JASON ADAMS



THE 5 FOOT FARM

Grow 100+ Pounds of Fresh Food a Year in a Small Space

No Digging. No Kneeling. Indoors or Out, In Any Season.

THE

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JASON ADAMS

The 5-Foot Farm · Revised and expanded edition, 2026

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This book is for general educational and informational purposes only. It is not professional, legal, medical or financial advice. Gardening involves physical work, tools, water and sometimes electricity. Use good judgment, follow the safety notes and product labels, and get help with anything heavy or unfamiliar. Check with a qualified professional if your situation calls for it.

Results vary with your climate, season, sun, space, materials and care. The harvest figures in this book are estimates drawn from published university sources, not promises.

Rules about digging, building, selling produce or plants, keeping gardens in front yards, homeowner associations and rental properties differ from place to place. Check your local rules, your lease and your HOA covenants before you build or sell. Before digging in the ground, call 811 so underground utility lines can be marked.

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Some photographs in this book are illustrations created with digital tools. All diagrams were drawn for this book.

A NOTE BEFORE YOU START

Welcome to Your 5-Foot Farm

First, thank you. You picked up this book because some part of you wants to grow real food, even if you don't have a yard, a tractor or a lot of time. I'm glad you did.

Here's what I believe after years of growing food in small spaces: you don't need a farm to eat like a farmer. You need a sunny spot about the size of a few doormats, a smart setup that grows *up* as well as out, and a simple plan you can follow in a weekend.

My wife thought I'd lost my mind the first time I told her I'd grow our salad greens by the kitchen window. Now she's the one sneaking out to pick cherry tomatoes before supper.



That's me, with a bowl from the patio farm.

This new edition is bigger and better than the first. Every build has been checked, the facts come with their sources, and nearly every page has a photo or a drawing. You'll find step-by-step plans for the garden tower, the self-watering bucket, the living wall and the boxes that tie it all together, plus the 100-Pound Plan: the exact 5-by-5-foot layout, crop by crop, that adds up to about 105 pounds of food a year at the middle of Cornell University's expected yields.

You don't have to build anything to enjoy this book. Flip through it with a cup of coffee. Steal an idea or two. When you're ready, the **15-Minute Quick Start** a few pages ahead will get your first plants in the ground this weekend.

And if you've ever killed a houseplant, welcome. So have I. There's no green thumb, just the right steps, and they're all in here.

— *Jason Adams* · Nashville, Tennessee

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BEFORE YOU DIVE IN

How to Use This Book

There's no wrong way to read this book. Here are three good ones:

☕ Flip through it

Look at the photos, read the boxes and stories that catch your eye. You'll pick up useful ideas without trying.

⏱️ Start in 15 minutes

Read the Quick Start on the next pages. It's the whole system in seven steps, with a pointer to the chapter for each one.

🔨 Build as you go

Pick one build, follow its numbered steps, and come back for the next when you're ready. Start small. Grow into it.

The boxes you'll see

JASON'S TIP

What I've learned the hard way, so you don't have to. When it's my own rule of thumb rather than a published fact, I'll say so.

DID YOU KNOW?

Fun facts and the "why" behind the steps, each one checked against a reliable source.

COMMON MISTAKE

The slip-ups that trip up most beginners, and the easy fix.

QUICK WIN

Something useful you can do today in a few minutes.

MYTH

~~The myth that's been fooling gardeners for years.~~

FACT

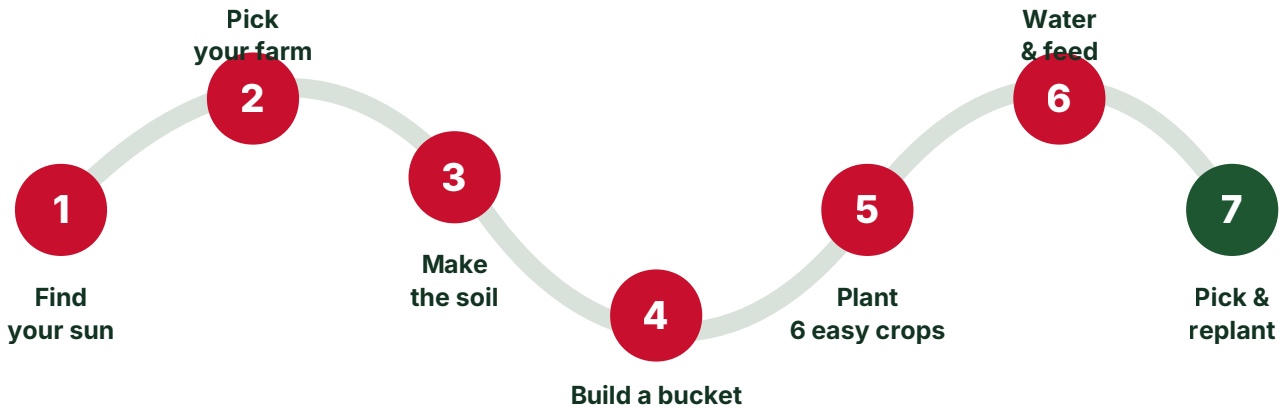
What the research actually says.

Build cards: every project starts with a dark green card showing the time, difficulty, cost and best crops, then a materials list and numbered steps. **Sources:** every chapter ends with the universities, extension services and studies behind its facts, so you can check anything yourself.

THE WHOLE SYSTEM IN ONE SITTING

The 15-Minute Quick Start

Short on time? Read just these pages and you'll know the whole 5-Foot Farm system. Each step tells you which chapter has the full how-to when you're ready.



Your road map. Seven steps from an empty spot to your first harvest.

1 Find your sun

ONE SUNNY DAY

Sun is the engine of every plant. Check your spot at 9 a.m., noon, 3 p.m. and 6 p.m. and jot down "sun" or "shade." Count each "sun" as roughly three hours. Leafy greens get by on 4–5 hours, root crops want 5–6, and tomatoes and peppers need at least 8 (Rutgers Cooperative Extension). In the mainland U.S., a south-facing spot is usually the sunniest.

FULL HOW-TO → CHAPTER 2, THE THREE GROWTH TRIGGERS

2 Pick your farm

5 MINUTES

8+ hours of sun? Plan the full 5-Foot Farm, the **100-Pound Plan**: a 5 × 5 ft footprint with grow bags, three garden towers and two narrow boxes that grow up a sunny wall. **4 to 8 hours?** Start with greens, herbs and roots. **Less than 4, or indoors?** Go for the Apartment Farm with LED lights. Not sure? Start with the **Doormat Starter**: one 1 × 4 ft strip plus one self-watering bucket.

FULL HOW-TO → CHAPTER 1 (THE FLOWCHART) AND CHAPTER 4, THE 5×5 MASTER PLAN (THE 100-POUND PLAN)

3 Make the soil, no shovel needed

AN AFTERNOON

In containers, never use plain garden dirt; use a potting mix made for containers. On open ground, skip the digging: lay plain brown cardboard over the grass, then stack layers of "browns" (dry leaves, straw) and "greens" (vegetable scraps, untreated grass clippings), and top it with compost. Mix in about **1 scoop of worm castings for every 9 scoops** of potting mix for a gentle boost.

FULL HOW-TO → CHAPTER 3, THE NO-SHOVEL METHOD

4 Build one self-watering bucket

30–60 MINUTES

Two nested 5-gallon buckets, a short PVC pipe and a wicking basket make a planter with its own water tank underneath, adapted from a University of Florida and Florida A&M extension design. It cuts your watering way down. It's the perfect home for a compact tomato or a pepper.

FULL HOW-TO → CHAPTER 2 (THE BUILD) AND CHAPTER 7, BUCKETS, BOXES & BAGS

5 Plant six easy crops

AN HOUR

Start with the forgiving ones: **leaf lettuce, radishes, bush beans, a compact cherry or patio tomato, a pepper and basil**. Plant cool-season crops (lettuce, radishes, peas) around your last spring frost and warm-season crops (tomatoes, peppers, beans, basil) after it. Look up your frost date by ZIP code, then count weeks from it.

FULL HOW-TO → CHAPTER 12, YOUR YEAR-ROUND CALENDAR, AND THE CROP PROFILES

6 Water and feed the easy way

5 MINUTES A DAY

Do the finger test: in containers, wait until the mix is dry at least 3 inches down, then water slowly until it runs out the bottom (Kansas State University). Check every day in hot weather. Castings are a mild food; once tomatoes start setting fruit, add a regular vegetable fertilizer and follow the label.

FULL HOW-TO → CHAPTER 2 AND CHAPTER 13, FEEDING YOUR FARM

7

Pick often, then replant

ALL SEASON

Pick leafy greens from the outside in and they keep coming. When a crop finishes, replant that spot right away: spring greens give way to summer beans, then fall greens. That simple habit, called succession planting, is how a small space keeps producing all season.

FULL HOW-TO → CHAPTER 4 AND CHAPTER 16, HARVEST TIME

Your First Weekend

Do just these and you're a farmer. Don't try to build the whole farm at once; start with one bucket and grow from there.

- [ ] **Saturday morning: map your sun**
  Four quick checks during the day (Chapter 2).
- [ ] **Saturday afternoon: gather supplies**
  Two food-grade 5-gallon buckets (bakeries often give them away), a bag of container potting mix, worm castings, and seeds or a few transplants.
- [ ] **Sunday morning: build your bucket**
  The self-watering bucket from Chapter 2.
- [ ] **Sunday afternoon: plant**
  One compact tomato or pepper in the bucket, plus lettuce and radishes in a pot or strip, if it's the right season for them where you live (Chapter 12).
- [ ] **Every day after: a two-minute check**
  Finger test, a look at the leaves, and a smile.

Sources for the Quick Start are the same as in the chapters it points to: Rutgers NJAES Fact Sheet FS129 (sun hours); Kansas State University MF2805 (container watering); UF/IFAS Leon County Extension and FAMU Cooperative Extension (self-watering bucket); Oregon State University Extension EM 9559 (sheet mulching).



PART ONE

The Secret of Small Spaces

Why a doormat-sized space can feed you, the three things every plant needs, and how to build rich soil without a shovel.

1 The Doormat That Feeds You

2 The Three Growth Triggers

3 The No-Shovel Method



CHAPTER 1

The Doormat That Feeds You

You don't need acres, a tractor or even a yard. People have been growing food up instead of out for thousands of years. You can too, starting with a space about the size of a doormat.

IN THIS CHAPTER

- Why a small space you can tend beats a big garden you can't
- An idea more than 2,500 years old: the Hanging Gardens
- The French botanist who taught plants to grow on walls
- Find your farm: the "Which 5-Foot Farm is right for you?" map

When my wife and I moved to a place with no real yard, I told her I'd keep growing our food anyway. She gave me the look you give a man who's lost his mind. I couldn't blame her. Most of us picture a vegetable garden as long rows, a rototiller and a sore back.

That picture is the problem. A big garden takes big work, big money and a big chunk of land. It's no wonder so many people try it once, get swamped by weeds in July, and quit.

The 5-Foot Farm flips the picture around. Instead of spreading out across the ground, it grows **up**: up towers, up strings, up walls. Instead of digging, you **stack**. Instead of guessing, you follow a plan where every square has a job. The whole thing fits in a **5-by-5-foot** space, and you can start with a strip the size of a doormat.

MYTH

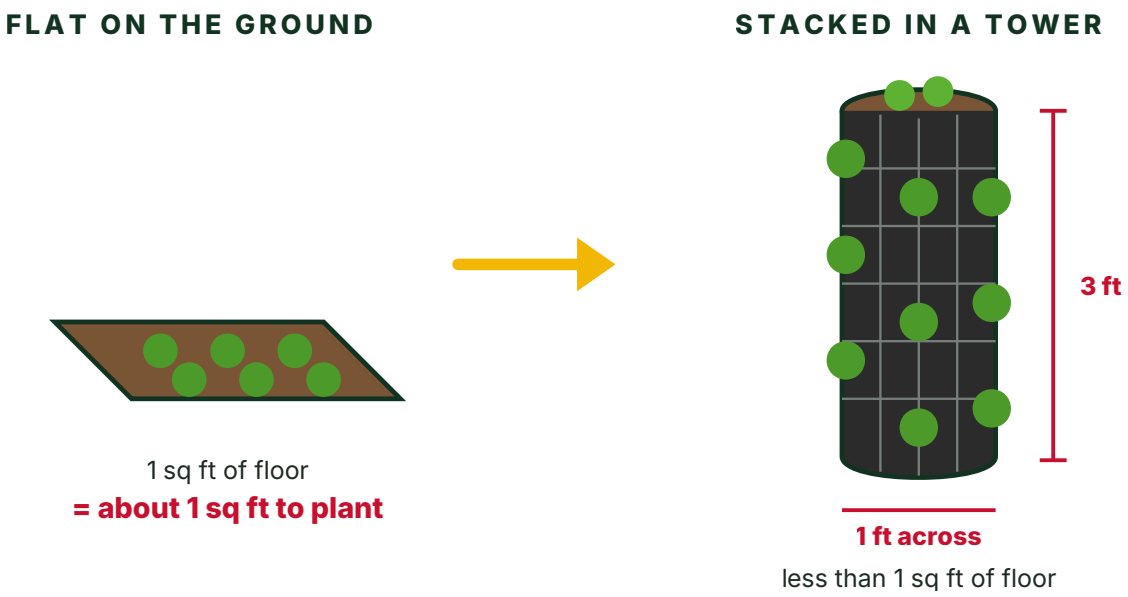
~~You need a big backyard to grow a real amount of food.~~

FACT

You need **growing surface**, not acres. Towers, trellises and walls add surface without adding floor space. In my experience, a small patch you can reach, water and pick every day often out-produces a big one you can't keep up with.

Grow up, not out

Here's the simple geometry behind the whole book. A garden tower that's one foot across and three feet tall takes up less than one square foot of floor. But the outside of that tower, where the plants grow, is more than nine square feet, about 10 with the top. Same floor. More than ten times the planting surface.



Same floor, far more surface. The side of a cylinder is its distance around (about 3.14 × 1 ft) times its height (3 ft), or roughly 9.4 square feet, plus about ¾ square foot on top: about 10 in all. Chapter 5 shows you how to build one.

AN IDEA MORE THAN 2,500 YEARS OLD

The Hanging Gardens



An artist's imagining of an ancient terraced garden, with water lifted from the river by a giant screw and flowing down from terrace to terrace. No one knows exactly what the real gardens looked like.

You've probably heard of the Hanging Gardens of Babylon, one of the Seven Wonders of the Ancient World. The story goes that a king built a mountain of terraces, each one spilling over with trees, vines and flowers, in the middle of a hot, flat land.

THE MYSTERY

Did they even exist?

Here's the honest answer: nobody knows for sure. Archaeologists have searched Babylon for centuries without finding the gardens. The Greek and Roman writers who described them lived long after the gardens were said to be gone, so none of them saw the place with their own eyes.

Oxford Assyriologist **Stephanie Dalley** has a fascinating theory. She argues the famous garden was really built in **Nineveh**, about 300 miles north of Babylon, by the Assyrian king **Sennacherib** in the early 600s B.C. In her reading of Sennacherib's own inscriptions, he cast bronze screws to water his terraced garden, centuries before Archimedes, the man usually given credit for the water screw.

Whether the gardens stood in Babylon, in Nineveh or mostly in people's imaginations, the idea behind them has lasted for one simple reason: it works. And it's the same idea you'll use in your own 5-Foot Farm.

1

Grow in layers

Terraces stacked plants on top of plants. Your towers, trellis and wall do the same thing.

2

Water from the top

Lift water up and let gravity carry it down through every layer. That's exactly how you'll water a tower.

3

Make it beautiful

Food plants can be gorgeous. A garden you love to look at is a garden you'll keep tending.

THE FRENCH BOTANIST'S SECRET FORMULA

Gardens Without Soil

Fast-forward to modern Paris. A botanist named **Patrick Blanc**, born in 1953, spent his career at France's national research center, the CNRS, studying plants from tropical forests.

Traveling through the tropics, Blanc paid close attention to where plants choose to live on their own. Many of them don't grow in soil at all. They cling to **rock faces**, wet cliffs and other damp, steep places, with their roots wrapped around almost nothing.

So he asked a wonderful question: if plants can live on a cliff, why not on a wall?

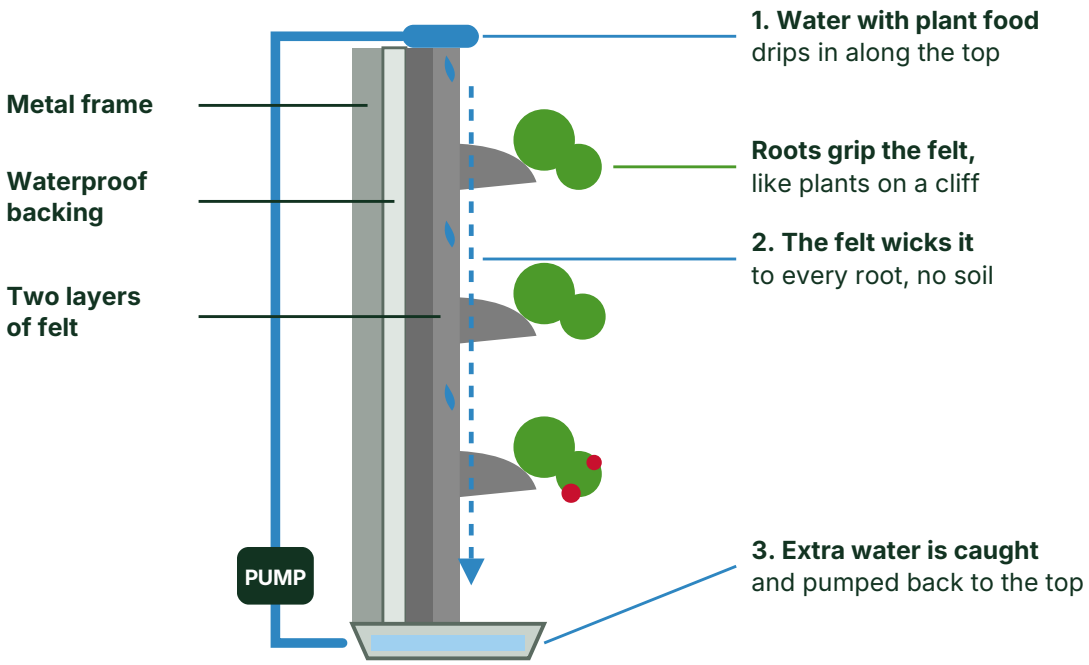
His answer became the modern **living wall**, the "mur végétal." He built one of his first at the science museum in Paris in the mid-1980s and patented the method in 1988. Later his walls covered buildings around the world, including a famous one at the Musée du quai Branly in Paris.



Blanc's idea, put to work growing food. Greens, herbs and strawberries in felt pockets, watered from the top.

How his "formula" works

Blanc's walls use no soil. Instead, plants root into thin layers of felt fastened to a waterproof backing on a frame. Water with plant food mixed in trickles through the felt from the top, soaks along the fibers, and runs down the wall. Whatever reaches the bottom is caught and pumped back up to the top.



Patrick Blanc's living wall, simplified. Based on published descriptions of his system. Chapter 6 shows easy home versions for growing food.

DID YOU KNOW?

As far as I've seen, Blanc's famous walls on museums and hotels are mostly decorative plantings. The 5-Foot Farm borrows his idea for food. Leafy greens, herbs and strawberries are naturally small and shallow-rooted, so they're perfect for pockets and bottles on a wall.

The modern twist

Grow up, water from the top, and let plants root where they're happiest. Those ideas are old. What's new is that today you can do all of it with cheap, everyday materials. Here are three tools the ancient gardeners never had.



Self-watering containers

A water tank hidden under the soil feeds roots from below. You'll build one in Chapter 2.



Light, soil-free mixes

Coconut coir, perlite and compost weigh far less than dirt and stay loose much longer. Chapter 3 has the recipes.



LED grow lights

They use less energy than old fluorescent tubes, give off very little heat and last about twice as long. Chapter 8 shows the setup.

Put those together with the three growth triggers from Chapter 2, and you have everything you need to grow a surprising amount of food in a small space, indoors or out.

JASON'S TIP

Don't let "living wall" or "tower" scare you. Every build in this book uses things you can find at a hardware store, a bakery or your own recycling bin: buckets, wire fencing, landscape fabric, plastic bottles and cardboard. If you can use a drill, a pair of scissors, wire cutters and a hacksaw or PVC cutter, you can build all of it.

— Jason

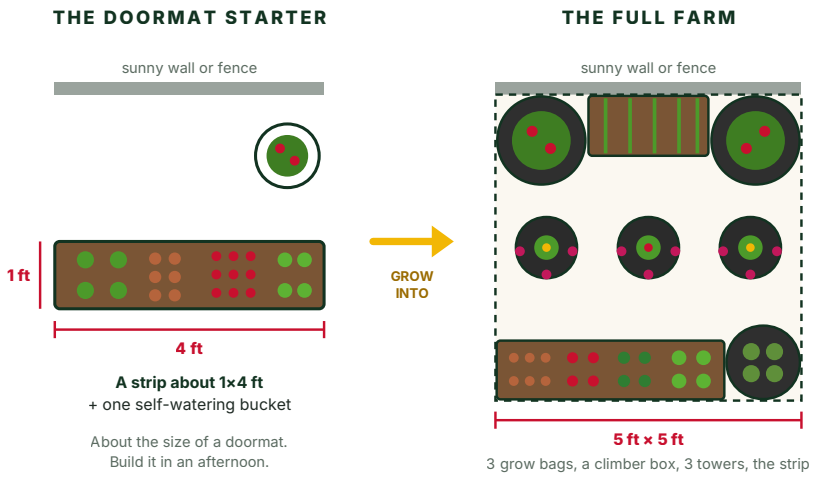
HE STARTED SMALL, TOO

Long before his walls covered museums, Patrick Blanc started out at about 18 years old, growing several kinds of plants in the limited space of his bedroom at his parents' home. Every big garden starts with one small, well-loved corner.

TWO SIZES

What a 5-Foot Farm Is

There are two ways to build your farm. Most people start small and grow into the big one. That's exactly what I recommend. Either way, it isn't a homestead or a pricey kit: just a handful of simple builds, with narrow boxes and a foot-wide lane so you can reach every plant.



Start with a doormat, grow into the full farm. Seen from above, with the sunny wall at the back. Chapter 4 labels every square of the full farm.

The Doormat Starter

Size: a strip about 1×4 ft (no-dig, or the 45×12 in. box from Chapter 7) plus one self-watering bucket.

Grows: lettuce and spinach in the strip (carrots and beets in the box, or once a no-dig strip breaks down), and a compact tomato or a pepper in the bucket.

Build it with: Chapter 3 (the no-dig strip) and Chapter 2 (the bucket).

The Full Farm

Size: 5×5 ft, plus a trellis on the wall behind it and an herb wall on a side fence.

Grows: two big staked tomatoes, Swiss chard, peppers, potatoes, peas, pole beans, carrots, beets, spinach, lettuce and herbs.

How much: about 105 pounds of food a year at the middle of Cornell University's expected yields: the 100-Pound Plan (Chapter 4).

Build it with: Chapter 4 (the plan), then Chapters 5, 6 and 7.



The skeptic, converted. My wife with an afternoon's picking from buckets and a tower on our patio.

> *"You were right. We CAN grow food indoors."*

That's the text my wife sent me the first winter we grew greens by the kitchen window. The same woman who gave me "the look" now beats me to the patio every morning to see what's ripe.

I'm telling you this because she was sure she had a "black thumb." She didn't. Nobody had ever handed her the right steps. That's what the rest of this book is for.

