

The Dreamer's **HOMESTEAD GARDEN**

6 SIMPLE STEPS FROM PLAN TO
PRODUCE FOR SELF-SUFFICIENCY



SOPHIA HALL

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EASYGREENGUIDES

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INTRODUCTION



*“The glory of gardening: hands in the dirt, head in the sun, heart with nature. To nurture a garden is to feed not just the body, but the soul.” – **Alfred Austin***

Years ago, I moved with my husband to a small town in the Oklahoma Panhandle. We settled down in a modest three-bedroom bungalow with a fenced-in backyard full of yellowing grass. We stared at that space, trying to decide what to do with it. When spring came around, our neighbors sprang to life and our neighborhood became a flurry of activity.

Our minds were blown at how busy our stretch of street became once the weather started warming up. Over white picket fences, I could see families in various yoga-like poses, working the soil. I chatted with a few of them, who were all too eager to show me photos of their fat tomatoes and juicy strawberries. The most exciting part of their yearly planting tradition was that they ate what they grew themselves and shared the surplus with each other. This inspired me with an idea: Why don't we plant fruits, vegetables, flowers, and more in our own backyard? And that is how I ended up starting my own homestead garden. That was almost a decade ago.

*“Gardening adds years to your life and life to your years.” – **Unknown***

It is easy to stroll into a supermarket and fill carts with fruits and vegetables, so why grow your own? It was not a hard sell to my husband and me. The reasons that drew us to homesteading were as important to us then as they are now. For me, homesteading is about more than saving \$0.50 on radishes every time I go grocery shopping (although that is nice). It's about being self-reliant, connected to nature, and all-around just living a simpler life. There is something fulfilling about growing your own food; it's almost like our ancestors have been doing it for thousands of years! We ate what we tended ourselves, so we knew what we were putting into our bodies. We were happy to get our hands dirty and get some exercise outside with the wind on our faces. You are healthier, and you swipe your credit card less at the grocery store. Time spent tending the homestead is also quality family bonding time. Of course, gardening has many other benefits, but these are the ones that resonate the most with me.

Food is a cornerstone of self-sufficiency. One thing I learned from years of being a teacher: no matter how great your skillset or how wonderful the subject is, if a pupil's stomach is empty, they won't hear a thing you say. They cannot think. They cannot play. They cannot learn. Transpose that to your experience as an adult, and you get the drift.

Sometimes the unexpected happens and nasty surprises get thrown your way. One March weekend, we had a horrible storm that hung icicles on trees and blew out electrical grids. Most grocery stores in our town had to throw dumpsters' worth of foodstuff as their coolers transformed into warmers. Frantic hoarders wiped out the rest of the shelves. Our family's saving grace was that we still had enough preserves and fresh food from our winter garden. Even our neighbors had their own supplies to tide them over until power came back three days later. Homesteading gives you that kind of resilience and more.

I know homesteading can sound a bit daunting and exclusive to a particular group of people, but trust me when I say that you really don't need anything extraordinary to do it. Like most life skills in the

world, it's just a matter of will and practice. Perfecting it can take a long time, but you shouldn't feel embarrassed to call yourself a homesteader at zero logged hours. Assume that identity from the get-go and learn along the way. It is a mindset and an attitude that you simply need to imbibe.

Homesteading doesn't require you to spend all day in the backyard. You should still be able to work your nine-to-five. There is no such thing as a stereotype homesteader - anybody can be one. Just start with one small step. You will eventually build up the momentum to do so much more than that.

I titled the book *The Dreamer's Homestead Garden: Six Simple Steps from Plan to Produce for Self-Sufficiency* because I recognize that you've dreamed of growing your own food for a long time now. This book is written for you. I have made the steps and the language as simple as possible to push you gently out the door, leaving you no excuses not to carry on, on your own. You will not get everything perfect the first time. You will make many mistakes. However, the point is not to focus on the negatives.

“There are no gardening mistakes, only experiments.” –

Janet Kilburn Phillips

To dream is to aspire for something that is yet to come. All it takes to get there is one small step at a time. Let your dream of a homestead garden begin here. I will hold your hand through six steps, taking you from plan to produce!

A Note on Sustainability

As much as possible, make your homestead garden a laboratory of sorts for waste management. Be mindful of the three Rs: reduce, reuse, and recycle. Be creative in using old and used items for your projects. Early on, I discovered that the town's hardware stores threw out their wooden pallets used for delivering goods. They gave me permission to collect dozens of them from their dumpsters to

make raised plant beds, fences, and trellises. Then, a friend who worked at a tire center donated several old tires for protection against the notorious Oklahoma tornado winds.

I also repurposed plastic items (water bottles, cracked food containers, etc.) as pots, tubes, posts, blocks, and more. Just be sure to check under each container for their number type. Numbers 2, 4, and 5 (surrounded by the recycling symbol) may be reused or recycled in your garden as long as their original contents were also food-grade. Number 1 containers are also viable candidates but do not expose them to direct and extreme heat or light. Use them in the shade or your shed.

If I really needed to buy some materials or supplies, I learned not to go for the overly expensive and fancy ones. A homestead garden is cared for throughout the year. Naturally, things break down outside and may need to be replaced—no need to buy a \$100 trellis when a couple of tree branches work. While I recommend this for things constantly out in the elements, I'd suggest investing in tools that you keep inside!

STEP ONE: ASKING THE QUESTIONS



I wish I could write a book on homestead gardening that covers every facet of the subject and is applicable to every location on Planet Earth. Sadly, I am not a walking encyclopedia. Even if I were, such an ocean of information in one volume would not benefit anyone. It would just lead to a tsunami of know-how, which would overwhelm you. The more efficient approach is to hand you a shortlist of incisive questions.

Questions are the lifeblood of learning, which is why I encourage my pupils to ask me anything. It is the same thing when it comes to homesteading. Before you stick that shovel into the ground to make your first hole, try to answer some key questions I have listed here. If it helps, you can download a follow-along worksheet from my website, www.easygreenguides.com/gardenguide , containing a questionnaire and guide for initial planning.

How Much Land Do I Need?

In May 2021, *The New York Times* reported about a Belgian farmer who had moved a 200-year-old border marker farther up his land by seven feet. By doing so, he had inadvertently expanded Belgian territory by a teeny-tiny bit while shrinking that of the French. Although he did not comment for the article, I could guess the farmer's motive: he needed additional space for his crops.

While I do not prescribe an action that might trigger an international incident, I do encourage you to make do with what you have, whether it is just a square foot or an entire acre. You start with what you have. I know some people who live in high-rise apartments who utilize their balconies for gardening. If all you have are pots perched precariously on a windowsill, then run with that. For the sake of this book, I will usually be talking about 8 ft x 4 ft raised beds. However, you are welcome to use whatever you have.

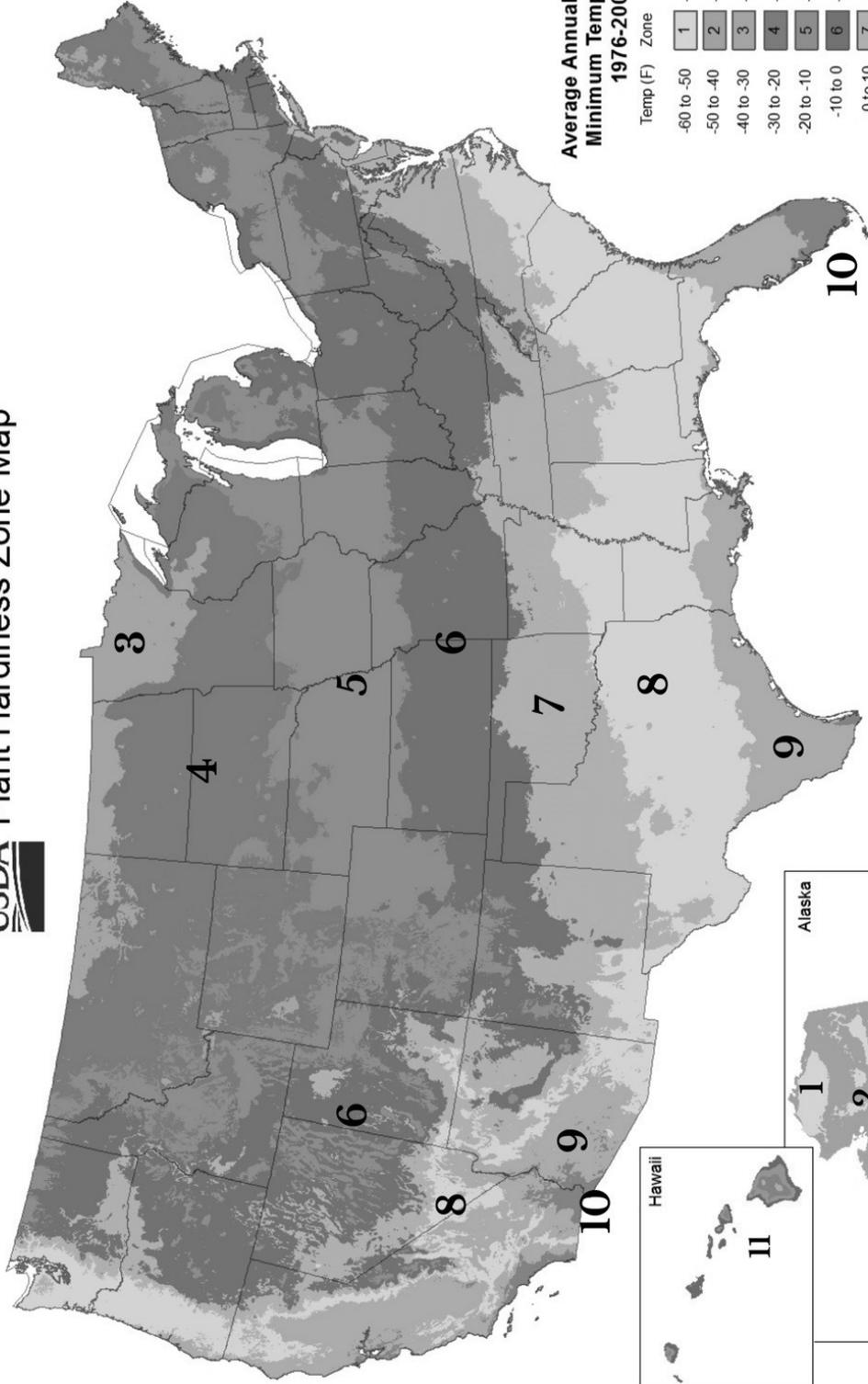
Understandably, you might want to aim high for your harvest volume, but manage your expectations. In the beginning, you will still need to make grocery runs at the supermarket, but that is okay. Even pioneer homesteaders depicted in the book and TV series, *The Little House on the Prairie*, needed a general merchandise store in their town. After all, plows do not come from rosemary bushes, and buckets do not magically appear under cows' udders. A store does not diminish the value of your homestead garden. It is just a gap filler.

What Climate Zone Am I in?

Atmospheric temperatures, windspeeds, and durations of weather events can make or break your gardening project. One of my costly mistakes in the early days was planting lettuce seedlings in late April, against everybody's advice. I felt the weather was already warm enough, but Mr. Jack Frost returned a few days later with a hailstorm. I had to make another trip to the garden store to replace my massacred greens. So yes, it is important for you to know your climate zone. If you know what it is, you can also figure out which plants are perfect for your area. There is a reason palm trees are not grown in Antarctica.

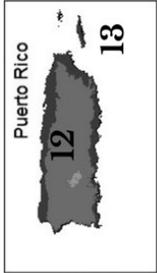
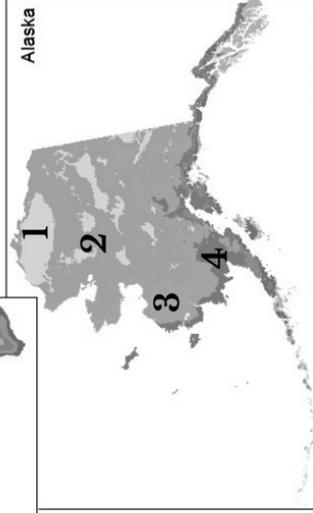
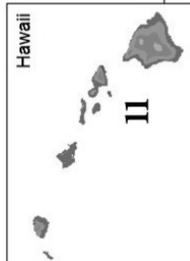
The US Department of Agriculture formulated "hardiness zones" to show which plants can thrive within particular climate zones. While most fruits and vegetables prefer bikini weather, some are tough enough to thrive in snow. Once you determine which ones those are, you can keep busy in your garden all year round.

USDA Plant Hardiness Zone Map



Average Annual Extreme Minimum Temperature 1976-2005

Temp (F)	Zone	Temp (C)
-60 to -50	1	-51.1 to -45.6
-50 to -40	2	-45.6 to -40
-40 to -30	3	-40 to -34.4
-30 to -20	4	-34.4 to -28.9
-20 to -10	5	-28.9 to -23.3
-10 to 0	6	-23.3 to -17.8
0 to 10	7	-17.8 to -12.2
10 to 20	8	-12.2 to -6.7
20 to 30	9	-6.7 to -1.1
30 to 40	10	-1.1 to 4.4
40 to 50	11	4.4 to 10
50 to 60	12	10 to 15.6
60 to 70	13	15.6 to 21.1



OSU
 Agricultural Research Service
 Mapping by the PRISM Climate Group, Oregon State University, <http://prism.oregonstate.edu>, 2012

What Soil Do I Have?

I once joined my husband on a trip to Kenya. During one of our downtimes, we went hiking through Karura Forest within the capital Nairobi. It had rained the previous days, so the trails were slick with viscous red mud. In short order, I got myself trapped in a puddle, depth unknown. By the time I pulled myself from the mire and stood on firm ground, my husband was in stitches and pointing at my feet. I had lost my shoes and socks to the mud gods. I felt the nakedness of my soles as I went back to our hotel with my useless hubby, laughing all the way.

Soil is not to be trifled with when gardening. It is the primary material in which plants grow. If you do not find out what yours is—primarily, its composition (clay, sand, silt, peat, chalk, or loam)—you can adversely affect the growth of your future produce. If the soil is too dense, like clay, your corianders will dehydrate. If it is too loose, like sand, the roots will drown. A simple method of checking soil composition is to do the ball test.



Soil Test

1. Dig a small hole in the ground and grab a palmful or three of soil about four inches in.
2. Scatter the soil onto a clean, flat surface and remove non-soil elements (for example, roots, plastic, paper, stones, twigs, etc.).
3. If you see some clumping (called aggregates), break them apart with your hand or with any tool that can crush them completely flat.
4. Scoop a handful of soil with your hand and add water to it gradually until it becomes moist but firm to the touch. You might need to throw in more water or soil until you get the right balance.

5. Ball up the putty-like soil. If it cannot form into a sphere despite your best efforts, then it is *sandy soil* . If it easily shapes into a ball, then proceed to the next test.
6. Squeeze the ball in your hand until soil oozes through your fingers like toothpaste. If it cannot mimic toothpaste but crumbles in your hand, it is *loamy sand* .
7. If it does come out like a ribbon 2 inches or longer you have *clay* . If it comes out like a ribbon less than 2 inches, you have *loam*. Soil can fall into many categories, but all you need to know for gardening is: clay, sand, and loam.

It would be best to avoid clay and sandy types for your garden; they are like days-old food served at a buffet restaurant. They can be harmful to most plants unless they have an iron stomach. The ideal soil in most circumstances should be loamy because it keeps just the right amount of water and nutrients in its composition.

Many gardening experts also recommend checking the pH balance (acidity or alkalinity) and salinity of the soil. That information can help your planting plans, but it's not a deal-breaker if you don't test them right now. My first garden was a laboratory of trials and errors—mostly the latter—and that was okay. The years since then reflected the lessons I learned. It wasn't until a few years ago that I started to measure soil pH and salinity. Before then, my garden still grew despite my ignorance of its acid, alkaline, and salt contents. So do not let that lack of knowledge delay you from getting started.

How Much Sun Do I Have Access to?

When I was a newbie, one of my original fountainheads of information was the elderly proprietor of the go-to garden shop in town. She paid a visit to our house and surveyed the backyard. Before long, she was spouting directions. “Over there, along the fence, is where you should plant the romaine. They do not like too much of the sun. This row and this row are where you should line up your tomatoes and peppers. They worship the sun.” And so on and so forth.

That exercise taught me that plants have unique sun exposure requirements. When you read that your habaneros need *full sun* , it means that you have to give them at least *six hours of full sunlight* . For optimal results, some sun-worshipping plants even demand *eight to 10 hours* of it. On the other hand, some of your plants might need *partial shade* or *partial sun* (both terms are used interchangeably). In that case, place them in an area with only *three to six hours of direct sun every day* . Any more than that can burn them to a crisp.

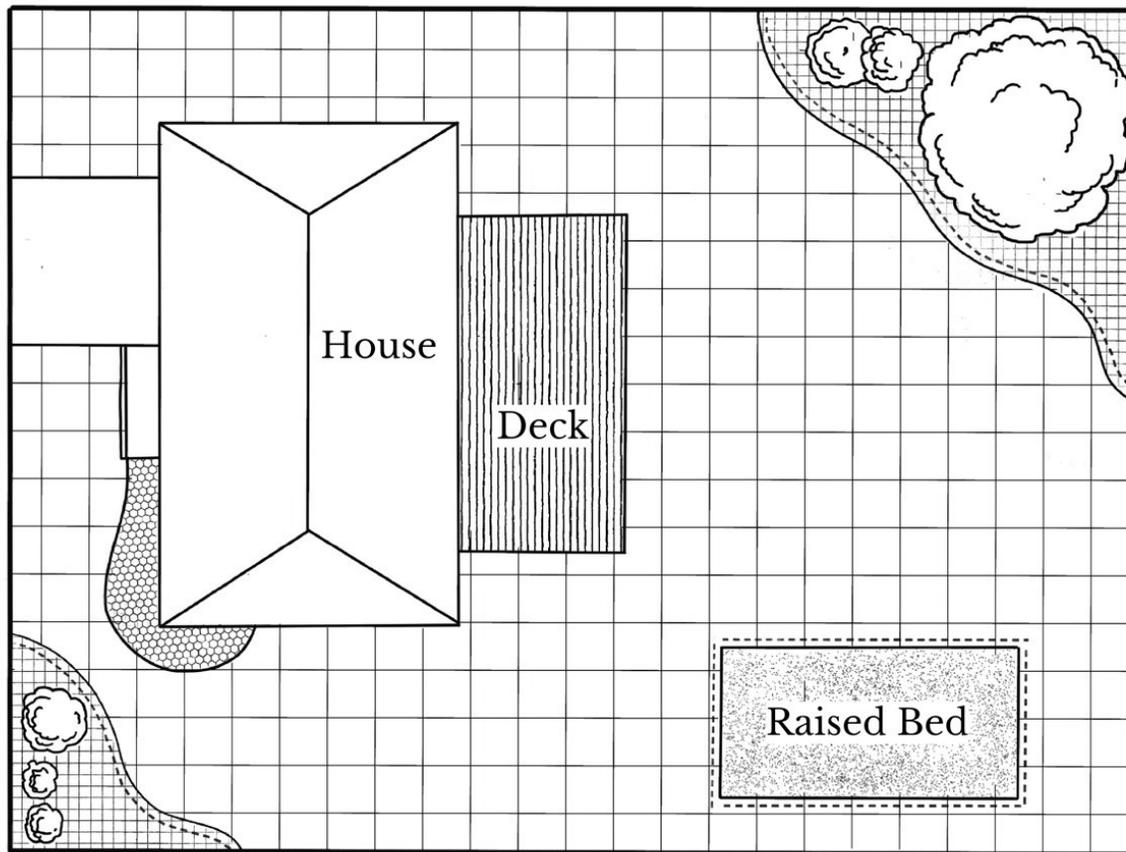
The majority of garden plants need full sun to trigger photosynthesis to create nutrients. The sun's position in the sky depends on the calendar month (Earth's orbit around the sun) and the time of day (Earth's rotation on its axis). Your garden layout should ensure that plants that need full sun can receive it wherever the sun is positioned. If you don't have full sun for the necessary amount of time, you should grow plants that can thrive in the shade.



GUIDE TO GARDEN Plotting Based on Sun Exposure

1. Divide your would-be garden into a grid.
2. In hourly increments, note the wash of sunlight across each section as the day progresses.

Once you figure out how the sun moves across your garden, you can plot where each plant variety goes.



An example sun grid (your squares can be larger!)

Using a grid like the one above, mark rectangular boxes to roughly correspond to the location of your would-be raised beds. It's a lot like playing Battleship. Position your planting areas to get the most out of their environment, including sun, soil, wind, rain, and shade.

You must account for more than just planting space. You also need room for walking, an irrigation system, a compost pile, and an all-purpose shed. Draw these into your layout. Don't worry about the scale of the drawing; this is just to get a rough idea of where things will fit in your space. In my early days of homesteading, my footpaths were too narrow, so I constantly lost my balance and fell into the planting areas. I committed more herbicide than actual chemicals did by stepping on dozens of seedlings and full-fledged plants.

How Much Rainfall Do I Get?

Rainwater is the beverage of choice for most plants on Earth. If your garden were a bar, rainwater would outsell Guinness all day, every day, all year long. It comes with its own nutrients, such as nitrates, for your florae, so you cannot overlook the amount you get every season. I had a bit of help determining the expected rainfall in my area from the local farmer's almanac, which I bought from the supermarket. It contains weather forecasts and comes with planting-specific information based on them.

In my Oklahoma Panhandle town, I discovered that farmers still paid a great deal of attention to radio broadcasts. In many ways, I learned from the old-timers who listened to such announcements much more than I did from Farmer Google.

If there is little rainfall in your area, either grow plants that are not thirsty creatures or ration the amount of water to give each garden section. To this end, you should plan for an irrigation system.

What Are the Most Common Pests and Diseases in My Location?

Nothing was more frightful to newbie gardener me than to walk around my garden in flip-flops only to be bitten by a million black ants. They were not the only interlopers, though. Soon enough, I encountered aphids, weevils, and cutworms, too.

