

GARDEN FOR ALL: ACCESSIBLE AND SUSTAINABLE GARDENS



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INTRODUCTION

Hello, friends! The Food Bank of Northeast Georgia, located in Athens, GA, has partnered with undergraduate students in the Sustainability Certificate at the University of Georgia to develop the Garden for All project, which focuses on helping community gardens become more sustainable and accessible.

Community gardens provide many physical and psychological benefits to community members. However, many gardens remain inaccessible to a significant portion of the population that they aim to serve. By making some adjustments to the design and organization of gardens, community gardens can expand their community base.

Sustainability is also very beneficial for community gardens. Sustainability efforts can help community gardens save money and help the planet at the same time!

This guide is meant to provide basic information on a broad variety of sustainability and accessibility topics. However, it is not exhaustive. Some outside research will be required to redesign your community garden and practices. We recommend speaking with local experts. Additionally, <https://vcgn.org/vcgn2020/wp-content/uploads/2018/05/AccessibleCommunityGardensGuide-GrassrootsGardensofBuffalo.pdf> is a great resource with detailed information!

The goal of this guide is to provide recommendations for community gardens to become more sustainable and accessible, not necessarily to completely redesign existing spaces. Implementing any of these suggestions is a step in the right direction. We recognize that there are many barriers, such as lack of time or money, that can prevent community gardens from becoming more accessible and sustainable. Any effort is important and can help make a positive impact on the people and the world around us. Thank you for joining us on our journey, and we hope that our suggestions can contribute to making your garden and your community more accessible, sustainable, and happy!

FOOD BANK OF NORTHEAST GEORGIA

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WALKWAYS

There are many aspects of accessibility that can be integrated into community gardens to help expand member engagement. Implementing accessible designs and processes can allow everyone, regardless of ability, to enjoy the fun and benefits of gardening! Walkways, Railings, Planters, Signage, Water, Vertical Gardening, Accessible Tools, Plants, and Sensory Gardens can all contribute to a more accessible community garden. Including one or more of these suggestions can provide physical and psychological benefits to all community members.

Incorporating sustainable practices into your community garden can provide lasting benefits for community members as well as the environment. If we want our earth, our relationships, and our gardens to continue on into the future, we must practice sustainability. Becoming more sustainable can be accomplished by improving your practices in Water, Compost, Mulch, Pest and Weed Management, Fossil Fuel Use, Native Plants, and Sustainable Materials. Again, creating a more sustainable community garden does not require you to employ every change we have listed; implementing even one can contribute to your sustainability efforts.

WALKWAYS

Paths

Pathways are often inaccessible to those who are differently abled. Changing the width and type of pathway can significantly improve the capacity of everyone to participate in your community garden.

Pathways should be at least 36 inches wide to accommodate people who use wheelchairs. For at least two points in the garden, there should be an area for someone using a wheelchair to turn around in. This turn-around should be at least 60 inches in diameter.¹



Pathways should be at least 36 inches wide to remain accessible for those who use wheelchairs.

Pathways

There are several options for materials to create accessible pathways. While paved pathways made of granite, crushed stone, brick, or permeable pavers are best, they also present a financial obstacle for many community gardens. In that case, grass or dirt pathways are acceptable when kept well-maintained.¹

Additionally, all paths should remain firm and stable to prevent slipping and falling.^{1,2} In order to help keep wheelchairs on the pathways, raised borders can be placed along the edges. Bushes and plants are easily added. But, they must be well-maintained in order to keep obstacles from the path.²

Ramps

Ramps are important aids for navigating topography changes. Ramps should be 36 inches wide, like pathways, to accommodate those who use wheelchairs. The maximum slope of ramps should be 1:12 or 8.3%. If a ramp were to be steeper, it would be too difficult to navigate. Additionally, ramps should end at a level space.¹

Fences, Gates, and Doors

All fences, gates, and doors should have handles that can accommodate every gardener. Handles that are accessible do not require more than one hand to use and should not require any type of twisting.¹

One way to test if your community garden already has accessible handles is to try and open gates, fences, and doors with a closed fist. If it is possible for you to do so without much effort, then those handles are generally considered to be accessible.¹

In order for the greatest amount of people to be able to reach handles, they should be placed 34 to 48 inches above the ground.¹

Additionally, fences, gates, and doors should not be too heavy. If any of these gateways require a lot of force, it can be difficult for everyone to access the garden.¹



