

Early Learning Gardening Guide



A Project of the North Okanagan Early Childhood Development
Coalition and the Community Nutrition Program of Interior Health



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Introduction

The Nutrition and Health Subcommittee of the North Okanagan Early Childhood Development (ECD) Coalition wanted to actively contribute to improving the health and nutrition of young children ages 0-6 years. The ECD coalition consists of representatives from various organizations serving young children and their families. Linda Boyd, Community Nutritionist with Interior Health and chair of the Nutrition and Health Subcommittee acted as project lead.

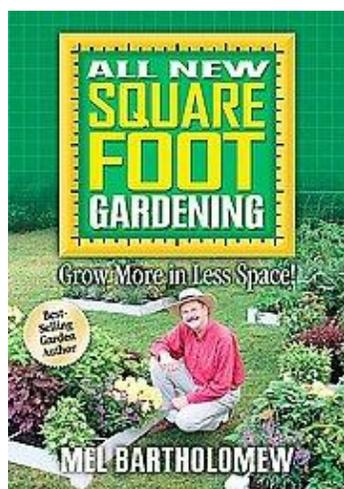
We partnered under the umbrella of the North Okanagan Child Care and Montessori Preschool Society to pilot the Square Foot Gardening method during the summer of 2009.

We would like to thank the centers who participated in the pilot project of the Early Learning Gardening Guide: Hailey's Garden Daycare, Little Seedlings Daycare, Little Ark Daycare, Smurfie Daycare, Kids Corner Daycare, the North Okanagan Child Care Society, and the Aboriginal Infant Development Program at the First nations Friendship Centre. Information in this guide was gathered by researching various kids gardening resources and through actual visits to each of the centers to hear firsthand what worked well for them with this project.

We would like to acknowledge the time and dedication of Cara Witt, University of Guelph dietetic student for volunteering over the summer to meet with all of the participating centers and develop this Early Learning Gardening Guide.

We would also like to thank the Vernon Teachers Association for funding this project.

This guide is intended to be used along with the book, **Square Foot Gardening** by Mel Bartholomew, which provides the information about using the square foot gardening method. However, the children will enjoy any type of gardening or growing experience including container gardening in a pot or bucket.



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The square foot gardening method involves building a shallow box that sets on the ground and is filled with a soil mix of three organic materials (1/3 compost, 1/3 peat, and 1/3 vermiculite). A one foot grid is then laid on the soil surface, dividing it up into individual square feet. The standard size for a Square Foot Garden is 4' x 4', producing 16 square feet. Young children may find it easier to reach the centre of a 3X3 grid, producing a total of 9 square feet. Boxes with a bottom can become table top gardens or you can attach wheels to be able to move your box from shade to sun. Each child or group of children can have their own square, choose what to plant, and tend their plants throughout the season. Square foot gardens require very little water compared to conventional gardens and virtually no weeding. There is no tilling in the spring because the garden soil has never been stepped on. For more information about the square foot gardening method see:

<http://www.squarefootgardening.com/>

Ready Set Grow!



It's never too early to get kids excited about gardening. Young children have a natural curiosity about the world around them and a genuine desire to learn. Along with the fun of getting dirty, gardening helps children learn valuable lessons about patience as they wait for vegetables to grow, responsibility as they take over watering duties, and even loss when flowers die at the end of a season. Gardening also provides opportunities to learn about science/nature and practice cooperation. One of the most important lessons a young child can learn from vegetable gardening is an understanding of where food comes from. Children are also more likely to take an interest in trying vegetables they have grown themselves. Hands on projects like gardening are successful because they allow children to explore at their own pace and engage in experiential learning. **Food Flair**, available from the Interior Health website at <http://www.interiorhealth.ca/choose-health.aspx?id=11572> (pages 97-102) outlines several early learning activities related to gardens and growing.

The following helpful tips apply generally to various types of preschool gardening experiences. These tips have been sourced with permission from an article written by Sarah Pounders, titled The Pre-Kindergarten that is posted on the National Gardening Association website: www.kidsgardening.org:

Tips for Gardening with Preschoolers

Start SMALL! It's okay to plan big, but start small. A large garden can exhaust both you and the kids. Let them get excited about the joy and fun of a bountiful, small garden, and then expand as your confidence and experience increases. **Involve the kids in all stages.** Engage them in as many of the planning steps as is reasonable based in the age of the children, including design and choosing plant material. This helps create a sense of ownership and enriches the learning experience.

Spend time preparing the soil. Ask any farmer or gardener — they'll tell you the most important step in the planting process is preparing the soil. Healthy, well-drained soil rich in organic matter produces healthy plants that are more resistant to pest and disease problems. You will recoup all the time and money spent preparing the soil through decrease in maintenance. If you are using containers, obtain high quality, well-drained potting mix (and make sure containers have drainage holes).

Prepare for the elements. Make sure each child is prepared with sunscreen, a hat, and plenty of water. You may wish to provide child-sized garden gloves for digging in soil.

Teach kids proper garden behaviour. Before going to the garden, make sure each child knows how to care for and work with the necessary garden tools. Establish a few basic guidelines such as "No one is to eat anything out of the garden without permission." Take time to demonstrate all garden techniques before asking kids to get started.

