

Central Texas Community Gardening Manual



Prepared by World Hunger Relief, Inc. and the
Heart of Texas Urban Gardening Coalition



Thank you to the following financial sponsors:

Alcoa Foundation

AmeriCorps VISTA

**Baptist General Convention of Texas –
Texas Baptist Offering for World Hunger**

Cooper Foundation



Acknowledgements

Neil Rowe Miller, Executive Director of World Hunger Relief

Matt Hess, Education Director of World Hunger Relief

David Cole, Farm Manager of World Hunger Relief

Bethel Erickson, HOT Urban Gardening Coalition VISTA

Tania Sullivan, Baylor University, Environmental Studies Intern

Michael Hannon, Baylor University, Environmental Studies Intern

Lucas Land, Urban Gardening intern



Table of Contents

INTRODUCTION AND HISTORY.....	5
HOW TO USE THIS MANUAL.....	
WORLD HUNGER RELIEF, INC.....	
HEART OF TEXAS URBAN GARDENING COALITION	
NOVEMBER: THINKING ABOUT GARDENING.....	9
WHY START A GARDEN?.....	
PURPOSE AND MODELS OF COMMUNITY GARDENS	
COMMUNITY ASSESSMENTS AND ORGANIZING	
DECEMBER: GEARING UP	14
SITE SELECTION	
RAISED BED GARDENING.....	
PLANTING TREES	
TOOLS.....	
JANUARY: THE DIRT ON DIRT	19
SOIL PHYSICAL PROPERTIES	
SOIL FERTILITY.....	
SOIL BIOLOGY	
<i>Compost</i>	
<i>Compost Tea</i>	
FEBRUARY: PLANNING AND PLANTING.....	25
STARTING SEEDS.....	
COMPANION PLANTING.....	
SUCCESSION PLANTING	
MARCH: ADMIT YOU HAVE A PROBLEM.....	28
THE SKINNY ON WEEDS.....	
WEEDS: ANNUAL (SPRING) WEED MANAGEMENT	
PLANT DISEASE	
CROP ROTATION.....	
APRIL: WHISTLE WHILE YOU WORK AND WATER.....	32
IRRIGATION	
HARVEST.....	
MAY: GOING BUGGY	36
INSECT IDENTIFICATION/MANAGEMENT	
IPM (INTEGRATED PEST MANAGEMENT)	
DIY INSECT REPELLENT IN THE GARDEN.....	
JUNE/ JULY: WHAT TO DO WITH WHAT YOU GROW	39
DISTRIBUTING THE HARVEST	
MARKETING	
SUSTAINABLE VS. ORGANIC	



AUGUST: A LITTLE EXTRA HELP 43
VOLUNTEER MANAGEMENT
COVER CROPS AND GREEN MANURE
BIOREMEDIATION.....

SEPTEMBER: PERENNIAL PROBLEMS 46
WEEDS: PERENNIAL (FALL) WEED MANAGEMENT
Budgets and Funding.....

OCTOBER: PLANNING FOR THE FUTURE..... 49
EXTENDING THE GROWING SEASON
SEED SAVING.....

APPENDIX..... 53
PLANTING SCHEDULE
FRUIT TREE VARIETIES.....
FERTILIZER FORMULA.....
COMPOST TEA FORMULA.....

RESOURCES 60
BOOKS, ORGANIZATIONS, WEBSITES, LOCAL STORES
UGC PARTNER GARDEN GUIDELINES.....
MODEL COMMUNITY GARDEN RULES
MODEL GARDEN WORK AND VOLUNTEER SCHEDULE



INTRODUCTION

So, you want to start a garden. Not just any garden. You want to start the kind of garden that does more than just grow food. You want to transform lives. You want to change neighborhoods. You want to save the world! You want to start a community garden. Many have started community gardens, and many have ended in weeds and frustration. Our hope is that this manual will help you be one of the few that persevere.



There are a lot of gardening resources out there. A lot of books are more technical and in-depth. Those will be valuable resources down the road as you learn and grow. We have listed a lot of those at the end of this manual. This manual is intended to get you started and keep you going, to help you put down roots and keep from wilting. This manual is a project of [World Hunger Relief, Inc. \(WHRI\)](#), and the [Heart of Texas Urban Gardening Coalition \(UGC\)](#).

How to Use this Manual

Gardening is all about timing. When to start seeds? When to plant, transplant or direct seed? When to water? When to start compost or prepare beds? We organized this manual by month, because gardening is an activity that ebbs and flows with the weather and seasons. We designed this manual to be something that will walk with you through your first year starting a garden, but continue to be a resource for years to come.

Each month there is a snapshot of what is happening in the garden, what to expect with the weather and what to do for that month. Some things are never ending... like weeding. Others happen only at certain times of the year, like planting or harvesting. You don't have to use the manual in chronological order. You can start working on



your garden in January or you can read about insects and weeds, even if it's November.

Some people like to make gardening complicated; these are usually the ones who are trying to sell you gardening products. The truth is that it is as easy as putting seeds in the ground and seeing what happens. Someone once told me, "If you aren't killing something you aren't gardening." Failure is unavoidable in a project that depends so much on a notoriously finicky thing like nature. Don't expect miracles. Just get your hands in the dirt and give it a go.

A Brief History of World Hunger Relief, Inc.

WHRI is a Christian organization committed to the alleviation of hunger around the world. God calls us to:

- Train individuals in holistic ministry that equips them to work with communities in developing sustainable farming techniques.
- Educate those with an economic abundance on methods of conserving and sharing resources
- Participate in local and international sustainable development programs

World Hunger Relief, Inc., was chartered in 1976 by real estate developers Bob and Jan Salley. The Texas, non-profit charter provided for a program in agroforestry and related technologies to address the needs of the hungry, both foreign and domestic.

In 1979 Carl Ryther and his family returned to Texas after 17 years of agricultural missions in Bangladesh (formerly East Pakistan). The Salleys invited Ryther to join World Hunger Relief in 1979 to develop a program to train individuals to address hunger needs around the world. In the following 25 years, WHRI has trained over 300 interns working in 20 countries spanning 4 continents. These interns now work for various international organizations promoting sustainable food production and economic development.

During his years in Bangladesh, Ryther had developed simple food production systems to address the food needs of the poor following major civil and environmental crises. These systems; which included intensive vegetable production in grow-beds, rabbit husbandry, and agroforestry (*Leucaena*); were designed to maximize food production in situations of limited land resources. In 1980, Ryther completed a *Backyard Food Production Systems* training manual which was translated into several languages.

In subsequent years, WHRI training was expanded to include sustainable technologies appropriate to developing countries with more extensive resources and production. These systems included alley cropping, larger scale organic



vegetable production, drip irrigation, rotational grazing, and additional livestock (chickens, cattle, goats, sheep, bees, and emu).

In the mid-1980's WHRI personnel became active in development programs in Haiti, Guatemala, Mexico, Kenya, and India. Most of these efforts involved agroforestry outreach utilizing the "miracle tree," *Leucaena leucocephala*. Well digging for irrigation and sanitary drinking water was also a component of many of these programs. The Ferrier, Haiti program is now 25 years old and has led to the formation of a sister organization, World Hunger Relief, Haiti.

In our local community, WHRI has addressed hunger issues of low income, elderly and disabled individuals through various community gardening projects. We have also provided training for schools in gardening and composting. Each year we host scores of tours for school and church groups focusing on sustainable agriculture, environmental responsibility and world hunger issues.

In 1994, Lee and Kathleen Piche joined WHRI as co-directors working alongside Ryther. During the following nine years, they expanded the program to include a Grade-A goat dairy, dried flower production, and fresh market vegetables organized in a community supported agriculture (CSA) model. They were also instrumental in significant facility improvements including construction of the Carl Ryther Education Building which was completed just before Ryther's death in 1999.

In recent years, WHRI staff has expanded to include a Development Director, Education Director and Farm Operations Director. In 2003, Neil Rowe Miller began as Executive Director. In the following year, we undertook a major reorganization of our intern Training program, providing a more comprehensive full-time curriculum, and offering living stipends in addition to room and board. As we look toward the future, we anticipate significant expansion of our local education and outreach programs. We are also exploring partnerships with additional training centers and organizations around the world. We are excited about the many opportunities God is presenting us to combat poverty and hunger in His name.

Urban Gardening in Waco

World Hunger Relief, Inc. created a history of urban gardening in Waco in 2004. For a copy of the complete history please contact World Hunger Relief, Inc.

Urban gardening has been promoted by individuals and projects throughout the history of Waco. The focus is primarily on small-scale, urban food production (vegetables and fruit) rather than ornamentals or landscape gardens. A surprising number of such projects have taken place in the past 25 years, reflecting an interest in gardening that appears to have continued up to the present. Sadly, by 2004 none of these formal gardening projects had continued. WHRI received various requests



to help with school, church, and other community gardens. In keeping with our philosophy of partnership, WHRI began to gather individuals and organizations with a desire to see community gardens flourish in our city. This group has become the Heart of Texas Urban Gardening Coalition. WHRI has remained an active member of the Coalition since that time.

The Heart of Texas Urban Gardening Coalition

Since its inception in the spring of 2005, the [Urban Gardening Coalition](#) (UGC) has served as a unique group facilitating discussion and organizing activities for individuals and organizations who are interested in gardening as a means of building community. Current activities include after-school gardening programs partnered with Communities in School Heart of Texas as well as coordinating gardening activities at many churches and community organizations across the Heart of Texas. However, UGC is much more than growing gardens. Other projects span from entrepreneurial gardening to community skills sharing and gardening workshops. As a coalition, the role of the UGC is to encourage and support partners and interested individuals to carry out identified objectives – by providing support through shared resources of garden skills and knowledge.

Goals of the Urban Gardening Coalition

Educational: Through various educational activities, UGC hopes to spread knowledge about growing gardens as well as eating seasonally and supporting local agriculture. (Projects: [Eat Local. Buy Local. Be Local](#) Campaign. [Community Garden Training Series](#). [Foxfire Fridays](#). After-school Garden Clubs.)

Economic: Beyond gardening, the UGC hopes to re-invest in the local community through various projects that encourage agrarian enterprises that contribute to building a local food economy. (Projects: [Youth Summer Employment](#). [Urban Gardening Scholarship](#). [Downtown Farmers Market](#).)

Community Development: Lastly, the UGC hopes to provide opportunities for green-thumbs and unlikely gardeners to meet in the garden and get to know one another through garden-related service to the community. (Projects: [MLK Day of Service](#). [Harvest Celebration](#). Monthly Garden Work Days.)



November

What's Happening?

Hunting, football, and Thanksgiving are what most people in Texas think about in November. The weather is finally a bit cooler. Even though winters are relatively mild in the Lone Star state, we still don't like going outside this time of year. That makes it a good time to spend some time curled up with this manual by a fire, or space heater or big blanket and think about the more abstract aspects of community gardens. Why do we grow gardens? Who does it benefit? What is the purpose? How can it help other people?

Central Texas has two major growing seasons. The growing season averages 253 days annually, and the rainfall averages 33 inches. Though November marks the beginning of the end for most crops, many can be grown through winter with a little extra effort, like kale, collards, onions and carrots.

Weather

The average date of first frost in Central Texas is November 16. Gardening is all about timing. If a cold front is coming early in the month you might try to get winter crops planted and established before then. If it's unseasonably warm you could put off planting, but it gets riskier the later you wait. Watch the weather daily or make friends with someone who has the local radar as the home page on their web browser.

To Do

- Clean up around the garden (rake leaves, sharpen and oil tools)
- Direct seed root crops: beets, carrots, radishes, turnips
- Start compost piles
- Collect bagged leaves on the side of the road – for free mulch or compost
- Prep beds for spring planting
- Harvest, mulch and weed winter crops
- Some plants that can continue through winter into early spring: brussel sprouts, broccoli, cabbage, collard, garlic, kale, kohlrabi, leek, lettuce, mustard, onion, parsley, rutabaga, spinach, Swiss chard and shallot.

Why Start a Community Garden

You're starting a community garden because you want to change the world, right? One life at a time, but your goal is the whole world... starting with this garden. Many have had the same dream, but sometimes our best intentions can actually hurt the people we want to help. It is important to take time to think through some important questions as you plan and start your garden.



- Is land available for a garden?
- Is there a strong desire and need for a garden?
- Who will the garden serve?
- Who will work in the garden?
- How will the garden be funded?
- Are you doing something *for*, *to*, or *with* the people you want to serve?
- What is the purpose of the garden?
- What type of role will the garden play - food production, community building, environmental restoration, beautification, recreation?
- Who makes decisions about the garden (democratic vote, consensus, board of directors, etc.)?
- Who are the potential supporters and/or partners of the garden - businesses, neighbors, schools?
- Will space be divided and gardened by individuals and families or will it be gardened collectively by the group - or both?
- Will there be a fee charged to gardeners to cover expenses? Will there be a sliding scale?
- Who is willing to serve on a garden leadership team?
- What is the best way for the group to stay in touch?

Our Development Philosophy

Gardens can be a great tool for community and economic development. They can also be a miserable failure, if the community does not have ownership of the project. Our role is to help people solve their own problems:

- By teaching a process of learning, not a set of technologies.
- By connecting communities with resources they would not otherwise have access to.
- By building capacity of local organizations through collaboration rather than establishing our own projects.

Our Global Perspective

Local solutions and global action are both critical elements in bringing justice to the poor. As you plan your garden, think about how it fits into your neighborhood, local community, region, state, nation and even the global economy and ecosystem.

- Empowerment of individuals and local communities is the most fundamental way of transforming unjust economic and political structures.
- Without a supportive national political and economic infrastructure, farmer knowledge and innovative technologies will only lead to frustration.



- Unjust global political and economic structures limit the social and economic well-being of the poor and must be addressed by Christians working for Kingdom change.

Purpose and Models for Community Gardens

What is a community garden?

“Any piece of land gardened by a group of people... It can be urban, suburban, or rural. The focus could be growing flowers, vegetables or community. It can be one community plot, or can be many individual plots. It can be at a school, hospital, or in a neighborhood. It can also be a series of plots dedicated to ‘urban agriculture’ where the produce is grown for a market.”



- [*American Community Gardening Association*](#)

Why start a community garden?

There are many reasons for starting a community garden. Your garden may be a combination of several of these or focus on only one. It is important to know the purpose for growing to guide your planning and planting for the garden. The following are descriptions of the types of gardens we have encountered.

Hunger Ministry - Food grown in the garden is primarily donated to food pantries and other hunger ministries in order to provide access to good food for people in need.

Education- Primary focus is to provide a hands-on learning environment for any age to learn about gardening, the environment, nutrition, cooking and food production.

Mentorship- Intergenerational or peer-to-peer models focus on community building and developing relationships through gardening.

Entrepreneurial- Focuses on the potential for food production to be a source of income and sustainability for those involved, cutting down on grocery costs and developing business skills in the community.

Therapy- Targets a specific group of people that would benefit from the healing effects of working in the garden, e.g. elderly, mental health patients, prisoners, etc.



Demonstration Garden- Intended as a place to train others in basic gardening skills and a variety of methods for growing food in diverse locations, apartments, rooftops or backyards so people can see and learn techniques to apply in their own gardens.

Community Development- Holistic approach focused on the big picture of all the possible effects of gardening on growing healthy communities, and tries to incorporate all the other elements into a program that addresses the needs of the community through organizing and gardening.

How do you want to grow your garden?

Now that you've thought about why you're growing a garden it's important to think about how you will organize and structure your gardening program. The following are some models for community gardens we've encountered.

Common Garden- large plot that is gardened communally by volunteers and people in community

Plot Garden- large garden where people pay a small fee and/or apply in order to garden a portion of the larger garden.

Yard Sharing- arrangements are made to garden people's lawns and share the harvest or proceeds among those involved

Where to garden?

We will cover more about site selection in December. The important things to consider are access to water, ownership of land, accessibility of garden, and city ordinances. With that said you can garden almost anywhere... schools, churches, apartment complexes, rooftops, front lawns, parks, vacant lots. Be creative. You are only limited by your imagination and perseverance.

Community Assessment and Organizing

As you are thinking about the initial questions surrounding starting a garden, it would be wise to conduct a community assessment. Discover the needs of your community – is a garden needed or wanted? What do people desire from a community garden? How will your garden play a role in bettering your community?

Community assessment can be as easy as talking to the neighbors living around the garden, as well as businesses in the neighborhood. Start with questions that will assess their desire for a garden, and avoid leading questions.

- Ask them how they would like to be involved.
- Ask them what they would to see grown in the garden.



- Invite them to work days, meetings and potlucks.
- Have them share about frustrations and joys the community brings them.
- Brainstorm how your garden can be a part of the solution.

After you have assessed community needs and priorities, you can organize neighborhood folks to participate in your garden project. Remember, not all people want to garden but may help in other ways, -such as starting seeds, donating flowers, providing access to water, working with youth, buying produce, spreading the word, cooking demonstrations, and more.

