

# Elder-Accessible Gardening

A Community Building Option for Brownfields Redevelopment



U.S. EPA Office of Brownfields and Land Revitalization

## Introduction

America's aging population is one of the fastest growing segments of society. By 2030, the population of people 65 years of age and over is expected to double, growing from 35 million (in 2008) to 72 million, and representing nearly 20 percent of the total U.S. population.<sup>1</sup>

Elder-accessible gardens create opportunities for older volunteers to contribute their time and expertise to grow nutritious foods, socialize with one another, and pass on cross-generational knowledge to younger community members. Gardening is also a great way to engage people of all age groups in physical activity. Done correctly, gardening can provide non-strenuous exercise and quality time outdoors. Increasing accessibility to these benefits should be a priority for new and existing gardens.

## Gardens for Nutrition

Researchers have found that aging, as well as medication, can bring physiological changes that may affect appetite, the sense of taste, or even the ability to chew and swallow foods.<sup>2</sup> With those changes, new approaches to food presentation and preparation are needed to stimulate appetite and interest in food. The gardening and harvesting of varied garden-fresh food may be one step that creates new enthusiasm for eating among older people and can help them adapt to these changes.



Photo by Zbigniew Kosmal



Successful planting of raised beds at the Nationalities Community Garden - Philadelphia, PA

## Tips:

- Satisfy a changing palate with herbs and spices like fennel, basil, spicy peppers or cumin. Many herbs or spices can thrive in small, convenient containers such as window boxes.
- Learn to process fresh vegetables for easy chewing and long-term storage. Many community gardening organizations offer seasonal classes in canning, pickling or other food preservation techniques. Some methods of fermentation can increase nutrient availability, antioxidants, beneficial microorganisms or flavor.

Calorie needs typically decrease as the adult body ages, physical activity is reduced, and metabolism slows. While the older body may need fewer calories, it still needs important nutrients (e.g., proteins, vitamins and minerals) and fiber. Fruits, beans and vegetables can provide both fiber and nutrients. Green leafy vegetables, citrus fruit, beans and peas contain folate, a B vitamin that is essential in the production of red blood cells.<sup>3</sup> Beans and legumes can be important "backyard protein" sources. Antioxidant-rich, garden-ready foods include blueberries, tomatoes, red beans, cabbage (sauerkraut),<sup>4</sup> legumes, broccoli, spinach and carrots.

<sup>1</sup>Federal Interagency Forum on Aging-Related Statistics. Older Americans 2010: Key Indicators of Well-Being. Federal Interagency Forum on Aging-Related Statistics. Washington, DC: U.S. Government Printing Office. July 2010.

<sup>2</sup>Schiffman SS, Effects of aging on the human taste system. Ann N Y Acad Sci. 2009 Jul;1170:725-9.

<sup>3</sup>"Nutrition and Aging". Purdue Extension, Consumer and Family Sciences, Department of Foods and Nutrition. [www.extension.purdue.edu/extmedia/CFS/CFS-605-W.pdf](http://www.extension.purdue.edu/extmedia/CFS/CFS-605-W.pdf)

<sup>4</sup>Sollitto, Marlo. "Top 14 Antioxidant-Rich Foods for Super Health Benefits." Agingcare.com. 2011. [www.agingcare.com/Articles/antioxidants-prevent-heart-disease-113293.htm](http://www.agingcare.com/Articles/antioxidants-prevent-heart-disease-113293.htm)

## Gardens Increase Physical Activity

Mowing the lawn with a push mower, raking leaves and gardening are three outdoor tasks that can help meet requirements for moderate physical activity. The Surgeon General and other leading health professionals recommend that all adults accumulate 30 minutes of moderate physical activity on most days of the week. Children and adolescents should accumulate 60 minutes of moderate physical activity on most days of the week in order to improve or maintain optimal health.

Osteoporosis, or porous bone, is a common condition among older Americans, especially women. Physical activity, especially weight bearing activity, can help slow the loss of bone mass that naturally occurs with aging.<sup>5</sup>

As people age, they may experience diminished physical strength, arthritis, limited mobility, or other physical challenges to gardening activities. Careful garden planning can help ensure continued accessibility for people of all ages and physical abilities.