Work in small groups and recruit additional adult garden helpers if needed. Kids want to dig, rake, water, and harvest. Working with kids in small groups of two or three helps you engage each child and make sure they are actively involved at all times.

Avoid garden clutter. Tools, empty pots, and piles of discarded plants are not only unsightly, they're a safety hazard. After each work day, put away tools and place weeds and spent plant matter in a compost bin or trash can. It helps to have your garden storage close by and accessible.

Use cultural and mechanical pest control. Although pesticides are safe when properly applied and all instructions are followed, cultural and mechanical pest control methods should be used in children's gardens. This reduces the amount of oversight and instruction needed for a safe gardening experience.

Obtain child-sized garden tools. Adult tools are too heavy and bulky for young children. Smaller gardening tools designed just for kids are available at many garden centers. As long as the soil has been properly prepared, most garden work can be completed with a small trowel.

Plant for immediate *and* delayed gratification. Watching new plants sprout from seeds is like magic for young kids, but slow germination rates can try their patience, so plant both seeds and potted plants

Avoid poisonous plants. Although every child needs to learn that some plants are not good to eat or touch, it is best to avoid poisonous plants and those with irritating characteristics such as thorns. Online databases of poisonous plants are available at:

http://www.cbif.gc.ca/pls/pp/poison?p_x=px

Also, see our plant list for pre-K gardens:

<http://www.kidsgardening.com/Dig/digdetail.taf?Type=Art&id=2154> .

Add whimsical elements to engage the imagination. Although the plants on their own will inspire creativity, adding in elements such as a seating area, bean tepee, sunflower house, wind chimes, bird feeder, stepping stones, and so on further stimulate wonder and creative garden play.

Let kids direct explorations. What captures your attention may not attract your students, so follow their lead. Help them investigate things that interest them, and share in their excitement.

Don't stress about the garden's appearance. In a child's garden, plants will get stepped on, leaves will be picked, and weeds will grow, but the kids will still think it is the most beautiful thing they have ever seen. Remember to look at the garden through a child's eyes.

Enjoy! Be a good model by exhibiting your pleasure in the garden – if you're having fun, chances are the kids will have fun, too!

Author: Sarah Pounders; Source: National Gardening Association www.kidsgardening.org

Preschool Gardening Manuals:

The National Gardening Association is a source of educational gardening resources for early childhood educators. Several manuals full of hands on activities for preschoolers that encourage exploration of plants and growing as well as cooking and tasting are available for purchase. See their website <http://www.gardeningwithkids.org/11-4136.html> to browse the available resources.

Getting Started With Square Foot Gardening

- Choose a location in the yard for the square foot garden(s). It is ideal for them to be placed in a sunny area that is easily accessible by the children. Ideally they will be located near the childrens ' play area so that they can frequently investigate the garden on their own.
- Assemble square foot garden box (es). Older children may be able to help with the assembly.
- Have the children help decide which plants you will plant. It may be a good idea to start some plants from seeds and transplant others so the children do not become impatient waiting for the seeds to sprout. Also choosing seeds that sprout at different rates can teach the children about various things growing at different speeds (like themselves). Choosing some plants that grow in the ground and some that grow out of the ground will show children that we eat the roots of some plants and the stems or flowers of others. Include some vegetables that may not be familiar with the children.
- Flowers also make a great addition to the square foot garden boxes and can teach the children about more colours and the parts of flowers. Butterflies may also be attracted to your flowers.
- Each child or small group of children could have their own square in the garden; this will give them a sense of ownership over the plants and teach them responsibility, as they will water their plants.
- Discussing what gardens are and showing them the square foot method book may make the idea of gardening important to them. Showing pictures of gardens in full bloom may excite the children. Also, discuss the concept that food will be grown and they can taste the produce later in the summer.
- Use the songs and booklist at the end of this guide to help get the children thinking about gardening.

Easy to grow plants:

Basil, beans, beets, carrots, chives (perennial), corn, dill, garden cress (also called peppergrass), horseradish (perennial), leaf lettuce, peas, potatoes, radishes, rutabagas, salsify, snow peas, Swiss chard, turnips, cherry tomatoes



Activities

Plant Markers

Supplies:

- Blank Paper
- Markers
- Popsicle sticks
- Plastic Bags (to laminate the signs)
- Tape or glue

Have children draw the vegetable they have chosen to plant in their square; the older children can write the vegetable name. Also, the children can write their names on the marker. Glue the paper onto the Popsicle stick and place the plastic around the paper to protect it from any rain. Place in squares to remind you what you have planted and which children planted it.

Sprouting Beans / Peas

Supplies:

- Bean or pea seeds
- Clear plastic cups
- Cotton balls



Give each child a plastic cup with some cotton balls in the bottom and a bean or pea seed. Place the seed on the cotton balls and wet the cotton balls. Make sure the cups are kept in the sunlight, keep them watered, and watch them sprout! Once the beans have sprouted and the garden is ready to be planted, they can be transplanted into the bean square. This can be done before the last frost to get the kids into a gardening theme.

Art

Get the children to create beautiful art gardens using crayons, markers, chalk, paint, textured paper, wool, buttons, stamps, clay, etc. Colouring sheets are also included in this guide.

