



Collard Greens and Common Ground:

A North Carolina Community
Food Gardening Handbook

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COLLARD GREENS AND COMMON GROUND:

A North Carolina Community Food Gardening Handbook

AG-806 | Published December 2015, revised July 2017

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Published by

NC State Extension

College of Agriculture and Life Sciences

NC State University



Available online at content.ces.ncsu.edu/collard-greens-and-common-ground-a-north-carolina-community-food-gardening-handbook

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Preface

Across North Carolina, community gardens are making a positive difference by strengthening neighborhoods, increasing food security, and giving thousands of people a place to grow a food garden of their own.

Behind every successful community garden are people just like you. We dedicate this publication to you and your fellow community gardeners, NC State Extension Master Gardeners, and to the sponsors, supporters, public agencies, faith communities, and other organizations that help turn community garden dreams into green and growing realities.

Many excellent documents and websites already explain the benefits of community gardening. The writers of this guide, both experienced community gardeners, highly recommend exploring them.

We hope to address a different objective by emphasizing practical information you can use to help make your community garden a success, whether you are a beginner starting your first garden or a veteran community gardener looking for ways to make your garden even better.

This publication is not an academic study, although we did our homework. We purposely focus on specific, practical, and applicable suggestions. We hope this guidebook will equip you with tested tools and techniques you can adapt to create successful solutions to match your own community garden's needs.

We owe a great deal to community garden organizers across the country who inspired and taught us over the years. We want to thank two grassroots organizations, The North Carolina Community Garden Partners (NCCGP) and The American Community Gardening Association (ACGA). They each have valuable resources and networks, and we urge you to join both.

Best of luck in your community gardens!

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1. Introduction

This tool for organizing and managing a community garden in North Carolina covers the entire process, from the first steps in organizing a new garden to long-term strategies to keep gardens flourishing over time. Our goal is to encourage the creation of successful and sustainable community gardens that benefit citizens across our state for decades to come.



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What is a Community Garden?

The Brooklyn Botanic Garden's book, *Community Gardening* (Kirby and Peters 2008), defines a community garden as "anywhere a community of people joins together to garden." By their nature, community gardens are highly diverse. Some target a special population—for instance, homeless people or recent immigrants. Others provide horticultural therapy to those with physical or developmental challenges or offer a soothing sanctuary for patients in hospice care. Community gardening programs include wildflower meadows, street tree projects, and outdoor gathering places for neighborhoods.

Community gardens have long been part of the American landscape. In 1759, Moravian immigrants established Bethabara Garden in Old Salem, North Carolina, North America's first documented colonial community garden. Bethabara is still an active community garden today.

Modern community gardens come in an endless variety of sizes, shapes, and purposes, from tiny pocket parks to expansive urban farms. They are as culturally diverse as America itself. In spite of their differences, however, all community gardens share something essential in common. Whether it's a church project to grow food for the hungry, a market garden to engage urban youth in an entrepreneurial adventure, or a traditional allotment garden where families rent plots to grow vegetables for themselves, a community garden's success depends directly on the gardeners and how actively they support their garden.

Benefits of Community Food Gardening

In this publication we focus on community food gardens, defined as community gardens that make growing food their top horticultural priority.

Community food gardens boast a long list of benefits, from improving access to fresh food to building stronger



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neighborhoods. Community food gardeners and their families eat a wider variety and larger quantity of fresh fruits and vegetables, leading to an overall improvement in nutrition. The gardens' harvests also help reduce grocery bills. Some gardeners supplement their incomes by marketing a portion of the produce they grow. Being involved in a community garden also increases gardeners' physical activity and overall health. Gardening can reduce stress, muscle tension, and high blood pressure. In addition, community gardens invite people of all ages and backgrounds to cooperate, work, and socialize together. A community garden can transform a group of separate individuals who happen to live in the same place into a community. The organizational and leadership skills gardeners learn while working with their community gardens help them become more effective and engaged citizens.

Community Food Gardens: Plots and Co-Ops

Community food gardens can be organized as a collection of individual *plot gardens*, as one large *cooperative garden*, or as a combination of the two.

Plot Gardens

Community food gardens with individual plots, similar to *allotment gardens* in the United Kingdom, are subdivided into individual gardening areas. Plots normally range in size from 100 to 500 square feet. Gardeners are responsible for planting, maintaining, and harvesting their own plots, and the harvest is usually for the gardener's home consumption. A well-established variation on plot gardens, especially in urban areas, provides gardeners



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with raised beds instead of plots. Raised beds average 32 to 60 square feet.

Cooperative Gardens

In a cooperative community food garden a group of gardeners work together to manage the entire space as a single large production garden. The harvest may be distributed equitably to member gardeners, donated to food banks or soup kitchens, or sold at local farmers' markets as an entrepreneurial project.

Each strategy has advantages and disadvantages. Plot gardens allow more personal control over what to grow and how to grow it; however, they require gardeners to have knowledge and experience and be committed to managing the plot for the entire season. Cooperative gardens are more accessible to gardeners because individuals can join any time in the growing season with no prior knowledge or experience, and gardeners can contribute as much or as little time as they want. It is also easier to manage crop rotation in a cooperative garden. However, some cooperative gardens tend to be directed "top down" and may not allow gardeners to take a meaningful role in decision-making and leadership.

Experience shows that either strategy can be used to create a successful and sustainable community garden. Both approaches benefit greatly from appropriate location, layout, and management as well as ongoing community engagement.

Mixing Plots and Co-Ops

A community food garden may offer a mix of individual plots and cooperative areas. For example, a plot garden may set aside a cooperative gardening area for space-hungry crops, such as corn or watermelons, or for collaborative efforts to grow fruit trees, bushes, and vine crops.

Organizing a Garden: A Quick Overview

There are two distinct phases in establishing a community food garden: *starting the garden* and *managing the garden*. Both are equally important. A community garden's success is determined not by how good it looks on opening day but on whether gardeners are still successfully gardening there ten years later.

Starting the Garden

Starting a new garden begins with forming a group—a *garden team*—to manage the many tasks needed to organize and set up the garden, from finding a site, to recruiting gardeners, to improving the soil. The timeline for the start-up phase depends on many factors. Three to six months from starting to opening day is possible but optimistic. A year is more realistic.

Managing the Garden

Community food garden management continues throughout the life of the garden. Management involves taking care of the gardeners as well as the garden. Communication, publicity, fundraising, and community engagement are also critical factors. During the management phase, the garden team ideally evolves into a garden-based organization as gardeners take on increasing responsibilities.



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Is a Food Garden the Right Project?

Before starting any community food gardening project, organizers must thoughtfully discuss if a food garden is the right project to pursue.

- Do potential gardeners and their neighborhood or organization *want* a community food garden?
- Will a community food garden meaningfully address the needs and hopes of the community and the gardeners?
- Is there another food garden in the area that could be expanded rather than creating a new garden?

The self-defined needs of the community must come first, because without community support the garden will likely fail. For instance, if neighborhood youth dream of a place to play soccer, creating a soccer field on a vacant lot may make more sense than using it to grow vegetables.

The best way to answer this question is to go into the community to discuss the proposed garden in one-on-one and street corner conversations as well as at formal informational meetings.

In areas where community gardens are unfamiliar, raise awareness by educating people about the many benefits these gardens bring to the community. At the same time, balance personal enthusiasm for community gardening with a commitment to listening respectfully to everyone, including those voicing questions, concerns, and criticism.



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2. Getting Started

A community food garden may begin with a neighborhood leader's idea, a casual conversation over coffee, or a formal proposal from the parks department. No matter who sows the seed, community garden organizers face the same challenge: how to transform an appealing vision into a thriving garden. North Carolina Community Garden Partners (NCCGP), The American Community Gardening Association (ACGA), and other experienced garden organizers suggest a step-by-step approach.

Form a Garden Team

Creating a community food garden is like a barn raising: don't try to do everything yourself. Starting and sustaining a community garden requires a committed group of people working together. Forming this group is the first step in creating a garden. For convenience, we will call this group the *garden team*.

Organizing a garden team isn't difficult. Usually, two or three people are already involved right from the start, informally discussing the potential for a garden. Recruit others who are interested in community food gardening, particularly people with skills, experience, and perspectives that can help the effort.

Keep the size of the team small and manageable at first, about a half-dozen members, to make collaborative work and communication easier. As the project progresses, expand the group to include resource people, highly motivated volunteers, and most importantly, potential gardeners.

Research Community Gardening

Even as the garden team is forming, learn as much as possible about community food gardening. Contact local community gardeners, and take a group to visit them and their gardens. Take pictures and ask lots of questions: What do they like about their garden design? What would they do differently? Community gardening programs outside your area are accessible for "virtual" visits, thanks to the Internet. Research city zoning and land-use policies to understand how these policies could affect the practices and long-term sustainability of the garden. See the References section for suggested resources.

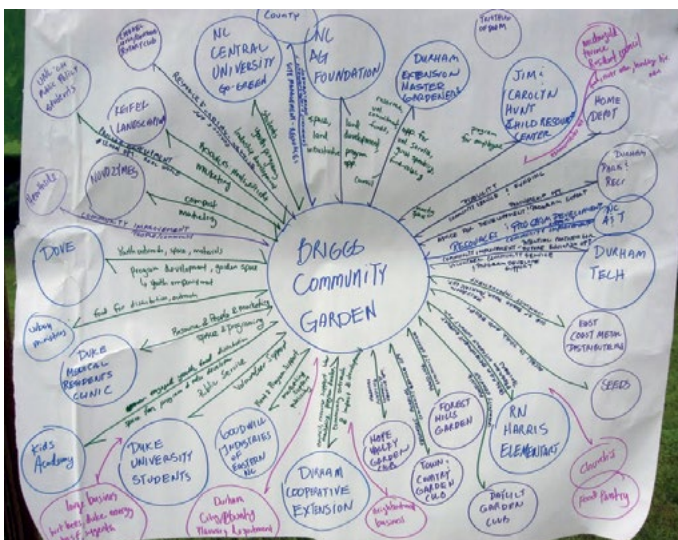
Choices and Decisions

Once garden team members are sure that a community food garden is the right choice, project planning can begin. See the Garden Questions on page 15 for discussion points. These questions do not have a single right answer, although there may be strong opinions. Actively seek common ground within the team, and try not to let differences in viewpoint derail the garden's progress.

A helpful tool for establishing common ground is consensus-based decision-making, which includes actively seeking ideas everyone can support, rather than relying on "majority rules" voting to make choices. Consensus building often requires more time and flexibility and the ability to listen respectfully to different points of view, but it results in more creative solutions and a stronger, more unified team. We encourage community gardeners to learn more about participatory decision-making by reviewing guides such as *Facilitator's Guide to Participatory Decision-Making* by Sam Kaner.

Write a Summary Description

When the garden team is reasonably clear about how they envision the garden, write down a brief summary of



© Lisa Valdivia

Garden Questions

- Who will the gardeners be? Where do they live? How will they be recruited? How can they obtain a plot or become members of the garden co-op?
- Where will the garden be located? (Selecting a site is covered separately in the next chapter.)
- What size will the garden be?
- Will the garden be organized in individual plots or as a cooperative project?
- How will the team and the gardeners make decisions, assign tasks, and establish leadership roles?
- What are the general standards for plot maintenance?
- Will the garden be all organic or pesticide-free, or will gardeners be free to choose their own pest management strategies?
- Will gardeners pay dues? What about those who can't afford dues?
- Will the garden focus on a particular group or set of needs? Will it restrict membership to a certain group or exclude some types of people?

key ideas. Keep this summary close at hand, and update and improve the text as the project progresses.

Organize and Assign Tasks

After team members have reached consensus, decide how to divide responsibilities and tasks among the team. A simple, informal organizational structure may work best early in the project. For many small-to-medium-sized gardens, this informal structure remains effective even after the garden is well established. Set target deadlines for completing tasks. Even if the team can't meet every deadline, a timeline is a powerful incentive and organizational tool.

Small is Beautiful

Organize your garden project as a series of bite-sized steps rather than trying to create a huge, perfect community food garden from day one. Working in phases provides better, quicker, and more sustainable results than trying to do an overly ambitious project all at once. For instance, consider beginning with plots for five or six enthusiastic gardeners and a single hose line. The garden can expand as the gardeners' success attracts more interest.

Spread the Word

With the garden's written project summary and proposed timeline in hand, reach out to the broader community. Organize community meetings and presentations for potential gardeners, neighborhood associations, public agency representatives, possible funders and sponsors,

and others who are curious about community gardening. Focus on potential host neighborhoods and sponsoring organizations. Have answers ready for practical questions such as, "How do I get a plot?" and "When can I start gardening?" Long before you have even chosen a site, people will want answers to these questions.

Finding a Sponsor

For many new community garden groups, finding a sponsor is a high priority, and with good reason. A *sponsor* is an organization or individual that helps to set up and manage the garden. This person or entity may lend financial support to help pay for tools, supplies, fencing, land preparation, water lines, and insurance. In some cases, the sponsor provides the land for a garden site, at no cost to the gardeners, and funds a garden coordinator or other support staff.

A sponsor may be a public or private entity. Parks and recreation department community garden programs are good examples of public sponsorship. Faith-based groups, such as churches, may sponsor gardens on church property or work to support community food gardens at sites throughout their areas. Other sponsors might include land trusts, food banks, slow food groups, and other non-profit organizations. Organizations and agencies with an interest in community gardening are often on the lookout for sponsorship opportunities, especially projects with strong community support and a well thought-out plan.



© Don Boekelheide

Sponsors sometimes set strict conditions or insist on making all garden decisions. For this reason, some grassroots community garden groups decline sponsorship, preferring the freedom to make their own choices to the security of having a sponsor.

The benefits of working with a sponsor, however, often outweigh potential drawbacks. Just be aware that the garden team, the sponsor, and eventually the gardeners must all be able to work together effectively.

Community Garden Support Programs

Community garden support programs provide advice and assist community gardens, particularly during their start-up phase. Though they do not sponsor gardens, they can act as a bridge between a new garden and potential sponsors. These programs are now active in an increasing number of US cities, often staffed by AmeriCorps, VISTA, or Food Corps volunteers.

Potential Community Garden Sponsors

- Parks and recreation departments
- Communities of faith, such as churches, temples, and mosques
- Colleges and universities
- Local Cooperative Extension centers and Extension Master Gardener programs
- Food banks and food security organizations
- Neighborhood associations
- Land trusts
- Slow food and local food groups

Many other possibilities exist, including non-profit organizations and private businesses.

School Gardens and Community Gardening

First Lady Michelle Obama's White House garden and concern for the health and nutrition of children and youth have helped reawaken national interest in youth gardening at pre-, elementary, middle and high schools.

School gardens are specialized community gardens, so much of the information in this manual will be useful in setting up a school garden. However, we also recommend seeking out additional resources that directly address school gardening, particularly focusing on curriculum and lesson planning, which is not a concern for most community gardens in non-educational settings.

Working with a school adds additional layers of complexity and challenge to setting up and managing a garden. As with any community garden, the wider school community, including students, parents, teachers, administrators, and maintenance workers, must support and take ownership of the garden. Once there is buy-in, many approaches to gardening can work in a school setting.

Students, the most important stakeholders in a school garden, are sometimes excluded from planning the garden, despite the wonderful learning opportunities inherent in the early phases of garden planning. Identify



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age-appropriate activities throughout the process to involve students from the beginning.

Simply having an inspiring idea is not enough to create a successful school garden. School garden organizers must forge cooperative partnerships with the principal and staff, as well as the teachers, students, and parents. They must also work with custodians, and sometimes hired landscape contractors, to ensure the garden is being managed in a way that works for everyone. In addition, school gardens also must satisfy requirements of the school's governing body and respond to interest and concern from neighbors and funding agencies.

If a suitable site is available near a school, combining a school and community garden has many benefits, including the possibility that community gardeners can tend and harvest a food garden over the summer when school is out. One relatively easy option in a plot garden is to reserve a plot or two for a nearby school.