## Starting a Community Garden on a Brownfield Property

Thousands of communities nationwide have assessed and cleaned up brownfields for use as community gardens with the help of the U.S. Environmental Protection Agency (EPA), state, tribal and other brownfields funding sources. A brownfield is a property that is vacant or abandoned because real or perceived concerns about environmental contamination on the property hinder its reuse. Before reusing a brownfield as a community garden, there are important public health considerations as well as environmental and planning and zoning issues that should be taken into consideration.

Brownfields may have no or limited contamination that may be removed or immobilized on site, depending on the intended reuse of the site. While these cleaned or stabilized sites can actually support a wide variety of new uses, a renewed interest in sustainability, local

food production, and healthy eating habits in children and adults alike fosters an interest in reusing these sites for community gardening.

### Steps for Reusing a Brownfield Property

**Community Involvement:** Community involvement may very well be the goal of your garden project! Remember that early community involvement – long before shovels hit the ground – can help your project in a number of ways. Documented community involvement can help you compete for grants and other scarce resources. Every community has a story to tell and that story may attract interest in your project. Engage older members of the community to compile neighborhood information that is both historical and site specific. Some of this information will be critical for the site assessment.

**Financial Assistance:** There are different types of grants and services that may be available at the state, federal or local level for brownfields site assessment and cleanup. To learn more about these grants and how to apply, contact your U.S. EPA regional brownfields coordinator, state environmental agency brownfields team, or agricultural extension office. Local development/redevelopment agencies, land banks or planning agencies might already be involved in similar work and may be able to offer funding assistance (e.g., community development block grants).



Construction underway at the Fremont Community Garden - Sacramento, CA

<sup>5</sup>Osteoporosis: What You Should Know". Purdue Extension, Consumer and Family Sciences, Department of Foods and Nutrition. [www.extension.purdue.edu/extmedia/CFS/CFS-150-W.pdf](http://www.extension.purdue.edu/extmedia/CFS/CFS-150-W.pdf)

## Starting a Community Garden on a Brownfield Property (continued)

**Before Acquiring a Site and Site Assessment:** Prior to buying, leasing or borrowing a property for use as a garden, you will want to know the site history. You may be able to research some of the property-specific history in city records, libraries and other sources. You also can have a professional assess the site to ensure the soil is safe for growing food. Phase I and II environmental site assessments will determine whether surface soil or ground water contamination is present based on site history and review (including interviews with neighbors), visual inspection, and soil sampling and analysis.

**Environmental Contaminants and Soil:** Site contaminants vary based on the property's previous use. Potential contaminants typically found on brownfields include: lead, arsenic and other metals at former industrial sites; petroleum and waste oils at former gas stations and auto repair facilities; volatile organic compounds (VOCs); pesticides; polycyclic aromatic hydrocarbons (PAHs); and asbestos, often found in construction and demolition debris resulting from illegal dumping.

In general, direct exposure to soils and accidental ingestion or inhalation may be of greater health concern than the smaller fraction of contaminants that move from the soil to the plants. The food crops less likely to take up heavy metals include certain vegetables, fruits and seeds (e.g., artichokes and blueberries), whereas green leafy vegetables (e.g., spinach and lettuce) may have soil particles splash onto the crop during watering. Root crops may also take up some types of contaminants. Selecting safe sites, incorporating clean materials, and using good garden practices that use integrated pest management and reduce chemical use are all steps to safe gardening operations.

### Ensuring Soil Safety

*Consider the likelihood of contamination when planting. Avoid planting food crops directly adjacent to building foundations where exterior lead-based paint may be present or close to heavily trafficked roads. These adjacent soils, if not improved, may be the places where lead contamination is highest. Covering topsoil (e.g., mulching) on paths and non-gardening areas and growing food crops in raised beds with new topsoil are common approaches to help prevent gardener exposures to potential environmental contaminants.*

**Tailoring Remediation Strategies to Reuse:** State voluntary cleanup programs or other appropriate regulatory authorities can help determine whether your site is safe for food production or the extent of cleanup required for your site. Brownfield properties will require varying levels of cleanup based on the site's planned reuse and state and local requirements. Other factors that should be considered are any potential exposures that may be associated with the planned reuse and the estimated risk to human health. A brownfield property slated for reuse as a community garden would likely seek the most stringent cleanup standards to ensure protection of human health. Alternatively, at a property for production of non-food crops or biofuels, or in operations where only adults enter, commercial or industrial reuse standards may be sufficient. To determine which end uses apply to your particular situation, please contact your state voluntary cleanup program or appropriate regulatory authority.