Resources for Assessing and Organizing

- [World Hunger Relief, Inc.](#): has conducted gardening assessments in South and East Waco to better understand the history of agriculture and access to healthy food in these neighborhoods. Reports and data from each of these assessments are available upon request.
- [Texas Hunger Initiative](#) and Waco's Food Planning Task Force: conducting local assessments of gaps in service to meet needs of the most food-insecure people of McLennan County. Community gardening is one component of addressing hunger.
- [Building Communities from the Inside Out: A Path Toward Finding and Mobilizing a Community's Assets](#) (Kretzmann and McKnight): a book used by many social workers in preparing for community organizing and assessing – based on building up a community rather than focusing on its flaws and deficits.
- [When Helping Hurts \(Corbett and Fikkert\)](#): a book discussing the sometimes detrimental role of theology in transformational ministry among the poor. Not necessarily agricultural – but helps in preparing how we work with people from different backgrounds than ourselves. Available in the Village Store at World Hunger Relief.



December

What's Happening?

This is winter in Texas. For Yankees it may feel like summer, but we Texans like to stay indoors when it gets down to 50 or so. There may be some winter crops to tend to and harvest, lots of greens, onions and carrots, but this is still a good time to do some thinking, planning and preparation for your garden. This month we turn to some more practical tasks to plan your garden. Where should you plant your garden? What tools do you need? How can you prepare beds for planting in the spring?

Weather

Temperatures this month can often be below freezing overnight and typically between 50 and 60 degrees during the day. Winter crops that are well established will do fine. However, you should keep an eye out for freezing overnight temperatures. Cover your plants with row cover or blankets and bring containers inside if the temperature is going to reach freezing.

To Do

- Get your soil tested (see January for more on soils)
- Make plans for seeding and planting
- Clean up around the garden
- Collect, label, sharpen, repair and organize tools
- Start or maintain compost piles (see January for more on compost)
- Prepare beds for spring planting
- Select varieties for tree planting
- Build frames for raised beds
- Harvest and weed winter crops

Site selection

Maybe you already have a location in mind for your garden. Maybe it is just the seed of a dream, and you're wondering what things to look for in a location. As we've already said, the purpose of your garden will guide in selecting a site. If you want to focus on growing for market, a container garden might not work best. If you are just wanting to garden with friends and neighbors, the roof of an office building with high security might not be ideal. That said, there are endless possibilities for where you can grow things.

The size of your garden is important. If you are new to gardening, it might be smart to start off small and get bigger as your thumb gets greener. Here are some things to keep in mind when considering sites for your garden:



- Ideally look for an open, south-facing location with a gradual slope (orient your rows running north to south and downhill if possible)
- Make sure that all the vegetables have a minimum of 6 hours of sunlight per day. All day sun is best.
- Consider how much space you need for your garden. Look for places that aren't too small or too big.
- Research your soil. The type of soil available can have a profound effect on your garden. (January for more on soils).
- Think about irrigation, and find a place with easy access to water.
- Consider the gardeners. Easy access for those who will be working in the garden is essential.
- Security is important to keep your garden safe from any intruders. Fences are helpful to keep animals and other trespassers away from your garden.

This is also a good time to plan your planting schedule for the garden. When thinking about where to put plants in the garden keep these questions in mind:

- Where will you put pathways? Where will you work?
- Which plants need more sun than others? Trellised plants can shade others. If you are considering using trellised plants, the Northeastern corner of you garden is best. Consider succession planting to maximize your space (see February for more on succession planting).

Raised Bed Gardening

If the site you have selected to garden is less than ideal, you may consider gardening in a raised bed or containers. Raised beds involve mounding the soil 6-8 inches high. Once you have created a raised bed do not step on the bed. The benefit of raised beds is that the loose soil drains well (especially for heavier soils) and is never compacted by people stepping on it. The furrow surrounding the bed becomes the path where you will walk and work the bed.

Permanent Framed Beds

You can make permanent beds by creating a frame -out of wood or cinder blocks - to keep the soil in place. This is a good option if you have very rocky or difficult soil. Instead of creating a raised bed out of your existing soil, simply create a frame and fill it with soil. Remember that you need to be able to reach whatever you plant to weed, water, and harvest. Beds should be 3 to 4 feet. Depending on the plant, you can fit two to three rows of lettuce or carrots in a bed this wide. Otherwise, larger plants such as vining plants like squash may take up the entire bed with one row – unless trellised. If you decide to trellis multiple rows may fit.



Square Foot Gardening

Another method is to use a wooden frame with a wooden grid of 12-inch squares and to plant different crops in each square. This method is easy to weed because of the compact planting. It can also easily be elevated for handicap-friendly and elderly-accessible tending and maintenance. See the book [Square Foot Gardening](#) by Mel Bartholomew for more information.

Containers

What do old tires, kiddie pools, hanging shoe racks, and 5-gallon buckets have in common? They're all perfect for growing plants. Containers can be a great alternative if you have limited or unique space (think apartments or rooftops for example). Containers need to have good drainage to prevent overwatering. That said, containers tend to dry out more quickly and must be watered more frequently.

Planting Trees

Root-bound, Balled or Bareroot?

Although the ground seems unwilling to budge when you put foot to shovel, winter is the time to plant trees and shrubs. Trees should be planted before hot weather so that they may adapt to their new surroundings, growing roots and getting established before they must brave hot temperatures. To prepare the ground, pre-water the site so as to make digging easier. For planting a container grown tree, dig a hold that is twice as wide as the root system and just as deep but no deeper. Act quickly as root exposure to air kills root hairs. Place the tree in the hold and refill with soil, watering deeply to allow the soil to settle. Container grown trees can also be re-potted in larger containers as the tree continues to grow, so that the root system does not become root-bound.

If you purchase a tree that is Balled and Burlapped (B&B) rather than container grown, you must understand some differences. These trees most likely were grown in a nursery, dug up to be sold – a process that damaged many of the roots but still retaining the soil ball surrounding the roots. After purchasing a B&B tree, remove all plastic including any string or twine. Burlap bags can remain around the root ball – but not plastic. Make sure to loosen the soil surrounding the hole where your tree will be planted. Too often holes are dug using a tree spade that creates holes with sides that impenetrable by roots. Again, dig a hole that is twice as wide but not deeper than the root ball.

On the other hand, bare-root trees have been dug from the nursery carefully so that the roots are intact but there is no soil. These trees are much more fragile without their soil buffer. Keep the roots moist at all times while you're planting. Dig the hole as deep as the roots go and just as wide. Put the tree in the hole and back fill slowly adding dirt while you pack it. Then water well to take out air pockets. Bare-root trees need to be planted now in winter. Most fruit and nut trees are sold this way.



For a listing of the best varieties of fruit trees to plant in Central Texas, consult the charts in the Appendix. [Womack Nursery](#) in DeLeon, TX, is the best source for a variety of trees suitable for the Central Texas growing region (contact information located in the Appendix).

Tools

Tools for the Community Garden

Shopping for garden tools can be overwhelming. Just remember, keep it simple. Many jobs may be made easier with special tools, but you can save money by only buying these tools if necessary. The list below includes some tools we have found helpful.

- Gloves – unless you revel in blisters and dirty fingernails
- Trowel – useful for planting and other small digging jobs
- A garden or spading fork – has sturdier tines than a pitchfork (pictured on right).
- Rototiller –hand held, rotary, electric, and gas models (expensive – so you may opt for a shovel or no-till methods of planting)
- Wheelbarrows or wagons
- Buckets
- Scissors
- Leaf and garden rakes – useful for leaves and bed-prep accordingly (note differences pictured on right).
- Handheld mattocks – a two sided pick that usually has one flat side and one side with three prongs. This is useful for weeding, digging, tilling, and harvesting.
- Pruners or pruning shears or hand clippers – to prevent the spread of disease from plants use a diluted bleach and water solution to sterilize equipment.
- Tool storage area
- String and stakes – for marking and outlining garden areas.
- Shovels and spades (pictured on right).
- Hedge shears, loppers, and bow saw





- Stakes, trellises, and cages –needed to keep some plants like tomatoes and beans off the ground. Plastic or galvanized metal is most durable and sturdy.
- Florist tape or string - to tie the plants to the stakes
- Hammer
- Weed eaters and mowers
- Hoe: big, small, and hoop hoes (pictured on right). Useful for prepping the ground and weeding at the seedling stage.
- Garden hoses: heavy duty hoses are well worth the investment
- Hose spray nozzle - consider the kind where the nozzle can be turned on and off to save water and that provides a wide spray area. For kids, we suggest water wands that turn off when they are placed down.



Beware of cheap tools that lose their edges quickly or break - you may end up spending more in the long run on replacing them. Invest in good tools and maintain them regularly.



January

What's Happening?

There are still plenty of cold days ahead. Hopefully, with some attention to weather and protecting cold crops, there are still some things to harvest. For the most part things continue to be pretty slow in the garden this month. We've had some time to talk about philosophy, purposes for starting a garden, where to put your garden, what you need, and how to prepare. This month we will consider the foundation of a healthy garden - soil. In many ways, the way you take care of the part of the garden under your feet affects everything else - weeds, pests, diseases, and the health of your plants.

Weather:

Average temperatures are from 34-56. There is usually low rainfall this month. Keep an eye on cold fronts and freezing temperatures. Cover crops with row cover, blankets, hot caps, hoop houses, or use cold frames to protect plants from freezing temperatures especially if temperatures will last for a day or more.

To Do:

- Side-dress (fertilize) cool season crops like broccoli, cabbage, cauliflower, collards, and other greens
- Transplant other cool season crops – incorporating in organic matter as you plant
- Seed tomatoes, peppers, eggplants and other spring/summer crops indoors
- Water everything well before a freeze – if plants experience water stress, they are more likely to suffer freeze damage
- Plant flowering bulbs (crocus, daffodil, iris, hyacinth, tulip) now
- Plant fruit and nut trees (see December for more on tree planting)
- Clean up around the garden
- Order seeds from your seed catalog
- Choose and purchase bare-root fruit and nut plants
- Harvest, mulch and weed winter crops
- Maintain compost piles
- Participate in the MLK Day of Service at gardens around Central Texas

Introduction to Soils

What is soil?

Soil is a natural body comprised of solids (minerals and organic matter), liquid, and gases that occurs on the land surface, occupies space, and is characterized by layers that have the ability to support rooted plants in a natural environment.



Importance of soil in plant life

- **Supplies water** – Soil absorbs and stores water. Different types of soils have varying abilities to absorb water.
- **Supplies nutrients** – Soil supplies nutrients to plants through decomposed organisms and minerals.
- **Supplies oxygen** – The air contained within spaces of soil brings oxygen to the plant's roots.
- **Provides physical support** – Soil keeps plants from falling over and remaining rooted.

Managing Soil

Folks who garden need to understand the basics of soil biology, physical properties, and fertility. Good soil management involves maintaining a balance between nature and human actions.

Soil Formation

Weathered / Transported parent material

What we call soil formed from a process beginning with rock material. Soil may be produced from igneous, sedimentary, or metamorphic rock. These parent rocks are broken down by physical and chemical factors such as wind, water, and acid. This process of breaking down rocks into smaller and smaller particles is called weathering.

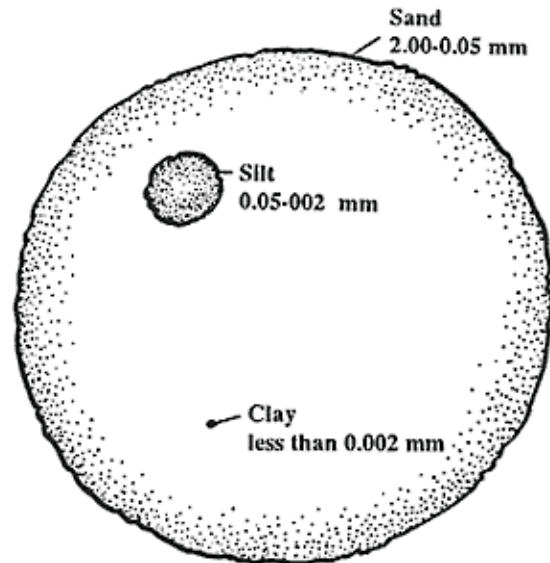


Characteristics

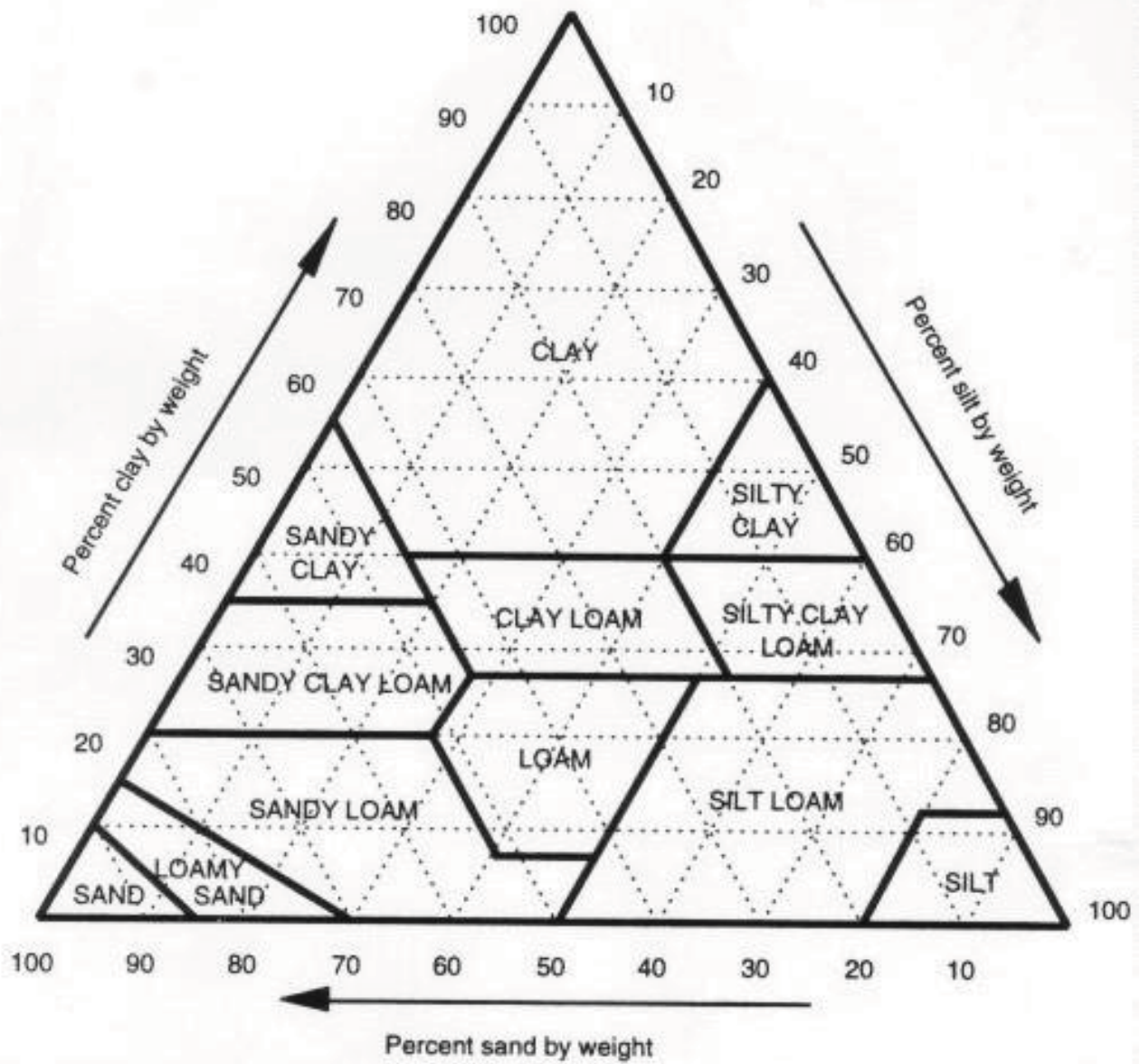
Physical

Soil can be described by characteristics such as color, texture, pore space, and structure.

Soil texture is broken down into three categories of particle sizes: sand, silt, and clay. Sand has a gritty feel: silt has a smooth slippery texture: and clay feels sticky. Each of these soil textures has different sized pores which allow more or less water and air to pass through them. Soil texture is also important when considering the health of the soil. Healthy soil needs pore space for air, water, and nutrients to pass through. Drainage is also influenced by particle size. Soil that has a clay texture is less likely to drain as well as a sandy soil. A combination of the two soils is ideal in order to maintain proper moisture in the soil. Below is a chart that will help to identify the type of soil according to the texture. It is also important to note that if you have had a soil test performed, the completed report will detail your soil type.