QUICK WIN · PICK YOUR SPOT TODAY

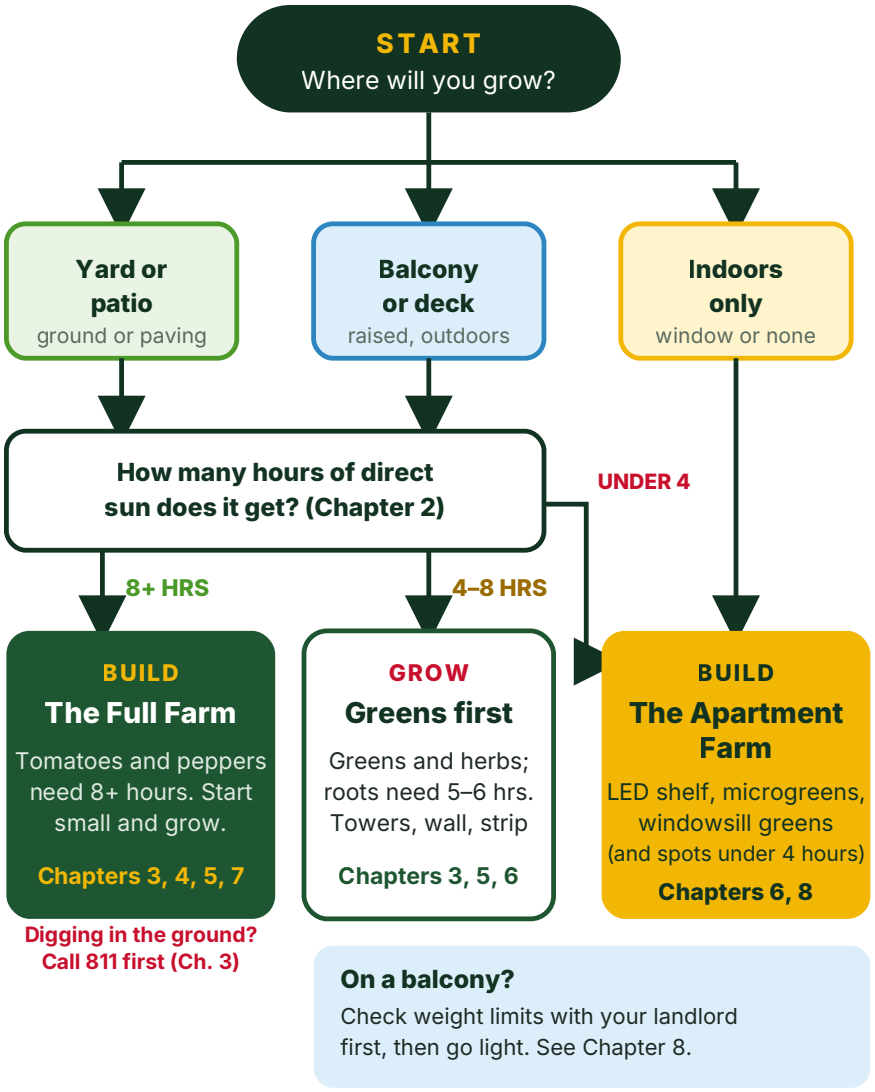
Walk around your home and find three possible spots: a strip along a sunny wall, a corner of a patio or balcony, and one indoor window. Snap a photo of each on your phone. Tomorrow, run the one-day sun map from Chapter 2 on your favorite.

COMMON MISTAKE · STARTING TOO BIG

Most first gardens fail from being too much, not too little. A small farm you water and pick every day will feed you better than a big one you avoid in August. Start with the Doormat Starter. Add a piece each season.

Which 5-Foot Farm is right for you?

Start at the top. Follow the arrows. Then check the side notes for anything that fits your life.



ALSO...

Hard to bend or kneel?
Raise everything to waist height.
→ Chapter 9

HOA or nosy neighbors?
Grow food that looks like a flower garden.
→ Chapter 10

Tight budget?
Free seeds, free buckets and free cardboard.
→ Chapters 11, 17

Short on time?
Doormat Starter plus self-watering buckets.
→ Chapters 2, 3

Cold winters?
Stretch the season with covers and indoor greens.
→ Chapter 12

NO MATTER WHICH PATH YOU TAKE

1. Learn the three growth triggers (Chapter 2).
2. Use the right mix, never plain yard dirt, in containers (Chapter 3).
3. Plant by your frost dates, not the calendar on the wall (Chapter 12).

Your First Decisions

You don't need to have it all figured out. Just tick these off before you buy a thing.

- [ ] **My spot**
  I've picked a spot and know which way it faces.

- [ ] **My sun**
  I've counted my hours of direct sun with the one-day sun map (Chapter 2 shows you how).

- [ ] **My size**
  Doormat Starter now, or the Full Farm? (Start with the doormat if you're unsure.)

- [ ] **My path**
  I've circled the chapters the flowchart pointed me to.

NEXT UP

Chapter 2: The Three Growth Triggers. The three things every plant needs, and how to give them all three in a small space.

SOURCES FOR THIS CHAPTER

Hanging Gardens (date, status, uncertain location): *Encyclopaedia Britannica*, "Hanging Gardens of Babylon." · Dalley's Nineveh theory, failed searches at Babylon, later Greek and Roman accounts: C. Klein, "Hanging Gardens Existed, but not in Babylon," History.com; S. Dalley, OUPblog post on *The Mystery of the Hanging Garden of Babylon* (Oxford University Press, 2013); Wikipedia, "Stephanie Dalley" (teaching Fellow, Oriental Institute, Oxford). · Patrick Blanc (born 1953, CNRS botanist, quai Branly 2004, frame + PVC + two felt layers + recirculating nutrient solution): Wikipedia, "Patrick Blanc"; first wall in 1986 at the Cité des sciences, patent in 1988: French Wikipedia, "Patrick Blanc"; S. Uyterhoeven, "Living Walls," NYBG Plant Talk, Feb. 28, 2012 (plants on rock faces, rot-proof felt, no soil, nutrient water recirculated); verticalgardenpatrickblanc.com; J. J. Tan, "Eden Re-envisioned," *CITYGREEN* #15 (started at 18 in his bedroom). · Mixes compact over time ("Potting soils are loose and light but will compact when watered"): WSU Extension Master Gardener Program, King County, "Container Gardening" tip sheet #6. · Sun thresholds (fruiting crops at least 8 hours; leafy greens 4–5): Rutgers NJAES FS129. · LED lights vs. fluorescent: J. Traunfeld, "Light choices for starting plants indoors," University of Maryland Extension, *Maryland Grows*, Jan. 18, 2019. · Cylinder surface area: standard geometry (circumference × height). · 100-Pound Plan: S. Reiners, Cornell Cooperative Extension, "Recommended Spacing & Expected Yield for Garden Vegetables in New York" (2017); the math is in Chapter 4.



CHAPTER 2

The Three Growth Triggers

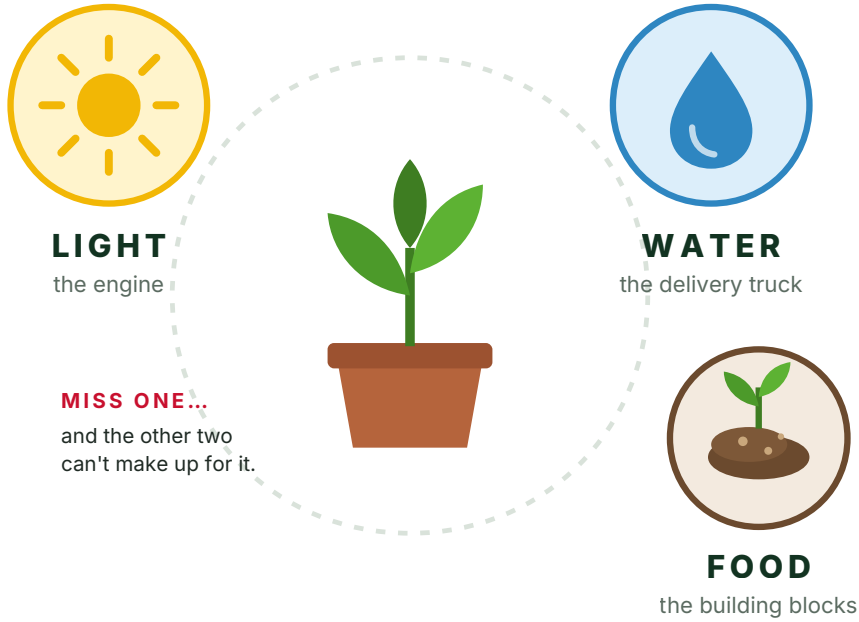
Every plant in your garden runs on the same three things. Give it all three and it grows. Starve it of just one, and nothing else you do will save it.

IN THIS CHAPTER

- How much sun your crops really need, and how to measure yours in one day
- The finger test that ends over- and under-watering for good
- The "weird" worm byproduct that gives tired soil a kick-start
- Build: the self-watering bucket that cuts your watering way down

Let's clear something up right away. The "green thumb" is a myth. Plants don't care who grows them, how old you are, or whether you've ever kept a houseplant alive. They care about three big things above all.

I call them the **three growth triggers**: light, water and food. Every trick in this book, from the towers to the bottle wall to the bucket you'll build at the end of this chapter, is really just a smarter way of delivering these three things in a small space.



The three growth triggers. Light powers the plant, water carries nutrients up from the roots, and the nutrients in your soil are building blocks the plant can't make for itself.

MYTH

~~Some people are just born with a green thumb.~~

FACT

"Green thumbs" are people who check light, water and food, often without realizing that's what they're doing. You're about to learn all three on purpose.

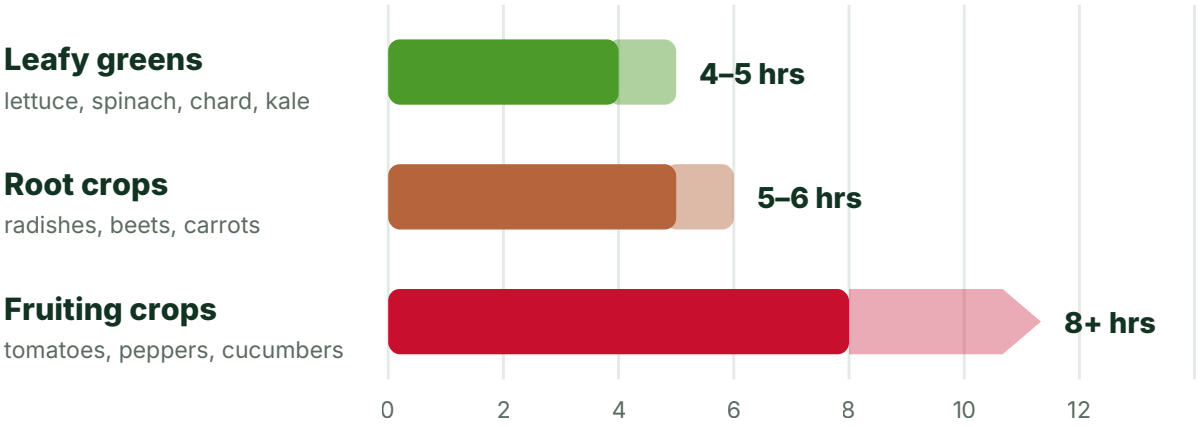
TRIGGER #1

Light

Sunlight is your plant's engine. Leaves use it to turn water and air into the sugar the plant lives on. No light, no sugar. No sugar, no tomatoes.

Here's what most beginners never get told: **different crops need very different amounts of sun.** Leafy greens are happy with a few hours. Tomatoes and peppers want a full day of it. Match the crop to your light and you've won half the battle before you plant a single seed.

HOURS OF DIRECT SUN PER DAY



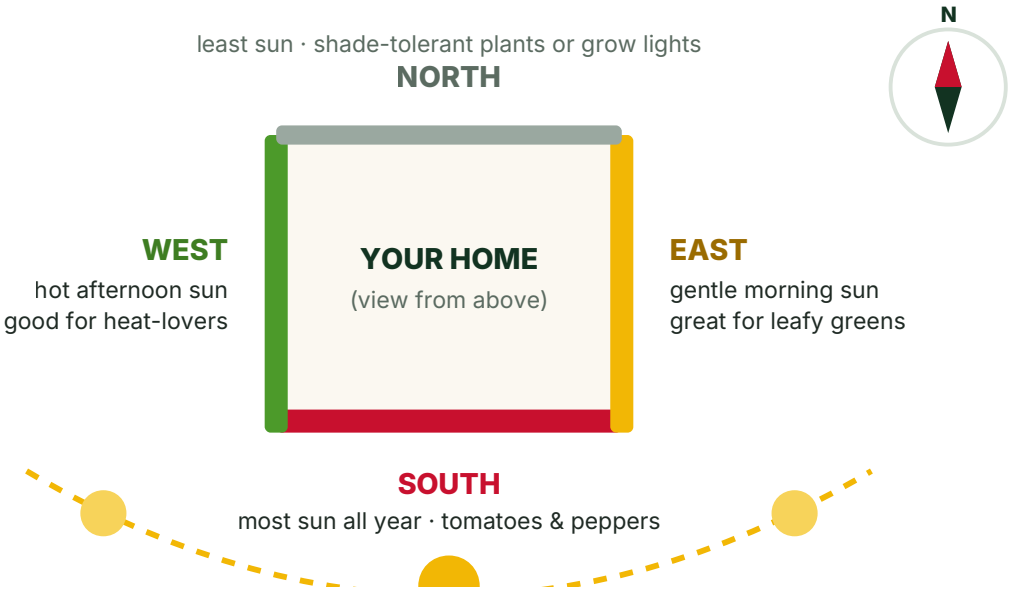
Match the crop to your light. Minimum hours of direct sun, from Rutgers Cooperative Extension. Shaded areas show the upper end of the range; fruiting crops need at least 8.

QUICK WIN · THE ONE-DAY SUN MAP

On a clear day during the growing season, check your spot at **9 a.m., noon, 3 p.m. and 6 p.m.** Each time, jot down "sun" or "shade." Count each "sun" as roughly three hours of light. It's a rough estimate, but it's plenty to choose your crops, and you don't need a single gadget.

Which way does your space face?

In the mainland United States, the sun travels across the **southern** half of the sky. That makes a south-facing balcony, window or wall the sunniest spot you have. Here's how the other directions stack up:



Sun around your home (mainland U.S.). The dotted line is the sun's daily path across the southern sky. In Hawaii the early-summer sun can pass slightly north of overhead, so trust your own sun map.

DID YOU KNOW?

A plant leaning hard toward the window isn't being dramatic. It's literally growing toward its energy source. If your seedlings are tall, pale and floppy, they're telling you they need more light.

JASON'S TIP

Short on sun? Don't fight it. Give your shadiest spot to lettuce, spinach and chard, and save every hour of strong sun for your tomatoes and peppers. And if you're indoors with no good window at all, a simple LED grow light fills the gap. I'll show you the setup in the indoor chapter.

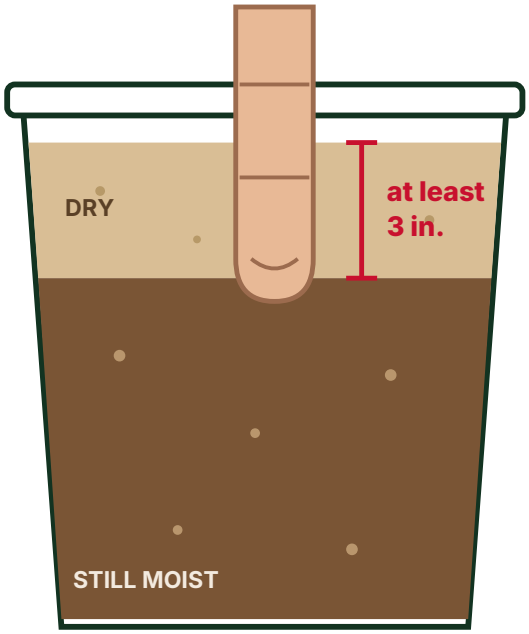
— *Jason*

TRIGGER #2

Water

Water is the delivery truck. It carries food from the soil up through the roots and into every leaf. In the ground, roots can wander deep to find it. In a bucket or bottle, your plant can only drink what's in that container, and **containers dry out much faster than garden soil**, especially in summer sun and wind.

The fix isn't a schedule. It's a two-second test you can do with the tool you always have on you.



The finger test

Push your finger straight down into the mix. Kansas State University's guidance for containers is to wait until the mix is **dry at least 3 inches down** before you water again. (For small pots, an inch or two is enough.)

Still damp? Walk away. Too much water drowns roots just as surely as too little starves them.

How to water the right way

1. **Water slowly until it runs out the bottom.** That's how you know the whole root zone got a drink, not just the top.
2. **Wait at least 30 minutes.** This gives the mix time to soak up what it can hold.
3. **Empty the saucer.** Pour off any water still sitting underneath so roots never sit in a puddle. Bucket too heavy to tip? A turkey baster pulls the water out with no lifting.

Too dry or too wet? Read the leaves.

TOO DRY

- Leaves droop in the afternoon, then perk up after a drink
- Leaf edges turn brown and crispy
- The mix shrinks away from the sides of the bucket
- The container feels light when you tip it

TOO WET

- Leaves yellow, starting with the lowest ones
- The plant wilts even though the mix is wet
- The mix stays soggy and may smell sour
- Tiny gnats hover over the soil surface

Signs overlap: tomatoes can droop on hot afternoons even in moist mix, and yellow leaves can also mean hunger. Always confirm with the finger test before you water.

COMMON MISTAKE · LITTLE SIPS

A quick splash every day feels caring, but it only wets the top inch. The roots at the bottom of the bucket stay thirsty. Water less often, and water deeply when the finger test says so.

CHECK EVERY DAY

Look at your containers daily, especially on hot, windy days. A bucket that was fine on Monday can be bone-dry by Wednesday. Or cut the chore way down with the self-watering bucket at the end of this chapter.

TRIGGER #3

Food

Light, air and water give a plant its energy and most of its bulk. But it also needs nutrients it can't make for itself, and those come from the soil. Bagged potting mix starts out with some, but a hungry tomato will use them up well before the season ends. (Check the bag: some mixes include a slow-release fertilizer that lasts longer.) Plants need more than a dozen nutrients, yet three do most of the heavy lifting:

N

Nitrogen

Green, leafy growth. The big need for lettuce, kale and spinach.

P

Phosphorus

Strong roots, flowers and fruit set.

K

Potassium

Toughness, root growth and help coping with dry spells.

Decode any fertilizer bag in 5 seconds



Every bag of plant food shows three numbers, always in the same order: **N**-**P**-**K**. Each is the percentage of that nutrient by weight (phosphorus is listed as phosphate, potassium as potash).

So a 10-pound bag marked **5-10-5** holds half a pound of nitrogen, a pound of phosphate and half a pound of potash. The rest is filler that makes it easy to spread evenly.

Rule of thumb: a higher first number suits leafy greens. Once tomatoes and peppers start to flower, switch to a food that isn't high in nitrogen, or you'll get lots of leaves and few fruits.



Worm castings look and smell like rich, dark earth.

The weird byproduct that kick-starts your farm

Here it is: **worm castings**. That's the polite name for what earthworms leave behind after they eat old leaves and kitchen scraps. It sounds odd. It works.

Castings are a gentle, natural plant food that also improves the texture of your mix. Researchers have reported growth increases of up to **40%** in marigolds and tomatoes when worm compost was added to the growing mix.

How to use worm castings

1. **Mix them in at planting.** Use about **1 scoop of castings for every 9 scoops of potting mix** (about 10%). That's a modest rate researchers have used when adding worm compost to growing mixes.

2. **Buy a bag, or make your own.** Garden centers sell bagged castings. Or keep a small worm bin under the sink and turn your kitchen scraps into free castings. (The worm bin chapter shows you how.)

3. **Top up through the season.** Sprinkle a handful on top of the mix and water it in when heavy feeders like tomatoes start setting fruit.

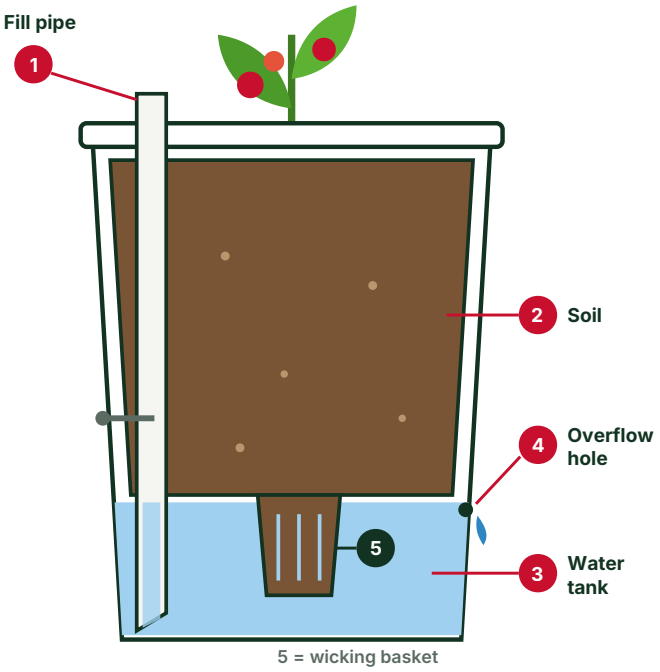
> **JASON'S TIP**
>
> Castings are gentle: a little extra is much less likely to burn roots than chemical fertilizer. Still, about 10% is plenty; there's no need to go heavier. And since they're mild, heavy feeders like tomatoes will still want a regular vegetable fertilizer once they're setting fruit.
>
> — *Jason*

BUILD · THE SELF-WATERING BUCKET

Water less. Worry less.

Two stacked buckets turn into a planter with its own water tank underneath. The plant drinks from below, as it needs it, and you refill through a pipe instead of guessing.

TIME	DIFFICULTY	COST	BEST FOR
30–60 min	●○○ Easy	Low · buckets often free	Compact tomatoes, peppers



How it works: water sits in the tank (3). The soil in the wicking basket (5) touches the water and pulls it up into the main soil (2), like a paper towel dipped in a glass. The overflow hole (4) stops the tank from ever flooding the roots.

WHAT YOU'LL NEED

- 2 five-gallon buckets (bakeries often give them away)
- 1-inch PVC pipe, about 2 feet long
- 16-oz wicking basket (a hydroponic net pot) or a cottage-cheese tub
- 2 screws about 1½ inches long (long enough to reach the pipe)
- Drill, ¼-inch bit, 1⅜-inch hole saw (for the pipe) and a hole saw sized to your basket
- PVC cutter or hacksaw
- Potting mix, dampened before you fill

Step by step

1. **Drill the inner bucket.** In the bottom of one bucket, cut a hole the pipe can slide through, right against the side wall, and a second hole in the middle that holds the wicking basket snugly without letting it fall through.
2. **Nest the buckets.** Set the drilled bucket inside the plain one. The space left underneath is your water tank.
3. **Cut the pipe.** It should reach the bottom of the outer bucket and stick up a few inches above the rim. Cut the bottom end at a slant so water can flow out freely.
4. **Fit the pipe and basket.** Push both into their holes. Using a homemade tub? Drill small holes in its bottom and lower sides first.
5. **Drill the overflow hole.** Make a ¼-inch hole in the outer bucket, just below the bottom of the inner bucket. This is the most important step: it keeps the water below the main root zone, so only the wicking basket sits in water.
6. **Lock it together.** Drive a screw through both bucket walls and into the pipe, above the overflow hole so it can't leak. Add a second screw through both walls on the opposite side.
7. **Fill and plant.** Pack the wicking basket with dampened potting mix first, then fill the rest of the bucket and plant.
8. **Fill the tank.** Pour water down the pipe until it starts to trickle out of the overflow hole. That's full.



The finished bucket. Only the fill pipe shows. The water tank is hidden underneath, feeding the roots from below.

TO LID OR NOT TO LID?

A lid over the soil slows evaporation and cuts down on weeds. The trade-offs, per the extension guide this design comes from: it can raise the risk of fungal disease, it's hard to remove once the plant is big, and it won't work with several plants in one bucket.

BIGGER TANK OPTION

This design is adapted from a University of Florida and Florida A&M extension guide. Want a bigger tank? The guide's other option nests a 3-gallon bucket inside the 5-gallon one, leaving more room for water so you refill less often. The catch: only 3 gallons of soil, so the guide recommends two 5-gallon buckets for big plants like tomatoes. In summer heat, check the tank daily either way.

Your 2-Minute Trigger Check

Run through this whenever a plant looks unhappy. Most of the time, the answer is right here.

- [ ] **Light**
  Does this spot get enough hours of sun for this crop? Greens 4–5, roots 5–6, fruiting crops 8 or more.

- [ ] **Water**
  Finger test: dry at least 3 inches down? Water until it drains. Still damp? Wait.

- [ ] **Food**
  Castings mixed in at planting? Heavy feeder setting fruit? Add a regular vegetable fertilizer.

- [ ] **Tank**
  Using a self-watering bucket? Check it daily in summer and refill through the pipe until it trickles from the overflow hole.

NEXT UP
Chapter 3: The No-Shovel Method. How to build rich soil without digging, kneeling or lifting a shovel.

SOURCES FOR THIS CHAPTER
Sun hours: Rutgers New Jersey Agricultural Experiment Station, Fact Sheet FS129 (njaes.rutgers.edu/FS129). · Watering containers: Kansas State University Research and Extension, *Watering Raised Beds, Berms, Containers and Houseplants* (MF2805). · Worm compost: Wills, M. & Bachman, G.R., "Vermicompost and Coir Enhance Germination of *Echinacea purpurea*," *Southeastern Floriculture*, Sept/Oct 2000, citing Bachman & Metzger (1998) for the 40% figure (copy hosted by NC State HortScans). · Self-watering bucket: UF/IFAS Leon County Extension and FAMU Cooperative Extension, *Self-Watering Bucket Instructions*. · Nutrients and their roles: University of Guam Cooperative Extension, *Enabled Gardening: Plant Fertilizers*. · Fertilizer label numbers: Mississippi State University Extension, "Fertilizer bag numbers reveal nutrient content" (2023); N.C. Department of Agriculture, *Soil Fertility Note 8: Homeowner's Guide to Fertilizer*.