The maximum ramp slope should be 12:1

Door handles should be able to be opened with a closed-fist



RAILINGS, PLANTERS

RAILINGS

Railings can provide extra safety and stability for community garden members. Railings should remain at a height of 34 to 38 inches off of the ground.^{1,3} If placed along pathways and ramps, railings should not block the 36-inch wide pathway.¹ Railings should remain uninterrupted and smooth to maintain constant support.³ The handrails can be either round or non-circular. If they are round, they should have a 1 and 1/4 inch to a 2 inch diameter. If non-circular, railings should have a perimeter of 4 inches to 6 and 1/4 inches.¹

Additionally, railings should be placed on both sides of pathways, ramps, stairs, etc. This will allow for maximum support, providing extra security.³

Railings should also be kept at least 1 and 1/2 inches away from walls or other blockages. 1 and 1/2 inches allows for hands to fit in between railings and any other type of structure.³

In order to provide the highest level of safety, railings should not rotate and they should not protrude. If a railing rotates in its socket, it has the potential to cause instability. Instead of protruding, railings should be smoothed as to not cause harm when someone runs into them, or they should end in a wall or other structure.³

PLANTERS

While most planters are not accessible to everyone, it is possible to redesign planters so that they can be utilized by all people who want to garden. There are multiple different ways to make planters and garden beds more accessible. Generally, raising garden beds off of the ground is a great way to make them easier for people of all mobilities to use.⁴



Raised garden planters are useful for those who cannot bend down.

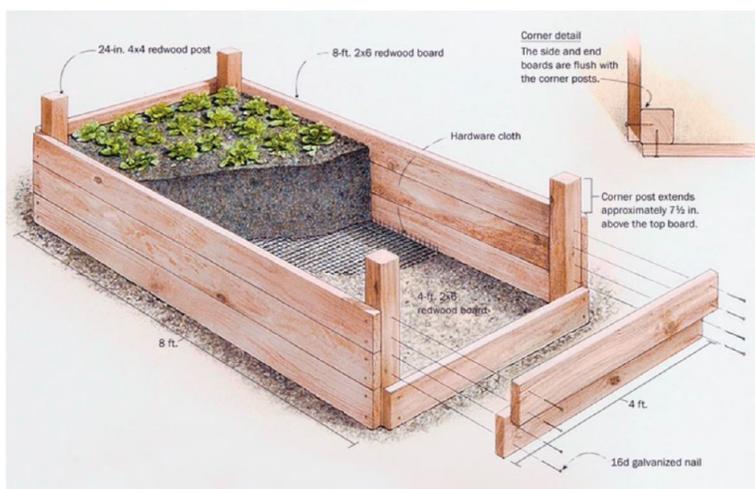
Dimensions

Ideally, planters should be around 30 to 36 inches tall. This allows gardening access for those individuals who might not be able to easily bend down.⁵ It is also possible to customize the height of raised beds in order to cater to a community garden's specific members. It is recommended that the space underneath raised beds should be around 28 inches in height. The remainder of the height for the bed will be used for soil.⁵ In order to accommodate the greatest amount of people, raised beds with multiple heights should be incorporated into the garden.⁵ Those who use wheelchairs would benefit from a slightly lower raised bed, around 24 inches tall, and those who struggle with bending down would benefit from standing at a raised bed around 30 inches tall or higher.⁴

Raised beds with access on both sides are usually 3 feet to 4 feet wide. In order to ensure that everyone can utilize the raised beds, they should be skinny enough for people to easily reach into the middle of them to garden. Generally, a 3 foot to 4 foot wide raised bed will allow everyone to reach into the middle.⁴ However, if a raised bed is set against a wall or other structure, the bed should be less than 2 and 1/2 feet wide in order for everyone to be able to reach the middle.^{1,6}

Additionally, raised beds can be made even more accessible by providing seating along the length of the planters.^{5,8} These seats should be anywhere from 8 inches to 18 inches wide.⁴ This allows for easier access that does not require standing for long periods of time.

Raised beds can come in a variety of lengths. Normally, they are about 10 feet to 20 feet in length, depending on the amount of space available.⁴



This is an example of the components and dimensions of a raised garden bed measuring 4x8 feet.

Paths

Like other pathways in the garden, the paths around raised beds should be at least 3 feet wide in order to accommodate those who use wheelchairs. In order to accommodate the space needed for those who use wheelchairs, the space between planters should be at least 36 inches wide. Additionally, the pathways should be level and firm, providing stability.¹

Composition

Raised beds can be made out of a variety of materials. Wood, brick, stone, and concrete are all materials that can be used in the building of raised beds.^{4,6} When possible, we recommend using sustainably-sourced or locally-sourced materials. However, whatever materials are readily available and within community gardens' budgets can be used.