Photo by Elkeforida

## Case Study: Multi-Cultural Gardening at the Nationalities Service Center - Philadelphia, PA

In 2010, the Nationalities Service Center received funding from the Pennsylvania Department of Aging and Philadelphia Corporation for Aging to build a community garden on the grounds of a local church (Our Lady of Hope Catholic Church). The property consisted of a patch of lawn and an adjacent vacant lot that was overrun by trash, weeds and the remains of an old trash incinerator. Part of the vacant lot had recently been used as a space for temporary classroom trailers.

The Center collected soil samples from the property and mailed them to the University of Massachusetts' Soil and Plant Testing Laboratory for analysis. Contaminant levels were not especially high, but the soils were also found to be nutrient-poor. The Center decided to use raised bed gardens with commercial soils to provide plants with ideal growing conditions and to maximize accessibility for elderly gardeners.

Specific goals of the garden project included:

- Empowering Center members to have a voice in what kinds of food they are eating each day in their congregate meal program; and
- Engaging older adults in meaningful volunteer roles as teachers (passing on knowledge that they acquire from prior experience as agricultural workers) as well as care givers for the garden space throughout the growing season.

The Nationalities Service Center is a non-profit organization that provides legal, educational, social services and senior services to immigrants and

refugees so they can participate fully in American society. The Center currently serves older adults from Vietnam, China, Cambodia, Laos, Indonesia, Korea, Iraq, Eastern Europe, as well as U.S. born African American and Caucasian seniors. Many Center members were agricultural workers in their countries of origin. Since moving to the United States, many have not had access to places to grow food and use skills and expertise they have from prior agrarian work.

### Quotes from the Gardeners at the Nationalities Service Center

*"The garden makes me very happy. Each time I am out here I just want to come out and do more and more planting."*

*"I like the fact that we grow many different things in the beds. This way we can grow things for ourselves and also share with other seniors."*

*"I feel that I am really a part of something important."*

*"I am very happy to be outside growing something. I want to continue growing more so that I can share with others."*

*"I want to be able to grow more food so that I can cook and share my cultural foods with others."*



*Raised beds and rest area in the Nationalities Senior Center Community Garden - Philadelphia, PA*

## Case Study: Multi-Cultural Gardening at the Nationalities Service Center - Philadelphia, PA (continued)

Members participate actively in decisions about what is planted in the garden, and in turn, what is offered in the “congregate meal menus.” The diversity of the selection of herbs and vegetables offered in the garden allows for greater cultural understanding among these groups.

The gardens were planned not only as a source of food and natural beauty, but also as a place where local seniors and other residents could remain physically active, connect with each other and to the natural world, and engage in community activities. Gardening is done in raised beds to accommodate all Center members who would like to participate. Given the Center’s mission to serve immigrant and refugee populations, these gardens are seen as places of fellowship where people from diverse backgrounds can grow culturally relevant foods and plants.

Program Director Tara Swartzendruber-Landis describes some of the physical benefits of gardening:

“Gardening activities increase endurance, flexibility and strength. Gardening has many other physical and mental benefits that can help people feel younger and stay fit. It is a great activity for older people who need gentle exercise but also need to stay mobile and active.”

### Community Involvement

Initial steps in creating the garden included: acquiring land, seeking out “champions” or elders who would be the foundation of the project, and looking for funding. Once these initial steps were underway, the “real gardening work” could begin. Elders from the Center and the local community stayed involved as the garden planners looked for appropriate beds and tools, sought out culturally relevant plants, and planned for long-term care and maintenance of the garden.



Communities volunteers tend to the Nationalities Senior Center Community Garden - Philadelphia, PA



Community volunteer planting in raised bed at the Nationalities Senior Center Community Garden - Philadelphia, PA

### Cultivating Community Through Gardens

*Pairing gardeners (e.g., young-with-old and experienced-with-inexperienced) provides increased accessibility to community gardens and strengthens the communities where the gardens are grown. Knowledge of effective gardening practices can be passed from generation to generation, along with cultural information about the meaning of food and plants to different people from different times.*

## Case Study: Using Gardens to Engage the Elderly – City of Sacramento, CA Community Gardens

The City of Sacramento Department of Parks manages nine community gardens and will open two more by September 2011. All of the gardens include at least two accessible raised bed gardening plots designed for older or alter-abled citizens.