Planting

- Allow the children to plant the seeds they have chosen. Show them how deep to poke the holes with a pencil and how to place one seed into each hole. Find the vegetable in the back of the Square Foot Gardening Method book to see how many seeds can be planted in each square. If possible, get the children to count out the correct number of seeds for their squares and show them how to space the seeds evenly. If the children cannot count, try to get them to count along with you as you count the seeds.



- Discuss what is needed for plants to grow; soil, water and sunlight.
- Get the children to predict what will happen.
 - What will the vegetable look like?
 - How tall do you think the plant will get?
 - What colour will the vegetable be?
 - What will the vegetable taste like? Will you like it?
 - Will the vegetable grow in the ground or out of the ground?

Remember to record these predictions to be able to look back on them once the plants have sprouted and are ready for harvest. Children could have a chart to keep track of the height of their plant. A bulletin board can be used to show pictures of the garden and artwork that the children do with the gardening theme. Also, a diagram of the garden showing which square has which plant and how many seeds were planted can be displayed. A log recording when planting took place and when each plant sprouted and was ready for harvest and any other interesting event can also be displayed for the children and parents to see.

- Take many pictures of the children planting and preparing the garden. This will help the children remember the entire process of growing food at the end of the season. Keep the leftover seeds available so the children can compare the mature vegetable to the seed it started from.
- The book, *The Carrot Seed* by Ruth Krauss is a good one on planting to capture the attention of preschoolers.

Activities

Seed Sorting

Supplies:

- A variety of different seeds (small, large, different colours, shapes etc.)

In small groups or individuals, allow the children sort the seeds into whichever categories they find appropriate. Discuss as a group the different ways the seeds were sorted.



Seed Counting and Fruit Tasting

Supplies:

- Variety of fruits
- Knife for cutting the fruit

Show the children the whole fruit and get the children to guess how many seeds are inside each fruit. Then cut open the fruit and count the seeds. Cut the fruit into bite sized pieces for the children to taste.

Seed Dissecting Activity

Supplies:

- Large bean seeds- pre-soaked overnight
- Magnifying glasses

Cut open seed and show children the inside of the seed. Show them each part (leaves, stem, root) and explain that the seed will sprout into a plant with the same parts. Allow the children to examine the open seed with the magnifying glass.

Maintaining the Garden

- Ensure the garden is watered. Keeping a bucket with water and small watering cups in it near the gardens is a good idea so the children can take the initiative to water their plants. At the end of the day make sure all the squares were watered, and monitor during the day to make sure the garden is not being overwatered if the children are being very attentive. Plants can be watered individually so that water is not being wasted by watering empty soil. Talk about what happens when a plant doesn't receive enough water (may go limp or not grow well). Compare this to a long narrow balloon that is filled with water (stands up tall) and one that has none.
- When plants begin sprouting, measure and record the height of the plants. Compare different types of plants and their sizes. Chart the heights and when they become tall enough you could compare the plant heights to those of children in the centre. Talk about which plant is taller, and other similarities and differences the children can find.
- Show the children the different parts of the plants; leaves, stems, roots, flowers etc. Talk about the basic function of the various plant parts. Talk about how we eat different parts of plants depending on what it is.



Activities

Celery Experiment

Supplies:

- Celery stalks with leaves (cut the base at an angle)
- Two glasses of water
- Food coloring (blue and red)

Mix 10 drops of food coloring with 1-2 cups of water. Bring out a stalk of celery that is about 6-8" high with the leafy part still attached. Explain that the celery stalk is the stem of a plant (the roots of the celery plant have already been cut off). The function of the stem is to bring water and food up to the leaves of a plant. Ask the children to guess what will happen when the celery stalk is placed in a cup of colored water. When the celery sits in the colored water for about 15 minutes, the colored water is absorbed by the celery and is soaked upwards to the leafy part through the "veins" in the celery stalk. The students will get very excited when the stem and finally the leaves change colour. This may take about 15 minutes. (Try one at home first so that you have a good example to show the kids, in case it takes too long).

Paper Plate Sunflowers

Supplies:

- Paper plates
- Construction paper
- Markers
- Glue
- Scissors



Cut out petals and allow children to glue onto paper plates into a sunflower shape. Markers can be used to dot seeds in the centre. Stems and leaves can also be made from the construction paper and glued onto the bottom.

Sponge Painting

Supplies:

- Sponges cut into flower tops and stems or vegetable shapes like tomatoes, peppers, carrots and cucumbers.
- Paint
- Paper

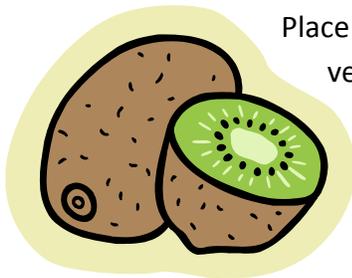
Children can sponge paint gardens using different flower tops and stems and vegetable shapes.



Mystery Bag

Supplies:

- Cloth bag or something similar that the children cannot see into through the sides
- A variety of vegetables of different sizes, shapes and textures



Place the vegetables into the bag and have children reach in and touch the vegetables and describe what they are touching using sensory words (hard, soft, big, smooth etc). See if they can guess which vegetable they are touching.

After the activity, wash the vegetables well and enjoy as a snack.