Wheelchair-Friendly Raised Beds

In addition to wheelchair-friendly raised beds being shorter than those used while standing (around 24 inches tall), raised beds should have space underneath for wheelchairs to fit into. This provides easier gardening access for those who use wheelchairs by reducing the amount of space between them and the bed.^{4,6}

Plants

Raised beds can accommodate a variety of plants. However, they are well-suited to flowers, vegetables, fruits, and herbs.⁴ Also, try to use native and non-invasive plant species in your raised bed. This will contribute to your community garden's sustainability efforts.



This is an example of a raised bed that is wheelchair-accessible.

WATER

Water may not be the first barrier you think of when analyzing the accessibility of your community garden. However, water is heavy and can be difficult to transport, making it a significant barrier to accessibility in gardening.

When water access is normally situated at a single point in a garden, it can be difficult to transport it to other areas. Generally, there are two methods that can be utilized to improve the accessibility of water: more accessible watering tools or the addition of an irrigation system. Buying new water tools and adapting current water tools are great ways to make water more accessible. Watering cans are often used for gardening. Lightweight versions of cans with controlled valves, larger handles, or different ways of pouring can make pouring water much easier. Additionally, if using a hose is necessary, try to make sure that the hose is as lightweight as possible and is stored at a height of fewer than 40 inches, allowing as many people as possible to reach it.¹

The other method of increasing water accessibility in community gardens is installing irrigation systems. There are different types of irrigation systems for many different budgets. While some are very expensive, there are cheaper and effective alternatives. For example, placing soaker hoses in garden beds can reduce the amount of water that requires carrying from one area to another. In order to prevent falling, always make sure that soaker hoses do not run across paths. Another method that can be used is emitter tubing. Placing emitter tubes throughout your community garden can allow for easy watering that does not have to be carried. Plus, different nozzles can be added to the holes in emitter tubes, which can allow you to customize the amount of water released and its radius.

It is always important to keep in mind that whatever kind of irrigation system you choose to implement in your community garden, some manual watering will always be required.²

Drip irrigation is preferable to other forms of irrigation because it wastes less water.



SIGNAGE, VERTICAL GARDENING

SIGNAGE

Redesigning signs in your community garden can significantly increase your garden's accessibility. Firstly, signs should be placed at different heights so that people of all ages and abilities can read them. When possible, signs should include braille so that gardeners who are blind or visually impaired can still benefit from them. Additionally, placing pictures on signs can make it easier for those with trouble reading to still learn from the signage.¹

We also recommend completing research and developing surveys to gauge the most spoken languages in your community. Instead of having signs only in English, adding information in other languages, such as Spanish, can make your community garden more accessible and educational for the greatest number of people possible.

VERTICAL GARDENING

In addition to implementing raised beds in your garden, installing vertical gardens can help increase accessibility. One of the benefits of vertical gardening is the range of possible heights for gardening. It allows for people of all different heights, those who cannot bend down, and those who cannot reach up, to garden.⁶ Vertical gardens should be at least 35 to 55 inches high to accommodate every gardener.

Trellises, green walls, hanging pots, and shoe pockets are all examples of vertical gardens that can be incorporated into your community garden.^{1,6} It is important for these garden fixtures to be placed at the edges of planter beds or other garden spaces to allow for easier access that does not require stepping into garden beds.^{1,6} It is also recommended that these vertical gardens be around 20 inches away from planters and other garden spaces.¹

Vertical gardens allow people of different heights and abilities to reach planters that best suit their height.



ACCESSIBLE TOOLS

ACCESSIBLE TOOLS

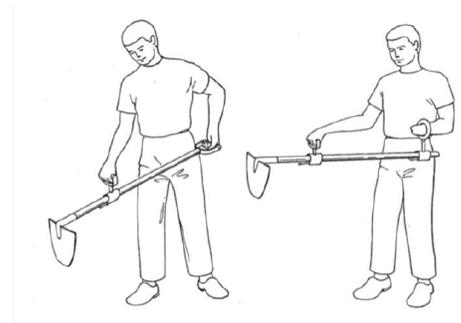
A lack of accessible tools can be a large barrier to accessibility in community gardens. While buying new tools may not be financially feasible, it is also possible to adapt the tools you currently have to make them more accessible. Accessible tools can come in many different forms, but finding them can be made easier when you look for certain aspects:

- lightweight^{1,2}
- adjustable extensions¹
- effortless grip handles that are non-slip, grooved, and/or padded^{1,2,6}
- extra-long handles²
- multiple handles in different places²
- large²
- easy-squeeze handle triggers²
- brightly-colored handles^{2,6}
- hook and loop straps⁶

Some accessible tools to look out for when shopping are:

- kneeling pads with handles⁶
- garden carts with two wheels⁵
- tool extenders⁵
- long-handled loppers⁵
- hand tools with wrist guards⁵
- tools with vertical handles⁵
- trollies for transportation²

In addition to buying accessible tools, it is possible to make adjustments to tools that you already have to make them more accessible. There are multiple ways to accomplish this. One of the easiest methods is to use duct tape to combine materials. For example, using duct tape to attach a pole to a shovel can allow those who use wheelchairs to reach the ground easier.¹ Additionally, adding duct tape to handles on tools can make them easier to grip and can provide more padding. Otherwise, foam padding or bicycle grips can be added. Plus, PVC pipe can be placed onto tools to make them longer for those who cannot bend down easily.⁷



Existing tools can be made more accessible with the addition of handgrips.