CHAPTER 3

The No-Shovel Method

Forget digging, double-digging and the sore back that comes with it. You can build rich, living soil by stacking it on top of the ground, or skip the ground altogether.

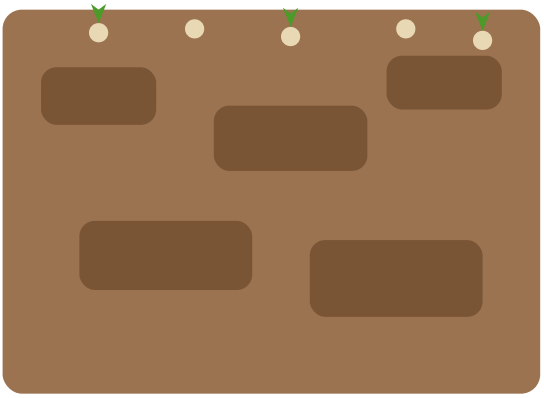
IN THIS CHAPTER

- Why digging can make your soil worse
- Build: the no-dig Doormat Strip, start to finish
- The right mix for buckets and towers (never plain yard dirt)
- The lazy gardener hack, and the one way to speed it up

The first edition of this book told you to go buy a good, sturdy shovel and double-dig your garden a full foot deep. I've changed my mind. You don't need to dig at all, and your soil will be happier if you don't.

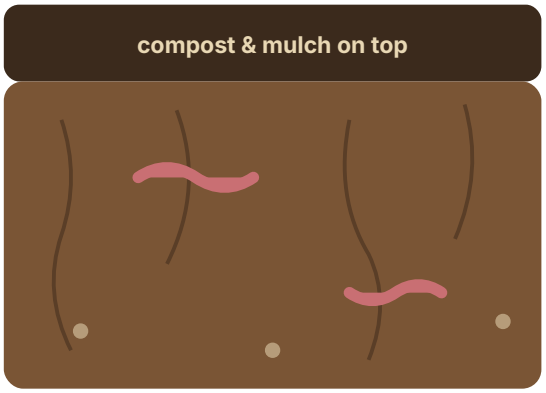
That's not just me being lazy (although I'll admit that's a nice bonus). Soil isn't just dirt. It's full of tiny air and water spaces, fungus threads and earthworm tunnels that hold it together like a sponge. Oregon State University Extension puts it plainly: tilling "compacts soil, destroys air-and-water pores" and "disrupts microorganisms and other soil life." Digging also flips buried weed seeds up to the surface, where they sprout.

DUG UP



Pores crushed, soil life scattered, weed seeds brought up to sprout

NO-DIG



Worm tunnels and pores stay open; weed seeds stay buried in the dark

Why no-dig wins. Instead of mixing food *into* the soil, you lay it *on top* and let worms and soil life carry it down for you.

MYTH

~~Good soil starts with deep, hard digging every spring.~~

FACT

Earthworms and other soil creatures do the tilling for free, and they create pore space as they go. Your job is to feed them from the top and keep the ground covered.

Two ways to build a no-dig bed

Both methods start the same way: cardboard on the ground, then layers of "greens" and "browns" on top, just like a lasagna. The only difference is whether you plant today or let the layers cook first.

The Weekend Method

Plant: the same day.

How: build the layers, then spread 2 to 3 inches of compost or garden soil on top and plant straight into it.

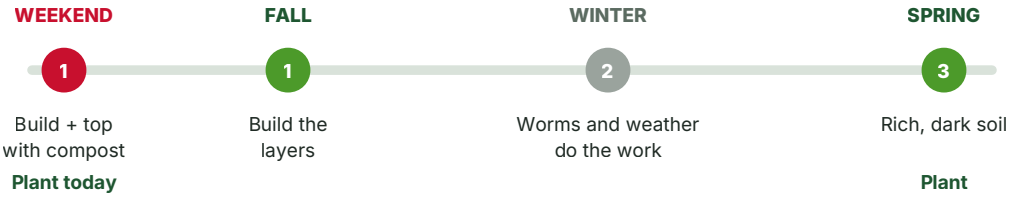
Best for: getting growing this season.

The Year-Ahead Method

Plant: about 6 months later, or longer.

How: build the layers in fall and let them break down over winter. They're ready when they look and smell like fresh earth.

Best for: the richest soil with the least money.



Weekend or year-ahead? Oregon State University Extension says a lasagna bed "may take 6 months or longer" to break down, or you can plant sooner by adding 2 to 3 inches of compost on top.

BEFORE YOU PUSH A STAKE INTO THE GROUND · CALL 811

Even no-dig beds sometimes need a stake or a post. In the U.S., 811 is the free "call before you dig" service: contact it a few business days ahead. Its own guidance says this applies to gardens and shallow digging, too.

JASON'S TIPS · CARDBOARD AND WATER

Ask an appliance or bike shop for big flat boxes: one big sheet means fewer seams for weeds. Use plain brown cardboard only (not shiny, glossy or printed) and pull off all tape and staples. For the first few weeks, roots live in the top layer of compost, so check it with the finger test from Chapter 2 and water gently when it's dry.

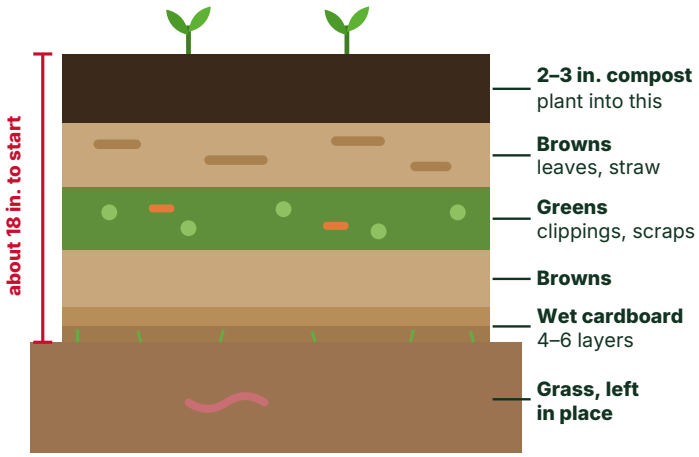
— *Jason*

BUILD · THE NO-DIG DOORMAT STRIP

A rich bed in an afternoon. No shovel.

This is the front row of your 5-Foot Farm, and the heart of the Doormat Starter. Build it on lawn or bare ground, with an edge to hold the layers. On paving, a deck or a balcony, use the 45-by-12-inch Doormat Strip box from Chapter 7 filled with potting mix instead.

TIME	DIFFICULTY	COST	START WITH
1–2 hours	●○○ Easy	Low · cardboard is free	Lettuce, spinach, radishes



Layers settle a lot as they break down.
Each layer about 1 to 6 inches thick.

WHAT YOU'LL NEED

- Plain brown corrugated cardboard (no tape, staples, gloss or printing)
- "Greens": grass clippings (not from a lawn treated with weed killer), fruit and vegetable scraps, coffee grounds, fresh weeds without seeds. No meat, fish, bones, dairy or oils.
- "Browns": dry leaves, straw, shredded paper
- About 1 cubic foot of compost (1–2 bags) for planting right away
- Hose or watering can
- **Required:** bricks, boards or the Chapter 7 box to edge the strip, so the loose layers don't slump. It will mound above the edging at first and settle as it breaks down.

Step by step

1. **Pick and mark the spot.** A sunny strip about 1 foot wide and 4 feet long, along a south-facing wall or fence if you have one (in the mainland U.S., south is the sunniest side). Set your edging or box in place. Mow or cut any grass as low as you can. Leave it there.
2. **Pull the tough guys.** Cardboard smothers most grass and weeds, but not the stubborn spreaders. Pull out bindweed, blackberry, morning glory or quackgrass first.
3. **Lay the cardboard.** Use 4 to 6 overlapping layers of cardboard or newspaper. Overlap the edges by at least 8 inches. Weeds will find any gap.
4. **Soak it.** Wet the cardboard thoroughly before adding anything on top.
5. **Add a "greens" layer, then a "browns" layer.** Make each one about 1 to 6 inches thick, and sprinkle each with water so the whole stack is damp, not soggy. A few handfuls of soil between layers adds helpful microbes.
6. **Repeat and finish with browns.** Keep alternating until the stack is about 18 inches high. It will settle a lot as it breaks down. Always finish with a browns layer so flies don't find the kitchen scraps.
7. **Top it and plant** (Weekend Method). Spread 2 to 3 inches of compost on top and plant right into it. Start with shallow-rooted crops: lettuce, spinach, radishes and transplants. Sow carrots and beets once the layers have broken down, or grow them in the Chapter 7 box. Or let the whole bed sit until spring (Year-Ahead Method).

Growing right in the ground? Get a soil test first

Planting deep-rooted crops into real garden ground below the strip? Your county extension office can test a soil sample for a small fee and tell you its pH and how much lime or fertilizer to add. To sample, slice thin strips from a few holes 8 to 12 inches deep and mix them in a clean bucket. Planting only into compost, buckets or towers? Then there's nothing to test.

BUCKETS, TOWERS & BOTTLES

The Right Mix

Here's a rule I'd tattoo on every new gardener's hand if I could: **never fill a container with plain yard dirt.** In a bucket or tower, garden soil packs down hard, drains poorly and smothers roots. Mississippi State University Extension says it simply: "there is no soil in the correct growing media." Container mixes need to be "light and airy and drain well."

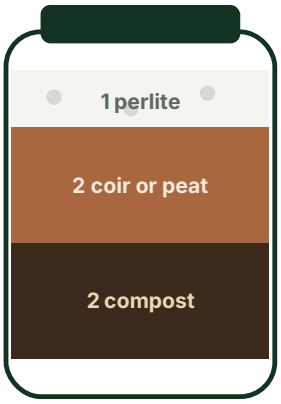
You have three good choices. Pick whichever fits your budget and your energy.



A · EASIEST
Bagged potting mix
+ 1 scoop castings
per 9 scoops mix



B · BASIC
7 parts coir or peat
3 parts perlite
+ fertilizer



C · TOWER MIX
2 parts coir or peat
2 parts compost
1 part perlite

Three mixes that work. Mix B is Mississippi State Extension's basic soilless recipe. Mix C is my own rule of thumb from the original 5-Foot Farm: the compost adds body and some food for towers.

Mix	Use it for	Good to know
A · Easiest	Self-watering buckets, grow bags, bottles, small pots	Buy a mix labeled "potting mix," not "garden soil" or "topsoil." Add worm castings (Chapter 2).
B · Basic	Any container, seed starting (without fertilizer)	Soilless mixes are low in nutrients, so add a fertilizer and follow the label.
C · Tower mix	Garden towers, the Climber Box	Holds moisture longer in tall towers. Don't add yard soil: the weight of a tall column packs it down.



Mixing Tower Mix in a shallow tub: coir, compost and perlite.

COIR OR PEAT?

Coir is the short coconut-husk fiber left over after coconuts are processed. Oregon State Extension notes it holds moisture well, wets more easily than peat, is less acidic and is renewable. Peat takes hundreds of years to form.

Coir often comes as a compressed brick that swells to several times its size when you soak it. Like peat, it has little food in it, so you still need compost or fertilizer.

HACK #4

The Lazy Gardener Hack

> *Never lift a shovel again. Feed the top, and let the worms do the digging.*

Here's the whole hack in four lines. Once your farm is built, you won't dig again. Not next spring, not ever.

1
Build on top
New beds go down as cardboard and layers, never as a dug hole.

2
Fill from the bag
Buckets, towers and bottles get mix poured in, not dirt shoveled in.

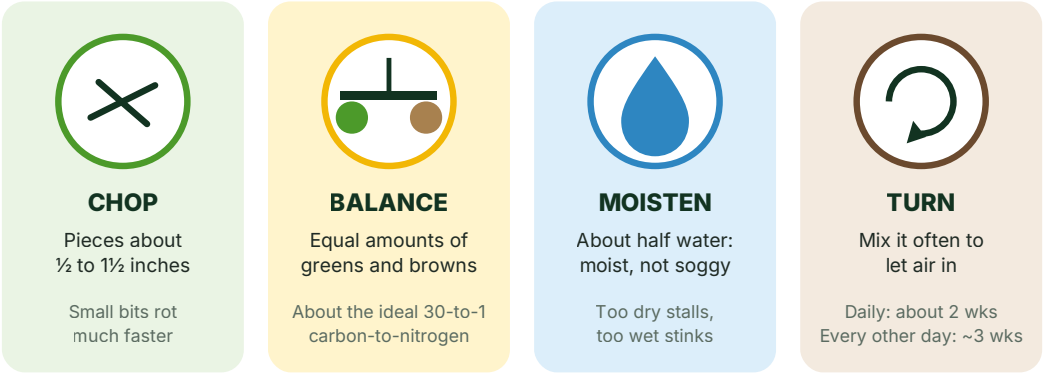
3
Feed the top
Each spring and fall, spread a fresh layer of compost on beds and top up containers.

4
Keep it covered
Mulch with straw, leaves or grass clippings. Covered soil keeps weed seeds dark and buried.

Oregon State's no-till advice matches it: "cover the soil year-round" with straw, compost, dried leaves or grass clippings. My own habit at the end of a season: instead of yanking spent plants out, I cut them off at the soil line and leave the roots to rot in place, so the soil stays undisturbed.

...plus the one way to speed it all up

Compost is the fuel for a no-dig farm, and left alone, a pile can take many months. But the University of California's classic guide *Compost in a Hurry* says a well-built pile can be ready in as little as 14 to 21 days. The trick isn't a product. It's one routine I call **Chop, Balance and Turn.**



Chop, Balance and Turn (plus keep it moist). The numbers come from UC's *Compost in a Hurry* (ANR Publication 8037).



Browns on greens. Every bucket of kitchen scraps gets an equal scoop of dry leaves.

COMMON MISTAKE · A PILE TOO SMALL TO HEAT UP

That 2-to-3-week speed needs heat, and heat needs size: the UC guide calls for a pile at least 3 feet wide, deep and tall. A small bin on a balcony will still make compost, just more slowly. In tight spaces, buy bagged compost and let a worm bin (Chapter 13) turn your kitchen scraps into castings instead.

Greens and browns

A general list (UC and the EPA). Leave out meat, fish, bones, dairy, fats and oils, and anything treated with weed killer.

GREENS (nitrogen)	BROWNS (carbon)
Grass clippings	Dry leaves
Fruit and vegetable scraps	Straw
Coffee grounds	Shredded paper and cardboard
Fresh weeds (no seeds)	Small chopped twigs and prunings
Wilted flowers, green prunings	Dried grass

The only tools you really need

A small farm needs a small toolbox. No tiller, no wheelbarrow, no shovel. Here's my short list.

Watering can
A 1-gallon can (about 9 pounds full) is kinder to wrists and backs. Fill it partway if you need to.

Hand trowel
For planting and scooping mix. Pick a wide, padded handle (Chapter 9).

Utility knife
For X-cuts in tower fabric and opening bags. Retract the blade every time.

Pruners or scissors
For harvesting and cutting twine. Kitchen scissors work fine on greens.

A shallow tub
For mixing potting mix and moving compost in small loads.

Drill and bits
For buckets, bottles and boxes. Borrow one, or check your library's "library of things."

Also needed for the builds: wire cutters (for tower fencing) and a hacksaw or PVC cutter (for bucket pipes). Also handy: a tape measure, gloves, soft cotton twine for tying up tomatoes and beans, and a stool or kneeling pad. Better yet, raise the garden so you don't need one (Chapter 9).

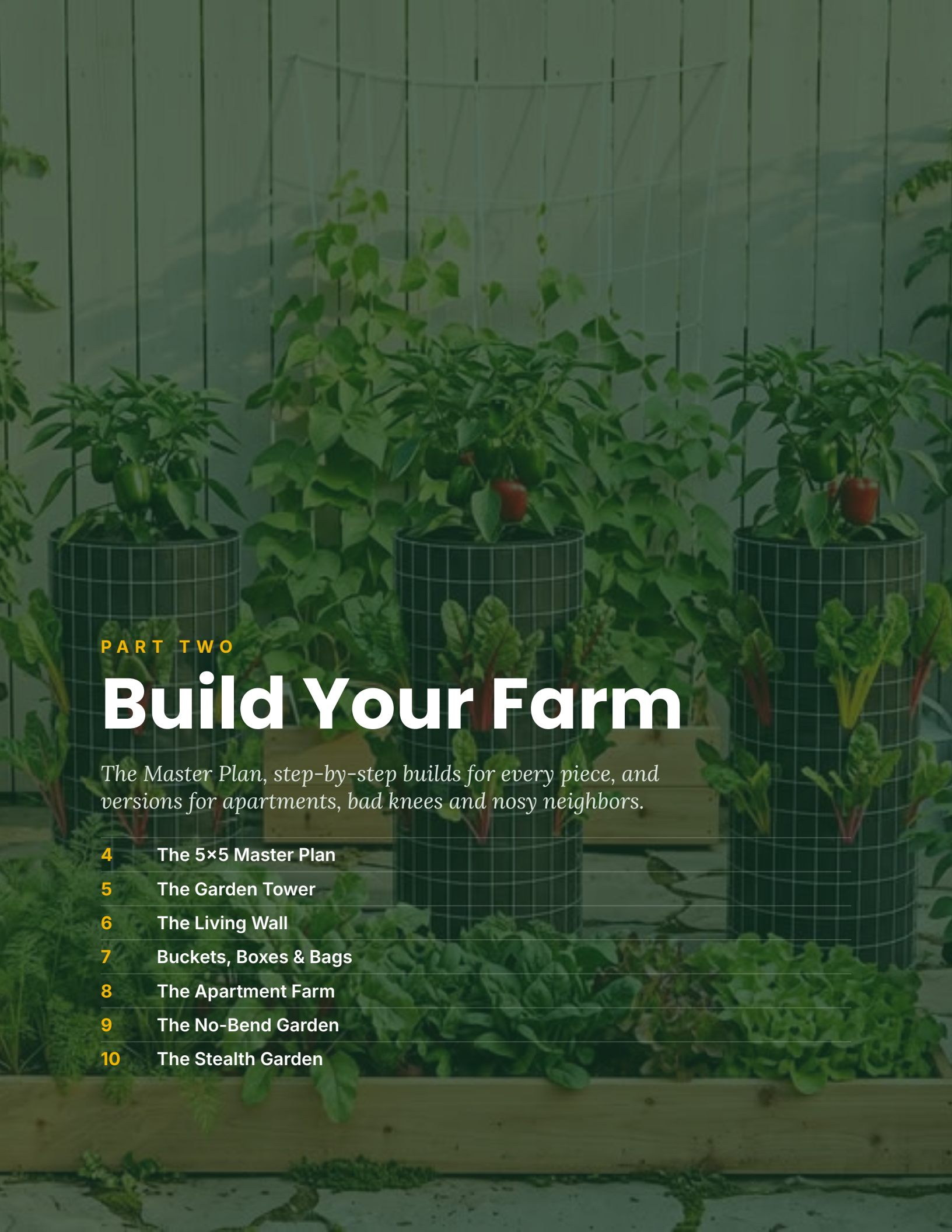
No-Shovel Checklist

Before you plant, make sure every box is ticked.

- [ ] **Cardboard down**
  4–6 overlapping layers, seams overlapped 8 inches, tape removed, soaked.
- [ ] **Layers built**
  Greens and browns, damp not soggy, finished with browns, plus 2–3 inches of compost on top if you're planting now.
- [ ] **Right mix**
  Potting mix or Tower Mix in every container. No yard dirt.
- [ ] **Covered**
  A mulch plan for bare soil, and a compost plan for spring and fall.

NEXT UP
Chapter 4: The 5×5 Master Plan. Every square, every layer, every season: the 100-Pound Plan.

SOURCES FOR THIS CHAPTER
No-till: K. Pokorny, "No-till gardening builds healthier soil at home," Oregon State University Extension, 2023. · Lasagna beds, plain cardboard, timing: Oregon State University Extension, "Sheet mulching and lasagna composting with cardboard" (EM 9559). · 811: 811beforeyoudig.com. · Soil sampling: G. Boyhan, UGA Extension, "Take mystery out of gardening with soil test." · Container mixes: Mississippi State University Extension (Jan. 19, 2015); WSU Extension Master Gardener Program, King County, tip sheet #6 (2024). · Coir: Oregon State University Extension. · Composting speed (30:1, 1:1 by volume, ½–1½ in. pieces, about 50% moisture, turning, 3-ft pile, 14–21 days): P. Geisel & C. Unruh, *Compost in a Hurry*, UC ANR 8037. · Greens, browns and what to leave out: U.S. EPA, "Composting at Home." · Watering can weight: a gallon of water weighs about 8.3 lb, plus the can. · Tower Mix: author's rule of thumb, from the original *5-Foot Farm*.



PART TWO

Build Your Farm

The Master Plan, step-by-step builds for every piece, and versions for apartments, bad knees and nosy neighbors.

4 The 5×5 Master Plan

5 The Garden Tower

6 The Living Wall

7 Buckets, Boxes & Bags

8 The Apartment Farm

9 The No-Bend Garden

10 The Stealth Garden



CHAPTER 4

The 5×5 Master Plan

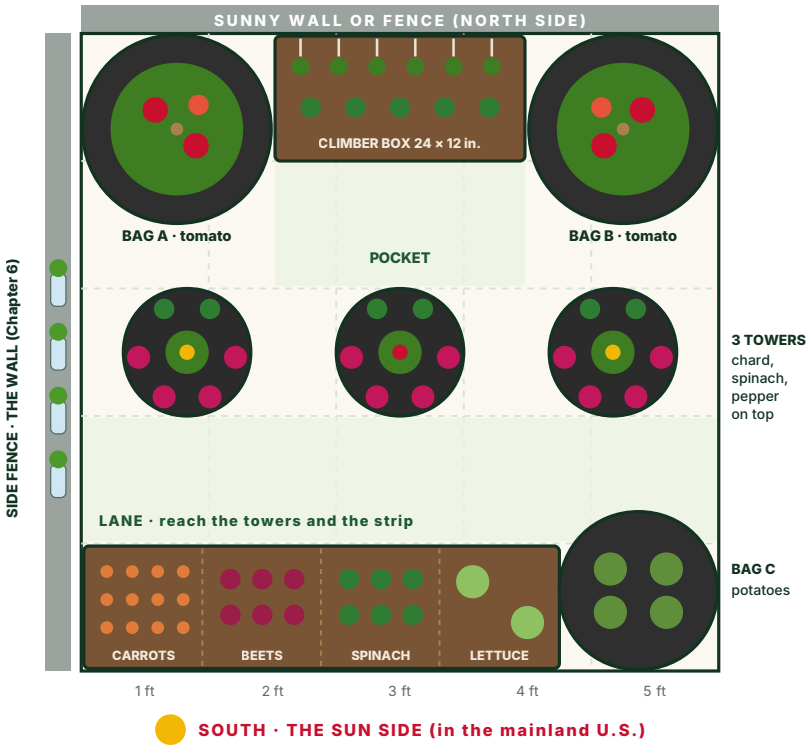
The 100-Pound Plan: every square, every layer and every season, planned for you, with the university numbers that add up to about 105 pounds of food a year.

IN THIS CHAPTER

- The 100-Pound Plan, square by square, from above and from the side
- Stalk stacking: crops sharing the same square, up and through the year
- A year of plantings, so no square sits empty
- How much food? About 105 pounds, crop by crop, plus a shopping list and build plan

This is the chapter I wish someone had handed me when I started. Not a list of "ideas," but a real plan: this goes here, that goes there, plant this in spring and that in summer. I call it **the 100-Pound Plan**, because at the middle of Cornell University's expected garden yields, this layout adds up to about 105 pounds of food a year. You'll see the math crop by crop later in this chapter.

The full farm fits in a **5-by-5-foot square**, about the size of a small rug, with its back edge against a sunny wall, fence or railing. It's laid out in three rows. Tall things go in the back so the front row stays in the sun. The boxes are only a foot wide. A foot-wide lane runs between the towers and the front row, and a pocket of the same width sits behind the middle tower for tending the Climber Box, the backs of the towers and Bag A. The towers stand only about 8 inches apart, so stepping in takes care: go sideways, or reach around the towers. Bag B is easy to reach from the open side. If tight spaces are hard for you, Chapter 9 shows how to widen the lanes.



Strip box 45 × 12 in. · Bags A, B 18 in. across (15 gal) · Bag C 15 in. (10 gal) · towers 12 in.

The 100-Pound Plan, seen from above. Each dashed square is 1 foot. Tower dots: chard (pink), spinach (green, north side), pepper on top. Builds: towers, Chapter 5 · boxes and bags, Chapter 7 · the Wall, Chapter 6.