Harvesting the Garden

- Show the children how to tell when the vegetable is mature and ready to be picked and eaten. Depending on what the vegetable is, it can either be eaten from the garden or prepared as part of snack.
- With the garden in full bloom, have the children explore the different plants and experience the different shades of green and colours of vegetables visible. Also, different textures, sizes and shapes can be experienced.
- Remind children about the growing process and that the vegetables they are eating started as a seed. Bring out the leftover seeds to show the children again. Show the children pictures of themselves planting and caring for the garden. If you are charting plant height, measure the plants one last time before harvest and plot on the chart. Talk about how some plants grew faster and taller than others.



Activities

Sorting: Have the children compare or sort the vegetables they have grown by size shape, color or texture. Compare one carrot with another or with another vegetable like a potato. Some carrots may be bigger than other carrots although they were growing beside each other and got the same amount of water. Discuss how carrots are long and thin and potatoes are round or oval. Engage the children in discussion about other vegetable comparisons.

Preparing and Tasting: Have the children help in preparation of the vegetables into their snack by letting them wash or peel the vegetables. In the spring have the children tear lettuce for a salad. In the fall prepare a harvest soup with root vegetables like carrots, parsnips, rutabagas and potatoes or serve raw with a dip. Many of the books listed on pages 21-25 tie in well with the tasting theme.

Communicating With Families

You may wish to send a letter home with the children to inform their families of the project and encourage them to talk to their child about their garden. Here is a sample letter you can adapt to fit your centre.

Dear Parents/Guardians,

At our centre this spring, we will be involving the children in a gardening project. Using the Square Foot Gardening method, the children will learn about where food comes from and it will spark their interest in gardening and vegetables.

The children will be involved in all aspects of the gardening process; from choosing which vegetables they would like to grow to learning how to nurture and care for their plants. Gardening is a great way to learn responsibility by caring for the plants and patience as they wait for their plant to grow. The gardens will provide hands on activities that provide opportunities to teach early learning concepts in an innovative way. The children will review the concepts of above and below, inside and outside, short and tall and many others by examining the plants growing in their gardens. We will also be practicing our counting, colour naming and sorting skills in the garden. The children will have an opportunity to sample various vegetables from the garden. Often children are more willing to try new vegetables they have grown themselves.

Encourage your child to show you the garden when you are picking them up from the centre and ask them about what they have been learning.

Please feel free to contact us with any questions you may have.

Hailey's Garden Daycare Success Story

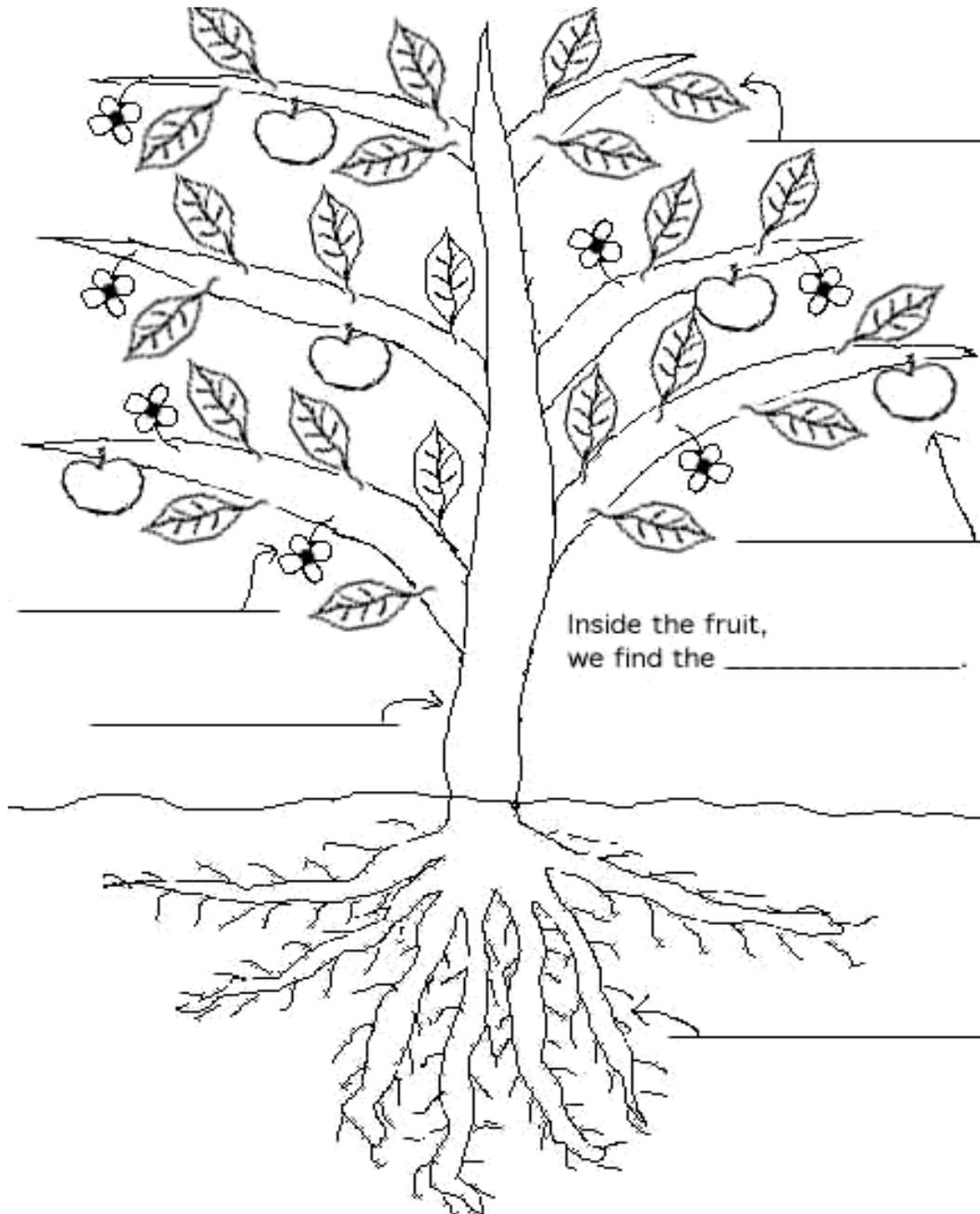
Hailey's Garden Daycare was one of the seven centres that participated in the pilot of the square foot gardening project. They had two boxes to have enough squares so that each child planted and cared for their own square. The children were very excited to choose the