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Here are a few practical suggestions for creating a school garden:

- In the piedmont, coastal plain, and warmer mountain valleys, plant cool-season varieties (lettuce, broccoli, root crops) in August as part of back-to-school.
- As the garden grows, include it in science lessons.
- Make compost from leaf drop in between Thanksgiving and the winter break.
- Plant lettuce, radishes, and other cool-season plants in March.
- Older children can start their own seedlings indoors using lights and even take warm-season crops, such as tomatoes and peppers, home for their family gardens when school lets out for summer.

Visit the following resources for more information on youth gardening:

- Grow For It, NC 4-H (growforit.org)
- Junior Master Gardener (jmgkids.us)
- LifeLab program (lifelab.org)
- Garden Mosaics, Cornell University (nyc.cce.cornell.edu/UrbanEnvironment/UrbanEcology/GardenMosaics/Pages/GardenMosaics.aspx)
- Natural Learning Initiative (naturalearning.org)

3. Site Selection

A community food garden's site has a big impact on its identity and long-term viability. No site is perfect, but some sites are much better choices than others.



© Gene Riddle

Site selection involves three steps:

1. Locating potential sites
2. Evaluating sites and picking the best one
3. Establishing a use agreement for the chosen site

Do not rush the site selection process, even if garden team members are very eager to get started digging soil and planting seeds. Ideally, come up with two or three sites to choose from. Runners-up can serve as sites for future gardens.

Sometimes a sponsor or the garden team already has its heart set on a specific site for the garden. Even in this situation, carefully evaluate the site using the site selection checklist. Thorough evaluation helps the team anticipate and correct problems early on.

Locating Potential Sites

Many times, a garden team may start by driving around the area targeted for the garden, scouting for interesting potential sites, and asking local officials, residents, and community garden groups for suggestions.

Gardeners also look at county GIS maps that show parks and other publicly owned land. Google Maps are also helpful and readily accessible, allowing a virtual flyover of the target area.

Site Evaluation

The next step is to evaluate finalist sites. When rating sites, consider the needs of the gardeners, the site's suitability for food gardening, and the options available for gaining secure, long-term access to the site for gardening.

Gardener Needs

Safety. The perception of safety and actual safety are both important. Gardeners will reject sites where they do not feel safe, and some gardeners may be anxious even in areas where others feel relatively safe. If pushers currently use the site for drug sales, a gang considers it their turf, aggressive dogs wander nearby, or the site is isolated, the garden team must address these risks or select an alternate location. The presence of a community garden can discourage crime and vandalism, but this takes time.

Convenient location. The garden should be reasonably close to where gardeners live and convenient to reach by walking, biking, or driving a short distance. Make sure that parking will not be a problem.



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Community factors. Be sure the site is acceptable to the neighborhood, especially to those living right next door. Supportive neighbors are a huge asset, keeping a protective eye on the garden, while unsupportive or antagonistic people right next door can be devastating.

Current uses of the site. For example, is it the unofficial neighborhood dump? Will that pattern continue even after the garden is there? Do the kids play soccer there? Where will they go?

Secure land tenure. It is only fair to gardeners that their garden be treated as more than a temporary land use. Seek a minimum five-year commitment, ten years preferred.

Suitability for expansion. Is there an easy, obvious way for the garden to grow bigger if there is high demand for plots?

Food Garden Needs

Reliable water. A community food garden site must have a reliable water source for optimal food production and gardener success. Transplants and newly seeded

Site Selection Checklist

Gardener Needs

- Safety
- Convenient location
- Community support
- Secure land tenure

Food Garden Needs

- Reliable water sources
- Full sun (8 hours or more per day during the entire growing season is best)
- Safe, workable soil or a good spot for raised beds

Other Considerations

- Trees, slopes, and drainage
- Fire ants, bermudagrass, or extreme weed problems
- Amount and type of trash on the site
- Adequate parking
- Bulk supply drop area
- Friendly zoning and current land uses
- Supportive neighbors

vegetables require daily watering until they are established, and productive food gardens need roughly an inch of water per week during the growing season.

A municipal water line is a practical way to provide water for a community garden. Look for a water meter on the site, which makes water hook up easier and less expensive. If there is no meter, locate the closest municipal water line that the garden can tap into.

As an alternative, partner with a nearby business, place of worship, or private home willing to let the garden obtain water by running a hose from their tap.

If there is a well on site, test the water and the flow rate to ensure the quality and volume are sufficient to supply the garden; if so, determine the cost of installing and maintaining a pumping system.



© United Way Lower Mainland

Harvesting rainfall is an excellent idea, if only to supplement other water sources. If the garden is interested in this option, look for an adjacent roof suitable as a collector.

Gardeners can also haul in water themselves using containers and watering cans. For highly motivated gardeners in small gardens, this sometimes provides adequate water, at least enough to get a garden started.

Full sun. For best productivity of the widest variety of fruits and vegetables, select a site with full sun for at least 8 hours per day. To flower and produce fruit (for example tomatoes, peppers, squash, melons), most plants require a minimum of 8 hours of sunlight per day. However, in as little as 6 hours of full sun per day it is possible to grow many culinary herbs, leafy vegetables, and root crops to harvest the root, stem, or leaves (for example radishes, celery, spinach). Be sure to consider light through the whole growing season. An appealingly sunny spot in February may be shaded in May after the oaks leaf out.

Safe, workable soil. Vegetables grow best in rich, well-drained soil. Look carefully at a site's soil, enlisting the aid of an experienced gardener, farmer, or Cooperative Extension agent. If the soil is extremely poor or contaminated, consider the pros and cons of building raised beds. For more information, see chapter 8, *Soil, Plots, and Planters*.

Other Considerations

Trees. Mature trees are good for a community garden, offering beauty and a place to rest in the shade. Unfortunately, their leaves and roots also compete with food crops. Be sure the site is large enough to locate



© Lucy K. Bradley

vegetable plots in sunny locations well away from large trees. Bring a compass to check directions. Trees or tall buildings on the south side of the garden may block needed sun, but those located to the north will not cause problems.

A site without a steep slope is easiest to lay out and manage.

Fire ants and bermudagrass. Fire ants, bermudagrass, and tough weeds can be very difficult to control after the garden is established, especially if the garden only allows organic techniques and bans synthetic pesticides and herbicides. The best strategy is to control tough weeds and pests on a site before attempting to establish an organic garden. See chapter 13, *Troubleshooting*, for more ideas.

Trash. Removing trash is part of starting a garden on many urban lots, but take note if the kind of trash demands extraordinary measures (for instance, large items, such as junked cars, or the presence of broken glass or used needles).

Parking and bulk supplies. Is there a suitable place to drop bulk supplies such as compost and mulch? Is there plenty of space for a parking area for gardeners and volunteers?

Land use and zoning. Check zoning and land use restrictions. For example, if a site is in a floodplain or greenway, permanent structures, such as sheds, fences, and raised beds may not be allowed due to environmental restrictions.



© Tony Webster

Drainage and flooding. Heavy rains and flooding are part of life in North Carolina. Check sites carefully for flooding potential and drainage issues, especially near creeks. A simple drainage system may be all a site needs to thrive.

Call before you dig. Dial 811 to have any underground utilities on the site located and marked. If there are underground utilities where you hoped to garden, consider a different location.

Arranging to Use a Site

After selecting a site, the garden team must formally arrange to use it for a community food garden. Begin by requesting affirmation from the landowner, ideally in writing, that community gardening will be the officially designated land use on the site for a period of at least five to ten years. Gardeners, sponsors, and supporters invest time, money, and creativity to develop a successful garden. If a site's owner, public or private, is unwilling to offer clear assurances that the garden will be protected from summary eviction, consider another site. A fair agreement should also have an escape clause allowing the owner to reassert control and to use the site for other purposes if the garden is abandoned or badly neglected.

The garden team should seek official approval, in writing, even for a garden on a publicly owned site, such as a garden in a public park. Draft a "letter of commitment" that affirms use of the land for a garden for five or more years and clarifies the relationship between the garden and the public agency. This is particularly important when

existing policy documents, such as the Park District Master Plan, have no provisions for community gardens.

Private Leases

For privately owned property, begin by locating the property owner. Schedule a meeting to share information about the garden project. If the owner is receptive, start negotiations on rental payments and a lease.

Check with other local community gardens to find a model of a lease agreement that has stood the test of time. The lease agreement should cover the following issues: How much is rent, and when is it due? What constitutes grounds for terminating the lease or agreement? To whom do improvements belong if the garden must close? Is the landowner willing to assist with garden resources such as water or a fence?

Insurance

Some landowners, and even some public agencies, will ask that a community garden be covered by liability insurance purchased by the garden group. Jack Hale, former president of the American Community Gardening Association and an authority on this issue, cautions that liability insurance is not always necessary. He urges community gardeners to research the insurance question carefully before embarking on a fundraising campaign to pay for an expensive but unneeded policy or giving up on a promising garden site. If the garden does need insurance, ask supportive organizations for help. For instance, can the garden be covered through an existing policy held by a large non-profit or university? If buying a policy is necessary, Hale suggests working with a firm that represents many different carriers and getting at least one quote from one of the ten largest insurance carriers.

4. Food Garden Design

An elaborate, costly, professional landscape design is not essential to garden success. However, a practical garden design is an important investment in efficient food production, peaceful human relations, and practical ease of maintenance. These fundamentals should never be eclipsed by other considerations, including creative expression.

A skilled garden designer or landscape architect who has taken the time to study and understand community gardening can be helpful. Community gardens are heavily used and often in public view, so both functionality and appearance are important.

If the garden team decides to design the garden on its own, seek assistance from someone with design skills. A graduate student in landscape architecture may be able to help with the design process and produce neat, accurate, scale drawings of the garden plans.

A Step-by-Step Method

We suggest adapting a simple, three-step process for garden design:

1. *Decide what goes in the garden.* Everyone with a stake in the garden discusses and makes suggestions about the elements and general structure of the garden. List your choices and priorities.
2. *Determine the site layout.* Next, go out to the site and walk around. Discuss where different elements might go. For instance, where will the front gate and entrance be? Where can you put a compost area? Where will you need a water tap? Take pictures.
3. *Draw the garden plan.* Recruit someone with visual design skills and experience to transform the team's ideas into clear scale drawings that accurately show the garden's actual layout on the site.

What Goes in the Garden?

Begin by reviewing the garden team's initial descriptions of the garden. The garden design process goes a step further by asking more specific questions. Different

garden elements are described in greater detail in the second section of this chapter. Read through the list of elements for suggestions and ideas.

Hold a Design Charrette

Design professionals such as planners and architects have developed a technique known as a *charrette*, a structured brainstorming and design meeting. A charrette can be a valuable tool in the garden design process. Recruit someone experienced to facilitate the charrettes and to help organize the ideas they generate.

Draw the Garden Plan

Next, create a scale drawing of the garden plan based on the ideas from the discussions. Start by creating a base plan, showing only the boundaries of the site and any permanent elements, such as mature trees, existing structures, underground utilities, and paved areas, as



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Community Food Garden Design Questions

- How many gardeners will be able to participate in the garden?
- Will the garden use native soil or build raised beds? If both strategies will be used, how much space will be devoted to each option?
- How big will each plot or planter be? Will there be a choice of sizes or a single size? How will plots or raised beds be laid out on the site?
- For cooperative gardens, how will the food gardening area be laid out?
- How wide will different kinds of paths be? Will they be mulched, mowed, graveled, paved, or left as dirt?
- Will the whole garden be organic? If not, will there be a designated area set aside for organic gardening? Where and how large will it be?
- What kind of sign or bulletin board will there be? Where should it go?
- Where will water come from? Where should the water spigots go, and how many are needed? How many hoses are needed and how long should they be? Will you need watering cans?
- Will the garden harvest rainfall? What will the system look like, and where will it go? Who will have the harvested water tested?
- Where's the best gathering area? What kind of seating will be available? Is there shade? Is there enough space for meetings and social events?
- Where will people be able to wash their hands and go to the toilet?
- Does the garden need a fence? If so, what kind and what type of gates will it have?
- Will there be a shed for storing tools and supplies? Where will it go? What will the shed look like? Will a shed require a special zoning permit?
- How will the garden handle compost-making and soil stewardship? Where will the composting area be? Will it be a shared pile or individual bins?
- How can bulk materials, stakes, and other supplies be stored and concealed from view?
- Will ornamental flower beds be created? Where should they go?
- Will there be joint growing projects, such as berries or large-space crops, such as sweet corn?
- Will art have a place in the garden? What kinds?
- What will the garden look like to the public, particularly the garden's entrance?

accurately and as close to scale as possible ($\frac{1}{4}$ inch = 1 foot and 1 inch = 10 feet are commonly used scales).

The county's GIS system or Google Maps makes it easy to create a preliminary base map. (Be sure to double-check measurements on the ground!)

A digital version of the base plan is very helpful, created using design software. Do not try to make a rough schematic using a document program such as MS Word or Excel. Neat work done the old fashioned way on a drafting table using pen and paper is a vastly better

alternative and creates a document that can be easily scanned into a computer.

Sketching

Once the base map is prepared, use it for sketching and modeling different design options. Using a grid makes it easy to keep elements in scale. Lay tracing paper over the base map as a way to explore different options. Make bubble diagrams to explore various organizations and locations for garden elements, such as gathering space and compost areas. Some designers like to cut out scaled representations of garden elements, such as plots or a shed, and move them around on a physical copy of

the base map to get ideas for placement. Others prefer to work on digital versions of the plan.

Three additional techniques are very helpful, especially for people who tend to think visually:

- Visit the site often at different times of the day.
- Make freehand sketches and notes while on site.
- Use digital images of the garden site to create computer simulations of what the garden might look like in the future. The images can also be an important historical record.

A Working Garden Plan

The working plan, the final step, is a scale drawing of the location that includes everything planned for the garden. It doesn't need to be of high artistic quality, but accurate scale, completeness, and clarity are essential.

Garden Design Elements

Overall Design

In plot gardens, individual plots or planters become a defining element in the garden's design. Each plot reflects its gardeners, giving a community food garden the charm of an old-fashioned patchwork quilt. In cooperative gardens, growing areas may be unified into a single large production garden resembling a small farm.

Garden Plots

A *plot* generally refers to a small gardening area using the native soil. Plots are most often square or rectangular, but they can be any shape, even round. Smaller gardens commonly have 10-foot by 10-foot (100 square feet) plots. Larger gardens can accommodate 20-foot by 20-foot (400 square feet) or larger plots. Some gardens create 4-foot by 8- to 10-foot beds to facilitate intensive gardening.

Raised-Bed Planters

Raised-bed planters, or *raised beds*, are a familiar alternative to plots. Many community gardens in urban settings use raised beds. Planters are usually smaller than plots (for example, 4-foot by 10-foot) and typically rectangular in shape. Wood is the most common bed framing material, but landscape blocks, bricks, stone, and other materials are sometimes used, to allow curving shapes in addition to squares or rectangles.



© Gene Riddle

For more information on the technical aspects of soil in planters and plots, see chapter 8, *Soil, Plots, and Planters*.

Accessible Planters

Planters designed for gardeners with physical challenges make an excellent addition to any community garden. They are similar to raised beds, but usually stand taller, up to 36 inches. Some are constructed like sturdy tables so a wheelchair can fit underneath. Others feature broad edges suitable for gardeners to sit on.

Shared Growing Spaces

Garden areas may be set aside for crops that are too large for individual plots, such as corn or watermelons. A garden may also establish group plantings of berry bushes, roses, or fruit trees.

Flower beds are attractive additions along community garden fence lines and around signs. Flowers make the garden inviting for the neighborhood and also attract pollinators. For such shared projects to be successful, the gardeners must know who is responsible for weekly watering and weeding.

Water Source

Hand watering with hoses is a practical and traditional option for plot community gardens. If the garden site has a municipal water line, locate taps so they are no farther than 50 feet from the farthest bed. A single tap can serve a number of garden plots.

