Early Sprouts
Cultivating Healthy Food Choices in Young Children
CHILDREN CAN BE INVOLVED in growing vegetables in many ways. You can either take advantage of existing resources in your community or plant a garden using whatever space is available. You may want to start small by visiting a local farmers’ market or growing a single plant in a clay pot. Or you may want to allocate a portion of your school’s play yard for a vegetable garden. Regardless of your budget, you can share the life cycle of plants with your children. Start small, but be adventurous!

Visits to Local Farms, Gardens, and Farmers’ Markets

If a school-based garden is not feasible, a visit to a local organic farm or even a neighbor’s backyard garden is a rewarding way for children to watch food grow. Children enjoy this experience even more when it is combined with an opportunity to pick and taste the foods they observe growing. You can further reinforce this experience by a visit to a local farmers’ market during the harvest season. During this visit, you can help the children recall their farm adventures.

The twenty-four-week Early Sprouts curriculum lasts much longer than the gardening season in many climates (including ours in New Hampshire!). Buying vegetables from alternate sources may become necessary. The Early Sprouts program features vegetables that are readily available year-round. Because the vegetables and the recipes are used as snack or meal items, some of the cost of food supplies will be covered by your food budget. Supermarkets, grocery stores, or natural foods stores may be willing to provide food donations or substantial discounts to school-based
nutrition initiatives. Farmers’ markets and Community Supported Agriculture (CSA) programs are other great sources of produce. Visit www.localharvest.org to identify local farmers and farmers’ markets.

**Indoor and Container Gardens**

If you are interested in gardening with your preschoolers but lack growing space, you can try indoor growing or container gardening. Both of these options provide children with seed-to-table exposure and an understanding of the origin of their food. Additionally, these methods tap into children’s natural sense of curiosity and adventure.

Indoor gardening can extend the growing season for preschool centers located in northern regions. Although indoor gardening has some limits of its own, it can be done, providing a helpful alternative for preschools with limited outdoor space. Careful attention to temperature, pollination, light, and fertilization are required when gardening indoors. For example, leafy crops (including Swiss chard), root crops (including carrots), and tomatoes can all be cultivated indoors. Butternut squash, however, is unlikely to thrive indoors because it needs so much space and has special pollination requirements.

Here are a few tips for successful indoor gardening:

- Purchase vegetable seeds in late spring or early summer: it is often difficult to find seeds in mid to late summer at garden centers. In those months, it is best to order directly from a seed company (see appendix C, Recommended Organic Seed Sources, page 197); select bush beans, small-rooted carrots, Swiss chard, bell peppers, and determinate varieties of cherry tomato seeds or seedlings.
- Place leafy greens and root vegetables in a cool yet bright location (an enclosed sunporch that stays above freezing is an ideal location).
- Locate tomato, green bean, and bell pepper plants in a warmer location with temperatures ranging from 60° F to 70° F; a sunny classroom window may provide a suitable growing environment.
- Build or purchase an indoor growing station; these are an ideal way to start seedlings.
- Lightweight soils are a must for indoor gardening, so do not use outdoor garden soil. Make your own indoor soil mix by combining equal amounts of compost, vermiculite, peat, and perlite.
- Water indoor vegetables daily; small growing containers and dry indoor air cause the soil to dry out quickly.
- Apply a well-diluted liquid fish or seaweed emulsion to indoor plants every other week. (Fish emulsion can create an unpleasant indoor odor.)
- Manually pollinate your flowering plants, such as the tomato, green bean, and bell pepper plants, using a small paintbrush to gently
distribute pollen from one flower to the next; this activity provides an ideal opportunity to discuss the important work of bees.

Container gardens enable us to enjoy plants in areas where a traditional garden is not possible. Container gardens require outdoor space with good sunlight but are usually located in small spaces—even a small porch, balcony, doorstep, or windowsill can produce an impressive harvest of vegetables in containers. Large pots, window baskets, hanging baskets, old buckets, wooden barrels, and plant boxes can all be used to grow Early Sprouts vegetables with children. Here are a few tips for successful container gardening:

- Plant your container garden at the same time you would plant a regular garden; after planting, carefully soak the soil with water.
- Water your container garden daily, because small containers dry out quickly; during the hottest weeks of the summer, we suggest watering in both the early morning and evening with a rain wand or a gentle sprayer.
- Select containers that drain readily but retain enough moisture to keep the plants’ roots moist.
- Use large containers that hold 20 to 100 quarts to allow for root development and moisture retention.
- Use compost or a high-quality organic potting mix to fill your containers—"soil-less" potting mixes work best. You can also make your own by mixing equal parts of peat moss, sand, and loamy garden soil.
- Place your container garden in a location that provides no fewer than five hours of direct sunlight each day. (Swiss chard can tolerate less sun, carrots will need more sun exposure, and tomatoes, bell peppers, and green beans will need the most. Butternut squash plants can be grown in a large container but will need room outside of the container for the vines to sprawl.)
- Remember that your container garden is mobile. Relocate the containers as the sun changes patterns throughout the growing season; wheels make relocating them easier.
- Fertilizer will be washed away each time you water, so fertilize your container garden frequently. Liquid fish or seaweed emulsions are good basic fertilizers.