Do not expect a pristine garden. It's a natural magnet for pests and diseases. Some of these intruders only cause cosmetic damage (for example, holes on leaves). However, others can rot the insides of your fruits and vegetables, ruining them beyond redemption.

The fundamental principle to follow when dealing with pests and diseases is not to poison yourself in the process. I will never advocate for industrial-strength chemical warfare against them. Instead, when you identify precisely what's pestering you, find the most organic, non-toxic way to deal with them. Often, your arsenal

can be found right in your pantry. Many organic pest and disease control concoctions use vinegar, olive oil, salt, and other edible items. On the extreme side, some suggestions might point you toward mild soapy sprays (neighbors named Dawn dishwashing liquid as a favorite).

A last word: one of the most obvious differences between your produce and those at supermarkets is appearance. A jaw-dropping truth of our time is that supermarket chains normally “curate” the look of the fruits and vegetables on their shelves. Bruised apples, overly curved eggplants, dwarf cucumbers, twin bananas, pale watermelons, and other deformed, discolored produce never reach the selling floor. Instead, they get diverted to dumpsters to feed all the rats, flies, and feral cats diving into their depths.

Do not be a Shrek about your Fiona-like produce. As long as they are edible, don't be bothered by their aesthetic imperfections. The scars on my heirloom tomatoes were from valiantly bracing themselves on their branches as the notorious gale-force winds of Oklahoma whipped them about. I made them into a delicious homemade pasta sauce. They got digested in the same way as the rest of my food, regardless of appearance.



Seedling Bank

Start your homestead gardening plans by asking yourself the following key questions:

- How much land do I need?
- What climate zone am I in?
- What soil do I have?
- How much sun do I have access to?
- How much space do I have?
- How much rainfall do I get?
- What are the most common pests and diseases which plague plants in my location?

STEP TWO: BUILDING THE GARDEN



Now that you have asked and answered key questions to help you plan, it is time to put the information to good use. You'll bring your grid diagram to life and create an actual homestead garden, not just a lawn on which you dump pots and planters everywhere. For maximum fun and pleasure, approach your project deliberately and thoughtfully.

Years after my first gardening attempt, I still gasp in amazement whenever flowers bloom and crops mature toward the harvest season. I can barely contain my excitement, knowing that they flourished under the careful nurturing of my hands. It is inspiring to see well-laid plans come to fruition.

Since I want you to survive your first gardening effort, let us first tackle the issue of safety. Accidents and unexpected events do happen, so to mitigate them, always use your common sense and abide by recommended safety measures.

SAFETY MEASURES

- Read instructions thoroughly, and follow them cautiously, carefully, and judiciously.
- Be aware of utility lines that may be right under your garden. They may be for communications, water, electricity, or gas. Seek advice from relevant agencies before any digging. If you hit one of them by accident and cause a street-wide outage, you might win the award for worst neighbor of the year.
- Handle tools according to the manufacturer's manual. Nobody wants to lose a limb or an eye, especially from carelessness.
- Wear sufficient protection for your hands, knees, feet, and eyes (for example, gloves, kneepads, and closed-toe shoes). They are the body parts most vulnerable to flying twigs, wayward chainsaws, and the rare rattlesnake.
- Seek out proper permissions when building permanent structures in your garden. You might need official approval from your homeowners' association, city council, or similar entities. It never hurts to double-check.
- If you have long hair, keep it tied up, and do not wear loose clothing. They can get caught on barbed wire, a nail, or a weed wacker.
- In the rare case that you end up using chemicals in your fertilizers and potting mixes, be sure to wear face masks and rubber gloves.

Safety first all the way, my friend!

Weeding the Ground

In Step One, "How much space do I have?" was a key question you needed to answer. It referred not only to the activity of planting but also to walking, irrigating, composting, and storing. In this Step Two sub-step, you will use your answer to that question to guide you in preparing the ground. Have a look again at your layout and identify

the designated areas in your yard as you had drawn them. Use string and stakes or something similar for marking them.

As the first order of the day, you should get rid of all weeds and unwanted plants in your soon-to-be garden. In the beginning, I focused only on my actual planting space. However, I soon discovered that unattended weeds outside of that space always sneakily found their way into planting rows. A thorough sweep of your entire garden area can prevent this from happening.

Since I do not recommend chemicals for this endeavor, I will share three methods that are as natural as you can get. The first method is *digging* . If you only have a small plot to tend, then you can use a trowel, digging fork, shovel, or hoe to pull the weeds out by their roots. This physical removal is guaranteed to burn lots of calories and provides instant gratification at the disappearance of your nemeses. If you have a bigger space to clear or do not fancy physical exertion, you can use a tiller to dig them up. I wanted to start right away, so I hired someone with the proper equipment to make short work of it.

You can also clear your yard using *solarization* , which takes six to eight weeks to accomplish. For this, you need to enlist the sun's help; it is a method best used in places with high sun exposure. You'll need to cut all weeds and plants as close to the roots as possible and then water them. Afterward, cover the entire area with clear or black plastic sheets. Clear ones will heat up the soil much faster. Black ones will trap heat much more effectively. The point is to cook the plants to death. Once dead, you can remove them from the ground or till them into the soil no more than two inches deep— instant compost for your plants! The downside is that it also kills good organisms and will be an unattractive sight in your yard for a few weeks.

The third and final method of killing weeds is *smothering* . As in solarization, you'll need to cut the weeds close to their roots. Then you'll cover them with cardboard or at least six layers of newspaper. Smothering prevents light from getting through to aid with photosynthesis. It also adds organic material to the soil. Unlike

solarization, smothering does not depend too much on weather conditions. The disadvantage of smothering is the length of time it takes to do a thorough job: one and a half to two months.



When you remove weeds, lawn grass, or other unwanted plants from your land, you are taking organic material from it. You must be ready to do the next ground preparation as soon as possible to avoid compromising the quality of your soil. Do not procrastinate, or nature will replace things for you, and you might not like what starts growing.

Composting Waste

Composting is part of the groundwork (pun intended) of gardening. It is the act of breaking down organic matter for use in growing your plants. It is a way of creating homemade fertilizer. There are two main types of composting:

1. *Hot composting* involves the decomposition of organic material by means of the heat they generate when you pile

them up and leave them to the mercy of the elements. There are two types of hot composting:

2. *Aerobic composting* requires you to turn the compost over every few days to introduce air inside the pile. It's a quick way to make your own fertilizer, but it does require a lot of energy from you for shoveling and raking. If done right, you can expect to use the compost in about 14 to 21 days.
3. *Anaerobic composting* does not need your biceps for turning over. Just leave the scraps and stuff alone. They will decompose more slowly than with aerobic composting, usually taking four weeks to a year or more to do so.
4. *Vermicomposting* is the decomposition of organic matter by employing worms and bacteria in moisture. The worms process the waste into nutrient-rich castings in a fast and efficient way.

While you are free to consider hot composting, I highly recommend vermicomposting. I had first tried both aerobic and anaerobic composting, but once the Oklahoma Panhandle hit 100 degrees Fahrenheit in the summer, I was in hell. Being the novice that I was, I was fairly sure I had done something wrong because my composting pile reeked worse than a pigsty. Not exactly the ambiance you want wafting about when friends drop by. That's why I moved on to vermicomposting. When done correctly, there is no risk of unpleasant odors escaping from its container. I also value the concept of symbiosis. While I feed the worms, they provide me with "black gold"—worm castings rich in iron, sulfur, calcium, nitrogen, phosphorus, and potassium.

To understand the pros, cons, similarities, and differences of hot composting and vermicomposting, let me give you a side-by-side comparison:

Point of Comparison	Hot Composting	Vermicomposting
Depth	Does not matter	At least 6-12 inches deep
Location	Outside in the garden	Inside or outside
Volume of Organic Matter	As much as you want	Half of the worms' weight per week at most
Aeration	Aerobic: manually turn pile every 3-4 days. Anaerobic: no air required	Created by burrowing of worms
Ingredients	Browns, greens, water. Refer to next table	Same as hot composting

Regardless of which composting type you choose, only three ingredients are necessary to get started: browns, greens, and water. Water is self-explanatory. It is the medium for introducing essential bacteria into the mix. There has to be enough only to keep organic matter moist. It should not overwhelm the rest of the pile or drown the poor worms. Now, we just need to focus on browns and greens.

Browns are the organic materials that give you carbon, while greens provide nitrogen. I came up with a list for each type as your guide. It is a combination of information from the US Environmental Protection Agency and several other sources, including my own personal experience:

Browns

Branches (dead)
Bread
Cardboard (shredded)
Corncobs
Cotton (no absorbed chemicals or substances)
Dryer lint
Eggshells
Fireplace ashes (from firewood)
Flowers (dried)
Fur
Grains
Hair
Hay
Leaves (dead)
Newspapers (shredded)
Nutshells
Paper
Paper towels (food-soiled)
Pinecones
Pine needles
Plants (dead)
Potting soil
Sawdust
Straw
Twigs (dead)
Vines (dead)
Woodchips
Wood shavings
Wool rags (no absorbed chemicals or substances)
Yard trimmings

Greens

Banana peelings
Carrot tops
Clover
Coffee filters (paper)
Coffee grounds (soaked only in water)
Feathers
Fruit scraps
Grass clippings (hot composting only)
Horse manure
Leaves (fresh)
Plants (fresh)
Potato skins
Seaweed
Teabags
Vegetable scraps

When in doubt about the material you have, err on the side of caution. Do not include it. A belated lesson for me was not to throw everything into the hot compost pile. I was the culprit of my own smelly home in those early days. I added stuff into it indiscriminately and suffered the consequences. These are the things you should never throw into your composter and why, according to the EPA:

- Black walnut tree (any part): releases substances harmful to plants
- Coal or coal ash: may have substances toxic to plants
- Dairy products (milk, cheese, and the like): invite rats and flies and stink
- Disease- or pest-infested plants: may transfer infestations to other plants
- Fat, grease, lard, and oils: produce odors and attract pests
- Meat or fish bones and scraps: create foul smells, and invite pests and strays
- Pet wastes: may contain harmful bacteria, parasites, pathogens, and viruses
- Yard trimmings (chemical-treated): may kill beneficial composting organisms

Knowing these can refine your sorting skills further. For example, even though cardboard is acceptable for composting, a pizza box should not be included because of the grease it has absorbed. You cannot compost coffee grounds soaked in milk either. Worms cannot digest fatty substances and dairy products.

Now that we have tackled the general concepts of composting, it is time for our first project.



PROJECT #1: The Vermicomposter

Materials:

Plastic container with lid (10+ gallon capacity),

Sandpaper

Newspapers

2 pounds of redworms,

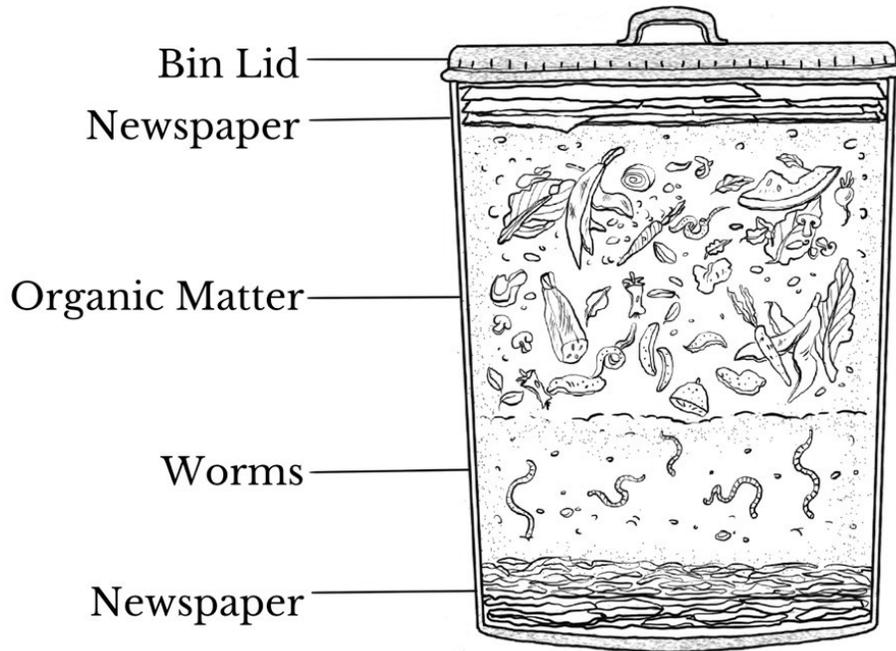
1 pound of cut-up organic matter

Tools:

Drill and drill bits

Kitchen scale

1. Wash or wipe down the container and lid to get rid of residues that might kill the worms.
2. Use a small bit (1/8 inch) to drill some holes in the bottom of the container. Use a larger bit (at least 1/2 inch) to drill air holes on the top and around the sides near the brim. Sand down all sharp edges.
3. Prepare the worm bedding by doing the following:
4. Shred newspaper pages into tiny bits.
5. Soak them in water until spongy to the touch.
6. Squeeze out excess water. The shredded paper should be moist, not dripping.
7. Put the moist paper shreds into the worm bin. Do not pack them in; keep them loose and fluffed up. Fill the container to 3/4 capacity.
8. Spread 2 lbs of worms evenly on top of the newspaper bedding and wait for them to burrow inside and out of sight.
9. Once the worms are well hidden from view, place 1 pound of organic matter on the bedding, add another layer of bedding, and cover the container with its lid. If necessary, have a kitchen scale available to weigh both the worms and the organic matter.



And that's it! Caring for your vermicomposter is essential too. Here are some important things to keep in mind when raising these beautiful beasts.

- Make sure not to feed your worms more than half their body weight per week. Overfeeding can cause the vermicomposter to build up too much moisture and drown them. It can also cause unwanted rancid odors or make the worms sick.
- Keep the container in a safe, quiet, and dark place. The sweet spot would be a location that is constantly between 40 to 80 degrees Fahrenheit and far from regular household activity - many people keep their vermicomposter in the basement.
- Monitor the activity in your vermicomposter regularly. Make sure that the worms are active and the bedding is moist. Spray some water if it dries up. If too much moisture builds up on the inner wall of the container, either add dry newspaper shreds or reduce the amount of organic matter for feeding. That moisture is caused by a lack of fresh bedding or overfeeding.

Now for harvesting! When your worm castings have built up considerably inside the container, are black in color, and smell like earth after a downpour, prepare to harvest them.

There are a few different ways to harvest worm castings, so I'll just give you a quick rundown. If you only need a small amount of compost or wish to harvest over a longer period of time, you can just grab some castings with your hand.

- The lazy gardener way: Place a bunch of food in one corner of the vermicomposter. Over a week or two, the worms will naturally migrate to that side of the bin, leaving the rest of their bounty wide open for you to scoop right out.
- The standard way: Scoop out a chunk from the vermicomposter and pour it into a mound onto a flat surface in bright sunlight or artificial light. Leave them alone for about 10 minutes to give the worms time to burrow to the bottom of the mound. They avoid light like the plague. Prepare a fresh vermicomposter to receive the worms you're about to collect.
- Transfer the clean castings to a different container and transport the clumped-up worms at the bottom of the mound to the fresh vermicomposter.
- Repeat until the entire container is empty. Clean and prepare it for the next round of vermicomposting.

A nice cup of worm tea. A common strategy is using your harvested worm castings to make worm tea. Personally, I don't do this, but I know many who swear by it. All you have to do is place your worm castings in a porous bag and steep it in a bucket of water overnight. You can also just throw the worm castings into the bucket in a pinch. Most of the nutrients are now in the water. Using the worm tea is simple: fill up a spray bottle and apply directly to your plants. You can also pour the worm tea directly into your garden if that sounds like too much work

If you're willing to put in a little effort now to save a lot of time in the future, there is another method of vermicomposting that you may be

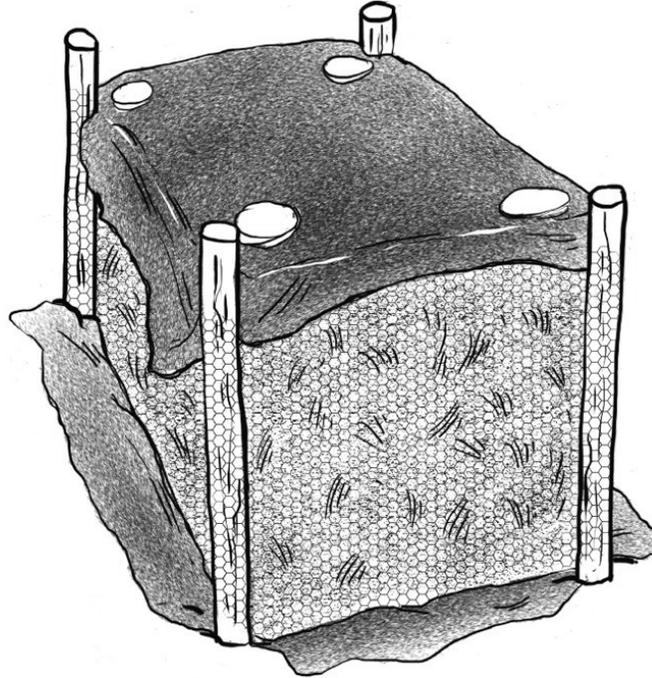
interested in. It's called **In-bed composting** , and like the name suggests, you're placing your vermicompost bins directly inside your raised beds. If this sounds intriguing to you, I've written an illustrated guide to the benefits and getting started, you can find it at:

www.easygreenguides.com/inbedcomposting .

Before I move on to the next project, a word about the worms for your vermicomposter. They are not created equal. Do not dig up the ones that live in your garden. They do not feed on the browns and greens of your compost pile. You have to use redworms (aka red wigglers), brandling worms, or manure worms. If you know horse farmers, ask them if you could collect the redworms found in their animals' dung heap. It is not the most pleasant of tasks, but it can be part of your adventure. If this is not possible, ask your friendly neighborhood garden shop if they supply them. If they do not, shop online and have them delivered to your doorstep.

The next project focuses on hot aerobic composting because it processes organic matter quicker and in higher volume than the anaerobic variety does. Get your biceps ready!





PROJECT #2: The Hot Composter

Materials: weed cloth, rebar, zip ties, organic matter

Tools: box cutters, mallet, gardening rake

1. Identify a place in your garden for the hot composter. Refer to your diagram from Step One in response to the question about space. I put mine a few feet beside an open shed, where I fixed things, transplanted seedlings, and stored materials. It was within reach of where I needed it the most.
2. Mark an area of 3 ft x 4 ft on the ground.
3. Measure the weed cloth to match the composting area and cut it to size.
4. Lay down the weed cloth on the ground and drive metal rebars through each corner to secure it.
5. Wrap durable netting material around the staked area and secure it to each rebar with zip ties. Ensure that the structure has no sharp points or edges protruding. Use the wire cutters to remove any.

6. Add organic matter by layers into the enclosed area, alternating it with a thin layer of soil and a sprinkle of water.
7. Cover the pile with weed cloth or netting material to keep the contents safe and secure from the wind and unwanted visitors, aka scavenging animals.
8. After three or four days, remove the cover and turn the pile over with a rake or shovel. Afterward, repeat steps 7 and 8 until all the organic matter is ready for harvesting. It is ready for use when it has the color of dark chocolate and smells and crumbles like moist loam. Replace the compost with fresh organic matter and begin again.

Of course, there is still plenty to learn and do for the composting part of your homestead garden, but you now have enough to get started. When I dug the first hole in my backyard, I did not have all the information and skills I wanted, but I learned along the way. I have no doubt you will, too, because it is all part of the journey.

One last thing before we move on to the next section. Let us say you really do not have the space or can't be bothered to build a composter. In that case, you can still use the dig-and-drop method to enhance the composition of your garden soil. It's a no-brainer.



THE DIG-AND-DROP METHOD

1. Dig a 1 ft deep hole near the roots of your plants.
2. Throw organic matter into the hole.
3. Cover the filled hole with soil. You can then take a photo of it for the 'gram because that is all there is to it. Nature will take care of the rest.

The D&D method is convenient because you do not have to harvest the compost. Organic matter will decompose right where it is needed, by the roots of plants that require nutrients. You do not need

to collect composting ingredients in large containers. A regular-sized bowl is good enough. Once full, you can take the kitchen scraps to your garden and follow the steps above. Easy-peasy. You will have time for that merlot before dinner.

Constructing Raised Beds

Now that you have weeded the yard and started a composting process, review the diagram of your garden again and identify your planting areas. Mark the areas of your raised beds with pegs and strings—make them visible for ease of construction and double-check them against the big picture. As your garden starts to take shape, ask yourself: are the planting areas at a good location, or should you move things around one more time? You are about to reach the point of no return (huge hassle if you have to uproot raised beds, you know), so you have to make sure that all elements are where they should be.

In this section, you will focus on building 8 ft x 4 ft raised beds. I recommend a one-foot-tall bed, so you do not struggle to find enough soil and amendments to fill it. The prescribed length and width give you at least two rows to work with per raised bed. Two feet is the average reach of a human being, so you do not have to strain yourself while working on one side. Once you are done with one row, you simply walk around to the other side and repeat the task. Your pedometer will love you for it.