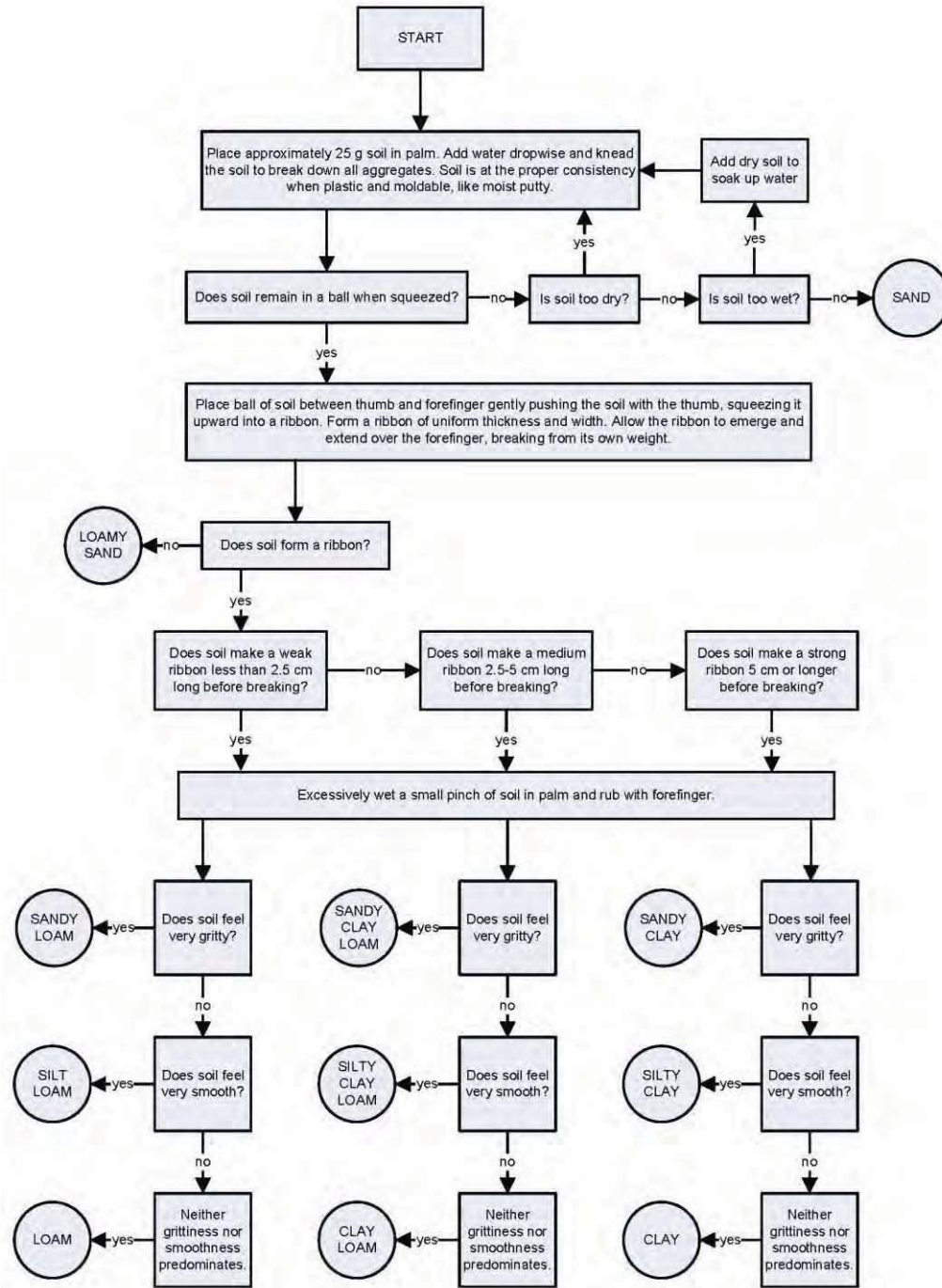
<http://www.eslarp.uiuc.edu/la/LA437-F94/soils/texture.gif>



<http://www.cst.cmich.edu/users/Franc1M/esc334/images/soil's%20physical%20properties/texture%20comparison.gif>



A guide to soil texture by feel according to the United States Department of Agriculture:



<http://soils.usda.gov/education/resources/lessons/texture/>



Soil fertility

Fertility of soil refers to the nutrients available to grow plants. A fertile soil has a proper mixture of minerals and other material in order to sustain a plant through its life processes.

Fertilizer can help increase soil fertility. (WHRI fertilizer mixes can be found in the index of this manual.) Pre-mixed fertilizer can also be purchased at most garden shops or home stores.

There are different ways to increase the health of your soil, and some of these are dependent on the type of soil you have. However, it is always good to increase the amount of air and organic matter in all soils. This can be done by stimulating biological activity. Essentially, this means aerating the soil, planting deep rooted plants, and adding manure, compost, and other organic amendments.

Soil biology

Generally if one were asked to point out the living things in a garden most people would include plants and insects. Most people also leave out the most important living component: soil. One teaspoon of healthy garden soil contains over one billion bacterial organisms! (Fun Fact: according to Hebrew tradition, *adam* [humans] are directly descended from *adama* [fertile soil]).

Below the ground, soil carries out a food web of its own. Here we find organisms that are responsible for decomposition. These include: bacteria, fungi, protozoa, nematodes, arthropods, and earthworms. Microbivore organisms consume decomposers such as bacteria and fungi. Microbivores may be thought of as the herbivores or grazers for the underground food chain. Predators are the last consumers in the web and are generally insects such as mites, beetles, and centipedes that prey on microbivores, and some organisms even perform both roles of grazing and predation in the soil food web.

Weather determines daily and seasonal variations in biological activity. The types of species present and their level of activity depends on micro-environmental conditions including temperature, moisture, aeration, pH, pore size, and food source.

Soil testing

Before you construct your garden, it's useful to know what kind of soil you're working with. Some soil is healthier than others. So how do you test your soil to make sure it's okay to be planted? Soil tests give you a good idea on the health of the soil. Nutrient levels and chemical characteristics are good factors to consider when thinking about what your soil can handle as well as what it

Material	C:N
----------	-----



needs in the way of organic matter and fertilizer. Usually, it's best to call the lab you intend to use for specific instructions. For example, [Texas A&M Soil, Water and Forage Testing Laboratory](#) is a great lab to take your soil samples. Each lab has certain procedures, and it helps to have an idea of what they're willing to receive before collecting a soil sample. Generally, it's best to take a sample from the top six inches of soil. Place your sample in a plastic bag, label it, and attach a completed order form to be shipped to the lab. Make sure to keep in mind what you plan on planting in your garden. The lab may require that information before giving you a fertilizer recommendation or any other advice.

Compost

Compost is used to improve soil conditions, and return nutrients back to the soil. Soil structure, moisture levels, soil pH, and diversity are all benefited through composting. With that being said, composting is an art – requiring the moisture of a wrung-out-but-not-dry sponge, the right balance of carbonaceous to nitrogenous materials (ie brown stuff to green stuff), and good aeration. To achieve the right balance of brown to green stuff, you want 30 parts carbon-brown stuff to 1 part nitrogen-green stuff (see chart at right for suggested compost material ratios). When these three components are in perfection – or near perfection - your compost pile will heat up to the ripe temperature of 140-degrees Fahrenheit – hot enough to kill off weed seed yet inviting to creepy crawlies that help in the decomposition process.

There are many resources that can help you better understand the art of composting – just don't get overwhelmed with all the information out there. Learn the basics of moisture, nitrogen-carbon ratio, and air - and you'll be fine. As far as locating your compost pile, don't worry about sunlight. Place your pile where it will be easily accessible for dumping kitchen scraps and coffee grounds – but not so close that if it starts stinking, the smell will waft in like an awkward family member. Keep your

Alfalfa hay	18:1
Blood	3:1
Cardboard	400-563:1
Coffee grounds	20:1
Corn cobs	56-123:1
Corn stalks	60:1
Farm manure	90:1
Fish scraps	3.6:1
Food scraps	15:1
Grass clippings	19:1
Humanure	5-10:1
Tree leaves	35-85:1
Newspaper	170:1
Pine needles	60-100:1
Poultry carcasses	5:1
Rotted manure	20:1
Sawdust – weathered 2 month	625:1
Sawdust – weathered 3 years	142:1
Seaweed	19:1
Straw	80:1
Telephone books	772:1
Urine	0.8:1
Vegetable produce	19:1
Water hyacinth	20-30:1
Woodchips: hardwoods	560:1
Woodchips: softwoods	641:1
Source: Humanure Handbook &	University of California Extension



nitrogen-carbon ratio balanced and turn your pile monthly, and you shouldn't have to worry about smells or attracting animals.

Also don't worry if you don't have a yard. Composting can happen in your home with the help of worms. Consider keeping *Eisenia*

foetida (commonly called red wigglers) as pets – feeding them your kitchen scraps. Vermicomposting results in worm castings (ie worm poop) which are black gold in the garden world. For a good resource on vermicomposting, read Mary Appelhof's *Worms Eat My Garbage*. And for more information locally, contact – or consider joining – the Heart of Texas Master Composters, a group of folks around Central Texas who train and support folks learning the art of composting.

Compost Tea

Compost tea is a useful way to introduce beneficial bacteria into contaminated soil. It can also be used as a preventative measure from plant disease. Using compost tea, you increase bacterial and fungal life, thereby outcompeting diseases. Because it is so easy to make compost tea, it is usually one of the most cost effective methods to treating bad soil or preventing plant disease.

Okay, so now that you know what compost tea is, how do you make it? Usually there are a few components of compost tea: well-aged compost, water, and air. Pour 1 gallon of well-aged compost in a 5-gallon bucket; fill the rest with water, and mix (making sure to get air in, by pouring if necessary) at least 3 times daily for 3 to 10 days. (Remember, making compost tea can be as complicated as you want it to be; some people like to use air pumps to make sure the tea does not lose oxygen. The tea will begin to smell if it has. If it stinks, start over!) Just make sure to filter out the compost before adding it to the sprayer, and *viola*, you have made compost tea.

To apply the compost tea to your garden, dilute the tea a little bit. A good rule of thumb is to dilute the leachate (the nutrient-saturated liquid) down to one part compost to four to ten parts water. It should look like iced tea. But don't drink it.



February

What's Happening?

The earlier you plant in February, the less insect and disease problems you're likely to have. Corn is one of the crops best planted in early February - and make sure to apply fertilizers high in nitrogen to encourage growth.

Weather

Depending on what year you read this, the weather may be really cold, spring-like, or 80 degrees. Got to love that Texas weather! Expect average temperatures to range from 44-65, with an average precipitation of 2 inches. February separates the gamblers from the cautious gardeners. The average last frost date in central Texas isn't until March - so if you're feeling adventurous because the temperature hits 80 for a week, you might consider tweaking your planting schedule.

To Do

- Continue transplanting cool season crops - before the weather switches - but be prepared to protect plants against frost.
- Continue to add organic matter to soil each time you plant.
- Mulch plantings throughout the spring to help with water retention.
- Keep an eye on pests in your garden. Caterpillars, snails and slugs may start munching on your leaves. Set traps or remove by hand. And check for daily activity.
- Plant trees as soon as the soil can be worked.
- Prune fruit and nut trees and vining plants for healthy production.

Starting seeds

You can buy seeds from most stores that have a Lawn and Garden department. Usually seeds from these stores are cheap and readily available - expect to pay \$1-2/packet of seeds. Unfortunately, you also get what you pay for. These packets are often hybrids, engineered to be pest and disease resistant - not a terrible thing in and of itself. However, you will usually be limited to generic varieties of plants when you could be preserving history and family tradition by planting and growing heirloom varieties. Wouldn't you rather tell your friends and family that they are eating Amish Deer Tongue lettuce rather than iceberg - or Pingtung Long Eggplant rather than that purple vegetable?!

Many seed companies produce organic and heirloom seeds – but you have to do a bit of searching. Seeds that are **Certified Organic** have been harvested from fields that Certified Organic and are guaranteed free of weed seeds. **Heirloom** seeds are varieties of fruits or vegetables that have been cultivated and handed down over the generations either by families or businesses. These varieties are valued for their flavor, uniqueness or adaptation to local climates. See the **Resources Page** for a list of sources to buy seeds locally and online.



Back to the topic at hand – starting your own seeds. When you start your own seeds, you know exactly how your plants are grown – from seed to harvest. Starting from seed also saves you money in the long run. Rather than paying \$1.25 for one

transplant, you can grow a whole packet of plants (usually about worth 25 plants) for \$3.00. Buy yourself some potting soil (a 40lb-bag often costs less than \$5). And find yourself some containers. Seeds can be started in almost any container that can hold soil. Look in your recycling bin for old egg cartons, milk jugs, toilet paper rolls, yogurt containers – and you’re on your way to seed starting. Make sure to poke holes in the bottom of the container – for drainage. Place soil in container. And plant and cover seeds in the top ¼-½ inch of the soil. Water and keep in a sunny window. Within the next two weeks, you should see germination. Depending on the size of your initial container, you may need to re-pot your plant before finding its final home out in the garden or in a larger container. Of course there are many more technical instructions in starting seeds by setting up grow lights and purchasing pre-made indoor seeding kits, but don’t be fooled. You can start your own seeds for little to no money using recycled items around the house.

Companion and Succession Planting

Planning your garden can be overwhelming, what with the number of varieties, when and where to plant and what plants grow well together. Again, don’t make things more complicated than they need to be.

Companion Planting

Certain plants have a beneficial relationship when planted near one another in the garden – either by nutritionally enriching the soil or deterring unwanted garden invaders. A well known example are the Three Sisters - corn, beans and squash - traditionally planted by Native Americans. The corn provides a trellis for the beans,



which fix nitrogen in the soil for the nitrogen-needy corn plants, while the squash and its broad leaves act as a vining, living mulch to conserve moisture. Another common companion plant is the marigold. Marigolds keep deter pests, while adding a vibrant border around the garden that may be edible. For a good resource on companion planting, refer to *Carrots Love Tomatoes: Secrets of Companion Planting for Successful Gardening* by Louise Riotte. Companion planting can easily be integrated into an intercropped garden by strategically placing beneficial plants next to one another.

Some suggestions:

- Plant complementary feeders – such as corn and beans – next to each other. Plants of the leguminous family (beans and peas) add lots of nitrogen to the soil – useful for green plants like brassicas. This includes plants with shallow roots near plants with deep roots – such as lettuce near carrots – thus preventing root competition.
- Protect pest-vulnerable plants next to repellent plants. Good repellent plants include: garlic, onions, chives, marigolds, catnip, cilantro, and mint (Be careful! Mint wanders!)
- Encourage pollination with flowers and herbs. Bees, butterflies, and other pollinators are attracted to dill, yarrow, borage, calendula, and basil.
- Enhance flavor by planting complementary plants such as borage with strawberries, chervil with radishes, and basil with tomatoes.
- Trap insects with plants that will be eaten by pests before attacking your valuable vegetables – allowing you to “squash” the competition before they wreak havoc. Consider marigolds, nasturtiums, and mustard greens.

Succession Planting

Succession planting is used to make the most of the space in your garden throughout the year. In Central Texas, you are able to grow a great garden about 9 months out of the year – leaving 3 months when the gardens grow only mostly well. If you want to be able to harvest continually, you must plan to make sure the garden is either producing a bounty or resting and enriching with cover crops. Succession planting allows you to plan ahead and have a schedule and increase plant availability. Succession planting can be as simple as planting indeterminate varieties of tomatoes that mature at different rates versus determinate that mature all at once. Or more complex, including spacing plantings of lettuce and spinach two weeks apart of spaced maturation. As plants wane in their productivity, pull them out of the garden and toss them in the compost. Replace their vacant spaces with transplants you started from seed – especially as growing seasons transition from winter to spring to heat-tolerant crops. As you make plans for future gardens, make sure that you are rotating crops throughout your garden – to prevent susceptibility to disease as well as nutrient depletion from soil. See June/July for more on crop rotation.



March

What's Happening?

As spring arrives, so does the opportunity for massive summer planting! This is the season to get everyone's favorite plants into the ground – especially after months on end of greens, greens, greens. Don't forget to incorporate good organic matter into the soil and water well before transplanting. Continue cleaning up around the garden, removing weeds and dead leaves that can provide the perfect breeding ground for pests or diseases. Add unwanted organic matter to your compost pile or use as mulch!

Weather

It's spring time! Birds are chirping, wildflowers are blooming, and temperatures are reaching into the 70s on a regular basis. The perfect time to get in the garden! Enjoy the sunshine and get planting! The last average frost date is around March 14th - so you can garden without fearing frost (except for those surprise snowstorms at Easter!)

To Do

- Harvest root crops before they get too big and bitter with the warming temperatures
- Harvest leafy crops regularly -harvesting the lower, older leaves first to encourage new growth
- Continue to plant some cool weather crops such as collards, kohlrabi, lima beans, mustard, radish, snap beans and Swiss chard
- Later in the month, start planting cantaloupe, corn, cucumbers, eggplant, peppers, pumpkin, summer squash, tomatoes, watermelon and winter squash
- Add organic matter and/or fertilizer into garden beds when transplanting
- Keep an eye on weeds – and stay ahead of the game by pulling weeds when they first appear so they don't cause problems down the road

The Skinny on Weeds

Weeds are just unwanted plants. Some “weeds” are edible, some are invasive and some are fierce competitors. It is inevitable that something you did not plant or do not want will grow in your garden. The question is how to respond to these intruders so that the crops you want can flourish abundantly. Here's what you need to know now. Read more on perennial weed management September.



Solarization

Solarization uses UV rated (greenhouse) clear plastic to heat up the top layer of soil. This method is extremely effective in weed suppression when used properly. It is not intended to be used annually as it kills all microbiological life – the good and the bad – in the top 2-3 inches of the soil. Once you solarize, you should try to manage that plot using intercropping, relay cropping (see February), cover cropping and mulching (See August).

Tillage

Tilling is any time you mechanically disturb or alter the soil to prepare it for planting crops. Using a rototiller or hoe to break up the top layer of soil kills the weeds and plants growing in the area you are preparing, and it breaks up the soil making it easier for plants to establish their roots. This method gives your crops a head start, outcompeting weeds in your garden. Tilling also destroys the soil structure created by the natural tillage of worms and organisms in the soil.