SENSORY GARDENS

Sensory gardens are garden spaces created with the intention of stimulating all five senses. By growing certain plants and using certain materials in your community garden, you can start your own sensory garden for the benefit of your entire community, especially those with sensory processing issues. Sensory gardens allow for gentle stimulation of all five senses without causing gardeners to be overwhelmed. These garden spaces allow everyone to explore their senses in a safe and serene environment.⁸

Sight

Incorporating colorful plants and materials in your sensory garden helps stimulate sight. Colors can be grouped into sections or distributed evenly throughout. It is important to balance the colors in your garden to prevent gardeners from being overwhelmed. Some colors should be muted and calming, while others should be bright and energizing.⁸ Daffodils, marigolds, pansies, sunflowers, and rainbow chard are all bright plants that can be incorporated into your garden.⁷ However, it is important to remember to also incorporate plants with more muted tones.

Additionally, certain colorful materials can be integrated into your garden in order to stimulate sight. When adding brick, gravel, stone, or other structures to your sensory garden, provide a mix of muted and bright colors.⁸

Sound

Certain plants and materials can be added to your sensory garden in order to stimulate people's sense of sound. Remember to keep these sounds soothing and peaceful.⁸ Ornamental grasses, corn, bamboo, and plants with rustling leaves all provide calming sounds that stimulate hearing.^{7,8}

Man-made structures and features such as fountains and wind chimes can also contribute to relaxing stimulation in your sensory garden.⁸



Flowers like daffodils can be added to your garden to stimulate sight.

Smell

Smell is another sense that can be stimulated in a sensory garden. Smells have the potential to trigger emotional responses, so be careful when choosing which plants to incorporate into your sensory garden. Some plants release smells when touched or crushed, but others release their scents naturally. Try to incorporate a range of scents in your garden. Some plants should release more subtle fragrances while others should emit more intense ones.⁸ Honeysuckle, lavender, violets, mint, chocolate cosmos, jasmine, sweet peas, pelargoniums, and lemon balm are just a few plants that have the potential to stimulate gardeners' sense of smell.^{7,8}

Taste

Although taste might seem like an odd sense to incorporate into a garden, it is not impossible. Many plants are edible, but make sure to thoroughly and distinctly distinguish the edible plants from the non-edible ones. We suggest separating the edible plants from the non-edible plants to ensure that everyone knows to avoid eating anything that does not come from the designated edible garden space. Fruits, vegetables, herbs, and edible flowers can all be integrated into your sensory garden. Edible flowers include nasturtiums, evening primrose, hibiscus, and pansy.⁸ Basil, strawberries, peas, rosemary, carrots, and cherry tomatoes are just a few of the other edible plants that can be added to your garden.⁷

Touch

Touch is the final sense that can be stimulated in a sensory garden. Both plants and man-made structures can be added to stimulate gardeners' sense of touch.⁸ Try to incorporate a variety of different textures into your sensory garden. There are many different plants that can provide textile stimulation. Lamb's ear, cape sundew, yarrow, feather grass, coneflower, borage, succulents, bottlebrush, and snapdragons are all plants that can be added to sensory gardens to stimulate gardeners' sense of touch.^{7,8} Additionally, including ponds and water gardens is a great way for gardeners to explore their sense of touch.⁸

BENEFITS OF GARDENING

Gardening provides many physical and psychological benefits.

Vitamin D

Gardening allows for exposure to vitamin D. Vitamin D comes from the sun and is vital for the health of our immune systems and bones.^{9, 10} Additionally, it is a component necessary for hundreds of bodily functions.¹⁴

Exercise

The CDC considers gardening a form of exercise. While there are different levels of physical intensity for exercise in a garden, gardening uses every major muscle group. Gardening also has the potential to offset age-related weight gain as well as childhood obesity.¹⁰

Cognitive Functions

Any type of exercise, including gardening, serves to improve cognitive functioning. There is some evidence that gardening can help improve memory and can help stimulate the growth of memory nerves.¹⁰ Additionally, gardening can contribute to combating dementia and has the potential to reduce the probability of developing dementia in the future.⁹

Stress Relief

Gardening can improve people's moods and their self-esteem. Those who garden are shown to feel less stress, anxiety, and depression. Additionally, after experiencing a traumatic or stressful experience, gardening can alleviate symptoms of stress. Those who garden after stressful events recover faster and have less cortisol, the stress hormone, in their body.^{9, 10}

Social Interaction

Gardening often requires working with others. Working in a garden with other people can expand community networks and can facilitate the growth of relationships, especially for those in retirement who have limited interactions with others.^{9, 10}

WATERING

Changing the way you use water in your community garden can significantly contribute to increasing your sustainability efforts.