A tour of the farm, back to front

Back row: the tall crops

Bags A & B (15-gallon grow bags, 18 in. across): one full-size tomato each, tied to a tall stake or set in a cage. Full-size tomatoes need 15–20 gallons or more, so this is where they live. Pound for pound, each tomato plant is the biggest producer on the farm.

Climber Box (24 × 12 in. outside, Chapter 7): peas in spring, pole beans up a string trellis in summer, spinach in fall.

Middle row: the towers

3 Garden Towers, each about 1 ft across and 3 ft tall, with 12 side holes (Chapter 5).

Chard in the 8 sunny-side holes (south, east and west), **spinach or lettuce** in the 4 north-side holes, and **one pepper** on top, in full sun. Chard is the backbone of the plan: you pick a few outer leaves at a time from spring until a moderate freeze. The east and west holes between towers get mostly midday sun; chard handles it.

Front row: the low crops

Doormat Strip box (45 × 12 in. outside, Chapter 7) or the no-dig strip from Chapter 3: carrots, beets, spinach and lettuce, planted square-foot style. The plan's numbers count the box (or a no-dig strip that has settled); a brand-new no-dig strip grows greens first.

Bag C (10-gallon potato bag, 15 in. across): 4 seed-potato pieces at the front corner (Chapter 7).

The Wall: zero floor space

A Bottle Wall or felt-pocket wall on a sunny side wall or fence beside the farm (or a balcony's side wall), for basil, parsley, chives, mint and lettuce.

It's a bonus: I don't count it in the plan's pounds.

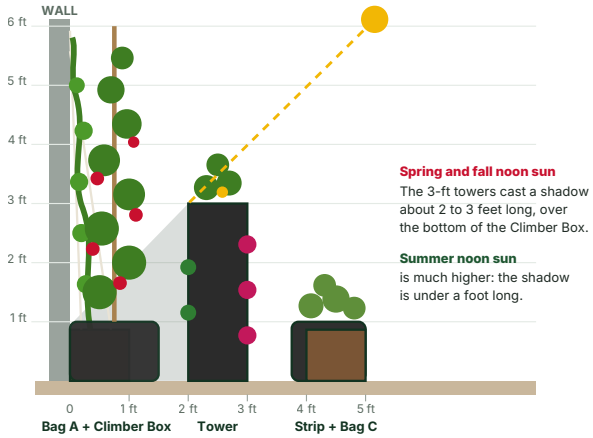
Mind the side fence: a tall side fence shades the farm for part of the day (afternoon on a west fence, morning on an east one). If you can, put the Wall a little beyond the farm, or on the side that shades the least.

WHY THE BOXES ARE SO NARROW

Oregon State University Extension recommends beds about three feet wide because "this allows you to reach the center of the bed from either side." The 100-Pound Plan's boxes are only a foot wide, so you can reach every plant from a lane, the pocket or the sides without ever stepping on, and packing down, your growing mix.

Tall in back, short in front

Tall in back keeps the front row in sun. The towers do shade the bottom of the Climber Box around midday in spring and fall, which is why it holds cool-season peas, lettuce and spinach in those seasons (the peas climb above the shadow), while the summer beans climb up into more sun.

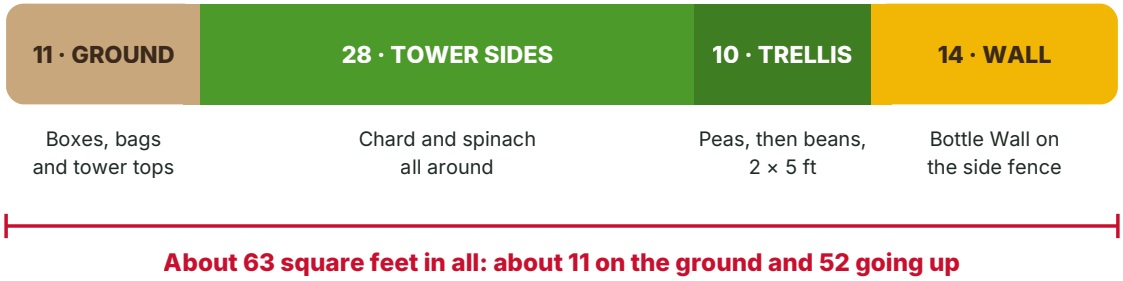


Side view, drawn to scale (looking east from the side-fence end, north on the left). Bag A stands in front of the Climber Box's end; the strip box stands in front of Bag C. Shadow: mid-October noon at about 36°N, roughly Nashville. The Wall is on a side fence, off this view.

A 25-square-foot footprint, about 63 square feet of growing surface

Remember the tower geometry from Chapter 1? Here's how it adds up across the whole farm. Most of the floor is lanes and gaps; the growing happens in the boxes, the bags and, above all, on vertical surfaces. (This is planting surface; the food comes next.)

WHERE THE GROWING SURFACE COMES FROM

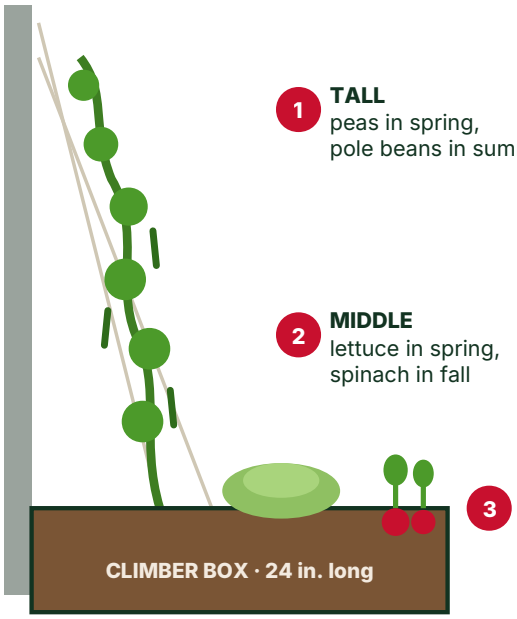


Footprint plus vertical surface. Ground: the inside of the two boxes (about 1⅓ and 2⅔ sq ft), the tops of the three grow bags (about 4¾) and three tower tops (about 2⅓). Towers: 3 × 3.14 × 1 ft × 3 ft. Trellis: 2 ft wide × 5 ft tall. Wall: a Bottle Wall about 3½ × 4 ft (Chapter 6). Not every inch gets full sun, so think of this as the ceiling, not the average.

HACK #7

Stalk Stacking

Here's the technique that makes a 24-inch box earn its keep. **Stalk stacking** is my name for vertical layering: crops of different heights sharing the same square, and taking turns in it through the year. In the 100-Pound Plan, the Climber Box grows **peas in spring, pole beans in summer and spinach in fall**, with quick lettuce and radishes tucked in along the front edge as a bonus.



LOW: radishes or green onions
along the front edge

Virginia Tech's vertical gardening guide explains why it works:

- **Climbers love to climb.** "Pole beans, peas, cucumbers, melons, and tomatoes are excellent candidates" for trellises.
- **Quick crops fit underneath.** "Quick-growing crops like radishes, turnips, and lettuce planted beneath vertically trained crops can be harvested before the taller crop gets too big."
- **Healthier plants.** Training plants upright gives "better air movement through the foliage, which reduces disease pressure."

So in spring, lettuce and radishes grow at the foot of young peas. In summer, pole beans climb the strings into more sun. In fall, spinach takes the box back.

ABOUT THAT SHADE

Against a north wall, the beans don't shade the box. The sun is behind you, to the south (in the mainland U.S.). What does shade it is the row of towers, around midday in spring and fall (see the side view). That's exactly why the Climber Box holds peas, lettuce and spinach in those seasons (the lettuce and spinach get by on 4 to 5 hours of sun, and the peas climb above the shadow), while the summer beans head up into the light.



Stalk stacking in action. Climbers go up the strings while lettuce, radishes and green onions fill the box below, all in a box one foot wide. (Cucumbers are a fine swap for the beans; the plan counts beans.)

Season	1 · Tall (climbs)	2 · Middle	3 · Low edge
Spring	Peas, about 10 plants, 2 in. apart	Lettuce	Radishes
Summer	Pole beans, about 5 plants, 4–5 in. apart	Lettuce, if it's not too hot	Green onions
Fall	Pull the beans	Spinach, about 7 plants	Radishes

JASON'S TIPS

Sow radishes and lettuce at the foot of the trellis on the same day you plant the peas. The radishes are picked long before the vines fill in, and the lettuce is done before summer heat arrives.

Plant each tower by its sides, too. That's why the plan puts spinach or lettuce in the four north-side holes: leafy greens get by on 4 to 5 hours of sun (Chapter 2). The sunny south, east and west holes go to chard, and the pepper sits on top in full sun. Check your sun map first: in spring and fall the north side may get too little sun.

— *Jason*

NO SQUARE SITS EMPTY

A Year of Plantings

A big garden gets planted once. A small farm gets planted **again and again.** The secret is simple: cool-weather crops in spring, warm-weather crops after your last

frost, and cool crops again in fall. Kansas State's planting guide rates peas, spinach and radishes as frost-hardy; lettuce, carrots and beets as half-hardy; tomatoes, peppers and beans as tender; and cucumbers as very tender. That's your sequence.

	SPRING (cool)	SUMMER (warm)	FALL (cool)
		▲ after your last spring frost	
Climber Box	Peas + lettuce + radishes	Pole beans + green onions	Spinach + radishes
Towers	Chard on the sunny sides, picked from spring until a moderate freeze		
	Spinach, north side	Pepper on top · lettuce north	Spinach, north side
Grow bags	A, B: start seeds indoors (Ch. 11)	A, B: two big tomatoes, picked until the first fall frost	
	C: potatoes, planted early, dug in summer		C: after the dig, a bonus round of greens
Doormat Strip	Carrots, beets, spinach, lettuce	Re-sow carrots and beets	Spinach, lettuce, radishes
The Wall	Herbs all season: chives and parsley early, basil once it's warm		

The 100-Pound Plan through the year. Exact weeks depend on your frost dates. Chapter 12 turns this into a week-by-week calendar for your ZIP code.

SOW A LITTLE, OFTEN

University of Missouri Extension suggests planting crops that you harvest all at once, like radishes, carrots and beets, "every couple of weeks." Lettuce works the same way: a small sowing every two weeks or so gives you a steady supply instead of 20 heads ready on the same Saturday.

THE 100-POUND PLAN

How Much Food? About 105 Pounds, Here's How

105 lb

The 100-Pound Plan. At the middle of Cornell University's expected garden yields, this layout adds up to about 105 pounds of food a year, and that's before counting lettuce, herbs, radishes, green onions or anything on the Wall.

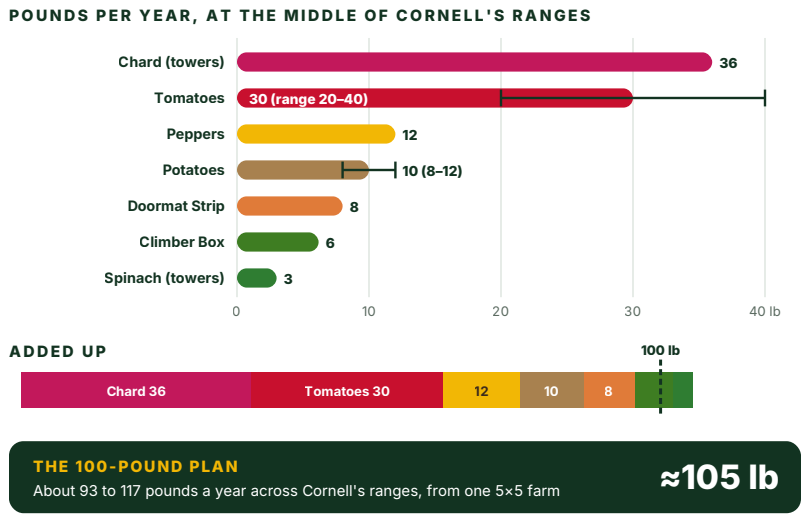
Cornell's ranges put it at **about 93 to 117 pounds.** Short sun, a short season or a late start will pull yours lower (see The Plain Truth below).

You've probably seen big promises about small gardens. I'd rather show you my math, so you can check it yourself. Every yield number comes from one source: Cornell University's *Recommended Spacing and Expected Yield* chart for home gardens, which lists what each plant can be expected to give. I counted the plants in each spot of the plan and multiplied.

Spot	Crop	Plants	Per plant	Lb a year
Bags A & B	Full-size staked tomatoes	2	10–20 lb	20–40
Towers, sunny	Swiss chard	24	1½ lb	36
Tower tops	Peppers	3	4 lb	12
Bag C	Potatoes	4	2–3 lb	8–12
Doormat Strip	Carrots, beets, spinach, twice	12 · 6 · 6	2 · 5 · 2 oz	about 8
Climber Box	Peas, pole beans, spinach	10 · 5 · 7	3 · 11 · 2 oz	about 6
Towers, north	Spinach, spring and fall	12 · 12	2 oz	3
TOTAL FOR ONE YEAR				**93–117**

Not counted, as a bonus: lettuce (Cornell lists it by the plant, not the pound), radishes, green onions, herbs and anything on the Wall. Climber Box: 1.9 lb of peas (spring) + 3.4 lb of beans (summer) + 0.9 lb of spinach (fall). Strip: 66 ounces per planting, two plantings. Cornell's tomato figures are for staked garden plants, 18 inches apart. **Potatoes are the least certain row:** Cornell's 2–3 pounds is for garden plants a foot apart, and

Bag C is shallower and more crowded than that, so treat its 8–12 pounds as a best case. The plan's 105 counts them at Cornell's garden rate.



Where the pounds come from. Chard and tomatoes carry the plan, so they get your best sun and your most regular feeding. Bars show the middle of Cornell's ranges; the black lines show the full range for tomatoes and potatoes.

CHARD IS THE BACKBONE

Cornell rates Swiss chard at 1½ pounds per plant. You don't pull it: you pick a few outer leaves at a time and it keeps growing, from spring until a moderate freeze (UMass Extension). Twenty-four chard plants on the sunny sides of the towers give you more than a third of the plan.

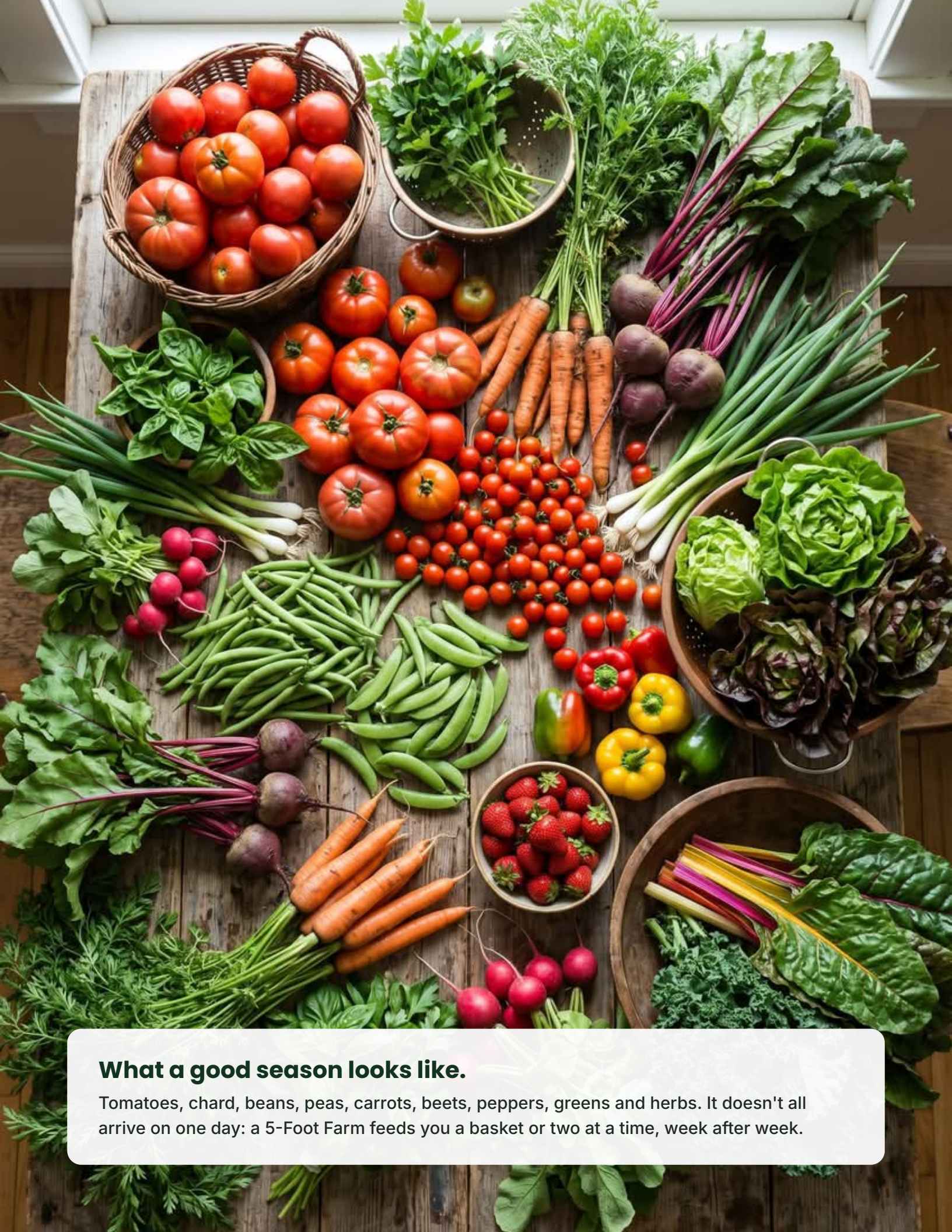
WHAT IT TAKES

Full sun, with 8+ hours on the tomatoes and peppers (the minimum Rutgers gives for fruiting crops) · a frost-free season long enough to ripen tomatoes and peppers (check the days to maturity on the seed packet against your frost dates, Chapter 12) · every square replanted on time · steady water and food. Chapters 2, 12, 13 and 15 show you how.

THE PLAIN TRUTH

Cornell's numbers are for garden rows, and plants in containers often yield less. Short sun, dry spells or a late start will pull your number down; good sun and steady care push it up. My rule of thumb: your second season usually beats your first, because by then you know your sun, your timing and your plants.

Want more? Build a second 5-Foot Farm. Don't cram more plants into the same square. A second farm is the honest way to grow more food.



What a good season looks like.

Tomatoes, chard, beans, peas, carrots, beets, peppers, greens and herbs. It doesn't all arrive on one day: a 5-Foot Farm feeds you a basket or two at a time, week after week.

Shopping list and budget

Here's what the full 100-Pound Plan takes. Prices vary a lot by store and region, so treat these as a rough guide. To save, scrounge: appliance stores for cardboard, the library for seeds (Chapter 11).

Item	For	About how much	Approx. cost
Fabric grow bags	Bags A, B, C	two 15-gal, one 10-gal	$20–45
Welded wire fencing, 36 in. tall	Towers (Ch. 5)	10–12 ft (50-ft roll ≈ $60)	$15–60
Landscape fabric, 3 ft wide	Tower linings	12 ft (50-ft roll ≈ $30–35)	$10–35
Potting mix, or coir, compost and perlite for Tower Mix (Chapter 3)	Towers, bags, box	13½ cu ft (+2¼ if you build the Chapter 7 strip box instead of the no-dig strip)	$80–170
Compost	Top of a no-dig strip	about 1 cu ft	$5–20
Cedar 2×6 lumber, 2×2 corner posts, deck screws	Both boxes (Ch. 7)	about 32 ft of 2×6, 8 posts, 64 screws (+1×4 slats on paving)	$60–135
Trellis: a 2×4 board, screw eyes, string; 2 tall tomato stakes or cages	Climber Box, Bags A & B	1 set	$25–60
Wall materials	The Wall (Ch. 6)	free bottles, cord, hooks	$0–50
Fertilizer and worm castings	Feeding (Ch. 2, 13)	1 bag of each	$20–45
Seeds, certified seed potatoes	The whole plan	8–10 packets, 1 lb potatoes	$5–55
ROUGH TOTAL			**$240–675**

Price checks, Oct. 2026: welded wire roll $59.99; landscape fabric $29.90 on sale (regularly $33.59); 2-cu-ft potting mix $18.99. Other rows are typical ranges. Volumes: tower about 2.4 cu ft (3.14 × 0.5 × 0.5 × 3 ft), 15-gallon bag about 2, 10-gallon bag about 1⅓, Climber Box about 1, strip box about 2¼ (insides with about 10 in. of mix). Lumber: two layers of 2×6 around each box.

SAFETY · LIFTING, FASTENING AND WEIGHT

Lifting: bags of mix and full grow bags are heavy. Fill towers and grow bags where they'll stand, and never lift or tip a full one. Use a helper or a hand truck for 2-cubic-foot bags of mix.

Fastening: screw the trellis and wall pockets to a sound fence or wall, never to rotten boards or a flimsy railing: a loaded trellis catches a lot of wind. Drive tomato stakes before you plant, so you don't spear the roots.

Weight: on a deck or balcony, check with your landlord or a builder about weight before you fill anything (Chapter 8).

The two-weekend build plan

Most people need two weekends for the whole farm. The times come from each build's own chapter, for a first-timer at an easy pace. Nobody's timing you, so spread it over a month if you like.

WEEKEND 1 · THE BASE

Saturday morning · about 3 hours
Mark the 5×5 square. Build the Doormat Strip box (about 2 hours, Chapter 7) or the no-dig strip (1–2 hours, Chapter 3).

Saturday afternoon · 2–3 hours
Build the Climber Box and hang the trellis on the wall (Chapter 7).

Sunday · about 1–2 hours
Set the three grow bags in place and fill them where they'll stand. Drive the tomato stakes (or set cages) in A and B.

WEEKEND 2 · GOING UP

Saturday · 3–6 hours
Build and fill the three Garden Towers (1–2 hours each, Chapter 5).

Sunday morning · about 2 hours
Hang the Bottle Wall on the sunny side fence (Chapter 6).

Sunday afternoon · 1–2 hours
Plant what's in season (above), water everything in, and enjoy the view.

Two weekends, one farm. Potatoes go in early, around your last frost. If it's too early for tomatoes and peppers, build everything now and plant them after your last frost (Chapter 12).

JASON'S TIP

You don't have to build it all at once. Start with the Doormat Starter this weekend: a strip plus one self-watering bucket (Chapter 2), for the price of a bag of compost, two buckets and a bag of potting mix. Add a tower next month, then the Climber Box and grow bags. The farm grows as your confidence does.

— *Jason*

Your Master Plan Checklist

- [ ] **Placed right**
  Against a sunny wall: two tomato grow bags and the Climber Box in back, three towers in the middle, the strip and the potato bag in front, a foot-wide lane and a pocket behind the middle tower, the Wall on a side fence.

- [ ] **Planned for the year**
  Chard picked all season, cool crops in spring and fall, warm crops after your last frost, and a little sown every couple of weeks.

- [ ] **Your goal: the 100-Pound Plan**
  About 105 pounds a year at the middle of Cornell's expected yields; about 93 to 117 across Cornell's ranges, less with short sun or a short season. Want more? Build a second farm.

NEXT UP

Chapter 5: The Garden Tower. Turn less than a square foot of floor into about 10 square feet of planting space.

SOURCES FOR THIS CHAPTER

Yields (every number): S. Reiners, Cornell Cooperative Extension, "Recommended Spacing & Expected Yield for Garden Vegetables in New York" (May 2017), "yield estimate per plant": tomatoes (staked) 10–20 lb, peppers 4 lb, Swiss chard 1½ lb, potatoes 2–3 lb, pole beans 11 oz, peas 3 oz, beets 5 oz, carrots 2 oz, spinach 2 oz; plant counts are the author's, from this layout. · Grow bags: EarthHero 15-gallon (18 in. across, 12 in. deep) and 10-gallon (15 in. across, 12 in. tall) product pages. Tomato containers: UC Master Gardeners of San Francisco (15–20+ gallons); UW–Madison Extension. · Frost ratings: Kansas State University, MF315 (2023). Chard harvest until a moderate freeze: UMass Extension. · Shadows: noon sun about 46° (mid-October) and 77° (late June) at 36°N. · Virginia Cooperative Extension HORT-189NP; University of Missouri Extension; Oregon State EM 9559; Rutgers FS129 (8+ hours for fruiting crops). · Prices: Hemlock Hardware, MiniTack, Ace Hardware; build times from Chapters 2–7.