Instead of planting directly into the ground, you will utilize plant boxes filled with good earth as your growing site and medium. Raised beds are recommended and even necessary where the soil condition can be a bit challenging. For example, it can be too weedy, too sandy, too gravelly, or too clayey. In such a case, you will want to have control over the situation by using raised beds. They provide the depth needed for plants to take root firmly and healthily without straining themselves. They have other advantages as well:

- You work the soil less. Direct planting requires you to weed and dig and amend the ground year in and year out. With raised beds, you can simply add compost and other amendments on top of the mounds after the harvest season. Mother Nature will take its course over late fall and into early spring. An old farmhand once told me that it is a way of letting your garden rest. I am also of the belief that the less intrusion we impose on the ground, the better off it is.
- They are kinder to your body. I may just be in my 30s, but gardening still does exact a heavy toll on my back, limbs, and joints. While it does give you a proper workout, too much of anything is never a good thing.
- They are visually pleasing. They will make your garden look tidy and manageable instead of cluttered and wild, like the Amazon rainforest.
- They keep many weeds and critters away from your crops because they are technically aboveground. It is easier to cover raised beds with weed cloth and secure it in place. Also, pest-detering installations like those against slugs and snails are more effective on raised beds.
- They enhance water drainage and are protected from flooding at their height. With the aid of gravity, any accumulated water can simply trickle down and away from plant roots, which can rot in sitting water.
- They are faster to prepare for the planting season than the ground is. Raised beds thaw much more quickly than the ground after winter, even if their height is only 12 inches. They give you a jumpstart on the season, so you can broaden the variety of plants in your garden to include those that do well in spring and enjoy a longer growing period.

How high or low a raised bed is will depend on your budget, the soil condition, and your chosen plants. If you happen to be in your golden years, then a hip-high construction spares your back and knees from the strain of bending and kneeling. Raised beds may either be free-standing or contained within a box. Boxes can be

constructed with wood pallets, corrugated metal, or other available materials. You will definitely need braces for a high raised bed.

As I mentioned earlier, I recommend a one-foot-tall raised bed. For the purpose of your next two projects, I will stick to one-foot-tall raised beds to keep things simple and inexpensive. If you want something higher (more than one-foot tall) or even higher (hip-high and not ankle-high), that is also okay! Feel free to adjust the instructions to your preferred raised bed height.



PROJECT #3: The Screwed-in Raised Bed

Materials :

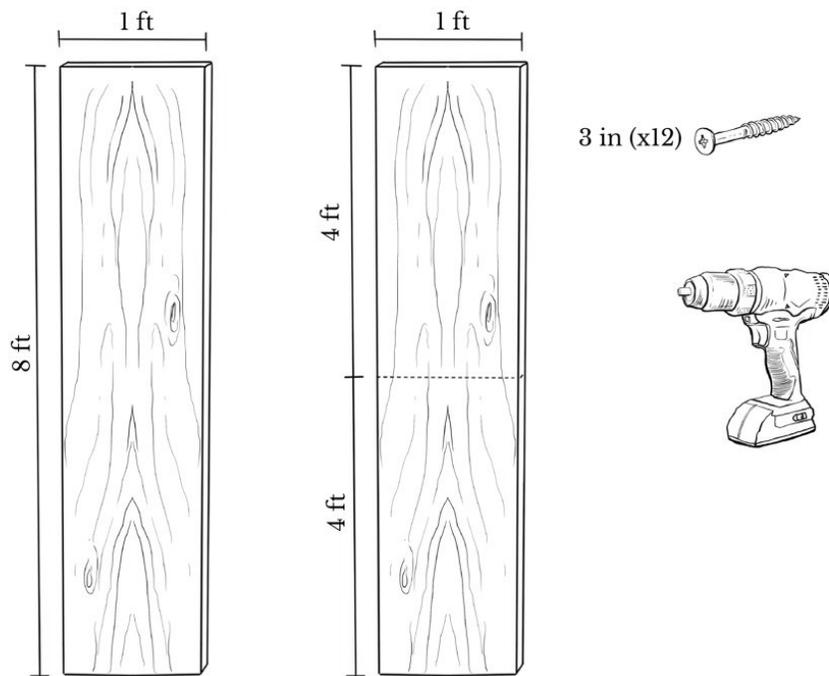
Two 8 ft x 1 ft x 1 in. boards

Two 4 ft x 1ft x 1 in. boards (or cut an 8 ft board in half)

3-inch screws (at least 12)

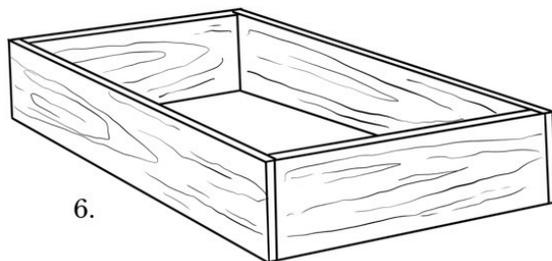
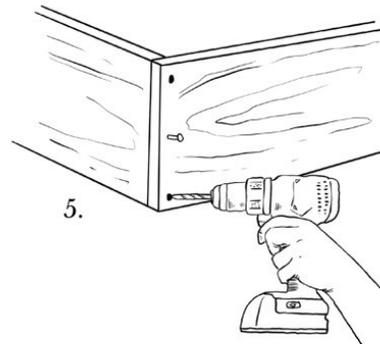
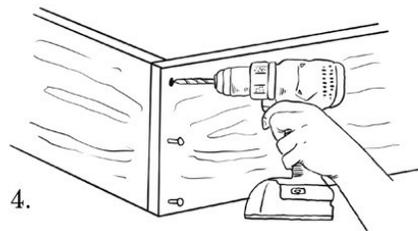
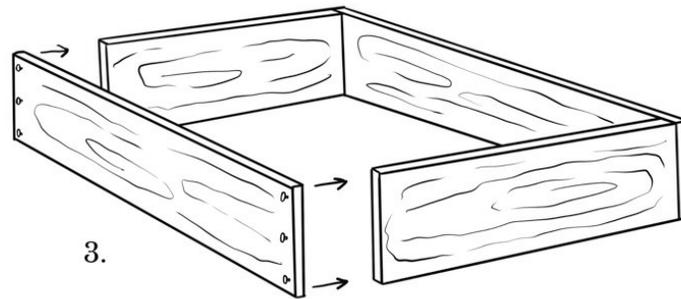
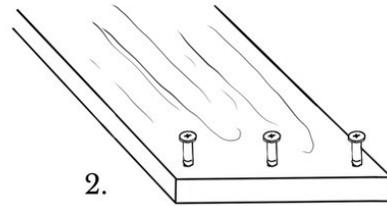
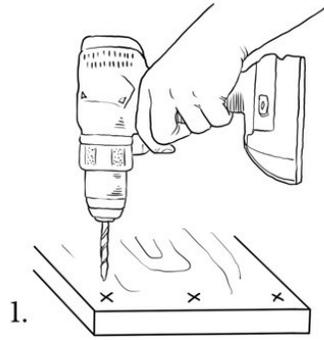
Tools:

Power drill



*The materials and tools you'll need to build your raised bed
—you can cut an 8x4 plant down the middle to make the 2*

1. Pre-drill three screw holes at each end of the longer boards, space them out evenly so they can secure the short boards properly.
2. Pre-sink the screws halfway into the holes, so they do not fall off the boards.
3. Stand a long board against a short board so that they form a right angle at one end of the board, aligned with the screws. Make sure that the top and sides of both boards are flush against each other.
4. Drill in the top screw and check that both boards are properly aligned by pivoting the long board on the screw and realigning it with the short board if needed.
5. Drill in the bottom screw before you do the middle screw.

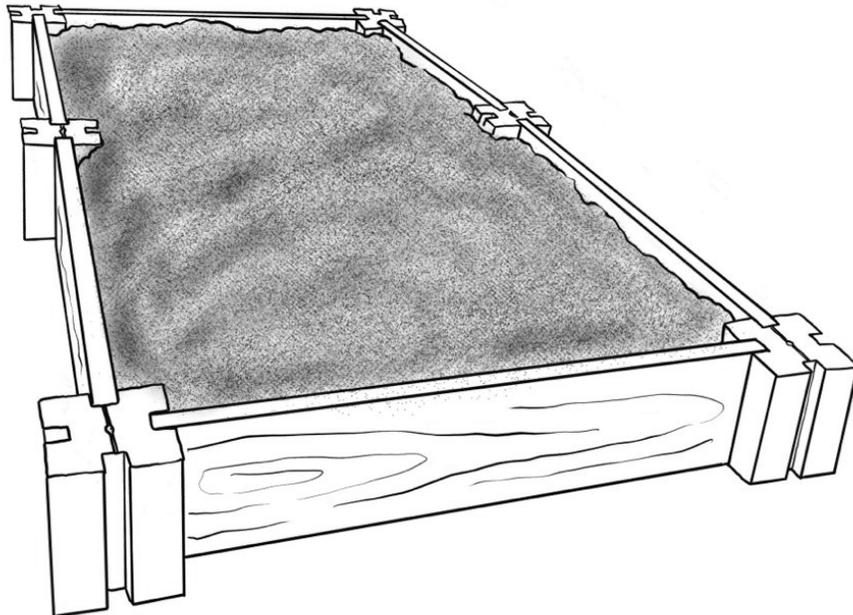


Repeat steps three to five for the other corners. At the end of the exercise, you will have a rectangular bed frame ready for planting.

By deliberate design, this project gives you a low raised bed, but it is a good foundation for building a higher one. Instead of screwing the boards to each other, you will add corner posts to which you will attach the boards. The posts will provide stability to the structure as you build higher than one-foot aboveground.

If you do plan to create a high raised bed, say, hip-high, you can use fillers at the bottom of the bed, so it's not too expensive to fill with tons of soil. Some street-smart gardeners might put in large logs. Over the years, they will decompose and add themselves to the soil nutrients. If you had taken out your lawn grass to make space for your homestead garden, you can use the very same sod as filler by flipping it over, grass-side down. If you have pieces of old, untreated lumber, you can throw them in there, too. You can use any organic matter to throw into the high raised bed. Once you have taken care of the bottom part, you can devote your attention to the top layer.

Next up is a no-tools method of constructing a raised bed.



PROJECT #4: The Easy-Peasy Raised Bed

Materials: Four planter wall blocks, two 8 ft x 1 ft x 1 in. boards, two 4 ft x 1ft x 1 in. boards

1. Lay the planter wall blocks on each corner of the marked planting area.
2. Insert boards into the slots on the blocks—long boards parallel and short boards parallel—so they form a rectangle.

Your raised bed is complete! No hammering or drilling necessary.

Just before you race off, there is one more thing to do. If you didn't use a tiller, break the ground within the raised bed using a hoe. If you used a tiller, crush big clods of earth into smaller, finer pieces. Remove all plastic and other non-biodegradable materials. Also, ensure that nothing remains that could compete with your plants' roots for nutrients and stability, including nearby trees. They may be in your next-door neighbor's yard, but they know no boundaries when it comes to their root system. I am not suggesting that you cut off those big roots; just make sure that you take their placement into account. If need be, you might have to move your raised bed. Do not fret because that will be doable, considering that this raised bed is very easy to assemble and transport elsewhere.

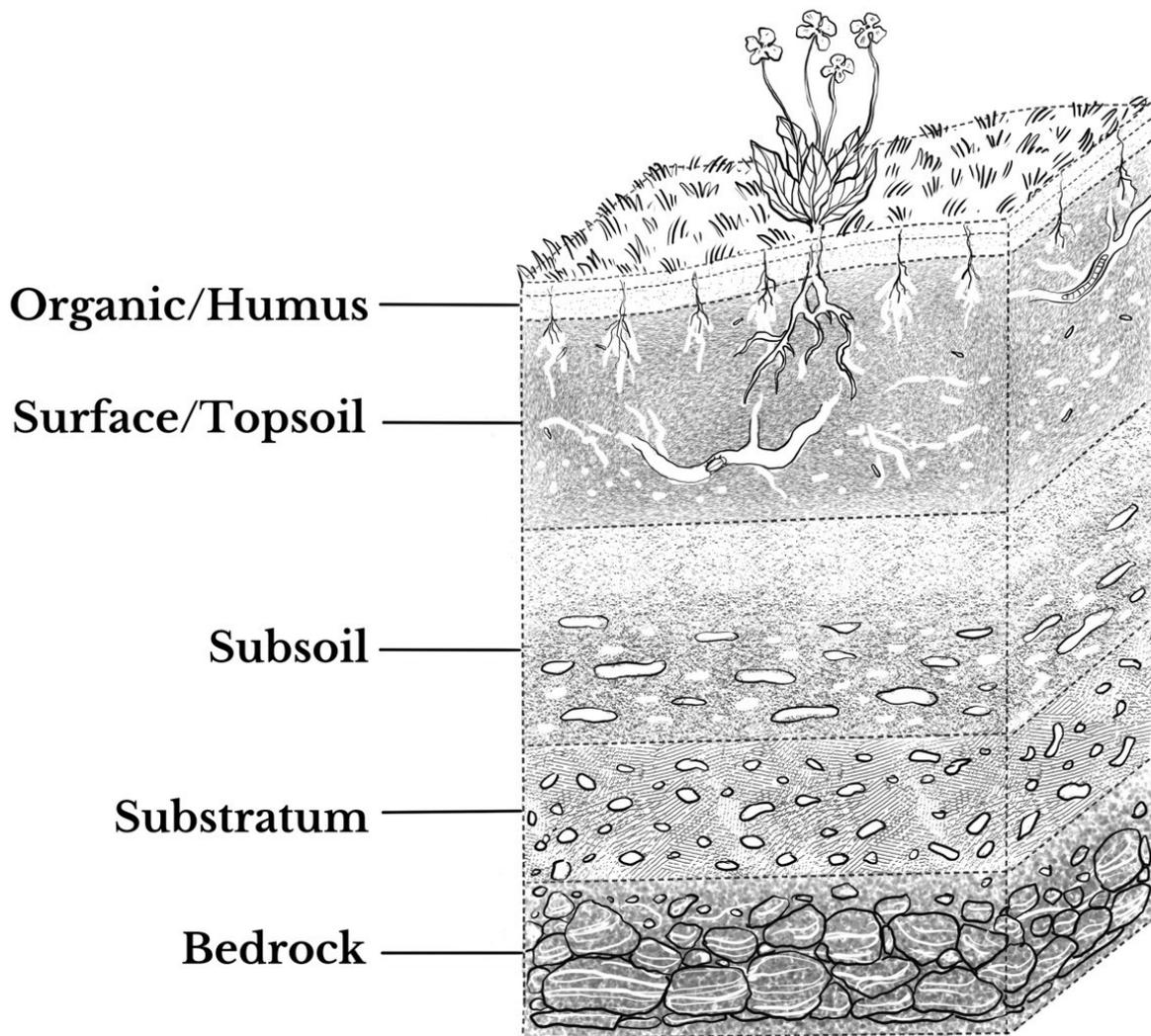
Understanding your Soil

Now that you have all that real estate cleared of unwanted plant life and your raised beds are ready, the next step is to give your soil a makeover. You want it to be nutrient-rich and conducive to healthy plant growth by amending the soil. "Amending the soil" is just a fancy way to say improving the quality of the soil by introducing elements into the ground that will boost the helpful microorganisms, mineral content, oxygen, and water-retentive properties of the earth. It also aims to convert your soil type to one that is friendly to your plants.

Most, if not all, vegetables and fruits prefer loam over clay, for instance.

To understand your soil better, know that it has five different layers:

1. Organic or humus layer: what you step on, made up of dead or dying living things (that is, plants and animals)
2. Surface or topsoil: second layer five to 10 inches deep from the humus, contains the main buffet table for plants because of its nutrients and microorganisms
3. Subsoil: third layer past the first 10 inches of depth, also has organic matter along with clay and iron, the target of your digging effort earlier
4. Substratum: fourth layer after subsoil, hard to dig through because of its compactness
5. Bedrock: fifth and bottom layer where rocks sleep, undisturbed by your noisy feet



The more you plant, the more replenishments will be needed from one season to the next as nutrients are depleted. In this case, your amendment is to give back to the soil what your crops have taken away. It may be in great shape today, but a lot of things can happen throughout the season. Amending the earth right at the start of the season creates a buffer in anticipation of potential crises, mostly generated by Mother Nature. Most certainly, this was true in the Oklahoma Panhandle, where we could experience four seasons in a single day.

Amending the Soil

Back in Step One, we figured out what type of soil you have. Keep it front and center in your mind; it will be what guides your amendments. Amending your soil has two main purposes: improving soil texture and introducing nutrients.

First, we'll start with improving the texture of your soil. These amendments address issues related to permeability and water retention. Permeability has to do with how soil lets water and air through its grains. The second involves soil's ability to retain moisture.

If you have sandy soil, you will need to make it more moisture and nutrient-friendly. In this case, you will want to employ vermicompost, peat, or aged manures. Their common feature is that they are all decomposed.

If you have clay soil, you will need to make it more porous and permeable. It has to have better aeration and less water retention. Just like the human digestive system, it will need fiber to clear up the clog. Peat, wood chips, tree bark, perlite, and straw will be very effective in this regard.

I have tabulated below some of the most common soil amendments and their characteristics to help you decide which ones are most appropriate for your garden. It is a table based on content in a Colorado State University Extension article.

Amendment	Permeability	Water Retentiveness
Decomposed		
Hot compost	Low-Medium	Medium-High
Manure (aged)	Low-Medium	Medium
Fiber Concentrated		
Coconut coir	High	Medium
Hardwood bark	High	Low-Medium
Peat	Low-Medium	Very High
Wood chips	High	Low-Medium
Inorganic		
Perlite	High	Low
Sand (coarse)	Medium-High	Low-Medium
Vermiculite	High	High

Different amendments and their characteristics

People often mention how important the salinity and pH of your soil are. While true, these are things you will not need to be concerned with as you start your garden. I didn't know those things either when I started, and I don't want to overcomplicate things. Gardening is a game of trial and error and figuring out what works best in your region. Salinity and pH aren't huge barriers to getting started.

Now that you have your raised beds built, it's time to fill them with the right soil and amendments to provide them with the perfect diet for a healthy plant.

The ratio of soil to amendments varies depending on your garden, but you should aim for a raised bed filled with loamy soil. If you think you already have the perfect soil for your raised bed, you should still make amendments, but adjust the volume of ingredients accordingly – a thin layer mixed in may be enough.

We will be making our own amendment mix, which, in combination with your garden soil, will fill your raised bed. This mix will be composed of vermicompost, coconut coir, and coarse sand. Each of these is a different type of amendment (decomposed, fiber-concentrated, and inorganic), making this an all-purpose recipe that'll work wonders for any type of soil. You are free to add as much mix to a raised bed as you wish – the more, the better. However, to save money, you can take dirt from other parts of your land and use that in the raised bed. You'll want to add enough mix to your raised bed until the soil is loamy. You should fill your raised bed almost all the way to the top with fluffy aerated soil (you don't want your soil to be compacted), so plan accordingly.

If you don't have enough vermicompost or soil, feel free to supplement your supply with shop-bought compost. You're also welcome to buy a ready-made planting mix with those three key types of ingredients, but if you're filling up a lot of raised beds (or even just one taller one), it's going to get expensive! For reference, one 8ft x 4ft x 1ft high raised bed has a volume of 32 ft³, meaning it would take 42 40-lb bags of soil to fill. That is a lot of soil, so feel free to get creative with where you source your soil. When I started my raised beds I tried to buy all my soil from a hardware store, but that got real expensive, real fast. Check Craigslist and local Facebook groups for freebies; I'm able to pick up tons of soil for free all the time. Hardware stores tend to be expensive, so I recommend finding a place that sells in bulk. You can also buy cheap topsoil and some compost and mix them together. Never hesitate to talk shop with your local garden store staff when in doubt about what to buy. One thing I've experienced: a lot of people love supporting newbies.



PROJECT #5: The Homemade Raised Bed Mix and Application

Materials: vermicompost, coconut coir, coarse sand

Tools: large container, hand trowel, shovel, rake

1. Measure one part vermicompost, one part coconut coir, and one part coarse sand. Make enough to mix into the loosened soil of your constructed raised bed.
2. Mix the three ingredients in a large container using a hand trowel. Work through them thoroughly. Ensure that they are completely blended.
3. Spread the mix evenly on top of the raised bed.
4. Using a shovel or your hands, incorporate the mix deep into the soil. Break apart any aggregates (clods of earth) you find. Once the soil's texture feels loamy to the touch, you can flatten the bed's contents with a rake.
5. There should be enough space left in the bed to add a final dose of amendments within one or two weeks of your planting schedule. Do not go beyond that window; you will want your plants to benefit from them while they are still sitting on the top layer. Leave the amended bed for a week or two, and then go to the next one.

You can modify this recipe by adding or subtracting each ingredient to optimize for your gardens' soil type. If you have sandy soil, you might want to add some extra vermicompost just to adjust for that. If this sounds complicated, don't worry about it; for now you'll learn through trial and error!

Before I move on to the next section, some important reminders:

- When in doubt about your soil, never hesitate to consult your local garden shop. The owner of mine was a treasure trove of gardening knowledge because her family had lived in the area for several decades.
- While sphagnum peat moss remains a popular soil amendment, a debate is growing regarding its sustainability. I suggest coconut coir for that reason. It has attributes similar to peat moss but is more prevalent and sustainable.

You do not need to amend other spaces in your garden that will not be used for crops. However, do make sure to clear them out. For

example, on the walking paths, remove any protruding rocks and roots. Set down a firm surface to walk on so it doesn't get muddy in the rain or while watering the plants. A nice, thick layer of straw or pebbles should do the trick. If you set up a drip irrigation system, ensure that hose paths will not cross with walking paths to avoid accidents. If it is unavoidable, at least make sure that they will not be a tripping hazard. Cover them with an extra layer of straw or pebbles. Or take the precaution of digging a trench to bury them in, so they are not visible at all.

Fertilizer

If you want to buy something other than vermicompost (while your worms are still hard at work making their own), you can substitute it with fertilizer. They accomplish the same thing as manure and worm castings—supplying nutrients for the soil. While both organic and inorganic fertilizers are available, I always recommend organic ones because you will be eating most, if not all, of the produce from your homestead garden. It's best to keep things as natural as possible.