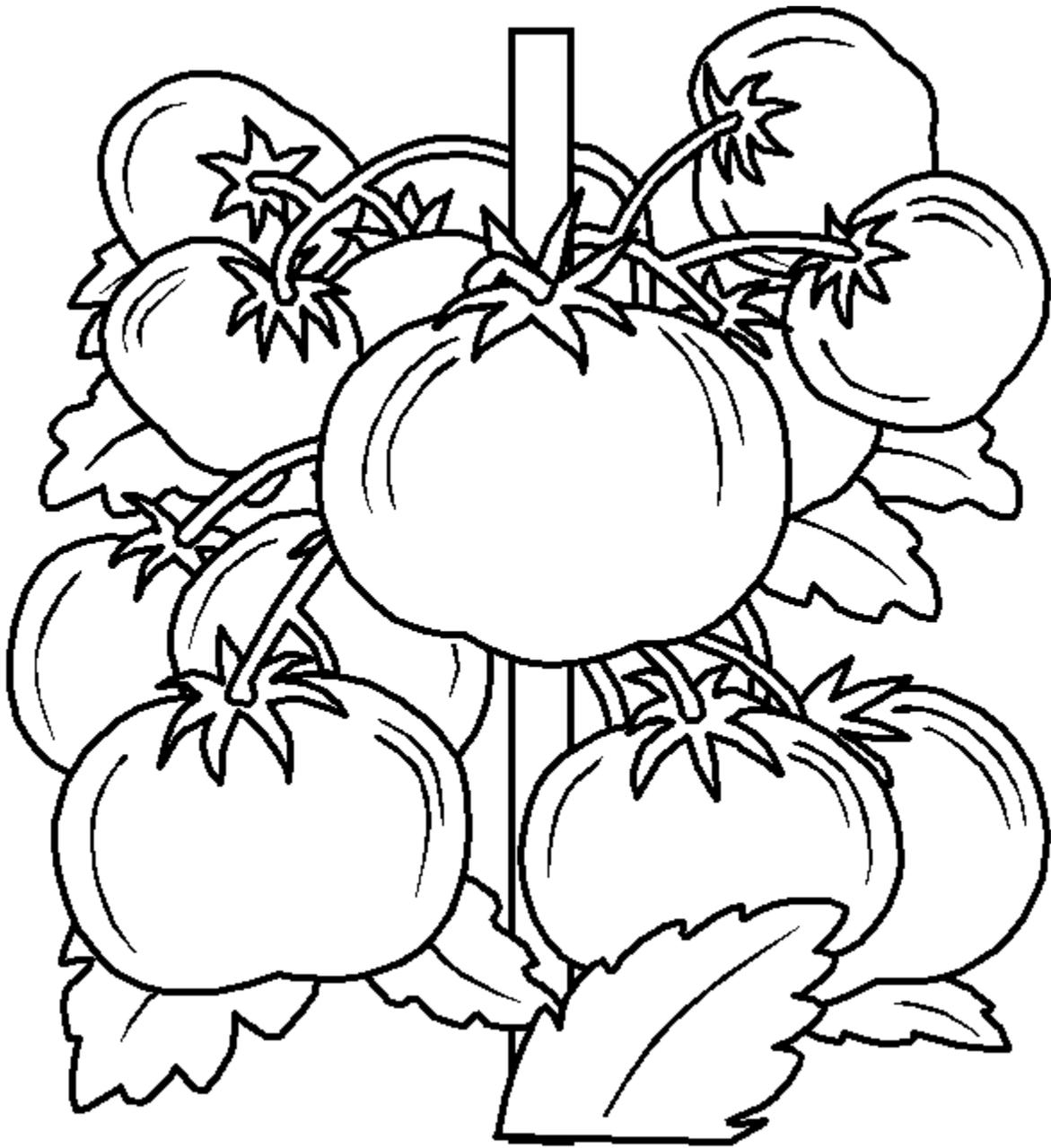
vegetable they wanted to grow and immediately showed interest and ownership over their squares and plants. Susan engaged the children in the garden by showing them the Square Foot Gardening book by Mel Bartholomew, explaining what it was they were going to do and what the finished product would look like. The children quickly became excited by the square foot idea, drawing gardens and vegetables during art time.

