hygiene should be followed when using gloves and working in the garden. Students should not share gloves unless they can be washed in between uses.

The JCPS *Soils and Hygiene Plan, March, 2007 states:*

> "Hygiene Practices- Students shall be supervised when working on school grounds especially the garden area. They shall have proper tools, protective gloves, and proper instruction. There is a special concern for children 6 years of age and under when working with or touching bare soil. They shall be supervised so as not to allow the placing of soil in their mouths. Hands and exposed skin areas shall be washed with soap and water upon completion of disturbance of soils. Garden tools shall be rinsed and cleaned of all soil."

- No pesticides/herbicides can be used in the gardens. There are organic methods to help kill weeds and control pests. Various herbs can be planted to ward off insects, mulching to help with weed control, and introducing insects such as praying mantis into your gardens. See appendix under *Soil & Hygiene* (form D) for some herbal pest control ideas. Also, the following website has additional ideas to control weeds and unwanted pests: http://www.thegardenhelper.com/weeds.html.



II. Developing the School Garden

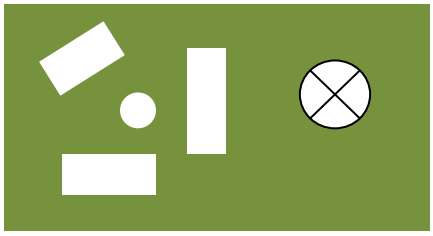
A. Select Garden Site

When thinking about a site for your garden you should consider the following questions:

- Does it receive at least 6-8 hours of sunlight daily?
- Is it clear of trees and roots?
- Does it have proper drainage?
- Is it near a water source?
- Is it easily accessible for all students?
- Is the area already used or designated for something else, i.e. recess.
- Do you want the garden to be accessible to students during unstructured times of the day or only during formal outdoor class times or both?
- Is it in an area that will not disturb indoor classroom learning?
- Do you have enough room for pathways and to fit a class of 25 students?

B. Design A Plan

Brainstorm with students the type of garden they would like to have. The following are a few types of gardens to consider:



THEME GARDENS:

- Veggie garden
- Pizza garden(tomatoes, basil, oregano, parsley)
- Herb garden
- Sensory garden(touch, taste, smell, sight, hear)
- Alphabet garden(26 plants grown in order)
- Salad garden(lettuce, celery, carrots, cucumbers, tomatoes, etc)

TOPIC/CONCEPT GARDENS:

- Seed Comparison
- Comparing Root Systems
- Plant structure and function
- Life Cycles

Students may decide to have various types of gardens. You could have a flower garden in one area, herb garden in whiskey barrels, and vegetable garden in a raised bed. Once you decide on a garden theme, you should stick with it for a couple of years to allow it to be successful.

After all classes have discussed and designed their ideas for a garden, come together and discuss the final design. Incorporate ideas from various classes. Remember to start small and don't take on too much the first year. You can always add on to the project every year. You want to be successful and not too overwhelmed the first year or otherwise enthusiasm may extinguish quickly.

C. Mapping Your Design

After final designs are decided, draw a base map of the site that shows existing features. Use 18" x 24" grid paper and make a scale to use such as 1 square =10 feet. Involve students with measuring the area, and recording distances. You may also contact the district to see if aerial maps are available for your school and use these as a base map.

After you have finished the base map, make copies of it for the students. Use tracing paper over top of the base map and have the students draw designs for the garden. By using tracing paper over top of base map, they can do several designs without needing a new base map every time. Remind them to leave at least 42" between each raised bed to allow for accessibility.

If the students are younger or have difficulty drawing, they could use cut-out shapes made of paper to represent the beds, plants, and other things. Let them be creative and "think out of the box" (literally and figuratively speaking). Students should not only think about where their raised beds will be and what will be in them, but what is between and around their garden beds. Think long term: The gardens may be just a part of a complete outdoor classroom to be developed.

Your school may want to illicit some input from a local landscaping company, or find a parent that is a landscape architect to look over the plans before finalizing.

Be sure that the final design considers all of the aspects from the site analysis done prior and the building modification form that was approved (refer to section II. A.)

Once the location, design and topics have been decided, let the students begin to plan what will be planted in each area and how they want to organize the gardens.

D. Gather Materials:

Once you have decided on the size, shape and location of the garden, make a list of needed materials. There is a list of approved vendors you can purchase from in the appendix.

The following is an initial list to consider:

- Raised beds- The beds can be made or bought but must follow the JCPS guidelines for purchasing and safety procedures. **No railroad ties or treated lumber should be used.** Other containers may be used but must follow guidelines. Suggestions: hollowed out log, store bought pots, whiskey barrels.
- Liners for the beds or containers should be used to prevent contact with ground soil and possible toxins leaching into the beds/containers.
  NOTE: The beds purchased through the CDC grant are from Fresh Start Growers Supply. They are 3' x 8'x 18" sustainable cedar frame. The beds will be constructed by students from Fern Creek High School and contain a liner.
- Soil (see appendix, form C for approved soils).
- Straw to mulch around plants.
- Garden Tools:
  Spades-1 or 2
  Shovel-1 or 2
  Wheelbarrow &/or Garden cart with mesh and fold down sides
  Water hose- 100' L- commercial or longer depending on location of school's water source.
  Soaker hose-1/2" dia. x 25'L (1 per bed) Or a drip irrigation system.
  Water wand-5 pattern spray nozzle
  Watering cans
  Bucket-2 gallon, plastic and 1 gallon, plastic
  Wisk broom

Hand cultivator-at least 15
Hand trowels-at least 15
Some of the following tools may be needed to help around the outside of the garden beds:
Mattock pick- 5 lb. With 36" fiberglass handle
Hoe-2 prong
Hoe-warren hoe
Hoe- Kids 32" handle
Pruner-4" bypass handle
Lopper-32" fiberglass handle
Digging fork-4-10 tines
Rake-bow rake
Rake-leaf rake
Push broom

- Gloves-preferably ones that can be washed and reused, i.e. Jersey gloves.

- Seeds or seedlings/starter plants
  You can often get free seeds from various organizations.
  Note: Lassiter Middle school has a greenhouse and may be able to provide some plants and seeds to the schools for a minimal cost. (See appendix under Request form E).

- Other items that may be useful:
  Plant markers
  Clipboards
  Journals
  Yarn/string
  Pencils, Markers, Colored pencils

E. Resources to consider before purchasing material or doing all labor:

Before going out and buying all of the supplies, or doing all of the labor yourself, consider various funding sources, local businesses, and parents. Some suggestions to help with supplies, funding, and labor:

- Create a Wish List to send home to parents. (Old trowels, watering cans, gloves, etc.)
- Write a letter to local businesses asking for their support (monetary, plant donations, containers, soil, etc.). Explain your project, your mission and demographics of the school. Consider larger corporations as well as some small local businesses such as garden centers, nurseries, grocery stores.

- Check out grants from various websites such as Operation Brightside, Tool Box for Education, Muhammad Ali Peace Garden, Lowes, & National Gardening Assoc.
- Youth Build is an excellent resource and will can even build raised beds and provide soil for a cost. Contact information for Youth Build Louisville is in the resource section.
- Look for local Boy Scouts, Girl Scouts, and other civic groups in your area to help with projects. Often Eagle Scouts are looking for community projects to do. They could help with making raised beds, bird houses, and benches, work tables, etc. Just be sure the district/school approves this.

See sample letters and lists in the Appendix section.

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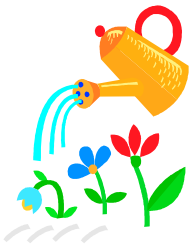
III. How to Prepare your Garden and Keep it Growing



A. Prepare the Soil

Preparing or amending the soil is the first and most important step for healthy plant growth. The soil is the foundation for great gardens, literally. Before you can amend the soil in your garden beds, you should test the soil to see what the soil may be lacking. Soil amendments are materials which are worked into the soil to add nutrients. Adding organic matter such as compost, straw, leaves, etc. is one way to help your soil to flourish and provide food for the beneficial microorganisms that release nutrients into the soil. Lasagna method is one way to help build soil and add nutrients. (See Appendix under *Building Soil*, Form F).

Another good way to help the soil is to plant annual rye in the beds. Rye is cold weather hardy and germinates quickly. It should be planted just under the topsoil and planted sparingly.

At the end of each planting season, you can have students cut up some of the plant material into small pieces to leave in the soil. You can also leave some of the plant material in the beds, but lay them over and let them decompose in the beds to put nutrients back into the soil. A good soil should be crumbly, hold water briefly, but drains and has a pH between 6 to 6.5. The local cooperative extension office can often provide soil kits and soil testing information.(See resource section for contact information)

Consider starting a Vermicomposter or Worm bin indoors during the winter months. This is an easy alternative to the more intensive composting systems. There are a lot of resources on the web about how to start a vermicomposter or ask local agencies or grower supply stores for advice. Also, in the appendix under *Building Soil* tab (form G) there is a step by step guide on how to create your own worm bin. Worms are great for soil. They aerate the soil as they eat their way through, leave good nutrients behind from their droppings and can suppress pest populations. Vermicomposters can teach students about decomposition and recycling. Once the worms start to work their "magic", you should have a substance that looks, feels, and smells like soil and will be ready to use on your garden.

Add composted materials into the current soil beds by a process called “double digging”. To do this, first make some trenches in the current soil. Spread the compost into the trenches and turn the soil back into the trenches. Do this in several different areas in the beds. You can also use a spade fork to get the compost mixed into the current soil. Spread the compost material over the current soil and use the spade fork to “twist” the organic matter into the soil. Avoid digging into the soil too much or too often because it disturbs the micro and macro organisms in your soil. Also, never dig into the soil when it is wet. You should try to layer compost, mulch and other amendments several times throughout the year.

B. Prepare the Plants/Seeds:

During winter months, you can start seeds indoors. You will need the following supplies:

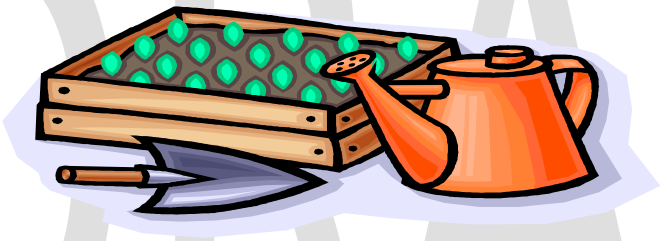
- Containers, either purchased flats or things like egg cartons and yogurt cups. If you use recycled containers, they should be disinfected with a bleach solution (1 part bleach to 10 parts water).
- Potting soil- A soil-less mixture is best for starting seeds. It is suggested to use vermiculite or something similar. *Note: Vermiculite is used in FOSS New Plants investigation 4.*
- Seeds - Your choice. A suggested list of plants good for container gardening is included in the appendix under *Planting Guides* (form H). Also, following this section is a suggested garden plan.
- Labels to mark the containers
- Plastic Bags or Covers - These will trap warmth and humidity.
- Water
- Light Source – near a bright window, or you can use some kind of florescent or high density plant light.

See Appendix, Form I, for transplant data information, how to plant, and dates. For more extensive information, check out the Cooperative Extension website.

Direct Seed	Seedlings
Beans	Broccoli
Beets	Cauliflower
Carrots	Chard
Cucumber	Collards
Lettuce	Garlic
Peas	Onions
Radishes	Peppers
Spinach	Tomato

Once you have seedlings started and the first true leaves emerge, you will need to transplant them into paper cups. If more than one plant has grown, separate them into different cups. 4 inch cups are a good size for most seedlings.

Seedlings need to get acclimated to the outdoors before they can be directly planted into the ground. *Hardening off* is a term used to do this. Taking them outdoors while still in the cups a little time each day and gradually increasing the time will help decrease shocking the plants.



C. Prepare the Students and Volunteers

Besides preparing plants, students and volunteers should be prepared as well. A training or orientation should be provided to demonstrate:

- how to safely use garden tools
- names of tools and their purpose
- clean-up and storage of tools
- reading seed package labels for sowing directions
- measurement techniques for sowing seeds
- rules in the garden
- how to water the garden
- other training sessions will be needed before harvesting to demonstrate proper techniques for picking various plants

D. One,Two,Three….Sow

Once the groundwork is laid, you are now ready to plant. To be successful in the garden, you should divide students into small groups. While you are working with a group of students on planting, other groups could be weeding, laying straw, spreading compost, etc with a volunteer or assistant. Science notebooks or writing journals could also be brought outside to work on specific garden related activities. Teachers should develop a "menu" of activities for groups to do independently. (See curriculum connections for sample activities).

After planting, lay straw around plants and on top of the soil to help maintain moisture and decrease weed growth.

See Appendix under Planting Guides (Form J) for suggestions on Spring, Summer, and Fall Garden selections, how to plant, and more.

E. Nurturing the crop

The process of caring for and protecting the plants begin. Regular watering, weeding, thinning, mulching and "de-bugging" are some of the routine tasks that must be done.

Once plants are established, soaker hoses or drip irrigation systems can be used. A simple idea for watering with children is to have 5 gal. buckets of water throughout the garden and small containers, such as yogurt cups, cottage cheese containers, etc. Punch small holes in the bottoms of the containers and let the students dip the cups in the bucket of water and begin watering. This method simulates rain falling and is gentle on the soil. It also reduces puddles and drowning the seeds/plants.