**Herb Gardens**

An herb garden with different textures and smells can interest children. Herbs also add great flavor when you are cooking with your target vegetables. You can plant herbs with your vegetables using a technique known as **companion planting**. Companion planting provides homes for beneficial insects and repels certain pests. Basil and parsley do well with tomatoes, for example. Dill, parsley, and cilantro attract
beneficial insects. When a cocoon or chrysalis forms on your herbs, you have a living science lesson in your play yard. Children will watch the transformation from caterpillar into moth or butterfly with wonder.

Play Yard Vegetable Gardens

If space is available, or as your confidence in gardening with children builds, you may want to consider a play yard garden. In this section and in appendix B, Preparing the Garden Site (page 191), you will find lots of information to help you get started on this venture.

GARDEN PLACEMENT

Locating your Early Sprouts garden in the play yard allows you and the children easy and frequent access to the gardens and the vegetables growing there. This proximity makes the garden part of the children’s daily lives rather than something exotic and inaccessible. With daily contact, the children will be more actively involved in observing plant growth and in harvesting the vegetables and other plants you grow. The location will depend, of course, on available space, sunlight, access to water, and other property and physical space considerations. Alternate potential locations include lawn or flower beds adjacent to the entrance of your facility, a spot outside the classroom windows for easy viewing during the day, or, for urban dwellers, a rooftop. Designing, constructing, planting, and maintaining your Early Sprouts garden is an exciting process when you embark on the program.

DESIGNING THE GARDEN

Select the best location for your Early Sprouts garden. Start by paying careful attention to which areas of your play yard get the most sun. Most vegetables require a minimum of five to six hours of direct sunlight per day. If you are observing your outdoor space in the winter or early spring, remember to consider the shade that will soon be created by nearby trees. The angle and location of the sun changes with the seasons as well.

An equally important consideration is the location of a water source. This is especially crucial in areas where there is minimal rainfall during the growing season. Be sure all parts of your garden can be watered easily, preferably with a garden hose or sprinkler. Newly planted seeds and young seedlings should be kept moist and require gentle daily watering. Hand
watering during the height of summer is very labor intensive. Mulching your garden can help, for you don’t want a weekend drought to wither your ripening vegetables!

Also important are accessibility and the positioning of your garden within your play space. The garden should invite children to enter in and explore, yet protect the plants. Other aspects of the play space will need to be considered, such as areas for climbing, digging, running, riding wheeled vehicles, and playing with balls and other outdoor toys. Young children need help remembering when it is acceptable to dig in the garden (while preparing the soil for planting or after harvesting when they pull plants out) and when it is not (while the seeds are sprouting or young plants are growing). Classroom design principles that advise locating active and quiet play spaces in different areas apply here (Curtis and Carter 2003, Isbell and Exelby 2001). For example, you may want to locate one portion of your garden in a high-traffic area of your play yard and another portion of the garden in a more remote location. As you plan the locations, think about how the garden will affect the flow and energy in your play space.

We use raised beds for our Early Sprouts gardens. This allows us to locate the garden beds in the best spots for sunlight, access to water, and play yard design. You may want to use an existing garden area or dig up a portion of your yard to create an open soil bed. This decision requires other considerations. If you plant your seeds directly into an open soil bed instead of into raised beds, pay attention to soil drainage. If you are planting directly in the soil, be sure to have your soil tested for lead and pesticides before you break ground. Take note of what areas of your play yard tend to always be damp and what areas are prone to drying out quickly. Vegetable plants thrive in soil with a balance between draining well and holding some moisture.

Garden soil also needs appropriate nutrients and an appropriate acid-to-base (pH) balance for the plants you select. Soil testing reveals the nature and quality of your garden soil and indicates what you should add to balance your soil ingredients for growing plants (for details, see appendix B, Preparing the Garden Site, page 191).