### *Fremont Community Garden*

The Fremont Community Garden had a 30-year history of informal gardening use before the city initiated redevelopment plans for the neighborhood. The Capital Area Development Authority (CADA) received ownership of the site from the State of California and started the redevelopment process. CADA conducted environmental site assessments that identified PAHs, lead and pesticides in the soil.

A U.S. EPA Brownfields Cleanup grant for \$200,000 helped to leverage over \$423,000 for cleanup and redevelopment. The cleanup included removal of twenty-four to forty-two inches of topsoil to address contamination issues. CADA also tested the new fill and soil that was brought in before donating the site to the Parks Department for further development, maintenance and management. The whole process from redevelopment planning to garden opening took over three years.

Today, the Fremont community enjoys a well-used garden, and former brownfields surrounding the property have been redeveloped into contemporary apartments. The raised-bed plots are being used by elder gardeners, and there is a waiting list for both regular and raised-bed gardening spaces. Community gardeners agree to use only natural or organic fertilizers and pest control.



*Volunteers working in the Fremont Community Garden - Sacramento, CA*

### *From Gas Station to Garden*

The Martin Luther King Jr. Community Garden opened to the public in August 2011, and features 32 ground-level gardening plots and four raised-bed plots. The Sacramento Housing and Redevelopment Agency (SHRA) and the Sacramento Parks and Recreation Department funded cleanup and garden construction. The project addresses multiple community needs by reducing blight, providing access to fresh vegetables, providing garden access to all ages, and revitalizing the streetscape and neighborhood with greenspace, foot traffic, and related arts projects.

As SHRA was drafting streetscape and urban design master plans for the neighborhood, residents expressed a desire to improve access to fresh, healthy food and the community identified specifically a need for gardening space. A SHRA-owned vacant parcel was identified as the future site for a community garden. The site was used formerly as a gasoline service station and automobile repair facility. A waste oil storage tank and three gasoline tanks were removed from the site in 1988. SHRA purchased the property in 1996 and demolished the remaining structures on the property. SHRA then conducted Phase I and II environmental site assessments and subsoil testing. The property did not test high for contaminants at that time. The site was again tested (Phase I and II environmental site assessments) before being transferred to the Sacramento Parks and Recreation Department in 2009, and no contaminant issues were found. The Parks Department will bring in additional clean fill and topsoil to complete garden construction.



*A view of the gate at Martin Luther King, Jr. Community Garden - Sacramento, CA*

## Design for Accessibility

Garden designs should be site specific, considering both the physical features of the site and the people who will use it. Including garden features such as Americans with Disabilities Act (ADA) compliant paths and ramps, raised beds or containers, adequate shading, seating and low-maintenance irrigation can enhance accessibility to community gardens and enhance the gardening experience.

Garden accessibility starts with paths. Accessible paths allow for increased mobility and safety of movement throughout the garden. The ideal garden path will need to have a hard, yet water-permeable surface that wheels can roll over easily. Some sites have had success with fine gravel surfaces or wood mulches on pathways. On sloped sites, ADA-accessible ramps may be necessary to provide access. Amongst other requirements, ramps should be at least 36 inches wide with 60-inch landings free of obstructions. Ramps exceeding 20:1 (5 percent) slope will require handrails according to ADA regulations, and often, local building codes. Outdoor ramps should be designed so that water will not accumulate on walking surfaces.

The use of raised beds and containers is another design component of community gardens that can increase accessibility. Providing raised beds two to three feet in height allows for easier maintenance and harvesting. Containers such as planter boxes, wooden barrels, hanging baskets, and large flowerpots can be used to increase accessibility to gardeners. Raised beds and containers also provide opportunities for gardening on contaminated or otherwise less-suitable sites.