Starting a water catchment system is a great way to recycle rainwater. Rain barrels could be set up to catch the water coming off of the building. The water can then be "piped" to the beds or hand delivered. (See form K in the appendix for more details.)

F. Harvesting

Excitement will generate when students see the “fruits of their labor”. Proper harvesting techniques should be taught to prevent chaos in the garden. Different crops have different harvesting requirements. Which ones are ripe? Do we cut or pinch the plants? Do we dig or pick? This should be gone over ahead of time and demonstrated to the students beforehand.

An “Ask before picking” policy should be implemented.

Students should wash their hands before harvesting, especially when picking edibles.

Sample of harvesting chart

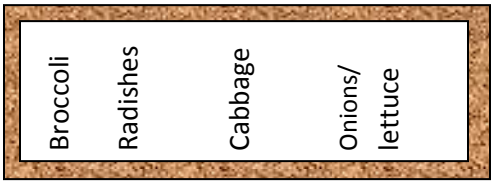
CUT	DIG	PICK AT WILL
Lettuce	Potatoes	Peas
Spinach	Beets	Beans
Chard	Carrots	Edible flowers
Greens	Garlic	Berries

Suggested Garden Plan

Suggestions contributed by Steve Meredith
(Especially for schools wanting to sell back to their cafeteria)

In first and second 3 x 8 beds:
Plant your row going across short ways, from long wall to long wall of bed.

- 2 broccoli plants
- A row of radishes(30 seeds)
- 2 cabbage plants(one red and one green)
- A row divided in half with lettuce(25 seeds) and onion sets(10 bulbs)



This will provide an early garden that will allow the planting action to begin in March and easily harvest before school is out.

In the third bed:

- 2 tomato transplants
- 2 zucchini transplants
- 2 yellow squash transplants

In the case of the first three beds please note that they can be replanted by staff in late summer and produce again in the fall with produce the whole month of September.

The squash and zucchini in bed three would be long dead and should be replaced with fall broccoli which, with the use of large transplants, could be planted after school is back in session. Keep in mind that all of the early spring garden can be duplicated in the fall and come to harvest after frost.

If a fourth bed:

- Green bell pepper
- Jalapeno
- Banana peppers

If start with standard size transplants, this would create harvestable veggies when school returns to session in the fall.

**Peas (sugar snap and some other pod peas) are good for the early spring garden. They actually do better when growing during short, cool days. Summer heat often reduces their quality, texture and quantity.

For more suggestions on what to grow and when, see charts in appendix under *Planting Guides* (form J) *"One Garden Plot: Three Garden Seasons."*

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IV. Issues to Address

A. Vandalism and Theft

While this may happen, it is usually rare. It should not deter you from doing the project. Occasionally plantings may be damaged and other things may be damaged or stolen. When this happens, clean up any damage and discuss it with the students. Re-plant quickly, if possible, and move on. Getting the neighborhood watch involved or local neighbors is a good way to help with preventing vandalism. You can give local neighbors some of the produce, flowers, etc from your garden as a thank you. Also, let your local police station know that you have a garden/outdoor classroom so that when they are patrolling the area they can keep a look out.

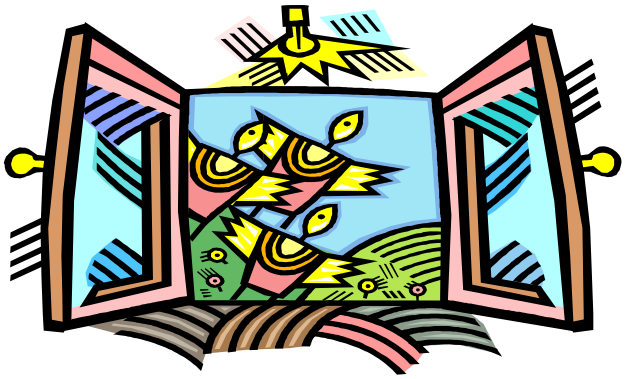
B. Pests

Pesticides or other harsh chemicals may not be used in the school garden. So, how do we keep the unwanted critters away? There are several organic methods you can use, such as sprays made from various herbs. You can plant various herbs or flowers around the borders that deter certain bugs and attract beneficial ones, like butterflies. (See appendix under *Soil & Hygiene* for more information). You can also release beneficial insects, such as praying mantis  or ladybugs  into your garden to help with eliminating harmful pests. If using raised beds and in smaller spaces, you can often just pick the unwanted critters off the plants. Keep the critters for a short time to observe in your classrooms. This will help students to develop an appreciation and fondness for them. A “no squish” policy could be introduced to the students. After investigating the critters you could release them back into nature, away from your gardens, of course.

C. Summer Care

One of the biggest concerns for most teachers and staff is summer maintenance. Some of the following tips are suggested:

- Get commitments in the beginning from staff, students, local businesses, and community. Ask the Extension office about Master Gardeners available.
- Have a Garden Club and get parents involved, as well as students. Try to enlist neighborhood kids to eliminate transportation issues in the summer.
- Send out a sign-up sheet towards the end of the school year broken down by weeks. You could send this out on paper as well as by email. It could state the various jobs that will be needed: weeding, watering, harvesting, mulching, etc. Be sure to send out reminders to the volunteers throughout the summer.
- Inventory the parent community to look for skilled adults needed throughout the year as well as the summer.
- Schedule Saturday workdays occasionally. Invite older students who may need service hours, Eagle scouts looking for a project badge to fulfill local Girl Scout troop, or local businesses partnering with the school.
- Set up a water catchment system to capture rainwater and use a soaker hose laid in the gardens to help with watering.
- One of the easiest things to do, if you cannot get summer help, is to only plant a Spring garden and a Fall garden. Sow annual rye or other cover crop during the summer.



V. Curriculum-Taking the Learning Outdoors

The curriculum relating to gardening should not be seen as a stand-alone but rather embedded into current curriculum. Gardens offer dynamic and beautiful settings in which to integrate every discipline. Interdisciplinary approaches cultivate the skills and talents of all students and can enrich their learning. The outdoor classroom naturally motivates students and can be used for a variety of purposes.

For example, during **reading** time, students could read about gardening, soil, decomposition, plants, and composting. Gardens can provide purpose for a variety of informational and literary readings as well as practical or workplace reading. Students can read field guides, seed packets, and directions on how to plant things.

Gardens are a great way to motivate students to **write**, whether it is a personal narrative, a vignette, imaginative writings, or a persuasive piece. They can develop poems about the garden, develop ads to promote the garden to the school and community, journal observations, design a "how to" guide, and so much more.

Gardens are great teaching medium for **mathematics.** Students can use standard and nonstandard units to measure length of the garden areas, compute area, and measure when planting seeds to space properly. They can measure growth of the plants, count seeds, look at patterns found in plants, and track temperatures of the compost pile.

The **science** connection is probably the most apparent one when discussing gardening. Science process skills such as observing, classifying, measuring, predicting, communicating, inferring, identifying, and analyzing, could all be addressed in some form or fashion. **Taking FOSS Outdoors** is a way to extend your current curriculum with the modules. This guide is provided on the FOSS website at www.fossweb.com. Some examples of this would be: During *Structures of Life unit,* students could investigate

seeds and how they are similar and different. They could go on a Seed Search and observe the variety of seeds found in the schoolyard and then consider how the shape may suggest how the seed travels. While doing *Pebbles, Sand and Silt unit*, students could analyze the soil in the garden by observing, screening the soil, and doing a soil separation experiment.

Practical Living/health is another area in which gardening concepts could easily intertwine. Proper nutrition could be taught while learning about the plants they are growing in the garden. Allowing kids to taste what is grown and experience something they have never tried is a memorable experience. Teaching about the different food groups, reading labels on foods, and sorting the food could also be done. The USDA website has various ideas and resources for Nutrition Education. Their website is www.usda.gov

Gardening can relate to **Social Studies** by helping students understand that patterns on the Earth's surface can be identified by observing how they are arranged, where things are, and why they are in a particular location. They can study physical characteristics of places and how this often determines the use of the land. Students can investigate various foods from different regions and research the origins. One example is to have kids keep a log of all the foods they eat in one day. Lists all the fruits and vegetables from their lists and discuss where they think the foods came from. Break students into groups by food to research various origins.

There are endless possibilities to extend the learning to the garden. The important thing to remember is to keep it simple and link it to your current curriculum. Garden-based curricula are numerous and resources are abundant on the web, as well as locally. Check out our curriculum suggestions in the resource section for more information and websites to visit.

Matrix for Elementary Science relating to gardens

Life Science

K	**"Animals 2 x 2"** **Life Science:** Demonstrates an understanding of the basic needs of animals, how the environment meets those needs, and the structures and functions of animals **Scientific Inquiry:** Demonstrates appropriate use of observation, questioning, evidence-based claims, and science notebooking skills • Characteristics and needs of animals • Comparing and classifying animals	• Investigate the worms that live in the garden area, compare their structure to the worms studied in the classroom • Examine the animals that are found in the garden area, how does the garden environment meet their basic needs? • Make a chart of all the animals that students observe in the garden, use the ABCD of Scientific Diagramming to record and label their structure.
1	**"New Plants"** **Life Science:** Demonstrates an understanding of basic needs of organisms, how the environment meets those needs, life cycles, and the structures and functions of plants **Scientific Inquiry:** Demonstrates appropriate use of observation, questioning, data organization and analysis, evidence-based claims, and science notebooking skills • Characteristics and needs of plants • Comparing and classifying plants	• Plant Wild Mustard, a Brassica commonly found in US and compare to Brassica planted in the classroom • Grow radishes, carrots, and spinach to demonstrate how different parts of the plant provide nutrients for people • Grow native wheat or grasses and compare to wheat and rye grown in classroom • Grow flowers from seed to demonstrate life cycles • Plant potatoes in garden to demonstrate that potato eyes will grow into new plants and make more potatoes • Plant bulbs in garden in late fall or early spring, investigate the life cycle of a bulb
2	**Insects** **Life Science:** Demonstrates an understanding of basic needs, life cycles, and the structures and functions of insects **Scientific Inquiry:** Demonstrates appropriate use of observation, questioning, data organization and analysis, evidence-based claims, and science notebooking skills • Life cycles • Similarities/Differences: Parent to offspring	• Grow Milkweed plants to attract milkweed bugs. Compare their natural habitat with the classroom environment • Look for evidence of insects in the garden, examine how insects interact with the garden environment • Use the garden area as an opportunity to demonstrate life cycle of insects, look for larvae, eggs and chrysalises, monitor changes over period of time or bring in specimens to observe in the classroom.

		• Use artificial bees to explore • how insects transfer pollen from one flower to another
3	**Structures of Life** **Life Science:** Demonstrates an understanding of basic needs of organisms, how the environment meets those needs, life cycles, and the structures and functions of organisms **Scientific Inquiry:** Demonstrates appropriate use of observation, questioning, data organization and analysis, evidence-based claims, and science notebooking skills • Structure and function in plants and animals • Observation of animal behavior	• Plant a variety of plants so that students can observe a diversity of seed pods. (Snow pea's will grow quickly and demonstrate an edible pea pod) • Allow students to transfer the seeds which germinated during Origin of Seeds into garden and continue their observations of plant life cycles • Investigate animals that live in or depend on the garden for survival. Explore the structure and function of those animals
4	**Food Chains and Webs** **Life Science:** Demonstrates an understanding of basic needs of organisms, how the environment meets those needs, and the structures and functions of organisms **Scientific Inquiry:** Demonstrates appropriate use of observation, questioning, data organization and analysis, evidence-based claims, and science note booking skills • Food chains • Organisms and their environments	• Examine soil samples and identify their component; test garden soil for sand/silt/clay composition • Design and conduct experiments to see how changes in variables such as water, nutrients or sunlight affect plant growth • Investigate the role of earthworms in the garden ecosystem • Gather evidence and examine food chains in the garden ecosystem. • Create a composting system and identify the role of decomposers in the garden food chain
5	**Diversity of Life** **Life Science:** Demonstrates an understanding of basic needs of organisms, how the environment meets those needs and the structures and functions of organisms **Scientific Inquiry:** Demonstrates appropriate use of observation, questioning, data organization and analysis, evidence-based claims, and science notebooking skills • Cell, tissue, organ, organism • Diversity and adaptation	• Examine garden plants under a microscope to identify cells and cell structure • Examine soil for microorganisms • Study methods of seed dispersal by looking at the seeds which are produced in a garden • Examine process of transpiration in leaves of garden plants. • Explore plant reproduction by examining flowers of garden plants