Like so much of gardening, the way you decide to deal with those unwanted competitors we call weeds is all about tradeoffs and compromise. Minimizing tillage can significantly increase your labor demands but is best for the long-term health of your soil. Tilling has lower labor demands and better short-term results but can deplete and damage your soil if not managed properly.

Organic matter is essential to healthy soils and gets depleted relatively quickly. So, it's a good idea to add a nice thick layer of compost, manure or other organic material to the area you plan to construct your garden – after solarization (so heat does not kill the beneficials) and before tilling (so as to be incorporated throughout the growing area).



Weeds: Annual (spring) Weed Management

A weed is not a specific type of plant or family of plants; a weed is simply any plant that is an inconvenience to you.

Weeds compete against as plants we want to grow. Undesirable plants take water, nutrients, or sun light from a plant we want to grow and should be removed for the best harvest. Weeds also provide a welcoming habitat for unwanted pests in the garden. Although weed identification isn't covered in full detail in this manual, you should also know that certain weeds indicate nutrient deficiencies, thus giving you a tip on adding more phosphorus or calcium.

The best method of weeding is prevention. The earlier weed problems are dealt with the easier your job is in the long run. Covering beds with plastic or organic mulch can go a long way in reducing your weeding job later on. When it comes to weed prevention, the more mulch the better. A layer of 3- 4 inches of organic mulch is good for most plants, but remember that the mulch will compact over time and may need to be replenished. Mulching not only keeps weeds from popping up it also retains moisture in the soil, and organic mulch decomposes to improve the soil fertility. Mulching should be avoided at the coldest times of the year because soil is too well insulated and cannot absorb heat from the sun.

If weeds do pop up after covering or mulching beds, they will be in smaller amounts and can be easily pulled or dug out of the garden. Annual weeds spread by seeding. As a gardener, your goal is to prevent the weed from flowering and dispersing seeds.

Weeding with a hoe can be much easier if the right tool is being used. Hoop or stirrup hoes are handy when weeds are about an inch tall and best around plants that have not been mulched. The hoe is designed to glide below the surface of the soil and remove weeds by cutting or pulling from the roots. Spacing rows at least 6-inches apart allows for greater ease in weeding with hand tools or weeding hoes.

Many resources on annual weed identification can be found in the Appendix – List of Resources.

Plant Disease

Vegetable diseases can be difficult to identify from as a novice green thumb.. Just as with humans, the best defense against disease is prevention. Good agricultural practices like crop rotation ensure that disease doesn't spread or hibernate in the soil.



Plant diseases come in many shapes and sizes, varying with plant families and varieties. Most garden books have detailed descriptions of the most common diseases, such as blossom-end rot, clubroot, cucumber mosaic virus, damping off, and mildew. Some solutions to combat disease are easy to brew yourself – like baking soda-water or diluted milk mixtures for combating powdery mildew (and other fungal diseases) and Epsom salt spray for plants struggling to set fruit. Compost tea is another brew that can be useful when facing disease (refer to the Soil Biology in January).

The main things to remember if you spot diseased crops in your garden:

- Rotate your crops (more below). Mix up where you place plants of the same family– to confuse insects and soil struggles.
- Remove diseased crops – and clean your tools on a regular basis.
- Reduce stressors on your plants. Stressors include: under- and over-watering, over-fertilizing, and root-binding in containers.
- Grow good soil. Constantly replenishing the organic matter in your soil increases the health of your plants.

Many resources on disease identification can be found in the Appendix – List of Resources.

Crop Rotation

What is crop rotation? Crop rotation is the replacement of crops after every season by a crop of a different family. This takes some planning, and it's important to do so before you begin putting any seeds or transplants in the soil. Make sure you make a list of what you'd like to plant. Then, make sure that the next crop will be in a different family. Crop rotation is a great strategy when used correctly. It helps keep your soil healthy, pests down, and control weeds. A little planning is well worth it, and it will greatly improve the health of your garden!



April

What's Happening?

April is the time to get out that “To-Do” list you’ve been dreaming about through the dreary days. Sharpen your tools, test your soil, and plant those perennials. Now is the time to transplant in full fury while harvest cool-season crops like crazy.

Weather

April weather usually has in highs of 75 and lows of 55. On average, there is rainfall of 3 inches. The weather is perfect for getting your hands dirty in the garden, so go get started. Fear of frost has passed!

To Do

- Finish harvesting most of your cool season vegetables this month to make room for warm weather crops.
- Sow second and third plantings of fast-producing crops throughout April to extend the harvest period.
- Plant all warm season vegetables as if your life depended on them.
- Stake or trellis tomatoes and other plants that vine.
- Continue weeding the garden. Warmer weather can mean more weeds.
- Pinch off side shoots, or “suckers,” of tomato plants.
- Fertilize plants every two weeks or so to get ‘em growing.
- Mulch around the trunks of fruit and nut trees to prevent damage from mowers.
- Be wary of fire ants!

Irrigation

Irrigation can be intimidating. First, make sure you have an irrigation plan before you begin your garden. What kind of irrigation are you planning on using? What’s your budget for irrigation? Most urban gardens will be using city water to irrigate their plants, although some gardeners and growers prefer not to use municipal water due to additives and chemicals. If you have the opportunity to collect and use rainwater for irrigating your garden, make sure to collect a lot of water during the sparse times that it rains in Central Texas – but more than liking you’ll have to turn on a faucet at some point in the season. Currently, the city of Waco does not have special agricultural rates for water use in community gardens, but feel free to call up your City Council Representatives about creating new policy.



There are several types of irrigation – hand-watering, sprinkler systems, drip irrigation, soaker hoses, and more, depending on the size of your production. The World Hunger Relief Farm, uses drip irrigation. This type of irrigation helps keep your water bill in check by being water-efficient and reduces moisture loss through evaporation. Drip irrigation also delivers water straight to the root zone of the plants. T-tape irrigation is a type of drip irrigation, but should only be used on a



larger, more sophisticated scale. Soaker hoses are a better alternative if you're starting small – or you may enjoy the daily satisfaction of watering your garden by hand. Another handy gadget to consider is a garden timer – which allows you to water your garden on a regular schedule, regardless if you remember or oversleep before work.

How much water is too much water? When should I water? It's easy to get overwhelmed with technical questions. There are some basic things to remember when it comes to irrigating your garden. Infrequent, deep watering is much better than frequent, light watering. Deep watering encourages deeper root growth rather than dependence on you – the gardener. When you water, make sure to water the roots – not the leaves. Watering the leaves can lead to disease.

Mulch can also help retain moisture in your soils. Each time you add organic matter to your soil, you increase your soil's capacity to retain water. Remember, keep it simple and be prepared to make mistakes. Just get started!

Harvesting

Your garden is now in peak production – what to do now?! Harvest your bountiful garden goodness!! A vegetable's full flavor develops only at peak maturity, resulting in the excellent taste of vine-ripened tomatoes, tender green beans, and crisp, flavorful lettuce. For maximum flavor and nutritional content, harvest the crop the day it is to be canned, frozen, or eaten. And aim for harvesting in the morning – when water content is at its highest – keeping leaves crisp and tasty.

Here are some general guidelines for specific crops – as well as a chart of general maturity rates (below) for figuring out how many days from seed to table you have before you'll be munching to your heart's delight!

Note: the goal of the plant is to reproduce (setting flowering and setting seed) – while your goal is ripe and tasty, which is usually a step or two before the plant reproduces. So stay on top of your game unless you like eating broccoli flowers and

overripe fruit. The more frequently you harvest – the more the plant will produce – and the more you'll reap!

- Tender, leafy greens (leaf lettuce, arugula, mustards): Cut regularly – from micro-green stage up to 4-6inches long. Space cuttings for continual harvest.
- Hardy greens (kale, collards, chard): Pick leaves, starting with outer, older leaves first. Will continue to produce through multiple growing seasons if harvested continually.
- Snap beans and peas: Harvest when pods are $\frac{1}{4}$ -developed and tender - before the pods are bulging
- Root crops (beets, carrots, turnips): Check the diameter of the root starting to emerge from the soil level – aim for 1-2 inches
- Broccoli: Harvest when the flower head is full of tiny, close-packed buds – but before they flower. Even after the main head has been harvested, you can keep harvesting flowerets that bud from the main stalk.
- Melons: Fruit will readily separate from vine. Sniff the fruit – if it has a vibrant smell, she is ripe for the picking. Should sound hollow when tapped.
- Summer Squash: Harvest when fruit is young and tender – finger should still be able to penetrate the rind.
- Winter Squash: Harvest when fully colored and skin is resistant to fingernail test.
- Potatoes: When the entire plant has died back, potatoes are ready for harvest.





General Maturity Ratings

Quick (30-60 Days)

Beets	Mustard	Summer squash
Bush Beans	Radishes	Turnips
Leaf lettuce	Spinach	Turnip greens

Moderate (60-80 Days)

Broccoli	Green onions	Parsley
Cabbage, Chinese	Kohlrabi	Peppers
Carrots	Lima beans, bush	Tomatoes, cherry
Cucumbers	Okra	

Slow (80 Days or More)

Brussels sprouts	Cauliflower	Pumpkins
Bulb onions	Eggplant	Sweet potatoes
Cabbage	Garlic	Tomatoes
Cantaloupes	Irish potatoes	Watermelon



May

What's Happening?

It's May, and although it is still spring time, it's beginning to feel a lot like summer. Keep a good eye on the garden, and keep on transplanting melons, okra, and tomatoes. Spice up your life by planting a sweet potato or two!

Weather

May is the peak of the rainy season- so watch for those sudden showers. Make sure your plants are protected in case of a severe hailstorm. Average temperatures in May range from 65-85.

To Do

- Side dress vegetables already in the ground. Harvest! Start enjoying your bell peppers, tomatoes, snap beans, squash, cucumbers, and sweet corn.
- Protect your harvest from greedy neighborhood animals. If you notice large bites taken out of your vegetables, you may consider placing netting or chicken wire around your plants
- Water faithfully. Watch your plant carefully for signs of stress. Make sure to deep water fruit trees and bushes good and deep.
- Keep your compost pile damp and aerated as you throw old plants and weeds into the mix.
- Mulch bare soil – so it doesn't bake away in the sun.
- Check your garden daily for new pests invading. Pests are at peak population in late spring.

Insect Identification

Your garden should contain insects. A garden without insects can be just as vulnerable as a garden full of pests. The complex role of insects in a garden can be understood once your insects are identified as either a beneficial or a pest (see the Resource Section for books on specific insect identification).

Types of pests to be most worried about in your garden include beetles, caterpillars, aphids, and squash bugs. Spider mites are also a problem but are not classified as insects; for our purposes treatments used on aphids may also be applied to mites. It is important to realize that a garden without insects would fail just as easily as one plagued by pests. Insects are a necessary part of the garden, so killing everything with a biocide is not ideal. Lady beetles, wasps, spiders and other predator bugs - for example - can be very helpful.

It is also necessary to have insects in the garden that can carry out the task of



pollination – aid plants in their reproductive cycle. Consider planting flowers and nectar plants around your garden to attract more pollinators for your plants. Several types of bees and wasps for example are capable of pollinating common garden crops like cucumbers, melons, squash, figs, and strawberries.

Other insects are predators that attack the most harmful critters in your garden. Ladybugs and praying mantises are usually prized for their predatory traits – but parasitic wasps and nematodes are just as effective. Consider limiting pesticide use to preserve the biodiversity of your garden – and use gentler, home-made insect repellents around your garden (see below for a few recipes).

When choosing plants that you will grow in the garden it is important to ask which varieties grow best in your area, and which are resistant to diseases, fungus, and pests that are common in your region. It is a good idea to check with local growers and nurseries who generally keep plants that work well for your region. They may be able to answer some of your questions regarding specific plants.

IPM (integrated pest management)

Integrated pest management (IPM) is one philosophy of controlling pests by using multiple methods together. IPM balances the goals of economic production and environmental stewardship when implementing control practices. Keeping a keen eye on your crops and noting invading pests is the first and most important step in IPM. The rest is up to you to decide which cultural, biological and mechanical controls to employ in battling the little beasts.

- Cultural controls include such practices as cultivation, weed management, crop rotation, water management and fertilizer use (sound familiar?) All of these practices allow you to interrupt the life cycle of pests in your garden – especially through crop rotation. Old pest-ridden crops should be destroyed by burning or hot composting.
- Biological Control uses one organism to control another – whether it be growing flowers to attract beneficial pollinators or using predatory insects to eat the others.
- Mechanical Control involves the use of barriers, water sprayers, row covers, and hand-picking to physically limit the access of the pest to your produce.

When you discover that there is a pest issue in the garden, find out the type of pest causing a problem and develop a management plan. Some pest identification resources are available or your local extension agent or master gardeners may also be able to help you identify pests if they are captured or well-described.



DIY Insect Repellent in the Garden

Garlic Pepper Tea

In a blender with water, liquefy two bulbs of garlic and two cayenne or habanero peppers. Strain away the solids. Pour the garlic-pepper juice into a one gallon container. Fill the remaining volume with water to make one gallon of concentrate. Shake well before using and add 1/4 cup of the concentrate to each gallon of water in the sprayer. To make garlic tea, simply omit the pepper and add another bulb of garlic. For additional power, add one tablespoon of seaweed and molasses to each gallon. Always use plastic containers with loose fitting lids for storage.

Soap Spray

For a strong solution, mix 3 Tablespoons of liquid dish soap into a gallon of water. Or you can use your old, dirty dishwater. Collect some of the dishwater and pour it into a watering can. Many bugs do not like their lunch spoiled by a soapy aftertaste. Use this weekly.

Slug Traps

Slugs leave silvery trails wherever they've slithered. And they like to sliver at night. So lure them away from your plants by leaving them a treat before you go to bed. Take a small saucer or jar lid and fill it with old beer or soapy water. In the morning, you'll easily be able to throw the slugs out with the bathwater.

Cutworm Collars

Use anything that can be fashioned into a tube (ie toilet paper roll, old aluminum foil, soda can) to wrap around the bottom of your vulnerable seedlings you just transplanted into the garden. These barriers protect your plant from the wrath of the cutworm – whose havoc can easily be identified as it looks as though something just cut your plant in half. Press the bottom of the tube at least 2-inches into the soil to protect stem just below the surface of the soil.

All homemade organic insecticides wash off easily – and break down quickly. Reapply often – especially after rain or heavy watering.



June/July

What's Happening?

Despite the harsh heat during the months of June and July, you can still plant some vegetables. You can start planting cantaloupe, collards, eggplant, luffa (that scrubby scrub you use in the shower), okra, peanuts, peppers, pumpkin, southern peas, sweet potatoes, and watermelons. Keep everything mulched - and mulched well - to retain moisture and keep the soil cool. Just as you start to wilt when you're out in the heat, so do your plants. But don't worry. The sun can be rough - but they'll perk up during the cooler parts of the day as long as you provide enough water.

Weather

It's hot folks! Average temperatures range from 95-73, and those are weak estimates. Keep your plants well watered. Average precipitation is low in July, so make sure to provide at least 1-2 inches of water a week if rainfall is scarce. Remember to water deeply and infrequently as possible.

To Do

- Water your garden between sundown and sunrise - when temperatures are lower. Expect to see a jump in your water bill over the next month.
- Begin preparing beds for a fall garden and planning what to plant.
- Be prepared to provide shade covers for your plants. The Texas sun in summer can scorch your plants. Protect them by covering plants with a thin white bed sheet.
- Start planting fall crops. Cold-sensitive crops need to get into the ground during July in order to mature by first frost (around mid-November).
- Replenish mulch. Make sure all bare soil is mulched.
- Drink lots of water while you're outside - and try to avoid working the hottest parts of the day.

Distributing the Harvest

By late spring, early summer, you are coming into the full bounty of an abundant garden. Congratulations! Now what to do with all those extra squash? Thankfully there are many options for gardeners in Waco.

Donate: Contact [Caritas of Waco](#) for more information and a list of food pantries throughout the city or donate directly to the Caritas distribution center. Caritas: (254)753-4593



Partner with a Pantry: Join the [McLennan County Hunger Coalition](#) and start a regular relationship with local pantries to streamline the process of getting healthy food to the community's food insecure populations. MCHC: (254)753-3545

Collaborate with Campus Kitchens: Learn more about what [Baylor University Campus Kitchens](#) is doing to rescue food throughout the community to create and cook healthy meals with low-income families. Donate your fresh produce to their programs. BUCK: (254) 710-4988

Neighborhood Farm Stand:

Consider setting up a farm stand on your garden property – or at community functions such as garage sales, places of worship, or more. Earn a few extra dollars and reminisce on the days of yore selling lemonade as a child. Consider setting up a farm stand with other neighbors growing produce to offer more variety to the community.



Sell to Local Restaurants: If you specialize in a certain crop or herb, you might consider selling to a high-end restaurant interested in advertising ingredients as locally produced. Chefs tend to be particular and like quantity, so don't get yourself in over your head. Stick to neighbors if you want low-stress market gardening, but if you want to get into the game with the big guns, see below . . .

Marketing

If you want to sell your produce to more than people who already know and love you, you will need to learn some marketing skills. Attend a farmers market and you are bound to see a number of the same vegetables at each booth – unless some “farmers” are magically growing their veggies out of season. So that means you will have to distinguish yourself amongst the competition.