Plants

Incorporating plants that have a high drought tolerance, those plants that require less water than average, can contribute to reducing the amount of water you use in your garden. Honeybush or Monterey cypress are two types of high-tolerance plants that can be added to your garden to promote water conservation. Finding high-tolerance plants that are native to your area will provide an additional layer of sustainability to your community garden.¹¹

Rainscaping

Rainscaping utilizes natural water collection and other water-saving features to conserve water. Rainwater is free and is a more sustainable way of obtaining water. There are a variety of ways that you can store or collect rainwater. Rain barrels and cisterns are two methods that collect large amounts of water. However, incorporating green roofs, permeable pavers, diverse landscaping, etc. can also contribute to the development of a rainscape that provides your community garden with free and sustainable water.¹⁶

Missouri Botanical Gardens has a guide for rainscaping that can help your community garden decide what features to implement:

<https://www.missouribotanicalgarden.org/sustainability/sustainability/sustainable-living/at-home/rainscaping-guide.aspx>.¹⁴

Rain barrels are an excellent way to capture and utilize rainwater for your community garden. Rain gardens are another way to sustainably collect and store rainwater. Rain gardens employ terraces to store rainwater, preventing evaporation and runoff.^{11,13} Using a cistern in your community garden can also improve your water storage. Cisterns are essentially very large underground rain collectors. Installing a cistern can give your community garden better access to a large amount of water that can be used for irrigation or other non-potable uses.¹³ However, cisterns can be extremely expensive, which can pose a barrier to many community gardens.

WATERING, COMPOSTING

Irrigation

Although sprinklers are easy options for watering plants, they are not very sustainable. Sprinklers, especially those that oscillate, lose water to evaporation. Additionally, the way sprinklers wet plants can cause them to become more susceptible to disease.¹²

Watering cans are a great alternative to sprinklers. Although they cannot water large spaces at once, they are good for watering the right space in the right amounts.¹²

Additionally, when designing your garden, placing plants that require the same amounts of water near each other can help your community garden save more water.¹²

For most gardens, drip irrigation or soaker hoses can be used in place of sprinklers.

These forms of irrigation lose less water to evaporation. Additionally, capturing excess water after watering plants can help you to conserve more water.¹³

Although sprinklers are generally not the best option for sustainable water irrigation, sometimes sprinkler use in your community garden is unavoidable. If so, using low-angle spray sprinklers is best. They do not lose as much water to evaporation and are therefore more sustainable.¹³

COMPOSTING

Composting is a great practice that can make your community garden more sustainable. Composting consists of recycling food or other natural waste and making it into fertilizer. Putting compost into your soil makes it rich and healthy, leading to the best possible outcomes for the plants you grow.¹¹ Highfields Center for Composting and the Institute for Local Self-Reliance has a very useful composting guide that we recommend: <https://ilsr.org/wp-content/uploads/2014/07/growing-local-fertility.pdf>.¹⁶ Instead of throwing away clippings, leaves, and other natural disposable garden materials, you can place them in your compost to reuse them as fertilizer.¹¹

Composts allow you to reuse waste and turn it into useable fertilizer.



COMPOSTING, MULCHING, SEED SAVING, PEST AND WEED MANAGEMENT

Additionally, from an economic standpoint, composting helps save your community garden money because it eliminates the need to buy fertilizer.¹⁵

For materials like plastic or clay that cannot be composted, try to reuse or recycle them when possible.¹³

MULCHING

Mulching significantly contributes to healthy and sustainable community gardens. It is a low-maintenance tool that assists in the development of low-maintenance gardens.