Earth Science

K	**Sunshine and Shadows** **Earth Materials:** Demonstrates an understanding of change in patterns of the sun's apparent movement **Scientific Inquiry:** Demonstrates appropriate use of observation, questioning, data organization and analysis ,evidence-based claims, and science notebooking skills • Sun's daily pattern of movement	• Create a sundial in the garden area to observe sun's movement across the sky. Use chalk or rocks to mark the changes in the shadow length and direction over time
1	**Air and Weather** **Earth Science:** Demonstrates an understanding of change in patterns of daily/seasonal weather **Scientific Inquiry:** Demonstrates appropriate use of observation, questioning, data organization and analysis, evidence-based claims, and science notebooking skills • Daily and seasonal weather patterns, changes	• Establish a weather monitoring station near garden area, record air temperature, precipitation, wind direction and soil temperature
2	**Pebbles, Sand, and Silt** **Earth Science:** Demonstrates an understanding of properties of earth materials **Scientific Inquiry:** Demonstrates appropriate use of observation, questioning, data organization and analysis, evidence-based claims, and science note booking skills • Earth materials • Soil and rocks	• Investigate components of soil composition; use screens to identify size of rocks found in soil, add water to a vial to examine components of soil smaller than smallest rocks • Examine how earth materials have been used in the construction of the garden area • Identify the ingredients that combine to make garden soil, separate and sort ingredients in soil, observe and record the results of shaking soil and water in a vial • Compare garden soil to soil located in other parts of the schoolyard
3	**Earth Materials** **Earth Science:** Demonstrates an understanding of properties of earth materials **Scientific Inquiry:** Demonstrates appropriate use of observation, questioning, data organization and	• Include rocks in the garden; observe and record the properties of rocks. • Test rocks for the presence of mineral calcite (present in Limestone, can be tested using vinegar)

	analysis, evidence-based claims, and science notebooking skills • Rocks and Minerals	
4	**Land and Water** **Earth Science:** Demonstrates an understanding of properties of Earth materials and changes in the Earth's surface **Scientific Inquiry:** Demonstrates appropriate use of observation, questioning, data organization and analysis, evidence-based claims, and science notebooking skills • Weathering and erosion	• Simulate the affects of rain on land in the garden environment, • Compare the effect of water on the soil in an area with plants compared to a area of bare soil • Investigate how roots of garden plants hold soil in place and allow for the absorption of water and nutrients by plants • Observe and compare the components of soil, test garden soil for composition of sand, silt and clay particles. • Evaluate nutrient level of soil in regards to organic and inorganic matter • Plant seeds in different types of soil and compare growth rate
5	**Weather and Water** **Earth Science:** Demonstrates an understanding of change in patterns of the sun's apparent movement and daily/seasonal weather **Scientific Inquiry:** Demonstrates appropriate use of observation, questioning, data organization and analysis, evidence-based claims, and science note booking skills • Atmosphere • Water cycle • Sun's energy and atmospheric weather conditions	• Take weather measurement in garden area (air temperature, precipitation, wind speed and direction) • Research the growing season in relation to local climate • Experiment with plant growth and changing variables that are affected by weather • Observe water cycle as it affects plant growth in garden

Middle School Curriculum –Not Available Yet

Work in Progress

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Matrix for High School Biology Connections

Being a Scientist: SCHS2.1 Students understand scientific ways of thinking and working and use those methods to solve real life problems.	• Students use garden plants to design experiments using the scientific method which include controls, dependent and independent variables such as water, sunlight, and soil composition in the growth of plants
The Human Animal: SCHS3.4.8 Students will understand that multicellular animals have nervous systems that generate behavior. Nerve cells communicate with each other by secreting specific molecules. Specialized cells in sense organs detect light, sound and specific chemicals enabling animals to monitor what is going on in the world around them	• Students use garden plants to study tropism through analyzing sun exposure measurements and growth direction • Students use beneficial garden insects to study behaviors and evidence for plant compatibility and benefits
Evolution: Change Across Time: SCHS3.5.1 Students will: • predict the impact on species of changes to 1) the potential for a species to increase its numbers, (2) the genetic variability of offspring due to mutation and recombination of genes, (3) a finite supply of the resources required for life, or (4) natural selection; • propose solutions to real world problems of endangered and extinct species. SCHS3.5.2 Students will: • predict the success of patterns of adaptive behaviors based on evidence/data; • justify explanations of organism survival based on scientific understandings of behavior.	• Students use Mendel's pea plants to study variations of traits from blooms to collection of seeds, simulating Mendel's experiments to determine genetic variability • Students will use garden plants to research history of present day crops from their ancestral plants and determine the selective patterns chosen from mutations based on nutrition, limited resources for growth and preferred human tastes

Products of Evolution: Unity and Diversity SCHS3.4.7 Students will: • classify organisms into groups based on similarities; • infer relationships based on internal and external structures and chemical processes.	• Students will use garden plants and their produce to classify and group by similarities • Students use garden plants to study phermonal competition between different species of plants by planting compatible plants and incompatible plants near each other to compare
The Internal Environment of Organisms SCHS3.5.2 Students will: • predict the success of patterns of adaptive behaviors based on evidence/data; • justify explanations of organism survival based on scientific understandings of behavior.	• Students will use garden grown onion root tips to prepare microscope slides for viewing differentiated plant cell division phases showing evidence of plant growth
Maintaining Balance in Organisms SCHS4.6.1 Students will: • explain the relationships and connections between matter, energy, living systems and the physical environment; • give examples of conservation of matter and energy.	• Students will measure the temperature and moisture level of the garden soil over a period of time and record their observations of the plants and their growth/production related to changes in the physical environment
Human Health SCHS3.4.2 Students will understand that most cell functions involve chemical reactions. Food molecules taken into cells react to provide the chemical constituents needed to synthesize other molecules. Both breakdown and synthesis are made possible by a large set of protein catalysts, called enzymes. The breakdown of some of the food molecules enables the cell to store energy in specific chemicals that are used to carry out the many functions of the cell.	• Students will list the enzymes required to digest different foods and find their nutritional value to relate to the need for enzymes • Students will research the nutritional and calorie content of specific foods that they eat and the foods grown in the garden in order to compare the differences related to health • Students will research the calories required to work in the garden

The Cellular Basis of Activity SCHS3.4.4 Students will understand that plant cells contain chloroplasts, the site of photosynthesis. Plants and many microorganisms (e.g., Euglena) use solar energy to combine molecules of carbon dioxide and water into complex, energy rich organic compounds and release oxygen to the environment. This process of photosynthesis provides a vital link between the Sun and energy needs of living systems.	• Students will conduct an experiment covering some leaves on a plant with an opaque bag that does not allow sunlight to reach chloroplasts then take leaf samples from covered and uncovered leaves, make side view slides to see the loss of chloroplast activity in the covered leaves using microscopes
The Cycling of Matter and the Flow of Energy in Communities SCHS4.6.4 Students will: • describe the components and reservoirs involved in biogeochemical cycles (water, nitrogen, carbon dioxide and oxygen); • explain the movement of matter and energy in biogeochemical cycles and related phenomena.	• Students will maintain a compost pile using organic debris, dead plants and food scraps to use as fertilizer on garden but will need to test soil for essential nutrient balance of H_2O, CO_2, O_2, N, P, K.

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Cross Curricular Ideas

Taken from www.Schoolgardenwizard.com

Math

Kindergarten

- Measuring the schoolyard garden, both before and after construction, with various non-standard units (hand-widths, arm-len etc.).
- Identifying shapes in the garden.
- Recording the daily temperature on a classroom chart.

Grade 1

- Measuring the schoolyard garden both before and after construction with non-standard and standard units.
- Identifying two- and three-dimensional shapes in the garden.
- Collecting data on daily temperature in the garden and recording it on a classroom chart.
- Recognizing patterns in the garden.

Grade 2

- Measuring the garden in metric units.
- Dividing garden beds to gain understanding of simple fractions.
- Measuring the daily temperature and recording it.
- Identifying symmetry and asymmetry in the garden.

Grade 3

- Measuring the perimeter and area of the garden.
- Measuring temperature of air and soil in the garden.
- Dividing garden beds into fractional units.
- Identifying geometric shapes and concepts in the garden.

Grade 4

- Measuring the garden and creating a map to scale.
- Identifying geometric shapes and concepts in the garden.
- Using the garden measurements to demonstrate fractions and decimals.
- Create a graph to illustrate data from plant studies, such as a bar graph to show the number of seedlings that sprout or a line graph to show the growth of a plant over time.

Grade 5

- Measure perimeter and area of the garden using metric units.
- Calculate the volume of soil in a plant bed.
- Create graphs to illustrate data from plant studies in the garden.
- Identify geometric shapes and concepts in the garden.

Grade 6

- Measure the garden; calculate the volume of soil in a garden plot.
- Observe a plant over time and graph its growth over time.
- Solve story/word problems related to the garden.

Grade 7

- Measure and calculate perimeter, area, surface area, and volume of garden beds.
- Create graphs to show data collected from experiments in the garden.
- Identify geometric shapes and concepts in the garden.

Grade 8

- Perform experiments in the garden, collect numerical data, and create a graph.
- Identify geometric shapes and concepts in the garden.
- Practice various measuring techniques in the garden.

Social Studies

Kindergarten

- Identifying garden plants that are used or have been used by various cultures.
- Relate folk tales, fables, and myths to the garden.
- While discussing family roles of various cultures, highlight agriculture and/or gardening practices.

Grade 1

- Relate legends, myths, stories, and fables to the garden.
- Apply what is learned about rules of conduct and work to behavior in the garden.
- Relate study of elements of culture to the plants and activities in the school garden; grow plants used by various cultures.

Grade 2

- Apply rules of conduct, rights and responsibilities to behavior in the school garden.
- Introduce botanical/garden/agricultural details into study of the diversity of backgrounds of Americans; grow plants from other cultures in your school garden.
- Use the garden to illustrate simple economic concepts.

Grade 3

- Highlight gardens, plants, agriculture, and nature in study of cultural diversity. Grow plants from theses cultures in the school garden.
- Consider how inventions and new developments in agriculture have influenced gardening practices used in the school garden.

Grade 4

- Use the garden to illustrate economic concepts such as effects of supply and demand.
- Grow plants from Africa and Asia.

Grade 5

- Discuss botanical/agricultural contributions by various cultures and grow some of the plants discussed.

Grade 6

- Use the garden to illustrate economic concepts such as effects of supply and demand.
- Grow plants from Africa and Asia.

Grade 7

- Investigate how agricultural discoveries and inventions changed daily life and affect practices in the school garden.
- Grow plants farmed or used by indigenous people.

Grade 8

- Investigate plants used by various Western Hemisphere civilizations; grow some examples.

Geography

Kindergarten

- Compare a simple map of the garden to the actual garden.
- Create and identify symbols to represent features on the garden map.

Grade 1

- Compare a map of the garden to the actual garden.
- Use a map legend to identify features on the garden map.
- Observe the weather and seasons effect on the garden.

Grade 2

- Create simple maps of the school garden.
- Collect data on weather and seasonal changes in the garden.

Grade 3

- Create map of school garden using relative locations: distance, scale, and map symbols.
- Discuss the neighborhood and/or community involvement in the school garden.
- Collect data on weather and seasonal changes in the garden.

Grade 4

- Create a scale map of the school garden.
- Collect data on weather and seasonal changes in the garden. Discuss their impact on the school garden.
- Use the garden to describe interaction of climate, weather, soil, and natural vegetation.

Grade 5

- Highlight crops and other plants that moved with human migrations; grow some examples.
- Collect data on weather and seasonal change in the garden; compare this to historical patterns.

Grade 6

- Highlight crops and other plants that have influenced growth and decline of empires, political policy, and other human activities; grow some examples.
- Collect data on weather and seasonal change in the garden; compare this to historical patterns.

Grade 7

- Highlight crops and other plants that have human activities across the globe; grow some examples.
- Collect data on weather and seasonal change in the garden; compare this to historical patterns.

Grade 8

- Discuss the effect of climate on vegetation as it relates to the school garden.
- Use the school garden as an example when discussing patterns of land use.

Reading | English | Language Arts

Kindergarten

- Reading children's literature on plants, gardens, or nature.
- Exercises in following directions when planting or caring for the garden.

Grade 1

- Reading children's literature on plants, gardens, or nature.
- Writing and talking about the garden; asking questions about what is happening in the school garden.

Grade 2

- Reading children's literature on plants, gardens, or nature.
- Writing and talking about the garden; asking questions about what is happening in the school garden.

Grade 3

- Reading children's literature on plants, gardens, or nature.
- Writing and talking about the garden; asking questions about what is happening in the school garden.

Grade 4

- Reading children's literature, both fiction and nonfiction on plants, gardens, or nature.
- Writing and talking about the garden; giving a written or oral report on the garden.

Grade 5

- Reading children's literature, both fiction and nonfiction on plants, gardens, or nature.
- Identifying literary devices in such literature.
- Writing and talking about the garden; giving a written or oral report on the garden.

Grade 6

- Reading literature, both fiction and nonfiction on plants, gardens, or nature.
- Identifying literary devices in such literature.
- Communicating about plans and tasks in the garden; making group decisions.

Grade 7

- Reading literature on plants, gardens, or nature – including a selection of folk tales, fables, and parables, and multi-ethnic literature.
- Writing a report or a research paper on a garden-related theme.
- Communicating about plans and tasks in the garden; making group decisions. Group presentations on a garden-related theme.

Grade 8

- Relating Greek and Roman mythology to the garden.
- Writing a research report on a garden-related theme.
- Individual and group presentation on garden-related themes.