A Texas A&M AgriLife Extension article advises gardeners to ensure that they get garden fertilizer, not lawn fertilizer. The one for lawns has an excess of nitrogen, which your fruits and vegetables do not care for. Here are some tips to guide your purchase of fertilizer:

- Fertilizer containers usually have three numbers stamped on them. Each number always corresponds to a particular element. The order of the elements is consistent across most fertilizers. The first number is nitrogen percentage, the second number is phosphorus, and the third is potassium. I don't want to overcomplicate the chemistry behind fertilizer. These elements usually come in a stable form called something slightly different. For example, don't worry if you can't find anything that says nitrogen or nitrates specifically; just focus on the number. If you have a 100-pound sack of 10-20-10, that means that it contains 10 pounds of nitrogen, 20 pounds of phosphorus, and 10 pounds of potassium. The remaining

60 pounds is made up of fillers like coarse sand or something similar.

- Your soil needs nitrogen for protein and photosynthesis. Phosphorus is to prevent stunting. Potassium is for your plants to thrive. If your fertilizer shows that it has all three minerals, then it is considered complete.
- Get fertilizer that has double the amount of phosphorus compared to the other two ingredients, like 10-20-10.

Once you have bought fertilizer, read the instructions carefully. Do not overuse fertilizer, as “too much of anything” applies even to something good like this nutrient-enhancer. Also, even if you feel confident that your soil in and of itself can resurrect the dead, I’d recommend still amending it. You need to maintain the top-rate quality of your soil all year to spare you the stress of catching up during the lean seasons.

Laying Out a Drip Irrigation System

We cannot sustain life without water. The fact that human survival is impossible beyond three days without it should tell you a little about the importance of watering your plants. When I started my garden, I watered my entire plot by hand with one of those 60-foot-long magic hoses—the ones that extend themselves from a wrinkled state once water fills their insides. The rhythmic back-and-forth oscillations gave me an hour or so of peace and meditation before I had to continue with my day.

Watering by hand is the simplest and quickest way to ensure that your plants get to drink regularly, so it was my default method in the early days. If you do not have the money to invest in a drip irrigation system right now, I recommend the expandable hose because it is light and easy to maneuver around your garden. Be sure to use a trigger-operated hose head or wand with multiple settings so you can adjust the amount of water for each row or plant. Two key pointers: avoid wetting leaves and aim for the roots. The same principles

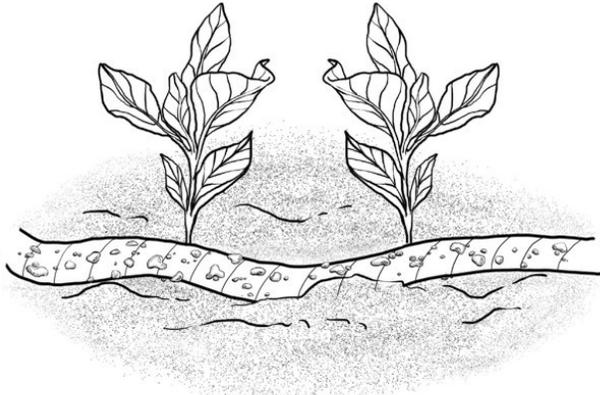
apply to irrigation systems to minimize the proliferation of pests and disease and to conserve water.

Having said all that, I will still encourage you to consider a drip irrigation system for the long term for the following reasons:

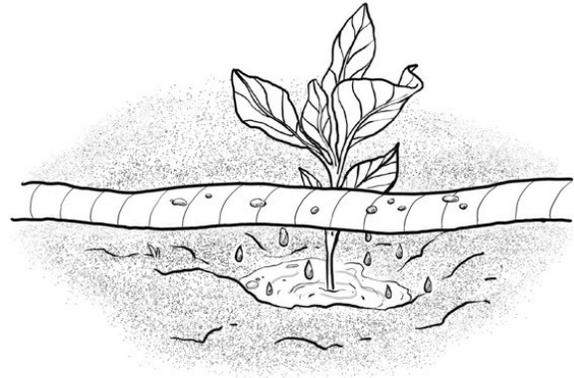
- It can be automated, so you do not have to be around the entire time to run it.
- You will save on water because it will be measured and appropriately distributed.
- It keeps your garden healthy. Irrigation systems can be set up to target specific parts of the plant and planting area. By doing so, you prevent diseases caused by constantly wet leaves, and you discourage the growth of weeds by depriving them of water.
- It balances soil nutrients. Everything is controlled and maintained, so you do not overwater and wash away valuable minerals. By preventing overwatering, you also keep the soil from compacting, which can suffocate roots.
- It prevents soil erosion. When properly laid out, an irrigation system strengthens the terrain by nurturing strong plant roots that keep the earth in place.

A drip system needs to be planned out. You will have to buy the right materials and get everything installed. That might sound daunting at first but envision the result—your garden will be watering itself until the end of time. Think of the countless hours saved, especially when mosquitoes are out wreaking havoc in the summer!

Before we get started building out your drip irrigation system, I want to address a debate between drip and soaker systems.



Soaker Hose



Drip Hose

Both drip and soaker systems feed water right where it needs to be—the roots, not the leaves. Both systems are easy to set up. From those commonalities, they quickly diverge to differences. The drip hoses can have parts open to water flow while others remain closed; soaker hoses are not as versatile. The former can be laid out for extensive gardens, while soaker hoses cannot cover large areas. Drippers are easier to repair. Once a soaker hose is damaged, an entire line may need to be replaced. The drip system requires a heftier upfront investment but lasts longer than a soaker system. To make them last longer, you will need to cover soaker hoses with mulch or a similar material because the sun is not their friend. With all these advantages, a drip irrigation system is worth considering in the future.

Let's say you adapt quickly to the idea of a drip system but do not have the budget for it just yet. Do not let that stop you. The next project can bridge the gap: a homemade drip system.



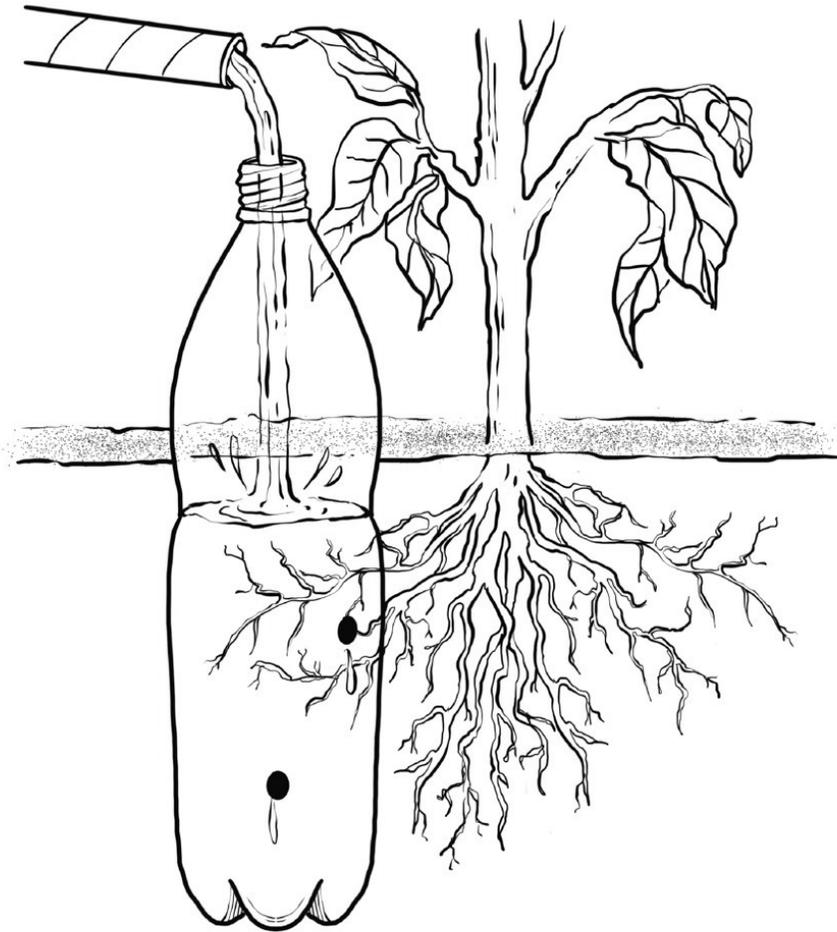
PROJECT #6: The Homemade Drip System

Materials: milk or water plastic bottles/jugs (as many as needed)

Tools: power drill and drill bits, shovel

1. Clean the jugs thoroughly to prevent unwanted contamination, especially from the milk containers.
2. Drill two holes, one each on opposite sides of a jug, no more than an inch above the bottom of the jug. Use a quarter-inch or half-inch borer to make them.
3. Dig a hole (about four to six inches deep, depending on the height of the jugs) between the two rows of your raised beds.
4. Fill the jug with water and cap it. Place it inside the hole with the two drip holes, each facing a planting row.
5. Bury the jug until only a third of it is visible. When ready, position a plant no more than six inches away from the jug holes. Its roots will have access to the slow drip of water.
6. Refill the jug as needed.

The jug will drip water slowly with its cap attached because no air enters the container to push it out. You can also position the jug right on the row itself, in the space between two plants. You can wait until after planting to install the jug correctly between two crops. This method is effective for tomatoes and similarly rooted vegetables and fruits—plants that do not have very deep roots.



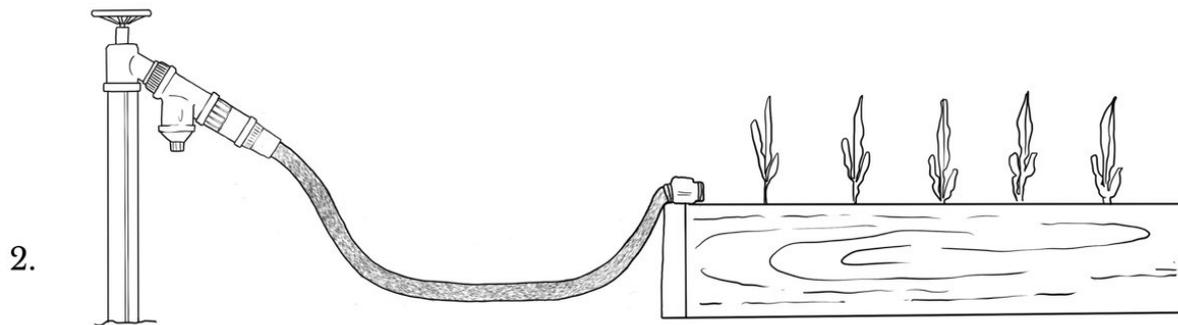
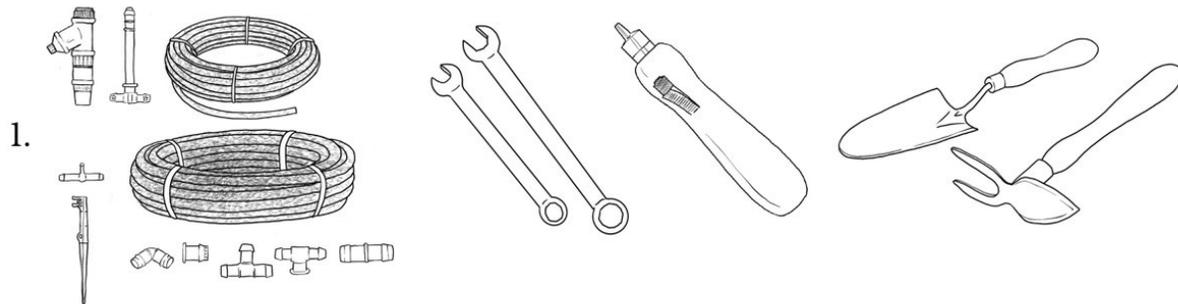
IF YOU ARE ready to take on a drip irrigation system at this point, you can try this simplified project. It does not require any fancy calculations. You can tune this setup to meet your watering needs as your homestead gains complexity. I recommend you buy a drip irrigation starter kit as they are widely available and will save you a lot of time. Building your own drip irrigation system from scratch can be quite the task!



PROJECT #7: The Simple Drip Irrigation System

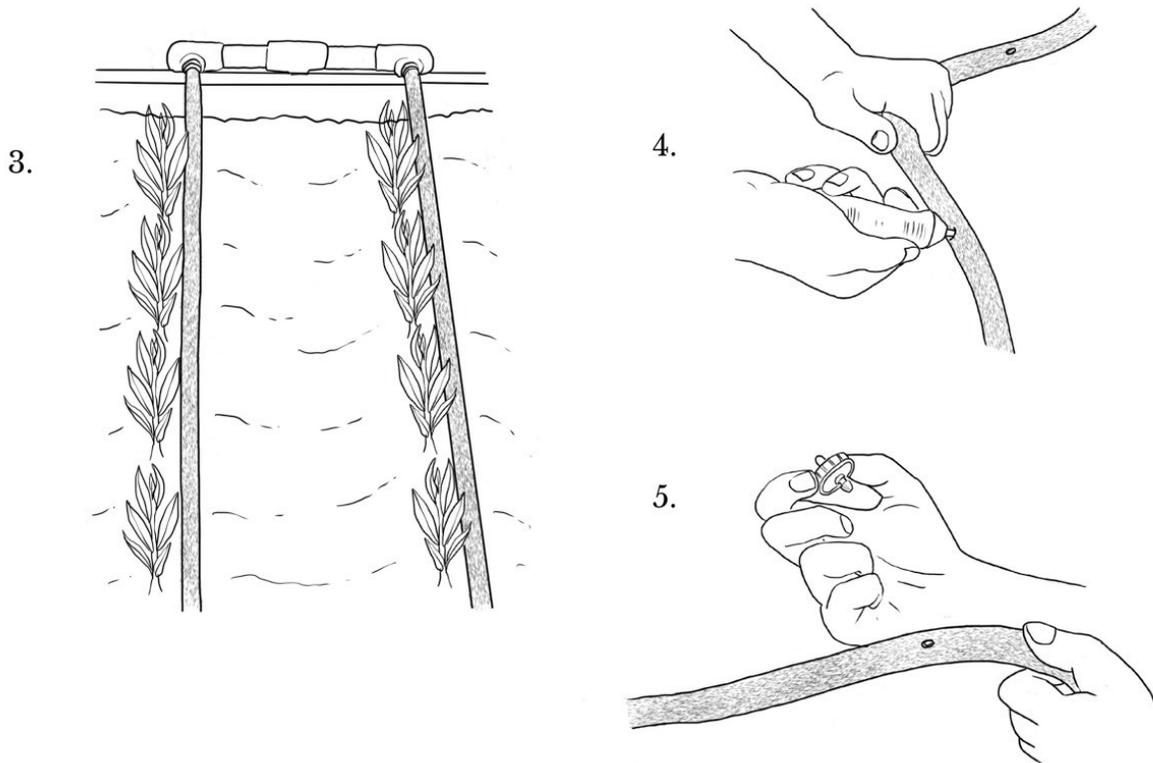
Materials: Drip irrigation starter kit (contains hoses, drippers, fittings, etc. for a basic setup)

Tools: wrenches, barb punch, shovel or hoe



1. Identify the location of the nearest water tap and the raised bed closest to it.
2. Attach the mainline from the tap to the raised bed and connect two driplines using the appropriate fittings.
3. Run the driplines across the length of the bed, parallel to the planting rows. One dripline is to one planting row.
4. Measure the desired spacing on the driplines for the drippers, corresponding to the location of the plants. Drinker spacing will depend on plant spacing. One drinker is to one plant.
5. Pierce a dripline with a barb punch on a spot marked for a drinker.
6. Screw-in a drinker and continue with the rest of the drinker marks.
7. Open the tap and observe the water drink. Make adjustments if the drink is too slow or too fast.

8. Once you have determined that the driplines work in that raised bed, carry on with the rest of the garden, following this basic procedure. Repeat steps 1 to 8.
9. Bury the mainline or any section of the system that crosses walking paths to prevent accidents.



Setting up an effective drip irrigation system as a new homestead gardener will require a lot of trial and error. You might read elsewhere that you need to measure water volume, water pressure, distance, and a few other math-related matters. If you happen to be mathematically inclined, go ahead and do the numbers. Starter kits usually contain instructions for doing that. I have a physics-loving friend who did it for his garden. I, on the other hand, was a bit more liberal in my approach. I went back and forth between tap and driplines to check if the connections were working. Being a Lego fan gave me the motivation to piece together my basic drip irrigation system.

If you have a large space, you might run into the issue of not having enough water pressure and volume to reach the farthest raised bed. In that case, you will need to add valves along the pipeline to close off certain portions and redirect the water to the shortest possible route from the tap to the farthest planting area. You might not have this problem if you have more than one water tap to service the garden.

In this basic system, you will open and close the tap manually. You will also have to schedule the days or times for watering each raised bed. As you gain more confidence in handling drip irrigation, you should definitely consider investing in a timer to automate this process. For now, I suggest writing down a simple schedule to remind you. It could be something to stick on your fridge.

Here are some best practices to follow while setting up your drip irrigation system:

- As water flows through your drip system, walk around and observe every single piece in the system. For example: check that timers are running (if you already have them), that there are no leaks, that no water goes to unnecessary places (wastage), etc. Adjust the lines and run it again until the issues disappear.
- Be aware of local weather. You do not need as much water during the rainy season. Or you might need more because of boiling temperatures. The irrigation system is there to supplement what nature cannot provide.
- Know the water requirements of each of your plants. Plant crops that have the same amount of water requirements in the same row or the same raised bed.
- Water in the morning so your plants can absorb the water better.
- Keep a journal of what grows and what does not grow in your garden as the season progresses. You need this information to guide your decisions for the following year. Do not be afraid of redoing your irrigation system layout. You will not have to repurchase much of the equipment.

Building a Trellis

A trellis is an essential structure in your garden. If you plan to plant vines, they require a frame to climb when they start growing. Cucumbers, gourds, beans, and several flower varieties would need a trellis a week or so after they sprout.

Trellises are also helpful when you do not have much space but want to grow several crops in your garden. They save water because you only need to water the roots of the plants climbing them, which are finite points on the ground, not a huge spread. They make your garden look pretty too! Besides the plants that grow on them, birds that land on their frame can add more color to your homestead. You will want to have some of your feathered friends visiting you to control an unwanted insect population. However, do take care that these visitors do not overstay their welcome; otherwise, they too can become pests and steal your crops away.

Trellises promote plant health because they allow for good airflow. When built well, they give vines better access to air in front and behind their vertical structure. Besides that, they also provide shade to your garden. They can be much more effective than trees in that regard because you can control their position and coverage. You will not be the only one to benefit from that when working under a hot summer sun. Some crops, such as lettuces and the like, will appreciate growing at the foot of trellises. I even had two bullfrogs take up residence behind my cucumber trellises! In return, they repaid me by taking care of the mosquitos that made the evening unbearable for me.

Harvesting trellised plants is much easier. For instance, your melons are more visible to spot when dangling from an upright structure than on the ground, where they can easily hide behind their leaves or become prey to worms and bugs. Your back will also thank you for sparing it from all that bending to find fruits and vegetables in the foliage.

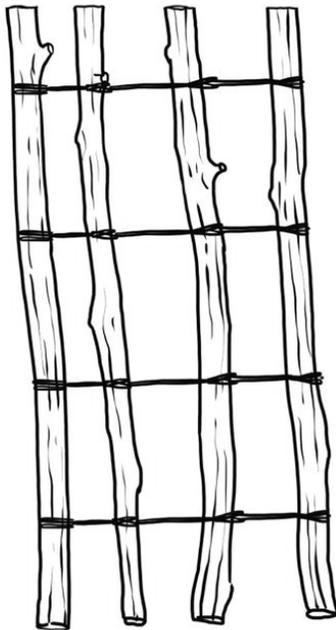
Below is a partial list of fruits and vegetables that can grow on trellises or will require one:

Beans
Peas
Cucumbers
Pumpkins
Gourds
Spinach
Grapes
Squashes
Melons
Tomatoes

Do consider at least one or two from this roster for your garden. The benefits of a trellis are far-reaching, affecting more than just the plants that clamber up its framework. Your shade-loving plants will appreciate it as well.

The build of your trellis should be based on your garden's overall aesthetics, budget, chosen plants, and materials on hand. If you can recycle, reuse, or repurpose something that is already present in your home, then go for it. The first trellises I ever built were made of throwaway pallets collected from hardware dumpsters. The basic form of a trellis is a grid. As long as you can mimic that pattern with whatever items you have on hand, you've got a trellis!





PROJECT #8: The Trellis

Materials:

Four recycled poles/posts, or sticks (at least 6 feet long)

GI wire or thick twine

Tools:

Mallet

Hand trowel

Wire cutter or box cutter

1. Identify the raised bed rows to which you have assigned climbing plants.
2. Dig four holes with your hand trowel. They should be parallel and adjacent to the row, about 4 inches from the plants and 2 feet away from each other.
3. Hammer one pole in each hole with a mallet. For stability, ensure they are at least two feet deep in each hole.
4. Cover the pole-hole with its displaced earth and double-check for stability. Reinforce the pole, if necessary.

5. Tie wire or twine six inches aboveground and stretch it across all four poles/posts. Ensure that it is securely fastened to every pole/post before moving to the next.
6. Repeat step 5 with the wire or twine six inches above the first level. Do both steps 5 and 6 again until the poles have several horizontal grids across them.

When choosing the wire or twine to use, be sure to find something that can bear the weight of your intended fruits or vegetables. It must be thick enough not to snap when the crops come out. The distance of the trellis from the planting row does not have to be far—four inches or so should be enough. If both rows in a raised bed will need a trellis, you must build one for each. Do not let them share a single structure; it will crowd them needlessly. It can also cause cross-contamination of pests and diseases among the plants.

Besides pallets, here are other objects that you can readily repurpose into trellises if you do not want to construct one from scratch:

- Antenna
- Curtain rods
- Laundry drying frame
- Bedframe
- Fishnet
- Living trees
- Bicycle frame
- Fridge shelving
- Rabbit-proof fencing
- Chicken wire fencing
- Lattice panel
- Wrought-iron gate

The only limit to what you can use as a trellis will be your imagination.