Although attractive and productive gardens can be created by seeding directly into the soil, we have found several advantages to using raised beds for planting:

- **Drainage**: raised beds are designed and built with good drainage in mind
- **Soil temperature**: the soil warms faster in the spring and stays warmer into the fall
- **Soil compaction**: the soil stays looser because people aren’t walking on it
- **Soil composition**: raised beds are filled with fertile, weed-free soil
- **Plant spacing**: fertile soil allows closer spacing of plants, resulting in higher yield and greater variety per square foot
- **Care and maintenance**: the raised height makes it easier to weed the soil and tend the plants
Our Early Sprouts gardens are located in the children’s outdoor play spaces. The raised beds, located in boxes built from composite decking, provide excellent protection that minimizes accidental trampling and puts the growing plants close to children’s eye level.

The first task in designing your garden is to create a layout that is inviting and welcoming for young children. The configuration should stimulate innovative play. For example, you may choose a layout that resembles a maze. Another option is to take advantage of playhouses located in your play yard and create cottage-style gardens. Cottage gardens are quaint, easily accessible to the playhouse, and take advantage of whatever space is available. Provide a minimum of three feet of space between beds so children can easily run, skip, or bike through them. The garden area can contribute to children’s gross-motor development as well as offer them cognitive and creative learning experiences. Raised beds can be used to create an interesting space that will stimulate children’s creativity well beyond the growing season.

The total size of your garden will be dictated by the space you have available. Obviously, the larger the garden space, the more plants you can grow. Because Early Sprouts relies on purchasing vegetables through the local grocery store or supermarket during the off-season (for us, the winter months), you don’t need to be able to grow everything you will use for the entire program. We believe that having the garden adds to the effectiveness of the program, so do what is reasonable to include some garden space.

Raised beds can be placed on top of surfaces like concrete or wood chips. Each of our current Early Sprouts gardens has its own arrangement, bed sizes, and creative approach to incorporating the garden in the play yard. Here is an example of a layout we have used:

(See appendix B: Preparing the Garden Site, page 191, for detailed information on how to construct garden beds.)
FILLING YOUR RAISED BEDS WITH SOIL

The foundation of organic gardening is well-nourished soil. A fertile soil is a mix of 15 percent compost, 15 percent sand, 70 percent loam, and possibly some lime (depending on the results of a soil sample). You will need enough soil to fill each of the raised beds to within 2 to 4 inches from the top. Organic soil is available through local landscapers and garden supply stores. The ultimate goal is to provide your plants with a nutrient-rich, dark-colored, sweet smelling, crumbly soil full of earthworms. (See appendix B, Preparing the Garden Site, page 191, for more information on soil and soil preparation.)

WHY ORGANIC?

When gardening with young children, you want to make the experience as safe as possible. Conventional gardening frequently relies on harsh synthetic pesticides and fertilizers. Many of these products are toxic. Children can easily get sick when their hands go directly from dirt containing pesticides and fertilizers into their mouths.

Organic gardening does not rely on harsh chemicals and therefore is the preferred way to garden with children. Organic gardening creates a healthy gardening environment by relying on feeding the soil, creating healthy plants that do not need to be fed with chemical fertilizers and pesticides. By choosing to garden organically, you also minimize chemical runoff from fertilizers and pesticides. This runoff often pollutes local drinking water or winds up contaminating lakes, streams, and water treatment plants.

Organic does not always mean nontoxic. Some organic pesticides and fertilizers (derived from plant, animal, or mineral sources) are just as toxic as conventional products. Several organic fertilizers are safe and can be used to supplement the compost and other soil amendments. We recommend liquid fish emulsion and seaweed fertilizers. We suggest avoiding all pesticides when gardening with children and instead (when necessary) hand-picking insect pests from the plants. Marigolds and other companion plants also repel some insects when planted along the garden edge. If you do decide to use an organically approved pesticide, please do so with great care. (Readers can find more information in this chapter’s Where to Get Gardening Help section, page 43, and appendix D, Gardening and Vegetable Resources, page 199.)

Growing vegetables organically is a commitment to a sustainable practice in which humans and nature live in harmony. Once you become part of this process, you realize that a few holes or blemishes on your produce or a small reduction in yield are not so bad after all. And the produce harvested from your Early Sprouts garden will be pesticide free and rich in vitamins and minerals.

PLANNING AND PLANTING THE GARDEN

Now that you have prepared your soil, created your garden plan, and purchased your seeds and/or seedlings, you are ready to plant when the weather permits. Just
before planting in your already tilled soil, lightly rake your garden beds to create a smooth surface. As you prepare for this step, plan how children and families can assist in planting the garden. Schedule an appropriate date for setting out your garden, depending on your USDA Plant Hardiness Zone.