Share your story. What is more personal and inviting than getting to know the person who grew your dinner?! Talk to consumers about your family and growing techniques – and be ready to listen. Small-scale agriculture is about relationships.

Food is art. If you are selling at market, make sure that you display your produce in a way that entices the senses – incorporating the full array of eggplant purple to tomato red and basil green.



Make signs. Clearly display the price and variety of each item on signs that you have created.

Advertise. This is also part of sharing your story – but pass your information along through local media outlets and local food resources online.

Keep it simple. If you want to sell more than fresh produce (ie home-canned or preserved goods, eggs, meat, crafts), you will need to obtain permits from the city for vending as well as inspection by the County Health Department. FYI.

- Here are some more resources to help you along the way: ATTRA's [Market Gardening – A Start Up Guide](#): Providing information on everything from writing a business plan to record keeping and food safety regulations
- [Local Harvest](#): Post your own growing operation online and learn more about other farms and producers in your area and around the country. Search for other local farmers in the area on Local Harvest and chat with them about their stories and strategies. A great way to promote upcoming events and sell on the internet.
- [Market Grower Symposium](#): A bi-annual workshop on growing for market – hosted by Home Sweet Farm in Brenham, TX. Learn the specifics of growing in Central Texas alongside other farmers and market gardeners.
- [Texas Organic Farmers and Growers Association](#) (TOFGA): Host an annual conference as well as keeping growers and the general public abreast of growing and constructing workshops.
- [Growing for Market Magazine](#): A great publication for local food producers covering common issues and strategies of producers growing for market.

Sustainable vs. Organic

Words are funny things. Their meaning is usually obvious, but used enough in the wrong hands, words start to lose their integrity. You can now buy organic makeup, organic clothes, organic supplements, organic cleaners and organic pet food. Organic is now a regulated word when applied to products. The USDA has standards for the ingredients in any product that is sold as “organic.” These include no use of synthetic fertilizers or pesticides, certain land, pest and weed management practices, among other things.



Sounds good, right? Technically, though, you could make a Twinkie that could be Certified Organic. If the only concern is fulfilling the USDA regulations, then an organic Twinkie makes sense. If it’s about more than marketing and gimmicks, then we have to dig deeper.



Some people have turned to the word “sustainable” to help fill this gap. Sustainability refers to something “capable of being continued with minimal long-term effect on the environment.” Thinking sustainably forces us to move beyond the organic (or any other) USDA label and think about the whole ecosystem and our role in it. It’s not only about particular methods for growing things, but more how we live in better relationship with the earth.

Sustainability is also about the long-term viability and profitability of an enterprise. It’s not sustainable if it doesn’t pay for itself. In the garden, you might have to make tough choices between organic principles and the sustainability of your project. In order to build enthusiasm for your project and have a good first harvest you might use a rototiller, even though not tilling at all might be better for the environment. Not using herbicides might fit your philosophy on good wholesome food, but the organic alternatives are more expensive and take longer (see March and September for Weed Management). There are always trade-offs in whatever system you use.



August

What's Happening?

Lawns around town are looking brown. And your garden may be looking a tad brown as well. Remember that August is still summer – and this too shall pass. You may decide you prefer a brown garden rather than an expensive water bill. Water bills continue to remain high this month. You may consider not planting a fall garden due to use of so much water.

Weather

The weather is still hot, with average temperatures in the 90s – with many a day in the 100s. Keep your plants (and yourself) hydrated and take heart - fall is only one month away! Average precipitation in August is about 2 inches.

To Do

- Continue to check the state of your mulch – making sure it is a few inches deep. Mulch conserves water and reduces soil temperatures.
- Check your irrigation to make sure it is working. Test soil moisture to make sure water is reaching the roots. Make repairs if necessary.
- Turn on irrigation system every other day for 2-3 hours to saturate well.
- Plant lots of vegetables by direct seed and transplant this month. You can also start seeding cool season crops indoor this month for transplanting once the weather has turned. Refer to the general maturity rate chart (found in April) to make sure your plants are able to fully mature before the first frost).
- Find an orchard – either untended or well-maintained – and start harvesting apples and pears

Volunteer Management

Although August is not the ideal time to be out in the garden or recruit others to help you, it is a good month to plan ahead. As the temperatures drop in the coming months, volunteers will sprout up like weeds in your garden. So use this time to think of cooler days and plentiful volunteers.

1. Set regular work days in the garden – whether weekly or monthly – so that volunteers come to expect bodies to be out in the garden on a regular basis and feel free to join in. (Find a Model Garden Work Schedule in the Appendix.)
2. Hold regular garden meetings – to discuss general maintenance (like watering and weeding schedules), planting schedules, struggles and frustrations, membership fees, and more. Publicize this to all who participate or might be interested.
3. Organize garden potlucks. You grow food – so you should celebrate food with those toiling alongside you in the dirt. Kick off the growing season, the harvest



- season – or those in-between times when interest is waning. If you're able to, hold the potluck in the garden and connect it to a garden work day.
4. Publicize garden activities to larger community. Build a kiosk and garden sign on-site to post information about meetings and work schedules. Send information about upcoming events to the [Urban Gardening Coalition](#), [Act Locally Waco](#), and the “Briefly” section of the *Waco Tribune-Herald* (email goings@wacotrib.com).
 5. Set up volunteer infrastructure. Yes – sounds boring – but can hold gardeners accountable to one another and the garden. Consider drafting garden rules and contracts, signed by each gardener – outlining membership fees and responsibilities, water usage fees, and more. Contact the [Urban Gardening Coalition](#) for examples of contracts used by other area gardens.

Cover Crops and Green Manures

Have you ever driven down a country road and seen a bare field on a windy day? Perhaps you’ve seen a dust devil, a dusty tornado in the distance. Soil erosion is a serious threat to the health of our soils. There are several steps you can take to conserve as much soil as possible – such as cover cropping in between growing seasons or establishing perennial crops to maintain soil structure for the long haul. Farmers commonly use windbreaks to keep soil in place. A windbreak can be as simple as a fence or a row of fruit trees or berry shrubs (also adding edible beneficial to the equation of soil conservation). Simple steps like these can save you a big headache in the future.

Cover crops are crops that guard the soil from eroding due to wind or water. Green manuring is the growing of cover crops to be turned under to enrich soil fertility and add organic matter. The cover crop is planted right after the food crop is harvested. Weeds can be used as a cover crop – and potentially as a green manure. Conveniently, they don’t have to be planted. Two weeks before you decide to plant, till the soil and plow under the weeds - returning essential nutrients like nitrogen and carbon back into the soil. Cover crops also play an essential role in protecting your garden from soil erosion caused by wind and water. Common cover crops and green manures are: rye grass, buckwheat, alfalfa, barley, oats, clover, and other legume crops. Although cover cropping is more common among large gardens or farms, it is an easy method to enrich your soil and give your garden a productive break.

After you’ve tilled the cover crop into the topsoil, allow the soil to rest for about 3 weeks before planting– ensuring enough time for the green manure to compost and decompose within the soil. If the crop is not fully composted before you plant, nitrogen will be bound in the soil, unable to fertilize the plant.



Bioremediation

So you've gotten your soil samples back and the results indicate that you have lead in your soil. Or the site you were hoping to garden on was formerly a gas station. Uh-oh. Enter bioremediation – a conversation starter sure to win you respect at any party. If your land is filled with toxic sludge, you might be better off selecting another site to garden.

However, bioremediation is a DIY alternative to hiring a company to remove your soil, treat it, and return it. Bioremediation is the process of using the natural abilities of living organisms – plants, bacteria, fungi – to speed the degradation or assist in the removal of contaminants.

Phytoremediation (using plants, specifically dynamic accumulators) and compost remediation are most commonly used for treating soils



contaminated by heavy metals such as lead, mercury, or arsenic – which would otherwise remain in the soil indefinitely. Mycoremediation (using fungi/mushrooms), bacterial remediation (using compost tea), and compost bioremediation are useful in treating soils contaminated by molecular contaminants such as pesticides, fuels, and industry by-products.

Bioremediation is another fascinating topic that is only briefly highlighted in this manual. One great resource for learning more is the book [Toolbox for Sustainable City Living](#) written by the Austin, TX-based Rhizome Collective – complete with a whole chapter dedicated to bioremediation using sunflowers, mushrooms, and compost tea – and a case study of bioremediation after Hurricane Katrina. If you trust the government more than anarchists, the Environmental Protection Agency also has a publication available on bioremediation: *A Citizens Guide to Bioremediation*.



September

What's Happening?

The heat is beginning to break. And there's more chance of rain than there has been for the best three months. If you want to spice up your landscape, consider planting some wildflowers for beautiful blooms next spring.

Weather

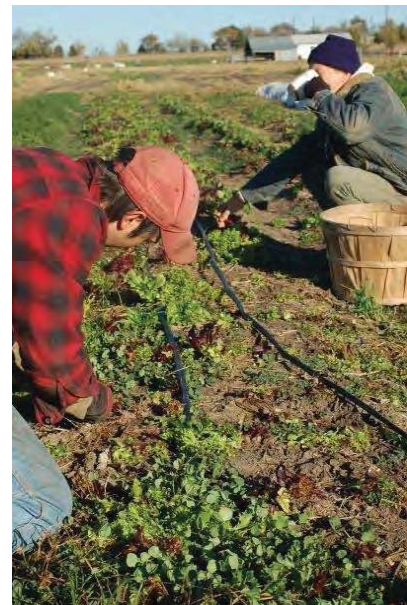
Enjoy the changing weather and get outside! Temperatures range from a high of 90 degrees Fahrenheit with lows of 70 degrees Fahrenheit.

To Do

- Plant, plant, plant your fall vegetable garden. September is the “tweener” month with great weather. Now is the second season for warm weather crops, sharing space with the beginning of the cool season crops.
- Direct seed lots of crops in the ground – still time to grow summer squash and dive into cooler season crops. Start seeding greens inside.
- Continue transplanting cool season crops like broccoli, brussels sprouts, cabbage, cauliflower, chard, and kale,
- Till in old mulch and add fresh mulch around garden.
- Watch plants and their water needs. Irrigation can be cut back as temperatures begin to drop.

Weeds: Perennial (fall) Weed Management

Perennial weeds are much harder to get rid of than annual weeds because they spread through seed but also creep, which means they spread out from their roots - getting larger and covering more area as they go. To eradicate these plants, every last bit of the root must be removed. This means that hand pulling and hoeing may not be enough to remove the whole plant. If you identify a perennial weed in your garden, try to dig out the entire plant at first sighting, and be sure not to compost this plant as it may sprout. An herbicide could be used - but it's best to avoid using poisons. The best approach to control perennial weeds is employing multiple methods – and not expecting a quick fix. Some methods to consider using together are mulching, solarization, and tilling.





Solarization is a good way to kill off weed activity in the first 2-3 inches of the soil. As explained in the December chapter, solarization is using the sun's energy to cook the soil, kill weeds, and start fresh. Solarization is most practical during the hottest months when the sun's rays are most intense. Solarization uses UV rated (greenhouse) clear plastic to heat up the top layer of soil. The plastic needs to be sealed off around the edges and irrigated with water to heat up the soil. The soil needs to be totally saturated with water to heat properly. The plastic also needs to be pulled as tightly as possible over the bed. Consider digging a shallow trench on other side of the bed, lay the plastic across the bed, and weigh it down with something heavy. This method is extremely effective in weed suppression when used properly, but use caution because it will kill off beneficial bacteria also living in the soil.

Another approach to control perennial weeds is tilling up the ground, which can be risky as roots may just end up spreading around, but the idea is to give your crops a head start before the weeds can sprout. Tilling multiple times in the heat of the summer on a weekly basis can also dry out and use up the stored energy in the roots of perennial weeds.

Budgets and Funding

When people talk about sustainability and community gardens, they're usually thinking more about the environment than the budget. The truth is that your garden will not be sustainable in the long run, if you don't think about how it will pay for itself. Unless gardening is for pure hobby and you're willing to keep paying for pure pleasure.

This might mean pursuing grants that fit with the purpose of your garden to help defray the costs of equipment, seeds, labor and other costs. Grants are great, but they are also time-consuming. You often have to reapply every year or look for new sources of funding on a regular basis. The Urban Gardening Coalition maintains a list of grant opportunities for community-based garden projects – consult them for help applying for funding or looking for additional resources.

Another possibility is to think about your garden as a business or hybrid between a non-profit and for-profit. Find revenue streams for your garden that will both sustain your garden financially and accomplish the purpose of your garden. For example, a yard-sharing Community Supported Agriculture (CSA) model has the potential to be a sustainable business, build community and get fresh produce into underserved neighborhoods.

Some Examples of small-scale for-profit agricultural endeavors:



- [Edible Lawns](#) (Waco, TX). A business helping people learn how to grow more of the food they eat including homegrown fruits, vegetables, eggs, chickens, fertilizer. Edible Lawns contracts labor to build gardens, compost bins, chicken coops – as well as hosts workshops on butchering, gardening and more.
- [Urban Patchwork](#) (Austin, TX). A neighborhood-based yard-sharing organization providing safe, fresh, local produce and eggs while helping farmers establish a solid living that helps their families and the local economy thrive.
- [Urban Roots](#) (Austin, TX). A youth development program that uses sustainable agriculture as a means to effect lasting change for youth participants and to nourish East Austin residents who currently have limited access to healthy foods. Young people cultivate a local 2-5 acre, diversified organic farm, selling a portion of their harvest in the Austin area and donating a portion to local hunger relief programs.
- [Farm Yard CSA](#) (Denver, CO). An urban farming adventure in the heart of Denver, growing produce on a collection of front and back-yard plots owned by local residents.
- [Magic Bean Farm](#) (Seattle, WA). An urban farm growing lush gardens of vegetables, herbs, and flowers in yards and other available spaces to nurture ecological, nutrient dense food that is both tasty and healthy. Using methods of hand cultivation and regenerative agriculture, nearby plots are mineralized and grown to build soil, build ecology, and produce nutrient dense food. No sprays or chemicals are used. Nor are large tractors used to plant, weed, and harvest.



October

What's Happening?

It's fall in Texas. Trees are dropping their leaves. If you have a compost or need some mulch, save the leaves for use later! Now is the time to plant perennial herbs. Remember, a little goes a long way in herb gardens. Now is also the time to plant cool season green manures in beds that are empty. These plants will be turned over later to return organic matter into the soil.

Weather

The weather in October can either be wet or dry. Keep this in mind when watering your garden. Younger plants may need some extra water. However, be sure to watch the weather! October is the start of the wet season, and it does have a high average precipitation compared to other months. Temperature highs will be in the 80s and lows in the 60s, bringing relief from the hotter days of summer.

To Do

- Water as needed.
- Continue direct seeding cool weather crops in the ground. Transplant cool season crops that you started inside earlier this summer.
- Plant strawberries!
- Collect leaves from your yard and around the neighborhood to use for mulch or in your compost.
- Mulch plants to reduce the emergence of winter weeds – and keep the roots of warm season plants warm as the temperature continues to drop.
- Harvest cold-sensitive herbs before they succumb to cold temperatures. Dry leaves for culinary use or transplant whole plant into containers and move indoors to a sunny window.

Extending the Season

Who doesn't want fresh-from-your-garden strawberries or tomatoes at Christmas time? Extending the season of produce in your garden can be as low-tech or cost-intensive as you choose. Before you get too excited about fresh tomatoes in December, remember and reflect on the fact that food is seasonal – and season extension can come at a cost. So appreciate the bounty from the ground each season – and the blessings each season provides. As you plan your garden, select vegetables and herbs that can tolerate extreme changes in temperatures. One kale plant can survive all year long. Weigh that against a tomato plant that may die off in the summer – and most likely will die off in the winter. But let's face it – kale isn't as exciting as that ripe, red tomato harvested in the spring still warm with sunshine. Another way to plan ahead is succession planting, sowing multiple successions of



the same crop. [Eliot Coleman](#) is the guru of season extension. He is able to grow year-round, not in the temperate climate of Texas, but the harsh winters of northern Maine. Try a few of the following methods to be as cool as Coleman – and to keep your garden warm during harsh, cold weather.



Unheated Greenhouse

An unheated greenhouse is a green house which doesn't use artificial heat. The goal of this greenhouse is to ensure temperatures remain above freezing. Unheated greenhouse may need additional heat if temperatures drop extremely. Some people use kerosene lamps or other methods to make sure that the greenhouse stays warm enough. Additional plastic covers or sheets can be added to trap heat

to maintain a healthy garden throughout the winter, as well as small livestock such as rabbits or goats, whose body heat can help regulate the temperature of the greenhouse. Picture at the right is the World Hunger Relief's experiment in [rabbit-heated greenhouses](#). According to one source, rabbits produce about 8 BTUs of heat per hour. And their feces can be composted with worms underneath the cages - adding additional heat. Be careful when those extreme cold nights come around, and be mindful of the costs and benefits of an unheated greenhouse!





Cold Frames

If building a greenhouse is a bit unrealistic, cold frames are one of the simplest and most cost-effective ways to ensure your garden survives. Simply put, cold frames are wood boxes with glass panes on top. The glass panes are hinged like doors, and should effectively seal the frame with the plants inside. Adding two layers of glass panes is ideal for maximum heat retention. Putting plants in cold frames can usually prevent them until the weather drops below 25 degrees Fahrenheit. Cold frames are incredibly cost effective and can easily be made from scrap lumber and old windows. A trip to the Habitat Restore can easily equip you for your first cold frame adventure.