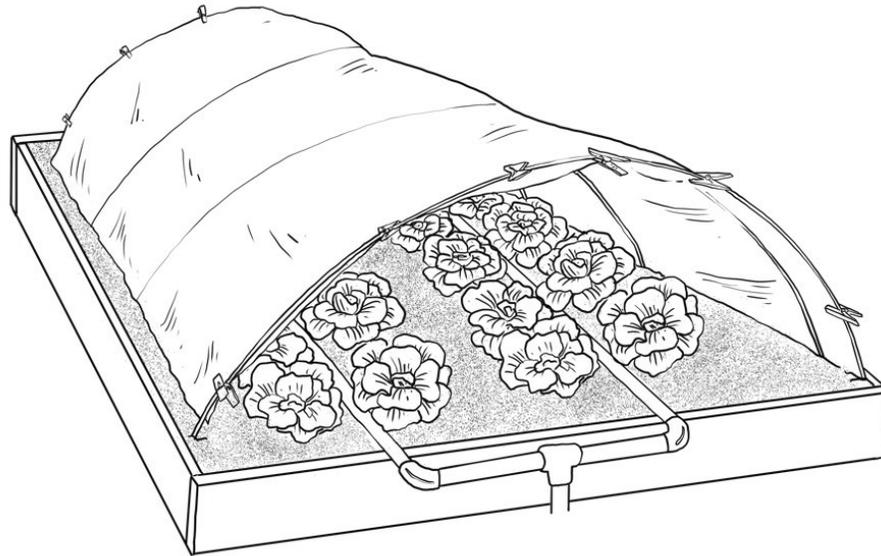
When your vine plants start their vertical journey by putting out tendrils or crawling across the raised bed, assist by tying them gently to the lowermost level of the trellis. People use different materials for this purpose: zip ties, wool yarn, cotton string, etc. I just wind the tendrils around the first horizontal grid, and the plant figures out the rest.

Season Extenders

Season extenders are garden builds or materials that allow your plants to grow and produce fruits and vegetables beyond their regular season. The extra time you buy may be at the beginning or end of the planting period. If at the beginning, then you are giving your plants an early jump on things. For example, you can get some lettuces going before your region completely warms up after winter. If at the tail end, you are prolonging the season just a bit by squeezing in one more harvest (such as a late-fall squash planting). Season extenders are meant to counter the ill effects of weather changes on your plants.

The following are some examples of season extenders:

- Old sheets: cover raised beds or several plant rows all at the same time when frost or hail comes; keep in place with blocks, tent pegs, or similar items.
- Cloches: cover individual plants; set up at night to keep the cold at bay and remove in the morning for proper exposure to the sun. They may be old buckets, gallon water bottles, milk jugs, etc.
- Low tunnels: create a long arch-like covering over rows and act like mini-greenhouses. They may be formed by bending old fencing materials or wire into an arch and covered with old fabric to trap heat.



Other examples of season extenders are full-sized greenhouses, row covers, frost covers, and cold frames. The ones I described above are especially well worth trying because they encourage using what you might already have. You can also create greenhouses from old or used materials, but most of the ones I have seen use store-bought materials.

One last season extender you can make yourself is a homemade version of a gizmo called a water teepee. It is an added layer of protection between your plant and the weather, whether it be hot or cold. Enjoy this next project.



PROJECT #9: The Water Teepee

Materials: milk or water plastic gallon jugs (as many as needed)

1. Gulp down the last ounce of milk or water from a plastic gallon jug. Rinse the container and then cut off the bottom with a box cutter or something similar.

2. Select the plant you want to protect with the jug. It must be at a size or height that can comfortably fit inside the container. Water it.
3. Cover the plant with the jug. Make sure the container is at least an inch deep into the soil. Let the sunlight come smiling down on it to heat up the inside of the jug. You may remove the cap to vent some heat out as needed, but be sure to replace the lid when the temperature drops at night.



Yours may not look exactly like this, but it will work just the same!

Common Homestead Gardening Mistakes

Before we move on to Step Three of our homesteading adventure, let us take this brief stop and highlight common mistakes beginners fall into. Do not beat yourself up over them. Been there, done that.

Mistakes are an essential part of any learning experience. You will not be alone in mourning over the death of innocent seedlings.

- **Forgetting to prepare the raised beds.** It is not just about building them; it is also about digging up the ground underneath them to clear it of unwanted matter and to aerate it.
- **Skipping soil amendments** . Regardless of how confident you are about the nutrient richness of your soil, you should still apply amendments to it. This ensures that the nutrients will remain throughout the season and sustain your crops till harvest.
- **Flooding the plants** . I was guilty beyond reasonable doubt when I allowed my soaker hoses to drown my plants with more water than they could ever need. I did not even replace them when they developed holes and started shooting water upward! Do not overwater your plants.
- **Dehydrating plant roots** . I know novice gardeners who like watching water glistening on leaves, so that is where they aim their hoses. Wrong! Target the roots because they are responsible for distributing water. Leaves are umbrellas that keep water off the roots. When wet, they can also develop mold and other diseases.
- **Planting sun worshippers in shade and shade fanatics in sun** . If plants could talk, they would be gossiping about you and your cruel and unusual punishment. Know the ideal location of your plants.
- **Not paying attention to seasons** . Tomatoes are summer growers, but I once planted them in late spring. When a sudden and unexpected drop in temperature brought frost, they paid me back by wilting and never recovering—plant at the right time. You can get information relevant to your area online, or by consulting your garden shop, a farmer's almanac, or even a radio station.



Seedling Bank

- Step Two involves preparing your garden space, constructing important structures for your garden, and producing materials to make it conducive to plant growth.
- Weeding the ground is necessary for clearing the soil of unwanted plants. It is a way of removing anything that might compete with your crops for nutrients and space.
- Composting creates organic matter to enrich your soil with the nutrients it needs. Two types of composting are hot composting, which uses heat to decompose organic matter, and vermicomposting, which uses redworms to hasten the process. Hot composting can be divided into aerobic (uses oxygen from regular mixing) and anaerobic (does not use oxygen).
- Organic matter for composting is made up of greens (such as kitchen scraps and grass clippings) and browns (such as shredded newspapers and sawdust).
- Raised beds are just one way of setting up the planting area of your garden. Still, expert gardeners usually recommend it because of its many advantages to plants, the environment, and you, the gardener.
- A drip irrigation system is recommended to supply water to your garden because it can save you time, money, and effort in the long run. It is also kinder to the environment and more efficient when delivering water to your plants.
- If you cannot set up a drip irrigation system just yet, hand-watering is okay, but be sure to target the roots and not the leaves. Use a hose with multiple modes so that you can have better control over water flow and pressure.
- Using trellises in your garden allows you to use space efficiently with the added benefit of creating shade in an otherwise bright spot.

- Season extenders are an effective way of lengthening your planting cycle by giving you an early start or a late finish.
- Beginner gardeners are expected to make plenty of mistakes, don't fret. Just make sure to learn from them so you don't repeat the same mistakes!

STEP THREE: SOW PLANTS



Your adventure now takes you to the heart and soul of homestead gardening: planting. You can think of this as the halfway point of your labor. Give yourself a pat on the back and allow yourself a minute to admire your handiwork so far. The garden is weedless. The compost is ripening. The raised beds have their vacancy signs out. And the soil is flexing more avidly than your gym-rat friend on pre-workout. It is time to focus on the fruits, vegetables, flowers, and other plants that are the main characters of this narrative.

Monoculture vs. Polyculture

When it comes to thinking about plants and how you intend to grow them, there is one important question you need to ask yourself: Should I sow all my plants of a kind together, or should I spread them throughout the garden? I recommend spreading them out so pests and diseases that plague one plant will not wipe out your entire harvest. This action follows a polyculture style, which means that different things grow together.

If you plan to grow only one kind of crop in a section of your garden, you are aiming for a monoculture. It is the method used on large-scale farms. Some gardeners opt for this method of planting because it is simple. All the activities you do for one plant can be replicated for the rest of the section. It is efficient, which translates to

savings for commercial farmers. Without variety, especially in sizable acreage, it can adversely affect the biodiversity of an entire region. Growing the same crop in the same location year after year depletes the soil and produces stunted, unhealthy produce. It also limits your harvesting capacity. If you were entrepreneurially inclined, it squeezes you of diversified income-generating potential.

A garden that showcases the polyculture method is a garden that grows different crops across its space—small or big as it may be. Polyculture could be achieved by practicing crop rotation. You plant different things in the same garden section from season to season. For instance, if you plant potatoes in one spot this year, then you should plan to have something else, like tomatoes, next year. You do not repeat crops year in, year out. You can also exercise polyculture planting by growing different plants side by side, row by row. Even though my first gardening attempt was generally a series of unfortunate mistakes, one thing I was happy about was the diversity of my plant selection. Polyculture can also lead to more bountiful harvests! I had lettuce, spinach, cucumber, tomato, pepper, eggplant, cilantro, zucchini, mint, basil, carrot, and others I cannot remember anymore. I even had prickly pear cacti to satisfy my curiosity for ensalada de nopales.

Polyculture mimics what is happening out there in nature. Natural vegetation grows in diversity. A single square foot in the Congo rainforest can easily yield hundreds of plant and animal species. A hidden benefit of polyculture planting is that it enriches the soil and maintains a healthy balance, even with the fauna it attracts. Your garden can become a haven for birds, bees, ladybugs, and worms living in ecological harmony. Goodbye to the need for harmful pesticides!

While I lean more favorably toward polyculture in writing this section, I reiterate that it is just a recommendation. Your final decision will depend on your planting goals. If you want to corner the market for watermelons in your town's weekend farmers' market, who am I to stop you? By all means, fill all your raised beds with nothing but watermelons.

Once you have settled the issue of monoculture versus polyculture, it is time to list the plants you want to grow and how to sow them strategically. I will focus on polyculture in the next section. However, even if you're a monoculturist, try not to skip it. Whether handling one or several species, the general principles of planting are the same.

An Approach to Polyculture

Polyculture produces more fruits and vegetables than monoculture does, but it requires a bit more effort from you. I hope that you can embrace that as simply part of the adventure. To get started, here are three tips to follow:

1. Don't try to plant every plant you never heard of on your first attempt. It is more work for you because each plant will demand different care. I want to help you keep your kill stats to a minimum. You can aspire for more once you develop your skills and confidence further. For now, concentrate on their proper spacing, correct grouping or pairing (more about this later), water needs, and other items on the maintenance checklist.
2. Do not forget flowers. A polyculture garden should always have space allotted for flowers. They are bright neon signs for attracting the good kind of birds and insects that will make your plants pest-free and thrive. For instance, ladybugs like to feast on aphids. Winged critters are needed for pollination too. Pollen usually hitchhikes on the legs of honeybees or the sides of hummingbird beaks. If you do not want that square foot assigned to an inedible plant, you can pick an edible flower like lavender or yucca.
3. Grow tall plants away from the sun's position. If you live above the equator, place your towering florae in the northernmost part of the garden. If you reside in the southern hemisphere, take them to the southernmost perimeter. You want to make sure that their height will not block their shorter

neighbors, especially if those neighbors happen to be hungry for sun.

In the polyculture approach, you have plants of different species that grow side-by-side within the same raised bed. You do not want them to fight over the same resources. Pairing or grouping the right plants together entails careful thought and is the art of companion planting.

Companion Planting

Companion planting is a gardening method where you sow plants beneficial to each other side by side in the same raised bed or growing plot. Some of the mutual benefits they derive from one another may be:

- Pest and disease control (e.g., a flower attracts ladybugs that eat aphids that have infested a vegetable)
- Soil enrichment (e.g., peanuts replenish nitrogen in the soil)
- Vine scaffolding (e.g., bean plants can climb sunflower stalks)
- Shade (e.g., trellised cucumber plants shade romaine lettuce at the foot of the trellis)
- Weed management (e.g., broad-leafed, spiky crawlers like squash protect maize)

There are plenty more advantages to growing certain plants together. The more you garden, the more you will know about them.

The Three Sisters are the perfect example of companion planting. Traditionally, many Native American communities planted corn, beans, and squash together because of how each one helped the others. The cornstalks were the natural trellises on which the beans could climb. Since the climbers grew fast, they produced nitrogen for the soil to absorb. Meanwhile, the squash covered the earth with their prickly and broad leaves to keep it moist and discourage weeds and pests.



The Three Sisters: A Native American technique

With that anecdote in mind, I have tabulated some of the most common garden crops and their ideal companions, as derived from The Old Farmer's Almanac and Gardenista websites. The table is by no means comprehensive, but you can use the information therein to decide what plants to grow. Check it out in the Extra Resources section. In a polyculture garden, you cannot think of a single plant in isolation. It should be considered in the bigger picture of its surroundings and "next-door" plant neighbors.

There are plenty of pairings out there that may not be as common as what I have in the Extra Resources, but they still work. As you spend more time planting and doing due diligence in developing your homestead garden, you will learn more. For now, the table has enough information for you to refer to and get started.

A quick note before I take you to the next sub-step of your homestead gardening: although not listed frequently, marigolds are ideal companions to a broad range of fruits and vegetables because of their pest-repelling qualities. If you have many plant varieties in your garden and cannot decide on the ideal flower for a polyculture setup, you can default to marigolds and be done with it.

Seed Selection and Germination

While some gardeners acquire their seeds from kitchen waste, I recommend that you get yours from a reputable seed company for your first-ever homestead garden. You are not guaranteed the best results from the seeds of an apple you just ate. I do not want you to be discouraged when your fruits and vegetables do not grow.

I understand your hesitation about buying seeds. If you are like me, you probably freeze in front of a revolving rack of seed packets at a supermarket or a garden shop, completely stumped by which packet to pick. To help you get over that hurdle, try to understand seeds and their labeling a bit more.

Nowadays, seeds are categorized as open-pollinated, heirloom, hybrid, or GMO. The terms tell you how their plant sources came into being. I will leave you to decide which one works best for you, according to your needs. Groups have fought with placards and picket signs against particular categories (cough–GMO–cough), but your garden should not be a political arena. You have planting goals set, so let that guide your decision.

- Open-pollinated seeds result from plants that have been pollinated by natural mechanisms like insects, birds, or wind. These plants tend to be genetically diverse, which lends itself to adaptation to different environments. The seedlings will look similar to the parent plants, or in gardener terms, true-to-type.
- Heirloom seeds are collected and saved from open-pollinated plants annually over an extended period (think 50 years or

more) by a gardener from a clear point of origin. You can find some really cool and unique heirloom varieties that you won't see in the produce section of your grocery store.

- Hybrid seeds come from crossbred plants, whose best attributes are distilled into a single plant. Crossbreeding is accomplished by cross-pollination across different species. The first generation of hybrid plants usually grows better and produces more than the parents. You shouldn't collect hybrid seeds from the first generation as they are genetically unstable—the seeds will either produce weak plants or none at all and won't grow true-to-type. That could be why you might've had trouble growing seeds obtained from fruit from the supermarket. It is necessary to purchase new seeds every season.
- GMO (genetically modified organism) seeds come from plants that have been altered in a lab to enhance certain traits, such as drought resistance. GMO's have been the topic of many debates, but I don't think they are the devil incarnate that some people paint them to be. They aren't commercially available to small-time gardeners like you are me, though, so don't consider them for your garden.

Once I armed myself with these basic definitions, it became easier for me to zero in on which seed packets to purchase. As it turned out, I became less worried about their categories than their ability to meet my planting goals. For instance, one year, I wanted to experiment with making my own sundried tomatoes. For this, I decided to try the Roma variety instead of the plumper, juicier ones like beefsteak tomato. No one was going to change my mind, even if new hybrids had just come out. I kept my life simple. If this seems like too much information, buy whatever seeds look nice to you at the store. Don't worry about saving seeds and creating your own heirlooms; everything will be okay, I promise.

I want to highlight some special considerations for pollination since a polyculture homestead will have tons of diversity packed together. If you are trying to reuse seeds, rogue cross-pollinated plants can

become a problem. To prevent the occurrence of unwanted and unplanned cross-pollination, pay attention to the following tips:

- Grow just one variety of each type of plant in your garden. This can be a challenge in a polyculture environment since diversity is its key feature.
- Do not cross-pollinate self-pollinating plants. Too much human intervention in a garden is never a good thing. If the plant is already hardwired to propagate itself, then do not interfere with its natural processes. Some examples of self-pollinating veggies are beans, peas, lettuce, pepper, tomato, and eggplant. With the right plant spacing and different varieties of the same species in your garden, you can minimize accidents.
- Stop cross-pollination among plants that pollinate via wind or insects. Pollinate them yourself, using a clean, uncontaminated paintbrush to transfer pollen from one flower to another. Then, if their flowers are big enough, you can tie the petals to prevent further cross-pollination. You can also space out different varieties of the same type of plant across different areas of your garden. But beware, all it takes to make hybrids is one stray bumblebee having a field day in your garden.

Despite all the things I said, I don't want to scare you off hybrids. I love using them, and I would pick the ability to grow five different varieties of tomatoes over being able to save seeds any day. Once you have identified which type of seeds to use, it is time to roll up your sleeves and sow. Here is a way to get going:

1. Buy seeds. If you are not immediately planting, be sure to store them in a cool, dry place to keep them viable for a long time.
2. Once you are ready to plant, get trays, starter pots, or recycled items (for example, plastic food containers, egg

- cartons, tissue cardboard rolls, etc.) in which you can germinate seeds. Make sure they have some drainage holes.
3. Add normal potting or garden soil to your containers to use as your germinating medium.
 4. Place seeds in the potting soil, about 1" - 2" deep.
 5. Cover the seeds with the soil and sprinkle lightly with water. Leave them undisturbed in a cool, dark, and damp place. If needed, keep them under a piece of cloth or an opaque plastic bag to minimize exposure to light. If you want to speed up germination, you can keep them under a plastic wrap or dome to increase moisture.
 6. As soon as you see green, take off any covers and give them lots of light!
 7. Mist them daily to keep them moist but not soaking.

I recommend indoor seed germination so that you can have a bit of a head start. It allows you to have a longer growing season and gives your soon-to-be seedlings a safe environment in which to sprout and gain some inches. Without disturbance from birds and hail, they will have a fighting chance. However, my recommendation should not prevent you from trying outdoor seed germination if you wish. You can sow directly into the ground. Just follow the instructions found on the seed package. You might need to put in some extra effort to ensure that the seeds do not fall victim to the elements, predators, or foragers.

When to germinate, transplant, nurture, and harvest plants is essential to know if you do not want anything to go to waste. I had made those mistakes before, so you do not have to make them yourself now. If you need information about planting timelines for your specific plants in your zone, visit my website, www.easygreenguides.com/plantingtimeline . You can also ask your local garden shop staff.

While waiting for your plants to come out of their seeds, you can spend a bit of time learning about another set of classifications for vegetation: annual, perennial, and biennial. They describe the duration of a plant's life cycle. Since timing is everything in

gardening, this information helps you plan for the short, mid, and long terms. For instance, you have to know that:

- Annuals are plants whose entire life cycles happen within one growing season. From roots to the topmost leaves and branches, they live and die in 12 months or so. Only their seeds allow them to cross over into the next cycle. Any raised beds assigned to annuals must be prepared for an entirely fresh batch of plants every year.
- Perennials live through a series of growing seasons. They survive for many years. Your world-record-holding trees in the thousands of years old are, of course, such examples. Only the upper sections of perennials die as winter rolls in. Their leaves fall to the ground. Their branches break off. When spring returns, everything regenerates from the same root system. Many of them never lose their leaves all year round, making them ideal as border plants (think evergreens) or groundcover. They may be best planted in areas of the garden where they can thrive undisturbed without too much human activity.
- Biennials have a lifespan of two years. They spend the first year establishing their roots without producing any fruits or flowers. In the second year, they begin to grow in height. Their flowers and fruits come out just before they wilt and die. When they do that, they leave nothing but their seeds. If you want to give yourself or your raised bed a break, biennials can stand in place during the brief hiatus without leaving an ugly gap in your garden.

Let me give you some examples of each:

Annuals	Perennials	Biennials
Begonia	Aster	Beet
Calendula	Banana	Cabbage
Corn	Banyan	Carrot
Cosmos	Bleeding heart	Celery
Geranium	Candytuft	Fennel
Larkspur	Coconut	Forget-me-not
Lettuce (some varieties)	Coral bell (some varieties)	Foxglove
Marigold	Daylily	Hollyhock
Mustard	English ivy	Lettuce (some varieties)
Nasturtium	Ginger	Money plant
Petunia	Goldenrod	Onion
Snap dragon	Hellebore	Parsley
Strawflower	Lavender	Petunia
Sweet alyssum	Mango	Radish
Watermelon	Palm	Spinach (some varieties)
Wheat	Peony	Sweet William
Zinnia	Purple coneflower	Swiss chard
	Tomato	
	Yarrow	
	Yucca	

Whenever you select your plants, categorize them into annuals, biennials, and perennials. Seeing your choices charted out will help you identify which ones are for the midterm to the long term and which ones will need to be rotated out at the end of the season. This will help guide your approach to daily tasks like irrigation and pruning and the special care required before and after each planting period. This exercise allows you to anticipate upcoming garden activities that may require your attention.

As a new gardener, you may plan for just two planting seasons in a year. I suggest the summer garden and the fall garden. You can eventually plan for a garden that thrives for the entire calendar year as you increase your knowledge and skillset. I recommend focusing only on these two as you figure out what works and as you're

building out additional structures in your garden. Each season comes with its own weather conditions, roster of potential plants, and maintenance requirements. You may aim to do both or just one of them. Whatever the case may be, the important thing is that you are ready and committed to meet your planting goals.

Summer Garden

Most gardeners sow their summer garden in May or June; typically once the last frost goes away. As implied, it is a garden that accommodates vegetables, fruits, flowers, and other plants that do exceptionally well in warm weather. My general recommendation is to germinate seeds indoors. However, other growth-starting methods may work better for you and the plant, considering your particular location, geography, and climate.