Drip irrigation uses water more efficiently and prevents plant disease by minimizing water splash onto leaves.



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Once installed, drip irrigation is more convenient and includes the capacity to add a timer. Consider recruiting someone with drip irrigation experience to help design and install the system.

Rainwater harvesting. To maximize the benefit of gravity, select a tall, narrow cistern instead of a short, fat cistern, and place the cistern at the highest point possible. For gravity flow with standard pressure, the drainage tap from the tank should be 10 feet above the garden. Tanks placed lower have slower flow rates and may require a pump.

Some tanks use a small pump, sometimes solar powered, to move water from the tank through a hose to the garden. Others are simple rain barrels, where gardeners can fill watering cans from a tap on the side of the barrel.

All rainwater harvesting systems must be carefully designed and managed to avoid mosquito problems. Review NC State's rainwater harvesting resources at www.bae.ncsu.edu/topic/waterharvesting/, and if possible, work with someone experienced with these systems.



© Alina

Rainwater harvesting systems, especially large cisterns, are highly visible in the garden, offering interesting potential for vertical gardening and innovative artistic design. In addition, they provide an opportunity to educate the community about water harvesting.

Paths

Well-designed paths are essential to a peaceful, productive, and attractive garden. For main paths, allow for widths of 5 to 6 feet so people can walk side-by-side to chat and people with tools and baskets can pass by one another. Paths separating plots or planters should be at least 3 feet wide to permit easy passage of wheelbarrows and people and to allow for the natural spillover of growing plants during the summer.

Wood chip mulch and mowed grass are the two most common materials used to cover paths in North Carolina. In spite of the challenges of maintaining these coverings, either is preferable to eroded and sometimes impassible mud.

Wood chips are often readily available for free from arborists and yard care companies who will drop materials off at the garden. Spreading provides an excellent all-group activity for work days and volunteer projects. If the quality of chips is good, the initial appearance can be very appealing.

Place recycled cardboard, newspaper, or commercial planter's paper on the path prior to applying the mulch to block weeds. Plastic landscape fabric may also be used, but it tears and shreds over time, leaving an unattractive mess that is difficult to clean up.



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Unless mulch is kept 4 or more inches deep, or a layer of cardboard is used to cover the soil underneath the mulch, it does not block all weeds. A large garden can require a huge amount of mulch annually. A 4-foot by 100-foot path requires roughly 4 cubic yards of wood mulch for 3-inch coverage. Wood mulch breaks down and must be renewed each year. The previous year's material can be moved from the path into the beds as a wonderful source of organic matter. The paths must then be re-lined with cardboard and covered with a new layer of wood chips. If you do not redistribute the decomposed chips each year, the paths will become higher over time. As a result, paths stay dry in wet weather but beds may flood.

Grassed paths require weekly mowing or string trimming during the growing season, a dedicated volunteer or staff effort, and reliable equipment. Most grassed paths in community food gardens are better described as "mowed weeds." This situation works fine as long as paths are kept mowed and not allowed to set seed. Neglecting paths for just a couple of weeks during warm, wet weather can easily lead to the garden looking unkempt and weedy. Turf grass is tricky to establish on garden paths, especially where gardeners actively move through the garden.

Emergency Vehicle Access

In larger gardens, create at least one unblocked emergency medical vehicle passageway. The passageway should be at least 10 feet wide, easily reached from all points in the garden, and accessed through a 10-foot wide double gate in the fence. With North Carolina's hot summer weather and the popularity



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of community gardening with seniors, ambulance access is very important. At least one large gate also makes it much easier for mowers, tractors, and trucks to access the interior of the garden to deliver bulk items, such as compost, mulch, and building supplies.

Places for People

All gardens, however small, benefit from a shady area with seating where gardeners can rest and chat. Creating such a spot should be a design priority for every community garden. Beyond these important basics, gardens frequently add picnic tables, sinks, barbecue grills, and space for hosting potluck gatherings, meetings, and classes.

Toilet Facilities

Larger gardens that are not close to an indoor toilet need some type of simple sanitary facility. A port-a-john is the most widely used option. It can easily be screened behind a trellis of flowers. If the privy is located inside the fence, make sure the maintenance crew can access it easily. Some gardens successfully use more ecologically oriented solutions, such as composting toilets.

Children's Area

A designated place for children is a great boon to a community food garden. Although it is essential to ensure that nothing dangerous ever gets into the area, the best strategy is to allow for a wide degree of laissez-faire freedom and messiness as kids dig in the dirt. Screen the area with kid-friendly flowers, such as sunflowers. Be sure to design the children's area so parents can easily keep an eye on things. The North

Carolina Botanical Garden in Chapel Hill has a wonderful children's area and is an inspiring source of ideas.

Sheds and Storage

A simple, inexpensive, shared shed with a lockable door, large enough for storing tools, supplies, and a mower, makes maintenance work much more convenient for gardeners.

Compost and Mulch

Every community food garden needs a composting and mulch area. Designate an area specifically for gardeners to make compost themselves on site using garden wastes supplemented with recycled leaves and similar materials.

If the garden has sufficient space, set aside a reasonably large area beside or behind the garden that is shielded from public view but easily accessible to gardeners and delivery trucks. This area will be a useful place to store bulk purchases of compost and mulch, which save money.



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Carefully consider whether or not the garden actually needs a fence. If the answer is yes, define what you are fencing out and research the specifics of an effective barrier—groundhogs, rabbits, deer, dogs, and people are excluded in different ways. For burrowing animals, the barrier will need to extend beneath the ground. For severe deer problems, you might consider an electric fence. Research the appearance, cost, and durability of locally available fencing materials. Perhaps a simple split-rail or white picket fence would define the edges of the garden and discourage casual pilfering while creating a more attractive and neighborly view than would a tall chain link fence.



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Fences and Gates

Fences clearly define the edge of the garden and offer a sense of security that is very important to some gardeners. However, locked gardens may send a signal to the neighborhood that the garden is unwelcoming and exclusive. In addition, fences cost money and may easily become a major garden budget item. Unfortunately, even with locked gates, fences do not always keep out unwelcome intruders intent on mischief or theft.

Signs and Bulletin Boards

The design of signs and bulletin boards can range from very simple and rudimentary to elaborate and artistic. The most important practical issues are durability and reasonable cost. An elegant way to combine the two functions is simply to put the bulletin board on the back of the garden name sign.

Though the saying goes, “good fences make good neighbors,” community gardeners may find that signs

are even more important in encouraging neighborly relations. An attractive sign with the garden's name helps establish the garden's presence in the neighborhood. It should include reliable, up-to-date contact information to direct interested gardeners and anyone with general suggestions, questions, or complaints. If the garden has a fence and locked gates, be sure to post regular visiting hours.

The bulletin board or message board is an important communication tool within the garden, particularly for those who lack internet access. Be sure to post upcoming meetings and events, accurate contact information, and a simple map showing plots with gardeners' last names.

Art in the Garden

Food gardens can be just as beautiful and inviting as purely ornamental gardens. Traditionally, community gardeners have transformed recycled and discarded materials into whimsical and beautiful garden art. Artists have also joined forces with gardens to create iconic art designed for a specific site. Art can be either integrated into elements such as fences, sheds, or seating, or it can be a separate element, such as a sculpture, a mosaic, or folk art such as a bottle tree.



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5. Site Preparation

A community garden may appear to transform a neglected vacant lot overnight, like magic. But the trick isn't really magic; it's the months of planning, thought, and hard work that preceded the garden's creation. In this publication we suggest a step-by-step process for setting up a new garden on a site. The garden team can adapt it to fit their garden's needs and circumstances.

Be flexible with the proposed timeline, particularly when working with public agencies to schedule equipment use and transport of mulch, compost, or topsoil. Wet and stormy weather has the potential to slow things down.

Line up Materials and People

Locate materials needed for the project and schedule delivery and pick up. Schedule services provided by public agencies or contractors, such as preparing the soil, installing water lines, and putting up a fence.

Prepare the Plan

Prepare a large copy of the garden design plan for working on site. Attach it to a large, sturdy clipboard. On site, orient the plan so north on the drawing matches north on the site.

Check the Boundaries

Check, double-check, then clearly mark the corners of the garden property with sturdy stakes. Indicate the boundaries using irrigation flags or another simple, low-cost method.

Put up a Sign

Install a simple but attractive sign with contact information for the garden as early as possible. Later, the garden can add a larger bulletin board to share educational information, meeting notices, and tasks.

Clean the Site

Remove existing rubbish and weeds. This task is a classic job for a big volunteer group. Consider renting a dumpster if the site has a lot of trash. Be sure to wear gloves and exercise caution—there may be thorns, poison ivy, discarded syringes, broken glass, or other hazards. Clean beyond the future fence line or garden



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edge to improve the view and allow for pedestrian traffic and parking.

If there is a severe problem with bermudagrass, johnsongrass, honeysuckle, or other aggressive weeds, seriously discuss all control options. A concerted effort to proactively control weeds and prevent them from going to seed will make them much easier to manage in the future. For more information on weed management, see the Weeds section of the NC State gardening portal (gardening.ces.ncsu.edu/weeds/).

Locate Utility Lines

Call Before You Dig! (nc811.org) is a free service in North Carolina. Dial 811 at least three days before you plan to dig to have the underground utilities located and marked.

Mark the Garden

Check the site's boundaries one more time. Then use durable stakes, such as metal conduit cut to length, to

mark the actual location of the fence or garden border. Take special care when marking the location of gates.

Prepare the Soil, Adding Compost and Lime

See chapter 8, *Soil, Plots, and Planters* for more details. Wait until later in the process, after the fence is up and the water is connected, to build raised beds.

Install the Water Lines

Install water lines and taps, digging trenches and laying pipe as needed. Install spigots securely and brace them well because they get a lot of use. Seek help with this process from professionals or other highly qualified individuals. *(Be sure contractors understand that standpipes are located inside the garden fence line).*

Put up the Fence

Adding a fence can occur any time after marking the boundaries; however, soil preparation with a tractor and digging water lines into the garden are easier to accomplish before the fence is in place. In some situations, such as in floodplains, fences and other structures are not allowed. Be sure to check.

Lay out Paths and Plots (or Planters)

It is possible to begin laying out the garden plots, paths, and other elements as soon as the garden boundary/fence line is marked, but waiting until the fence is in place makes placement more reliable. Be prepared to make many minor adjustments in the garden plan, but try to avoid major improvisations.

String, stakes, and a directional compass are good tools for marking main paths and plot locations. Use the 3-4-5 triangle method for making sure corners are right angles.

A line cart used for marking athletic fields is very useful for marking the locations of paths, beds, and common areas. Marking in this manner creates an actual size version of the garden plan and allows for double-checking locations of different elements as well as ease of movement within the garden before making any final decisions.

After any final adjustments, mark plots carefully with permanent stakes in the corners. As soon as paths and common gathering areas are marked, cover them with deep mulch or sow them with a durable grass mix.

The 3-4-5 Method of Creating a 90° Angle

To create a square corner, create a triangle with one point that is the point of the corner. The second point should be 3 feet down one sideline and the third point should be 4 feet down the other. When the line that connects the second point to the third point is five feet long, the angle at point one will be 90°. If a larger triangle is needed, use a multiple of 2, 3, or 4. See Figure 1.

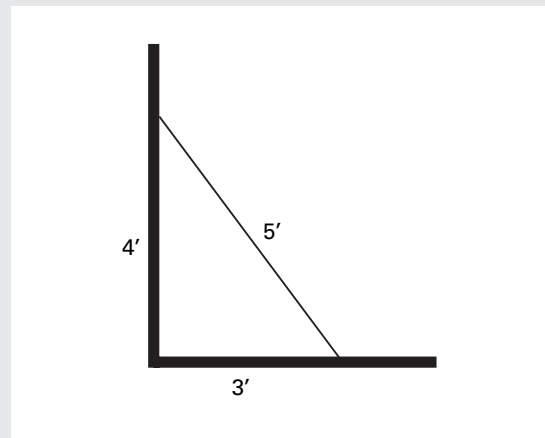


Figure 1. Illustration of the 3-4-5 method.

Construct and Fill Raised-Bed Planters

See discussion in chapter 8, *Soil, Plots, and Planters*.

Mark Each Plot

Mark each plot or planter with a clearly visible number attached to a corner post. Gardener assignment may now begin!

Add Final Elements

When the basics are in place, look for ways to make beneficial additions, such as a picnic table, hay bales for seating in the common area, or a small shed for tools. Build the first compost pile. Are there places to collect recycling and trash?

Celebrate!

You can now host a big celebration to mark the opening of the garden. Congratulations!

6. Organization

The best way to build an effective community garden organization is to engage and empower the gardeners. During the first year or two, the original garden team continues to play a vital role. After opening day, however, the team has a new goal—helping the garden become *self-sustaining*, where gardeners successfully manage day-to-day operations on their own.

Making Decisions

Resist the temptation to set major policies and make important decisions without including gardeners and other garden stakeholders in the decision-making process. Being inclusive takes more time, but it pays off with better ideas, greater buy-in, and a stronger garden.

Establish workable, practical ways to give everyone a say, but try to move quickly to peaceful agreements. Whenever possible, seek consensus solutions rather than relying only on majority rules votes. Make sure each gardener feels respected and understands that others value her or his ideas, concerns, and suggestions.

Leadership, Responsibilities, and Roles

Successful community food gardens often have an informal structure that maintains the cooperative spirit of the original garden team. Responsibilities and roles are frequently blurry in any community garden, even after a garden has elected officers, named chairpersons, and set up committees. It is important, however, to empower those who have been assigned a responsibility. Give garden leaders, committee chairs, and volunteers a chance to succeed on their own. If intervention or assistance seems necessary, be respectful and take action in a diplomatic, problem-solving way.

Garden Coordinators and Head Gardeners

Although the title for the person who manages the garden may differ from program to program and garden to garden, most successful gardens have someone empowered to make decisions, answer questions, and coordinate resources. Two commonly encountered terms are garden coordinator and head gardener. These roles



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overlap a good deal, but for simplicity's sake this manual will make a distinction.

A *garden coordinator* is usually a paid employee, or occasionally a trained volunteer, who assists a community garden with organization and management and serves as a liaison between the sponsor and gardeners. Paid garden coordinators normally work with a number of gardens.

Garden coordinators are frequently the people who oversee assigning plots and maintaining the waiting list. They troubleshoot problems from mediating gardener disputes to reassigning abandoned beds. They may also schedule and chair major meetings, facilitate at workdays, and coordinate resources and services, such as compost, tilling, and contributions of tools and plants. Conscientious coordinators even pitch in to help with maintenance and to help others in the garden.

The closely related role of *head gardener* is similar, with many overlapping responsibilities. However, for purposes of this manual, head gardener is more often a volunteer position that is normally limited to a single garden. Most often, an experienced gardener holds this position. While it is usually an unpaid position, dues are sometimes waived for head gardeners. Garden coordinators with multiple sites often delegate routine management tasks to a head gardener for each garden.

Committees

The Steering Committee.

A *steering committee* or *leadership committee* of three or more members, similar to the original garden team, can help keep the garden running smoothly by working closely with the garden coordinator, the head gardener, or both. In some cases, the steering committee serves in the coordinator or head gardener role.

The steering committee may assume many leadership, decision-making, and organizing functions, particularly in the absence of a paid garden coordinator. When the steering committee manages the garden's membership, waiting lists, and dues, it is essential to find reliable

volunteers to handle these important responsibilities and maintain accurate, up-to-date records.

A steering committee may be composed solely of gardeners or be a mix of gardeners and representatives from the garden's sponsor, other support agencies, and the neighborhood. The committee frequently includes members of the original garden team. The steering committee is often informal and self-selected, consisting of those gardeners who step forward to deal with larger garden issues. Some gardens take a more formal approach and create their steering committees by electing traditional officers, such as president, vice-president, secretary, and treasurer, and automatically naming them as steering committee members. Members of the steering committee should be ready to work with gardeners, sponsors, and neighbors who have questions and concerns, as well as members of the general public, the press, and public officials who are interested in the garden.