Row Covers

Another simple method for season extension is the use of row covers. There are two types of row covers: floating and plastic. Much like a cold frame, row covers can easily be crafted from materials lying around your house or yard. Floating row covers are white, light-weight garden blankets and require no supports. The lighter the blanket, the more light transmission. The heavier the blanket, the more frost protection. Keep that in mind. Plastic row covers, on the other hand, are supported through the use of hoops – and generate more heat than a floating row cover, although they are less efficient than floating in retaining heat. To make a plastic row cover, locate some old hula hoops (and cut them in half) or pieces of PVC pipe and bend them in an arc over your garden bed – forming a low tunnel over your crops. Then cover in plastic (perhaps the same plastic you used for solarizing). And bam! Instant mini greenhouse. This row cover setup can also be used as a physical barrier if you have a pest infestation on your crops during the warmer seasons.

Other low-cost season extender ideas include using old milk jugs or plastic soda bottles as hot caps, insulating with hay bales around the bed, and covering plants with plastic bags. Let your imagination run wild.



Saving Seeds

With your bounty passing its peak, the time is now to collect seed from the best of your bounty and prepare for next season. Watch and observe your plants – so you know when they are at the height of their maturity. Timing is important. Depending on the type of plant you are harvesting, you may be harvesting seeds from a pod, threshing the entire plant or giving a good shake down. Understand that some plants are biennials (flowering after 2 growing seasons – e.g. carrots, kale) and others annuals (flowering after 1 growing season – e.g. tomatoes, squash)– which is the predictor of how often the plant sets seed. Certain plants also must be grown in isolation in order to set seed that is pure – and has not been cross-pollinated by other plants.

To harvest seeds from a fruiting plant (such as tomatoes or squash), harvest the fruit when it is at its peak maturity – you would want to eat the vegetable. Choose the best looking fruit on the plant. Cut and scoop seeds from the inside and wash to remove pulp from seeds. Leave cleaned seeds to dry on a paper towel or some newspaper. Allow seeds to dry thoroughly before storing them.



To harvest seeds from a non-fleshy flowering plant (such as basil or dill), cut off seed heads from plant with shears. Place seed heads (still on stems) upside down in a brown paper bag, poking holes in the bag to allow for air circulation, and allow to dry until seeds are released. Separate any chaff from the seeds before storing in a container. Pick out the biggest, best looking seeds to save. Allow seeds to dry thoroughly before storing them.

To harvest seeds from a pod (such as okra or beans), you don't have to do much. Allow the pod to turn brown and dry out on the plant. Then cut the pod from the plant – and you have yourself an instant seed storage container.

Once you've harvested seed, germination will still be good for at least a year as long as you keep seeds stored at cool temperatures. The fridge works well – but a dark, cool cupboard is also ideal. Additional moisture will be the death of a seed. Good containers for saved seed include: baby food jars, prescription medicine containers, paper envelopes, and more. The container should be air-tight. Make sure to label your container with varietal name and date harvested. And enjoy your bounty again next season!



APPENDIX

PLANTING CHARTS

Crop	Jan 1-15	Jan 16-31	Feb 1-15	Feb 16-28	Mar 1-15	Mar 16-31	April 1-15	April 16-30	May 1-15	May 16-31	June 1-15	June 16-30
Arugula			Blue	Blue	Blue	Blue	Blue	Blue				
Basil			Yellow	Yellow			Green	Green				
Beans--Snap					Blue	Blue	Blue	Blue				
Beans--Liana					Blue	Blue	Blue	Blue				
Beets			Blue	Blue	Blue							
Broccoli	Yellow	Yellow	Green	Green	Green							
Cabbage	Yellow	Yellow	Green	Green	Green	Green						
Carrots	Blue	Blue	Blue	Blue								
Cauliflower	Yellow	Yellow	Green	Green	Green							
Chard	Yellow	Yellow		Green	Green							
Cilantro			Blue	Blue	Blue	Blue						
Collards			Blue	Blue	Blue	Blue						
Corn (sweet)					Blue	Blue	Blue	Blue				
Cucumber			Yellow	Yellow	Green	or direct seed	Green	Green				
Dill			Blue	Blue	Blue	Blue						
Eggplant		Yellow	Yellow	Yellow		Green	Green	Green				
Garlic												
Kale	Yellow	Yellow	Green	Green	Green							
Leeks	Yellow	Yellow	Green	Green	Green	Green						
Lettuce (leaf)			Blue	Blue	Blue	Blue	Blue	Blue				
Lettuce (head)	Yellow	Yellow	Green	Green	Green							
Melon-Cantaloupe				Yellow	Yellow	Yellow	Green	Green	Green			Yellow
Melon-Spanish				Yellow	Yellow	Yellow	Green	Green	Green			Yellow
Melon-Water				Yellow	Yellow	Yellow	Green	Green	Green			Yellow



Crop	Jan 1-15	Jan 16-31	Feb 1-15	Feb 16-28	Mar 1-15	Mar 16-31	April 1-15	April 16-30	May 1-15	May 16-31	June 1-15	June 16-30
Mustard greens			Direct Seed	Direct Seed	Direct Seed	Direct Seed						
Okra					Plant Inside	Plant Inside		Transplant	Transplant			
Onion (bunching)	Plant Inside	Plant Inside		Transplant	Transplant	Transplant						
Onion (sets)		Direct Seed	Direct Seed	Direct Seed								
Pak Choi	Plant Inside	Plant Inside	Transplant	Transplant	Transplant							
Parsley			Direct Seed	Direct Seed	Direct Seed	Direct Seed						
Peanuts											Direct Seed	Direct Seed
Peas (southern)						Direct Seed	Direct Seed	Direct Seed				
Peas (snap)	Direct Seed											
Pepper (sweet)	Plant Inside	Plant Inside	Plant Inside			Transplant	Transplant	Transplant				
Pepper (hot)	Plant Inside	Plant Inside	Plant Inside			Transplant	Transplant	Transplant				
Potato (Andean)			Direct Seed	Direct Seed	Direct Seed							
Pumpkin				Plant Inside	Plant Inside		Transplant	Transplant				Plant Inside
Radish			Direct Seed	Direct Seed	Direct Seed	Direct Seed	Direct Seed	Direct Seed				
Soybean						Direct Seed	Direct Seed	Direct Seed				
Spinach	Direct Seed	Direct Seed	Direct Seed	Direct Seed	Direct Seed							
Squash (Patti Pan)		Plant Inside	Plant Inside	Plant Inside	Plant Inside	or direct seed	Transplant	Transplant				
Squash (Yellow)		Plant Inside	Plant Inside	Plant Inside	Plant Inside	or direct seed	Transplant	Transplant				
Squash (Zucchini)		Plant Inside	Plant Inside	Plant Inside	Plant Inside	or direct seed	Transplant	Transplant				
Squash (Winter)		Plant Inside	Plant Inside	Plant Inside	Plant Inside	or direct seed	Transplant	Transplant				Plant Inside
Sweet Potato									Direct Seed	Direct Seed		
Tomato (Spring)	Plant Inside	Plant Inside	Plant Inside	Plant Inside	Plant Inside	Transplant	Transplant					
Turnip			Direct Seed	Direct Seed	Direct Seed	Direct Seed	Direct Seed					

Key:	Plant Inside	plant inside
	Transplant	transplant
	Direct Seed	direct seed



Crop	July 1-15	July 16-31	Aug 1-15	Aug 16-31	Sept 1-15	Sept 16-30	Oct 1-15	Oct 16-31	Nov 1-15	Nov 16-30	Dec 1-15	Dec 15-31
Onion (sets)				Direct Seed	Direct Seed	Direct Seed	Direct Seed					
Pak Choi				Plant Inside	Plant Inside	Transplant	Transplant					Plant Inside
Parsley				Direct Seed	Direct Seed	Direct Seed	Direct Seed					
Peanuts												
Peas (southern)			Direct Seed	Direct Seed								
Peas (snap)											Direct Seed	Direct Seed
Pepper (sweet)												
Pepper (hot)												
Potato (Andean)												
Pumpkin	Plant Inside	Transplant	Transplant									
Radish				Direct Seed	Direct Seed	Direct Seed	Direct Seed	Direct Seed				
Soybean												
Spinach						Direct Seed	Direct Seed	Direct Seed	Direct Seed	Direct Seed		
Squash (Patti Pan)			Plant Inside	or direct seed	Transplant	Transplant						
Squash (yellow)			Plant Inside	or direct seed	Transplant	Transplant						
Squash (zucchini)			Plant Inside	or direct seed	Transplant	Transplant						
Squash (winter)	Plant Inside	Transplant	Transplant	or direct seed								
Sweet Potato												
Tomato (Spring)												
Turnip				Direct Seed	Direct Seed	Direct Seed	Direct Seed	Direct Seed	Direct Seed			

Key:	Plant Inside	plant inside
	Transplant	transplant
	Direct Seed	direct seed



FRUIT TREES TO PLANT IN CENTRAL TEXAS

Pomegranates	Persimmon	Pears	Pecans*
Wonderful	Eureka	Orient	Caddo 1
Sweet	Fuyu	Warren	Oconee 1
Ambrosia	Great Wall	Garber (Monterrey)	Desirable 1
Cloud	Tani Nashi	Kieffer	Nacono 2
Eversweet	Hachiya	Magness	Sioux 2
Fleishman	Matsumoto	Moonglow	Waco 1
Purple	Tam-O-Span	Ayres	Hopi 2
Ambrosia	Saijo		Kanza 2
			Pawnee 1
			Lakota 2

* 1 is for Protandrous (pollen first) Varieties and 2 is for Protogynous (nut first) Varieties

Figs	Jujubes	Grapes	Blackberries
Celeste	Li	Champanel (red - jelly)	Rosborough (thorny)
Brown Turkey	Lang	Le Noir (red - juice, wine)	Kiowa (thorny)
Texas Everbearing	Sui Men	Blanc duBois (white – wine)	Brazos (thorny)
Excel	G17-62	Cynthiana (red – wine)	Apache (thornless)
LSU Purple	So		

Plums	Apples	Strawberries	Olives
Methley	Molly's Delicious	Chandler	Arbequina
Ozark Premier	Granny Smith	Sequoia	Arbosana
Santa Rosa	Gala (Royal or Imperial)	Seascape	Koroneiki
Morris	Fuji		
Bruce	Matsu (Crispin)		

Peach Varieties	Ripens
June Gold (cling)	May 24
June Prince (semi)	May 30
Southern Pearl (free)	June 3
Sentinel (cling)	June 7
Harvester (free)	June 14
La Feliciano (free)	July 1
Red Skin (free)	July 7
Dixiland (free)	July 14



WHRI'S FERTILIZER MIXES

Balanced Fertilizer without vermicompost -2 gallons per 500 square feet

Fish meal	4.5 units (by volume)
Rock Phosphorus	3.5 units
KMg	1 unit
Sulfur	.1 unit

Balanced Fertilizer with vermicompost – 4 gallons per 500 square feet

Vermicompost	5 units (by volume)
Fish meal	1.5 units
Rock Phosphorus	2.25 units
KMg	.25 unit
Sulfur	.1 unit

High Nitrogen Fertilizer without vermicompost -2 gallons per 500 square feet

Fish meal	10 units (by volume)
Rock Phosphorus	0 units
KMg	1.25 unit
Sulfur	.1 unit

High Nitrogen Fertilizer with vermicompost – 3 gallons per 500 square feet

Vermicompost	5.5 units (by volume)
Fish meal	3.5 units
Rock Phosphorus	1 units
KMg	.25 unit
Sulfur	.1 unit

High Phosphorus Fertilizer without vermicompost -1.5 gallons per 500 square feet

Fish meal	2.75 units (by volume)
Rock Phosphorus	4.5 units
KMg	.5 unit
Sulfur	.1 unit

High Phosphorus Fertilizer with vermicompost – 4 gallons per 500 square feet

Vermicompost	5 units (by volume)
Fish meal	1 units
Rock Phosphorus	2.75 units
KMg	.1 unit
Sulfur	.1 unit



Compost Tea (5 Gallon Batch)

Water	5 gal
Finished compost	1 shovel (1.5 lbs)
Seaweed extract or fish emulsion	1 TBS
Humic Acid	¼ cup
Vinegar (5%)	¼ cup

Use well finished compost. Brew 1-2 days with aquarium bubbler or stirring regularly. Apply as a foliar spray (full strength) or soil drench (2 qts/10 ft of row).



Resources

Books

General Texas Gardening

Breneman, Karen. *Gardening with Nature in Texas*. San Francisco: Ignatius Press, 2002.

Cotner, Sam. *The Vegetable Book*. San Francisco: Ignatius Press, 1985.

Sperry, Neil. *Neil Sperry's Complete Guide to Texas Gardening*. San Francisco: Ignatius Press, 1991.

Garrett, Howard. *Howard Garrett's Plants for Texas*. San Francisco: Ignatius Press, 1996.

Garrett, Howard, and Chris Celusniak. *Texas Gardening the Natural Way*. San Francisco: Ignatius Press, 2004.

Garrett, J. et.al. *Texas Organic Vegetable Gardening*. San Francisco: Ignatius Press, 1999.

Gill, Dan, and Dale Groom. *Month-by-Month Gardening in Texas: Revised Edition: What to Do Each Month to Have a Beautiful Garden All Year*. San Francisco: Ignatius Press, 2006.

Wasowski, Sally, and Andy Wasowski. *Native Texas Gardens*. San Francisco: Ignatius Press, 2003.

Welsh, Doug, and Aletha St Romain. *Doug Welsh's Texas Garden Almanac*. San Francisco: Ignatius Press, 2007.

Soil Physical Properties

Brady, N. 1974. *The Nature and Property of Soils*. MacMillian Pub. Co., Inc., New York. pp. 7-18, 40-49, 58-69.

USDA photo gallery: <http://soils.usda.gov/gallery/photos/profiles/>

Globe. 2005. *Particle Size Distribution*. Univ. Corp. Atmospheric Res./Col. St. Univ. <http://www.globe.gov/tctg/tgchapter.jsp?sectionId=86>



Soil Biology

Ingham, E, A.R. Moldenke, and C. A. Edwards. 2000. *Soil Biology Primer*. Soil and Water Conservation Society.

http://soils.usda.gov/sqi/soil_quality/soil_biology/soil_biology_primer.html

Brady, N. C. 1974. *The Nature and Property of Soils*. Macmillan Publishing Co., Inc. NY. Ch. 5

Compost

Applehoff, Mary. 1982. *Worms Eat My Garbage*. Flowerfield Press, Kalamazoo
Master Composters Training Manual. 1994. Texas Natural Resource Conservation Commission Publication GI-58. (pp 13-28, 37)

Martin, Deborah et.al. *The Rodale Book of Composting*. Emmaus Pa: Rodale Press, 1992.

Rosen, C.J. and P. M. Bierman. 2005. *Nutrient Management for Fruit & Vegetable Crop Production*. University of Minn. (pp. 1-7).

<http://www.extension.umn.edu/distribution/horticulture/M1192.html>

Compost Tea

Diver, S. 2002. *Notes on Compost Teas*. ATTRA. <http://attra.ncat.org/attra-pub/PDF/compost-tea-notes.pdf>

Ingham, E. 2003. *The Compost Tea Brewing Manual, 4th Ed*. The Soil Foodweb, Inc.
Walz, E. 2001. "Compost Teas: A Brave New World". Organic Farming Research Foundation Information Bulletin No. 9.

Soil Fertility

A&L Great Lakes Laboratories. 2002. *Lime Recommendations*. Fact Sheet No. 30.

Reich, R.C., and M.S. Phipps. 2002. *Soil Testing*. N.C. Dept of Agric. & Consumer Svcs.

Albrecht, W. 1989. *The Albrecht Papers*. Acres U.S.A., Kansas City.

Brady, N. C. 1974. *The Nature and Property of Soils*. Macmillan Publishing Co., Inc. New York. pp. 18, 71-76, 88-106.

Wichman, W. 2004. *World Fertilizer Manual*. International Fertilizer Association (IFA). <http://www.fertilizer.org/ifa/publicat/html/pubman/manual.htm>



Disease Identification and Management

Harman, G. 1996. *Trichoderma for Biocontrol of Plant Pathogens*. Cornell University, Geneva, NY.

<http://www.nysaes.cornell.edu/ent/bcconf/talks/harman.html>

Koike, S.T., et al. No Date. *Plant Disease Management for Organic Crops*. University of California, Div. Of Agr. And Nat. Res., Pub 7252.

<http://anrcatalog.ucdavis.edu/pdf/7252.pdf>

Smith, M. and A. Carr. 1988. *Rodale's Garden Insect, Disease & Weed Identification Guide*. Rodale Press, Inc. pp. 2-12 and pp. 18-21

Insect Identification and Management

Beck & Garrett. *Texas Bug Book: The Good the Bad and the Ugly*.

Dufour, R. 2001. *Biointensive Integrated Pest Management (IPM)*, ATTRA.

<http://www.attra.ncat.org/attra-pub/ipm.html> pp. 1-17

Entomology and Wildlife Ecology Insect Database. College of Agr & Nat. Res. U. of Del. <http://ag.udel.edu/enwc/insectdb/collembola.htm>

Gordon's Key to Insect Orders. <http://www.earthlife.net/insects/orders-key.html>

Insect Images. Univ. of Georgia/USDA Forest Service.