The children used pencils to poke holes into the soil and carefully placed their seeds into the hole. The children enjoyed finding their plant in the back of the Square Foot Gardening Method book and following the directions as to how many seeds to plant in their square. As the garden is in a central location in the daycare's yard, the children continuously run past it and will take their own initiative check on it and water their squares. A bucket of water with cups is left out so the kids can water the garden in their own time. Susan will make sure at the end of the day that all the plants are watered, but the kids show enough enthusiasm that she rarely needs to remind them to water. As the seeds began to sprout, the children became more excited about the gardens telling their parents and visitors "we are growing food". They are very proud of their garden and want to show their parents and visitors what they have grown. They understand that they will be able to eat what they are growing. The children are taking the initiative to explore the garden themselves. The children are very responsive to the gardens and are curious about why things are happening by being able to participate in the gardening themselves. Susan said, "It's a great experience for the kids".

Colouring Pages:

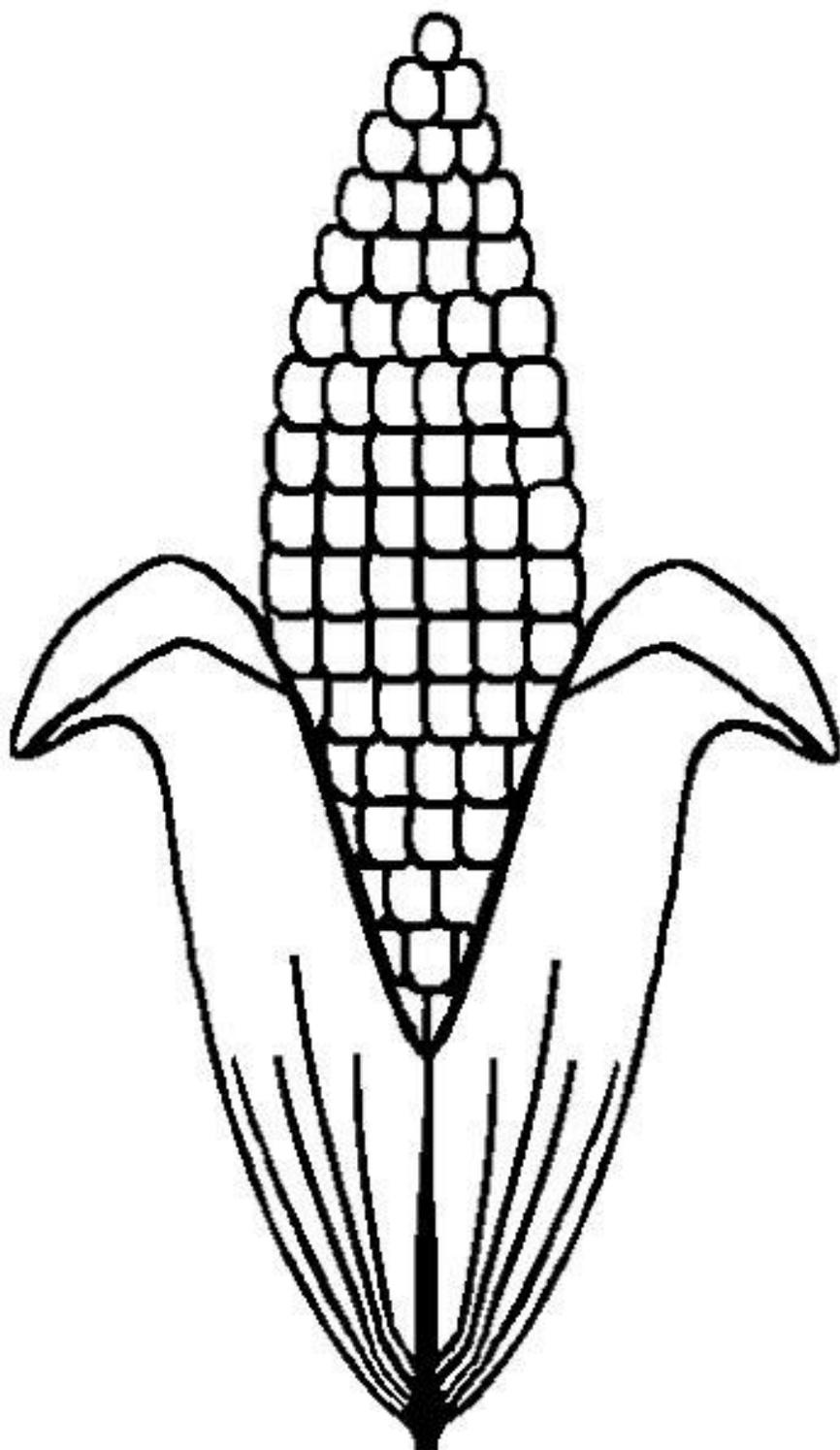


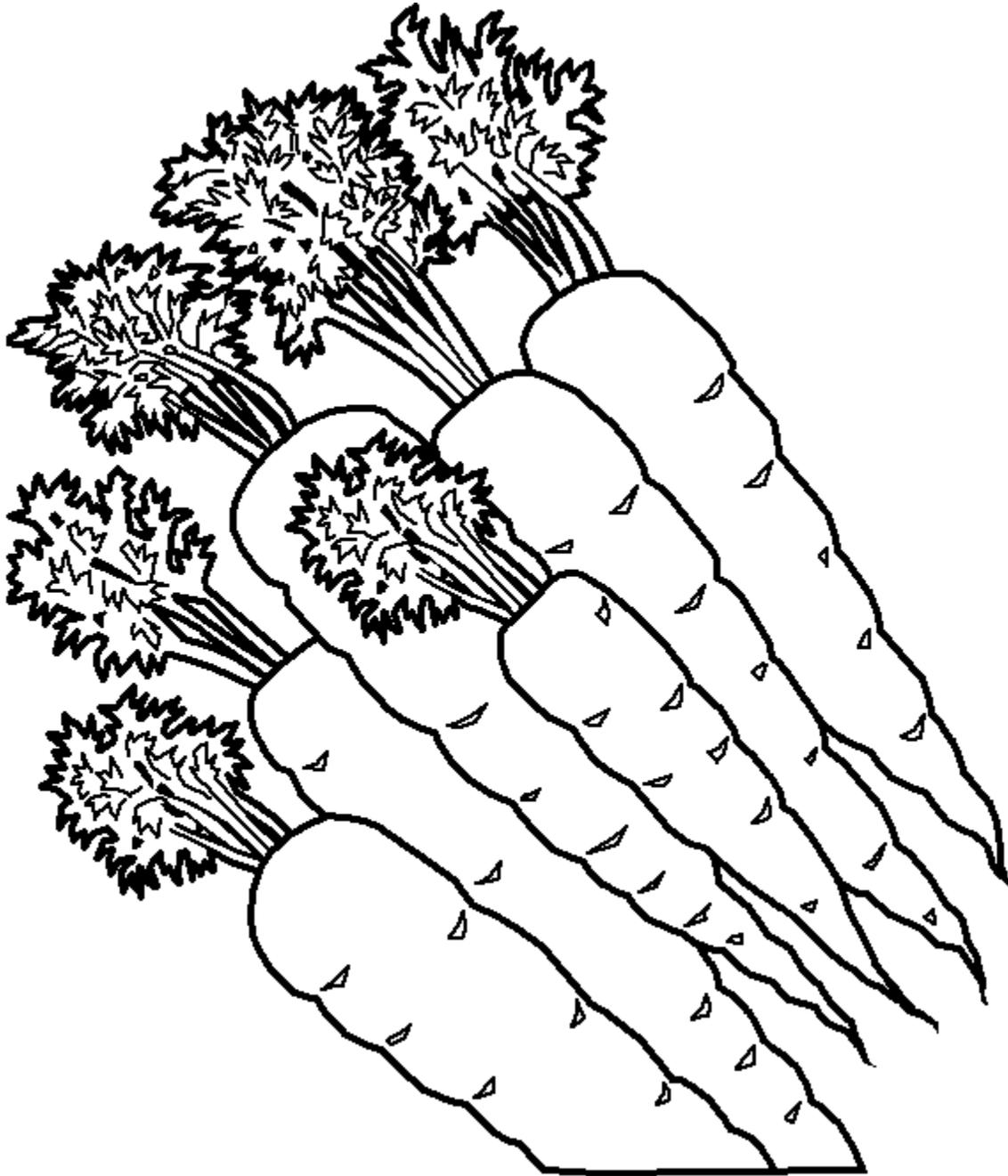
Retrieved from <http://its.guilford.k12.nc.us/webquests/plantquest/parts.htm>



Retrieved from <http://afunk.com/vegetables/index5.html>







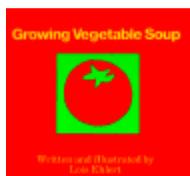
Retrieved from <http://afunk.com/vegetables/index6.html>

Early Learning Gardening Booklist

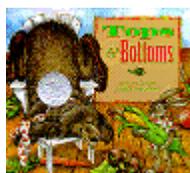
- All of these titles are available through the Okanagan Regional Library and are stories about gardening for preschool aged children. By pressing Ctrl and clicking on the link it will take you to the ORL website where you can request the book.



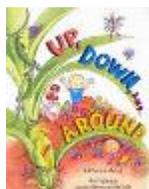
[Tiny green thumbs / C.Z. Guest; illustrated by Loretta Krupinski.](#)
by *Guest, C. Z.*
New York: Hyperion Books for Children, 2000.



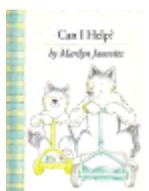
[Growing vegetable soup / written and illustrated by Lois Ehlert.](#)
by *Ehlert, Lois*
San Diego, Calif. : Harcourt Brace Jovanovich, 1987



[Tops & bottoms.](#)
by *Stevens, Janet*
San Diego, Calif.: Harcourt Brace, 1995.



[Up, down, and around.](#)
by *Ayres, Katherine.*
Cambridge, Mass.: Candlewick, 2007.