### Plan for Shade and Seating

The use of shading in community gardens can provide aesthetic benefits, increase accessibility, and promote biodiversity. Features such as planted trellises and trees create shade that provides a respite from heat and ultraviolet radiation. Trellises can be planted with ornamentals like flowering vines or with edible crops like tomatoes, beans or grapes. Not only can these features be included in a community garden in an aesthetically pleasing way, they make shelter for shade-tolerant or shade-requiring plant species in the garden. Cool season vegetables such as lettuce and spinach may benefit from partial shading during the warmest summer months.

Younger and older gardeners are particularly affected by ultraviolet radiation. Community gardens can further accommodate these gardeners by making available items such as gloves, long sleeve shirts and wide brimmed hats.



*Bench with umbrella shade, Martin Luther King, Jr. Community Garden - Sacramento, CA*

Seating, particularly in shaded areas, can increase accessibility and comfort in community gardens. The availability of seating in community gardens is especially beneficial to those with heart and/or respiratory conditions. Natural materials, including straw bales or tree stumps, or natural building materials such as cob—a mixture of clay, sand and straw—can be used for seating. These materials can be incorporated easily into the gardens and are often already present at gardening sites.

### Conserve Effort and Water

Adding compost to soils, drip irrigation and mulching are effective water conservation practices that can decrease the amount of water that has to be physically transported, giving gardeners an increased ability to care for their gardens. Consider “traffic patterns” when planning a garden. Compost bins, water and other resources should be placed near planting beds. Techniques such as sheet mulching can drastically reduce tilling and other maintenance needs. Community gardens should have some source of fresh, consumable water onsite for gardeners to drink.

## Resources

### **EPA's Aging Initiative**

[www.epa.gov/agingepa/](http://www.epa.gov/agingepa/)

### **Urban Agriculture**

U.S. EPA Office of Brownfields and Land Revitalization.  
[www.epa.gov/brownfields/urbanag/index.html](http://www.epa.gov/brownfields/urbanag/index.html)

U.S. EPA. Office of Superfund Remediation and Technology Innovation, Ecotools, Growing Gardens in Urban Soils. [www.cluin.org/ecotools/urbangardens.cfm#healthysoil](http://www.cluin.org/ecotools/urbangardens.cfm#healthysoil)

### **State and Tribal Programs**

#### **U.S. EPA Office of Brownfields and Land Revitalization**

[www.epa.gov/brownfields/state\\_tribal/state\\_map.htm](http://www.epa.gov/brownfields/state_tribal/state_map.htm)  
[www.epa.gov/brownfields/state\\_tribal/tribe\\_progs.htm](http://www.epa.gov/brownfields/state_tribal/tribe_progs.htm)

### **National and Global Organizations**

#### **AARP**

[www.aarp.org/home-garden/gardening/](http://www.aarp.org/home-garden/gardening/)

#### **American Community Garden Association, Accessible Garden**

[www.communitygarden.org/docs/learn/articles/the\\_accessible\\_garden.pdf](http://www.communitygarden.org/docs/learn/articles/the_accessible_garden.pdf)

#### **National Association of Nutrition and Aging Programs**

[www.nanasp.org/](http://www.nanasp.org/)

#### **The National Council on Aging**

[www.ncoa.org/about-ncoa/](http://www.ncoa.org/about-ncoa/)

#### **World Health Organization, Age-Friendly Environments Program**

[www.who.int/ageing/age\\_friendly\\_cities/en/index.html](http://www.who.int/ageing/age_friendly_cities/en/index.html)

### **Local Initiatives and Non-Profits**

#### **Community Gardens, Department of Parks and Recreation, City of Sacramento**

[www.cityofsacramento.org/parksandrecreation/parks/community\\_garden.htm](http://www.cityofsacramento.org/parksandrecreation/parks/community_garden.htm)

#### **Nationalities Service Center, Philadelphia, PA**

[www.nationalitiesservice.org/](http://www.nationalitiesservice.org/)

#### **Philadelphia Corporation for Aging**

[www.pcacares.org/](http://www.pcacares.org/)

#### **Portland Memory Garden**

[www.portlandmemorygarden.org/](http://www.portlandmemorygarden.org/)

#### **Tool Kit for Community Gardens and Seniors, GenPhilly**

[www.genphilly.wordpress.com/resources/tool-kit-for-community-gardens-and-seniors/](http://www.genphilly.wordpress.com/resources/tool-kit-for-community-gardens-and-seniors/)