CHAPTER 5

The Garden Tower

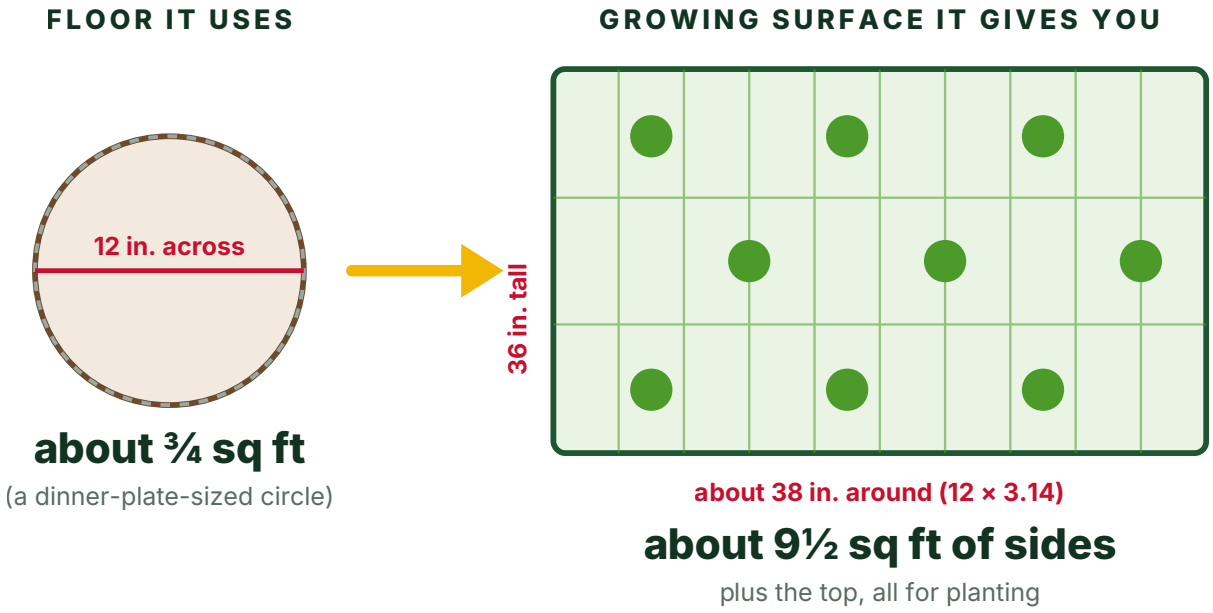
A roll of wire, a liner and a few bags of potting mix. Stand it up, and less than one square foot of floor becomes about ten square feet of planting space.

IN THIS CHAPTER

- Why a tower packs so much food into so little floor
- Build: the 1-foot Garden Tower, step by step, with an all-natural, no-plastic option
- What to plant on the sunny side, the shady side and the top
- Watering, feeding and tying up, all season long

The first time my wife saw a Garden Tower, she said it looked like a giant birdcage full of salad. She wasn't wrong. It's also the hardest-working thing on our patio.

Here's the idea. A normal pot only grows plants on its top. A tower grows plants on its top *and all the way around its sides*. You roll welded wire into a tube, line it, fill it with potting mix, and tuck plants into the sides. In the Master Plan from Chapter 4, three of these stand in the middle row of your 5-Foot Farm.



Unroll a tower and look what you get. The sides of a tower 1 foot across and 3 feet tall add up to about 9½ square feet, roughly twelve times the floor it stands on. It's simple geometry: the distance around (12 in. × 3.14 ≈ 38 in.) times the height (36 in.).

> **DID YOU KNOW?**
>
> Three towers in the middle row of your 5-Foot Farm take up a little over 2 square feet of floor, yet give you close to 30 square feet of side space to plant. That's the heart of how a small footprint feeds you.

Why a tower works so well

Think back to the old stories of the Hanging Gardens of Babylon in Chapter 1: grow **up**, and let water travel from the top down. A tower does both. You water at the top

and down a center tube, gravity carries the water through the mix, and every plant along the way gets a drink.

Towers also lift your plants off the ground, which makes picking easier on the back. The top sits at about kitchen-counter height (36 inches), and even the lowest ring of plants is about 9 inches up.

MYTH

~~You can grow anything in a tower, even big beefsteak tomatoes.~~

FACT

Towers shine with small-rooted plants: Sunset's tower guide picks arugula, leaf lettuce, radishes and strawberries "because of their small root system." Big beefsteaks need 15–20 gallons or more (Chapter 7).

What grows best where

In the full 5-Foot Farm, every tower follows the same plan: **Swiss chard** in the 8 sunny-side holes, **spinach or lettuce** in the 4 north-side holes, and **one pepper** on top. Not following the plan? The last column gives you other good choices.

Spot on the tower	What it's like	Best plants
Top	Full sun, dries out first. Peppers want 8+ hours (Rutgers).	**Plan: one pepper.** Or a compact cherry tomato, or peas on a short trellis.
Sunny sides (south, east, west)	In the mainland U.S., the south side gets the most direct sun.	**Plan: Swiss chard.** Or strawberries (6–8 hours of sun, UNL), basil, parsley, kale.
North side	Fewer sun hours. Greens need only 4–5 (Rutgers).	**Plan: spinach** in spring and fall, or lettuce. Or arugula, mint, cilantro.
Bottom ring	Stays moist the longest	Thirsty greens. Radishes if you mix it up.

BUILD · THE GARDEN TOWER

One roll of wire. A wall of salad.

A 3-foot-tall tube of welded wire, lined and filled with potting mix, with a simple watering tube down the middle. Build one in an afternoon; build three for the full Master Plan.

TIME	DIFFICULTY	SIZE	PLANTS
1–2 hours	●●○ Moderate	12 in. across, 36 in. tall	About 12 sides + top

WHAT YOU'LL NEED (ONE TOWER)

- **Welded wire fencing, 36 in. tall**, a piece 40 in. long. Galvanized "2×4" mesh is common at hardware stores; one 50-ft roll makes about 15 towers.
- **Liner:** landscape fabric, a piece 36 in. × 40 in. (3-ft-wide fabric cut 40 in. long), or a natural liner; see the box below
- **Watering tube:** a 12 in. × 36 in. strip of galvanized ¼-in. hardware cloth
- **Stake:** a 4-ft steel rebar, T-post or sturdy wooden stake
- **Ties:** soft tie wire, jute twine or zip ties
- **Potting mix:** about 2½ cubic feet (two 1.5-cu-ft bags covers it). Never plain garden soil; see Chapter 3.

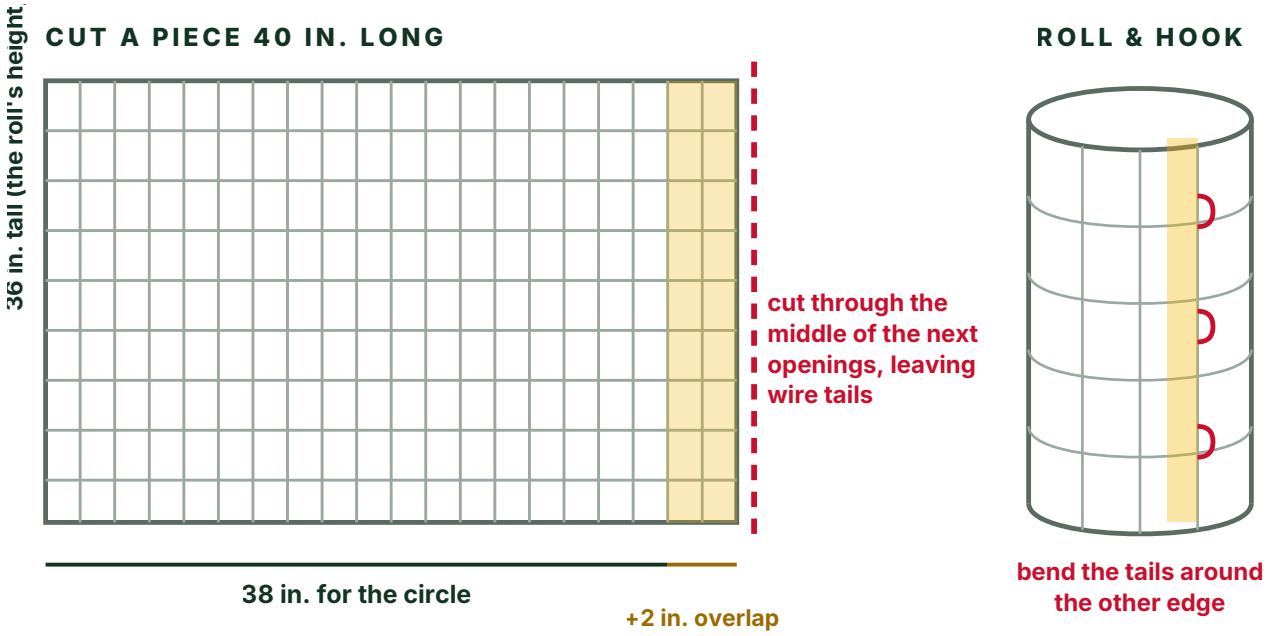
TOOLS

- Wire cutters (or small bolt cutters)
- Pliers
- Leather gloves (cut wire is sharp)
- Tape measure and marker
- Scissors or a utility knife
- A plant saucer or wide tray at least 16 in. across, if your tower stands on a patio or deck

THE ALL-NATURAL, NO-PLASTIC VERSION

Landscape fabric is a plastic. For a plastic-free tower, line it with **burlap**, a **coco-fiber (coir) liner** or **damp sphagnum moss** (Sunset magazine's choice), and tie with tie wire or jute twine. The wire is steel and the watering tube is metal. Natural liners do break down: in my experience burlap lasts about one season.

Steps 1–3: Cut, roll and close the wire



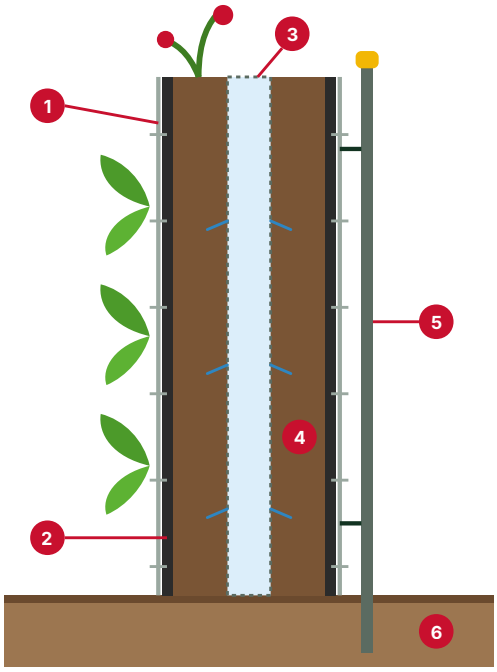
Cutting and rolling. A circle 12 inches across is about 38 inches around (12 × 3.14 = 37.7). Add 2 inches so the edges overlap. If your mesh openings are 2 inches wide, that's 20 openings in all.

1. **Measure and cut.** Unroll the fencing on a driveway or lawn and weigh the end down. Measure 40 inches along the roll and cut straight down through the middle of the openings, so short wire "tails" stick out along the cut edge. Wear gloves: cut wire is sharp.

2. **Roll it into a tube.** Stand the piece on its edge and bend it into a circle about 12 inches across, with the two ends overlapping by about 2 inches. Fencing has a natural curl from the roll, so let it help you.

3. **Hook it closed.** With pliers, bend each wire tail around the wire on the other edge, all the way from bottom to top. Squeeze every hook flat so nothing pokes out to scratch your hands later.

Steps 4–6: Line it, add the watering tube and stand it up



INSIDE THE TOWER

1 Welded wire tube, 12 in. across

2 Liner: landscape fabric, burlap or coir

3 Watering tube of ¼-in. hardware cloth, about 3 in. across, standing in the center. Water poured in seeps out along its length to the middle and lower layers.

4 Potting mix, firmed in layers

5 Stake driven into the soil, with the tower tied to it in two places so it can't tip

6 Soil level. (On a patio, use a saucer instead of a stake and tie the tower back to the wall; see step 6.)

4 **Line the tube.** Stand the 36-inch-tall liner inside the wire, overlapping its edges by a couple of inches. Tie its top edge to the top wire every 6 inches or so. Leave the bottom open: the mix will rest on the ground or in the saucer.

5 **Make the watering tube.** Roll the strip of hardware cloth the long way into a narrow tube about 3 inches across, overlapping the edges, and tie it closed with tie wire. Stand it in the middle of the tower, from the bottom to the top rim.

6 **Stand it up and anchor it.** Put the tower in its final sunny spot first: full, it's far too heavy to move. **In soil,** drive the stake in right against it and tie them together near the top and bottom (N.C. extension agents anchor wire towers with stakes, T-posts or rebar). Put a safety cap on rebar. **On a patio,** set the tower in its saucer, tie the three towers to each other at the top, and run a cord from each top wire to an eye hook in the wall or fence behind the farm.

Steps 7–9: Fill, plant and water

7 **Fill in layers.** Use potting mix or the Tower Mix from Chapter 3, with worm castings mixed in at about 1 scoop for every 9 scoops of mix (Chapter 2). Pour in about 6 inches, press it down gently with your hand, and water it lightly. Repeat until you're 1 inch from the top. Keep the watering tube centered and empty as you go. Layering stops big air pockets from forming and sinking later.

8 **Plant through the sides.** Plan three rings of planting holes, at about 9, 18 and 27 inches up, with about four plants in each ring, staggered so no plant sits right above another. At each spot, cut an X about 3 inches across in the liner, fold the flaps back, poke a hollow into the mix with your fingers, and slide in a small seedling's root ball. Firm the mix around it and fold the flaps back against the stem. If a mesh opening is too small for the root ball, snip one wire to make a bigger window. Radishes don't transplant well, so sow them instead: drop 2–3 seeds into a side slit and keep it moist.

9 **Plant the top and water.** Set one pepper plant in the top (the plan), or one to three smaller plants. Then water slowly, first down the watering tube, then over the top, until water seeps out of the bottom.



Planting through the side. Cut an X in the liner, tuck in the root ball, firm the mix and fold the flaps back.

QUICK WIN · START SMALL

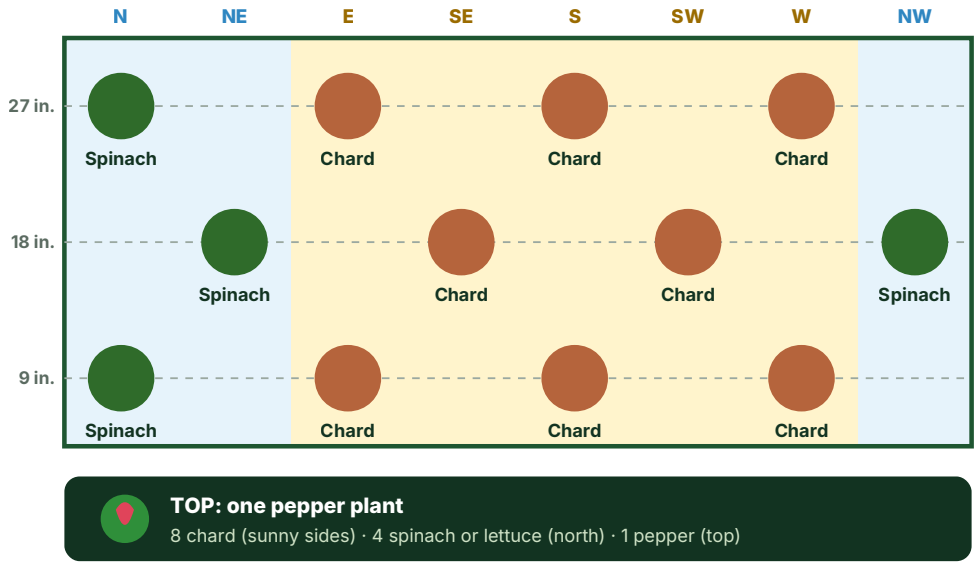
Small seedlings from a cell tray slide through the sides easily. Bigger plants from 4-inch pots go on top.

COMMON MISTAKE · YARD DIRT

Garden soil packs down hard in a tall column, especially at the bottom. Packed soil holds little air and sheds water. Use a light potting mix (Chapter 3).

Your tower planting map

Here's the Master Plan for one tower. Imagine the tube unrolled flat, with the compass points along the top and the north side at both ends.



One tower in the Master Plan. Three rings of four holes, staggered so every plant gets light. The blue bands at both ends are the same north side, shown split because the tube is unrolled. Every tower in the farm is planted the same way.

THE BACKBONE OF THE 100-POUND PLAN: SWISS CHARD

Cornell rates Swiss chard at **1½ pounds per plant**. It's cut-and-come-again: pick a few outer leaves at a time and leave the center growing; in my experience it keeps producing from spring until a moderate freeze. Three towers hold 24 chard plants, about **36 pounds**. Add Cornell's 4 pounds per pepper on top and the spinach, and the towers carry about half of the 100-Pound Plan in Chapter 4 (about 51 of 105 pounds).

Room to grow

Cornell spaces chard 6 inches apart in a row and spinach 3. Tower holes sit about 9½ inches apart around (38 ÷ 4) and 9 inches between rings.

Spinach twice a year

Sow the north holes in early spring, pull the spinach when summer heat arrives, and sow again in late summer for fall (Chapter 12).



Water from the top down.

I fill the center tube first, then give the top a slow soak. On a hot July afternoon, that tower drinks more than you'd guess.

ALL SEASON

Caring for your tower

Watering

A tower has a lot of surface open to sun and wind, so it dries out faster than a bucket. Check it every day in warm weather. Use the finger test from Chapter 2 at the top, and push a finger into a side hole too. When it's time, fill the center tube, then water the top slowly until water seeps from the bottom.

Feeding

Potting mix runs low on nutrients as plants grow. Mix worm castings into the potting mix when you fill the tower (Chapter 2), then feed every few weeks with a liquid vegetable fertilizer poured down the tube and over the top. Follow the label. Chapter 13 has a simple feeding schedule.

Tying up the top

A pepper loaded with fruit, or peas or a compact tomato, will lean on top of the tower. At planting, push a 4-foot bamboo stake down into the mix beside the plant, or tie twine to the tower's top wire. Loop soft twine loosely around the stem and the support in a figure-eight, which is how UC Master Gardeners tie tomatoes, so the stem isn't pinched.

JASON'S TIP

Pick outer leaves of chard, lettuce and kale first and leave the center growing. Each plant keeps producing, and the tower stays full instead of gappy.

— *Jason*

DID YOU KNOW?

Lifting plants off the ground keeps leaves cleaner: less garden mud splashes up onto lettuce growing in the side of a tower.

At the end of the season

1. **Pull the spent plants.** Add them to your compost (Chapter 3).
2. **Empty or refresh the mix.** Don't try to lift or tip a full tower. Untie it from its stake, unhook the seam and let the wire spring open over a tarp, or scoop the mix out from the top. Crumble it, pull out old roots, and mix in fresh compost before you reuse it next spring.
3. **Save the wire.** Galvanized fencing lasts for years. Shake out the liner, let it dry, and store everything flat or nested until spring.

Your Tower Checklist

- [ ] **Built and anchored**
  40 in. of 36-in.-tall wire rolled to 12 in. across, lined, watering tube in the center, staked in soil or tied back to the wall on a patio.

- [ ] **Filled and planted**
  Potting mix or Tower Mix with castings, in 6-inch layers. Chard on the sunny sides, spinach or lettuce north, one pepper on top. Finger test daily in warm weather; feed every few weeks.

NEXT UP
Chapter 6: The Living Wall. The French botanist's soil-free secret, adapted to grow food on a wall.

SOURCES FOR THIS CHAPTER
Tower dimensions and planting surface: simple geometry (circumference = 3.14 × diameter). · Welded wire: Agway 36 in. × 50 ft (2×4) galvanized welded wire fence, Do it Best product listing (doitbest.com). · Small-rooted plants for towers; sphagnum liner: Sunset, "How to make a vertical garden tower." · Anchoring towers with stakes, T-posts or rebar: N.C. Cooperative Extension, Sampson County, "From the Vine: Potato Tower" (2025). · Sun hours: Rutgers NJAES Fact Sheet FS129; strawberries: University of Nebraska–Lincoln, Backyard Farmer, "Strawberries." · Spacing and yields (chard 1½ lb per plant, 6 in.; spinach 2 oz, 3 in.; peppers 4 lb; lettuce 6 in.): Reiners, S., *Recommended Spacing & Expected Yield for Garden Vegetables in New York*, Cornell University (2017). · Figure-eight ties: UC Master Gardeners of San Mateo & San Francisco Counties, *Growing Container Tomatoes in San Francisco* (2025).



CHAPTER 6

The Living Wall

A French botanist taught the world to grow gardens on bare walls with no soil at all. Here's his formula, cut down to kitchen size and pointed at food.

IN THIS CHAPTER

- The French botanist's secret formula, and how it works
- Build: the 12-bottle Bottle Wall that you water from the top down
- Build: the easy felt-pocket wall for a fence or balcony
- Build: an indoor drip wall with LED lights, for fresh greens all winter

Every home has more wall than floor. A fence, the side of a shed, a balcony railing, the blank space beside a kitchen window. Most of us never think of that space as somewhere to grow food. Patrick Blanc did.

THE FRENCH BOTANIST'S SECRET FORMULA

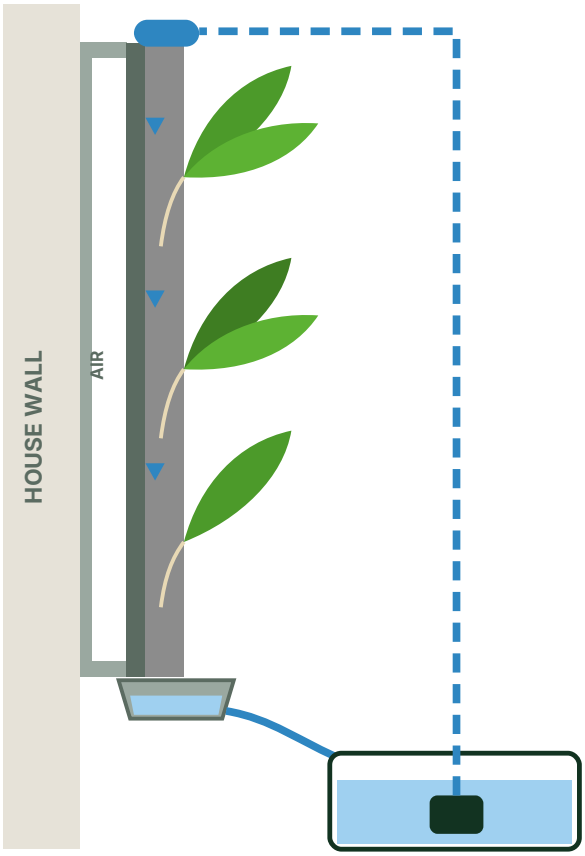
Patrick Blanc is a French botanist who spent his career as a researcher at France's national research agency, the CNRS, studying tropical forest plants. His living walls cover museums and hotels around the world, including a famous wall at the Musée du quai Branly in Paris.

His "secret formula" is simple: **no soil.** In his own description, a metal frame on the wall leaves an air layer behind it, a PVC sheet about 1 centimeter thick is riveted to the frame, and felt is stapled onto the PVC. The roots grow on the felt. Water with nutrients added is fed in from the top, and the felt spreads it evenly. A gutter at the bottom catches the extra so a pump can send it back up. You'll find his full story in Chapter 1.

We're going to borrow that idea three ways, from dead easy to weekend project:

Wall	Grows in	Where	Difficulty	Best for
1. Bottle Wall	Potting mix in 2-liter bottles	Sunny fence or wall; indoors over a tray	Easy	Lettuce, herbs, green onions
2. Felt-Pocket Wall	Potting mix in felt pockets	Fence, balcony, sunny wall	Easiest	Herbs and leafy greens
3. Indoor Drip Wall	Felt only, fed by water with plant food (Blanc's way)	Indoors, under LED lights	Advanced	Lettuce, herbs, pak choi in winter

How a Blanc-style wall works



1. **Drip pipe along the top**
   water with nutrients fed in
2. **Felt**
   roots grow on it; no soil
3. **PVC sheet, about 1 cm thick**
   waterproof backing
4. **Metal frame**
   leaves an air layer behind
5. **Gutter at the bottom**
   catches the extra water
6. **Tank and pump, below the gutter**
   water drains down to it, then is pumped back to the top

Patrick Blanc's system, side view. Water moves down through the felt by wicking, the extra is caught at the bottom, and the pump recycles it in a closed loop. Based on Blanc's own description of his system (quoted on a University of Washington course page); the gutter and closed-circuit recycling are described in his Wikipedia biography.

DID YOU KNOW?

Blanc's own description of his system, quoted on a University of Washington course page, puts the whole wall, plants and metal frame included, at **less than 30 kilograms per square meter**, about 6 pounds per square foot. With no heavy, wet soil, his walls can climb far higher than any pot.

JASON'S TIP

You don't need a museum budget to steal the idea. The two lessons that matter: **water from the top and let gravity do the rest**, and **protect the wall behind** from constant damp.