Grow as Seedling	Seedling or Direct Sow	Direct Sow
Berries	Corn	Amaranth
Broccoli	Cucumber	Bush beans
Cauliflower	Head lettuce	Corn
Celery	Kale	Green onion
Cucumber	Kohlrabi	Greens
Eggplant	Sunflower	Lettuce
Fall squash	Swiss chard	Malabar spinach
Fennel	Zucchini	New Zealand spinach
Honeydew melon		Okra
Leek		Peas
Onion		Pole beans
Pepper		Shallot
Pumpkin		Sorrel
Squash		Sweet potato
Tomatillo		Swiss chard
Tomato		
Watermelon		
Zucchini		

To ensure that these summer plants will thrive throughout the blazing-hot months, make sure to:

- Water in the morning to avoid loss of water from evaporation.
- Mulch your raised beds to keep moisture in the soil.

I will discuss these points in more detail later in the book. For now, note that the sun can be either a blessing or a curse depending on how you work around it. It is essential to plant growth (think photosynthesis), but it can also be responsible for its death. The sun

will be a critical factor to consider when taking care of your summer garden.

Fall Garden

A successful fall garden is started right in the heat of the summer months. Although fall plants prefer a cool climate, the sun is still needed to aid their growth. Consider starting your autumn garden in August or September. That will also give your fruits, vegetables, and other plants time to gain roots and mass before the bone-chilling cold comes rolling in. Your fall crops will still grow then, of course. It will just take them longer to develop because of the cold. Be sure to clear out the summer garden as soon as possible once you initiate planting for the fall garden. Don't forget about your composter! You can dispose of the out-of-season plant matter there.

I have listed some fall crops to choose from below:

- Broccoli
- Cauliflower
- Scallion
- Arugula
- Asparagus
- Beet
- Bok choy
- Cabbage
- Carrot
- Collard
- Fava beans
- Garlic
- Greens
- Kale
- Kohlrabi
- Lettuce
- Onion
- Peas
- Radish

Rutabaga

Most fall crops are sown directly into the ground. I could not get a clear reason for this from any one source, but it may be because many of them race against the clock to grow before the first frost arrives. Direct sowing means plants have more time to mature because they do not have to recover from the trauma of transplanting. The exception to this is broccoli and cauliflower, which you can grow as a seedling indoors. Whatever the reason you started a fall garden is, it gives you an opportunity to hone an entirely different set of gardening skills.

The need to winterize your garden is unique to a fall garden. Most places in the US have geographies and climates that banish any thought of a winter garden. It is just too harsh outdoors in the absence of a greenhouse. If you happen to live in such an unforgiving region, you should take steps to winterproof the homestead garden and get it ready for the next planting season. Here are the key tasks to complete:

- Remove all unwanted plant debris. Throw it into your composter and mix previously composted material into the empty beds. The compost will replenish nutrients that the summer garden depleted from the soil.
- “Tuck in” your raised beds. Transplant sensitive plants indoors or into containers in anticipation of the cold. Protect your raised beds with mulch, weed cloth, or other forms of covering.
- Plant new plants. There are flowers and such that can withstand the cold. Or leave spring bulbs in the ground to wait under all that snow for the winter to end.

As with the tips I shared for the summer garden, I will expound on these bullet points further in other sections of the book.

Transplanting

After waiting for several days or a couple of weeks for your seeds to germinate, you know that they are ready for transplanting when at least three or four true leaves appear on its tiny frame. True leaves are what leaves typically look like on the plant. As a plant comes out of its seed, it will have parts that look like leaves but are not. They are there only as food storage while the plant hides inside the seed. Eventually, the phony leaves fall off in anticipation of the real ones. Neither leaf nor height are good measures for the right time to transplant, so do not use them as a basis for moving your indoor seedlings to the outdoor raised beds.

Transplanting takes just five easy steps to accomplish:

1. Gently take the plant out of its receptacle once ready to transplant. Be sure its roots are intact.
2. If soil clings to its roots, carefully tease it out. Shake them a bit, if necessary.
3. Put the plant inside a dug hole of a raised bed. Make sure that its roots are firmly sitting on the hole floor.
4. Cover the hole with loose soil. Use your hands to pat down the ground and to keep the plant in place.
5. Water the seedling well to settle the soil further and to encourage the roots to dig in.

These are the same steps you follow when taking a plant from one raised bed to another. Or from a clay planter to direct ground. It does not matter if the plant is fully grown or not. All you have to ensure is that the roots are viable and the receiving hole is adequately spaced and in the correct location.

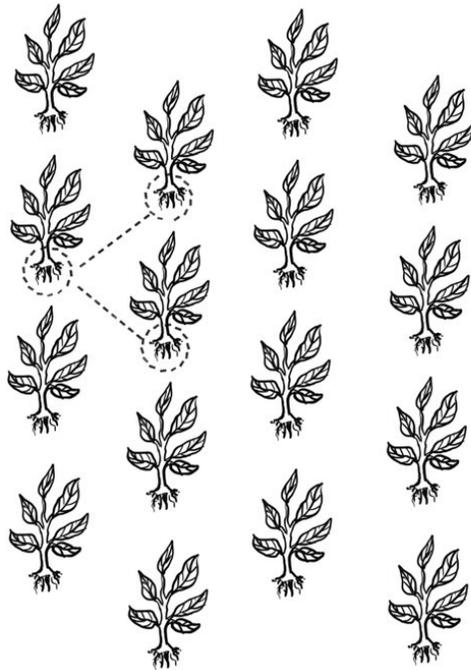
Direct Sowing

Planting seeds or seedlings in your garden is a straightforward exercise. You already have a predetermined planting area in your raised beds. All you have to do next is decide on a layout and sowing method.

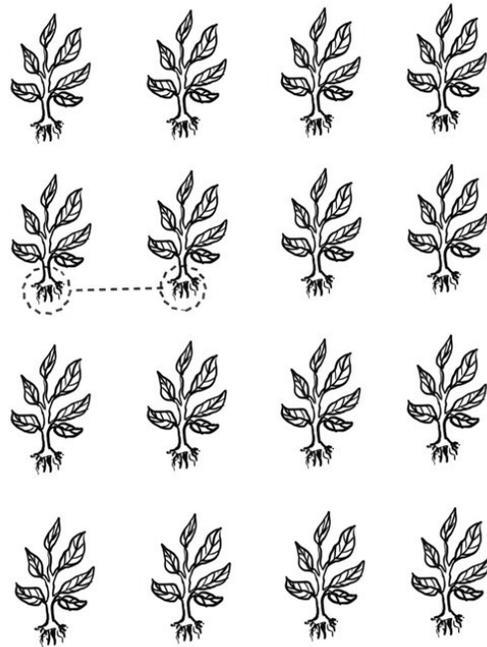
First, think about the arrangement of your plants on the ground. One such layout is the grid formation—rows upon rows of vegetation. This was dictated by the origins of farm work when manual tools and animals were used together. It was easier to plot out irrigation and harvesting when all the crops were lined up neatly in a single direction.

The desire to use space more effectively has led to the creation of the staggered row formation. The zigzag pattern accommodates more plants per square foot. This technique is common in rice-planting cultures, especially in Southeast Asia. Because it can accommodate more plants in a raised bed, it is possible to expect a more abundant harvest. The zigzag pattern is also more visually appealing, in my opinion.

The wider area between plants can make tending the garden easier with all that maneuvering space. You can have better access to plants for weeding, amending, irrigating, and repairing. A downside to staggered rows is that you have to be precise about your garden layout. You must ensure that plants will not interfere with each other's sun, water, and air. With all that said, I still recommend staggered planting to squeeze out more food from your garden. Follow the spacing prescribed on your seed packets, and you should be fine.



Staggered Planting



Parallel Planting

After choosing a planting formation, the next step is to sow the seeds. Many people will have slightly different methods, but they all work the same. I want you to remember that gardening does not need to be complicated! Sowing seeds is as simple as poking a one-inch hole in the dirt with your finger; if the seeds look especially small or big or if you have any doubt, check the seed packet for the appropriate depth. Drop the seed in, and loosely sprinkle some dirt to fill the hole and then water enough to moisten the soil and the seed. You may be watering too heavily if the earth starts compacting. You should lightly water the seedling once or twice a day as it has no established root system to look for water.

You can tell that your seedling is healthy when its leaves are green and appear moist. They should not have any hint of brown or yellow, even along their edges. And they should never be curled up. If your seedling does not stand upright, check for any rot close to its roots. The more you inspect seedlings, the more you can hone your senses to the criteria for good seedling health.

Staggered Planting

One of the biggest mistakes I made in my first garden was planting all my vegetables at the same time. I was so caught up in the gardening fever of my neighborhood that I did not think about what would happen down the road when harvest time came. Four weeks sped past, and my romaine lettuce and baby kale kicked off the first batch of produce. And then spinach. And then zucchini. And then coriander. By the time I began harvesting tomatoes, peppers, and eggplants, I had run out of the space, patience, and desire to store any more of my crops. I was planning on selling them off at the farmers' market, but that ended up being too much of a hassle. I began giving them away for free, but I did not know enough interested people, so I ran out of recipients. I ended up throwing away a good volume of my garden's yield because they had gone bad in the pantry. I learned about staggered planting the hard way.

Before we get started, I want to note the differences between staggered row formation and staggered planting because they do sound similar. Staggered row formation has to do with how each plant takes space in the garden. Staggered planting is a method of sowing a single crop variety across a spread of different calendar dates, so you aren't stuck with all your ripe tomatoes in only one week of the year. Gardeners do intervals of anywhere from one to two weeks between plantings for a month. With that scheduling, I was able to bring my harvest volume under control. My vegetables and fruits did not mature or ripen all at the same time. You can apply this technique to any of your vegetables and fruits—and even flowers! Your garden can have a long stretch of weeks of beauty and grace growing from raised beds.

To be effective with staggered planting, try to do the following:

- Stock up on seeds in the spring when a wide variety is available at stores. If you procrastinate, you may not be able to find all the varieties you want in time.

- Amend your raised beds early—some gardeners get things started at the end of the fall season—so you can begin your staggered sowing without delay.
- Start your seedlings indoors. Do not be at the mercy of the weather; take control of the situation by setting the planting clock yourself.

Tree Planting

Since the beginning of the book, I have focused all my attention on planting vegetables, fruits, and flowers. However, a garden would not be interesting and biodiverse without the presence of trees—fruit, ornamental, and anything in between. It is well worth devoting a small section specifically to them because you grow them differently from most, if not all, your other garden plants.

While you can plant trees (and bushes) pretty much all year round, the ideal time is autumn—with early spring coming in a close second. It gives enough time for trees to settle in and get ready to brave the summer heat. The two periods I mentioned are also the best time for tree relocation.

When you're ready to plant a new tree or relocate an old one, follow these simple steps:

1. Dig a hole three times bigger than the tree or sapling root system. It shouldn't be so deep that the flared part of the trunk is below the soil line
2. Take the tree out of its container or out of the ground. Inspect its roots for any sign of clumping. Loosen the root system thoroughly. Only trim it if necessary.
3. Place the tree inside the hole and adjust its position until 25% of its root ball can sit above the soil line. The root ball is where most tree root mass is, directly underneath the trunk.
4. Eliminate air pockets in the hole by filling it halfway with soil. You may use a strong stream of water to help the soil settle.

5. Pack the hole and tree roots all the way above the visible root ball in a mound shape. Tamp the ground down with your hand and a stiff flow of water until the soil and tree are firmly—not compactly—in place.
6. Cover the ground around the tree with mulch two inches high except for a 2-inch radius around the trunk. It's very important not to have the mulch touching the tree. A mulch volcano is a surefire way to a rotting tree.
7. Water the tree until its roots are established. This may take a year or so, so be patient about it.

Some gardeners stake their trees, which means to tie the tree to a rod to support it. Personally, I don't, but if you do stake the tree, be sure to loosen the tie regularly as the tree grows.

Also, while hand-watering is acceptable, the most effective way of watering a newly planted or relocated tree is by using a drip system or soaker hoses. If you choose to hand-water, you can make a simple watering aid to ensure the deep and proper saturation of water into the roots. This build is totally optional but will help water get deep into the roots.



PROJECT #10: The Watering Aid

Materials: PVC pipes (various lengths, as many as needed)

Tools: hacksaw, power drill, and drill bits

1. Cut a PVC pipe to the depth of the tree root ball using a hacksaw.
2. Plug up one end of the pipe firmly.
3. Drill a ½ inch hole every 1.5 inches up and down the length of the pipe.
4. Push the pipe deep into the ground as near to the tree roots as possible without harming them. There should be at least

- an inch or so of pipe sticking out of the soil for easy access.
5. Plug a garden hose into the PVC pipe and saturate your roots deeply!

For an easier setup, install the PVC pipe when you plant the tree.

You can replicate this project on as many trees as you want. You can even use this watering aid on your smaller plants. It is an effective way to conserve water and reach plant roots directly. Get creative, you can create DIY watering aids with any material. It is helpful for plants that do not have a broad root system.

Unlike smaller vegetation, trees have root systems that must always be taken into consideration when planting. The minimum recommended distance between your tree and house (or other structures in your property) is 16 feet, so the roots have ample room to spread without destroying anything in their path.

Figure out your tree's ultimate height, girth, and spread to guide your decision for its location, suitability, and interaction with other plants. You should also know its life cycle. Make sure that its leaves, branches, fruits, and other debris will not become a problem in the future. I have watched some courtroom reality TV shows involving trees encroaching upon another person's real estate. I have also watched storms breaking trees weighing thousands of pounds on top of houses, so know your tree.

When you acquire a tree sapling, plant it as soon as possible. If you cannot, at least keep its roots soaked in a water bucket. Be sure to plant it within a week so you don't compromise its ability to thrive. Wherever you decide to plant the tree, try to amend the soil where it will stand and some of the broader areas where you expect the roots will extend. If you are dealing with fruit trees, make sure that their soil drains well, and they will have access to full sun exposure.



Seedling Bank

- Planting is the heart and soul of homestead gardening.
- Companion planting is the concept of growing certain plants next to each other for their mutual benefit. A historically significant example would be the traditional Native American Three Sisters: corn, beans, and squash.
- There are three types of seeds to choose from: open-pollinated, heirloom, and hybrid. They affect how you save seeds from season to season.
- There are two ways of starting seeds, you can either start your seedlings indoors or sow them outdoors directly into the ground. Indoors gives them a head start, while outdoors allows them to develop faster.
- There are three types of plants: annuals, biennials, and perennials. These classifications are based on a plant's life cycle. The entire life cycle of annuals happens within a year. Biennials live for two years. Perennials have lifespans across several years.
- Your homestead garden can thrive all year long, but I recommend only focusing on a summer garden and a fall garden for now.
- Transplanting a seedling must be done with care to minimize plant stress.
- There are two types of planting layouts for your garden: grid formation and staggered row.
- Instead of planting all your tomato seeds at once, you can sow them gradually over a period of time. This is called staggered planting and is a way to spread out your harvest.
- Tree planting and care are different from those of smaller plants. A tree's eventual size, root system, and spread must be considered to determine its best location and maintenance requirements.

STEP FOUR: MAINTAIN THE GARDEN



You and I have now reached what could be best described as the daily grind of homestead gardening: the regular tasks you need to complete to keep your garden happy and thriving. After all the preparation and work you've put in, you don't want your effort wasted. This is why Step Four is important. It makes the waiting time bearable between planting and harvesting. The preparation you did before planting will have a much greater effect on your garden if you carry on with just a little bit of maintenance. Now, let's go through what you need to know to maintain a homestead garden.

Weeds

Weeds are like any other plant in your garden. The only problem with them is that they are similar to unwanted guests or overstaying relatives at your home. They are present where they are not wanted, needed, welcomed, or invited. And they just keep coming back.

Everyone has a different approach to dealing with weeds. Some simply pull them out where they see them; others take a more preventative approach. I've compiled some common methods and techniques for weeding, choose an approach that works for you.

Don't disturb the soil. Take it for granted that most, if not all, of your garden was once filled with wild vegetation. Expect that the

topsoil is conducive to that untamed sort of growth. In order not to escalate things further, do not stir up the soil (that is, dig) any more than you should. It can cause dormant weed seeds to come closer to the surface and germinate, worsening your problem. If you need to control your unruly crops, keep your action to a minimum by simply plunging a narrow-bladed knife down into the soil, right where their roots are, and cut away. Add them to your hot compost or leave them where they fall. Another minimally invasive method is to use a flame gun or a similar controlled flame device to burn weeds off. This is ideal for spot-specific issues. The weeds do not even have to be charred. Once it reaches a dull appearance after flame exposure for about three seconds, it is on its way to a quick demise.

Mulch them to kingdom come. Mulch is good for keeping moisture in the soil and for blocking sunlight to discourage weed growth. Be sure to have no more than a 2-inch layer of mulch over your planting area. That depth is enough to kill the weeds below without suffocating the soil. You can also use cardboard, newspaper, or weed-blocking fabric by laying it out over the soil before you throw in the mulch. However, it is still possible for weeds to grow over these sun deterrents. Be vigilant about monitoring the situation. I will discuss mulching further in a separate section.

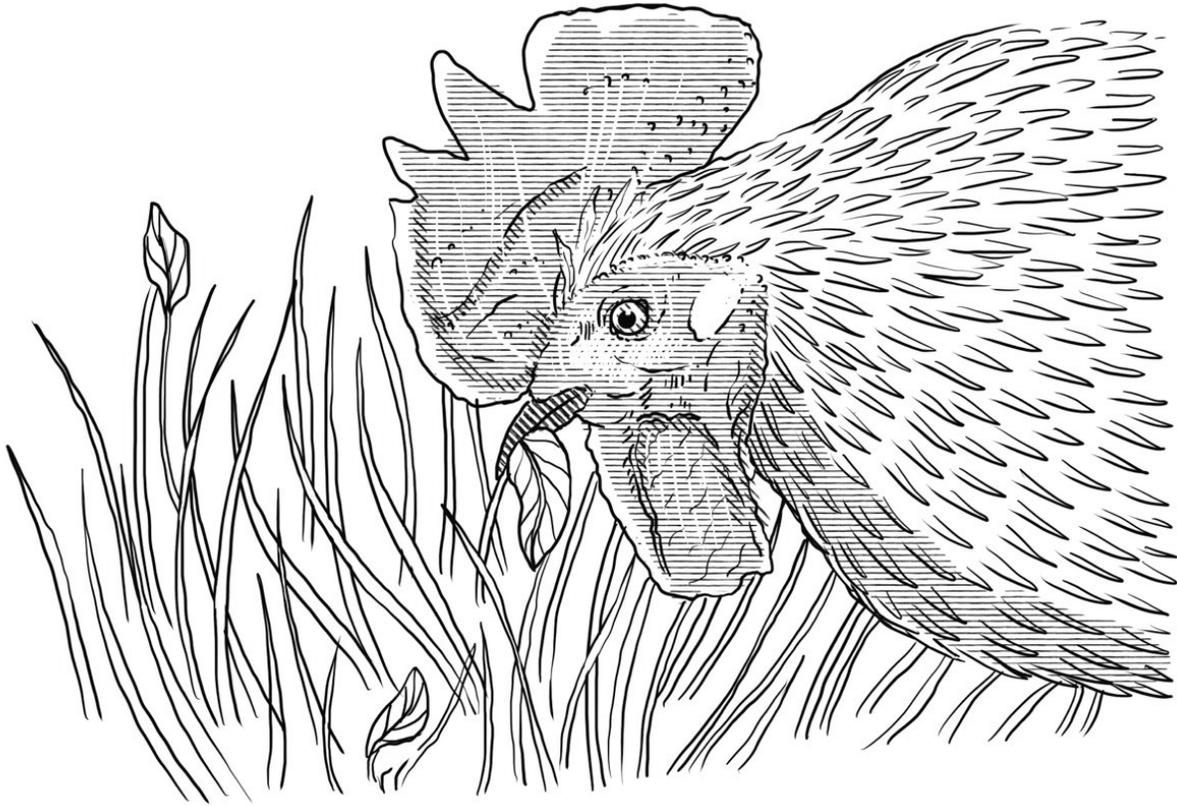
Work with the weather. Weeding is satisfying after a heavy rain because the soil is soft, making it easy to pull weeds by their roots. You can use your hands, a gardening fork, or a fishtail weeder to dislodge them. Bring a stool or something to sit/kneel on for your comfort. Even if a downpour is not forthcoming, you can still weed by using heavier tools, such as a hoe or a shovel.

Off with their heads! Some weeds are more tenacious than others; killing them at root level is not possible or effective. In such cases, make headless horsemen of them all. Use a machete, pruning loppers, or something similar to chop off their tops before they can reseed or flower. Once they do, it is like they multiply in numbers exponentially, making it more difficult to control them.

Keep your enemies closed in. You can shave off 25% of the recommended spacing for your plants and still get them to grow optimally. The benefit to this is that weeds growing between your crops get constricted and lose sun real-estate. No sunlight equals no photosynthesis equals weed death. There is a caveat to this: if your plants have the potential for pest or disease transmittal through leaves and other parts touching, then you are better off maintaining their recommended spacing.

Let it drip—or not. An important benefit of a drip irrigation system is control over water flow. By setting clear targets, you can deprive disruptive plants of any essential water. To do this, simply make sure that the drip holes on your tubing line up with your crops. You don't want water dripping in a spot where you have no plants; you're laying fertile grounds for a weed to come make its home.

Release the chickens . They can be quite effective in controlling your weeds as they peck their way around your garden. In a future volume, I will write about poultry raising as a suitable addition to the homestead. Even goats can be quite effective recruits for this task. However, I would only use them if my raised beds were beyond their reach. Also, watch out for your actual crops; your chickens may start chomping on those too!



Earlier, I said that weeds are like any other plant in your garden, just unwanted. With this definition, you can consider your own crop to be a weed if it ends up growing in a place not meant for it or in a manner inconsistent to your intentions. A perfect example would be my mint plant. It was supposed to be in one spot, but because of its ability to spread, it was soon encroaching upon the space for other herbs. I treated it like a weed and cut it off before it could expand farther. You may need to do the same thing with yours, so consider the following questions:

- Are your plants spreading beyond their allotted spaces?
- Do they interfere with the growth of neighboring plants?
- Are they growing too close to each other or squashing out other plants?
- Do they look unhealthy and pest-ridden?