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Curriculum Connections

FOSS website www.fossweb.com/news/taking_foss_outdoors	Taking FOSS Outdoors contains lessons that correspond to the K-6 science modules. Also demonstrates both practical tips for taking your class outdoors and strategies for managing time outside.
JCPS Center for Environmental Education http://www.jefferson.kyschools.us/departments/environmentaled	Outdoor classroom information, links, curriculum connections, professional development, and more. A *Schoolyard Habitat Guide* can be found at this site as well.
National Gardening Association www.garden.org or www.kidsgardening.com/growingideas	Contains classroom projects, curriculum connections, resources and related articles.
Project Learning Tree www.plt.org	Publishes teacher's guides, offers professional development and support. Conservation and environmental programs K-High School.
United States Department of Agriculture Ag in the Classroom www.agclassroom.org	Website provides a teacher center, student center, resource directory, and more.
Growing in the Garden – K – 3 Curriculum Growing Curiosity About Agriculture, Natural Resources, Food and People: http://www.extension.iastate.edu/GrowingintheGarden/	K-3 curriculum developed by 4-H Youth Development and Iowa State University.
Cornell University www.gardenmosaics.cornell.edu	Garden Mosaics is a project that combines science education with gardening, intergenerational mentoring, multicultural understanding and community action. Great science and action project resources as well as interactive components. K-12.

Texas Schools www.RealSchoolGardens.org	Extensive garden curriculum based on Texas standards but relevant to all schools.
California Foundation for Agriculture in the Classroom www.cfaitc.org	Website provides free, downloadable lesson plans in all subject matters. Great resource! K-12.
Center for Eco-literacy Published by WorldLink Nourish: Food + Community WWW.NourishLife.org	A middle school curriculum guide and video exploring the story of food and the consequences of our daily choices and actions.
AIMS Education Foundation Activities Integrating Math and Science www.aimsedu.org	Math and Science curriculum for grades K- 12. Complete teacher resource guides, labs, activity sheets, and more. Specific to gardens: *The Budding Botanist*; *Crazy about Cotton*; *Primarily Plants*.
Great Explorations in Math and Science(GEMS) www.lhsgems.org	Developed at the Lawrence Hall of Science in Berkeley, CA. Publishes science and math curricula, offers professional development, and maintains support network.
Collaborating Classroom- My Garden website www/Collaboratingclassrooms.com	Website to look up lesson plans and share ideas.

VI. Community Resources and Contacts

Organizations that offer free materials, handouts, newsletters:

UK cooperative /Jefferson County Cooperative Extension Service 810 Barret Ave Louisville, KY 40204 502-569-2344 ext 113 http://ces.ca.uky.edu/jefferson/	The extension office has fact sheets on topics related to outdoor classrooms, urban gardening, and Horticultural agents. They can provide soil kits and soil testing information. Ask for volunteers from the Master Gardening Program.
Kentucky Association for Environmental Education(KAEE) PO Box 17494 Louisville, KY 40217-0494 http://kentuckyassociationforenvironmentaleducation.org	Can provide information through newsletters, yearly conferences, and other.
Kentucky Dept. of Agriculture P.O.Box 814 Frankfort,Ky.40602 502-564-4696 http://www.kyagr.com/	Kindergarten through Grade Twelve teacher workshops, a mobile teaching unit and teacher's guide for classroom activities are available.
 Kentucky Dept. of Fish and Wildlife #1 Game Farm Rd Frankfort,Ky. 40601 http://fw.ky.gov/ **Project help**	Biologists may be available to provide technical assistance related to the development of outdoor classrooms. Various posters, hand-outs, information sheets available.
Kentucky School Gardens Network http://www.kyschoolgarden.org/ email: KSGN@stfrancisSchool.org Take a survey at: http://www.surveymonkey.com/schoolgardens	Organization that can provide assistance in laying out outdoor classrooms and schoolyard gardens. May also be able to connect your school with community organizations
Food Literacy Project **9001 Limehouse Lane** **Lou.Ky. 40222** **www.foodliteracyproject.org** **foodliteracyproject@gmail.com** **502-491-0072**	The Food Literacy Project provides farm-based experiential education and entrepreneurial youth development programs that bring the Field-to-Fork experience to life for local youth. Provides PD to teachers, as well.

Operation Brightside www.louisvilleky.gov/Brightside/	Can assist with planning, plants and seeds, and more.
Youth Build Louisville 88 W.Chestnut , Rm.104 Lou.Ky. 40203 502-213-4257 info@youthbuildlouisville.org	Their mission is to capitalize on the positive energy of young adults by helping them rebuild their communities and their own lives with commitment to work, education, responsibility and family. They help with building projects and may help to build raised beds.
Salato Wildlife Center(part of Fish and Wildlife dept) Frankfort, Ky.	Offers field trips, Backyard Wildlife Habitat program, in-service workshops, and more.
Examples of other organizations/school systems using school gardens: Portland Elementary and Cane Run Elementary Jefferson County Public Schools Darlene Horton, Environmental Education teacher at Cane Run Elem. Brenda Stokes, Environmental Education teacher at Portland Elem.	Local schools that are involved in the Elementary Schoolyard Project, a partnership between the City Solutions Center and JCPS. A book is available about the project by calling City Solutions at 852-5720 or 587-7015.
St .Francis of Goshen www.Stfrancisschool.org	Local school that has garden they use for food. They have a greenhouse, compost and unique nature preserve.
California School Garden Network www.csgn.org	This is a research-based organization founded to create and sustain school gardens in every school in California. This site is an invaluable resource for grant information as well as for garden-based learning research.
Cultivating Community www.cultivatingcommunity.org	A non-profit agency that uses organic, sustainable practices to grow food in community and school gardens as well as at partnering farms and to distribute to those in need.

Boston Schoolyard Initiative(BSI) www.schoolyards.org	BSI helps schools design and build schoolyards that provide a rich environment for teaching and learning. BSI has help develop the supplement to ***FOSS, Taking Learning Outdoors.***
Edible Schoolyard Berkeley, California www.edibleschoolyard.org	Has a one acre garden and kitchen classroom at local middle school.
Texas Schools www.RealSchoolGardens.org	Extensive garden curriculum based on Texas standards but relevant to all schools.

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VII. Teacher Resource Books and Websites:

All New Square Root, Mel Bartholomew*Resource guide that is practical and useful. Contains charts and helpful tips.*

Secrets of a Kentucky Gardener, by Karen Angelucci
Secrets of a Kentucky Gardener is a practical, monthly journal providing easy-to-follow advice for Kentucky gardeners. Karen Angelucci gives helpful tips and advice for landscaping chores and mixes in quotes, lore and poetry for entertainment. Color snapshots from her garden round out this helpful book

Grimy, Grubby Gardening ,by Karen Angelucci

Grimy, Grubby Gardening shares the love of being up close and personal with nature. Children can discover the fun in planting a seed, growing a garden and nurturing the environment.

French Fries and the Food System: A Year-Round Curriculum Connecting Youth with Farming and Food, Sara Coblyn

How to Grow A School Garden, Arden Bucklin Sporer and Rachel Kathleen Pringle.
A complete guide for parents and teachers. Includes planning the project, raising funds, designing and preparing the space, and curriculum connections.

Growing Together: A guide for building inspired, diverse and productive youth communities, Greg Gale

Schoolyard Exploration and Discovery Guide for Teachers: Using You Knowledge About the Natural World, JCPS Center for Environmental Education

The Food System: Building Youth Awareness through Involvement, Alison Harmon et al

Getting Started: A Guide for Creating School Gardens as Outdoor Classrooms, Zenobia Barlow

Schoolyard Habitat Guide, JCPS and Brightside.

What if All I Ate Was…: A Food Systems Guidebook for Grades K-5, Elizabeth Patten et al

Growing Communities Curriculum: Community Building and Organizational Development through Community Gardening, Jeanette Abi-Nader et al

The ABC's of the Environment: An Elementary Investigation and Idea Springboard for Louisville and Jefferson County, Operation Brightside

Food Systems: Youth Making a Difference, The Northeast Network Food Agriculture and Health Policy Education Program 1997

Master Gardener Manual for Kentucky, Cooperative Extension Service

Garden Collaborative Training Manual, Marin County [CA] School Garden Collaborative

In the Garden Reusable Photo Stickers - 400 stickers for collage or scrapbook

Gardening With Children : Brooklyn Botanical Garden All-Region Guide

This comprehensive, lavishly illustrated handbook explores every aspect of plants with well-researched information supported by child-friendly graphs and diagrams. Over 40 hands-on activities.

Demonstrations in Soil Science, Purdue University- Dept. of Ag website
Demonstrations in Soil Science that provide labs and or experiments with soils in the classroom for secondary teachers.

Kids, Crops and Critters in the Classroom, Dept.of Ag website
Sixty lesson plans in all subject areas for grades K-6 (based on Illinois Learning Standards).

Nourishing the Planet in the 21st Century, Dept.of Ag Website
Curriculum features six student activities to help tomorrow's generation realize the challenge of feeding our growing population.

Websites:

www.Schoolgardenwizard.org Site includes ideas for garden basics, designing building, and planting as well as, curriculum activities and ways to sustain the garden.

www.nourishlife.org_ Nourish is an educational initiative designed to open a meaningful conversation about food and sustainability, particularly in schools and communities.

www.kidsgardening.org Classroom projects, resources, articles, and curriculum connections.

www.jmgkids.us *An international youth gardening program of the University Extension network.*JMG Mission: To grow good kids by igniting a passion for learning, success and service through unique gardening education.

www.eeweek.org National Environmental Education Week (EE Week), the nation's largest environmental education event held each year the week before Earth Day, inspires environmental learning and stewardship among K-12 students. EE Week connects educators with environmental resources to promote K-12 students' understanding of the environment. EE Week is a program of the National Environmental Education Foundation.

http://www.ca.uky.edu/agc/pubs/id/id128/id128.pdf UK Cooperative Extension Service Home Vegetable Gardening in Kentucky is just one resource available on website.

www.sustainlex.org/ Sustainable Communities Network is a community-based non-profit organization located in Lexington, Ky that endeavors to educate, inspire, build, create and empower sustainable cities.

www.lifelab.org Website includes ideas for professional development, as well as curriculum connections, links and more!

www.actionfor healthykids.org Action for Healthy Kids

www.foodandhealth.com Communicating Food for Health Newsletter

www.nutritionforkids.com Nutrition for Kids sponsored by 24 Carrot Press

www.dole5aday.com Kids website to play games related to nutrition

www.ars.usda.gov/is/kids/index.html Science 4 Kids from the Agricultural Research Service

www.smart-mouth.org A great interactive nutrition site for kids

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VIII. Suggested Reading Lists

Primary

A Handful of Dirt, Raymond Bial
Soil may not be alive, but amazingly, multitudes of microscopic creatures live there, battling it out in an eat-or-be-eaten world. These tiny creatures, invisible to our eyes, provide food for the insects that in turn feed the reptiles and mammals that live in and above the soil. You'll never look at the ground you walk on in the same way after Raymond Bial, an award-winning photo essayist, takes you on this eye-opening, down-and-dirty tour of one of the earth's most precious resources.

All the Places to Love, Patricia MacLachlan
The author explores a family's connection to the land. A young boy describes his favorite places on his family farm and remembers all the things he loves about living in the country.

Compost By Gosh! Michelle Eva Portman
Author Michelle Eva Portman presents a wonderful adventure where a young girl and her mom convert a storage box into a house for their new pets. The box becomes a vermicomposting bin and the pets are redworms. Portman's poetic, rhyming couplets provide a grand explanation of the process of vermicomposting in a manner that the youngest reader/listener will enjoy. The story is accompanied by adorable illustrations. The book includes How To and Resources sections to encourage further exploration of vermicomposting.

Compost! Growing Gardens from your Garbage , Linda Glaser
In this new kind of non-fiction story for children, the borders tell the story of seasons as a family practices composting and recycling. Beautiful warm illustrations indicate the value of these natural activities. Information on composting is provided in the back of book.

From Seed to Plant, Gail Gibbons
With colorful, fun illustrations and delightful, lighthearted text, children can learn about the life cycles of various types of plants. Includes a "From Seed to Plant Project."

Growing Vegetable Soup, Lois Ehlert.
This story offers basic information on gardening with a lovely touch of imagination. The unseen narrator describes the whole process of how he and his dad "grow vegetable soup," starting with their tools, going on to planting the seeds and sprouts, and ending with picking or digging up the vegetables and cooking them. The simple, direct text is accompanied by labeled illustrations of everything that's used, from the soil to the soup bowl. Ehlert's signature collage illustrations make each item colorful and distinctive, and give the little seedlings and growing plants their full measure of charm. If you've only seen the small board book edition, do yourself a favor and check out this edition, or the original picture book. (2-6)

Herman and Marguerite: An Earth Story, Jay O'Callahan
An earthworm and a caterpillar become friends and work together to bring a neglected orchard back to life. The absence of eyes on the earthworm shows a more accurate invertebrate than most books on worms. Friendship and working together is a key theme of the story. The back pages of the book explain about worms and how they help the earth, along with the bees and butterflies. Also included are plans to make a worm bin.

Life in a Bucket of Soil, Alvin and Virginia Silverstein
Fascinating book introduces grade-school youngsters to industrious ants, tunnel-building earthworms, snails and slugs, beetles, and many other creatures inhabiting the world beneath our feet. Vivid descriptions of how they live, breed and interact; their methods of locomotion, feeding and defense; and the effect they have on the soil in which they live.