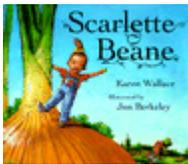


[Can I help? / by Marilyn Janovitz.](#)
by *Janovitz, Marilyn*
New York : North-South Books, 1996

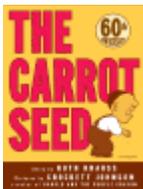
Beaver the gardener.
 by *Klitting, Lars*
 Vancouver : Douglas & McIntyre, 1998



Good job, Oliver! / Laurel Molk.
 by *Molk, Laurel*
 New York : Crown Publishers, 1999



Scarlette Beane / Karen Wallace; illustrated by Jon Berkeley.
 by *Wallace, Karen*
 New York : Dial Books for Young Readers, 2000



The carrot seed / story by Ruth Krauss; pictures by Crockett Johnson.
 by *Krauss, Ruth*
 New York : HarperCollins, 1973



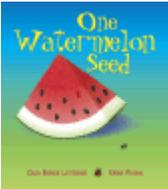
Flora's surprise! / by Debi Gliori.
 by *Gliori, Debi*
 New York : Orchard Books 2003



And the good brown earth / Kathy Henderson.
 by *Henderson, Kathy, 1949-*
 Cambridge, Mass. : Candlewick Press, 2004, 2003



Chicken said, "Cluck!" / by Judyann Grant; pictures by Sue Truesdell.
by *Grant, Judyann*
New York : HarperCollins, 2002



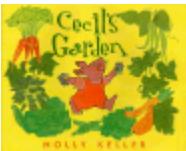
One watermelon seed / Celia Barker Lottridge; illustrated by Karen Patkau.
by *Lottridge, Celia B (Celia Barker)*
Markham, Ont. : Fitzhenry & Whiteside, 2008



Carrot soup / written and illustrated by John Segal.
by *Segal, John*
New York : Margaret K. McElderry Books, c2006



Muncha! Muncha! Muncha! / by Candace Fleming; illustrated by G. Brian Karas.
by *Fleming, Candace*
New York : Atheneum Books for Young Readers, 2002



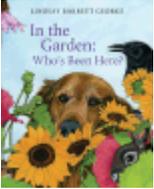
Cecil's garden / by Holly Keller.
by *Keller, Holly*
[New York] : Greenwillow Books, 2002



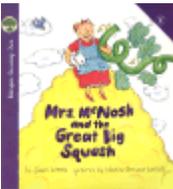
Whose garden is it? / Mary Ann Hoberman; illustrated by Jane Dyer.
by *Hoberman, Mary Ann.*
Orlando, Fla. : Harcourt, c2004



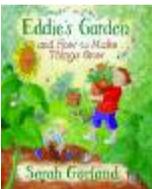
We're rabbits!
by *Peters, Lisa Westberg*
Orlando, Fla. : Harcourt, 2004



In the garden: who's been here? / Lindsay Barrett George.
by *George, Lindsay Barrett.*
[New York] : Greenwillow Books, c2006



Mrs. McNosh and the great big squash.
by *Weeks, Sarah*
[New York] : HarperFestival, 2000



Eddie's garden and how to make things grow.
by *Garland, Sarah*
London: F. Lincoln Children's Books, 2004.

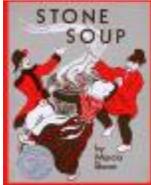
[Salad people and more real recipes : a new cookbook for preschoolers & up / Mollie Katzen.](#)



Berkeley, Calif.: Tricycle Press, 2005.

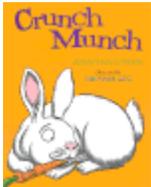
Stone soup : an old tale /

told and pictured by Marcia Brown.



Crunch munch

by Jonathan London; illustrated by Michael Rex.



San Diego, Calif. : Harcourt, Inc., 2001.

Gardening Songs for Preschoolers

How Does Your Garden Grow?

Corn Stalks Grow High, way up in the sky. (Raise arms above head and sway back and forth) Watermelons are round, (Arms in front with fingers interlocking) And grow on the ground. (Point to ground) But under the ground, (Tap ground with finger) Where no one can see. Grow potatoes and onions and carrots (Raise three fingers consecutively) All three. (Show three fingers you raised) Make a mural labelling all the vegetables and where they grow.



Act out "Little Brown Seed"

I'm a little brown seed.
 Rolled up in a tiny ball.
 I'll wait for the rain and sunshine.
 To make me big and tall.

Found at <http://www.preschoolrainbow.org/preschool-summer.htm>

Planting Time Original Author Unknown

Sung to: "Row, Row, Row Your Boat"

Dig, dig, dig the earth
 (make digging motion)
 Then you **plant** your seeds
 (pretend to drop seeds)
 A gentle rain
 And bright sunshine
 (Circle arms above head)
 Will help your **flowers** grow
 (Hold one arm parallel to ground and move other arm up behind it with fingers extended to represent a **flower** growing)



I'll Plant A Little Seed Original Author Unknown

Sung to: "I'm A Little Teapot"

I'll plant a little seed in the dark, dark ground.
 Out comes the yellow sun, big and round.
 Down comes the cool rain, soft and slow.
 comes the little seed, grow, grow, grow!



Up



I'm a Tiny Seed Original Author Unknown

Sung to: "I'm a Little Teapot"

I'm a tiny seed, deep in the ground
 I lie asleep - I don't make a sound
 I am waking up now - see me sprout

Found at <http://www.preschooleducation.com/sgarden.shtml>