If you answered yes to one or all questions, you should treat the problematic plants as weeds and deal with them accordingly.

Successful weeding is all about being a few steps ahead of your nemeses, and it is an integral part of gardening.

Mulch

Mulch is a gardener's best friend. It's one of the most effective methods of controlling weeds in your garden through the simple act of covering the soil's surface. We mimic what happens in nature, where natural mulch is created when leaves and twigs fall to the ground and cover the soil. As they decompose, they provide nutrients to soil microorganisms, which in turn enriches the soil. At the same time, mulch also shields the ground from weed invasion and soil erosion. There are many types of mulch. I have seen neighbors employ woodchips, cardboard, sawdust, and straw as mulch, besides the organically occurring ones. There are also nonorganic forms of mulch, such as fabric sheets, plastic covers, stones, rubber pieces, bricks, etc.

You only need to mulch your raised beds twice a year at most, especially when using organic types. This implies that you can even do it just once a year and still be fine. Mulching is simple, just add a 2-inch layer over your raised bed. Make sure to leave a small gap around your plants; you don't want mulch in contact with them.

General consensus is that the best time to mulch your garden is late winter/early spring. It becomes part of your prep for the new planting season. However, if you're feeling antsy about it, you can do a second smaller mulching in late fall/early winter to prevent soil erosion. Because most mulches break down over a number of months, you don't need to remove old ones; they would have already broken down and mixed in with the soil. Just add another 2-inch layer or less, depending on the amount of old mulch remaining, and you are good to go.

If you want to create homemade mulch to save some money and not just rely on garden shops, you should try the next project for your garden. I am inclined to use combination mulches (a mix of multiple materials) because they remind me of unprocessed compost (not yet broken down into a nutrient-rich aggregate). As Mother Nature does her work on it—voila—it transforms into an additional amendment to the soil, killing two birds with one stone.



PROJECT #11: The Homemade Mulch

Materials: tree/plant leaves, branches, bark, trimmings (except eucalyptus and walnut), grass clippings, pine needles, recycled paper

Tools: rake, lawnmower or machete, paper shredder or scissors

1. In a flat clearing of your garden, rake leaves, branches, bark, trimmings, grass clippings, and pine needles together into a small pile.
2. Run a lawnmower through the pile several times until properly shredded. In the absence of one, use a machete or something similar to hack through the pile until chopped up thoroughly.
3. Cut your recycled paper into strips using a paper shredder or scissors.
4. Mix the paper strips into the mowed-down pile.
5. Scatter your homemade mulch over your raised beds.

By combining the “heavier” wood pieces with less dense materials, I keep the mulch light so it does not kill essential elements underneath its covering. If you made a bit too much and have surplus mulch, place it on a clean, dry, and cool surface. Cover it loosely with a piece of tarp. Be sure that the remaining pile receives adequate air circulation to prevent decay and fungi. If you have a large garden

and are mulching often, I'd recommend a wood chipper/shredder. They can generate massive quantities of mulch fast!

While mulch is generally beneficial to any garden, it can be detrimental if used incorrectly. When piled on too thickly, it can suffocate the soil and hasten the rotting of nearby woody plants. Using too much sawdust/woodchips as mulch could cause a loss of nitrogen in your soil. Decomposing wood ties up nitrogen in the soil and can adversely affect growing vegetables nearby. Remember, you only want a couple of inches of mulch to cover your soil; more isn't better. Excessive mulch can create an environment conducive to pests like slugs, snails, and in some regions, even snakes. Of course, most garden snakes are harmless, so don't panic.

Herbicides

While I generally don't use herbicides, they may sometimes be the only viable solution to your gardening problems. In that case, you should equip yourself with an understanding of them so you do not walk into the whole affair blind.

Herbicides exist to kill plants. There are two types of herbicides: contact and systemic. Contact herbicides knock out weeds and unruly plants by their direct application to any exposed plant parts. It is a quick death for the weed, but the roots and other parts underground that the herbicide cannot reach may still revive it. The good news about contact herbicides is that the more you use them, the more they will weaken your target to the point of a permanent demise. Systemic herbicides are soaked up by plants through either their leaves or stems. Once inside, they travel throughout each plant and eventually kill them. They do not work as quickly as contact herbicides, but the solution they provide is long-lasting.

Most of the herbicides currently available in the market are made of powerful chemicals that may kill not only unwanted plants, but also nearby plants in your raised bed, especially if improperly used. To counter that problem, you can try making your own herbicide, as

described in the following project. It would be an example of contact herbicide.



PROJECT #12: The Organic Herbicide

Materials: 1 gallon vinegar, 1 cup salt, 1 tablespoon liquid dish soap

Tools: spray bottle

1. Pour the vinegar into a large container and add the salt and dish soap.
2. Mix the ingredients together until the salt dissolves completely.
3. Fill a spray bottle with the concoction and spray at targets. The best time to do this is when the sun is at its hottest temperature or highest position over the nuisance areas.

If you can, choose vinegar with a high percentage of acetic acid. The higher the acidity, the better for killing weeds. Common grocery store white vinegar contains about 5% acetic acid, which should work fine for small weeds. If you need something stronger, your local garden shop may stock 10%, 20%, or even 30% concentrated vinegar. If you want to increase the sharpness of your mixture, try adding lemon juice on top of your herbicide. If you want a quick solution, say, for weeds standing in the cracks of your garden walkway, pour boiling water on them. Just be sure that there are no valuable crops anywhere near them. The boiling liquid will not be selective about its target.

Plant Diseases

I am tempted to tell you about the most common plant diseases so you know what to look out for when checking your raised beds. However, that can simply become a laundry list of plant health issues

without giving you the skills to recognize and address them. Since that is not what this book is all about, let me focus instead on practical actions to take when confronted with an ailing plant.

Even though a roster of plant diseases can be long, there is a short catalog of signs and symptoms that shout, “I am a sick plant,” which you should not ignore. As soon as you see one of them on a plant, you should check if there are other indicators on it and its neighbors. Once you visually confirm what else is happening with it, you can figure out the appropriate course of action. By doing so, you may just nip the problem in the bud, so to speak.

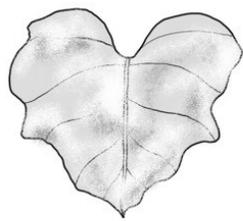
Now this doesn’t mean that every blemish on your plant entails pulling out the big guns. Don’t put your plant down for having a cold. Many plants can survive and even produce. You may not need to take action unless the disease is adversely affecting your plants’ health. This means you see things like wilting or yellowing.

If you’re having trouble identifying your plant’s ailment (or if you’re just lazy), there’s an app for that! There are several free plant disease identification apps available on the Android and iOS app stores.

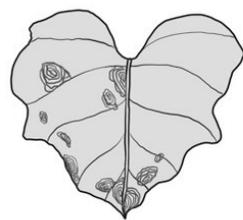
In the below table, a **sign** is actual evidence of a potential disease, such as mildew or thick sap on your leaves. A **symptom** is the impact the disease is having on your plant, for example, wilting or yellow leaves. There are three main origins of plant disease: fungi, viruses, and bacteria. It’s estimated that 80-90% of plant diseases are caused by fungi, so if something is bothering your plant, it’s probably a fungal disease. The table below describes some of the most common signs and symptoms of disease.

Plant	Signs	Symptoms
Fungi	<ul style="list-style-type: none"> • Brown streaks • Spots on stems/leaves • White mold • Powdery mildew 	<ul style="list-style-type: none"> • Bird's-eye spot • Seedling death from dampness • Brown leaf spot • Yellow leaves
Viruses	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Mosaic leaf pattern • Crinkled leaves • Yellow leaves • Plant stunting
Bacteria	<ul style="list-style-type: none"> • Sap-like beads on plant surfaces • Water-soaked lesions • Bacterial stream from cut stem 	<ul style="list-style-type: none"> • Leaf spot with yellow halo • Fruit spot • Canker • Crown gall (woody bulge) • Shepherd's crook stem

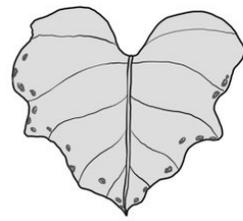
Powdery Mildew



Blight



Scabs



Once you've identified your plants' disease, it's time for treatment. If the disease has infected just a small part of your plant, I recommend just pruning the diseased leaves or stems. Make sure to disinfect your pruning tool with alcohol or diluted bleach after every use to avoid cross-contamination. Keep the plant dry and make sure it isn't touching other plants to prevent the fungal infection from worsening. Some fungal diseases can be treated with fungicides. Since fungi are the most common cause of plant diseases, you can often win the war with easily available solutions. My opinion: Neem oil is the way to go. It's cheap, organic, and great at dealing with mildews and other common fungi. It also happens to be a great insecticide against arthropods. Make sure to dilute heavily (I use 1% neem oil) and spray in the mornings or evenings to prevent the sun from burning your oil-coated plant. If neem oil isn't doing the trick, you may try something commercial such as a copper-based fungicide. If you do use commercial fungicides, make sure to wait a bit between spraying and eating.

Viral and bacterial diseases are different stories. If a virus attacks your plants, they are most likely done for. I recommend cutting off the diseased leaves or stems and waiting. Otherwise, you might need to uproot the entire thing and throw it away. If nothing is working or you don't want to buy any fungicides, you can try these homemade fungicides:

Fungi	Ingredients
Powdery Mildew	<ul style="list-style-type: none"> ● 4 tsp baking soda ● 1 tsp dish soap ● 1 gallon water
Scabs, Black spots, Leaf spots, Mildew	<ul style="list-style-type: none"> ● 4 Tbsp apple cider ● Vinegar ● 1 gallon water

The suggested homemade fungicides that do not have fungi listed may be used for general applications. Apply your fungicide spray once every 7-14 days or so. It is best to spray early in the morning so the liquid can dry up from the sun as the day progresses. You can experiment with using the last three homemade fungicides as preventive measures as well.

While there are solutions to cure plant diseases when they happen, the best practice is to block them from showing up altogether. It begins with regular housekeeping: dispose of plant debris immediately and properly, prune unhealthy or dying plant parts, and weed, weed, weed. If you're using fertilizer, don't add too much or too often. Moderation is key, even in gardening.

If you decide to buy seedlings, be sure to check each of them closely. Do not bring infected plants home; they can spread disease to their neighbors.

I had mentioned earlier that it would be good to rotate out your annuals from season to season. That is also a disease prevention method. As with the spraying of fungicides, water your plants in the morning. Give them time to dry before sundown to keep moisture from standing on plant parts. I have touched on the benefits of mulch previously, but it's worth repeating that it also helps prevent diseases.

When I touched on trellises, I remarked that they foster good airflow. Airflow is important for a plant to strengthen its limbs and prevent moisture from accumulating on it. A simple thing like observing recommended spacing ensures that you are steps ahead of diseases.

If you do end up losing the war against plant diseases, be sure to dispose of the infected plants correctly. Do not throw them into your compost pile to prevent contamination. You can chop them up and bury them in a hole away from your garden beds, or if allowed in your area, burn the diseased plants. Do not do this if your region is prone to wild winds and wildfires. As a last recourse, bag and throw them into the dumpster.

Pests

Pests are the evil twin of diseases when it comes to gardening. They do not and can never elicit any love from gardeners the world over. To differentiate the twins, you can simply think of pests as the insects, rodents, and other fauna that create damage and chaos to your homestead. Before you declare war on all creatures big and small in and on your raised beds, you must remind yourself that not all critters you find in the garden are harmful. Some of them need to be there because they are an essential part of the ecosystem. Even actual pests should not be completely eradicated for the same reason: they also have a role to play in the environment.

That said, I've listed some of the most common pests in gardens, their harm to plants, and how to address them.

Aphids

- Feed on plant sap and soft plant parts; bringers of mildew and viral diseases.
- Spray mild soapy water on affected areas of the plants. Sometimes, a pinch of cayenne pepper added to the soap-and-water solution gives it a bit more zing. Or dust plants with flour to constipate them.

Birds

- Eat seeds, fruits, and vegetables.
- Frighten them away using scarecrows, flags, ribbons, and similar setups that can flap in the wind. Under no circumstance should you poison them. If they drop dead within your property and your dog or cat finds them and snacks on them, you would have created an unnecessary and painful tragedy for your family and yourself.

Caterpillars

- Eat pretty much everything in a garden.
- Pluck caterpillars and eggs off your plants one by one. You can also wash them off your plants with water, neem oil, or insecticide. Wrap the base of your plants in cardboard or tin foil to prevent their arrival.

Cutworms

- Feed on plants at night, rest at plant base in daytime.
- Handpick them off plant base during the day.

Earwigs

- Chew holes on plant leaves and soft-skinned fruits
- Place a rolled newspaper next to the infected plant overnight. Remove the newspaper after the earwigs move to it.

Flea beetles

- Chew holes on plant leaves; cause wilt and plant death.
- Use a soapy mixture on these insects too, but add rubbing alcohol to it. Before a garden-wide spraying, try the solution on a leaf and leave it overnight. If nothing adverse happens, continue the campaign. You can also dust talcum powder on your affected plants.

Leaf rollers

- Feed on buds, leaves, and fruits.
- Same recommendation as cutworms.

Mealybugs

- Suck out plant sap, causing yellow coloration, wilt, deformation, or death.
- Wipe them off with cotton buds dipped in rubbing alcohol. You may also spray alcohol on the infested plants.

Rabbits

- Chew leaves, stems, and fruits. Check for jagged edges on plants near the ground.
- Spray plants with fox urine, red pepper water, or garlic water. If all else fails, you can install a cage around plants.

Root and vine weevils

- Attack berry and ornamental plants.
- Place short cardboard pieces among plants. Weevils will hide under them, making it easy for you to collect and destroy them.

Scale insects

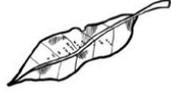
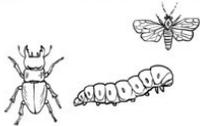
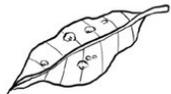
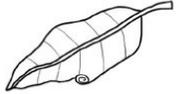
- Eat a wide variety of plants.
- Rub them off with a fingernail or a toothbrush. Prune plants when heavily infested.

Slugs and snails

- As voracious as caterpillars in feasting on your garden; carriers of lungworms, which are dangerous to pets.
- Spread coffee grounds, eggshells, diatomaceous earth, wheat/corn bran, or seashells around your plants. Or plant garlic and chives, which the pests do not like at all.

Spider mites

- Cause foliage to change to pale green to bronze; create small red blisters on the underside of leaves.
- Use fungicides and insecticides against them. Or you can simply wash them off with a jet of water.

	Damage		Pests
Deformed leaves, sucking damage			Aphids
Discolored leaves, sucking damage			Thrips, mites
Chewed or skeletonized leaves			Beetles, caterpillars, sawflies
Leaf galls- abnormal plant growth			Cynipid wasps, certain aphids, psyllids, mites
Leaf mines- white patterns on leaves			Beetles, flies, moth larvae
Folded leaves			Caterpillars, tree crickets, spiders
Rolled leaves			Certain mites, some caterpillars
Chewed leaves, slime trails			Slugs, snails

Pest and diseases are the best arguments for companion planting. However, It is impossible to predict what pests you have, so treat them as you go along. You will not be pest-free for a while, so always be prepared. I recommend spending ample time in the garden with an insect identification app so you know precisely what's plaguing your garden. Weak plants often attract pests, so try to keep your plants as healthy as possible. Sometimes, the best soldiers to combat these tiny pests are other creatures. You may buy helpful predators such as ladybugs, praying mantises, and toads online, but be sure they do not become pests.

Pruning

A garden that is untrimmed and unpruned is like uncombed, unwashed hair. Not only does it look visually offensive to most people, but it is also a signal to many diseases and pests to crash the party. You need to trim and prune for the following reasons:

- To increase your harvest yield. By cutting here and snipping there, you allow your plant to concentrate on production rather than growth.
- To control plant growth. I remember my mint plant again for this. I needed to cut off new shoots as they came up, or they would choke out the rest of my garden.
- To reduce diseases and pests. Trimming and pruning prevent overcrowding, dense foliage, and other unideal scenarios, which make your garden conducive to rot, blight, aphids, and slugs, to name a few.
- To encourage airflow. Removing excessive growths (bunched up branches, thick leaves, etc.) in a plant allows for better air circulation.

The timing for this garden maintenance activity depends on the plant. If you have a polyculture garden, trimming and pruning can happen several times each planting season. However, if you are merely taking care of damaged, dead, or unhealthy parts, you can do

that immediately. Flowering trees and shrubs should be pruned in late winter or early spring. Ornamental trees, rhododendrons, and lilacs should be pruned soon after blooming. For the kind of trimming and pruning that is part of general garden maintenance, you can use the following schedule as your guide:

Fungi	Plants to Prune
February-April	<ul style="list-style-type: none"> • Flowering summer shrubs (before budding) • Fruit trees • Evergreens
May-June	<ul style="list-style-type: none"> • Flowering spring shrubs (after flowering)
June-July	<ul style="list-style-type: none"> • Shade trees
August-December	<ul style="list-style-type: none"> • Dead/damaged branches

In theory, most plants can stand a bit of pruning and trimming, except many conifers. There is no hard and fast rule for how old they should be before you start handling them. My personal rule is to prune and trim when I begin seeing disease or damage or if the foliage begins to look unkempt and ugly. Some important tips to remember about trimming and pruning:

- Clean all your cutting tools and devices. Make sure that there are no residues from previous trimming and pruning exercises to prevent potential cross-contamination.
- Leave a stub. Do not cut too cleanly down to the crook of a branch or stem.
- You can only prune up to a third of your plant or risk its ability to produce a bountiful harvest.
- Ensure that your tools are sharp.

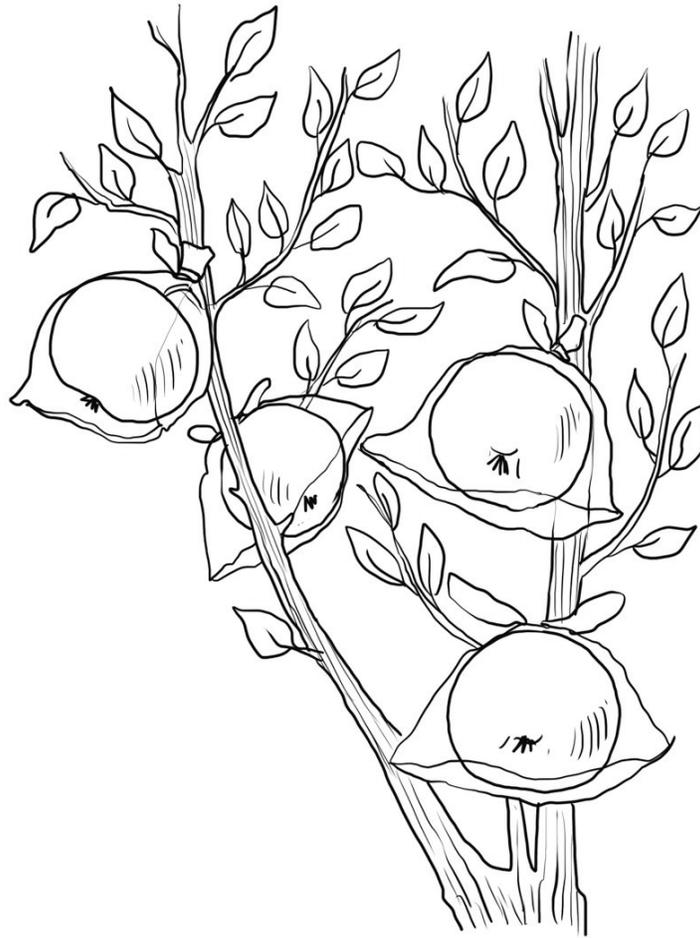
In regards to fruit trees, observe the growth of the fruits keenly. Do not allow them to burden branches so much that they start bending from the fruits' combined weight. If branches sag too much or fruits bruise and scar excessively as they bunch up together, you must

reduce the fruit population by removing some of them. I once had a tree that dropped hundreds of baby peaches. I had to thin out many of those peaches so the tree could develop the remaining ones properly. There is no formula to it. Just learn the way that works in your situation by trial and error. If you're anything like me, you'll be hesitant to pluck dozens of unripe fruits in fear of minimizing your harvest. Trust me, if it's necessary, thin your fruits; it'll actually produce a better harvest.

Fruits and Vegetables

All the tasks and topics discussed under Step Four apply directly to the care and maintenance of fruits and vegetables. When you weed, mulch, make herbicides, address plant diseases and pests, and trim and prune, you help your plants develop in width and height and produce fruits and vegetables. Therefore, you do not have to be heavy-handed with your crops beyond what had already been shared. The few pointers specific to fruits and vegetables I want to highlight are only the following:

- Trim the bottom leaves of your plants. Make sure that nothing touches the ground. Do the same thing to the middle section but to a lesser degree. Remember not to prune more than one-third of your plant ever!
- Pluck off plant suckers only in the lower section of plants. Suckers are the tiny shoots that emerge from branch joints.
- Prune vegetable plants enough to see the light through them when you look at them from the side, through their leaves.
- You may bag individual fruits and vegetables to prevent insects and birds from eating them. Say, wrap a single lemon in a zip bag (for easy closing). Cut a small hole in one of the bottom corners to allow the fruit to breathe. Keep it inside the bag until ready for harvest.



You can bag individual fruits to protect them from pests

Trees

Of all the plants in your homestead garden, trees require the least amount of human intervention, once well established and healthy. Most trees are perennial, so they can stand in your garden year after year, silently watching as you putter around. Their regular upkeep is nothing much: mulch, prune, irrigate, and loosen compacted earth at roots. As they grow older, they might require specialized attention. Do not hesitate to seek out such help, as the tree's well-being is also your well-being.