— *Jason*

BUILD 1 · THE BOTTLE WALL

Twelve bottles. One cascading garden.

Three hanging columns of four 2-liter bottles each, strung on cord. You water the top bottle in each column, and what drains out of it drips into the bottle below, all the way down.

TIME	DIFFICULTY	SIZE	COST
About 2 hours	●○○ Easy	About 3½ ft wide × 4 ft tall	Very low · bottles free

WHAT YOU'LL NEED

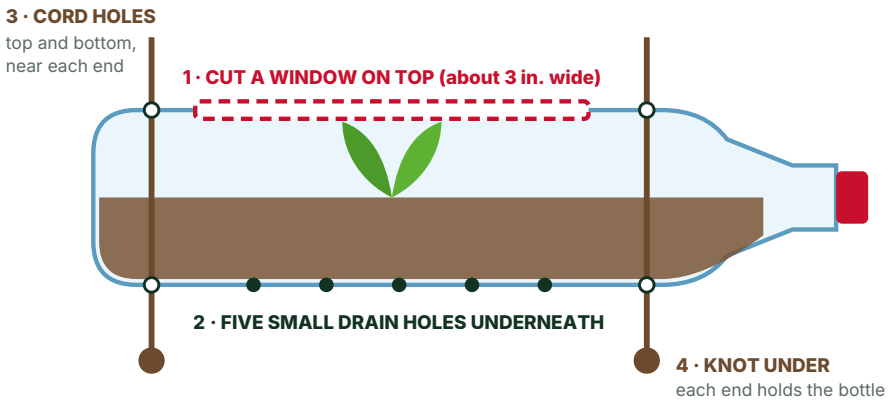
- **12 empty 2-liter soda bottles** with caps on, rinsed, labels peeled off
- **Strong outdoor cord** such as paracord, about 36 feet in all (six 6-foot pieces)
- **6 outdoor screw hooks**, screwed into a horizontal fence rail. On a wall: first screw a 1×4 or 2×4 board, about 4 ft long, across the wall studs (two 3-in. exterior screws per stud), then put the hooks into that board
- **Potting mix**, about 15 quarts (half a cubic foot) for all 12 bottles
- **Seedlings or seeds:** lettuce, herbs, green onions
- Indoors: a long boot tray or drip tray for under the bottom bottles

TOOLS

- Utility knife or sharp scissors
- Drill with a ¼-inch bit (or a sturdy awl)
- Permanent marker
- Tape measure
- Gloves (cut plastic edges can be sharp)

This design follows a bottle garden built by the California Department of Food and Agriculture, which strings 2-liter bottles on wire about a foot apart.

Steps 1–4: Turn a bottle into a planter



One bottle, side view. The window stops about 2 inches short of each end, so the cord holes go through solid plastic. The bottle hangs on two cords and rests on a knot under each end.

1. **Cut the window.** Lay a bottle on its side. On the top, draw a rectangle about 3 inches wide that runs most of the length, stopping about 2 inches from each end. Cut it out with a utility knife and trim any sharp points. Leave the cap on.

2. **Add drainage.** Turn the bottle over and make five small holes in a line along the bottom, directly opposite the window. This is the same five-hole pattern the CDFA bottle garden uses.

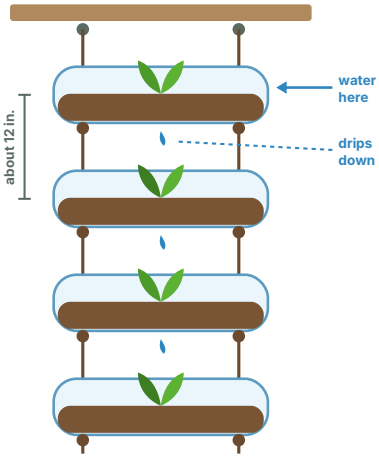
3. **Make the cord holes.** Near each end, in the solid part past the window, drill one hole through the top and a second hole straight below it through the bottom. A cord will run through each pair, top to bottom.

4. **Repeat for all 12 bottles.** Make one bottle first, check it, then use it as a pattern so every hole lines up the same way.

BE HONEST ABOUT PLASTIC

Soda bottles are PET (#1), made for one-time use, and Toronto Master Gardeners advise avoiding #1 plastic for growing food. My compromise: **one season only**, then recycle them; in my experience they turn brittle after a summer in strong sun. For no plastic, use felt pockets or the tower's natural liner (Chapter 5).

Steps 5–8: String, hang and plant



5 **String a column.** Cut two 6-foot cords. Tie a big double knot near the bottom of each. Thread the bottom bottle onto both cords, through its holes, so it rests on the knots. Tie the next pair of knots about 12 inches higher and thread the next bottle. Repeat until four bottles are on.

6 **Hang it.** Measure the distance between the cord holes on your bottle (usually 8–9 inches) and screw two hooks exactly that far apart into the fence rail or wall board. Tie the cords to the hooks. Line the bottles up so each drain-hole row sits right above the window of the bottle below. Hang the other two columns beside it, leaving about 3 inches between the bottle ends.

7 **Fill and plant.** Fill each bottle with moist potting mix to just below the window's edge. Plant one lettuce or two or three small herbs per bottle.

8 **Water the top bottle.** Pour slowly into the top bottle of each column. When it drains, the water drips into the bottle below, then the next. Check the bottom bottle: if it's still dry, give it its own drink.

DID YOU KNOW?

This is the Hanging Gardens idea from Chapter 1 in miniature: water lifted to the top and allowed to flow down through layer after layer of plants.

QUICK WIN · SAFE HANGING

A column of four full, wet bottles is heavier than it looks. Screw the hooks into a horizontal fence rail or a board fastened across wall studs. Never use a thin fence picket or bare drywall.

BUILD 2

The Felt-Pocket Wall



Ready-made pockets turn a bare balcony wall into an herb garden in an afternoon.

This is the easiest living wall there is. Big home stores sell felt planters with rows of sewn pockets and metal grommets along the edges. One 36-pocket felt panel sold at a big home store, for example, opens to 36 by 36 inches and hangs on a fence with zip ties or on a wall with hooks or screws.

It's soil in pockets rather than Blanc's soil-free felt, but it borrows his best idea, felt that holds moisture against the roots, plus a waterproof sheet you add behind it.

JASON'S TIP

Felt dries fast in sun and wind, just like a tower. Check the top pockets daily in summer: they dry first.

— *Jason*

What grows best on a wall

Grows well	Skip it on a wall
Leaf lettuce, arugula, spinach	Full-size tomatoes and peppers (too big and heavy)
Herbs: basil, parsley, mint, thyme, chives, cilantro	Root crops like carrots and potatoes (no depth)
Green onions; pak choi indoors	Squash, melons and vining crops

Lettuces and herbs (CDFA) and small-rooted greens (Sunset); the rest is my experience.



A pocket plan that follows the water. Water runs down through the pockets, so the bottom rows stay damp longest. This layout is my rule of thumb; shown here for 18 pockets, repeat it for bigger panels.

1. **Protect the wall.** Against a house, shed or indoor wall, first screw two or three 1×2 wood strips upright into the studs. Staple a sheet of heavy plastic (a pond liner or shower-curtain liner works), a little bigger than the panel, to the strips. The strips leave an air gap so damp can't build up against the wall, like the air layer behind Blanc's frame.

2. **Hang the panel.** Use the grommets: zip ties around a fence rail, or screws through the grommets into the wood strips. Hang it where it gets the sun your plants need (Chapter 2).

3. **Fill, plant and water.** Fill each pocket with moist potting mix and plant one herb or lettuce per pocket, thirstiest plants low (see the plan above). Water the top row slowly, let the extra trickle down, and finish by checking the bottom row.

BUILD 3 · THE INDOOR DRIP WALL

Blanc's way, at kitchen size.

A 2-by-4-foot panel of felt with no soil, fed by a tiny pump on a timer and lit by LED grow lights. It's the most advanced build in this book, and the one that keeps fresh greens on the table in January.

TIME	DIFFICULTY	SIZE	POWER
A weekend	●●● Advanced	2 ft wide × 4 ft tall	Pump + lights on timers

WHAT YOU'LL NEED

- Waterproof backing panel, 2 × 4 ft (rigid PVC or plastic sheet)
- Two layers of felt, 2 × 4 ft each (synthetic felt lasts; Blanc uses polyamide)
- Stainless staples and a staple gun
- 1×2 wood strips to make a frame that holds the panel off the wall
- A 2-ft gutter with end caps, or a long tray, at the bottom
- A plastic tub or tote for a water tank
- Small submersible fountain pump rated for at least 6–7 ft of lift (the water climbs about 5 ft)
- Vinyl tubing; a 2-ft drip line with small holes or drippers, end capped
- Two plug-in timers: a digital timer that can run for just a few minutes (pump), and a simple timer for the lights
- Two 4-foot LED grow-light bars and a stand to hold them upright, facing the wall
- A waterproof floor tray or boot tray under the whole setup
- Liquid hydroponic plant food

SAFETY FIRST

- **Plug the pump and lights into a GFCI outlet.** The U.S. Consumer Product Safety Commission says ground-fault circuit interrupters protect people from electric shock: they cut the power in a fraction of a second if current leaks. Newer homes have them in kitchens and bathrooms (look for the TEST and RESET buttons; press TEST to check it works). Otherwise use a plug-in GFCI adapter.
- Let each cord droop below the outlet before it rises to the plug (a "drip loop"), so water can't run down the cord into the socket.
- Unplug the pump before your hands go in the tank.
- Keep the tank covered so pets and children can't get into it.



A drip wall in a kitchen corner. Greens grow straight out of the felt, with a drip tube along the top and a tray at the bottom.

Step by step

1. **Build the frame and backing.** Screw a simple rectangle of 1×2 strips to the wall (into studs), or stand it on sturdy feet. Fasten the waterproof panel to the frame so there's an air gap between it and your wall, as in Blanc's walls.

2. **Staple on the felt.** Lay both felt layers over the panel and staple around all the edges and in a grid every 6 inches or so, keeping the felt flat.

3. **Cut planting slits.** In the outer felt layer only, cut horizontal slits about 3 inches long, in staggered rows about 6 inches apart. Each slit opens into a pocket between the two layers.

4. **Fit the gutter and tank.** Mount the gutter right under the bottom edge of the felt, tilted slightly toward one end. Set the tank on the floor tray, lower than the gutter, so a short tube from the gutter's low end runs downhill into it. Set the pump in the tank.

5. **Run the water line.** Run tubing from the pump up to the drip line along the top edge, holes facing the felt. Cap the far end.

6. **Test with plain water first.** Fill the tank, run the pump and look for leaks and dry spots. Every inch of felt should darken as the water spreads.

7 **Set the timer.** In Blanc's walls, watering is automated. Start with a few runs of a few minutes each day and adjust until the felt stays damp but never dries out; that's my rule of thumb, and your room's warmth and humidity will set the final schedule.

8 **Add plant food and plants.** Mix hydroponic plant food into the tank at the strength on its label. Tuck seedlings with their roots rinsed clean (or in small starter plugs) into the slits so the roots touch the inner felt.

9 **Light it.** Stand the two 4-foot LED bars upright on their stand, facing the felt and about 12 inches from the plants, so light reaches the whole 4-foot height. Set them for about 12 hours a day. UConn's Home & Garden Education Center suggests that distance, 12 hours for herbs and greens, and more (14–16 hours) for seedlings. It also warns that 24 hours of light isn't ideal.

MYTH

~~No soil means no food for the plants.~~

FACT

In a drip wall, the food travels in the water. Writing about Blanc's walls, CITYGREEN magazine (Singapore's National Parks Board) notes that the felt needs only about a tenth of the nutrients a soil garden uses. A little plant food goes a long way, so mix it at the label's strength and don't add extra.

Looking after your drip wall

Top up

Plants drink and water evaporates, so the tank level drops. Top it up with plain water between feedings.

Refresh

Empty and refill the tank with fresh water and plant food as often as your plant-food label advises.

Harvest

Pick outer leaves often. A wall packed with overgrown plants shades its own lower rows.

Your Living Wall Checklist

- [ ] **Pick your wall**
  Bottle Wall (easy, outdoors or over a tray), Felt-Pocket Wall (easiest) or Indoor Drip Wall (advanced).

- [ ] **Hang it safely**
  Hooks into a horizontal fence rail or a board screwed across studs. Waterproof sheet on spacer strips behind anything against a wall.

- [ ] **Water from the top**
  Let it flow down. Check the top daily in summer and the bottom row too.

- [ ] **Indoors**
  GFCI outlet, drip loops, floor tray, lights upright about 12 in. away for about 12 hours a day.

NEXT UP

Chapter 7: Buckets, Boxes & Bags. Potatoes in a bag, sweet potatoes from the grocery store, and the Doormat Strip box.

SOURCES FOR THIS CHAPTER

Blanc's system (metal frame and air layer, 1-cm PVC sheet, polyamide felt, watering from the top with nutrients, automated; under 30 kg/m²): Blanc's own description quoted on University of Washington, "Green walls" course page (2010). · Blanc's career, gutter and closed-circuit recycling, Musée du quai Branly: "Patrick Blanc," Wikipedia. · Felt and nutrients: Tan, J. J., "Eden Re-envisioned," *CITYGREEN* #15, National Parks Board, Singapore. · Bottle garden (rectangle cut, five drain holes, wire, about a foot apart; lettuces and herbs): California Department of Food and Agriculture, *Tales from the Field*, "How to Build a Vertical Garden." · Plastic codes: Plastic Action Centre, "Plastic by the Numbers"; advice to avoid #1, 3, 6 and 7 for growing food: Toronto Master Gardeners. · Felt pocket planter specs: Style Selections 36-pocket fabric wall planter, Lowe's product listing. · GFCI protection: U.S. Consumer Product Safety Commission. · LED distance and hours: Leahy, E., "Shine a Light – But Which One?", UConn Home & Garden Education Center (2025). · Small-rooted plants for vertical gardens: Sunset, "How to make a vertical garden tower."



CHAPTER 7

Buckets, Boxes & Bags

The humble workhorses of a small farm. A bag of potatoes you roll out like buried treasure, sweet potatoes started in a jar, and the Doormat Strip box at the front of your farm.

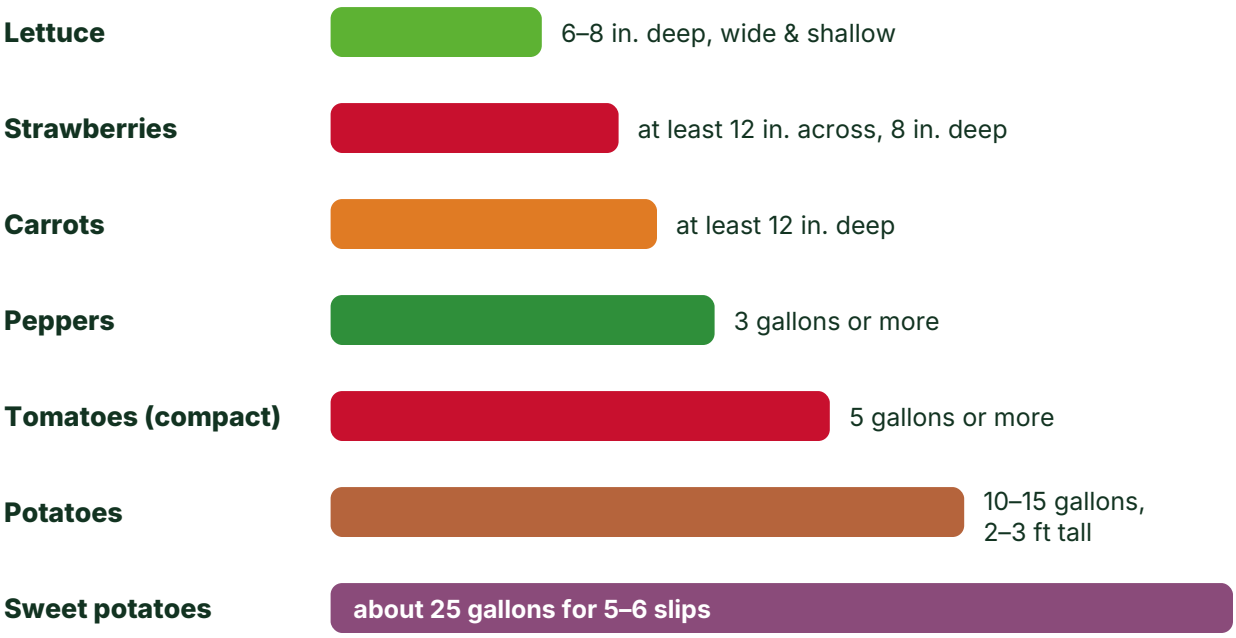
IN THIS CHAPTER

- How big a container each crop really needs, and which plastics to trust
- Potatoes in a bag: plant, hill and roll out your harvest
- Sweet potatoes from a grocery-store root and a glass jar
- Big bags for big tomatoes, compact tomatoes and peppers in buckets, and the truth about "suckers"
- Build: the doormat-sized Strip box and the 2-foot Climber Box with its string trellis

If the Garden Tower is the show-off of the 5-Foot Farm, buckets and boxes are the quiet folks who do the heavy lifting. They hold the big plants, the deep roots and the crops that like room to spread out underground.

The single biggest container mistake I see is a pot that's too small. Roots run out of room, the mix dries out in an hour, and the plant sulks. So before anything else, here's how much room each crop really wants, according to extension gardeners.

HOW MUCH ROOM EACH CROP WANTS



Container sizes from extension sources. Lettuce, peppers, compact tomatoes and sweet potatoes: N.C. Cooperative Extension, Onslow County. Strawberries: University of Nebraska–Lincoln. Carrots: Washington State University. Potatoes: University of Georgia Extension. Full-size (indeterminate) tomatoes need more: "bigger than a 5 gallon bucket" (UW–Madison Extension); UC Master Gardeners in San Francisco suggest 15–20 gallons or more for container tomatoes.

MYTH

~~Bigger pots are just a waste of potting mix.~~

FACT

More mix holds more water and more food, so a big pot dries out more slowly and feeds roots longer.

Which containers are safe for food?

Look on the bottom of any plastic pot or bucket and you'll find a number inside a little triangle. It tells you what kind of plastic it is.

#	Plastic	Where you see it	For growing food
1	PET	Water and soda bottles	Made for one-time use. My call: OK for a one-season bottle planter (Chapter 6).
2	HDPE	Buckets, milk jugs, yogurt tubs	**A good choice,** especially food-grade buckets.
3	PVC	Pipe, vinyl	Avoid for containers.
4	LDPE	Soft bags	Rarely used for pots.
5	PP	Caps, some tubs, many nursery pots	Commonly used for pots.
6	Polystyrene	Foam cups, takeout boxes	Avoid.
7	Other / mixed	Everything else	Avoid when you can't tell what it is.

Codes and examples: Plastic Action Centre, "Plastic by the Numbers." Toronto Master Gardeners advise avoiding #1, #3, #6 and #7 for growing food and using food-grade plastics.

The honest answer

An Oregon State University Extension agent put it plainly: there are "very few good (unambiguous) answers" here. "Food grade" is probably safest, plain hardware-store buckets aren't very sun-stable, and people have grown food in black nursery pots for years with no reported problems.

My short list

Food-grade HDPE (#2) buckets (bakeries and delis often give them away), fabric grow bags, untreated wood, and clay or ceramic pots. Ask what a free bucket held before, and skip any that held chemicals.

POTATOES

Potatoes in a bag



Harvest day. No digging: lay the bag on its side on a tarp and roll the potatoes out.

My wife calls potato day "the treasure hunt." Potatoes are perfect for small spaces because you grow them in a deep container, add mix as they grow, and harvest by laying the bag on its side on a tarp. No shovel, no kneeling in the dirt.

COMMON MISTAKE · GROCERY POTATOES

Grocery-store potatoes may be treated with a sprout inhibitor, and UGA Extension notes they often give a lower yield, if any. Buy **certified seed potatoes** from a garden center or seed catalog instead.

Container

UGA Extension calls a 10–15 gallon container about 2–3 feet tall ideal. In the full farm, **Bag C** is a shorter 10-gallon grow bag (15 in. across, 12 in. tall) at the front-right corner. N.C. Extension's minimum for potatoes is 12 inches deep.

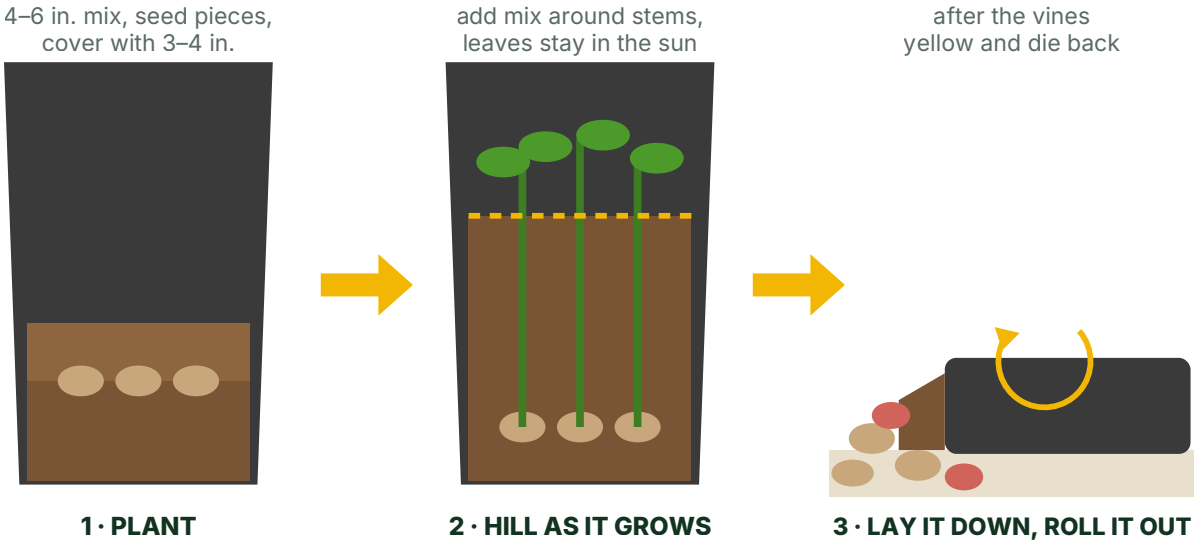
When to plant

Early spring: UGA Extension says potatoes can go in once the soil reaches 45°F, usually before the last frost, and come up best above 50°F. Chapter 12 helps you time it.

What to expect

Cornell expects 2–3 pounds per plant in a garden row, with plants a foot apart. Bag C is shallower and more crowded than that, so treat Chapter 4's 8–12 pounds as a best case.

Plant, hill, harvest



Three stages of bag potatoes. Depths from UGA Extension and a potato cheat sheet hosted by UC Davis (no author listed).

1. **Cut and cure the seed.** Cut big seed potatoes into pieces with at least two "eyes" (buds) each. Let the cut sides dry for a day or two before planting. Small seed potatoes can go in whole.

2. **Plant.** Put 4–6 inches of moist potting mix in the bag. Set the pieces eyes up, about 6 inches apart (Colusa County Master Gardeners). In the farm's 10-gallon Bag C that works out to about 4 pieces; a 15-gallon bag takes 4 or 5 (my rule of thumb). Cover them with 3–4 inches of mix.

3. **Hill as they grow.** When the shoots are 3–4 inches tall, add more mix (or straw) around the stems, but don't bury the leaves completely: they need sun to feed the plant. Repeat until the mix is near the top.

4. **Water evenly.** Keep the mix moist but never soggy. Containers need a bit more water than garden beds.

5. **Harvest.** When the leaves turn yellow and die back, stop watering for about a week. Don't lift the bag: lay it on its side on a tarp and roll it, or cut or unzip the side and pull the mix out, then sift out your potatoes.

JASON'S TIP

Can't wait? A few weeks after the plants flower, reach into the side of the bag and feel around for small "new" potatoes. Take a few for dinner and leave the rest to keep growing.

— *Jason*

SWEET POTATOES

From a jar in the kitchen

Sweet potatoes aren't grown from seed. They're grown from "slips": leafy sprouts that grow from a sweet potato root. You can buy slips, or grow your own in a warm spot out of direct sun, using Clemson University's method.

1. **Set it up.** Push 3 or 4 toothpicks into the sides of a healthy, medium-sized sweet potato and rest them on the rim of a quart jar, so the bottom half sits in warm water. Keep it in bright, indirect light.
2. **Change the water weekly.** Sprouts should appear in about 2 weeks.
3. **Twist off the slips.** When the sprouts are 6 inches or longer, twist them off and stand them in fresh water. They'll grow their own roots in about 10 days.



Slips in the making. Toothpicks hold the root so its bottom half stays in water. Clemson advises bright, indirect light rather than hot direct sun.

DID YOU KNOW?