Task Committees and Project Teams.

Task committees form to handle responsibilities such as mowing paths, creating and managing a garden website, and keeping the tool shed clean and organized. A gardener or volunteer with a special interest or expertise in a given area makes an ideal chair for a task committee. The task committee that handles maintenance and keeping up the garden's appearance is especially important. If a maintenance committee becomes a "committee of one," the amount of work may overwhelm a single volunteer.

Sometimes task committees form project groups to handle a specific project, such as building a gazebo or shed, handling arrangements for a fundraising activity or social event, or applying for a grant.

Community Volunteers

Community volunteers from organizations such as civic groups, schools, and places of worship can help accomplish large, demanding tasks such as clearing trash from the site, spreading mulch on paths, and general cleanup and weeding.

Community volunteers can contribute much more than simple labor. For instance, NC State Extension Master Gardener Volunteers have served as garden mentors and have coordinated tours of community gardens in some counties.



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Youth volunteers have great potential. For example, at a community garden for the homeless at Charlotte's Urban Ministry Center, Eagle Scouts have built stairways, pathways, and arbors, greatly improving the garden at no expense to the gardeners or the garden sponsor.

Make sure all community volunteers have a positive experience at the garden and know that they are appreciated and respected. Thank them sincerely for their work and contributions, and write them up in the newsletter. Never underestimate the incentive value of a basketful of fresh vegetables.

Guidelines and Rules

Clearly written guidelines or rules provide a straightforward set of procedures, expectations, and responsibilities for gardeners.

To create guidelines, review the garden's goals, consider examples, and borrow good ideas from established, successful community food gardens.

Discuss a draft version of proposed guidelines with gardeners and incorporate their comments and suggestions before making the guidelines final. Evaluate and revise guidelines on an ongoing basis.

Keep garden guidelines simple and use common sense. Gardeners may be inclined to ignore guidelines that are too persnickety, controlling, or lengthy. A simple, single page of bullet points will suffice. Share the rules with gardeners, post them in a central location, and make sure everyone involved in the garden understands them.



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Working with Gardeners

Motivated and engaged gardeners are a community garden's most important harvest. They are people who bring positive changes to the communities where they live. There are many ways the garden's organizational system can recruit new gardeners and keep current gardeners committed and energized.

Recruiting Gardeners

Gardener recruitment starts even before the garden exists, beginning with the first informational meetings in the community. While recruitment is most intense during the start-up period, it continues on an on-going basis to fill vacancies in the garden. A website and Facebook page are good recruiting tools, as are more traditional techniques, such as special events, public meetings, and flyers.

The Application

Establish a clear application and selection process for assigning plots in a plot garden. Use a similar process to enroll members of a cooperative garden. An application form should record the applicant's name, contact



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information, emergency contact, and other relevant information, such as organic gardening preference and gardening experience. Make sure applicants receive valid contact information for the garden coordinator or another official garden representative. A website can make the application process convenient for those with access to computers.

The Selection Process

When applicants exceed available spaces, the garden must decide on a selection method. One option is first-come, first-served, based on when applicants file their application. Another option is a lottery, where applications are collected for a set period and then names are randomly selected to assign plots. Applicants who do not get a plot are put on a waiting list.

Garden sponsors or the garden team may want to recruit selectively for all or some plots, choosing gardeners on the basis of ethnic group, family size, age, place of residence, financial need, or another factor. Organizers may also want to reserve one or more plots for resource people, such as the garden coordinator, head gardener, or an Extension Master Gardener volunteer.

Letter of Agreement

After receiving a plot assignment, each gardener should sign a *letter of agreement* stating that she or he will abide by garden guidelines, participate in workdays and meetings, and pay designated dues.

A letter of agreement helps ensure that gardeners understand expectations from the beginning. The agreement should plainly state all requirements, timelines, and consequences for non-compliance. The

garden coordinator or membership committee should keep a file for each gardener containing the signed letter of agreement and completed application form.

First Plot Visit

Each new gardener should be invited to the garden to meet on site with the garden coordinator, a garden team member, or an established gardener. Together, they can visit the gardener's new plot for the first time, and the new gardener can sign the letter of agreement, check contact information, and pay dues. This offers a chance to discuss the garden informally and answer questions. The gardener should receive a duplicate of the letter of agreement, a copy of the garden guidelines, a roster, and a plot map.

The Waiting List

A waiting list tracks people interested in joining the garden. Be careful not to promise anyone a plot or place in the garden when none are available. The person in charge of the waiting list must keep an accurate, regularly updated count of the number of people on the list and the probable wait time before a plot is available. Let people on the list know this information when they sign on. Also tell them about nearby community gardens with available spaces.

Avoid allowing a gardener to cut in ahead of others on the wait list. Some applicants are very eager and will call and email incessantly. Resist the temptation to simply give someone a spot.



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Renewing Plots

Automatically extending a gardener's right to work a plot from year to year provides a powerful incentive for gardeners to improve the soil and stay involved in the garden. Successful gardeners invest a good deal of money, effort, and hope in transforming their plot into a fertile and productive garden space.

Look for ways to expand the size of the garden to provide more spaces and to help start additional community gardens to accommodate everyone in the community who wants a garden space.

Multiple Plots

Families will sometimes take over large areas of gardens—or whole gardens in some cases—by taking out plots in different family members' names. Some gardens limit families to a maximum of two plots. However, active gardeners with growing experience and sufficient time and energy can successfully manage a 1,000 square foot gardening area without major difficulty. Consider creating "large plot" gardens for these experienced gardeners.

Once opening-day excitement fades, some plots may become unoccupied or neglected. Establish guidelines for reclaiming and reassigning these plots. Active gardeners are quick to ask for vacated plots, but consider if gardeners on the wait-list might also be interested. Some gardens temporarily assign second plots through the end of the growing season. Make the rules clear up front; once gardeners pay for and receive plot assignments, they often will be reluctant to give them up and may even become emotional, even after only a short time.

Meetings, Work Days, and Gatherings

Meetings, workdays, and social gatherings are all important for an effective community food garden. Working together to solve problems and accomplish tasks can strengthen community leadership and increase social capital. For further discussion, please see chapter 7, *Management*.

Experts Available

Apart from workdays, the garden coordinator, head gardener, and skilled gardeners can schedule a regular block of time each week to be on site to answer questions and make suggestions. Gardeners may prefer to work on their plots at this time, knowing they will find others in the garden. These times offer a good chance to hold informal discussions and share information.

Celebrations

Try to organize at least one or two special events during the year when gardeners can gather to enjoy their garden and socialize. There are plenty of potential excuses to celebrate—signing the lease, planting day, first tomato harvest, summer solstice, spring and fall equinoxes, and Earth Day, to name a few.

Inviting the larger community to a celebration is an excellent way to build good community relations. Host regular open houses to give the public the opportunity to visit the garden, ask questions, and ideally, get involved as a supporter, volunteer, or gardener. Events and



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celebrations can generate invaluable media opportunities, attract interest and partners, and promote relationships and goodwill with the community.

Communication

There are two aspects to communication. First, within the garden, gardeners must be able to stay informed and share their questions and opinions. Indispensable tools for communicating within the garden include email, the telephone, a garden bulletin board, and face-to-face contact. Second, the garden must be able to communicate effectively with the larger community, including sponsors.

Email, Newsletters, and Phone Trees

These days, it is tempting to handle most internal communication by email. Some gardens have set up listservs, which are simple electronic discussion groups using email. Others rely on Facebook. Others send out an electronic newsletter via email. However, it is also vital to include gardeners who communicate by telephone and who may not even own a computer. A simple, short, printed monthly newsletter can cover the high points, and an old-fashioned phone tree is helpful for reminders and last minute information.

Web Presence

Websites, blogs, and social media network pages (such as a Facebook) are all useful tools for communicating with existing gardeners, recruiting new gardeners, and engaging volunteers, partners, sponsors, and the public. However, a website or Facebook page filled with outdated or inaccurate information is worse than having no web presence. Review the on-line community garden directories by North Carolina Community Garden Partners (www.nccgp.org/garden_directory) and the American Community Gardening Association (communitygarden.org/find-a-garden/) for links to garden websites, blogs, and social media to visit for ideas.

The Garden Bulletin Board

A garden bulletin board is a low-tech but valuable tool for communicating with visitors, community members, and gardeners alike. Post important meetings, special events, work times, and accurate contact information for the garden coordinator or head gardener. If the garden newsletter is distributed electronically, a printed copy of the latest issue can be posted on the bulletin



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Potential Components for a Garden Website

Key Elements

- Garden name and address
- Location information and map
- Garden hours (if appropriate)
- Contact information for the garden (can be email)
- "About" section with a description, mission statement, and history of the garden
- Calendar
- Application instructions, including eligibility, cost, due dates, and selection criteria

Optional Elements

- Garden rules/guidelines
- On-going record of pounds of produce donated
- Blog of current garden events
 - ☐ Classes, meetings, potlucks, work-days, guest visitors
 - ☐ Observations (plantings, harvests, insect or disease issues along with management recommendations)
- Newsletters
- Photos and videos
- News items
- Garden tips
- Recipes
- Volunteer opportunities
- Sponsors
- Wish list and ways to donate
- Related links
- Social media



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board. Consider posting identification and management information for garden pests currently causing problems in the garden.

Places for Conversation

Be sure to maintain comfortable places for large and small groups to gather and talk in the shade.

Expanding Community Outreach

Communication with the larger community segues into publicity, public relations, and community organizing—each a discipline in its own right—with important implications for fundraising and gaining public support. The American Community Gardening Association’s Cultivating Community training includes an excellent discussion of larger communication issues.

Signs

An attractive sign with the garden’s name and reliable contact information is an important communication tool. More detailed signs explaining what a community food garden is and how to enroll are also very helpful. Additional “how-to” signage is also helpful throughout the garden, such as a sign describing what goes where in the compost piles.

Press Releases

The garden may want to occasionally send out a simple press release to a list of local media to share information about its classes, events, and volunteer service opportunities. Helping with publicity and press releases is a tailor-made role for a gardener or volunteer with experience working with the media. Don’t forget to



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share notices with neighborhood associations, houses of worship, and other local organizations, and post copies on bulletin boards at coffeehouses, libraries, recreation centers, and other locations throughout the community.

Fact Sheet

Prepare a one-page fact sheet to provide basic information about the garden, the application process, and what membership entails. The garden’s website can also feature this information. An expensive and fancy brochure is nice but not necessary.

7. Management

Managing a community food garden, day in and day out, is every bit as important as *starting* the garden. Although we discuss organization and on-going management and maintenance in separate chapters, these activities overlap in the garden. Mobilize the gardeners to help manage the garden. On-going, hands-on maintenance tasks are ideal for sharing responsibility, strengthening community, and cultivating grass-roots leadership.

Soil Stewardship

Soil stewardship is so critical to the success of any food garden that this manual addresses it separately in chapter 8, *Soil, Plots, and Planters*.

Caring for Paths

An active, well-organized committee is essential to regularly maintain paths and common areas. This maintenance is critical to prevent grass and weeds from spreading. Assign gardeners responsibility for taking care of the small access paths adjacent to where they garden. If necessary, request assistance from a sponsor or public agency to hire someone to help with maintenance activities, or look for a way to swap vegetables for work with an interested neighbor or someone on the wait-list for a garden plot.

Mulched Paths

New mulch must be applied to paths annually because mulch breaks down rapidly during North Carolina's warm, wet summers. Mulch must be 4 or more inches deep to effectively suppress weeds.

A few weeds always manage to establish themselves even in the best-managed mulched paths. Remove weeds regularly by cultivation, use of a flamer, or precise spot application of herbicide.

Mowed Paths

Grow turf grass, clover, or mowed volunteer vegetation on paths and gathering places as an alternate to mulch. These living paths and areas require regular weekly mowing throughout the growing season. Discourage gardeners from allowing their plants to grow onto paths, because unruly garden vegetables, such as squash, can make mowing more tedious, time-consuming, and potentially contentious.

Paved or Gravel Paths

Some gardens install gravel paths, pavers, or paved paths for main pathways. These can be attractive and accessible; however, not even these are maintenance free. Gravel paths particularly can be quickly overrun by weeds. All require active and regular intervention.

Weed Control

Control annual weeds by eliminating them when they are young and not allowing them to go to seed. To prevent weed seeds from spreading throughout the garden, never let plots, fence lines, or other garden areas become overgrown and neglected.

Controlling perennial weeds (ones that come back every year) should start before the garden is in place. Deal with perennials such as milkweed, nutsedge, and wild blackberries by digging out the roots and bulbs. Be persistent about cutting back the top growth to eliminate photosynthesis. Workdays can target these troublemakers.



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Weeds tend to thrive along fence lines, around the garden sign and kiosk, in the composting area, and in shared group plots and flower beds. Be sure someone is clearly assigned the responsibility for regular weed control in each of these areas. Use a sturdy commercial string trimmer to intervene before things get out of hand.

For ideas on controlling bermudagrass, a particularly persistent problem, see chapter 13, *Troubleshooting*.

Information Kiosk or Bulletin Board

Maintaining the information kiosk or bulletin board is an ideal task for a communications committee. The committee keeps the board looking good and regularly checks to make sure no objectionable materials have been posted.



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Plot and Planter Markers

Check plots and planters regularly to make sure that each plot's address sign is in good shape, attractive, and easy to read. Repair or replace signs as needed. Check to make sure plot corner posts are secure. For planters, check to make sure the sides are stable and corners are securely nailed or screwed in place.

Hoses and Water Taps

Because of heavy use, water taps frequently develop minor problems. Learn how the taps work, how to fix common problems, and how to close the master valve in case of a major leak. Hoses also get plenty of use and sometimes need mending. In the shed, if the garden is lucky enough to have one, keep a box of hose mending supplies and replacement parts for items that often break on water taps. In the winter, drain hoses and store them in the shed.

Signs, Sheds, Seats, and Shelters

Signs, sheds, seats, shelters, bulletin boards, gates, and other garden components need to be checked regularly and repaired as needed. Keep a careful eye out for screws and nails that have worked loose.

Wasps

Paper wasps sometimes make their homes under a roof overhang or at the top of a kiosk, and yellow jackets may make underground nests. Eliminate nests in heavily trafficked places as soon as possible. Seek expert help if gardeners are not experienced doing this kind of work.

Consider leaving nests undisturbed (and well-marked) if they are out of the way. Wasps help control caterpillars and other pests, and existing nests may help prevent establishment of new wasp colonies.

Snakes

Although many gardeners may be fearful of snakes, the vast majority of snakes are harmless and benefit the garden by controlling true pests, such as rodents. To minimize problems, keep the garden, especially storage areas, free from weeds, brush, and piles of old bricks and lumber.

Gathering Places

High traffic areas, such as the gathering or picnic area and the toilet facility, need regular inspection and cleanup. If the garden has a children's area, make sure it stays attractive and safe. Check frequently for toys and tools left behind.

Shared Tools

Community gardeners mostly use hand tools such as rakes, shovels, hoes, and wheelbarrows. Keeping up with garden site maintenance is much easier if the garden has regular access to basic landscaping power tools, especially a good mower and a string trimmer. A garden shed for storing equipment, tools, and garden supplies is very helpful. Placing a solar panel on the roof of the shed is a great way to ensure that battery powered tools are always charged and ready to go.



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Recycling and Trash

Every garden produces recycling and trash. The garden should have appropriate containers for each, clearly marked, and emptied weekly. Most organic materials, such as weed stalks, crop wastes, and old mulch, should be composted and never put in a trash container.

Composting and Bulk Storage

The composting area deserves a special note for maintenance, because of its potential to grow a massive crop of weeds, particularly in late summer.

The same caution pertains to the bulk storage area, which is frequently near the compost area. Stockpiles of wire cages, wood, stakes, and other garden materials may be frugal, but they make weeding difficult. Think carefully about maintenance when setting up these areas. Review the discussion in chapter 4, *Food Garden Design*, for more details.