Mulching has a multitude of benefits:¹³

- keeps soil damp/reduces water evaporation^{12, 13}
- suppresses weeds¹³
- regulates soil temperature¹³
- reduces soil compaction¹³
- adds nutrients to the soil¹³
- prevents erosion¹³
- ambiance ¹³

By keeping soil damp and reducing water evaporation, mulch curbs the amount of water you need to keep your plants healthy.^{12, 13}

SEED SAVING

After your plants have matured and produced seeds, you should collect them for future use. You can utilize these seeds for the next season, preventing you from having to purchase new seeds to grow.¹¹

PEST AND WEED MANAGEMENT

Herbicides and pesticides are not good to use for the maintenance of a healthy garden. They contain chemicals that are dangerous for humans, gardens, and environmental health. Additionally, through runoff, pesticides can spread and further contaminate an ecosystem.^{12, 13}

PEST AND WEED MANAGEMENT, NATIVE PLANTING

There are many alternatives to using herbicides and pesticides. Weeding by hand is a natural and sustainable way to remove weeds from your gardens.¹¹ However, although this is great exercise, it may pose an obstacle for those with limited mobility.

Using beneficial insects is a more natural way to get rid of pests. Introducing insects that eat pests to your community garden can protect your plants from damage. For example, introducing ladybugs to your garden can prevent aphids from harming your plants.¹¹ The type of beneficial insect you require depends on the type of pest you are trying to combat. We recommend doing your own research and connecting with local experts to determine which beneficial insect would best suit your needs.

Another method of preventing damage to plants is by planting larger seedlings that are stronger and are more likely to survive disease.¹⁵ Additionally, using a long hoe to cultivate in-between plants can aerate the soil and suppress the growth of weeds.¹²

If pesticide or herbicide use is unavoidable, use ones with as low toxicity as possible.¹⁵

NATIVE PLANTING

Native plants, which are extremely beneficial to the environment, are those that are indigenous and occur naturally in the area of your community garden. Because they are well-suited to your garden's environment, they require less maintenance than other plants. They don't need as much water and time, making them more environmentally friendly. Additionally, planting native plants in your community garden provides habitats for native animals and insects, contributing to ecosystem health. Native plants attract many different species, such as birds and butterflies, that benefit the health of the ecosystem and add beauty to your garden. We recommend doing your own research and working with local experts to determine which native plants will be most beneficial for your garden.¹¹

Butterfly Milkweed is native to the Southeast and is beneficial for pollinators.



REDUCING FOSSIL FUEL USE

Using sustainable lighting in your garden can contribute to lower fossil fuel use. Solar-powered lights, compact fluorescent bulbs, low voltage lighting, and LED lights all use less energy than normal lighting practices, contributing to reducing your use of fossil fuels.¹³

Additionally, instead of using a gas-powered lawnmower, when possible, pull weeds by hand, use a manual lawn mower, or use an electric lawnmower. If it is necessary for you to use a gas-powered lawnmower, get it serviced as often as possible to prevent it from releasing pollution.¹¹

Another way to reduce fossil fuel use is through removing the lawns in your garden. Lawns require a great deal of maintenance, most of which requires the use of tools that rely on fossil fuels. Instead of having a lawn, it is more beneficial to the environment to plant perennials. These plants, that bloom during one season of the year, add beauty to your garden while simultaneously reducing your need to use a lawnmower.¹¹

SUSTAINABLE MATERIALS

There are many different materials that you can use in the construction of your garden that are sustainable and long-lasting. Using sustainable materials ensures that your garden contributes to the betterment of the planet. Using recycled, repurposed, reclaimed, and locally-sourced materials can help make your community garden more sustainable.

Recycled Materials

Items that community members have around their homes can sometimes be used as garden supplies. Materials that have the potential to be recycled into community garden materials can often be found at low prices at yard sales. Most recycled materials are extremely cheap or even free. This demonstrates that sustainability efforts can be completed without extreme costs. For example, old clothes that can no longer be worn can be used as rags to clean hands and garden items.¹⁷

Repurposed Materials

Some items can be repurposed and turned into garden beds. This practice is sustainable and good for the environment. It doesn't require the production of more materials. Additionally, reusing old items that have already been purchased enables you to save a great deal of money. There are a variety of different materials that can be used. Anything from old furniture to old toys can be repurposed to build planter beds in sustainable and eco-friendly ways.¹⁷

Reclaimed Materials

Instead of buying new wood or plastic materials to use for garden construction, utilizing wood from unusable furniture or other structures can allow your community garden to build fences that have a very low, or no, cost. Additionally, using these materials aids community gardens in becoming more sustainable by reducing their reliance on materials that have been unsustainably produced.¹⁷

Locally-Sourced Materials

Obtaining materials from local sources is more sustainable than acquiring items from distant locations. Locally-sourced materials do not require as much energy, emit as much pollution, or use as much resources as other materials.¹⁸



Garden materials can be recycled or repurposed. Instead of buying something new, you can reuse something old to save money and add an extra layer of sustainability to your community garden.

EXAMPLE GARDEN DESIGN

SCOPE OF DESIGN

The Food Bank of Northeast Georgia has more than 25 years of experience serving the Athens community and currently distributes more than 11 million pounds of food to a fourteen county service area through more than 225 partner organizations every year. The Food Bank works with local, regional, state, and national product partners to bring food into the local community.