Miss Rumphius, Barbara Cooney
As a child (Alice Rumphius) dreamed of travel... and of a house by the sea; but Grandfather had made one further request: 'You must do something to make the world more beautiful.' The simple story is accompanied by glowing pictures." *The Horn Book*. American Book Award. Full-color illustrations.

My Garden, Jane Conteh-Morgan
A girl does her simple gardening chores with the help of a friendly bird. These cheerful, mostly rhyming texts are pleasant to read and the interesting textures and childlike shapes of the collage illustrations work well with the theme, creating lively and expressive interactions.

Plantzilla, Jerdine Nolen
Busy in the Garden , George Shannon. Illustrated by Sam Williams.There's so much freshness and playfulness in this collection of gardening related poems, it's easy to understand why the illustrator chose to fill the pictures with images of toddlers. That may limit its appeal to older children... but no matter, some of these clever poems are clearly destined to be anthologized later. Meanwhile, younger children can enjoy the bouncy rhymes and word play, even if they're too young to appreciate many of the jokes. ("...the scarecrow--what a stuffed shirt!") The busy toddlers, happy animals and even smiling vegetables all add to the friendly air of the book, with light pen & ink pictures that never crowd out the words. (2 & up)

The Apple Pie Tree, Zoe Hall
A colorful collage shows the seasons and the cycle of nature through the life of an apple tree. An apple tree is seen as it grows leaves and flowers and then produces its fruit, while in its branches robins make a nest, lay eggs, and raise a family. Last page shows importance of bees to pollination and a recipe for apple pie.

The Garden in the City, Gerda Muller Ben and Caroline design their own garden in the backyard of a city townhouse. The seasonal joys of gardening are explained as the children watch the garden grow and change over the course of a year. Their friend, Luke, who uses a wheelchair, watches their garden and grows his own on a balcony next door.

The Garden of Happiness, Erika Tam
Set in multiracial neighborhood in New York, the neighbors get together to clean up an empty lot and plant a community garden. Marisol plants an unknown seed that turns out to be a sunflower. When the sunflower dies in the fall, she collects the seed to start again in the spring. The message here is that beauty can be found anywhere.

The Gardener, Sarah Stewart
Lydia Grace Finch brings a suitcase full of seeds to the big gray city, where she goes to stay with her Uncle Jim, a cantankerous baker. There she initiates a gradual transformation, bit by bit brightening the shop and bringing smiles to customers' faces with the flowers she grows. But it is in a secret place that Lydia Grace works on her masterpiece — an ambitious rooftop garden — which she hopes will make even Uncle Jim smile. Sarah Stewart introduces readers to an engaging and determined young heroine, whose story is told through letters written home, while David Small's illustrations beautifully evoke the Depression-era setting.

The Giving Tree, Shel Silverstein
This story of a boy who grows to manhood, and of a tree that gives him her bounty through the years, is a moving parable about the gift of giving and the capacity to love.

The Old Boot: An Ecology Story Book, Chris Baines
A delightful series to introduce young children to nature and the environment. Each story is set on a small piece of wasteland and tells, step-by-step, how the life of plants and animals changes and re-establishes itself when two children take a hand — by planting a seed, moving an old boot, having a picnic or visiting a nest-site.

Tops and Bottoms, Janet Stevens
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."—*Booklist*

Where Butterflies Grow, Joanne Ryder
In a field of lacy leaves, a small caterpillar hatches, grows, and sheds its skin, becoming a smooth, green creeper. It eats and changes some more, then in a sequence of remarkable close-ups, spins a sliken sling in which to pupate--until it finally bursts forth as a brilliant black swallowtail butterfly. Includes suggestions on how children can grow butterfiles in their own gardens. Color throughout.

Wild Wild Sunflower Child Anna, Nancy Carlstrom
An African-American child experiences a sense of wonder while exploring the outdoors. Bright pictures illustrate the joys of sun, sky, grass, flowers, berries, frogs, ants and beetles.

Wonderful Worms, Linda Glaser
A non-fiction book illustrated in the style of a picture book. The pictures of the boy and the worm are centered to show both the underground and above ground worlds. The physical characteristics and behavior and life cycle of common earthworm are described A question and answer page gives accurate information about worms.

Worms Eat My Garbage, Mary Appelhof
A new edition of the definitive guide to vermicomposting--a process using redworms to recycle human food waste into nutrient-rich fertilizer for plants. Author Mary Appelhof provides complete illustrated instructions on setting up and maintaining small-scale worm composting systems. Internationally recognized as an authority on vermicomposting, Appelhof has worked with worms for over three decades. Topics include: bin types, worm species, reproduction, care and feeding of worms, harvesting, and how to make the finished product of potting soil.

Books good for Grades 4-8

Compost! Growing Gardens from your Garbage ,Linda Glaser, 1996
In this picture book, a little girl explains how her family turns garbage and garden waste into soil using their compost bin. Information on composting is provided.

Counting Wildflowers , Bruce McMillan, 1986
1 - 20 are presented in full-page color photographs.

Jack's Garden, Henry Cole
A pleasing mixture of fact and fancy, this book uses a house-that-Jack-built-style cumulative rhyme as the starting point for a look at the basic components that go into a garden. As each verse adds a new element--soil, seeds, rain--the accompanying illustrations show different aspects of that element: soil, for example, might contain slugs, earthworms and fly pupas. The meticulous, subtly colored pencil illustrations are intriguing and evocative, and readers may well be inspired to follow Jack's example and start their own gardens.

Jody's Beans, Malachy Doyle. Illustrated by Judith Allibone
The basics of gardening are shown with effective simplicity in this story about a girl growing her first crop of runner beans. Jody's Grandpa brings her the seeds, and throughout the summer he tells her how to care for and enjoy the plants: watering, thinning, pinching them back, and finally eating their delicious produce. Although Jody does most of the work herself, her father and increasingly pregnant mother are often nearby enjoying the sights and her cat and toy rabbit are also interested observers.

Native American Gardening: Stories, Projects and Recipes for Families, Michael J. Caduto et al
The authors of the best-selling Keepers of the Earth "RM" series offer traditional methods of growing, maintaining, and protecting Native American crops. Contains craft projects, recipes, and more.

Seeds on the Go (Bowmar Nature Series), Aileen Fisher, 1977
Rhyming text and illustrations describe how seeds travel.

Something is Growing ,Walter Lyon Krudop, 1995
A planted seed goes berserk in this humorous story.

Ten Seeds, Ruth Brown, 2001(grades 3-6)
A counting book about predator/prey relationships and plant life-cycles.

The Reason for a Flower, Ruth Heller
The reason for a flower is to manufacture seeds, but Ruth Heller shares much more about the parts of plants and their functions in her trademark rhythmic style.

Wildflowers Around the Year, Hope Ryden, 2001

Beautiful photographs illustrate 38 different wildflowers. Accompanying text describes habitat, adaptations, and human uses of the plant.

Books good for grades 9-12

Buried Treasure: Roots and Tubers ,Meredith Sayles Hughes and Tom Hughes, 1998

Relates the history and describes the use and production of roots and tubers such

as potatoes, yams, carrots, radishes, and parsnips. Includes recipes.

1880's Agricultural Nation: Foods and Families on the Move, United States Dept.of Agriculture

Students will examine primary sources and answer questions about how crops were harvested, transported and sold in 1880's America.

Seed Leaf Flower Fruit , Maryjo Koch, 1999
Artist Maryjo Koch combines scientific fact, charming tidbits of information, and captivating watercolor illustrations to celebrate plants.

Seeds, Stems, and Stamens: The Ways Plants Fit into Their World ,Susan E. Goodman, 2001
Color photographs and concise text describe plant adaptations.

Slime Molds and Fungi ,Elaine Pascoe, 1998
Using natural science projects, this book explores and explains the different types and characteristics of slime molds and fungi.

The Curious Naturalist, Jennifer G. Ackerman
Based on a series of articles published in the Massachusetts Audubon Society journal of the same name, The Curious Naturalist provides a wealth of crafts, games, activities, and ideas for teaching children about the world of nature--from how mammals survive in winter to how to build an insect cage in summer. Organized by season, skillfully hand-lettered, and illustrated with line drawings, this handbook offers nature lovers, young and old alike, a potpourri of fascinating facts and folklore about common plants, animals, and natural phenomena.

The Young Naturalist, A.Mitchell
Practical guides designed for the novice -- Filled with helpful ideas about choosing and using equipment

The American Farm Bureau Foundation for Agriculture®
Recommended reading list

Note: Permission granted to copy. "Regarding AG book list it is fine to reprint in part or whole with indication of source." Curtis Miller AFBFA Director of Ed.

Composting

The Magic School Bus Meets the Rot Squad
by Joanna Cole
Best for ages 6-8
ISBN: 0-590-40023-1
Take a trip into a decomposing log and explore the organisms that help make compost. As with the other books in the Magic School Bus series, this book helps students examine a potentially unpleasant topic without the "ick" factor. This book also deals with the insects and mammals that aid in decomposition.

The Worm Café
by Binet Payne
Best for ages 14- Adult
ISBN: 0-942256-11-5
This is a comprehensive instruction guide about worm composting. It explains setting up and properly operating a composting system from A to Z. This book's 13 chapters contain information that could be used by teachers as instructional activities and as a set-up and operation manual for vermiculture. The book closes with a high quality reference list, student worksheets, a pre- and post-test, and bibliography.

Worms Eat My Garbage
by Mary Appelhof
Best for ages 14- Adult
ISBN: 0-942256-10-7
If you are interested in a comprehensive instruction guide about worm composting this is the book for you. It explains setting up and properly operating a composting system from A to Z. This book's 14 chapters ask and answer almost any question a beginning worm composter could pose. The appendices contain information which could be used by teachers as instructional activities. The book closes with a high-quality reference list and glossary.

Worms Eat Our Garbage
by Mary Appelhof
Best for ages 14- Adult,
ISBN: 0-942256-05-017
This resource is the follow-up book to the previous book listed. Note the similar title. This teacher resource is a comprehensive set of classroom activities about worm composting. The activities are, for the most part, educationally sound although the authors could improve on the written objectives, connection to standards, and delineate evaluation components. This text should not be viewed as the final authority on the many topics included. Its description of Rachel Carson and her capability as a scholar and biologist would be challenged by true research scientists. There are also objectionable anthropomorphized animals in a few sections.

Cooking

All in Just One Cookie

by Susan E. Goodman
Best for ages 6-12
ISBN: 0-06-009092-8
Focused around all of the ingredients that are used to make chocolate chip cookies, this book takes the reader and listener on a world-wide exploration. The trip is complete from butter produced by local dairy farms in the United States to Madagascar vanilla beans. The flour page explains how challenging it used to be to harvest wheat and the miracle preformed in a couple of hours by a modern combine. It also includes the mining information for salt and baking soda. This is an unusual find. The book's sole shortcoming is the anthropomorphized animals which are used to tell the story. As the teacher utilizes this resource, that issue can be addressed.

Cook-A-Doodle-Doo

by Janet Stevens
Best for ages 4-8
ISBN: 0-15-201924-3
In this work of fiction, a rooster and his eager assistants set out to make strawberry shortcake. Rooster is glad to have the help but none of the helpers know how to cook so Rooster forges ahead to teach the helpers the basics of cooking and baking with entertaining results. While a book containing anthropomorphized animals would normally not pass our scrutiny, this one cannot be resisted. It provides great opportunities to build correct vocabulary and teach basic cooking skills.

Kids Cooking

Best for ages 6-12, Teacher
ISBN: 0-932592-14-7
As with other Klutz Press books this book provides great information in a fun and colorful manner. It includes great simple recipes for kids to do with their parents or another adult. It includes recipes for play dough, face paint, giant soap bubbles and Fido's People Biscuits (doggie treats).

Mama Provi and the Pot of Rice

by Sylvia Rosa-Casanova Best for ages 6-10
ISBN: 0-689-84249-X
Using the pot of rice with chicken, Mama barters with her neighbors to create a bountiful meal. As she does so she also takes her granddaughter, Lucy, on a marvelous cultural tour of the neighborhood. Woven throughout the book are the Spanish names for a variety of foods.

The Science Chef

by Joan D'Amico
Best for ages 7-16 or adult
ISBN: 0-471-31045-x
One hundred fun food experiments and recipes are explored in a variety of topics in this 180 page book. The book explores questions from "How does yeast make bread rise?" to "What makes popcorn pop?" and "Why does whipped cream froth?" in a series of 20 chapters. The book also includes cooking skills, safety rules, nutrition in a nutshell, food safety and a nice glossary.

The Usborne First Cookbook
by Angela Wilkes
Best for ages 6-12 with adult supervision
ISBN: 9-780794-51479-2
The colorfully illustrated recipes of this book will interest children in learning to cook and developing basic cooking skills. The easy to use recipes often require little or no cooking. The book closes with handy hints, tips for preparing vegetables, basic kitchen equipment and an excellent glossary.

Production of Food

From Flower to Honey
by Robin Nelson
Best for ages 4-8
ISBN13: 978-0-8225-0717-8
This is one in an excellent series of books depicting the various plant and animal sources of food and fibers. As an early reader book, the content is minimal but fairly accurate. Each page has one to five sentences. The excellent photographs depict a mixture of modern production and processing equipment and practices. The book ends with a glossary.