Community Food Garden Maintenance Calendar for North Carolina

Community food garden maintenance follows the annual cycle below in the North Carolina piedmont. Adjust accordingly for the mountains and the coastal plain.

Spring

All Gardener Meeting

Hold an all gardener meeting early in the year (typically in February or March) to welcome gardeners and find out how many will be returning for the coming gardening year. This is a convenient time to pay dues (if any) and sign agreements and to make sure all gardeners have an up-to-date set of guidelines. If the group elects officers and a head gardener, this is a good time to hold the vote; if these positions are appointed or self-appointed, it is important to introduce the people serving in these roles to the group and provide their contact information.

At the meeting, discuss how the garden will handle maintenance for the coming year. Select a maintenance committee chairperson who works well with people and understands maintenance needs; sign up gardeners for the committee and special tasks; and set up a calendar for workdays, regular chores, and community building events such as classes, gatherings, parties, and celebrations. A “pep talk” and a report on the previous year are often parts of this important meeting, along with a visit by the County Extension Director and representatives of the sponsor, key support organizations, and the local community.

Early Spring Workday

A major workday in late February or early March helps prepare the garden for the coming growing season. Replenish paths with mulch, assess winter weed growth, and generally clean up after winter. This workday is a good opportunity for a large volunteer group that wants to help in the garden. Gardeners can begin preparing beds at this time. As early as February and March, gardeners in the piedmont begin planting cool-season crops such as peas, potatoes, and onions.

Spring Cool-Season Planting Day

Mid-March is a good time for a spring planting day for cool-season vegetables, such as lettuce, broccoli, and root crops. Experienced gardeners are often very interested in getting soil prepared and crops planted at this time of year, so leave some time for individual work as part of the workdays. Important all-garden tasks to accomplish at this time include controlling winter weeds, cleaning up beds, and performing maintenance on winter compost piles.

Mowing and Weeding (throughout the growing season)

From mid-March through November, weeding, mowing, and general care continue on a weekly basis. Even if the garden has mulched paths, there will be areas that need regular mowing and weed trimming. As areas are harvested in plots or in the cooperative garden, encourage planting summer cover crops to protect and improve soil and suppress weeds.

Warm-Season Planting Day

April 15 marks the piedmont planting date for warm-season crops such as tomatoes, squash, green beans, and sweet corn. The warm-season planting day can be an enjoyable day in the garden for planting, sowing, and thinking about something other than taxes.

Summer

Continue weekly maintenance (grassed paths may need more frequent mowing during the summer).

Mid-Summer Workday and Open House

Gardens can look very attractive from mid-May through mid-July, making this a good time for an open house. The weekend before, hold a workday to get everything in the garden looking its best.

Back to School Cleanup/Fall Cool-Season Planting Day

Plan a late summer/back to school cleanup day to control the rampant growth of summer weeds. This workday is a key time for continuing maintenance and for dealing with pests, such as fire ants and yellow jackets. August is also the time to begin planting fall crops in the piedmont and coastal plain, so gardeners will want time for personal work during workdays.

Fall

Continue weekly maintenance in the fall.

Mid-Fall Activities

Mid-September is the rough cut-off date for fall plantings in the piedmont, even for quick crops such as radishes and mustard greens, unless gardeners plan to use row covers. Before the end of September, plant a cover crop in beds that will not be used to grow vegetables over the winter. Crimson clover, winter ryegrass, and other cover crops prevent weeds and erosion while improving soil. For more information see chapter 8, *Soil, Plots and Planters*.

Late Fall Harvest Festival, Garlic Day, and Tasks before Frost

When summer crops are joined by fall greens, the garden is beautiful and presents the opportunity for a harvest festival. In October, encourage gardeners to clean their plot of weeds and the remains of summer crops. A festival can be a good incentive to get this important round of garden cleanup done in a timely way. On or about October 15 is the traditional planting day for garlic in the piedmont, which provides another good excuse to hold a garden gathering combining work and fun.

Be sure to harvest sweet potatoes and rambling squash vines along fences before frost.

Compost and Mulch Party

After leaves begin falling in November and December, hold a compost and mulch party to make a compost windrow and storage area for bags of leaves, which make ideal mulch. Gardeners save money and set a good environmental example by making their own compost and mulch from fallen leaves.

Late Fall Cleanup

Hold a garden-wide cleanup in late fall after Thanksgiving and the first killing frosts. Completely clean the garden of weeds, finished vegetables and flowers, and materials such as trellises and stakes. In plot gardens, each plot holder is responsible for cleaning their own plot. Allow gardeners to neatly stockpile garden supplies under a tarp in a corner of their plot for the coming year. Late fall is also an optimal time to apply lime (if the need is indicated by a soil test) and perform needed tilling.

Winter

Community food gardens in the piedmont are generally not highly active from mid-December through February. Maintenance on paths and winter weeds may be necessary, however. With the growing popularity of season extending techniques, the garden may want to experiment with row covers or even consider building a hoop house to allow production in all seasons.

8. Soil, Plots, and Planters

A community food garden's success depends on healthy soil, so wise soil stewardship is an essential part of managing every sustainable food garden. Nothing inspires gardeners' commitment to the garden like successful harvests, and nothing does more to ensure bountiful harvests than healthy soil.

A community food garden presents an ideal opportunity to show the public how to be stewards of the soil, even in an urban environment. Whether the garden has traditional in-ground beds using native soil or raised beds filled with a planting mix, there are opportunities to demonstrate soil management and health. This chapter will help you select the best strategies for your garden including incorporating compost and lime into garden soils. For more information on fertilizer use, please see chapter 9, *Growing Food*.

The Soil Management Process

Caring for soil is an on-going process rather than a one-time event, such as putting up a fence or building a shed. Follow the lead of skilled local farmers and gardeners and create an annual plan for maintaining soil health.

Soil Test

Do a soil test early in the site selection process. The results of the soil test will provide a baseline for future work with your soil. Experts recommend a soil test every three years, though some gardens test annually, particularly during the early years while the soil is improving.

Improve the Soil on Site or Bring in "Topsoil"?

When a garden site's soil is acceptable—workable and reasonably well drained—improving the soil on site may be less costly and more environmentally friendly than constructing raised beds and purchasing a planter mix or "topsoil" to fill them. Preparing native soil for growing vegetables will probably require adding compost, lime, and fertilizer (plant nutrients) based on soil test recommendations.



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If an otherwise promising site has soil that is in very poor condition (very hard to work, full of gravel, or easily flooded with poor drainage) or contaminated, the garden team may choose to utilize raised beds.

The choice between in-ground plots and building planters is a fundamental one for food gardeners, with implications for how much the project will cost, how the garden will look to the public, and how gardeners will manage food production. Each approach has advantages, disadvantages, and outspoken advocates, but one is not better than the other. Motivated gardeners can grow good harvests in plots and planters, so we discuss both in this chapter

Pros and Cons in a Nutshell

Well-designed and constructed raised beds are attractive and make a positive first impression. Planters may make gardening less intimidating and easier for novice gardeners, and they may provide a more effective way



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to organize a garden overall. In locations where soil is extremely poor or contaminated, or where handicapped access is essential, planters may be the only choice. Planters tend to drain more quickly, require more frequent watering, and warm up more quickly in the spring than in-ground beds.

The major drawback to planters is probably the cost; however, building materials and fill soil for planters are popular donations from funding agencies and civic groups because they quickly produce tangible results that can provide an attractive photo opportunity for the media. Other drawbacks include reliance on a purchased fill for the planters, resulting in reduced connection to soil stewardship or sustainability, less flexibility to move planters, and restriction to rectangular shapes when boards are used to form the sides. Using stones or blocks, however, allows planters to be constructed in curving, natural forms. Finally, once planter boxes are in place, they are much harder to remove if the garden fails. Abandoned planter boxes are a sad testament to gardens that started with much enthusiasm but were not sustainable.

In many situations, improving native soil to create plots may be much less expensive, more flexible, and more environmentally friendly and sustainable over the long run. However, there are drawbacks to gardening in in-ground beds as well. While soil stewardship strategies are straightforward and inexpensive, not all gardeners or funders are familiar with them, which may lead to a steeper learning curve. In-ground gardens may ultimately look wonderful, but they do not give the instant gratification offered when a group installs planter boxes.



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Another strategy that might make sense for some gardens, especially gardens with low budgets, is veteran garden writer Barbara Pleasant's method of gardening in bags of commercial potting soil. This instant start strategy has the advantage of minimizing weed and insect problems and improving the garden soil over time.

Many community gardens have both planter boxes and in-ground plots. Planter boxes are excellent for gardeners who want smaller areas or who need easy access. In-ground gardens are better for gardeners who need more space. By combining the two approaches, a garden can have the best of both worlds.

Working with Plots

Setting up a garden with plots using the native soil is a simple two-step process. First, improve the soil in the garden using compost as outlined in chapter 5, *Site Preparation*. Then permanently mark the location of each plot.

When marking the plots, it is not necessary to surround each plot with landscape timbers. A better and much less expensive way to define plots is with permanent metal stakes set in each corner. Stakes also make it easier to manage whole garden tasks such as mowing, composting, and tilling.

In a New Garden

Begin by cultivating the areas where vegetables will be grown. The easiest way to accomplish this task is to use a large farm tractor capable of working the soil to a depth of 6 inches or more. A sturdy front drive/rear-tine

Know Your Compost

High quality compost is recognized as “black gold” for gardens, and it is generally considered the best practical way to increase vital organic matter. However, compost is only as good as its ingredients. Keep the following inappropriate material out of compost piles: dog or cat wastes, herbicide-treated plant debris, diseased plants, and weed seeds. If you purchase compost, make sure it is Compost Council certified, and that it does not contain sewage sludge (i.e., biosolids). Potential problems include:

Municipal composts:

- Broadleaf herbicides (from lawn clippings treated with persistent herbicides)
- Heavy metals (from pressure treated lumber and other inappropriate products disposed of in green waste containers)

Animal manure:

- Broadleaf herbicides (from cows and horses fed hay grown in fields treated with persistent herbicides)
- E. coli and other pathogens (unless composted at 130 to 140°F for two five-day cycles)

Grass clippings:

- Broadleaf herbicides (from lawns treated with persistent herbicides)

Carefully evaluate the potential danger of any products you intend to add to your garden. Ask questions and consider having compost tested for heavy metals and running a quick screen to detect broadleaf herbicides prior to purchase.

rototiller, paired with use of shovels to spade the soil by hand, is also another good option. Some gardeners may prefer turning or double digging (Jeavons 2006).

Lasagna gardening or sheet mulching is another option. No-till, no-dig, lasagna gardening involves composting on the spot, layering green material (grass clippings,) with brown material (dried leaves, cardboard) on top of the garden bed and allowing it to break down and improve the soil.

Test the Soil

Check with a Cooperative Extension agent for test boxes, report forms, and guidance on how to take reliable samples. He or she can also help you interpret the soil test results and the recommendations for how much compost, lime, and fertilizer to add during soil preparation.

Adding Compost and Organic Matter

If possible, add 1 to 3 inches of locally produced, high-quality compost when you prepare the soil. Creating your own compost on site is an excellent option, but you still may need to purchase or seek donations when starting the garden and for an annual boost.

Municipal composting programs may provide free or low-cost compost, particularly if the garden can help encourage home composting by hosting classes and demonstrations. Compost left over from commercial mushroom production and worm castings are also good options. When purchasing compost, look for products certified by the US Composting Council with the Seal of Testing Assurance (STA). Local farmers, especially organic vegetable growers, are excellent sources of information and referrals regarding sources for organic matter.



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For more information on composting, see the Gardening chapter of the *North Carolina Extension Gardening Handbook*, AG-831 (content.ces.ncsu.edu/extension-gardener-handbook/2-composting), the NC State Extension Composting portal (composting.ces.ncsu.edu), and *Composting at NC Residential and Summer Camps*, AG-773 (content.ces.ncsu.edu/composting-at-nc-residential-and-summer-camps).

Annual Soil Maintenance and Improvement

A yearly application of 2 to 3 inches of high-quality compost is very beneficial to a community food garden and even 1/2 inch brings benefits. Gardeners can easily incorporate this plot-by-plot using hand tools. Cooperative community food gardens, and some large plot gardens, apply compost to the whole garden in the late fall or winter.

When intending to incorporate the product into the soil, avoid buying mulch (large chunks of wood chips intended for use as a top dressing) or topsoil (sand, silt, and clay)

instead of compost (bio-degraded organic matter)—they are not the same thing. Seek guidance from a Cooperative Extension agent if there are any questions about which material to use.

Fertilizer should also be added on a seasonal basis if the garden's objective is optimum food production. Harvesting removes nutrients, such as nitrogen. These nutrients should be restored, based on the requirement of the crop. For more detailed information, see chapter 9, *Growing Food*.

Lime

Ground limestone (lime) helps reduce acidity to improve vegetable performance. The best way to determine when and how much lime to apply is with a soil test. Typically, lime is applied every three years, but only if the soil test results indicate that it is needed. Lime can be mixed into the soil at the same time compost is added using the same techniques.

Mulch vs. Compost

Mulch

Any material used to cover the soil. Organic mulches include small pieces of leaves, straw, pine straw, or wood and are used to prevent weeds, conserve water, moderate soil temperature and eventually breakdown and provide nutrients for plants and soil organisms.



© rfduck

Compost

Rich organic matter that has decayed into unrecognizable elements (you can no longer tell if it was a leaf or a tomato) incorporated into the soil to improve structure, provide nutrients, improve habitat for beneficial organisms and enhance water management.



© USDA



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Mulch

Cover the soil with a protective layer of organic mulch, such as straw, leaves, wood chips, newspaper, or cardboard. An effective soil stewardship strategy, mulch protects the soil from erosion, discourages weeds, prevents soil from splashing onto leaves, conserves soil moisture, and moderates soil temperature. In addition, when mulch breaks down it can be incorporated into the soil as compost, improving soil structure, providing nutrients, and enhancing water retention and drainage. Experienced gardeners sometimes run their lawnmower over leaf mulch to chop it into finer pieces, making it easier to use. It is not necessary to spread leaf mulch (or any organic mulch) deeper than about 4 inches.

Use mulch in pathways and in garden beds. Coarse mulch (such as wood chips) breaks down slowly, and a 3- to 4-inch layer sufficiently covers paths and high traffic areas to suppress weeds and clearly define the pathway. Use a 1- to 2-inch layer of finer textured mulch, such as leaf mulch and straw, within plots.

Cover Crops

Another excellent way to build and protect garden soil is through the traditional technique of cover cropping—growing a crop to feed and protect the soil.

Cover crops are also called green manures because they add vital nutrients to the soil. Legumes make excellent cover crops because they enrich the soil with nitrogen. Two favorite legumes are crimson clover, grown in the cool-season, and black-eyed peas, grown in the summer.

Non-legumes also help build soil. Buckwheat is popular for use in the summer, and cereal rye is often used as a winter cover crop.

Cover cropping is fun, beneficial, and can even be attractive—crimson clover, for instance, has a beautiful red flower. North Carolina gardeners can get more details about cover crops by reading *An Introduction to Cover Crop Species for Organic Farming Systems*, by Dr. Keith Baldwin, North Carolina Agricultural and Technical University, and Dr. Nancy Creamer, North Carolina State University.

The No-Till Option

Some community gardeners are attracted to *no-till*, a soil-conservation technique that disturbs the soil as little as possible. *Deep mulch* methods such as Lasagna Gardening (Lanza 1998) and Ruth Stout's approach (Stout and Clemmens 1971) can be considered versions of no-till.

It is tricky to apply no-till practices to community vegetable gardening. In general, no-till vegetable production systems show inconclusive results so far in terms of yield, particularly ones created using strictly organic methods.

We recommend testing no-till in a small area before considering it for an entire garden. No-till research



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nonetheless teaches a lesson worth remembering in every garden: there is no benefit to overworking soil by constantly tilling it. Consistent with this concept, traditional organic gardeners only work their beds deeply every third year when adding lime, and they try to avoid unnecessary soil disturbance (and extra work) whenever possible.