Currently, the Food Bank has a small community garden on their property, which allows them to distribute fresh produce along with the donations and surplus food that they regularly have.

However, the current garden situation is unable to accommodate community members who are wheelchair bound, special needs, or otherwise require specialized assistance. Many members of the community have expressed interest in volunteering at the garden, but are unable to due to the garden's accessibility limitations.

The purpose of the Garden for All project is to ultimately turn the outdoor space behind the Northeast Georgia Food Bank into an accessible and inclusive community garden area and education space that keeps all aspects of sustainability in mind.

The Garden for All Capstone team has outlined many ways that community garden are able to simultaneously become more inclusive and sustainable. These initiatives include:

Materials

- Using local, renewable, low-energy input materials decreases environmental strain and supports surrounding companies. However, there can be conflicts with accessibility due to ADA regulations. We suggest that the Food Bank reserves non-sustainable materials for areas where they are completely necessary (for example, the area under the covered tent does not have to have permeable pavers, as it is not as affected by rainfall).

Plants

- Use Native plants where you can. Since they are already adjusted to the climate, they do not require as much water, maintenance, or pest control.
- Low-maintenance plants make it easier for people with disabilities to assist with gardening.
- Plants with larger yields will allow the Food Bank to produce more food and provide more community members with fresh produce.
- Use native plants on the surrounding Food Bank property to improve soil quality and provide ecosystem services for wildlife (habitat and food).

EXAMPLE GARDEN DESIGN

FOCUS AREA - EDUCATION

Benefits

- Connects people with nature and their immediate environment
- Teaches tangible and useful skills for life in a fun and engaging way
- Applicable and tangible learning of culturally relevant environmental education

Costs

- Materials: upfront costs of permeable pavement is larger than alternatives
- Volunteers can be recruited to help with installation (time)
- Professional installation may be necessary (money)

Community Needs

- 40% of children aged 5 to 17 live in poverty and could benefit from free fresh produce

FOCUS AREA - PLANTERS

Benefits

- Accessibility (ability, age)
- Usable for a multitude of produce, herbs, and flowering plants

Costs

- Materials: wood for planters, pavement for wheelchair access
- Volunteer help with construction and installation (time)
- Professional construction and installation (money)
- Space: edges of planters should be at least 36 inches apart so those in wheelchairs can safely navigate the beds

Community Needs

- fastest growing age segment in Athens is over-65, a group that would benefit from raised planters



This is an example of a potential layout for an accessible garden. It leaves room for those who use wheelchairs to navigate around beds and other obstacles.

OVERVIEW

The purpose of the Garden for All project is to ultimately turn the outdoor space behind the Northeast Georgia Food Bank into an accessible and inclusive community garden area and education space that keeps all aspects of sustainability in mind. This report is part of the beginning stages to create a plan for the garden area in terms of design, financial resources, and overall goals for the space. In this brief report, costs and benefits of proposed renovations and execution of the project are discussed, considered, and weighed at large. In Section IV, two specific ideas in the plans will be considered in detail to serve as examples of the considerations that would occur for renovations to be executed in terms of costs and benefits.

Many of the benefits from this project are non-monetary. It is difficult to put a dollar value to them and to directly compare with the monetary costs that this project entails, but these benefits do accomplish the goals of inclusivity in terms of ability as well as expanding the reach of the Food Bank. The Food Bank does not exist to make money but to provide a service to the local community. Accessibility and education through an active community garden that produces more food to provide to locals broadens the capacity of the Food Bank to provide those services. When the garden area is inaccessible to a portion of the community it exists to serve, a negative externality exists because a resource is not fully allocated to the parties it intends to benefit, and the real social cost is higher than it seems. In less economic terms, the full potential of the garden area is not fully attained because a portion of the population that is intended to be served and included misses out on the resource.

When the community garden serves the role it intends to all community members, a positive externality exists because the overall benefit to the community is greater than just the services of the Food Bank. These externalities must be internalized, or acknowledged, to contextually compare benefits to the costs and to understand the importance of this project and the immense ways it could help the local population.

Costs, however, are mostly monetary, and they can really add up in a renovation project such as this. Grants, donations, and appropriate budgeting are crucial for projects like this with a non-profit organization. Any of the services provided by the Food Bank could not be provided without funding through grants and donations, making budgeting a very important and thoughtful task. Budgeting for additional projects and expansions such as this one can pose an immense challenge, so awareness of project proposals for donor campaigns and grant proposals are crucial to increase funding. When necessary funding increases, relative costs decrease and non-monetary benefits become even more justifiable in the logic of cost-benefit analysis.