Before we continue to the next section, I want to conclude this discussion about tree maintenance with a focus on pruning techniques. Try not to be too overzealous with the clippers!

For beautifying your tree

- Remove parts that fall under the three Ds: dead, damaged, diseased.
- Trim off suckers at the tree base and perfectly vertical sprouts sticking up from main branches.
- Cut branches down completely. Do not leave stubs protruding from the trunk or main branches.

To promote airflow and sunlight penetration

- Prune branches that extend in undesirable directions (downward, toward the center, or crossed with other branches).
- Check if the remaining branches are spaced evenly and stretching outward from the tree center.
- Remove less healthy-looking branches or ones positioned at bad angles if more than one branch emerges from a single point on the tree trunk.
- Keep cutting until the remaining large branches have a breathing space of 6 to 12 in all around.

To refine and finalize trimming and pruning.

- Get rid of the outermost branches of the tree until it can look short but thick. It strengthens the tree's ability to bear the weight of upcoming fruits.
- Stop cutting once you can distinguish a tree's growth from the previous year. It will be evident from the wrinkled texture of the bark.

Watering

Now that you have a drip irrigation system that waters your plants, it's time to configure it to follow the best watering practices. There are well-defined principles that regulate this chore, and I encourage you to use them in your own gardening efforts:

- The window of time before sunrise to midmorning is when you should water. This gives your plants enough time to absorb the moisture and tide themselves over until the end of the day. It also ensures that they are not wet at night when they may have difficulty drying up.
- Water deep into the roots so that you do not have to do it every day. You save precious resources and time for other tasks. Deep watering also encourages the roots to go deep, which strengthens the plant.
- Avoid wetting leaves and other parts of the foliage. If they do not dry properly, you invite the evil twins to come.
- Do not neglect your trees and shrubs. Water them directly at least once every one to two weeks, depending on their requirements.
- Stick your finger into the ground to check if there is a need to water. If it feels dry, then go ahead and water. My experience in the Oklahoma Panhandle is that the arrival of rain is not necessarily the cancellation of watering duties. The rain sometimes does not go deep enough to provide the nourishment plants need from water.
- If you can, recycle wastewater from washing fruits and vegetables in the kitchen. If it does not contain strong household chemicals, recycle bath/shower water, too.

I have mentioned some of the tips listed here in earlier parts of the book. I have repeated them to emphasize their role in the overall maintenance of your homestead garden. Eventually, you will create your own as you learn more and refine your gardening skillsets.

Scheduling

If there's one thing I learned from my early years of gardening, it is that maintenance can become overwhelming. To manage the flood of tasks, I created a scheduler that reflected daily, weekly, monthly, and yearly things. The activities I listed changed depending on the season, current weather conditions, issues arising from day to day, helping hands and time available, and other factors. I also mentally divided the garden into four zones to split up my chores into manageable pieces.

Weekly Scheduler

	Sun	Mon	Tues	Wed	Thurs	Fri	Sat
Zone 1							
Zone 2							
Zone 3							
Zone 4							

Yearly Scheduler

	Zone 1	Zone 2	Zone 3	Zone 4
Jan				
Feb				
Mar				
Apr				
May				
Jun				
Jul				
Aug				
Sep				
Oct				
Nov				
Dec				

The tables shown above are just samples to show you how to get started. If you want a printable copy of the scheduler I use, go to my website, easygreenguides.com/scheduler . The most effective way of garden maintenance is not achieved in time management but in energy management. Learn to devote your efforts to the important things only, even if you have just a few minutes to spare every day.



Seedling Bank

- Garden maintenance encompasses the tasks that need to be done from the time you start your garden to the time you harvest the last batch of produce.
- Weeding continues even after you have sowed your seeds and seedlings.
- Mulch is an integral part of protecting your plants and should be used every season.
- Herbicides are sometimes necessary for controlling weeds and unruly plants.
- Fungi, viruses, or bacteria may cause plant diseases. Know their signs and symptoms so that you can provide appropriate solutions.
- Pests can destroy an entire garden. Monitor your garden closely, identify the pests, and act accordingly.
- Garden maintenance is incomplete without trimming and pruning. Most, if not all, plants require these actions to develop healthily, free of pests and diseases.
- Watering plants is an essential task for the upkeep of your garden. Learn to do it correctly so you do not waste water or nutrients.
- Draw up a schedule for your daily, weekly, monthly, and yearly tasks for maintaining your garden. Print a copy and display it in an area where you can see it.

STEP FIVE: HARVEST THE PRODUCE



Now that you have done the hard work of creating and maintaining your garden, it is time to enjoy the fruits (and vegetables) of your labor! Every crop in your garden grows at different rates. They mature and ripen at various times, even if you plant them all on the same day. With that in mind, it can get tricky to know when they are ready for harvest. Thankfully, each plant will display clear signs when they're ripe and ready for harvest; you just need to know what to look for. I tabulated some of the most common ones for your reference.

Signs of Readiness for Harvest

- Apple / Pear** : Twists off easily from stem
- Beans** : Easily snap in two before seeds bulge out
- Beet** : Shoulders swell above the soil line
- Berries:** Evenly colored
- Blackcurrant:** A week after turning black
- Blueberry** : Two or three days after turning blue
- Broccoli** : Buds the size of matchstick heads
- Brussels sprout:** One inch in diameter
- Cabbage** : Solid when squeezed gently
- Carrot** : Tops swell above the soil line

Cauliflower : The head looks full while curds are still smooth
Corn : Shriveled tassels, milky substance from pinching
Cucumber : Firm and smooth, no pointy tip
Currant : Same as berries
Eggplant : Firm and shiny
Garlic / Onion / Shallot : Top falls over
Kale : Deep green, firm, and sturdy
Lettuce (head): Full and firm when squeezed
Lettuce (leaf): Outer leaves ready when plant stands 4in high
Peach/Nectarine: Slightly softer at the stem end
Parsnip: After the first frost for the sweetest taste
Peas: Pods look and feel full
Pepper: Lovely, even color on entire fruit
Potato: 20 weeks after planting
Radish: Bulbs swell above the soil line
Raspberry: Comes off easily from the plug
Rutabaga: Three months after planting
Spinach: Stands 6 inches high
Squash (summer): Skin tender enough to poke through with a fingernail
Squash (winter): The color turns as expected
Swiss chard: Same as kale and leaf lettuce
Tomato: Full color, slightly soft to touch, discernible scent, twists easily off stem
Turnip: Shoulder 2 to 2.5 inches in diameter at the soil line
Watermelon: White spot at the bottom turns yellow
Zucchini: Four inches in length

Since I cannot list all the possible garden produce for your reference, you should learn about the basic general plant characteristics that signal harvest readiness:

Amendment	Permeability	Water Retentiveness
Decomposed		
Hot compost	Low-Medium	Medium-High
Manure (aged)	Low-Medium	Medium
Fiber Concentrated		
Coconut coir	High	Medium
Hardwood bark	High	Low-Medium
Peat	Low-Medium	Very High
Wood chips	High	Low-Medium
Inorganic		
Perlite	High	Low
Sand (coarse)	Medium-High	Low-Medium
Vermiculite	High	High

Timing can make or break garden harvesting. If done too early, you risk wasting produce because you have no way of storing it safely. If done too late, the same wastage can happen because they are no longer viable for eating. It is essential to know exactly when to do it.

Hold the crop in your hand. Feel its size and heft. Trust your gut, which has been developing this sense ever since you saw produce in the kitchen for the first time when you were a child. Run your fingers across its surface. It should feel firm and full. You could also try a small piece to assess its flavor. If it tastes as it should taste, then begin the harvest. If you continue homestead gardening, you will be able to nail this trial-and-error method and know instinctively, without fail, that your garden is ready for harvesting. Until then, it is okay to make mistakes. I remind you this again because I, too, experienced frustration when I could not get things right the first time.

Do not let your produce overgrow on its plant. I once left a zucchini on its vine until it was as long as my leg from knee to ankle. It made

me very proud, driven by the foolish notion that it had achieved a record-breaking size. When I cut into it, I was humiliated to discover that it was more reminiscent of a loofah than a summer squash. It would help if you constantly remembered that your garden produce might never look as big or as shiny as the ones you find on store shelves. Bigger is not always better; shinier is not always better. As long as you have applied the best practices and your hard work, you can take pride in what comes out of your raised beds.

Each plant in your garden requires a different action for harvesting. Some may need to be pinched; others, twisted. Still, others may need to be cut off with scissors. It's okay to try different things and see what works best.

Seed Saving

As you close out the season with one or more harvests, look to the future—the next growing cycle—and plan for it. While you utilize most of your crops for food and bartering with your neighbors, try setting some of them aside to collect seeds for the next season. It is a practical, economical way of continuing your homestead garden while leveling up your skillset. Saving seeds was second nature to traditional farmers of long ago. They did not have stores that stocked up on their favorite crops, so they had to do everything from scratch.

However, even as I say all that, you must remember that some of your collected seeds may not become as good as the ones you bought from the garden shop. In the section about seed selection and germination, I mentioned that cross-pollination might compromise the seed quality, making the seeds less viable than their commercial counterparts. Still, as long as you keep your seeds to your homestead, this can be the start of your self-sufficient, self-sustaining garden.

The following are steps to take for saving seeds:

1. Select

Not all crops in your garden can be harvested for their seeds. Thankfully, some of the most popular garden plants are also the easiest to select for seed harvesting: tomatoes, peppers, beans, and peas. These four vegetables are self-pollinating. They do not need to be fussed over to be ready for storage.

2. Harvest

Carefully assess your plants and determine which ones are the best candidates for seed harvesting. Choose the healthiest, strongest, and most typical for its species. This is not the time for collecting oddballs.

To harvest tomato seeds, let the tomatoes ripen completely on their plant. Twist them off from their stems and scoop out the seeds and pulp. Place them in a container filled with water and swirl the liquid around every day. Repeat for the next few days until seeds separate from the pulp and sink to the bottom of the container. Pour out everything except the seeds, using a strainer to catch and rinse them. Let the seeds dry on a paper towel or cloth. Once they are completely dry, store them in a properly labeled envelope and set them aside in a cool and dry area of your house.

To harvest pepper seeds, leave the peppers on the plant until they fully ripen and start to wrinkle. Remove them from their stems and cut the peppers open. Scrape out the seeds and spread them on a paper towel or a similar surface. Leave them to dry. Once they are desiccated, do as you did for the tomato seeds: envelope, label, store.

To harvest peas and beans, let the pods ripen from the plant. They can stay there until they dry up and turn brown. Collect the pods and lay them out on a tray inside your house. Let them dry further for about two weeks. After that period, you can store them as-is until the next planting season or shell them and store them in the same way as previously discussed seeds.

3. Store

Seeds keep best inside paper envelopes placed inside airtight containers. Be sure to put the containers in a dry location, say, on a shelf or in a cabinet, above ground level. This is to avoid moisture buildup, which can spoil the seeds. It is also a way to prevent pests (for example, mice) from feasting on them. When you label your seeds, include the following information: name, variety, date collected, and any notes you deem necessary. Provide the same set of data for all your seeds to create uniformity and order in your storage.



Seedling Bank

- Timing is everything when it comes to harvesting. Know the right moment to do it.
- The following crop characteristics are what you look out for when determining harvest time: color, sheen, and size.
- Fruits, vegetables, flowers, tubers, and nuts are not the only things you harvest from your garden. You should also harvest seeds for the next planting season.
- You can harvest tomato, pepper, bean, and pea seeds from the garden without much deviation from the parent plant. Most other seeds are best purchased from a garden shop.
- Harvesting seeds involves three key steps: selecting your seed source, harvesting the seeds, and storing them.

STEP SIX: PREPARE FOR NEXT YEAR



By sheer will, persistence, patience, and courage, you have reached the end of your first planting season! Cue the fireworks.

You have established homestead gardening as a lifestyle, and you can carry on with it for many years to come. However, before you kick off your gardening clogs, you must be sure to lay the groundwork for the coming year. Your preparations begin right after your last harvest.

Clear the Garden

Clear the garden of all weeds and debris. Uproot plants that never bore fruit, died, or were plagued by pests and diseases. Add everything to your compost pile except the unhealthy ones. You need to throw those far, far away from your garden to prevent contamination in the next planting cycle. Once all remaining plants have withered and browned or blackened, add them to the compost as well.

As soon as you have cleared the garden of all plant waste, do one rough till of the soil back and forth. Tilling helps the soil breathe after a busy year. It is also like a massage to the ground. It deserves a rest. Do not till if the soil is wet; it is too sticky a job to do in that condition. If you must, wait until it dries before tilling. Under no circumstance should you skip through this step. Be patient.

Refine the garden for spring

After or while tilling, throw in organic matter (it could be your vermicompost) so that nutrients and beneficial microorganisms can embed themselves in the soil. By the time you start your planting next year, your garden will be ready to feed your fresh batch of crops.

If you are pumped by the success of your first gardening efforts and do not want to stop planting, you can also put in winter crops. They can invigorate the soil while you wait for the freeze to pass. Check with your local garden shop for what works best in your area. Off the top of my head, the usual suspects for this are rye, clover, and vetch. The nice thing about planting winter crops is that they prevent soil erosion and compaction, and they add to the organic material of your raised beds—plenty more food for next year's batch of fruits and vegetables.

If you notice sections where weeds seem to have won, cover them with cardboard or black plastic to kill them. Do not give them a chance to sprout and wreak another round of havoc in the garden.

While most of the garden may lie fallow until spring, do not forget that there may be perennials in there somewhere (for example, rosemary). To help them survive through the winter, cover them in mulch about 2 to 3 inches deep, but do not make it thick until after the first serious frost. Winter mulch is the duvet your soil needs to maintain a relatively warmer temperature compared to the overall atmosphere. Post-harvest time in the fall is also the right time for doing a bit of trimming and pruning of your perennials.

Evaluate the year that was

A serious homestead gardener uses the winter hiatus as a time to assess the previous planting cycle. Did your plants produce as expected? Which ones were the most productive? Which ones were underachievers? Should you replace the underachievers with different crops next year? Was your irrigation system adequate? Did

your maintenance schedule meet the needs of your garden? There are plenty of questions that need answers. Try to be as thorough as possible, creating questionnaires that will address the following key features:

- Space usage
- Weeding
- Composting
- Constructed garden elements
- Soil amendments
- Irrigation system
- Plant selection and variety
- Maintenance work
- Harvesting
- Post-harvest upkeep

Check your Tools

Since you are a newbie to homestead gardening, it is possible that you had neglected to take care of your tools in the first season. Now is the time to make sure that they will be in tiptop shape for next year. Wash them to remove all dirt and debris. If they have started to rust, sand them or use a wire brush. Sharpen the ones that need sharpening, such as your spades, hoes, machetes, axes, cutters, etc. Once you have done all this, apply some light machine oil to their surfaces. I personally like using old tools instead of continually buying new ones. They are like an extension of my hands. I handle them much better.

Crop Rotation

As you prepare for the new year, do not forget to plan for crop rotation. I do understand that while crop rotation is a good gardening practice, it cannot always be applied to every situation. For one, small gardens cannot accommodate constant changes, as they have fixed elements in place. However, it makes sense to rotate—even in

a small space—if your garden is under serious threat of pests and diseases. It is not just sensible; it is required in this situation.

If you must or want to do crop rotation, remember that different crops affect the soil differently. Some are heavy feeders (for example, tomatoes, cabbage, and other leafy vegetables); they consume many soil nutrients. Some are light feeders like peppers, radishes, and potatoes, to name a few. Still, others are soil builders. Instead of taking away nutrients from the soil, they give them back. They include legumes and winter cover crops.

Even if you have a small garden, you can still rotate crops by assigning each type of plant (heavy feeder, light feeder, or soil builder) to one raised bed. Next year, designate a different plant type to that raised bed. And so on. Whether you have just one bed or 10, the important thing is that it will always be a different type occupying the area come next year. The plants will have their own game of musical chairs. If you do not even have beds to speak of, you can still plan for a square foot of planting area to have different crops from year to year.

Besides using these types to guide your rotation, you can also employ harvest groups: leafy crops (example: spinach), root crops (example: carrots), and fruiting or flowering crops (example: eggplants). As with the type strategy, the harvest group strategy means they follow each other in succession from season to season. Be sure to add cover crops after the fruit crops because the latter usually get planted in summer. There will be time for cover crops to work their magic in the soil.

A third crop rotation strategy is to follow plant families: squash, cabbage, tomato, bean, lettuce, carrot, onion, and spinach are the most prominent ones. Each family may be planted in the same spot every three years or so.



AND IT IS HERE where we end our time together. I hope that you've learned something and have implemented that knowledge into practice. There will always be room to learn new things every day. Build your homesteading skills and share that skillset with the rest of your family. I look forward to hearing about your gardening adventures, and Happy Homesteading!



Seedling Bank

- After your last harvest of the year, prepare your garden for the next planting season.
- First, clear the garden of all weeds and debris.
- Next, refine your garden with soil amendments, winter cover crops, mulch, and trimming and pruning.
- Use the winter hiatus for evaluating the current year's planting cycle and plan for the next one.
- Check your tools and get them ready for the coming year.
- If you plan to engage in crop rotation, consider what strategy may work best for you: plant type, harvest group, or plant family.

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EXTRA RESOURCES



General Maintenance Checklist

Weeding the ground

- Check raised beds for any weeds and unwanted plants and remove any found.
- Inspect all gardening tools and equipment for cleanliness, sharpness, and performance. Clean, sharpen, and/or fix any that are not in good shape.
- Others: _____

Vermicomposting

- Collect greens and browns, and feed worms at least once a week.
- Harvest worm castings and create a fresh worm bedding.
- Assess if you need a bigger/smaller vermicomposter, more/less worms, and act accordingly.
- Others: _____

Hot composting

- Turn the pile over (if aerobic type) every three or four days.
- Collect greens and browns and add to the pile until 2 to 3 feet high. Do not add further until it ripens.
- Harvest hot compost and make a new pile.
- Others: _____

Constructing raised beds

- Check stability and durability of beds. Repair if any issues found.
- Top up with amended soil if you find any soil settling (ground “sinks” low and compacts).

- Examine for any signs of pest invasion. Reinforce and/or upgrade, if necessary.
- Others: _____

Amending the soil

- Observe plant growth for any issues related to soil. Write down any and adjust amendments for next season or for immediate top-up.
- Apply an inch or two of revised soil amendments on top of raised beds, for any urgent needs.
- Others: _____

Laying out a drip system

- Check system for leaks, blockage, and other issues. Fix any found.
- Evaluate efficiency of waterflow and volume. Plan for a different layout, if needed.
- Others: _____

Building a trellis

- Inspect trellis for stability. Fix or reinforce, if needed.
- Monitor plant growth. Tie climbers to first level of trellis when ready.
- Others: _____

General Questions

- Do I need to protect any or all of my plants due to weather changes?
- Do I have the supplies, materials, and tools to make improvements to my homestead garden?

- Are my supplies, materials, and tools stored properly in a safe and secure place?
- Others: _____

Companion Planting Guide

Plants	Companions	Notes
Asparagus	Calendula, petunia, tomato	Deter pests
Basil	Purslane	Keeps fresh even in hot weather
Beans	Lovage, nasturtium, rosemary, squash, strawberry, sunflower	Act as an insect repellent; sunflower provides shade
Beet	Broccoli, Brussels sprout, cabbage, onion, Swiss chard	Promote space efficiency, pest control
Broccoli	Brussels sprout, cabbage, cauliflower, oregano	Same as above
Cabbage	Broccoli, Brussels sprout, garlic, kale, nasturtium, sage, spinach, Swiss chard, tomato	Same as above
Carrot	Cabbage, chive, early potato, leek, lettuce, onion, peas, radish, rosemary, sage, tomato	Same as above; carrot aerates soil for companions
Corn	Beans, cucumber, dill, marigold, melon, peas, squash, sunflower	Control pests; beans provide nitrogen; pole beans offer structural support; sunflower acts as windbreaker; corn takes role of natural trellis for companions
Cucumber	Beans, borage, cabbage, corn, dill, lettuce, nasturtium, oregano, peas, radish, sunflower, tansy	Promote space efficiency, pest control; nasturtium improves growth, flavor; peas provide nitrogen; sunflower acts as trellis, shelter
Lettuce	Basil, beetroot, cabbage, carrot, chard, chive, lettuce, onion, parsnip, poached egg plant, radish, scallion, spinach,	Promote space efficiency, pest control; basil, chamomile, summer savory tomato improve growth, flavor

Plants	Companions	Notes
Onion	Beet, cabbage, carrot, chamomile, lettuce, parsnip	Promote space efficiency, pest control
Parsnip	Lettuce, onion, radish	Same as above
Peas	Alyssum, beans, carrot, chive, corn, cucumber, mint, radish, turnip	Same as above; alyssum improves health, flavor
Pepper	Basil, carrot, marjoram, onion, oregano, tomato	Control pests; basil improves taste, growth
Potato	Basil, beans, brassicas, calendula, catmint, cilantro, corn, eggplant, horseradish, peas, squash, tansy	Promote space efficiency, pest control; beans improve tuber size
Radish	Carrots, chervil, cucumber, lettuce, nasturtium, parsnip, peas, spinach	Promote space efficiency, pest control; chervil, nasturtium improve growth, flavor; lettuce tenderizes summer radish
Spinach	Beans, brassicas, cilantro, eggplant, peas, strawberry	Promote space efficiency, pest control; beans, peas provide shade
Swiss chard	Beet, cabbage, onion	Promote space efficiency, pest control
Tomato	Asparagus, basil, borage, cabbage, calendula, carrot, celery, chive, cucumber, garlic, bee balm, nasturtium, onion, parsley, pepper	Same as above; chive, bee balm improve health, flavor; basil improves taste, growth
Winter squashes, pumpkins	Beans, borage, calendula, corn, marigold, nasturtium, oregano	Control pests; borage attracts pollinators, improves growth, flavor
Zucchini	Nasturtium, oregano, zinnia	Oregano, zinnia attract pollinators; nasturtium protects against pests

Bibliography

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