Raised-Bed Planters

Planters are a popular and familiar option in urban community food gardens, particularly where soil conditions are poor. Planters are more expensive to set up than plots because of the cost of materials, soil mix, labor, and transportation.

Preparing the Area

Installing raised beds is a more complex process than simply digging up a garden area. Before filling raised beds, clear the area under the planter or mow grass as closely as possible, then cover with a layer of cardboard or landscape fabric, then cover with 6 inches of hardwood mulch (tree companies are a good source).

As an alternative, treat the lawn with an herbicide applied at the correct time of year, carefully following the



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Treated Wood Planters

The Environmental Protection Agency (EPA) has banned treated lumber containing copper, chromium, and arsenic. Known as CCA, for two decades it was more or less synonymous with the term *treated lumber*.

CCA is no longer available to consumers; however, sometimes a well-meaning store or volunteer may unknowingly offer to donate a product made with this material. Do not use it for food gardens.

New treated lumber products now in stores, such as ACQ (Alkaline Copper Quaternary) and CBA (Copper Boron Azole), may be used for food gardens. These types of lumber sometimes require special nails, however, and are not always recommended for direct contact with soil. Be sure to research the wood carefully before using.



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instructions on the label. Contact your local Cooperative Extension agent if you have questions.

Building Planters

A common planter size is 4 feet by 10 feet with a rise of 8 inches or more above the natural soil level. When using wood, make construction easy and reduce waste by using standard-sized lumber and selecting a planter size to match: for example, 4 feet by 12 feet by 12 inches high (48 square feet).

Raised beds may be constructed of masonry landscaping blocks, riprap stone, rot resistant cedar, redwood, painted pine boards, or other materials. Masonry and stone have the advantage of being easily arranged to form pleasantly curved beds. Blocks can also provide a seating area along the edges of beds, which is helpful for gardeners with physical challenges.

Another option is to use woven willow branches or bamboo to create retaining walls that are essentially gigantic, attractive baskets. This traditional French, low cost technique can also be used for ornamental plants or herbs.

To date, plastic wood products made from recycled milk containers have received mixed reviews and are rarely used for constructing planters.

If there is concern that the existing soil is contaminated, seal the raised beds with water-pooof plastic to prevent root contact with contaminated soil. Provide holes on the sides of the beds to facilitate drainage.



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Filling Planters

Fill planters with planter mix or soil, similar to gigantic flowerpots. The easiest option is to purchase a commercial topsoil or planter blend.

Filling a planter takes a surprisingly large amount of material. A 4-foot by 12-foot by 12-inch planter requires 1.7 cubic yards of planter mix, which equates to 48 one-cubic foot bags of planter mix, at a cost of approximately \$100 (\$2 per bag) per bed. In bulk, the cost would be considerably less expensive, roughly \$45 per bed (at \$25 per yard for commercial gardener blend topsoil). If possible, purchase in bulk instead of bags to save money and reduce waste.

Exercise caution when purchasing topsoil. Use reputable firms recommended by local community gardeners, landscaping companies, farmers, and Extension agents.

Any planter that includes large gaps may require a liner of landscape fabric or perforated plastic to hold soil in while still allowing drainage.

Some community gardener programs use only compost for filling planters. This practice is not recommended because compost breaks down over time, can lead to disease problems and watering difficulties, and can be expensive if purchased.

Managing Raised-Bed Planters

Managing soil in raised beds is a challenge. The planter mix or soil used to fill the planters tends to compact over time, lose nutrients, and sometimes develop disease problems.

Add 1 to 2 inches of good compost annually and incorporate into the soil with a hoe or garden fork. If the bed has been lined to protect the garden from contaminated ground soil, take care not to tear the bed's liner. Add lime periodically, as indicated by soil test results, and apply compost seasonally as a top dressing.

Above all, be sure to rotate plants seasonally in the planters as is done with plots. Growing the same varieties repeatedly in a confined space may lead to plant diseases and pest problems.

If serious soil problems occur, including soil compaction or soil-borne disease, the best strategy may be to remove all the old material and replace it with high-quality planter soil mix.

Terracing

Terraces are common elements in traditional landscapes throughout the world. They can add an element of beauty to the garden. If the garden has any sloping areas, terraces provide some of the benefits of raised beds at a lower cost. Lay out terraces so they follow the contour of the garden's slope, and mark them using strings and levels or a laser device. Next, install a retaining wall to hold the soil in place. Inexpensive or free stone or rubble, such as riprap or jackhammered concrete (urbanite), works quite well. Use the topsoil from the slope above the retaining wall to fill behind it and create a level surface. Add additional soil as needed.

Containers

Another option for community food gardens, particularly smaller ones with limited space or soil, is to create container gardens. Clay pots, plastic buckets, washtubs, and all kinds of unlikely objects can become a place to grow vegetables and flowers. Be sure they have a hole in the bottom for drainage, and that they are safe for growing food (no pottery with lead glazing or rubber tires).

Soil management in containers is generally similar to that in raised beds; however, because containers are much smaller, commercial bagged potting soil is often used. Containers will need more frequent watering than in-ground beds.

Containers are especially useful for getting plants growing quickly in the early days of the garden. They also add color to brighten up common areas and views. Containers make an accessible project for younger gardeners and those with physical mobility challenges. Because they are portable, unlike planters, containers can be used to create temporary food garden installations in non-traditional places.

9. Growing Food

Good gardening practices are essential to the success of community food gardens. Successful gardeners who reap a bounty of good food from their garden plots will stick with the garden. If their garden fails to produce a harvest they may become discouraged and give up.

Despite the importance of the topic, this chapter on specific techniques for growing food is brief, limited to a handful of specific issues relevant to community gardeners. General information on vegetable gardening is easy to find, and the NC State Extension Gardening portal (gardening.ces.ncsu.edu/plants-2/vegetables-2/) is an excellent resource.

Learning about Growing Food

Gardeners can become more successful by learning more about gardening. Dozens of popular gardening books, TV shows, and websites compete for public attention, each claiming to have the newest and best techniques for growing garden vegetables. A handful of these resources have become extremely influential among community gardeners, such as *Square Foot Gardening* (Bartholomew 1981) and *Lasagna Gardening* (Lanza 1998). *Permaculture* (Mollison and Holmgren 1978; Hemenway 2009) a complex, ecologically-based food production and landscape design system, has passionate adherents, as does the biodynamic method (Steiner, 1928; Pfeiffer, 1938) and French-Intensive/Biodynamic based on the gardening practices of Alan Chadwick (Jeavons 1974). Each approach has virtues and shortcomings. Draw on NC State Extension (ces.ncsu.edu), Carolina Farm Stewardship Association (www.carolinafarmstewards.org), The Center for Environmental Farming Systems (www.cefs.ncsu.edu), and other researchers for a broad view, emphasizing research-based, ecologically sound gardening methods. Experienced local gardeners and farmers, and community gardeners themselves, can also be outstanding resources.

Individual gardeners in plot gardens should be free to use any technique they prefer, so long as it does not



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adversely affect the rest of the garden (particularly their immediate neighbors) or gardeners who might use their plot after them.

NC State Extension

NC State Extension offers a wealth of expertise on growing vegetables. Start your search at gardening.ces.ncsu.edu. NC State Extension Master Gardener Volunteers receive training in fruit and vegetable gardening and community gardening. Contact your local Extension center to request an Extension Master Gardener mentor for your garden. Extension Master



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Gardener Volunteers can be contacted online or by phone at your local Extension center, which can be located by visiting ces.ncsu.edu/local-county-center.

Local Farmers and Gardeners as Resources

Experienced gardeners and farmers in the community are also excellent information sources. They are often pleased to be asked for advice and will generously share information about best varieties, timing, and techniques. Local hardware and feed stores, which have been dispensing good advice and good seeds to the gardeners in their communities for generations, are another great source of information. Seek out such local assets and support them.

A growing number of community colleges offer classes on vegetable production. Continuing education courses designed for home vegetable gardening are inexpensive, locally-oriented, and offer a good starting point. Another source of valuable technical information and networking is the Carolina Farm Stewardship Association and the North Carolina Organic Growers Schools (www.organicgrowersschool.org).

Within the Garden

Within a community food garden, it is easy to spot an experienced gardener's plot, full of flowers and healthy crops. These gardeners can become valuable resources building relationships across generations and between cultures. Many of the best gardeners are older gardeners or recent immigrants who grew up on a farm or working in the fields. The knowledge they gained working the land is invaluable in the garden.

Learning in the Garden

The best way to learn to garden is by gardening. Help the garden become a learning community where gardeners share what they learn and pool resources to research questions. Encourage gardeners to keep a garden journal. Set up classes and discussion groups about various aspects of food growing and host them at the garden, inviting both gardeners and the community to attend.

Vegetable Growing Calendar

North Carolina's long growing season, even in the mountains, allows community food gardeners to enjoy months of fresh produce from their garden plots. However, timing is critical for success in the vegetable garden.

In the piedmont and coastal plain, there are three overlapping seasons (see Table 1). Cool-season vegetables such as cabbage and lettuce thrive in both spring and fall. Warm-season vegetables, such as tomatoes and green beans, need to wait until the soil warms after the average last spring frost date (April 15 in the central piedmont). See Average Last Spring Frost Dates for Selected North Carolina Locations for more information (content.ces.ncsu.edu/average-last-spring-frost-dates-for-selected-north-carolina-locations). Beginning gardeners may not be aware of these timing requirements and need gentle reminders. Garden centers do not always offer wise choices on their shelves.

To save gardeners money, increase choices, and provide good community building opportunities, consider



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Table 1. Community Food Garden Planting Calendar for the North Carolina Piedmont.

SPRING	SUMMER	FALL
<i>(February)</i>	<i>(April 15 and after)</i>	<i>(early to mid-August)</i>
peas	amaranth, callaloo	arugula
<i>(early to mid-March)</i>	basil	beets
arugula	beans, green beans	bok choy
beets	squash, summer	broccoli
bok choy (transplants)	squash, winter	Brussels sprouts
broccoli	sweet corn	cabbage
cabbage	tomatoes	cabbage, Asian
cabbage, Asian	<i>(late April/early May)</i>	carrots
carrots	beans, lima	cilantro
cilantro	black-eyed peas	greens, Asian
greens, Asian	cucumbers	greens, collards
greens, collards	eggplant	greens, mustard
greens, mustard	melons	kale
kale	okra	kohlrabi
kohlrabi	peas, southern	lettuce
lettuce	peppers	onions, green
onions, green	pumpkins	parsley
onions, bulb	spinach	radish
parsley	spinach, Malabar	salad mix, mesclun
potatoes	watermelon	spinach
radish	<i>(mid-May/June)</i>	Swiss chard
salad mix, mesclun	beans, edamame/soy	turnips
spinach	sweetpotato	<i>(mid-October)</i>
Swiss chard		garlic
turnips		

Based on Bradley et al. (2012), Jones and Roos (2007).

Note: As a general rule of thumb, for the coastal plain, where it warms up sooner and stays warm longer, you can begin two weeks earlier in the spring, and continue two weeks later into the fall. For the mountains and foothills where winter lasts longer and comes earlier, it is safer to begin two weeks later in the spring and quit planting two weeks earlier in the fall. See Figure 2 to identify the regions.

Also see the planting calendars for each region:

- *Eastern North Carolina Planting Calendar for Annual Vegetables, Fruits, and Herbs*, AG-756-02: content.ces.ncsu.edu/eastern-north-carolina-planting-calendar-for-annual-vegetables-fruits-and-herbs
- *Central North Carolina Planting Calendar for Annual Vegetables, Fruits, and Herbs*, AG-756-01: content.ces.ncsu.edu/central-north-carolina-planting-calendar-for-annual-vegetables-fruits-and-herbs
- *Western North Carolina Planting Calendar for Annual Vegetables, Fruits, and Herbs*, AG-756-03: content.ces.ncsu.edu/western-north-carolina-planting-calendar-for-annual-vegetables-fruits-and-herbs

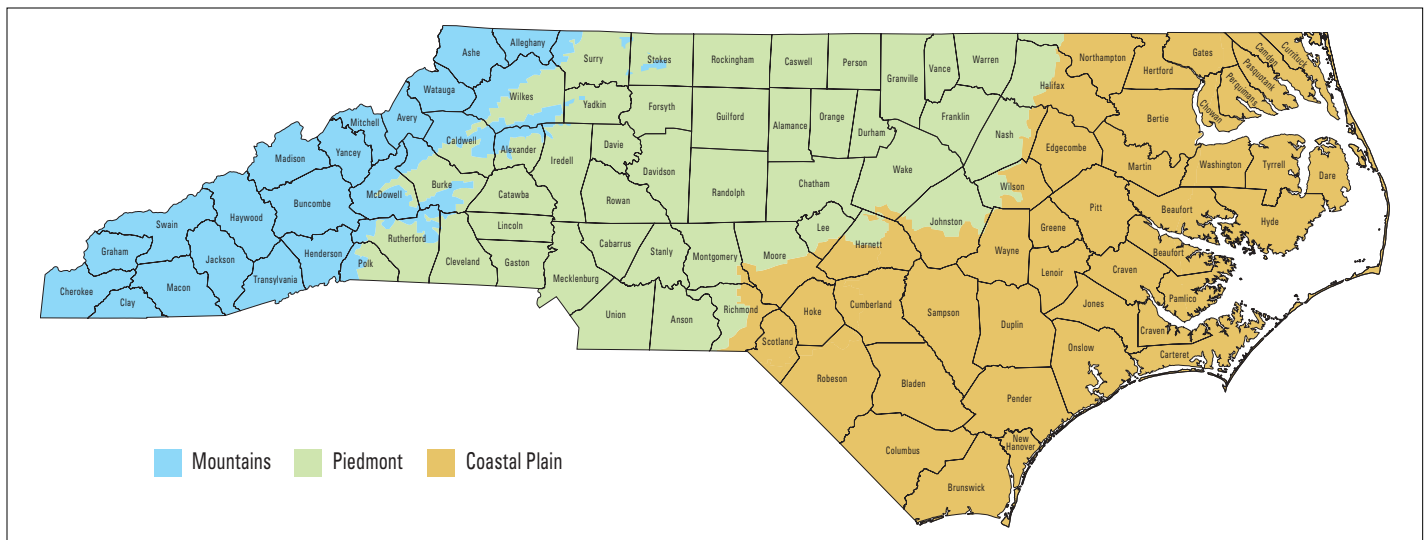


Figure 2. North Carolina's mountains, piedmont, and coastal plain.

growing your own transplants. Start seeds early indoors or in a greenhouse and use season extenders. Starting seeds under florescent bulbs or in a greenhouse can provide gardeners with healthy seedlings in time for planting in the spring. Seedlings need to be started early enough, however, (meaning February and March, if not January) for spring cool-season starts.

Season extension techniques allow crops to be grown outside their usual growing season, providing an earlier start and a longer harvest period. Frost cloth, high tunnels, and greenhouses can provide protection from the cold in late fall, winter, and early spring. Shade cloth can protect from high heat and solar intensity in summer. These techniques, coupled with wise variety selection, make it possible to have fresh food from the garden for much of the year.

Fertilization

Vegetables are fast-growing, high-demand plants that yield significantly more when optimum amounts of plant nutrients are available in the soil. Fertilizer is a natural or synthetic material with a concentrated source of plant nutrients.

Commercial fertilizers are labeled with three numbers. The first number is the percentage of nitrogen, the second is the percentage of phosphorus, and the third is the percentage of potassium. For example, bone meal is labeled 4–12–0: 4% nitrogen, 12% phosphorous, and 0% potassium. An Extension agent or other qualified individual can help develop a straight-forward fertilization



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plan to guide the amount and timing of fertilizer applications based on soil test results, nutrient needs of specific crops, past fertilizer applications, and other factors.