From Apples to Apple Sauce
by Kristin Thoennes Keller
Best for ages 7-10
ISBN13: 978-0-7368-2633-4
This is one in an excellent series of books depicting the various plant and animal sources of food and fibers. As an early reader book, the content is short but fairly accurate. Each page has three to five sentences describing the harvest process through finished applesauce being sold to a consumer. It does a very complete depiction from tree to consumer. All of the images are of modern farm equipment and modern processing operations. The book ends with glossary, recipe, and recommended Internet sites.

From Fruit to Jelly
by Shannon Zemlicka
Best for ages 5-7
ISBN13: 978-0-8225-0942-4
As with the other books I this series, this early reader presents factual information in a few brief sentences per page with excellent pictures accompanying the test. All in all it does an excellent job of depicting the production of jelly from tree to consumer. This is information that most adults no longer understand.

Beneficial Insects

Nature's Friends, Ladybugs

by Ann Heinrichs
Best for ages 6-11
ISBN: 0-7565-0167-9
This is a very nice book about the beneficial insect ladybug beetle. The text describes the beetle's anatomy, their diets, overwintering, and predators. It closes with a very short glossary, trivia and additional resources to consult.

Praying Mantises (A True Book)

by Larry Dane
Best for Ages 7-13
ISBN: 0-516-26769-8
This book about the fascinating praying mantis is significantly enhanced by detailed photographs which capture praying mantises in all stages of life. The photographer has captured images of praying mantises mating, laying eggs, hatching, emerging from the egg case, dangling to the ground, stalking and consuming their prey, and molting. The text and photos take an amazing look at the various forms of camouflage employed by this insect in a variety of environments. A challenging glossary is included

Farming

All Kinds of Farms

by Daniel Shepard
Best for ages 4-7
ISBN: 978-0-7368-2871-0
This colorful and easy to read book has a few sentences on each page about different kinds of farms. The book shows big farms and small farms as well as tropical and cool climate farms. This would be a good book to introduce children to where different types of produce grow. The book also includes an idea for an extra project to do with children.

Farmer George Plants a Nation

by Peggy Thomas Best for ages 9-11
ISBN: 978-1-59078-460-0
Besides being a general and the first president of the United States, George Washington was also a farmer who enjoyed experimenting with seeds, tools and fertilizers. He also tinkered with plows and designed a sixteen-sided barn, and plotted the location of each new tree he planted. In this wonderfully illustrated book the reader will learn how George's created a self-sufficient farm at Mount Vernon, Virginia.

Fertilizers

The World's Greatest Fix: A History of Nitrogen and Agriculture

Best for ages 15 – adult
by G. J. Leigh
ISBN-10: 0-195-16582-9 and teacher reference
ISBN-13: 978-0195165821
This is a book that would serve many audiences in a high school library - social studies, science and environmental studies foremost. While this may not seem like a title of any great interest, any person truly interested in the future of humans, population and the environment, this book is a must. One cannot fully comprehend the challenges facing agriculture unless they understand the requirements of producing food. This book explores early civilizations through today's modern capability and explains why we are now capable of feeding so many people. The book contains segments on the agriculture of Egyptian, Mayan, Aztec, Chinese, Roman, and English civilizations and their quest to escape famine by producing adequate food on land. The author makes fairly complex information easy to understand and clear for the average adult with an interest in the topic. The work is well documented with 150 footnotes from excellent sources. The nitrogen fixation explanation would serve well in a high school science class (either biology or chemistry).

Food and Culture

America's Food

by Lynn M. Stone Best for ages 5-9
ISBN: 1-58952-314-8
As with Stone's other books this one has excellent photographs and accurate text. It does a nice job of weaving food and culture and the impact of one upon the other as well as the impact of both on our American culture. A nice inclusion is the description of how foods become accepted in the American melting pot and what each group contributes. One example is the bagel introduced by Eastern European Jews and the fact that Pennsylvania Quakers added cream cheese as a topping. The book ends with a nice glossary and description of a few regional specialties that are not likely to become regular menu items outside of their region of the country.

Midday Meals Around the World

by Michele Zurakowski Best for ages 7-10
ISBN: 1-4048-0281-9
Discover what children around the world eat for their midday meals. Menus include one or two meals from North and South America, Europe, Africa, Asia, and Australia. It also includes kidfriendly recipes.

Where Does Food Come From?

by Shelley Rotner and Gary Goss Best for ages 4-7
ISBN07613-2935-8
This colorful book shows the reader where many different types of food come from. Whether it

is an apple on a tree or rice going in wet fields called paddies, the book explores and explains where we get a lot of our different types of food.

Food Safety

Food Safety (A True Book)

by Joan Kalbacken
Best for ages 8-10
ISBN: 0-516-20757-1
This book covers various health concerns related to the food we eat and explains and discusses ways to avoid them. Personal responsibility for food safety and the importance of hand washing are stressed.

Food Safety (A True Book)

by Joan Kalbacken
Best for Ages 7-13
ISBN: 978-0516-2637-79
This book and its accompanying photos provide sound information about food safety for readers at an intermediate level. It contains excellent photos of several microbes as it describes that particular problem. All the essential messages of food safety are included and common myths are avoided. The book correctly describes food safety safeguards, governmental oversight and 27 individual responsibility. It does a good job of explaining pesticides and how food safety is maintained. Unlike many other books on this subject, this book contains information about food allergies. The information is accurate and provides good advice. The important focus on washing hands, fruits and vegetables because of bacterial contamination is excellent. The book ends with a glossary.

Food Safety

by Sharon Gordon
Best for ages 6-8
ISBN: 0-516-22294-5
This book and its accompanying photos provide basic information about food safety for early readers. It contains an excellent photo of bacteria and provides good advice. The important focus on washing hands, fruits and vegetables because of bacterial contamination is excellent. All the essential messages of food safety are included and common myths are avoided. The book ends with a unique photo ‘glossary.’

Gardening

Beyond the Bean Seed

by Nancy Allen Jurenka
Best as a teacher reference
ISBN: 1-56308-346-9
The 11 chapters created by the author in this book provide information, resources, student-centerededucational activities that connect the garden to required subjects, games, and recipes
for treats. While a great book for teaching ideas and methodology to connect the garden to required learning, this book will not stand alone. It is intended as a teacher companion reference.

If your school plans to weave a school garden into its curriculum and would like to have that garden impact education most effectively in a positive way, then this book is an excellent reference, especially for the elementary grades.

Carrots Love Tomatoes

ISBN: 1-58017-027-7
by Louise Riotte
Best for ages 14- Adult and Teacher Reference
As gardens and gardening move beyond the basics, this book would be a good resource for any gardener. It contains companion planting, pest control and fertilization techniques. The text provides advice on topics which include vegetables, herbs, fruit, grasses and field crops, ornamental trees, and shrubs. A detailed overview of poisonous plants would benefit any reader. The book includes a garden planning section which includes plans for a weekend garden, postage stamp garden, children's garden, kitchen herb garden, able disabled garden (raised), spirit garden, mini-garden and suggestions for window boxes.

A Child's Garden of Verses

by Robert Louis Stevenson
Best for ages 4-8
ISBN: 0-689-82382-7
This book celebrates children and nature through poetry. Throughout sixty-six poems, the author recalls the joys of his childhood, from sailing boats down river, to waiting for the lamplighter, to sailing off to foreign lands in his imagination. Its poetry can be used to introduce the topics and techniques to children as well as connect them to agriculture. From golden apples to meadows or climbing cherry trees and enjoying the activities of a cow, these poems celebrate the farm life of the 19th century.

From Seed to Plant

by Gail Gibbons
Best for ages 6-9
ISBN: 0-8234-1025-0
As with all of Gail Gibbons' books, she depicts information accurately in both text and image. This is one of her stronger books from an illustration standpoint. The book describes plant structure and function. It also includes how seeds move and the mechanisms that enable them to move. The book ends with an illustrated glossary of terms.

The Garden of Happiness

by Erika Tamar
Best for ages 5-8
ISBN13: 0-15-230582-329
This is a story about an inner-city neighborhood's effort to clean up a vacant lot and transform it into a community garden. Colorful, multi-cultural images enhance and help tell the story. A little girl, Marisol, finds a small patch of her own where she plants a large flat seed. As the garden grows, her little seed out grows the rest of the plants, surprises everyone and becomes the happiest plant in The Garden of Happiness. This book would be an excellent resource to initiate planning a school garden or working to plant one in the spring.

Gardening Wizardry for Kids

by Patricia Kite
Best for ages 6-adult and Teacher Reference
ISBN: 0-8120-1317-4
This colorful book on gardening is an excellent book to introduce children to gardening. Packed with fun activities, facts, folklore, history, and gardening tips it is just the tool needed to get kids hooked on gardening. Divided into six sections, the book has history, fun activities, directions for

science experiments, insect and earthworm-raising tips, and a section on herbs and craft projects.

Inch by Inch

by David Mallett
Best for ages 4-7
ISBN: 0-06-443481-8
This book is an illustrated version of the song of the same title. If one wishes to interest students in gardening from an early age this is a great place to begin.

Lily's Garden

by Deborah Kogan Ray
Best for ages 4-8
ISBN: 0-76-131593-4
Lily's grandparents move all the way across the country, but stay in touch with Lily by sending her plants and produce from their new home. Each spread deals with a new month and garden challenge for Lily. Her grandparents' advice helps her cope with the realistic challenges presented by managing a successful garden. This book is also a good exploration of seasonal changes.

Our Generous Garden

by Anne Nagro
Best for ages 5-8
ISBN: 978-0-9793739-4-7
Based on a successful school garden project, this engaging book is written from a child's perspective and is the perfect complement to classroom curriculum and home-based learning. Even better, picky eaters will be intrigued by what they can grow with their own hands, and what they might even try with a delicious recipe! They east to read text and pop art images grab kids' attention. The book also includes a section on what your garden needs to grow.

The Summer My Father Was Ten

by Pat Brisson
Best for ages 5-13
ISBN: 1-56397-435-5 ISBN: 1-56397-829-630
One of the most touching stories available, this book takes a growing up journey. The cross-generationalstory uses the vandalism of a neighborhood garden to explore the lessons learned by the author's father. The thoughtlessness of youth is met with real consequences in the life of the elderly gardener. The unsentimental tale of mending one's ways and changing a life is illustrated by beautiful watercolors. If only a few books can be included in a library this is one that is a must for many reasons. Those who know the investment of time, hope and love made by anyone growing a crop will make good use of this story to express that investment.

This Year's Garden

by Cynthia Rylant
Best for ages 4-7
ISBN: 0-689-71122-0
This short book takes us on a year-long journey through a garden. Beginning in winter, the planning takes place for the next growing season. The story follows the activities of each season until we arrive back at winter and begin again.

Harvest and Harvest Celebration

Harvest Year

by Cris Peterson
Best for ages 5-9
ISBN: 1-56397-571-8
Cris Peterson captures the concept that every single month food is being harvested somewhere in the United States with colorful and dramatic photos by Alvin Upitis. This book is a collaboration of clear and concise text and a map of harvest locations across the country. With an array of photographs that capture the colorful fields and orchards and a variety of workers and machines and children sampling foods from the year's harvest. While not every state is included, 27 states representing every region of the country are included, from Maine to Hawaii and Alaska to Florida.

Harvest Time

by Jerry Cipriano
Best for ages 4-7
ISBN: 0-7368-2926-1
This is an early reader book with short statement sentences in a large font. While the content is minimal this would be a very good book for a teacher to use to begin to teach reading for content. The content and pictures could be used to begin to teach about the life cycle and seasons in science. What is particularly nice about this book is that the photographs and text depict how the fruit, vegetables or grain are grown, show the plant as it is either growing or ripe, describe and the harvest process. The strawberry section has an adorable picture of a small boy peaking under the leaves of the strawberry plant searching for the ripe berry. The photographs enhance the text and depict modern agriculture including apples being picked from dwarf trees.

A Midwestern Corn Festival: Ears Everywhere

by Lisa Gabbert
Best for ages 6-8
ISBN: 0-8239-5341-631
This book explains the importance of corn as a crop. It explores corn's origins, history, and examines the rides, pageants, and other activities at a corn festival.

Issues to Address

Food: The Struggle to Sustain the Human Community

by Jake Goldberg
Best for ages 12-18
ISBN: 0-531-11411-232
This book's author looks at the struggle to feed the human population from the earliest days through the present. It provides a nice overview of the development of agriculture but comes up short as it explores agriculture's future. Surprisingly, a discussion of biotechnology is absent. This book is recommended in spite of that because it does a credible job in other areas.

Invasive Species in a Changing World

ISBN: 1-55963-782-x
by Harold A. Mooney
Best for ages 15-adult, and Teacher Reference
As the world becomes smaller, the issue of invasive species becomes ever more probable and their impacts more damaging. Though noxious, invasive species have long been recognized and challenged by agriculture, others are now taking notice with the threat of a bird flu pandemic. Invasions of fire ants and Africanized honeybees have made average Americans realize that this is a very real threat to all. This book provides a well-referenced, comprehensive overview of the issues and looks not only at the ecological implications but also the economic costs.