Clemson notes that roots from a home garden or an organic store sprout more easily than most grocery-store sweet potatoes, which are often treated to stop them sprouting. If your first one sulks, try an organic sweet potato.

Plant out

Only when the soil is above 65°F and you're well past your last spring frost (Clemson).

Container

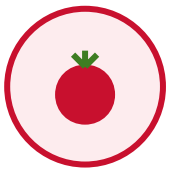
Big: about 25 gallons for 5–6 slips, such as a half wine barrel (N.C. Extension).

Harvest

About 90–120 days after planting, and before frost. Cornell expects about 2 pounds per plant in the ground.

CURE THEM FOR SWEETNESS AND STORAGE

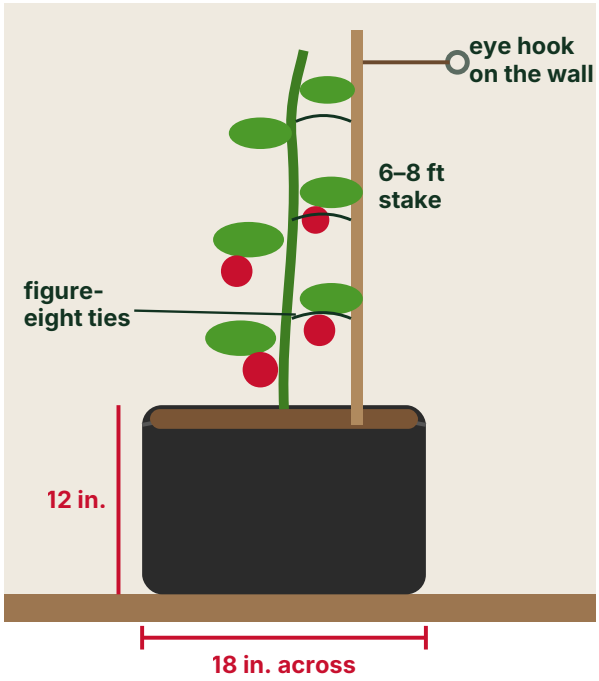
Freshly dug sweet potatoes need curing. Clemson suggests keeping them in the warmest room of the house, usually the kitchen, for about 14 days (curing doesn't happen below 70°F). Then store them somewhere cool but never below 50°F, and **never in the refrigerator**. Kept well, they last for more than six months.



TOMATOES

Big bags for big tomatoes

Full-size tomatoes are the heavy hitters of the 100-Pound Plan. Cornell University expects **10 to 20 pounds from each staked plant** in a garden row. But they need room: UW–Madison Extension says indeterminate tomatoes need a container "bigger than a 5 gallon bucket," and UC Master Gardeners suggest 15–20 gallons or more. So in the full 5-Foot Farm, the two back corners hold **Bag A and Bag B**: 15-gallon fabric grow bags, one tomato plant in each.



THE BIG BAG AT A GLANCE

Bag: 15-gallon fabric grow bag, 18 inches across and 12 inches deep (one maker's spec).

Plant: one full-size (indeterminate) tomato per bag.

Sun: 8 hours or more (Rutgers), which is why the bags sit at the back, where the low crops don't shade them. The towers in front shade only the bottom of each plant around midday, early and late in the season.

Support: a 6–8 foot stake or a sturdy cage, set at planting (UC Master Gardeners).

1. **Set the empty bag in place.** Put it in its back corner first, then fill it with moist potting mix, with castings mixed in (1 scoop per 9 of mix, Chapter 2). A full bag is far too heavy to move.

2. **Plant and stake on the same day.** Plant one tomato. Push the stake in just outside the root ball, then tie its top to an eye hook in the wall or fence behind (or to the Climber Box's trellis board), because 12 inches of mix can't hold a tall stake upright on its own. A sturdy cage around the plant works too.

3. **Tie as it grows.** Every week or so, tie the main stem loosely to the stake in a figure-eight (UC Master Gardeners). Pinch off most suckers while they're small (see below).

4. **Water every day in summer.** Fabric sides let water evaporate, and in my experience a grow bag dries out faster than a plastic bucket. Check it daily with the finger test (Chapter 2) and water until it drains. UC Master Gardeners warn that uneven watering causes cracked fruit and blossom-end rot.

5 **Feed every 4 weeks.** UC Master Gardeners re-apply compost or a liquid organic fertilizer about every 4 weeks, choosing one lower in nitrogen so you get fruit rather than just leaves. Chapter 13 has the schedule.



COMPACT TOMATOES & PEPPERS

Bucket stars

The 5-gallon self-watering bucket from Chapter 2 is the heart of the **Doormat Starter**, and it's perfect on a balcony or a sunny step. Put one **compact tomato or one pepper** in each bucket. (In the full farm, peppers grow on top of the towers, Chapter 5.)

JASON'S TIP

Even a compact tomato likes a short stake or small cage. Push it in at planting time, just outside the root ball.

— *Jason*

Feeding

UC Master Gardeners feed about every 4 weeks with compost or a liquid organic fertilizer lower in nitrogen, for fruit rather than leaves. See Chapter 13.

Choose the right tomato

Determinate tomatoes grow to a set size and ripen their fruit over a fairly short period. They fit a 5-gallon bucket (UW–Madison Extension). Look for "determinate" on the label; many "patio" types are compact too.

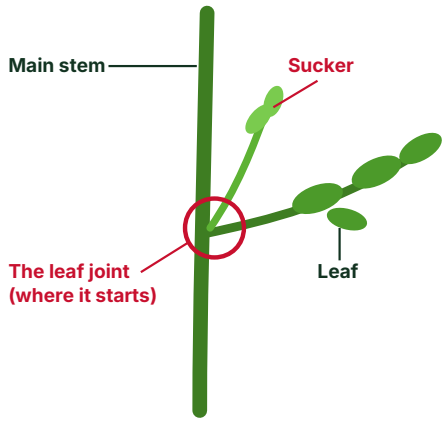
Indeterminate tomatoes keep growing all season and produce more. UW–Madison says they need a container bigger than a 5-gallon bucket; UC Master Gardeners suggest 15–20 gallons or more, and 6–8 foot stakes. Give them a big bag (above).

Peppers

A 3-gallon container is the minimum (N.C. Extension), so a 5-gallon bucket gives a pepper plenty of room. Cornell expects about 4 pounds per pepper plant in a garden row. A short stake keeps a heavy plant from leaning.

Both crops want the full 8 hours of sun from Chapter 2.

What is a "sucker," really?



A sucker is a small side shoot that sprouts in the joint between the main stem and a leaf (UC Master Gardeners). It is **not** the top of the plant, whatever you may have read.

Determinate tomatoes: leave the suckers. They carry part of the crop.

Indeterminate tomatoes: pinch off most suckers while they're small, keeping a few as extra branches, so the plant stays manageable.

COMMON MISTAKE · UP-AND-DOWN WATERING

Tomatoes need steady moisture. UC Master Gardeners warn that an uneven water supply can cause cracked fruit and blossom-end rot (a dark, sunken patch on the bottom of the fruit). A self-watering bucket helps a lot here. More fixes in Chapter 15.

BUILD 1 · THE DOORMAT STRIP BOX

A doormat-sized box for salad and roots.

A cedar box 45 inches long and 12 inches wide on the outside, 11 inches tall: about the size of a doormat. Beside Bag C, the 15-inch potato bag, it fills the 60-inch front row of the 5-Foot Farm exactly (45 + 15 = 60).

TIME	DIFFICULTY	OUTSIDE	INSIDE
About 2 hours	●●○ Moderate	45 × 12 × 11 in.	42 × 9 in.

WHAT YOU'LL NEED

- **2 cedar 2×6 boards, 10 ft long.** A "2×6" really measures 1½ × 5½ inches (American Wood Council), so two stacked boards make an 11-inch-tall box.
- **1 cedar 2×2, 4 ft long** for the corner posts
- **32 exterior screws, 2½ in.** (coated deck screws)
- **Mix:** about 2 cubic feet of potting mix or raised-bed mix (two 1.5-cu-ft bags covers it)
- **Patio version only:** two 8-ft 1×4 boards; 44 exterior screws, 1⅝ in.; landscape fabric about 18 × 51 in.; 4 bricks or two 2×4 runners about 12 in. long

CUT LIST

- **Long sides:** 4 pieces of 2×6 at 45 in.
- **Ends:** 4 pieces of 2×6 at 9 in.
- **Corner posts:** 4 pieces of 2×2 at 11 in.
- **Patio slats:** 11 pieces of 1×4 at 12 in.

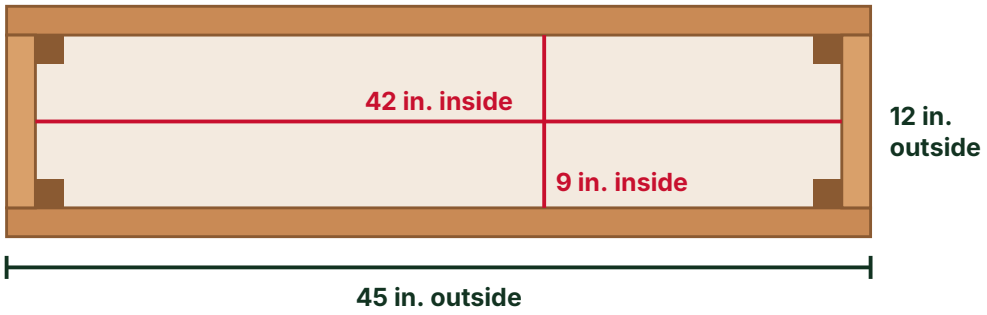
From each 10-ft 2×6, cut two 45-in. sides and two 9-in. ends. From each 8-ft 1×4, cut up to seven 12-in. slats. Most home stores will make the cuts for you.

TOOLS

- Drill/driver and a ⅛-in. bit for pilot holes
- Tape measure, pencil, square
- Saw (if cutting yourself)

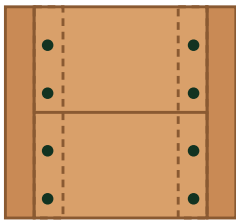
Putting it together

TOP VIEW



45-in. sides cover the ends of the 9-in. end boards; 2×2 posts sit in the inside corners

END VIEW



end screws into the posts (dashed)

1 in. and 3½ in. up each board

SIDE VIEW, ONE CORNER



side screws 2¼ in. from the board's end (into the post), at 2 in. and 4½ in. up, so they miss the end screws

Simple corner posts make it easy. Every board screws into a 2×2 post, so you never drive screws into thin end grain. Drawings to scale.

1. **Build the two ends.** Stand two 9-inch end boards on edge, one on top of the other. Set an 11-inch 2×2 post upright against the inside face at each end of the boards, flush with the top, the bottom and the boards' ends. Drill ⅛-inch pilot holes so the posts don't split, then drive two screws through each board into each post, about 1 inch and 3½ inches up from that board's bottom edge. Repeat for the other end (16 screws in all).

2. **Add the long sides.** Stand the two ends up about 42 inches apart. Lay a 45-inch board across them so its ends are flush with the outside faces of the end boards. Drill pilot holes 2¼ inches in from the board's end, which puts them over the center of the post, at about 2 inches and 4½ inches up from the board's bottom edge, so they pass above and below the end screws. Screw in, then add the second board above it and do the other side (16 more screws).

3. **Check it's square.** Measure corner to corner both ways. If the two numbers match, the box is square. If not, nudge it until they do.

4. **Set it in place before you fill it.** A filled box is far too heavy to move. On soil, set it on the no-dig cardboard layers from Chapter 3 (no bottom needed).

5. **On a patio, add a bottom.** Flip the box over. Lay the eleven 12-inch slats across the bottom edges, flush with the outside faces, with gaps of about ⅝ inch between them. Screw each slat into the long sides with two 1⅝-inch screws at each end. Turn it right side up, line the bottom and the first couple of inches of the sides with landscape fabric, and set it on 4 bricks or two short 2×4 runners so water can drain away.

6. **Fill and plant.** Fill with moist mix, with worm castings mixed in at 1 scoop per 9 of mix (Chapter 2), to about an inch below the top, so about 10 inches of mix. Plant using the plan on the next page.

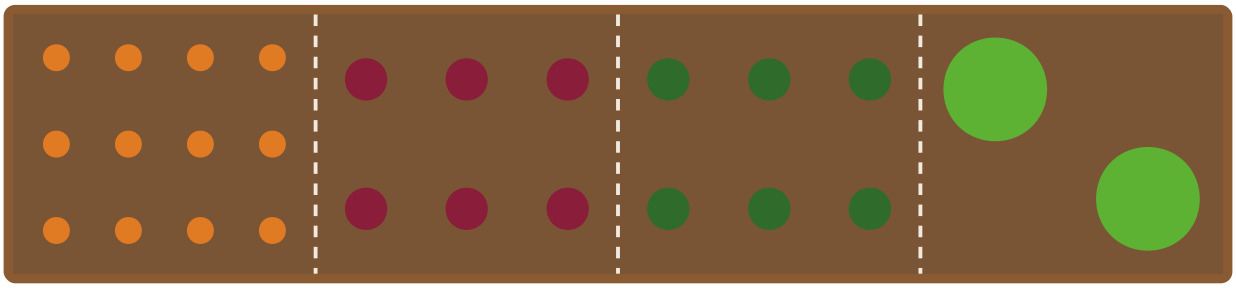
WHAT ABOUT TREATED LUMBER?

Oregon State University Extension reports that chemicals from pressure-treated wood leach into soil and plants only in very small amounts, and that it found no research showing levels that threaten health. The old arsenic-based treatment (CCA) was restricted for home use in 2004. I still choose untreated cedar for food boxes, because it's simple and needs no second thought.



A narrow box like this fills fast. Carrot tops, lettuce, onions and beets, each in its own section.

The Doormat Strip planting plan



Four sections, each about 10½ × 9 inches (inside the box), drawn to scale

Four crops in a narrow box. Every plant sits at least as far apart as Cornell's in-row spacing (carrots 2 in., beets 2–3 in., spinach 3 in., leaf lettuce 6 in.). Sow carrots, beets and spinach again after the first harvest for a second planting (Chapter 12). Swap beets for 6 onions or scallions, or tuck a few radishes between the carrots. With about 10 inches of mix, grow short carrots: WSU suggests Chantenay, Nantes or Thumbelina for containers, which it says should be at least 12 inches deep.

BUILD 2 · THE CLIMBER BOX AND STRING TRELLIS

A 2-foot box that grows up the wall.

The same simple box, 24 inches long, for the back row between Bags A and B, the two big tomato bags (18 + 24 + 18 = 60 inches), with strings running up to a board on the wall or fence behind it. This is where peas and pole beans climb.

TIME	DIFFICULTY	OUTSIDE	TRELLIS
2–3 hours	●●○ Moderate	24 × 12 × 11 in.	Top about 6 ft up

BOX: WHAT YOU'LL NEED

- **Cedar 2×6:** two 6-ft boards (or one 12-ft board)
- **1 cedar 2×2, 4 ft long** for corner posts
- **32 exterior screws, 2½ in.**
- **Mix:** about 1 cubic foot (one 1.5-cu-ft bag covers it)
- **Patio version only:** one 8-ft 1×4; 24 exterior screws, 1⅝ in.; landscape fabric about 18 × 30 in.; 4 bricks or two 2×4 runners

CUT LIST

- **Long sides:** 4 pieces of 2×6 at 24 in.
- **Ends:** 4 pieces of 2×6 at 9 in.
- **Corner posts:** 4 pieces of 2×2 at 11 in.
- **Patio slats:** 6 pieces of 1×4 at 12 in.

From each 6-ft 2×6: two 24-in. sides and two 9-in. ends.

TRELLIS: WHAT YOU'LL NEED

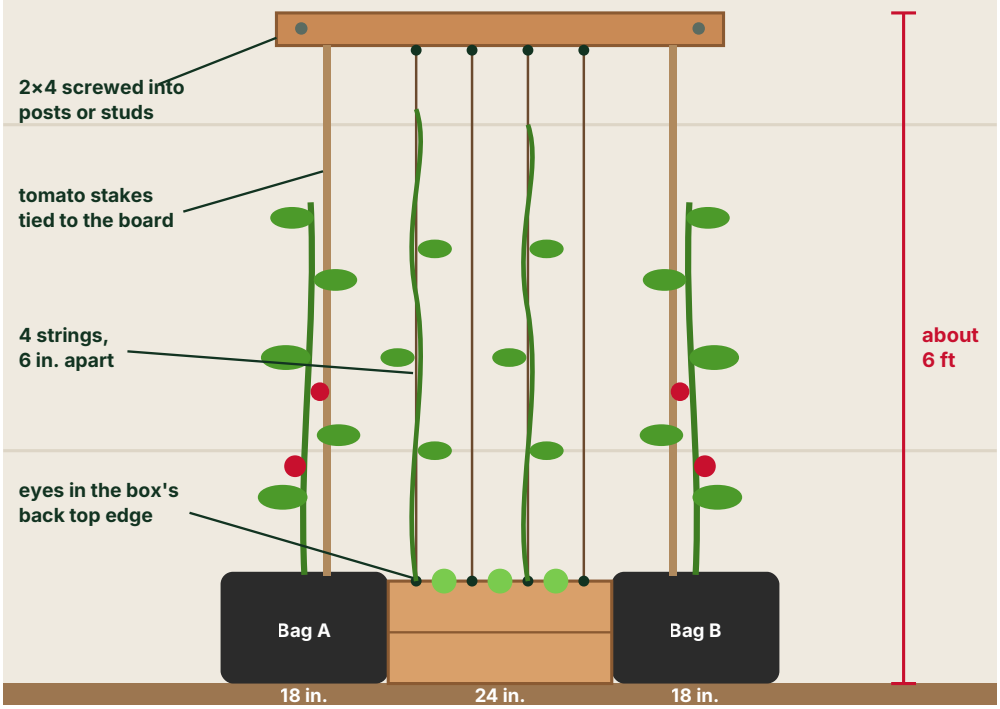
- **One 2×4** long enough to reach across two fence posts, or across at least two wall studs (a 4-ft board spans three studs set 16 in. apart)
- **3-in. exterior screws,** two per post or stud (masonry screws for brick or block)
- **8 screw eyes,** about 2 in. long
- **Garden twine,** about 30 ft, or a piece of plant-support netting about 2 × 5 ft
- A stud finder (for walls), a level, a step stool and a helper

Pole beans are twining vines that grow to six feet and sometimes taller (University of Minnesota Extension); Iowa State calls for sturdy supports at least 6 feet tall.

SAFETY FIRST

Fasten the trellis board only to a sound fence or wall, into posts or studs, never a fence picket or bare siding. Use a step stool with a helper steadying it.

The Climber Box, front view



The back row, front view, drawn to scale. The 24-inch box fits between the two 18-inch tomato bags (18 + 24 + 18 = 60 in.). Four strings run from screw eyes in a 2×4 about 6 feet up down to screw eyes in the top edge of the box's back wall, and the tomato stakes are tied to the same board.

STALK STACKING IN ONE BOX

This box is the stalk-stacking showcase from Chapter 4: layers that share the same ground through the year. In **spring**, peas climb the strings while lettuce and radishes grow at their feet. In **summer**, pole beans take over the strings. In **fall**, cut the bean vines at the soil, leave the roots, and fill the box with spinach. Cornell's figures put the three plantings at about 6 pounds a year (peas 3 oz, beans 11 oz, spinach 2 oz per plant). As Chapter 4 explains, the towers in front shade the bottom of the box around midday in spring and fall, which is why it holds cool-season crops then: lettuce and spinach get by on 4 to 5 hours of sun, and the peas climb above the shadow.

JASON'S TIP

Pick beans every few days once they start. Picking young pods keeps the vines making more. — *Jason*

Building the Climber Box and trellis

1. **Build the box.** Follow steps 1–3 for the Doormat box, using the Climber cut list. The ends stand about 21 inches apart before you add the 24-inch sides. On a patio, add the six slats (gaps of about ⅝ inch) and fabric as in step 5.

2. **Set it in place.** Put the box against the wall or fence at the back of the farm, between Bags A and B, before you fill it.

3. **Mount the trellis board.** Find the fence posts or wall studs behind the box (use a stud finder on a wall). With a helper, hold the 2×4 level with its top edge about 6 feet up, centered over the box, and fasten it with two 3-inch screws into each post or stud.

4. **Add screw eyes.** Twist four screw eyes into the underside of the 2×4, straight above the box at 3, 9, 15 and 21 inches from its left end (6 inches apart). Drill small pilot holes, then twist four matching eyes into the top edge of the box's back wall, straight below them.

5. **Tie the strings.** Tie twine to each top eye, run it straight down and tie it to the eye below, snug but not tight. Or hang plant-support netting from the top eyes and tie its bottom edge to the box eyes.

6. **Fill and plant three times a year.** Fill with moist mix and castings to about an inch below the top. **Early spring:** sow peas along the back in front of the strings, about 2 inches apart (Cornell's spacing), about 10 seeds, with a few lettuce or radish seeds along the front edge as a bonus. **Early summer:** when the peas finish, pull them and sow pole beans 4 inches apart in front of the strings (University of Minnesota Extension), about 5 seeds. **Late summer:** when the beans are done, sow spinach for fall, about 7 plants at Cornell's 3-inch spacing. Chapter 12 has the dates.

7. **Guide the vines.** Peas grab the strings with their tendrils; pole beans twine. When a young vine reaches out, wind its tip loosely around the nearest string, and it will take over from there.

Your Buckets, Boxes & Bags Checklist

- [ ] **Containers and potatoes**
  Big enough and food-safe (HDPE #2, grow bags, untreated wood). Certified seed potatoes, about 4 pieces in 10-gallon Bag C, harvested without lifting; sweet potato slips planted when the soil is above 65°F.

- [ ] **Tomatoes and peppers**
  Full-size tomatoes in 15-gallon Bags A and B, staked at planting and tied to the wall; compact tomatoes and peppers in 5-gallon buckets. Water evenly, daily in summer.

- [ ] **Two boxes**
  Doormat Strip box 45 × 12 in. outside (carrots, beets, spinach, lettuce). Climber Box 24 × 12 in. outside, strings to a 2×4 about 6 ft up on posts or studs; peas, then beans, then spinach.

NEXT UP

Chapter 8: The Apartment Farm. Balconies, windowsills, grow lights and a jar that grows lettuce with no pump at all.

SOURCES FOR THIS CHAPTER

Container sizes: Burgess, E., "Easy Container Vegetables and How to Grow Them," N.C. Cooperative Extension, Onslow County (2025); UNL Backyard Farmer, "Strawberries"; WSU Extension, *Gardening Monthly: Carrots*; UC Master Gardeners of San Mateo & San Francisco Counties, *Growing Container Tomatoes in San Francisco* (2025); UW–Madison Extension, Marinette County, "Tomato in a Container." · Potatoes: Mehalek, C., "Grow Potatoes in a Trash Can," UGA Extension, DeKalb County (2026); UGA Extension, Colquitt County, "How do I plant my potatoes?" (2023); "Potato Cheat Sheet (Tahoe)," hosted by UC Davis, no author listed; UCCE Master Gardeners of Colusa County, "A Garden Runs Through It." · Yields and spacing (tomatoes 10–20 lb, peppers 4 lb, potatoes 2–3 lb, sweet potatoes 2 lb, peas 3 oz, beans 11 oz, spinach 2 oz per plant): Reiners, S., *Recommended Spacing & Expected Yield for Garden Vegetables in New York*, Cornell (2017). · Sweet potatoes: Clemson Extension HGIC, "Sweet Potato." · Plastics: Plastic Action Centre, "Plastic by the Numbers"; Toronto Master Gardeners; Bubl, C., OSU Extension via Ask Extension. · Lumber: American Wood Council, NDS Supplement, Table 1A; OSU Extension, "Raised bed lumber, pressure treated safe?" · Spacing: Driscoll, L., "Square Foot Gardening," NC State Extension 4-H. · Pole beans (twining, to six feet; supports at planting; 4 in. apart in front of the trellis): University of Minnesota Extension, "Growing beans in home gardens"; supports at least 6 ft: Iowa State University Extension, "All About Beans." · Grow bags: EarthHero product specs.



CHAPTER 8

The Apartment Farm

No yard? No problem. A balcony, a bright window or a simple shelf with a light can keep fresh food on your table, even in the middle of winter.

IN THIS CHAPTER

- Balcony basics: weight, wind, water and good neighbors
- What really grows indoors, and what's a struggle
- Build: the kitchen light shelf
- Microgreens on your counter, many in about one to two weeks
- Build: the no-pump lettuce jar (no electricity at all)

You don't need a yard to grow food. You need light, a little floor or railing space, and a plan that fits where you live. Our first indoor crop was a tray of lettuce on a kitchen windowsill, and it changed how I thought about every sunny corner of the house.