Organic fertilizers are made from a wide variety of naturally occurring materials, such as fish, blood, bone, feather, manure, and plant materials. Organic fertilizers have a number of advantages: they are readily available and sometimes inexpensive or free; they release nutrients slowly over time; they provide micronutrients and soil microbes; and they improve soil structure. There are also disadvantages to organic fertilizers: sometimes they don't act quickly enough to address a critical deficiency, the nutrient contents may vary, they can be bulky and difficult to store, and some can be quite expensive, especially in small quantities.

Synthetic fertilizers are manufactured and come in powder, pellet, granular, and liquid forms. They include sodium nitrate, potassium chloride, ammonium sulfate, and many others. These fertilizers are widely available, quick-acting, easy to use, and often inexpensive. However, the manufacturing process is energy intensive and produces pollution, and overuse can damage microorganisms in the soil and pollute streams, rivers, lakes, and groundwater via stormwater runoff.

Compost is helpful for both approaches for fertilization. It increases soil organic matter and the ability of the soil to retain nutrients, and it stimulates beneficial soil ecology and microorganisms, making fertilizer use more efficient.

If a garden chooses to be organic, garden leadership and sponsors should clarify exactly what organic means in the context of the garden and whether organic methods will be required in the entire garden or only in a specific location within the garden. The USDA's National Organic Program (NOP) rules for organic certification and the Organic Materials Research Institute (OMRI) rules provide a logical starting point, though community gardeners may want to adapt these guidelines to fit their



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needs and expectations. For more information on organic gardening, see the *North Carolina Extension Gardener Handbook*, AG-831 (content.ces.ncsu.edu/extension-gardener-handbook).

Fertilizing Raised-Bed Planters

Gardeners using raised beds should also add fertilizer on a seasonal basis to match the needs of each crop. They must be especially careful, however, to not over-apply, which is easy to do with a limited volume of soil. Avoid fertilizer materials with high salt values.

Planting Strategies

Gardeners with individual plots usually are most interested in putting food on the table. For that reason, they may favor old-fashioned and heirloom varieties that give an ongoing harvest throughout the growing season. They may also plant small amounts of certain crops every three or four weeks to ensure a continuous supply of fresh produce (for instance, arugula, lettuce, radishes, bush green beans, and tomatoes).

A cooperative garden must keep harvesting demands in mind and be able to mobilize enough people to pick and process the harvest at peak quality. In these cases, gardeners may focus on agricultural varieties bred for uniform ripening to facilitate mass harvest (such as determinate tomatoes, heading cabbage, lettuce, and sweet corn).



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Cooperative food gardens should let the food preferences of those receiving the vegetables guide the choice of what to grow. Collard greens and Irish potatoes may be much more popular in donated food baskets or the soup kitchen than arugula and mesclun mix.

If the cooperative garden's goal is to earn money, however, such high value gourmet crops may be the better choice. If the garden plans to sell to restaurants and farmers markets, conscientiously look for a niche and set fair prices that do not compete with or undercut local small farmers.

Post-Harvest Handling

If the garden is large, set aside an area to clean and properly handle and refrigerate produce after harvest. Proper produce handling is essential to ensuring food safety and is required if the garden wishes to sell or donate the food it produces. These practices are beneficial for all gardens. For more detailed information, see chapter 10, *Food Safety and Garden Health*.

10. Food Safety and Garden Health

To maximize the health and nutritional benefits of fresh-grown produce, gardeners must attend to food safety while growing, harvesting, processing, and storing their vegetables. These easy, common-sense ideas can make any community garden's harvest safer and more healthful.

The Centers for Disease Control and Prevention estimate that each year 48 million people in the United States suffer from food-borne illnesses, many of which were contracted by eating fresh fruits and vegetables contaminated by bacteria and viruses. Because most food safety problems are not easily washed off, prevention is critical.

Site Selection

Protecting food safety begins with site selection. Obtain a history of the site and conduct a soil test to evaluate the safety of gardening on the site (Crozier et al. 2012). Consider prior land use, proximity to sources of polluted run-off, potential for flooding (that could wash in pollutants), chemicals and heavy metals in the soil, and prior use of animal manure. Garden sites near current or former highways may have high soil lead levels due to decades of exhaust from cars using leaded gasoline.

Soil Safety Tests

If a review of the history suggests soil contamination could be a problem, have the soil tested for contaminants, including heavy metals such as lead. These can cause health complications to those working in the garden or eating the harvest, and are very difficult to eliminate from the soil.

Soil safety tests are distinct from conventional soil tests for plant nutrients, which provide recommendations for fertilizer and lime applications. Safety tests may need to be specially ordered and may entail additional costs. If the soil is contaminated, consider finding an alternate site.

Check to see if soil safety tests already exist for a given site. This is likely to be true for designated brownfield or cleanup sites, which are sometimes offered as locations for urban agriculture or community garden projects.

Prevention strategies to make community garden harvests safer:

- Clean and sanitize hands
- Use gloves when appropriate
- Use safe soil amendments
- Use safe water
- Clean and sanitize surfaces

Based on Chaifetz et al. (2012).

If a site has contaminated soil, raised beds lined with plastic to prevent vegetable contact with the contaminated soil may be the only practical short-term solution. In some cases, however, it may be that the land should not be used for food growing of any kind for the foreseeable future, and that a community project other than a garden might be better suited for the site.

Agricultural Chemicals

Pesticides are subject to a three-step rating system indicating increasing toxicity: *caution*, *warning*, and *danger*. Always follow pesticide and fertilizer label directions to the letter, wear appropriate personal protective equipment when working with chemical products, and store materials carefully. This applies to both conventional and organic products.

Some gardens have a locked shed or box for pesticides; others do not allow them to be stored in the garden at all. These safeguards help prevent unintentional contamination and reduce danger to children. Gardeners may be surprised to learn that organic products and homemade garden sprays can also pose food safety and environmental risks. To ensure safety, handle all garden products with care.



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Hand Washing

The US Centers for Disease Control and Prevention estimates that over half of foodborne illnesses are linked to poor hand washing. Washing hands with soap and water is the best way to reduce the number of potentially harmful microorganisms. Search on-line for a variety of attractive, functional, easy to build hand washing stations.

If washing with soap and water is not possible, use a hand sanitizer with 60% alcohol or wear disposable single-use gloves while harvesting and when cleaning produce.

Water

For all water that will be used for irrigation, hand washing, or cleaning produce, use a regulated, treated water source, or have the water tested to ensure that it meets EPA drinking water standards.

Avoid rivers, streams, irrigation ditches, wells, or ponds that could be sources of contamination, including pathogens and toxins.

If your garden harvests rainwater from buildings, have the water tested to be sure it meets EPA drinking water standards and is not being contaminated by bird droppings or other pathogens. Monitor for other contamination, such as lead-rich chips of old weathered paint. Retest harvested water periodically. Also, store the water in a way that does not allow mosquitos to breed.

Irrigation

Apply water to the soil, not the plant. Minimize splashing, which may carry diseases from the soil onto the leaves

and stems, infecting the plants and contaminating the harvest.

Both mulch and drip irrigation help prevent soil splash and also conserve water. When hand watering, apply carefully and slowly to minimize splash. Overhead sprinklers are not recommended for food gardens because they make it impossible to control soil splash. "Pop up" style lawn sprinklers should not be used in food gardens.

Compost

Composting turns green waste into a valuable asset that improves the health of the soil and plants, leading to more bountiful harvests. Manage compost with food safety in mind. In community gardens, compost usually comes from one of two sources: purchased compost from outside the garden and compost made largely from materials within the garden, often mixed with leaves and sometimes kitchen scraps.

When purchasing, select products certified by the US Composting Council or ask to see test results documenting the contents and establishing the absence of contaminants. Testing may require a fee and some planning, but dealing with contamination once compost is incorporated into the soil becomes much more costly and time-consuming.

What's the Problem?

Water, manures, soil contamination, and even compost may carry deadly threats into community gardens.

PATHOGENS

- Bacteria
 - ☐ *E. coli*
 - ☐ *Salmonella*
 - ☐ *Shigella*
- Parasites
 - ☐ *Cryptosporidia*
 - ☐ *Giardia*
 - ☐ *Toxoplasma gondii*
- Viruses
 - ☐ *Hepatitis A*
- And more

TOXINS

- Heavy metals
- Agricultural and industrial chemicals
- Domestic waste
- Nitrates
- Petroleum
- And more



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For garden-made compost, be sure to use best practices. Locate the compost bin downhill and as far from the garden as possible to keep unfinished compost out of the garden. Exercise reasonable caution and common sense when acquiring organic matter for the compost pile to minimize the risk of bringing in contaminants. Most of the material composted will be plant material from within the garden, such as overripe produce and young weeds that have not gone to seed.

A “hot” composting process that involves turning the piles and sometimes adding supplemental nitrogen to help the pile heat to temperatures greater than 130°F for at least five days will kill most pathogens. Always wash your hands after working with compost and before harvesting or working in the garden. Seek help from Extension and other knowledgeable sources when designing your composting system. If you exercise caution, include only healthy plant materials, and keep rodents out of your pile, you should be able to minimize risk. When in doubt, test garden-made compost before use.

NC State discourages using manures or fertilizers made with sewage sludge or bio-solids in compost to be used on food gardens.

Keeping Animals Out

Animal feces can deposit pathogenic *E. coli*, *Campylobacter*, *Shigella*, *Salmonella*, and other illness-causing microorganisms. Fence out rabbits, raccoons,

groundhogs, dogs, deer, bears, and other animals. Pets can also become a problem, even if they are carefully monitored. Do not allow dogs or other pets in the garden.

Tall fencing or an electric fence may help keep deer out of the garden, and smaller mesh wire can sometimes help exclude rodents. In addition, keep the compost bin covered to deter scavenging animals.

The most effective strategy to prevent issues with animals, however, is to keep the garden clean and free of rodent-harboring weeds, trash, or mulch piles and to harvest on a regular basis. Nothing attracts animal pests more than overly ripe or rotting produce. Some gardens institute a “you harvest when ripe, or we will harvest it for you and donate it” policy during heavy harvest periods, where the garden is regularly gleaned on a given day each week, and ripe crops are given to charity.

Using poison bait to control mammal pests is not recommended in community gardens because the risks are too great.

Sanitation and Tools

Food harvesting, processing, and storage methods also play important roles in food safety. Wash tools using 1 tablespoon of bleach per gallon of water. Wash hands before harvesting and put harvested food into clean, sanitized containers. Do not wash produce until it is to be consumed (Chaifetz et al. 2012). Larger community gardens that donate or sell their produce may want to consider adding a simple washing and processing area similar to ones used by small farmers.



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11. Funding and Resources

Community food gardens have relatively low start-up costs and modest annual maintenance budgets compared to many other types of community development projects. Most do, however, require a modest amount of cash.

Gardens benefit from a simple, realistic budget and an effective fund-raising program. Fundraising offers another opportunity to engage the talents and energy of gardeners, volunteers, and supporters.

Cutting Costs

Any money a garden doesn't need to spend is money earned. Save money by scrounging recycled tools and growing seedlings. Creative frugality can be fun, sets a good example, and teaches important lessons in stewardship.

Budgeting

A start-up budget for a basic community food garden on a quarter-acre lot in North Carolina ranges from roughly \$1,000 to \$5,000, not counting the salary of paid staff. Fencing and water hookup tend to be the largest costs. Donations and sweat equity labor by gardeners and volunteers can reduce the budget.

The regular maintenance budget for an average community food garden is typically a fraction of the start-up budget. Annual maintenance budgets are often well under \$1,000, excluding salaries. This amount can be further reduced through donations and volunteer labor.

Annual costs include water, compost, mulch, soil preparation, new and replacement tools, and maintenance costs and rent payments. Ambitious one-time projects, such as building a shed or expanding the garden, can temporarily—but substantially—increase an annual budget. Seeds and seedlings may be available as donations, but the quality may or may not be suited to gardening success.



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Finding Resources

Many individuals and organizations are happy to help community food gardens. Civic groups and businesses can support a community garden by providing volunteers, financial contributions, and in-kind donations. For instance, tree companies are often willing to drop wood chips beside the garden gate as free mulch, a win-win for both gardeners and the tree company.

Funding

Even with generous contributions, dedicated volunteers, and creative frugality, most gardens still need other sources of cash. Community gardens generate needed

funds through a combination of fundraising, dues, donations, and grants.

Fundraising

Fundraising is a straightforward way to raise money. It has the added benefit of garnering good publicity, reaching out to the community, and building relationships among gardeners working on a joint project. Potluck dinners, bake sales, car washes, and silent auctions can all effectively raise money. Crowdfunding sites, such as Kickstarter, and other web-based fundraising resources are also viable options.

Look for potential sources of funding, such as private businesses, public agencies, non-profit organizations, and individuals. Enlist help from gardeners and supporters to establish personal connections with donors in the community.

Dues

Assessing modest dues of between \$5 and \$50 per plot annually is common practice for community food gardens. Giving gardeners a chance to buy into the garden is beneficial even if the amount of cash generated is very modest.

To make sure no one is excluded because they can't afford dues, set up a scholarship program that gives gardeners a chance to work off their dues by contributing in other ways, such as volunteering in the garden or the community.

Grants

Grants are a viable and valuable source of supplemental funding, and getting a grant can be a great morale boost for the garden. Don't be tempted to rely on grants for long-term support, however. What happens when the grant is gone?

Writing a successful grant takes time and skill and requires long-term reporting responsibilities. Make sure the garden has the capacity to handle both the application and reporting process. Despite these administrative requirements, grants are still important sources of start-up and operating funds. Gardens that successfully obtain grants are able to establish contacts and legitimacy for the garden and create opportunities for long-term sources of financial support.



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Community Garden Evaluation

Evaluation is a powerful tool to keep a community garden learning, growing stronger, and doing an even better job. Sponsors, funders, and grant organizations understandably want information that demonstrates results and helps them gauge the effectiveness of their contributions. Normally they require specific quantifiable (countable) data, and the garden must be able to provide this information. For instance, these data might include how many people participated in the garden or how much food the garden produced.

To most effectively communicate the garden's value, however, gardeners and garden supporters must dig deeper to show the garden's overall impact. The garden grows food, cultivates community, and builds social capital. Document the garden's successes not just with numbers but also with narratives, pictures, and thoughtful analysis. Consider creating an annual report that summarizes key findings and post it on the garden website.

Telling Your Story

The most powerful way to educate people about the value of community food gardening is simple, old-fashioned, and low tech—tell a story. Gardens are full of fascinating tales of gardeners' lives and lessons learned from growing food. Sometimes poignant, sometimes funny, often full of insight, stories explain the value of the garden in a memorable and effective way.

Sponsors and Agencies

If the garden has a sponsor or public agency that pays the bills, it's still wise to think carefully about evaluation and fundraising.

It is always important to be able to demonstrate the garden's successes and benefits to the larger community, as well as to the gardeners. Showing the garden's value is even more important in tight economic times.

Over time, non-profit and government agency priorities change, and different personalities may influence decisions. Keep track of how much food the garden produces and how many families it benefits to make a strong case for continued funding even when personnel changes or organizational goals shift.

Funds raised for a garden that is part of a larger organization may automatically be channeled into the sponsoring agency's general accounts. Before beginning

a fundraising effort, be sure to clarify where the money will be deposited and who will be able to decide how it is spent.

Some gardens form independent support groups—friends of the garden or community gardener organizations—to raise money specifically for the garden and to seek grants. These funds stay under the control of the group and typically are used to directly benefit the garden. Forming such a group is sometimes the first step toward the garden becoming more independent, as discussed in the next chapter.



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12. Beyond the Garden Gate

Community gardens are recognized and celebrated for their power to build community beyond the garden gate. The American Community Gardening Association's publication *Cultivating Community* (Payne and Fryman, 2001) is a recommended resource for gardens ready to expand involvement in social justice, community-based development, and local food security.