Eating the Alphabet: Fruits and Vegetables from A to Z

by Lois Ehlert
Best for ages 2-5
Price: 0-15-224435-2
In brilliant watercolor collages, Lois Ehlert introduces young readers to a wide variety of fruits and vegetables from A to Z. Clearly labeled and easy to identify, the collection includes favorites such as apples, bananas, potatoes and tomatoes - as well as some less common edibles like jalapeño peppers and radicchio. This book includes a glossary which offers useful an interesting information about each fruit and vegetable.

Natural Fibers

From Plant to Blue Jeans

by John L'Hommedieu
Best for ages 4-8
ISBN: 0-516-20366-5
This wonderful photo essay documents the process of making blue jeans. From the first step of planting cotton to sewing the finished denim into jeans, the process is captured in image and text.

From Cotton to T-Shirt

by Robin Nelson
Best for ages 7-10
ISBN13: 978-0-8225-4661-0
As with the other books in this series, this is an excellent book. As an early reader book, the content is short but fairly accurate. Each page has three to five sentences. It does a very complete depiction from cotton plant to harvesting and processing. All of the images are of modern farm equipment and modern processing operations. The photos in this book greatly enhance the text. The book ends with a glossary.

Nutrition

Eating Well

by Lisa Trumbaur
Best for ages 4-7
ISBN: 0-7368-2937-7
This is an early reader book with short statement sentences in a large font. While the content is minimal this would be a very good book to use to teach reading for content as well as good nutrition. The photographs enhance the text and depict a complete array of foods in each food group. Unlike many nutrition books at this age level, this book avoids the use of the food guide pyramid but still uses the food groups. The teacher will need to provide the image of the food guide pyramid if he/she wishes to include it in instruction.

The Edible Pyramid

by Loreen Leedy
Best for ages 4-8
ISBN13: 978-0-8234-2075-936
While we strive to avoid the anthropomorphic representation of animals we will make exceptions for excellent books. This well-written book on nutrition and the food-guide pyramid is one such example. The text does depicts the normal foods that various animals would consume (the pelican hopes there is seafood while the frogs hope there are fresh flies). Also the author represents all foods equally. On the page depicting protein foods there are seafoods, eggs, turkey, chicken, ham, meatballs, steak, and fish. The text and illustrations are accurate. This would be a great way to introduce the nutritional recommendations of the food-guide pyramid.

The Monster Health

by Edward Miller
Best for ages 7-11
ISBN 13: 978-0-8234-2139-8
ISBN 10: 0-8234-2139-2
A friendly green monster helps make what could be a dull and dry series of health lectures into a fun romp through life including scattered trivia. Focusing on nutrition and healthy habits, more than two-thirds of the book is nutrition information. The balance focuses on exercise, sleep and healthy habits. While the book is fun, it is also packed with information from the food pyramid, food groups and their nutrients, reading nutrition labels, and mealtime suggestions. Sections of food issues will need explaining to younger students but provide and excellent place to initiate the discussion.

The New Food Guide Pyramid, Eating Healthy

by Emily Green
Best for Ages 5-7
ISBN13: 978-0-531-17850-8
This early reader book provides very basic information about the revised food guide pyramid. The simple, yet direct and accurate information is complemented by the excellent photographs. The book ends with a glossary. We recommend the whole series.

The Quest to Digest

by Mary K. Corcoran
Best for ages 4-8
ISBN: 1-57091-664-038
Children always wonder what happens after our food is swallowed and where does it go? Follow an apple's journey from the mouth to the small intestines on a quest to learn about the digestive system. Many questions regarding burps, passing gas and vomit will be answered. Accompanied by comic illustrations this book is fun, fascinating and concise for all readers. Although not technically an agricultural topic this resource will help teachers begin to discuss nutrition and healthy food choices as students learn how their body digests food.

When Vegetables Go Bad

by Don Gillmor and Mary Louise Gay
Best for ages 6-9
ISBN: 1-55209-261-5
This work of fiction is a great tool to introduce nutrition to younger audiences and encourage them to eat vegetables. The title might mislead you to think the vegetables in the book are spoiling but the story is really about vegetables behaving badly because Ivy refused to eat them. Instead of eating her vegetables, Ivy stuffed them into her pocket. At night when she is sleeping, the vegetables form a taunting chorus in Ivy's sleep and invade her dreams with nasty songs. No matter how Ivy tries to run from this nightmare, the vegetables chase her down and continue their harassment. Once she admits she likes vegetables, the nightmare stops

Fruits

The Berry Book

by Gail Gibbons
Best for ages 4-8
ISBN: 0-8234-1697-6
Gail Gibbons has developed another excellent book on an agricultural topic. This time she weaves her storytelling magic about all sorts of berries. Her discussion of how berries grow in the wild and how they are cultivated in fields and gardens domestically includes the impact of climate. The author describes the uses of edible berries and even gives directions on how to grow strawberries. The colorfully illustrated book includes recipes for berry jams, pies and ice creams.

Johnny Appleseed: A Tall Tale by Steven Kellogg

Best for ages 6-9
ISBN: 9-7806-8806417-445
While this book has been in print since 1988, its story and artwork are timeless. The well known story of Johnny Appleseed is enhanced with the author/artist's complex and colorful illustrations. A great addition to any library, this book is also a great fictional introduction to the topic of apples. As teachers weave folktales into their language arts instruction, this book is a must.

Tall and Tasty: Fruit Trees
by Meredith Sayles Hughes
Best for ages 7-13
ISBN: 0-8225-2837-1
Tall and Tasty: Fruit Trees is packed with information about apples, peaches, mangoes, figs and citrus. Each chapter examines the discovery and migration of these plants as well as their roles in cooking, technology and world cultures. Through a close-up look at planting, pollination, harvesting, and processing, readers will also learn how fruit crops make their way from field to table.

Vegetables

Buried Treasure, Roots and Tubers
by Meredith Sayles Hughes
Best for ages 10-16
ISBN: 0-8225-2830-4
This series provides a wealth of information on each topic. Discussing foods which grow in the ground can be tricky because some are roots, some modified stems, some leaves, etc. This book handles those issues nicely by just addressing roots and tubers. The book covers five topics in some detail the last of which is divided into three root crops.

From Eye to Potato
by Ellen Weiss
Best for ages 4-7
ISBN13:978-0-531-18535-3
Each of the books in this series by the same author begins with vocabulary words and photographs depicting the meaning of the words. It identifies the term in bold letters and instructs the reader to look for the word in the text in its bold format. As a result this is a great vocabulary builder and reading for content book. Each page has three to five sentences and the facing page has an excellent photograph with a caption. The content covers how potatoes are grown and harvested. It does not show mechanical harvesting. That is one flaw. The book also describes how potatoes are grown from potato sections termed see potatoes but then describes and displays the fruit of the potato and seed without explaining that the seed is only used to breed potatoes not grow them commercially. The book ends with the potato life cycle and a glossary.

From Tomatoes to Ketchup
by Roberta Basel
Best for ages 7-10
ISBN13: 978-0-7368-4286-1
This is another great book in an excellent series of books depicting the various plant and animal sources of food and fibers. As an early reader book, the content is short but fairly accurate. Each page has three to five sentences. It does a very complete depiction from the growing plant to processed product. All of the images are of modern farm equipment and modern processing operations. The photos in this book greatly enhance the text. The book ends with a page on George Washington's love of ice cream, a glossary, recipe, and recommended Internet sites.

Green Power, Leaf and Flower Vegetables

by Meredith Sayles Hughes
Best for ages 10-18
ISBN: 0-8225-2839-8
This series provides a wealth of information on each topic. The book covers cabbage, broccoli, artichokes, spinach, Belgian endive, and lettuce. Each chapter covers the vegetable's history, sources, production methods and uses.

Growing Vegetable Soup

by Lois Ehlert
Best for ages 2-5
ISBN: 0-15-232575-163
This colorful book is designed to capture the attention of young children and interest them in gardens. The bright (florescent) colors and shapes will capture the attention of most preschool children.

The Life Cycle of a Bean

by Linda Tagliaferro
Best for ages 4-7
(Gail Saunders-Smith Ph.D, Consulting Editor).
ISBN13: 978-0-7368-6714-6.
This early reader book captures the development of the green snap bean from seed through germination, growth, flower development and pollination and on to seed development. It does not depict commercial green bean production but focuses on the growth of a few plants. This would be an excellent book to teach about the life cycle of a plant. The book includes a glossary, recommended reading list and suggested Internet sites.

The Life Cycle of a Carrot

by Linda Tagliaferro
Best for ages 4-7
(Gail Saunders-Smith Ph.D, Consulting Editor).
ISBN13: 978-0-7368-6714-6.
As with other books in this series, this early reader book captures the development of a carrot from seed through germination, growth, flower development and pollination and on to seed development. Unfortunately, it mixes wild carrot (Queen Anne's Lace) with domesticated carrot production. It also refers to pulling carrots out of the ground. This is a bit misleading since most carrots need to be dug and pulling would only result in breaking off the foliage in all but the softest of soils. The book includes a glossary, recommended reading list and suggested Internet sites.

I Like Potatoes

by Jennifer Julius
Best for ages 5-7
ISBN: 0-516-23134
This early-reader book gives the basics about potatoes. It focuses mainly on how potatoes are cooked and eaten rather than growing or history.

Lettuce Introduce You

by Laura Purdie Salas
Best for ages 4-7
ISBN 13: 978-1-4296-1703-1
This fun assortment of poetry explores different poem formats and nutrition at the same time. Read to the youngest children they will find delight in humor and amusing pictures as well as the clever word use.

Plant Plumbing: A Book about Roots and Stems

by Susan Blackaby
Best for ages 7-9
ISBN: 1-4048-0109-X64
While the illustrations of this book detract from its overall appeal, the content is excellent. The book's focus on roots and stems is an unusual approach. The author explains the role of roots and stems, the two types of roots, stems found both above and below ground, function of their structures and how both help plants survive. It also includes a depiction of a seed germinating and some simple experiments. Included at the back of the book are a few Web sites and four additional books to read on the subjects.

Plant Stems and Roots

by David M. Schwartz
Best for ages 5-7
ISBN: 0-8368-2581-0
This early-reader book gives the basics about plant roots and stems without too much detail. The right-hand side of the page gives a clue (sometimes a strange one) as to what the reader will find when the page is turned.

Potato

by Larry Zuckerman
Best for ages 13- Adult
ISBN13: 978-0-86547-578-6
This engaging book details the story of how this humble vegetable had an enormous impact on the Western world. It covers history from 11,000 B.C. to today, with a special emphasis on the time period from the 1700s through World War 1. This is not a scientific study but rather a social history. The author's documentation and insights make for a unique study of a major food.

Taking Root

by Allan Fowler
Best for ages 5-7
ISBN: 0-516-27058-3
This early-reader book begins to teach children about roots. Roots used for food are explored along with other root functions. The information is limited but appropriate for this age level.

Tomatoes (A True Book)

by Elaine Landau
Best for ages 7-13
ISBN: 0-516-26773-6
As with the other books written by this author, this text provides an accurate and comprehensive look at tomatoes. From the early cultivation of tomatoes by the Aztecs to the introduction of the tomato to Europe by the Spanish Conquistadors and modern culture today, the text and photos tell tomato's story. The author has even depicted and described backyard, greenhouse and large

scale tomato production. The story of processing the tomato into a variety of products is enhanced by including the rise of the Campbell Soup Company. The book ends with a good glossary.

Tomatoes, Potatoes, Corn and Beans

by Sylvia A. Johnson
Best for ages 12-Adult
ISBN: 0-689-80141-665
This excellent book describes how foods from North and South America changed eating around the world. It focuses on corn, beans, peppers, peanuts, potatoes, tomatoes, and chocolate but also includes other foods that originated in the Americas. Can you imagine Italian food without the tomato? Indian curries without the pepper? German or Irish food without the potato? Corn is now the most widely grown grain in the world. This book details the history of those transitions and is illustrated with historic artwork and modern photos. For anyone wishing to understand the real gold found in America, this book is an essential read.

The Ugly Vegetables

by Grace Lin
Best for ages 6-9
ISBN: 0-88106-336-3
This fiction book is a good introduction to multiculturalism and the benefits of differences. A little girl is distressed by the ugly vegetables her mother is growing in their garden. The neighbors were all growing pretty flowers that filled the yards with color, aromas and pretty butterflies flitting about. But the plants grown by the girl's mother in her garden looked strange and the vegetables it yielded were ugly and bumpy. When it came time for harvest, the girl's mother filled the air with a wonderful aroma. The whole neighborhood stopped to partake of the delightful scent. Before long the neighborhood is gathering to trade their flowers for her soup. The book closes with a list of the "ugly" Chinese vegetables, their names, pronunciations, images, and descriptions along with the recipe for the "Ugly Vegetable Soup."

The Vegetable Alphabet Book

by Jerry Pallotta
Best for ages 4-7
ISBN: 0-88106-469-6
A wonderful blend of facts and humor make learning about vegetable gardening fun and easy for children. The wonderful, accurate illustrations guide children through a variety of vegetables and terms from A to Z relating to vegetable gardening.