<http://www.insectimages.org/>

Queirolo, J. 2000. Attracting Beneficial Insects. *Kitchen Gardener*.

<http://www.taunton.com/finegardening/how-to/articles/attracting-beneficial-insects.aspx>

Smith, M. and A. Carr. 1988. *Rodale's Garden Insect, Disease & Weed Identification Guide*. Rodale Press, Inc. pp. 2-12 and pp. 18-21

Weed Identification and Management

Bauman, P.A. 1999. *Weed Identification: Using Plant Structures as a Key*. Texas Agr. Ext. Svc. B-6079. <http://sanangelo.tamu.edu/agronomy/garden/txweedid.pdf>

Colquhoun, J. 2001. *Perennial Weed Biology and Management (EM 8776)*. Oregon State University. <http://eesc.orst.edu/agcomwebfile/edmat/em8776.pdf>

Dufour, R. 2001. *Biointensive Integrated Pest Management (IPM)*, ATTRA.

<http://www.attra.ncat.org/attra-pub/ipm.html> pp. 1-17



Fishel, F. 1999. *Weeds of Field Crops and Pastures*.

<http://www.psu.missouri.edu/fishel/> The University of Missouri-System Board of Curators

Smith, M. and A. Carr. 1988. *Rodale's Garden Insect, Disease & Weed Identification Guide*. Rodale Press, Inc. pp. 2-12 and pp. 18-21

Sullivan, P.G. 1999. *Principles of Sustainable Weed Management for Croplands*. ATTRA. (pp.1-12). <http://www.attra.org/attra-pub/PDF/weed.pdf>

Local Gardening Organizations

Heart of Texas Urban Gardening Coalition

- a group dedicated to seeing gardens used to improve our community

Bethel Erickson

(773) 494-3613

vista@worldhungerrelief.org

<http://hotugc.org>

McLennan County Master Gardener Association

- offers training for members and advice to the public

County Extension Office

420 N. 6th St., Waco, 76701

(254) 757-5180

<http://www.mclennanmastergardeners.org>

McLennan County Extension Office

- advice on gardening, especially useful in selecting varieties to plant

420 N. 6th Street Waco, Texas 76701

(254) 757-5180

mclennan@ag.tamu.edu

<http://mclennan-tx.tamu.edu>

Local Sources of Seed and Plants

Bonnies Greenhouse - plants

5198 Orchard Lane, Waco

(254) 799-7909

Brazos Feed - bulk seeds, plants, potatoes,

1505 La Salle Ave, Waco

(254) 756-6687



Empire Seed Company - bulk seeds, plants, potatoes
201 Elm St., Waco - (254) 756-1009
7319 Bosque Blvd, Waco - (254) 772-5005

Green Life - plants and soil amendments
1312 N New Rd, Waco
(254) 776-2400

Homestead Heritage - unique seeds, plants and soil amendments
608 Dry Creek Road, Waco
254-754-9600

Womack Nursery – fruit trees specific to Central Texas
2551 State Hwy 6, DeLeon, TX
254-893-6497

Mail Order Seeds

Johnny's Select Seeds – lots of seeds (not necessarily organic or heirloom), as well as fun but pricey tools. Free Catalog.

<http://www.johnnyseeds.com>

Seeds of Change – certified organic, native, and heirloom seeds. Free seeds to educational and community gardens – available during January every year. Free catalog.

<http://www.seedsofchange.com> Seed Savers Exchange – dedicated to the collection and preservation of heirloom seeds. Offer free seeds to community garden projects through a program called Herman's Garden. Free catalog.

<http://www.seedsavers.org>

Southern Exposure Seed Exchange – distributes seeds for growers specifically in the south, as well as offering information on gardening seasons. Free catalog.

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

Websites about Gardening

American Community Gardening Association

The Mission of the American Community Gardening Association is to build community by increasing and enhancing community gardening and greening across the United States and Canada.

<http://www.communitygarden.org>

ATTRA – National Sustainable Agriculture Information Service



ATTRA is an invaluable resource in the world of sustainable agriculture. Download numerous articles on everything from integrated pest management to marketing advice. Complete with case studies from real farmers.

<http://attra.ncat.org/>

National Gardening Association

National Gardening Association, a national non-profit dedicated to the promotion of gardening. Ideas, grant info, curriculum, books, resources, etc., free e-zines.

<http://www.garden.org>

NGA also operates a website specifically for gardens working with youth.

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

Texas A&M AgriLife Resources

Vegetable Grower's Handbook-

<http://aggie-horticulture.tamu.edu/publications/veghandbook/index.html>

The Crops of Texas- <http://aggie-horticulture.tamu.edu/extension/Texascrops/>

Crop Guides- <http://aggie-horticulture.tamu.edu/extension/vegetable/cropguides/>

Texas Organic Vegetable Production-

<http://aggie-horticulture.tamu.edu/publications/guides/organicvegprod/>

Vegetable Gardening-

<http://aggie-horticulture.tamu.edu/travis/lgevegetables.htm>

Vegetable Integrated Pest Management -

<http://vegipm.tamu.edu/indexbyvegetable.html>



Urban Gardening Coalition Partner Garden Guidelines

The [Heart of Texas Urban Gardening Coalition](#) (UGC) is a community collaboration that educates and encourages people to grow gardens. UGC provides the training and relationships to establish gardens at homes or other living environments, schools, and community centers.

Gardens partnered by UGC must agree to:

- Pay annual partnership fees of \$25 to cover basic garden supplies and expertise from the UGC.
- Sign an MOA with the Urban Gardening Coalition and at least one other community partner (nearby school, church, non-profit, coalition, government agency) that agrees to help with the care and maintenance of the garden.
- Locate access to water on-site prior to initial groundbreaking.
- Help with the initial groundbreaking and garden-building and the continual care of the garden plot (watering, weeding, planting).
- Establish weekly/monthly work and watering schedule with garden volunteers.
- Attend monthly meetings facilitated by the Urban Gardening Coalition.
- Participate in [Beyond the Backyard](#) garden workshop series – workshops available each month.
- Participate in large community garden workdays (such as the MLK Day of Service in January and the Harvest Celebration in April).

UGC agrees to provide partner gardens with:

- Workshop training and educational materials necessary to establish an organic food garden.
- Volunteer recruitment – some with experience, others eager to learn.
- Plants, seeds and supplies for large community garden work days.
- Coordination for large seasonal work days to help with up-keep of the garden: MLK Day of Service (January), Harvest Celebration (April) and Baylor's Steppin Out (fall and spring).
- Access to agricultural assistance through partnerships with the [McLennan County Master Gardeners](#), the [Heart of Texas Master Composters](#), and the [World Hunger Relief Farm](#).
- Access to business planning and counseling through the [Small Business Development Center](#) for gardens interested in for-profit ventures contributing to the local food economy.
- Access to the [McLennan County Hunger Coalition](#), [Baylor Campus Kitchens](#), and Food Pantry Network for gardens interested in donated produce to those in need.
- Access to a list of upcoming grant opportunities for community gardens. For an additional \$25 per year, partner gardens can receive grant-writing support from UGC.



Model Community Garden Rules

(Original Source: “Ground Rules – a Legal Toolkit for Community Gardens” published by the National Policy and Legal Analysis Network to Prevent Childhood Obesity. This document and other model documents for community gardens can be found online at: <http://www.nplanonline.org>).

The Model Community Garden Rules set forth the operating rules for a community garden. They are designed to be used with the attached Model Lease and Gardener’s Agreement. There are many different types of community gardens, with different governing structures and operating models. The Garden Rules are intended as a starting framework that can be tailored based on the needs of the specific garden, the parties, and the gardening community. Because the Sponsor is ultimately legally responsible to the Landowner for operation of the garden, the Garden Rules give final authority for many decisions to the Sponsor. Even so, the Sponsor could choose to delegate some of those decisions to the gardening leadership team.

From a legal perspective, Garden Rules are a tool to:

- *Maintain the safety of all participants*
- *Maintain the property safely*
- *Prevent disputes*
- *Provide a fair method for resolving disputes to prevent them from escalating*
- *Prevent disturbances to neighboring property owners and residents*

In addition, having and following carefully thought-out Garden Rules can demonstrate to the Landowner that the proposed garden will be operated safely and responsibly, helping convince the Landowner to allow use of the property as a community garden.

To address communities’ varying needs, we offer comments explaining the provisions or options. The comments and options are written in italics. Text in brackets is suggested, but should be altered to meet local conditions. When modifying these Rules, consider how changes may affect the factors listed above.

Community Garden Rules

This document sets out the rules that govern the Community Garden (the “Garden”). These Rules are intended to help all our Gardeners grow fresh, healthy food in a thriving garden, to help create a sense of community among our gardeners, and to help the Garden to be a good neighbor. (the “Sponsor”) is a nonprofit organization that leases the land for the Garden, sponsors the Garden, and administers these Rules. Every person who has a plot in the Garden (called “Gardeners”) must sign a legal agreement with Sponsor in which the Gardener agrees to comply with these Rules.

A. Access to the Garden



- Season:** The Garden is open and accessible [*all year. Alternative: from to*].
- Hours:** Gardeners may be in the Garden between [6] am and [8] pm. [*Alternative: dawn to dusk.*]
- Keys and Security:** Sponsor will give each Gardener one key to the Garden [*or the combination or code to open the lock*]. [*Gardeners will pay a \$ deposit in exchange for receiving the key. The deposit will be returned when Gardener returns the key upon vacating his or her plot.*] Gardeners may not make any copies of the key. On leaving the Garden, Gardeners are responsible for locking the gate if there are no other individuals in the Garden. Gardeners will follow any additional security guidelines that may be announced by Sponsor.

Comment: *Some gardens may not have gates secured by locks. If so, consider whether there are other security measures or a “closing” protocol gardeners should follow and change the text accordingly. Locked gates may lower the risk of vandalism, theft, and liability.*

B. Garden Plots

- Use of Own Plot:** Gardeners may use only the plots assigned to them by the Sponsor [*leadership team*]. Gardeners will maintain their plants within their plots and will trim any plants that extend into neighboring plots or into common areas. Gardeners may not alter the dimensions of their plot.
- Comment:** *Some gardens use joint cultivation areas. If so, change the text in these Rules to address the Gardeners’ responsibilities when gardening in the joint cultivation areas.*
- Plantings:** Gardeners may plant vegetables, fruits, and flowers. Gardeners may not grow any plants above [4] feet in height.
- [*Alternative language: Gardeners may plant vegetables, fruits, and flowers. Gardeners may not maintain plantings or plant-supporting structures that impede the security of the garden or impede adjacent gardeners’ access to sunlight by the nature of their height, material or density.*]
- Comment:** *Landowners may want to impose a height limit on plants for safety reasons or out of deference to neighbors. Some communities have zoning or other restrictions regarding landscaping that blocks views or shades adjacent property. It is important to check local laws before increasing height restrictions. For gardens with a shorter lifespan, the Sponsor may recommend that Gardeners not grow plants that take multiple years to produce food. In addition, the Sponsor may wish to maintain a list of plants prohibited in the Garden, such as highly invasive vines or stinging nettles.*

- Supplies:** Gardeners are solely responsible for the planning and management of their own plots, including providing their own seeds, plants, fertilizer, and any



tools not provided by Sponsor or Gardeners collectively.

Organic Methods:

Gardeners will garden organically. Gardeners will check with the Sponsor before applying any fertilizers, pesticides, herbicides, or rodenticides, even if labeled “organic.” Use of compost, organic mulch, and weeding is always acceptable.

Water:

Each Gardener is responsible for watering his or her own plot *[using the hose provided by Sponsor or Gardeners collectively.]* Gardeners will not overwater their plants or leave a hose unattended. *[The cost of water is included in the cost of plot rental, so any excessive water usage may cause the cost of plot rental to increase the following year.]*

Tools:

Gardeners may bring their own tools into the Garden to use in their plots, but they cannot store any tools in the Garden. Gardeners are responsible for any damage caused by tools they bring into the Garden and so should use them with care. Gardeners may not use any power tools, such as those that require gasoline, batteries, or electricity.

Plot Maintenance and Trash:

Gardeners will maintain their plots and adjacent paths in a clean and neat fashion, promptly removing any weeds, overgrowth, or other waste from their plot. Gardeners will promptly harvest edible plants. Gardeners are responsible for hauling and disposing of their own trash, such as weeds, boxes, trays, bags, packets, and similar items.

[Summer gardening begins in early spring. Plots should be weeded and planted by [May 1]. Winter gardening begins in early fall. Your plot should be replanted with a winter or cover crop, amended with compost or covered by mulch by [November 1].]

Comment: This Rule should be changed to reflect local growing seasons and what gardening, if any, occurs in the fall and winter months. Giving specific dates ensures that Gardeners understand their responsibilities at the end of the growing season(s). Depending on the local climate, the Rules should include responsibilities for leaf and snow removal. Finally, it may be helpful to provide a chart that designates all of the maintenance chores and the responsibilities for them.

Yearly Clean-up:

Gardeners will perform a yearly clean-up on their plots on *[date to be determined by Sponsor.]*

[Compost:]

[Gardeners will place any organic waste such as weeds, dead plants, or rotten produce, in the compost pile designated by Sponsor.] *Comment: Compost feasibility varies from site to site, but should be encouraged. Some communities have local laws requiring composting. It is important to check local requirements and to adjust the Rules accordingly. The Sponsor may also wish to have weeds composted separately and exclude unchopped thick stems and diseased plant materials from compost piles.*



- Absence:** Gardeners may not abandon their plots. Abandonment means failing to maintain a plot for [2 weeks]. If a Gardener expects to be away from the Garden for more than [2 weeks], but less than [3 months], he or she must inform Sponsor. The Gardener and the Sponsor will then determine an alternative, such as a temporary substitute, acceptable to both. Gardeners who are away for more than [3 months] will lose their plots.
- No Personal Property:** Gardeners may not keep any personal property on their plots or in the Garden when they are not in the Garden. If Gardeners leave personal property on their plots after the termination of their participation in the Garden, Sponsor can keep and sell the abandoned property.

C. COMMON AREAS AND RESPONSIBILITIES

[**Common Tools:** [*Sponsor or Gardeners collectively will provide a set of tools in a storage shed in the Garden for use by all Gardeners (the “Common Tools.”)*]
Gardeners will return the Common Tools to the storage shed as soon as they are finished using them. If a Common Tool appears dangerous or in disrepair, Gardener will not use the Common Tool and inform Sponsor immediately.]

Common Responsibilities: Gardeners will keep clean and neat any common areas, such as pathways and storage sheds. Gardeners will promptly report any concerns about the safety of the Garden to the Sponsor. If there is vandalism, storm damage, or other damage to the Garden, all Gardeners are expected to help in cleaning up and restoring the Garden to its prior condition, but the Sponsor will bear the cost of the repairs.

[**Garden Work Days:** [*All Gardeners must participate in [4] Garden Work Days per year, where they participate in cleaning and maintaining the Garden.*]

D. Communication

Comment to section D: *As noted previously, community gardens use various governance structures, including having one garden manager, a leadership team, or governance council. In certain gardens, the Sponsor may wish to make management decisions. In that case the Sponsor should designate two Garden Coordinators responsible for communication between the Sponsor and Gardeners. In other gardens, the Sponsor may wish to allow the Gardeners, through a garden council or leadership team, to provide more management functions. Regardless of the governance structure, it is important to ensure there is a specific method of communication between the Sponsor and Gardeners so that Gardeners have input into the management and operation of the Garden and are aware of the Rules and any changes to the Rules or operations of the Garden required by the Sponsor.*

[*Insert text here briefly describing the management structure*]

Garden The [*insert name of Garden leadership*] has complete authority to interpret



- Management:** the Rules and make decisions.
- Communication:** The [*Sponsor, Governance Council, leadership team, other entity*] will designate [*two*] members as “Garden Coordinators” to be the official point of contact for the Sponsor [*and leadership team*] and Gardeners.
- Contact Information:** The Sponsor will provide a bulletin/announcement board in the garden. The Coordinators [*and other members of the Leadership team*] will post contact numbers on the board in the Garden. Gardeners must tell the Coordinators of any change in their contact e-mail addresses or phone numbers.
- Comment: Some gardens assign oversight of different functions to different members. If so, the Rule should require that the names, duties, and contact information for each of the leaders be posted.*
- Gardener Input:** Gardeners are encouraged to provide suggestions about Garden operations to the Coordinators. Gardeners should contact the Coordinators directly at the number provided by the Coordinator, not the Sponsor’s office, with any questions relating to day-to-day operational matters.
- Gardener Orientation:** New Gardeners must attend a Sponsor [*and leadership team*]-led orientation to become familiar with how the Garden functions and their responsibilities as a Gardener.
- Annual Meeting:** Once a year, the Sponsor will invite all Gardeners to an annual meeting to notify Gardeners of any changes made in how the Garden operates, these Rules, in assignments of plots, to discuss any issues or concerns, [*and to elect a new leadership team*]. Sponsor will give written notice of the annual meeting, sent by email or first-class mail, no fewer than 14 days in advance. Comment: Many gardens distribute leadership duties by designating positions for membership, treasurer, common area maintenance, communications, and other functions. Distributing responsibilities for garden management and oversight prevents overburdening a few members. Leaders can be elected at the annual meeting.
- Confidentiality:** Sponsor and other Gardeners will not use any personally identifiable information, including Gardener’s name, email address, telephone number, or street address, for purposes other than the operation of the Garden.