IV. Example of Costs and Benefits

B. Raised Bed Construction

In order to meet the standards of accessibility in terms of ability set for this project, all of the plant beds in the garden area at the Food Bank need to be raised. As it exists prior to renovations, most of the beds in the garden are sunken and will therefore need to be replaced. As detailed in the corresponding project distribution pamphlet, raised beds are beneficial to people of all mobilities and particularly people who may have trouble bending down. In the chart below, some alternative materials are listed and compared. For simplicity in comparison, all of the material listed are alternatives of lumber, but as mentioned in our corresponding pamphlet, raised beds can be constructed using numerous materials including bricks, concrete, and stone.

Material	Scrap Wood	Large retail lumber	Locally-sourced lumber
Price Range	\$ or Free	\$\$\$	\$\$
Advantage	Cheap, reused	Easy to find	FSC Certified, Local
Disadvantage	Could deteriorate quicker	More expensive, less sustainable	Harder to find

As mentioned prior, sustainability in terms of environmental cost is an important factor to consider with materials, and all other factors of this project, in order to protect and benefit the environment and prevent further costs in the long run. In terms of lumber, scraps or re-used wood and locally-sourced lumber hold a great advantage over lumber bought at big box retailers such as Home Depot. The use of scrap wood prevents further waste and can provide cheap and quickly-accessible materials. Depending on the state of these scraps, however, they may deteriorate faster, but they are always an alternative worthy of consideration. Locally-sourced lumber can be found at local lumber yards or through the [Forest Stewardship Council \(FSC\) Supplier Search](#) for often cheaper prices than large retailers and for a better selection of better quality products. FSC Certification guarantees responsible forest management, so purchases promote ecological care in sourcing. While one may have to seek out and travel to local sourcers more than the nearest big box retailer, locally-sourced lumber travels less, also cutting down on carbon emissions. The lumber from local foresters and lumber yards also tends to be higher quality, cutting down on maintenance and replacement costs and waste. Other sustainable considerations include that any lumber needs to be treated, and if buying lumber, one should be aware of the type of treatment used on the wood and whether it is food safe. Additionally, it is suggested that raised beds are lined in order to protect from the treatment and prevent unnecessary water wicking.

MAGGIE SMITH

Maggie Smith is graduating from the University of Georgia in May 2021 with a Bachelor of Arts in Anthropology, a Women's Studies minor, and a Sustainability Certificate. She wrote this distribution pamphlet as her final deliverable for the Sustainability Capstone. She thoroughly enjoyed working on this and hopes that this information helps you and your community garden to become more sustainable and accessible! Maggie plans to attend Georgia State University in the Fall of 2021 to obtain her Master's degree in Anthropology. She hopes to work with Indigenous and local communities, especially with women, to determine how their relationships with non-governmental organizations and their environments have affected their cultures and their lives. Because of the time she spent on this project, Maggie is confident that she can incorporate sustainability and accessibility into her work as an Anthropologist and her daily life.

NICOLE CRUIKSHANK

Nicole Cruikshank is graduating from the University of Georgia in May 2021 with a Bachelor of Business Administration in Economics, Bachelor of Arts in International Affairs, a minor in Sociology, and a certificate in Sustainability. For this capstone project, she acted as the Cost-Benefit and Funding Lead and produced a Grant List and Business Case for the Food Bank's specific site while also contributing to the research that led to this pamphlet. Throughout the course of this project, she really enjoyed working closely with a community non-profit and applying the knowledge she gained to produce tangible products that can benefit the local community in all of the aspects of sustainability. After graduation, she plans to serve with AmeriCorps VISTA in Phoenix, Arizona for a year with a local non-profit to expand their volunteer recruitment and management capacity. She then hopes to attend law school and practice as a public interest attorney.

ABOUT THE AUTHORS

ANNALIESE POLINER

Annaliese Poliner is graduating from the University of Georgia in May 2021 with a Bachelors in Landscape Architecture, an Environmental Ethics Certificate, and a Sustainability Certificate. For the capstone, she was Garden Design Head and produced a generalized garden design for the North East Georgia Food Bank, as well as offered suggested changes for two areas on site. This capstone was one of her favorite courses she has had the opportunity to take, and it taught her how to prioritize and balance sustainable practices and community needs. After graduation, Annaliese has an internship at Innovation Design Group in Orlando, Florida.

ISAAC SWIER

Isaac was our project partner with the Food Bank of Northeast Georgia. He is the Horticulture Specialist as well as the sole individual in charge of their community garden. Without his help and expertise, our project, including this distribution pamphlet, would not be possible. We hope that our work is a worthy reflection of his dedication and hard work. Thank you, Isaac.

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