Form a Citizen-Based Community Garden Advisory Board

The experience gained in a successful community food garden can be invaluable to others who want to start a garden or make an existing garden stronger. Volunteer to serve on a citizen-based advisory and resource board for community gardening, if one already exists, and encourage interested gardeners to do the same. If your community lacks an umbrella organization to support community gardening, consider forming one with the garden team as host and sponsor and gardeners taking leadership roles.

A citizen group is especially valuable for working toward the creation of public policy that clearly supports community gardens. Public policy can be as simple as ensuring that park master plans include community gardens on park maps and state official support for them in documents. Introducing a resolution supporting community gardens to the city council or county commissioners is another way to influence policy. At the state-wide level, Vermont is a leader in this area.

Create a Garden-Based Non-Profit

The garden may want to form a non-profit community garden association to make garden decisions and raise funds to purchase the garden site outright. Starting a non-profit is a big step that demands a high level of organization and commitment. It should be discussed thoroughly and carefully planned. The group will need to elect customary officers, such as president, vice president, secretary, and treasurer, and enlist a committed board of directors from the larger community. Some community food gardens have successfully used this option to establish long-term stability.

Join Regional and National Organizations

Like politics, all gardening is local, something doubly true for community gardening. Regional and national organizations, however, can be invaluable sources of networking, support, resources, and ideas.

In North Carolina, the NC Community Garden Partners website (www.nccgp.org) features a directory of community gardens around the state as well as a host of other resources, including information on workshops and conferences. NC State University hosts an email listserv connecting community gardeners. To sign up for this listserv, learn more, and access digital copies of the publications *How to Organize a Community Garden* and *Growing Communities through Gardens*, visit NC State Extension's Community Gardens website (nccommunitygardens.ces.ncsu.edu).

At the national level, the non-profit American Community Gardening Association (www.communitygarden.org) has been working with community gardening for over a quarter-century. Visit their website to access a wealth of resources, and their annual conference is an excellent way to meet other community gardeners and share ideas.



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13. Troubleshooting

This chapter discusses common challenges facing community food gardens in North Carolina and some proven strategies for meeting them. A well-organized garden with strong leadership and committed members can overcome almost any obstacle.

Abandoned or Neglected Plots

Abandoned and neglected plots are eyesores. They may become littered with rotting produce and harbor pests, diseases, and weeds.

- In the garden's letter of agreement, include a "you harvest when ripe, or we will harvest it for you and donate it" clause. This clause should state that gardeners will lose neglected plots and that the garden can mow down and clean up any neglected plot and reassign it as part of a clear, fair process.
- Make it clear that dues will be forfeited in the case of abandoned or neglected plots.
- Make sure that the garden has reliable contact information for all gardeners. Contact gardeners with messy plots to find out if they need help due to health or personal problems, and try to work with them.
- When a gardener leaves, reassign the plot to a new, active gardener as soon as possible; be sure the garden's wait list is current and accurate.
- Encourage and support gardeners who have good-looking plots by holding a plot of the month contest and award.
- As a temporary measure to address unkempt plots, consider planting a cover crop or using the plot for a large shared group crop, such as corn or melons.

Complaints from Neighbors

Angry neighbors complaining publicly about weedy gardens or rowdy behavior can give community gardens a bad name. Community gardens should strengthen community, not cause problems.



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- Set up a strong maintenance committee to prevent weeds and keep the garden looking good.
- Enforce abandoned and neglected plot rules.
- Build a positive relationship with people who live near the garden and meet with them in person to acknowledge their concerns. Offer concrete steps to address problems.
- Discourage loitering in and around the garden. If the problem is youth with no place to go, help create ways to solve this problem.
- Remind gardeners to respect neighbors by avoiding loud conversations, loud music, and noisy garden equipment, particularly at quiet times of day. Be thoughtful about parking.
- Be generous and share flowers and fresh vegetables with neighbors.
- Recruit neighborhood leaders as gardeners and community garden supporters.

Feuding Gardeners

Disputes between gardeners can poison the atmosphere in a community garden and distract the group from important tasks.

- Model respectful, courteous, and peaceful relations in the garden.
- Plainly state in the guidelines that violence, including yelling and insults, has no place in the garden.
- Design the garden to minimize problems. Consider setting aside part of or the entire garden as organic (group gardeners with similar perspectives on pesticides in the same area).
- Be fair and transparent about assigning plots and managing the wait list.
- Carefully supervise children and create special places in the garden for them.
- Act quickly to resolve potential problems; don't let issues fester unresolved.
- Seek ways to mediate disputes.
- If the garden has a troublemaker who thrives on conflict, encourage that person to take a break from confrontational behavior while in the community garden.
- Keep a sense of humor and practice compassion at all times.



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Fire Ants

Fire ants have a painful sting and can be a dangerous garden nuisance.

- Educate gardeners about fire ants so they know what they are dealing with.
- Teach gardeners how to deal with stings and how to dress to prevent ants from getting onto their skin.
- Mark mounds with irrigation flags and treat them promptly.
- Teach gardeners effective techniques to control fire ants in their plots, such as the Texas Two-Step (available in both organic and chemical versions).
- Monitor fire ants carefully, and be prepared to treat the entire garden using an effective technique at the optimum time, based on recommendations from NC State Extension. Be aware, however, that the best sustainable control for exotic fire ants is a healthy local ant population, which can be decimated by blanket application of ant control chemicals.

Poor Soil or No Soil

Poor soil, or a complete lack of topsoil in some urban sites, can make productive vegetable growing impossible.

- Construct raised planters and fill them with the most environmentally friendly and economical mix suitable for growing vegetables.
- Garden in pots or large containers in locations where soil is unworkable.
- If the soil is hard but potentially workable, or covered with bermudagrass or an established lawn, try using pillow packs or grow bags of soil and compost placed atop cardboard and wood chip mulch.
- Consider alternative sites for the garden, and use the problem site for a different project, such as a community greenhouse or a youth sports field.

Super Gardeners

Sometimes a single individual in a community garden may make most of the decisions (as well as do much of the work). In community garden circles, these people are sometimes called super gardeners. A garden can depend

so heavily on its super gardener that it fails when that person leaves.

- Help super gardeners and other natural leaders learn to share responsibility, delegate authority, and empower others to make decisions.
- Pro-actively recognize and respect a super gardener's hard work and many contributions, especially when she or he is an original founder of the garden.
- Offer opportunities for this person to become a mentor to pass along knowledge and experience to other gardeners.
- Build democratic processes into garden management, and work to ensure that consensus means all voices are heard and, when possible, reflected in decisions, even when the super gardener disagrees.
- Create fair and thoughtful rules and governing structure, including term limits, and apply them fairly to everyone involved in the garden.

Theft

Loss of ripe vegetables, flowers, tools, benches, and other items from the garden is extremely demoralizing. Theft can come from both inside and outside the garden.

- Require gardeners to harvest in a timely manner and not leave ripe produce sitting unharvested for long periods.
- Make sure guidelines and the letter of agreement clearly state that gardeners are not to harvest from other plots without permission.
- Establish good relations with the neighborhood; ask the garden's closest neighbors to keep an eye on things. Make friends with local law enforcement, youth, and seniors.
- Consider enclosing the garden with a gated fence, but realize that this will not be sufficient to discourage serious thieves or malicious vandals.
- Hold classes and other events in the garden, and invite the neighbors so they know that it is their garden too.
- Set up a you-pick garden outside the fence or at the edge of the garden for passers-by, and place a basket outside the gate to share surplus vegetables donated by gardeners to whoever needs them.



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- Put up signs stating that only gardeners may pick produce, and that the public is not free to help themselves.
- Along the edge of the garden, grow root crops, such as potatoes, that are not attractive targets for theft. Choose unusual varieties (for instance, black tomatoes or red lettuce).
- Secure garden furniture with cables, or use biodegradable materials such as hay bales, for benches and tables.
- Paint garden tool handles with bright colors.

Vandalism

Vandalism, when someone tramples vegetable beds and destroys or defaces property, is both frightening to gardeners and terribly discouraging.

- Reach out to the community and particularly local youth, as suggested for preventing theft. Arrange for police to drive by the garden regularly, especially in the evenings.
- Keep the garden clean and neat looking, and keep lines of sight open.
- Make sure boundaries are clearly defined. A fence and gates are more effective for deterring casual vandalism than they are for controlling theft.
- Maintain your perspective. Don't treat damage from an awkward gardener or careless child as vandalism. After an incident of true vandalism, take a deep breath, and act quickly to repair the damage and restore the garden's appearance.



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Weeds

Uncontrolled, rampant weeds can make even a productive garden look very unappealing.

- Know your enemy—get help and research-based information on weed control from NC State Extension.
- Form a strong and active maintenance committee.
- In the guidelines and letter of agreement, specify weed management requirements for personal plots and community areas.
- Don't make the garden larger than the group can manage, especially in the beginning. Make sure all plots are assigned to an active gardener throughout the growing season. Act promptly to deal with any abandoned or neglected plots.
- Encourage the use of mulch around plants to suppress weeds.
- Intervene early: the smaller the weed, the easier it is to remove. Remove weeds before they flower and set seed to prevent the next generation.
- Schedule workdays at times when weed problems are expected, such as in March (cool-season weeds) and August (warm-season weeds).
- Keep a watchful eye on the fence line, composting, and bulk storage areas, and take quick action to stay ahead of weed growth.
- If gardeners and volunteers can't handle weed control, hire appropriate help.

Weeds: Bermudagrass

Bermudagrass is sometimes used for lawns and sports fields because it grows fast and is difficult to kill. These characteristics make it a problem in community gardens, where it can strangle crops and take over.

- Learn to identify bermudagrass, both during the growth and dormant phases. Act quickly to deal with bermudagrass before the garden is established on a site.
- For organic control, mow very close, then smother with cardboard and deep mulch (six inches), and do not water through the entire growing season. Quickly remove any sprigs that emerge through the mulch or spread by underground stems to prevent them from photosynthesizing and producing food for the plant.
- During the dormant season (cold weather), bermudagrass turns brown. Try carefully digging out the underground stems. This control method is very labor intensive and will only work for small areas or with a very large number of dedicated people to weed.
- For chemical control, use an herbicide labeled for use around edible crops. Contact your local Extension agent for recommendations, follow instructions on the label exactly, and only use during the active growing season (summer).

Additional Resources

North Carolina Resources

The NC State Extension Community Gardening Portal (nccommunitygardens.ces.ncsu.edu)

Collard Greens and Common Ground: A North Carolina Community Food Gardening Handbook, AG-806 (go.ncsu.edu/cg-handbook)

The North Carolina Extension Gardener Handbook, AG-831 (go.ncsu.edu/eg-handbook)

The NC State Extension Gardening Portal (gardening.ces.ncsu.edu)

North Carolina Community Garden Partners (nccgp.org)

National Start-Up and Management Guide Websites

Australia—Australian City Farms and Community Gardens Network (communitygarden.org.au)

Canada—Community Garden Council of Waterloo Region, Ontario, Canada (community-gardens.ca)

United States of America—American Community Gardening Association (communitygarden.org)

State and Local Start-Up and Management Guide Websites

California—ChangeLab Solutions: Land use Policies, A Legal Toolkit and more (www.changelabsolutions.org/publications/seeding-city); University of California Cooperative Extension Los Angeles County (celosangeles.ucanr.edu/UC_Master_Gardener_Program/Community_Gardens)

Colorado—Denver Urban Gardens, Denver, CO (dug.org)

Kansas—Community Toolbox, University of Kansas (ctb.ku.edu/en/toolkits)

Massachusetts—Boston Natural Areas Network, Boston, MA (www.bostonnatural.org/communitygardens.htm)

Minnesota—Gardening Matters, Minneapolis, MN (www.gardeningmatters.org)

Missouri—Community Gardening Toolkit, University of Missouri Extension (extension.missouri.edu/p/mp906-6); Gateway Greening, St. Louis, MO (www.gatewaygreening.org)

New York—NE Beginning Farmers Project, Cornell University (www.nebeginningfarmers.org)

Oregon—Parks & Recreation, Portland, OR (www.portlandoregon.gov/parks/39846)

Utah—Wasatch Community Gardens, Salt Lake City, UT (wasatchgardens.org)

Vermont—Vermont Community Garden Network, Burlington, VT (vcgn.org)

Washington—P-Patch Program, Seattle, WA (www.seattle.gov/neighborhoods/ppatch)

Resources in Spanish

Farm and Garden Resources—Center for Rural Affairs, Lyons, NE (www.cfra.org/community-food/siouxlandcommunitygarden#span)

Garden Resources, LifeLab (www.lifelab.org/2011/07/spanish)

Garden Start-Up Guide, University of California (celosangeles.ucanr.edu/files/96933.doc)

Cooperative Extension Los Angeles County (celosangeles.ucanr.edu/UC_Master_Gardener_Program/Community_Gardens)

List compiled by Betsy Johnson, The American Community Gardening Association.

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Acknowledgements

The authors wish to express their appreciation to Keith Baldwin, Judith Bates, Diane Beth, Mary Jac Brennan, Susan Burns, Kim Curlee, Jim Flint, Nadine Ford, Deborah Green, Maria Hitt, Debra Ireland, Susan Jakes, Betsy Johnson, Ellen Kirby, Issac Lewis, Kathleen Moore, Karen Neill, Lisa Valdivia, Joni Young-Torres, and all of our fellow community gardeners at Reedy Creek Park Community Garden, The Urban Ministry Center Community Garden, the UNC Charlotte Student Community Garden, as well as the NC Community Garden Partners and NC State Extension Master Gardener Volunteers.

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Extension Gardener—Your Community Gardening Resource.

Through the Extension Gardener program, NC State Extension supports community gardens by providing the following resources:

- Web portal: nccommunitygardens.ces.ncsu.edu
- Listserv: go.ncsu.edu/subscribe-cg
- Handbook: go.ncsu.edu/cg-handbook
- Publications: go.ncsu.edu/cg-pubs
- Mentoring: go.ncsu.edu/cg-mentor
- Training and Tours: nccommunitygardens.ces.ncsu.edu/events

Community gardening is a component of the Extension Gardener program, which also includes home gardening and food production and therapeutic horticulture.

Your contribution to the Extension Gardener fund will help support the community gardening program and provide useful resources to gardeners across North Carolina.

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Community gardens have been part of the American landscape since the mid-1700s. Today, community gardens continue to make positive contributions in neighborhoods across North Carolina. Winner of an American Society for Horticultural Science, Extension Division, 2017 Educational Materials Award, *Collard Greens and Common Ground: A North Carolina Community Food Gardening Handbook* is a practical guide to community gardening. Based on experience and research, it is packed with best practices, tested strategies, and useful checklists. The guide covers every step in the community gardening process, from starting a new garden to sustainable long-term garden management and policy. Whether you are new to community gardening or a seasoned veteran, *Collard Greens and Common Ground* will help your community garden flourish.

Don Boekelheide organized Charlotte's Reedy Creek Park Community Garden in 2004 to 2005, where he is still an active gardener. Sponsored by Mecklenburg County Parks and Recreation, with 76 plots covering over an acre, it is now the region's largest community garden. Don served as Garden Director for Charlotte's Urban Ministry Center for the Homeless. He also created Mecklenburg County's Home Composting training and Master Composter Programs. A member of North Carolina Community Garden Partners (NCCGP), where he serves on the Board, and the American Community Gardening Association (ACGA), Don is a lead trainer for ACGA's Growing Community workshops. A long-time journalist, he was editor of 25 Years of Community Gardening for ACGA and now edits The Garden Beet newsletter for NCCGP. He teaches popular vegetable gardening classes for Central Piedmont Community College. A returned Peace Corps Agriculture Volunteer (Togo), he holds an MS in Agriculture from Cal Poly San Luis Obispo. Don leads a second life as a musician and plays pipe and tabor for Queens Capers Morris. He lives with his family in Charlotte.



Photo by Nancy Pierce

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Photo by Becky Kirkland

Published by NC State Extension
ces.ncsu.edu

NC STATE EXTENSION

Distributed by the University of North Carolina Press
www.uncpress.org

ISBN-13: 978-1469641911
90000



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