At this step, the children can become directly involved. They will enjoy digging, sowing seeds, and planting seedlings. They will want to please and will follow clear and careful directions that are developmentally appropriate. Remember that the Early Sprouts garden is primarily a children’s garden. Its purpose is for children to learn about vegetable gardening. Some seedlings may accidentally get damaged or seeds may be sown in locations not intended. All of these instances provide opportunities for learning and exploring. (Growing, maintaining, and harvesting each of the Early Sprouts target vegetables are discussed in chapter 6.)

After your seeds and seedlings have been planted, water your garden well. We recommend a rain wand that attaches to your garden hose. The rain wand provides a gentle, yet thorough, watering and allows children and families to successfully assist in caring for the garden.

Maintaining the Garden

Any successful gardener can attest to the importance of garden maintenance. Watering, weeding, thinning, and fertilizing are all critical aspects to caring for your garden to help ensure a fruitful harvest.

WATERING

It is important to water frequently during the early stages of plant growth and while plants are forming and ripening fruits. Plants can become damaged and fruits can be stunted from too little or sporadic watering. At the beginning, the garden should be watered almost daily, unless a substantial late afternoon or evening rain occurs. Children love to help water the garden, although they will need some assistance in reaching all corners of the garden beds. During summer vacations, we recruit families and children to sign up for daily watering shifts.

It is important to provide some basic instructions to help families succeed at this chore. It is considered best for the plants to be watered during the early morning hours or after sunset. If plants are watered with a sprinkler during the heat of the day, their leaves and fruits scorch when watered, and the bulk of the water evaporates rather than seeps into the soil. A drip irrigation system for watering reduces loss through evaporation, but it is costly. To best support the growth of your plants, you

---

**SUGGESTED GARDENING TOOLS (IN CHILD AND ADULT SIZES)**

- Buckets
- Broad fork to hand-till raised beds
- Hand trowels and hoes
- Harvesting baskets
- Hoes
- Hoses and sprinklers
- Measuring sticks and rulers
- Pruners (kept in a safe location)
- Rakes
- Row markers
- Six-foot bamboo or wooden stakes to stake up tomato and pole bean plants
- Shovels
- Thick yarn and scraps from women’s hosiery for tying up plants
- Tiller (hand or electric)
- Watering cans
- Wheelbarrow
want the majority of the water to go into the soil, not directly on the leaves of the plants. Gentle, thorough watering is the best practice here, just as gentle rain supports plant growth without damaging tender sprouts.

WEEDING

As your vegetables grow, so do unwanted garden weeds. Sometimes it appears that weeds grow faster than the desired vegetables! Familiarize yourself with how your vegetable seedlings should look so you do not accidentally pull them during weeding. If the seeds were planted in a row, you can usually recognize that the row plants are not weeds. Try to pull or hoe weeds when they first appear; small weeds are easier to uproot and create less soil disturbance when removed. Placing mulch around your vegetable plants is a great way to control weeds and maintain soil moisture. Organic gardening books provide great advice on selecting specific mulch for various vegetable plants (see appendix D, Gardening and Vegetable Resources, page 199).

THINNING

Typically when planting small seeds, such as those of carrots, young children sow too many. When this occurs, it is important to thin out the sprouts while they are still small. Following the spacing guidelines on the back of the seed packages, remove sprouts until the recommended spacing is achieved. This task requires care so as not to disrupt the roots of the plants you want to remain growing in your garden. (See chapter 6 for tips on growing the Early Sprouts target vegetables.)

FERTILIZING

Mild fertilizers, such as liquid fish or seaweed emulsion, are ideal for organic gardens and are relatively safe for humans. These fertilizers provide nitrogen and other nutrients needed for early vegetable growth. We recommend that you apply liquid fish or seaweed emulsion one week after seeds have sprouted and when the seedlings are transplanted. Follow the directions for dilution and amount on the type of fertilizer you purchase. Here’s a rule of thumb: Go light on the application of fertilizer. Too much fertilizer can be more harmful than too little, especially if your soil is well prepared before planting. Be sure to dilute the fertilizer to the appropriate concentration prior to application, because fertilizers are often sold in concentrated form. Heavy-feeding vegetables, such as tomatoes, benefit from regular fertilizer treatments. A monthly dose of a 5-3-3 organic fertilizer can keep them actively growing all season long.