What's for Lunch, Corn

by Pam Robson
Best for Ages 6-10
ISBN: 0-516-20823-3
As with the other books in this series, the colorful, high-quality photographs complement the text and tell half the story. The book accurately depicts planting corn, corn growth, plant structure, pollination, mechanically harvesting sweet corn, and processing sweet corn. The book accurately portrays insect damage in one of the best photographs of the whole series, need for chemical intervention to halt that damage and aerial spraying. The books one short coming is that the author does not understand or explain the difference between sweet corn and field corn. It treats them as one and the same and the reader should address this with students. The book concludes with familiar foods made from corn and an excellent glossary.

What's for Lunch, Peas

by Claire Llewellyn
Best for Ages 6-10

ISBN: 0-516-21549-3
This is one of the best books in the series. The colorful, high-quality photographs are excellent. The book accurately depicts planting seed through harvesting, storage, packing and processing peas. Included with the production photos are a series of three time-lapse photos of seed germination and seedling growth. The book accurately portrays aerial spraying to control pests. Perhaps the best inclusions in the book are the two photos of mechanical pea harvest. As with the other books in the series, an excellent glossary will help build vocabulary.

What's for Lunch, Potatoes

by Claire Llewellyn
Best for Ages 6-10
ISBN: 0-516-26223-866
The colorful, high-quality photographs complement the text and tell half the story. The book accurately depicts planting seed potatoes, potato growth, fields of growing and harvested potatoes, harvesting, storage, packing and processing potatoes. Interspersed with these production photos are a series of "below the soil" photos which expose tuber formation and growth. The book concludes with familiar and not-so-familiar foods made from and with potatoes. An excellent glossary will help build vocabulary.

Grains and Grain Foods
Bread and Wheat

Bread

by Eric Treuille
Best for ages 12-Adult
ISBN: 978-0756-1889-6
This book moves beyond the basic how bread is made from wheat to display and explains how cultures interpret bread and how bread impacts culture. It explains and displays a wide variety of bread from across the globe, explains the characteristic of each and explains the area it developed and sometimes what its name signifies. This is an updated, paperback edition of the book *Ultimate Bread*.

Bread, Bread, Bread

by Ann Morris
Best for ages 6-8
ISBN: 0-688-06334-9
This book shares the idea that people eat bread all around the world and explores the forms which bread takes in each of those cultures. As an early-reader book this book does not contain too much detail but the excellent photographs help tell the story very well. The index contains pictures and identifies where each type of bread originates.

Bread Comes to Life

by George Levenson
Best for ages 6-8
ISBN: 1-58246-114-751
This book shares the story of wheat in a rhyming poem and excellent photographs.

Unfortunately, the effort to successfully complete the rhyme precludes using modern production techniques in the telling. Accurate up to the baker sowing the seed in his back yard, the story includes hand harvesting and threshing the wheat instead of the modern use of sowing seed in large fields using a seed drill and combine. While the poem and images are not technically incorrect they are not modern. The best use of this book would be as an accompaniment with another book that included modern images. The index contains pictures and detailed descriptions and student centered activities.

Bread Is For Eating

by David and Phyllis Gershator
Best for ages 6-8
ISBN: 0-8050-5798-6
While this book does depict some stereotypical images it does provide an accurate description of the story of wheat. The story is colorfully illustrated using modern production techniques for the most part as it takes the reader on a journey from field to meal. A nice addition is the bilingual text, introduction of Spanish words, Guatemalan fold art and the depiction of a variety of peoples and the forms their breads take.

Everybody Bakes Bread

by Norah Dooley
Best for ages 5-8
ISBN: 0-87614-895-X
On a rainy Saturday, what is better to do then to bake bread? Carrie and her brother bicker so much that their mother sends Carrie on a fool's errand to borrow a rolling pin. Each house she stops at a new kind of bread is offered to her and by the time she returns home the bread is ready at her house. This tummy warming story is both informational and fun for families to enjoy together as each new kind of bread represents a household of a different culture.

Everybody Eats Bread

by Janet Reed
Best for ages 4-7
ISBN: 0-7368-2909-1
ISBN13: 978-0-7368-2909-0
This is an early reader book with short statement sentences in a large font. While the content is minimal this would be a very good book for a teacher to use to begin to teach reading for content. The content and picture could be used to begin to teach about cultures and meeting human needs in social studies. The photographs are excellent and enhance the text.

From Wheat to Bread

by Kristin Thoennes Keller
Best for ages 7-10
ISBN13: 978-0-7368-2638-9
This is one in an excellent series of books depicting the various plant and animal source of food and fibers. As an early reader book, the content is minimal but fairly accurate. Each page has three to five sentences. The best feature of the book is that it begins with depicting wheat kernels and moves to harvesting wheat. Most students and teachers have never seen wheat seeds. The excellent photographs depict modern production and processing. The book ends with wheat weaving, a glossary, a recipe and recommended Internet sites.

From Wheat to Bread

by Pam Marshall

Best for ages 4-8
ISBN: 0-8225-0715-352
This is one in an excellent series of books depicting the various plant and animal sources of food and fibers. As an early reader book, the content is minimal but fairly accurate. Each page has one to five sentences. The best feature of the book is that it begins with planting a wheat field as well as harvesting one. This is rarely seen in children's books or textbooks. The excellent photographs depict modern production and but the processing depicts much more old fashioned processes and equipment. The book ends with a glossary.

From Wheat to Bread

by Stacy Taus-Bolstad
Best for ages 4-8
ISBN13: 978-0-8225-0715-4
This is one in an excellent series of books depicting the various plant and animal sources of food and fibers. As an early reader book, the content is minimal but fairly accurate. Each page has one to five sentences. The best feature of the book is that it begins with planting a wheat field as well as harvesting one. This is rarely seen in children's books or textbooks. The excellent photographs depict modern production and but the bread making depicts much more old fashioned processes and equipment. The book ends with a glossary.

From Wheat to Pasta

by Robert Egan
Best for ages 6-9
ISBN: 0-516-26069-3
The excellent photographs beautifully illustrate this story from the wheat to the finished meal. The photos and story depict the growing wheat, combining wheat, grain elevators, milling flour, and making pasta. The book closes with photos and descriptions of six different types of pasta.

Loaves of Fun

by Elizabeth Harbison
Best for ages 8-adult
ISBN: 1-55652-311-4
The text of this book is much better than its black-line illustrations. The illustrations are rudimentary at best while the text is well researched and written. The book starts in 8000 B.C. in Asia with the first known use of a ground grain and water mixture. It ends with a look at a modern bakery today. Included are breads from many countries, cultures and celebrations. Beyond bread, it includes recipes for poster paints, squeeze paints and play dough that use wheat flour as an ingredient. The book ends with a well-developed glossary.

Ultimate Bread

by Eric Treuille and Ursula Ferrigno
Best for ages 12-Adult
ISBN: 0-7894-3513-653
Other books make the wheat-to-bread connection for younger students. This book moves beyond that to display and explain how cultures interpret bread and how bread impacts culture. It explains and displays a wide variety of bread from across the globe, explains the characteristic of each and explains the area it developed and sometimes what its name signifies.

Corn and Corn Foods

Burro's Tortillas

by Terry Fields
Best for ages 5-7
ISBN13: 978-934359-18-1
This is a tortilla version of the little red hen's story of bread making from wheat but the burro make tortillas from corn. The story follows the same pattern that none of the characters but the burro is interested in helping when there is work to be done but they are interested in eating the product of that work. While we usually do not recommend books that anthropomorphize animals, in this instance the accuracy of the process warrants that we include this book. The book concludes with classroom appropriate student activities and instructions for making tortillas.

Corn (A True Book)

by Elaine Landau
Best for ages 7-13
ISBN: 0-516-26759-0
This excellent book takes a thorough look at corn by providing high quality, sound information in both text and image. It provides a comprehensive overview of types of corn and their uses, how and where corn grows, the history of corn, and the uses of corn for food and more. The book provides text and photos which describe using corn in both food and non-food items and even the most surprising uses. It also includes a section on corn breeding and its use in creating renewable fuels and biodegradable plastics. The book ends with a good glossary.

Corn

by Gail Gibbons
Best for ages 7-11
ISBN13: 978-0-8234-2169-554
As with most of the books developed by Gail Gibbons this one depicts the agricultural information correctly. The artwork is simple but correct. Unlike most books about corn this book describes the difference between the four major types of corn and provides further descriptors of their individual uses. It is unique in that it depicts the corn silk as the pollen tube that it is and an illustration shows the process of fertilization of a single kernel on an ear. It also depicts the multitude of ways in which corn is used in a variety of food and non-food items. If there was only one book on corn that could be purchased for a school this would be the book that we recommend.

Corn

by Lisa Trumbauer
Best for ages 7-11
ISBN: 0-7368-5846-6
ISBN13: 978-0-7368-5846-5
This is an early reader book about three sentences per page. Vocabulary words are bold and a glossary defines those words in the back of the book. The content is accurate and for an early reader book tells the story very well. The text deals with corn's origins but is not quite accurate here. It states that corn grew wild and Native Americans learned how to use it. This is not the case. Corn was developed by humans from its wild ancestors. That is the only technical inaccuracy and is a relatively minor one.

From Corn to Cereal

by Roberta Basel
Best for ages 7-10
ISBN13: 978-0-7368-4284-6
This is one of the best books in an excellent series of books depicting the various plant and animal sources of food and fibers. As an early reader book, the content is short but fairly accurate. Each page has three to five sentences. It does a very complete depiction from seed to consumer. All of the images are of modern farm equipment and modern processing operations. The photos in this book greatly enhance the text. The growing cornfield is so vibrant one can almost hear the rustle of leaves in the breeze and the sweet corny sent that surrounds a cornfield on a hot and humid day. The book ends with a page on the Corn Palace of South Dakota, a glossary, recipe, and recommended Internet sites.

From Kernel to Corn

by Robin Nelson
Best for ages 4-8
ISBN13: 978-0-8225-0944-8
This is one in an excellent series of books depicting the various plant and animal source of food and fibers that come from plants and animals. As an early reader book, the content is minimal but fairly accurate. Each page has one to five sentences. The image of a farmer plowing a filed is not accurate but the rest of the book is fairly sound in image and text. It depicts sweet corn production from seedling to consumer. There is an excellent page describing why farmers use pesticides to control weeds and insects that compete with and/or damage crops.

From Kernel to Corncob

by Ellen Weiss
Best for ages 4-7
ISBN13:978-0-531-18536-055
Each of the books in this series by the same author begins with vocabulary words and photographs depicting the meaning of the words. It identifies the term in bold letters and instructs the reader to look for the word in the text in its bold format. As a result this is a great vocabulary builder and reading for content book. Each page has three to five sentences and the facing page has an excellent photograph with a caption. The content covers how corn is grown and harvested. This is the weakest book of the series. Unfortunately, it never explains that sweet corn and field corn are different and used differently. It uses the images of each interchangeably. It does not show field corn dried down nor mechanical harvesting. Also, the sequence of photos in this book does not accurately accompany the text the way the other books in the series does. Either the author should have just depicted sweet corn and left out any references to field corn or she should have explained the difference and included more information about field corn, its uses and production. The book ends with the corn life cycle and a glossary.

I Like Corn

by Robin Pickering
Best for Ages 4-7
ISBN: 0-516-23009-3
This early-reader book provides basic information about corn. It does not differentiate between sweet corn and field corn but discusses both as food, a problem on two levels. The text describes corn as a vegetable. We eat sweet corn as a vegetable but is (botanically) a fruit. On the other hand, field corn is considered a grain. This book nicely depicts corn growing and one method of irrigation, corn in the husk, on the cob, tamale making, and foods made with corn. The book ends with a nice glossary.

Popcorn

by Elaine Landau
Best for ages 5-9
ISBN: 1-57091-443-5
Join the zany popcorn-loving raccoon on a journey through the history and science of popcorn. You'll learn where archaeologists found 5,600 year old ears of popcorn, how a hard little kernel turns into a fluffy snack and much more! While the book is a bit silly, it encompasses everything you ever wanted to know about popcorn! Take the opportunity to have children seek out the ridiculous images and correct them as you read the book. (Hint: The Pilgrims did not watch football on television at the first Thanksgiving.)

The Popcorn Book

by Tomie de Paola
Best for ages 5-9
ISBN: 0-8234-0533-8
This engaging book entertains as it instructs. Designed as a quick and fun overview of popcorn, most of the information is accurate. The one exception is that the description of Indians holding an ear of popcorn over a fire on a stick is untrue. As American Indians pointed out when reviewing the book, it is absurd to believe anyone would pop corn in this way. As the kernels popped they would fly all over the place and be lost as a food. This can be used as a teachable moment to students to instruct them that just because something is written does not guarantee its accuracy.

The Story of Corn

by Betty Fussel
Best for ages 12- Adult
ISBN13: 978-0-8263-3592-656
Largely a historic look at the history of corn and its impact on the world, this book documents corn from its earliest roots to today. The author examines the cultural influences and ways that corn has been woven into the culture of earlier American societies and the culture of today's civilizations. While the book mainly discusses field corn there is a bit about popcorn and sweet corn. Corn as human food, animal feed, converted into alcohol, and now as a renewable fuel, this book addresses each area with factual discernment not rose-colored glasses. Perhaps of particular interest to those learning about Meso-American cultures, the author weaves text illustration, poetry and photos throughout the book.