E. Conduct

- General Conduct:** Gardeners are expected to be civil, honest, and cooperative in dealing with the Landowner, Sponsor, Garden neighbors, other Gardeners, and guests of other Gardeners.



Guests: Gardeners may bring guests, including children, into the Garden, provided that the guests comply with the Rules. Gardeners will supervise any child under the age of sixteen. Gardeners will be responsible for the conduct of children and their guests including making sure they do not damage or interfere with activities on other plots or otherwise engage in inappropriate conduct. Guest violations of these Rules are treated as violations by the Gardener.

***Comment:** Many gardens encourage Gardeners to hold internal garden community-building events such as potluck dinners, gardening workshops, music in the garden, etc. Other gardens may limit the number of guests a Gardener can bring in at any time and require explicit permission before bringing in a large group (for example, a school class for a visit or special event) or holding an “open house” for the community. The Rules should reflect what activities are permitted, how frequently, any restrictions on guests, and what activities require special permission.*

Pets: Gardeners may not bring any pets or animals into the Garden, including for burial.

[Alternative: Gardeners may bring their pets into the Garden only if Gardeners keep them on a leash or other restraint for the entire time the pets are in the Garden. Gardeners are responsible for cleaning up after their pets and ensuring that their pets stay on their plots and do not interfere with activities or damage plants on other plots. If other Gardeners complain about the pet, Gardener will remove it from the Garden.]

Comment: Pets can be points of controversy for community gardens. Many community gardens simply ban all pets.

Respect Others’ Property: Gardeners may not enter other plots, use another Gardener’s tools or supplies, or harvest another Gardener’s produce, without the explicit permission of the other Gardener. Gardeners may not enter property next to the Garden without the owner’s permission.

No Illegal Plants: Gardeners may not grow any plants considered illegal under state or federal law. For example, Gardeners may not grow Cannabis sativa (marijuana), whether or not the use of marijuana may be lawful for medical purposes under state law.

Compliance: Gardeners must comply with all applicable local, state, and federal laws.

No Firearms: Gardeners may not carry, use, or store firearms in the Garden.

No Smoking: Gardeners may not smoke in the Garden.

No Alcohol/Drug Use: Gardeners may not consume or use alcohol or illegal drugs while on the Garden premises. Gardeners may not bring alcohol or illegal drugs onto the Garden premises. Gardeners may not come into the Garden while under the influence of alcohol or illegal drugs.



- No Sexual Relations:** Gardeners may not engage in sexual relations in the Garden.
- No Fires or Cooking:** Gardeners may not start or maintain a campfire, burn weeds, [*use a barbecue grill, or cook*] in the Garden.
- Comment: Many community gardens encourage using a barbecue grill for garden-wide events. If so, change the Rule to reflect when, and under what circumstances, barbecue use is permitted.*
- No Loud Music:** Gardeners may not play music or the radio loud enough to be a nuisance to other Gardeners or to the Garden's neighbors.
- No Sales:** The Garden is for personal, noncommercial use only; Gardeners may not sell any produce or flowers grown in the Garden.
Comment: Some landowners may permit limited on-site sales during specific times. Before permitting sales, the Sponsor should check state and local law to determine whether a permit or license is required for sales and ensure that Gardeners comply with all laws.

F. Problems

- Dispute Resolution:** Gardeners will raise with the Coordinators any disputes about the Garden or with fellow Gardeners. The Coordinators [*Leadership team*] will have the power to hear these disputes and will resolve them in the best interest of the Garden.
- Rules Violations:** Gardeners may lose their rights to participate in the Garden if they fail to comply with any of these Rules. If a Gardener:
- endangers other Gardeners, Sponsor, neighbors, or other individuals;
 - takes or uses another Gardener's tools, supplies, or produce without permission;
 - encroaches on Garden neighbors' property;
 - grows illegal plants;
 - carries, uses or stores firearms in the Garden;
 - uses alcohol or illegal drugs in the Garden; or
 - has sexual relations in the Garden
- The Sponsor may, at its discretion, terminate immediately the Gardener's right to participate in the Garden. If that occurs, the Gardener must leave the Garden by the end of Garden hours on the termination day and may not reenter without Sponsor's permission.
- If a Gardener violates any other of these Rules, Sponsor will inform Gardener of the violation by [*sending an email to Gardener or putting a*



red flag on Gardener's plot.] Gardener will have [*one week*] to correct the violation. If the violation is not corrected within [*one week*,] as determined by the Sponsor in its discretion, the Sponsor may, at its discretion, terminate the Gardener's Agreement. After termination, Gardener will have [*two weeks*] to harvest and clean up the plot.

Upon termination for any reason, a Gardener will promptly return to the Sponsor the key to the Garden and any other Sponsor property. Terminated Gardeners are not entitled to any refunds or other payments from the Sponsor.

No Limit on Sponsor Rights:

The process described in this Section G does not (i) limit the Sponsor's ability to enforce its rights under these Rules; (ii) limit or qualify a Gardener's obligation to comply with applicable law or the Rules; or (iii) limit the Sponsor's right to notify and/or involve government authorities as it may determine.

No Refund or Other Claims:

Gardeners under no circumstances will be entitled, directly or indirectly, to any refunds, any direct, incidental, consequential, punitive, or other damages, any other forms of compensation from the Sponsor or the owner of the Garden's land, or to obtain an injunction, specific performance, or other equitable remedy, as a consequence of termination from participation in the Garden.

G. OTHER PROVISIONS

Changes in the Rules:

Sponsor may amend these Rules in its discretion without advance notice. Sponsor will provide all Gardeners with a copy of the current Rules, will post a copy of the current Rules at the Garden, and will summarize any changes in the next annual meeting. The Gardeners, through the [*Garden Coordinators/leadership team*], may propose Rules for the Sponsor's consideration.

Master Lease:

The Gardener's Agreements with individual Gardeners are subject to the master Lease between the landlord who owns the Garden's land and Sponsor. As a result, if the landlord terminates the lease, the Garden will close, and the Gardener's Agreement will terminate. At that time the Gardeners will no longer have access to the Garden.

Garden Agreement Controls:

Nothing in these Rules limits, qualifies, or otherwise affects the Garden Agreements between the Sponsor and each Gardener. Should there be any ambiguity or conflict between a Gardener Agreement and these Rules, the Gardener Agreement will control.

Waiver:

Any waiver by the Sponsor of these Rules must be in writing and signed by the Sponsor. Failure, neglect, or delay by the Sponsor at any time to enforce the provision of these Rules will not be considered a waiver of the Sponsor's rights under these Rules. Waiver of any breach or provision of these Rules or failure to enforce any breach or provision of these Rules will not be considered a waiver of any later breach or the right to enforce



any provision of these Rules.

- No Discrimination:** Sponsor will not discriminate on the basis of race, color, national origin, religion, sex, disability, age, medical condition, ancestry, marital status, citizenship, sexual orientation, gender identity, or status as a veteran [*except the Sponsor will keep available [25%] of the plots for certain groups of individuals*].
- Translations Not Binding:** Sponsor may provide Gardeners with a translation of these Rules and related summaries or other explanatory materials. Sponsor does so as a convenience. Should there be any ambiguity or conflict between the English and the translated versions of these documents, the English language versions will control. They, not the translations, are the official, legally binding documents.
- Other Rules:** *Comment: Depending on the anticipated tenure of the garden and local circumstances, the Sponsor may wish to include Rules addressing some additional issues, such as allocation of plots when there is a waiting list to join the garden, the allocation of costs when infrastructure repairs are needed, and other topics.*



Model Garden Work Schedule

This is a simple garden work schedule created by the Power of Prevention Coalition in Waco – ensuring that programming and garden work is provided every other week. Also consider developing a weekly watering and weeding schedule – where garden volunteers take one day/week to manage daily garden care.

Cottage of Oak Springs Garden Calendar

<p>January 17 MLK Service Day</p>	<p>January</p> <table border="1"> <thead> <tr><th>Su</th><th>Mo</th><th>Tu</th><th>We</th><th>Th</th><th>Fr</th><th>Sa</th></tr> </thead> <tbody> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td>1</td></tr> <tr><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td></tr> <tr><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td></tr> <tr><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td></tr> <tr><td>30</td><td>31</td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table>	Su	Mo	Tu	We	Th	Fr	Sa							1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31						<p>February</p> <table border="1"> <thead> <tr><th>Su</th><th>Mo</th><th>Tu</th><th>We</th><th>Th</th><th>Fr</th><th>Sa</th></tr> </thead> <tbody> <tr><td></td><td></td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr> <tr><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td></tr> <tr><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td></tr> <tr><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td></tr> <tr><td>27</td><td>28</td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table>	Su	Mo	Tu	We	Th	Fr	Sa			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28						<p>February 3 Seeding Indoors MARIA SOLANO February 17 Soil Preparation JO LEEN</p>
Su	Mo	Tu	We	Th	Fr	Sa																																																																																								
						1																																																																																								
2	3	4	5	6	7	8																																																																																								
9	10	11	12	13	14	15																																																																																								
16	17	18	19	20	21	22																																																																																								
23	24	25	26	27	28	29																																																																																								
30	31																																																																																													
Su	Mo	Tu	We	Th	Fr	Sa																																																																																								
		1	2	3	4	5																																																																																								
6	7	8	9	10	11	12																																																																																								
13	14	15	16	17	18	19																																																																																								
20	21	22	23	24	25	26																																																																																								
27	28																																																																																													
<p>March 3 Garden supply Donation Drive MARILYN BOOTH MARIA SOLANO March 17 Work Day ASHLEY WILLIAMS March 31 Spring Planting ASHLEY WILLIAMS</p>	<p>March</p> <table border="1"> <thead> <tr><th>Su</th><th>Mo</th><th>Tu</th><th>We</th><th>Th</th><th>Fr</th><th>Sa</th></tr> </thead> <tbody> <tr><td></td><td></td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr> <tr><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td></tr> <tr><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td></tr> <tr><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td></tr> <tr><td>27</td><td>28</td><td>29</td><td>30</td><td>31</td><td></td><td></td></tr> </tbody> </table>	Su	Mo	Tu	We	Th	Fr	Sa			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			<p>April</p> <table border="1"> <thead> <tr><th>Su</th><th>Mo</th><th>Tu</th><th>We</th><th>Th</th><th>Fr</th><th>Sa</th></tr> </thead> <tbody> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td>1</td></tr> <tr><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td></tr> <tr><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td></tr> <tr><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td></tr> <tr><td>30</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table>	Su	Mo	Tu	We	Th	Fr	Sa							1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30							<p>April 14 Education—Bottle irrigation system SAMANTHA GAMMEL April 28 Herb Garden Planting MARIA SOLANO</p>
Su	Mo	Tu	We	Th	Fr	Sa																																																																																								
		1	2	3	4	5																																																																																								
6	7	8	9	10	11	12																																																																																								
13	14	15	16	17	18	19																																																																																								
20	21	22	23	24	25	26																																																																																								
27	28	29	30	31																																																																																										
Su	Mo	Tu	We	Th	Fr	Sa																																																																																								
						1																																																																																								
2	3	4	5	6	7	8																																																																																								
9	10	11	12	13	14	15																																																																																								
16	17	18	19	20	21	22																																																																																								
23	24	25	26	27	28	29																																																																																								
30																																																																																														
<p>May 12 Work Day May 26 Education—Rain barrel</p>	<p>May</p> <table border="1"> <thead> <tr><th>Su</th><th>Mo</th><th>Tu</th><th>We</th><th>Th</th><th>Fr</th><th>Sa</th></tr> </thead> <tbody> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr> <tr><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td></tr> <tr><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td></tr> <tr><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td></tr> <tr><td>29</td><td>30</td><td>31</td><td></td><td></td><td></td><td></td></tr> </tbody> </table>	Su	Mo	Tu	We	Th	Fr	Sa	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31					<p>June</p> <table border="1"> <thead> <tr><th>Su</th><th>Mo</th><th>Tu</th><th>We</th><th>Th</th><th>Fr</th><th>Sa</th></tr> </thead> <tbody> <tr><td></td><td></td><td></td><td></td><td>1</td><td>2</td><td>3</td></tr> <tr><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td></tr> <tr><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td></tr> <tr><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td><td></td></tr> </tbody> </table>	Su	Mo	Tu	We	Th	Fr	Sa					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		<p>June 9 Cooking Demonstration JESSICA K. June 23 Seeding Indoors for Fall Garden</p>							
Su	Mo	Tu	We	Th	Fr	Sa																																																																																								
1	2	3	4	5	6	7																																																																																								
8	9	10	11	12	13	14																																																																																								
15	16	17	18	19	20	21																																																																																								
22	23	24	25	26	27	28																																																																																								
29	30	31																																																																																												
Su	Mo	Tu	We	Th	Fr	Sa																																																																																								
				1	2	3																																																																																								
4	5	6	7	8	9	10																																																																																								
11	12	13	14	15	16	17																																																																																								
18	19	20	21	22	23	24																																																																																								
25	26	27	28	29	30																																																																																									
<p>July 7 Education July 21 Work Day—till</p>	<p>July</p> <table border="1"> <thead> <tr><th>Su</th><th>Mo</th><th>Tu</th><th>We</th><th>Th</th><th>Fr</th><th>Sa</th></tr> </thead> <tbody> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td>1</td></tr> <tr><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td></tr> <tr><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td></tr> <tr><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td></tr> <tr><td>30</td><td>31</td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table>	Su	Mo	Tu	We	Th	Fr	Sa							1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31						<p>August</p> <table border="1"> <thead> <tr><th>Su</th><th>Mo</th><th>Tu</th><th>We</th><th>Th</th><th>Fr</th><th>Sa</th></tr> </thead> <tbody> <tr><td></td><td></td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr> <tr><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td></tr> <tr><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td></tr> <tr><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td></tr> <tr><td>27</td><td>28</td><td>29</td><td>30</td><td>31</td><td></td><td></td></tr> </tbody> </table>	Su	Mo	Tu	We	Th	Fr	Sa			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			<p>August 4 Plant Fall Garden August 18 Education</p>
Su	Mo	Tu	We	Th	Fr	Sa																																																																																								
						1																																																																																								
2	3	4	5	6	7	8																																																																																								
9	10	11	12	13	14	15																																																																																								
16	17	18	19	20	21	22																																																																																								
23	24	25	26	27	28	29																																																																																								
30	31																																																																																													
Su	Mo	Tu	We	Th	Fr	Sa																																																																																								
		1	2	3	4	5																																																																																								
6	7	8	9	10	11	12																																																																																								
13	14	15	16	17	18	19																																																																																								
20	21	22	23	24	25	26																																																																																								
27	28	29	30	31																																																																																										
<p>September 15 Work Day September 29 Education</p>	<p>September</p> <table border="1"> <thead> <tr><th>Su</th><th>Mo</th><th>Tu</th><th>We</th><th>Th</th><th>Fr</th><th>Sa</th></tr> </thead> <tbody> <tr><td></td><td></td><td></td><td></td><td></td><td>1</td><td>2</td></tr> <tr><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr> <tr><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td></tr> <tr><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td></tr> <tr><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr> </tbody> </table>	Su	Mo	Tu	We	Th	Fr	Sa						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	<p>October</p> <table border="1"> <thead> <tr><th>Su</th><th>Mo</th><th>Tu</th><th>We</th><th>Th</th><th>Fr</th><th>Sa</th></tr> </thead> <tbody> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td>1</td></tr> <tr><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td></tr> <tr><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td></tr> <tr><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td></tr> <tr><td>30</td><td>31</td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table>	Su	Mo	Tu	We	Th	Fr	Sa							1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31						<p>October 13 Cooking demonstration October 27 Pumpkin Party</p>
Su	Mo	Tu	We	Th	Fr	Sa																																																																																								
					1	2																																																																																								
3	4	5	6	7	8	9																																																																																								
10	11	12	13	14	15	16																																																																																								
17	18	19	20	21	22	23																																																																																								
24	25	26	27	28	29	30																																																																																								
Su	Mo	Tu	We	Th	Fr	Sa																																																																																								
						1																																																																																								
2	3	4	5	6	7	8																																																																																								
9	10	11	12	13	14	15																																																																																								
16	17	18	19	20	21	22																																																																																								
23	24	25	26	27	28	29																																																																																								
30	31																																																																																													
<p>November 10 Work Day</p>	<p>November</p> <table border="1"> <thead> <tr><th>Su</th><th>Mo</th><th>Tu</th><th>We</th><th>Th</th><th>Fr</th><th>Sa</th></tr> </thead> <tbody> <tr><td></td><td></td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr> <tr><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td></tr> <tr><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td></tr> <tr><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td></tr> <tr><td>27</td><td>28</td><td>29</td><td>30</td><td></td><td></td><td></td></tr> </tbody> </table>	Su	Mo	Tu	We	Th	Fr	Sa			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30				<p>December 8 Education December 22 Work Day</p>																																																		
Su	Mo	Tu	We	Th	Fr	Sa																																																																																								
		1	2	3	4	5																																																																																								
6	7	8	9	10	11	12																																																																																								
13	14	15	16	17	18	19																																																																																								
20	21	22	23	24	25	26																																																																																								
27	28	29	30																																																																																											