HARVESTING THE BOUNTY

After many weeks of watering, weeding, and watching the garden grow, children will be eager to start picking the fruits—and vegetables—of their labor. Green beans and Swiss chard can be harvested shortly after they first appear. In fact, picking the beans and trimming some of the larger Swiss chard leaves help the plants to produce more. Other Early Sprouts vegetables, such as tomatoes, bell peppers, and butternut
squash, require a bit more patience until the fruit is fully ripe. Of course, when gardening with young children, many vegetables will be picked before their peak ripeness, thus providing lots of learning and tasting opportunities.

**Using a Cover Crop**

At the end of the harvest season, after you have removed all remaining plants, you have a final opportunity to nourish your garden’s soil. The warm days of late fall allow you to grow a cover crop. Cover crops replenish soil nutrients diminished during the growing season, minimize erosion (especially important for open-soil gardens), and prevent weed growth. Before planting a cover crop, turn the garden over with a tiller or a spading fork. Level the garden soil with a rake and scatter the cover crop seeds by hand, spreading them as evenly as possible.

Winter rye is an ideal cover crop for cold climates. Be sure to plant the grass at least a few weeks before the ground freezes. In the early spring (three to four weeks before planting your garden), till the cover crop into the soil. Be sure to select a cover crop that is adapted to your region’s climate. We suggest consulting with a local organic farmer, a Cooperative Extension gardening expert, or your local nursery staff for specific suggestions.

Rotate the location of your crops annually. Crop rotation is crucial to maintaining healthy soil. For example, alternating the location of your tomatoes and green beans from year to year helps to keep your soil’s nitrogen in balance. Each new gardening year brings the joy of planning a new garden layout and experimenting with new varieties of vegetables, flowers, and herbs. Your Early Sprouts garden is a growing opportunity in many, many ways!

**Composting**

Composting is the microbial decomposition of organic matter under controlled conditions. Put another way, composting turns stinky kitchen food scraps and yard waste into rich, productive soil. Bacteria, fungi, worms, and insects all contribute to creating compost from food scraps, dead plants, and other organic matter into something wonderful. Implementing a play yard composting system helps your garden in several ways:

- Uses food scraps that would normally have been thrown away in the garbage
- Creates nutrient-rich compost that can enrich your garden for the following growing season, contributing to the garden being self-sustaining
- Completes the children’s exposure to the cycle of life that your play yard garden embodies so well

(For details about composting, see appendix B, Preparing the Garden Site, page 191.)
Questions of Budget and Funding

The gardening component of your program does not need to be expensive. You can start small with a few bags of seeds, some soil, and a few pots. Or you can spend a few thousand dollars building an elaborate raised-bed garden with a drip irrigation system. The majority of our Early Sprout gardens required an initial investment of $1,000 for materials to build raised beds, acquire soil, and buy garden tools/equipment. Once established, we spend about $75 per year on seeds, seedlings, manure, and other garden enrichments.

Where to Get Gardening Help

To date, all of our Early Sprouts play yard gardens have experienced great growing success! But occasionally you may need to consult an expert about a particular gardening concern. Most organic farmers are enthusiastic about seeing your garden succeed. They can provide excellent advice on locating and rotating plants, cover cropping, preventing plant disease, and managing pests. We have been fortunate to have an organic grower serve as a gardening consultant from time to time. To get in touch with a local farm, visit www.localharvest.org and enter your zip code to find farmers in your area.

Local Cooperative Extension Service offices employ knowledgeable gardening consultants who can serve as an excellent resource. Be sure to tell the extension consultant that you are growing and managing your garden organically and that children actively participate in gardening activities. This information helps the extension agent assist you in safely involving the children in the garden. The Cooperative Extension Service also trains and coordinates the Master Gardeners program. To achieve and maintain Master Gardener certification, a gardener must complete a designated number of garden-based service hours. You may be able to recruit a Master Gardener to complete his annual service hours in your Early Sprouts garden. Your local garden club is another potential resource for help. Finally, a knowledgeable staff member at a local gardening supply store is another reliable source of gardening advice.

We are not experts at vegetable gardening, but we have found success even with our limited expertise. The good news is that the target vegetables are easy to grow. Good soil, adequate fertilizer, plenty of sun, and sufficient rain augmented by watering in dry climates or months are all you need. The most important things are a positive attitude and a willingness to try. The children will learn about plant care and the cycle of seed to harvest regardless of how many tomatoes or green beans you are able to pick. So relax and give it a try. You can learn new skills through
participating in Early Sprouts, as we have. And you will have the wonderful pleasure of fresh-picked vegetables that come from your classroom or play yard garden as a benefit to you and your preschoolers!