Here's the truth about apartment growing: you won't grow corn in a living room. But you can grow a surprising amount of the food that costs the most and spoils the fastest: salad greens, herbs, microgreens, and even tomatoes and peppers if you have a sunny balcony.

The secret is matching the right crop to the right spot. Every apartment has up to three growing spots. Most of us only think of one.



SPOT 1

The balcony

Real sun and fresh air. Your best bet for the fruiting crops.

- Tomatoes and peppers in buckets
- Beans up a screen or trellis
- Greens and herbs in railing boxes



SPOT 2

The sunny window

Free light. Perfect for the plants that need the least of it.

- Herbs in their own pots
- Lettuce and baby greens
- The no-pump lettuce jar



SPOT 3

The light shelf

Your own private sun, on a timer. Works in any room, any season.

- Microgreens
- Lettuce, basil, chives
- Seedlings for the balcony

SPOT 1

The Balcony Farm

A balcony is a little patch of sky. If it gets direct sun for most of the day, you can grow almost everything in the 5-Foot Farm on it: buckets of tomatoes and peppers, beans climbing a screen, greens and herbs in boxes. A shady balcony is still great for lettuce, spinach and chard. (Chapter 2 shows you how to count your sun hours.)

Before you haul up a single bag of potting mix, though, there are three things to think about that people with yards never have to: **weight, wind and water.**

1. Weight: ask first, then keep heavy things by the wall

Wet potting mix and water are heavy. A gallon of water weighs a little over 8 pounds, so a bucket's worth of water alone tops 40 pounds, before you add the mix and the pot. Britain's Royal Horticultural Society warns that balconies that stick out from a building have strict weight limits, and that heavy containers should sit near load-bearing walls or over a beam.

> **JASON'S TIP · ASK BEFORE YOU HAUL**
>
> Send your landlord or building manager a short, friendly note: "I'd like to grow a few vegetables in containers on my balcony. Is there a weight limit or any rule I should know about?" You'll get a clear answer, and you'll be the tenant who asked first, not the one who got a letter.
>
> — *Jason*

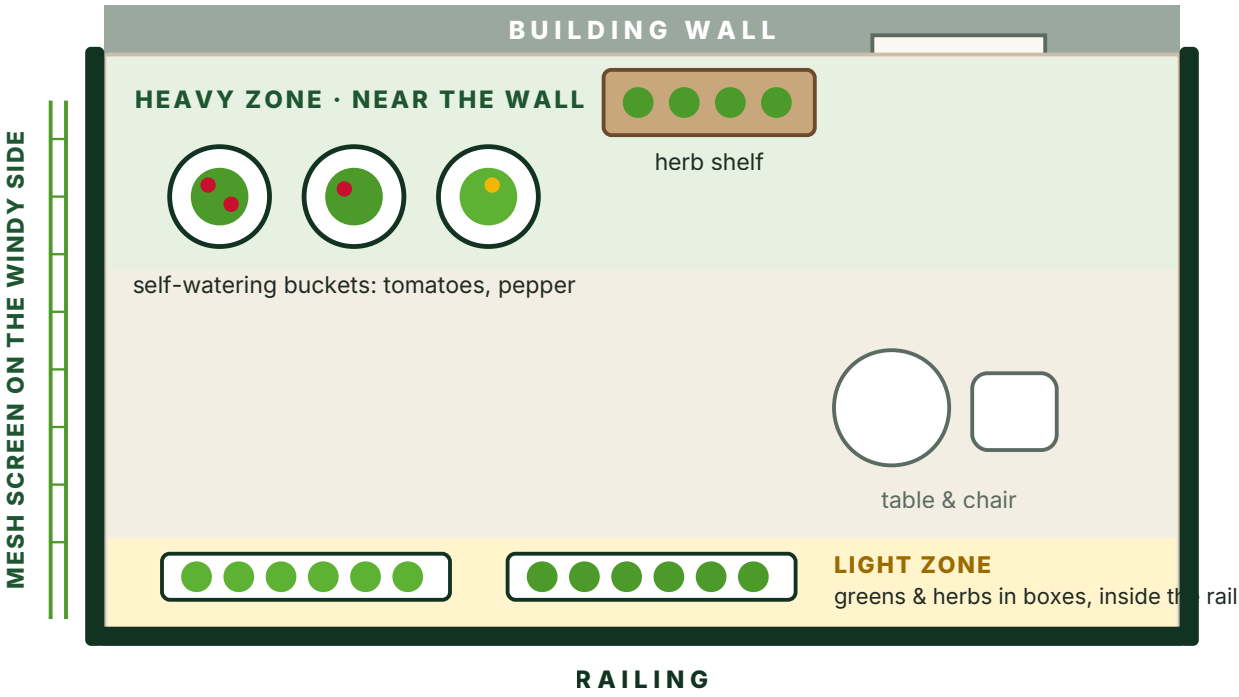
2. Wind: filter it, don't fight it

Wind is the balcony gardener's biggest enemy, along with strong sun. It dries pots fast and knocks plants over. The RHS notes that slatted or mesh screens work better than solid walls, because they filter the wind instead of creating swirling gusts behind them. Lightweight pots may need to be tied or fixed in place so they don't blow over.

3. Water: be a good neighbor

Containers on a hot, windy balcony dry out quickly. In summer they may need water twice a day, according to the RHS. That's one reason the self-watering bucket from Chapter 2 is such a good fit for balconies. Set saucers or drip trays under every pot, so water stays on your balcony and doesn't rain down on the people below.

A SMART BALCONY LAYOUT (VIEW FROM ABOVE)



1. Heavy pots hug the building wall.
2. A saucer or drip tray under every pot.
3. Light boxes go inside the railing, never hanging out over people below.

Heavy by the wall, light by the rail. Weight and wind guidance from the Royal Horticultural Society. Keeping boxes on the inside of the railing is my own rule. Check your lease; your building may require it.

How big a pot does each crop need?

Bigger pots hold more water, so they dry out more slowly, which matters on a windy balcony. Here are the container sizes recommended by Texas A&M AgriLife Extension:

Crop	Container	Plants per container
Tomato	5 gallons	1
Pepper	5 gallons	1–2
Green beans	2 gallons or more	plants 3 inches apart
Swiss chard, dwarf tomatoes	1–2 gallons	—
Leaf lettuce	1 gallon	2
Spinach	1 gallon	2
Radishes	1 gallon	3
Carrots	1 gallon, 2 inches deeper than the carrot	2–3
Green onions	1 gallon	3–5
Parsley	1 gallon	3



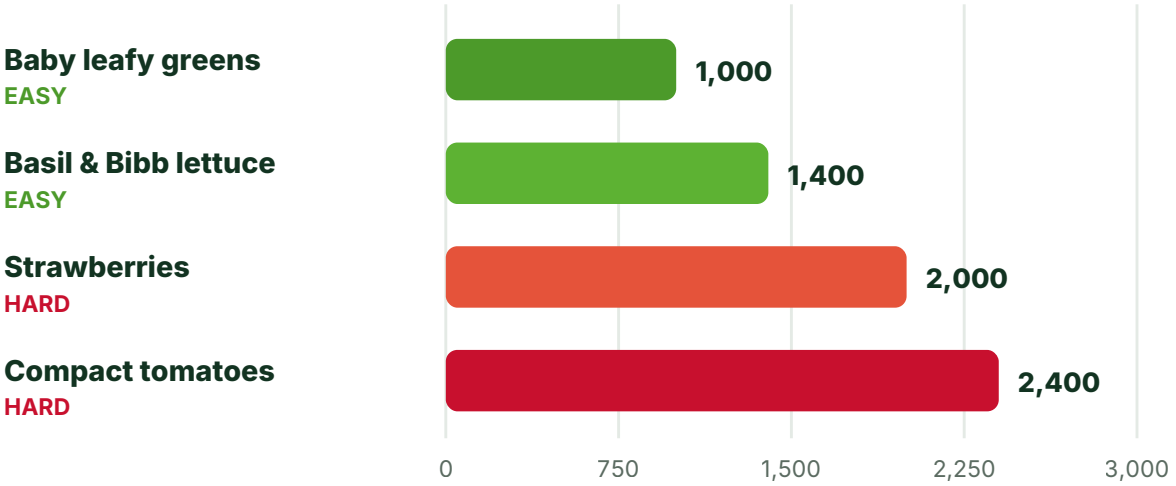
SPOTS 2 & 3

Growing Indoors

Indoors, light is everything. A window that looks bright to your eyes gives a plant far less light than the open sky. That's why some crops are a breeze indoors and others are a constant struggle.

University of Tennessee Extension sorted indoor crops by how much light they need. The easiest are **microgreens, baby leafy greens, basil and small Bibb lettuces**. The hardest are **strawberries and compact tomatoes**, which need so much more light that they'd likely need extra light all year.

LIGHT NEEDED UNDER A 16-HOUR LIGHT DAY (FOOTCANDLES)



Leaves are easy. Fruit is hard. Light targets for 16 hours of light a day, from University of Tennessee Extension publication W 1288-B. Microgreens are also on its easiest list. A footcandle is a unit of light brightness; you don't need to measure it. Just know that compact tomatoes need more than twice the light of baby greens, and almost twice what Bibb lettuce needs.

A sunny window is enough for...

Herbs and leafy greens grown by a window need **at least 4–6 hours of direct sun** a day (UT Extension). Most herbs are happiest with **8 hours or more** (Iowa State University). A south-facing window is best; a bright east or west window can work too.

You'll want a light for...

Anything in a dim window, anything in winter when days are short, and anything that makes fruit. If you want indoor tomatoes or strawberries, plan on a light from day one, and still expect smaller harvests than outdoors.



Coming up: the kitchen light shelf. Lettuce on top, herbs in the middle, microgreens below.

MYTH

~~Grow indoors and you'll never see a bug.~~

FACT

Indoor plants get pests too: spider mites, fungus gnats, aphids, whiteflies and mealybugs, according to University of Maryland and University of Minnesota Extension. Fewer pests find you indoors, but the ones that do have no birds or ladybugs to stop them.

KEEP INDOOR PESTS OUT · UNIVERSITY OF MINNESOTA EXTENSION

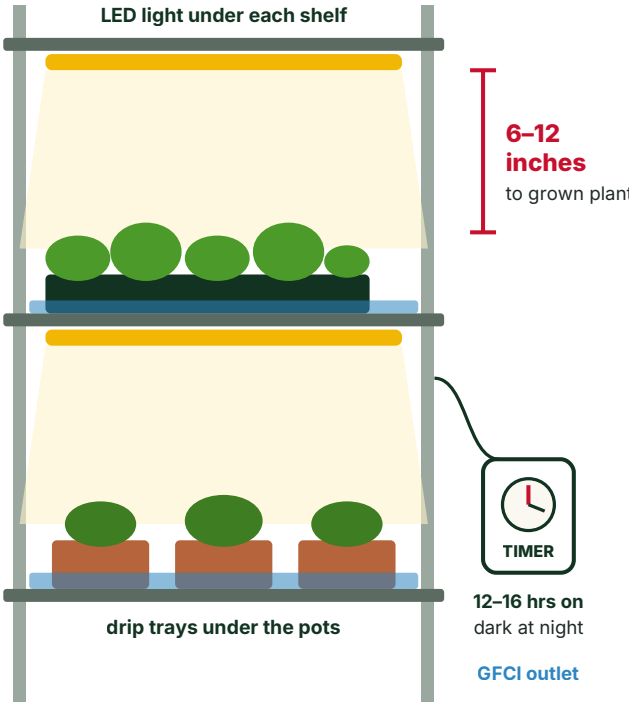
Quarantine new plants for a while before they join the others. **Let the mix dry** to an appropriate level between waterings; soggy soil breeds fungus gnats. **Hang yellow sticky traps** to catch adult gnats. **Rinse your plants** now and then in winter. If pests show up anyway, **insecticidal soap** helps keep their numbers down.

BUILD · THE KITCHEN LIGHT SHELF

Your own private sun, on a timer.

A plain wire shelving unit plus a few LED lights turns any corner into a year-round salad garden. No window needed.

TIME	DIFFICULTY	COST	BEST FOR
About 1 hour	●○○ Easy	Low to moderate	Greens, herbs, microgreens



WHAT YOU'LL NEED

- A wire shelving unit (3 or 4 shelves)
- Full-spectrum LED grow lights or LED shop lights, one for each shelf you grow on (a 4-foot LED shop light covers a lot)
- Zip ties, or chains and S-hooks if your lights hang
- A plug-in timer
- A GFCI-protected outlet, or a plug-in (portable) GFCI
- Trays or saucers to catch drips

Why LED? LEDs are highly efficient and give off less heat than other bulbs (UConn Home & Garden Education Center). Older guides, including the first edition of this book, called for big fluorescent tube fixtures. Today, slim LED fixtures are simpler.

Step by step

1. **Pick the spot.** Near an outlet, on a floor that can handle a spill, and away from heating and air-conditioning vents (UT Extension).

2. **Assemble the shelves** with roughly 18 inches or more between them, so there's room for plants plus the light above them. (That spacing is my rule of thumb; you can adjust it later.)

3. **Hang one light under each shelf.** It shines down on the plants on the shelf below. Iowa State University recommends full-spectrum grow lights in high-output fixtures.

4. **Set the height.** For grown herbs and greens, keep the lights about **6 to 12 inches above the leaves** (Iowa State). Seedlings need tube-style lights much closer: **2 to 4 inches** above the tops of the seedlings (University of Minnesota). For a stronger LED grow light, follow the maker's directions. Plants should look stocky and dark green. Tall, pale and stretched means the light is too far away.

5. **Plug into a GFCI and a timer.** Water and electricity sit side by side here. A GFCI cuts the power in a fraction of a second if current leaks; the U.S. Consumer Product Safety Commission recommends them wherever electrical equipment is near water, and a plug-in GFCI works where your outlet doesn't have one. Test it monthly with its TEST button.

6. **Set the timer.** 12 to 16 hours a day for herbs (Iowa State); about 12 for other greens and 14 to 16 for seedlings (UConn). Microgreens get 18 (Utah State), so give their shelf its own timer. Don't leave lights on around the clock: plants need some darkness each day (UConn).

7. **Add trays, then plants.** Trays under everything catch leaks (UT Extension). Feed once or twice a month with a fertilizer matched to the crop (UT Extension).

QUICK WIN

Microgreens

Microgreens are vegetable and herb seedlings you eat when they're just a couple of inches tall: sunflower, pea shoots, radish, broccoli, kale, arugula. They're crunchy, full of flavor, and one of the fastest foods you can grow. Fast ones like radish and arugula are ready in about **one to two weeks**; basil takes about two, and cilantro three to four.

They don't need a balcony or even a window, just a shallow tray and a light. Here's the method from Utah State University Extension.



Harvest with scissors, just above the soil.

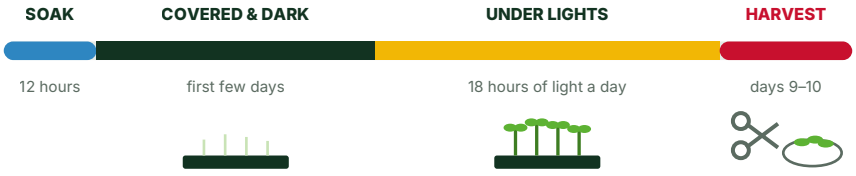
Microgreen	Seed per 10×20 tray	Soak first?	Days to harvest
Arugula	10 g (⅓ oz)	No	6–8
Pea shoots	150 g (5 oz)	Yes, 6 hours	8–10
Sunflower	48 g (1¾ oz)	Yes, 12 hours	9–10
Radish	42 g (1½ oz)	No	8–12
Broccoli, kale	28 g (1 oz)	No	8–12
Basil	28 g (1 oz)	No	12–16
Mesclun mix	28 g (1 oz)	No	12–14
Cilantro	28 g (1 oz)	No	21–28

Seed amounts and days from Utah State University Extension, "Grow Your Own Microgreens." Ounces are rounded conversions. A 10×20 tray (sold as a "1020 tray") is the standard nursery flat.

How to grow a tray

1. **Fill a shallow tray** that has drainage holes with seed-starting mix, coconut coir or a hydroponic grow mat.
2. **Moisten it** until it feels like a wrung-out sponge. Set the tray in a second tray of water for 30 minutes, then pour off any water that's left.
3. **Soak if needed** (peas and sunflowers only), then scatter the seed evenly over the surface.
4. **Cover and weigh it down.** Set another tray on top with 2 to 5 pounds of weight on it, and keep the seeds dark. Halfway through the dark time, flip the top tray over so it still covers the seeds but no longer presses on them. The darkness makes them stretch up.
5. **Uncover and give them light** once the sprouts push up. Utah State runs its lights 18 hours a day on a timer, with a gentle fan for airflow.
6. **Harvest** as soon as you see the first true leaves, or a little sooner. Snip with clean scissors just above the mix.

A TRAY OF SUNFLOWER SHOOTS, START TO FINISH



About a week and a half from seed to salad. Soak time and days to harvest for sunflower from Utah State University Extension; "first few days" in the dark is a rough guide, so uncover as soon as the sprouts push up.

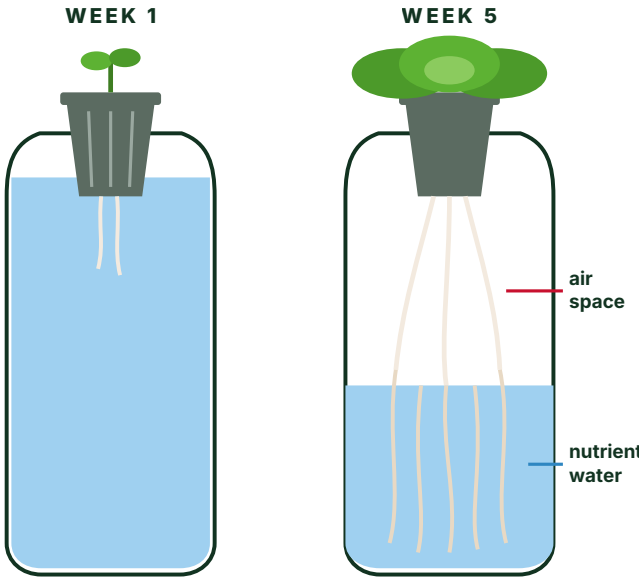
> **JASON'S TIP**
>
> Start a new tray every week and you'll harvest a fresh one every week. Radish shoots add a peppery kick to a sandwich.

BUILD · THE NO-PUMP LETTUCE JAR

Lettuce with no soil, no pump and no plug.

A University of Hawaii scientist, Dr. B.A. Kratky, worked out a way to grow lettuce in nutrient water that needs no electricity, pumps or wicks. You fill it once, and the plant does the rest.

TIME	DIFFICULTY	COST	BEST FOR
About 20 min	●○○ Easy	Low	Lettuce, leafy greens



At the start, the bottom inch of the net pot sits in the water.

How it works. The bottom of a net pot sits in nutrient water, so the growing mix stays moist. As the lettuce drinks, the water level drops, and a moist air space opens up. The upper roots breathe in that air; the lower roots drink and feed. (Kratky, University of Hawaii, 2009.)

DON'T TOP IT UP

It's tempting to refill the jar. Dr. Kratky warns not to raise the level: it can drown the roots that now live in the air space.

WHAT YOU'LL NEED

- A wide-mouth glass jar or food-safe jug that holds **about a gallon (4 liters)**
- A net pot that sits snugly in the opening
- Growing mix for the net pot (coconut coir or a starter plug)
- A hydroponic fertilizer for leafy greens
- Paper, foil, paint or a sock to keep light out
- Lettuce seed or a small seedling



The paper sleeve keeps light out, so algae can't grow. The full head grew in a gallon jar; the small quart jar holds a young plant. One lettuce drank 3 to 4 liters in Kratky's trials.

Step by step

1. **Darken the jar.** Wrap or paint it so no light gets in. Light inside the jar grows algae.
2. **Mix the nutrient water** with a hydroponic fertilizer, following its label for lettuce. Plain garden fertilizer isn't made for this (UT Extension).
3. **Fill** until the bottom inch or so of the net pot (about 3 cm) sits in the water.
4. **Plant** a seed or seedling in the net pot's growing mix and set the pot in place.
5. **Set it in light:** a sunny window or under your light shelf.
6. **Leave it alone.** In Kratky's trials, lettuce in this bottle method was ready about 6 to 7 weeks from seeding.

DID YOU KNOW?

In his tank method, Kratky filled 4 to 8 liters per plant, and plants typically used 3 to 6. That's why a pint jar won't carry a full head to harvest. He also notes that still nutrient water can breed mosquitoes; my fix is to keep the net pot snug and cover any gaps.

The Windowsill Herb Garden

Fresh herbs are some of the priciest things in the produce aisle, and some of the easiest things to grow on a sill. Iowa State University's advice, in a nutshell:

Start with these

Parsley · Mint · Chives · Basil · Oregano · Cilantro · Thyme

Harder indoors

Rosemary · Sage · Lemon balm · Marjoram · Bay laurel

These need more light and are prone to pests such as spider mites indoors.

Care in five lines

Light: about 8 hours of direct light, or a grow light 6–12 inches above grown plants, 12–16 hours a day.

Pots: one herb per pot, with drainage. Not too big: oversized pots stay wet.

Water: let the mix dry between waterings. Most herbs hate wet feet.

Feed: on a windowsill, a diluted all-purpose fertilizer spring through summer; skip winter, when they barely grow (Iowa State). Under lights, feed once or twice a month all year (UT Extension).

Harvest: cut basil and parsley back hard, leaving 4–6 inches of stem. Take only the top third of chives, mint, oregano and thyme.

QUICK WIN · THE HERB HABIT

Snip a little from every herb, every few days, even if you don't need it. Regular cutting keeps them bushy instead of tall and leggy. After several harvests, Iowa State suggests replacing tired annual herbs like basil with fresh plants from seed.

Your Apartment Farm Checklist

- [ ] **Permission**
  Asked the landlord or building manager about weight limits and balcony rules?
- [ ] **Placement**
  Heavy pots by the wall, light boxes inside the rail, a tray under every pot?
- [ ] **Right crop, right spot**
  Fruit on the sunny balcony; greens and herbs at the window or under lights?
- [ ] **Lights**
  6–12 inches above grown plants (2–4 for seedlings), on a timer, dark at night, plugged into a GFCI?
- [ ] **Pests**
  New plants quarantined, mix allowed to dry between waterings, sticky traps up?

NEXT UP

Chapter 9: The No-Bend Garden. The cheap trick that lets you grow food without kneeling, stooping or lifting.

SOURCES FOR THIS CHAPTER

Balcony weight, wind and watering: Royal Horticultural Society, "Roof gardens and balconies" (rhs.org.uk). · Container sizes: Masabni, J.G., *Vegetable Gardening in Containers*, Texas AgriLife Extension E-545 (2009). · Indoor crops, light targets, trays, feeding: Bumgarner, N., Dunlap, A. & Treadway, H., *Small-Space Indoor Food Production*, University of Tennessee Extension W 1288-B (rev. 2025). · Herbs indoors and grow-light height and hours: Iowa State University Extension, "Growing Herbs Indoors." · Light hours for seedlings and greens, darkness, LED efficiency: UConn Home & Garden Education Center, "Shine a Light – But Which One?" (2025). · Seedling light height: University of Minnesota Extension, "Starting seeds indoors." · Indoor pests: University of Maryland Extension, "Indoor Plant Insects"; University of Minnesota Extension, "Houseplant pests." · GFCIs: U.S. Consumer Product Safety Commission, GFCI fact sheet (CPSC Document #099). · Microgreens: Utah State University Extension, "Grow Your Own Microgreens." · No-pump lettuce (3 cm immersion, liters, weeks, algae, mosquitoes): Kratky, B.A. (2009), "Three non-circulating hydroponic methods for growing lettuce," *Acta Horticulturae* 843:65–72, University of Hawaii CTAHR.



CHAPTER 9

The No-Bend Garden

If your knees, back or hands complain, don't give up growing. Raise the garden to meet you, and let the right tools do the gripping.

IN THIS CHAPTER

- The cheap trick: lift the farm, not yourself
- The right height for standing, sitting and wheelchairs
- Build: the bucket riser, with four concrete blocks
- Easy-grip tools and a no-bend daily routine
- Staying safe in the summer heat

My knees and I have reached an understanding. They don't kneel on concrete anymore, and I don't ask them to. That deal could have been the end of my gardening. Instead, it made my garden better.

Here's what I figured out: the hard part of gardening is almost never the plants. It's getting down to them. Kneeling, stooping, reaching, lifting. Old-fashioned gardens are built at ground level, so the gardener has to go to the ground.

The 5-Foot Farm flips that around. We bring the soil up to you. Once you do that, a bad back, stiff knees or tired hands stop being reasons to quit.

> *"One of the most common concepts in barrier-free gardening is raising the soil to a safe, comfortable height."*
>
> — Chicago Botanic Garden, *Gardening with Containers and Raised Beds*

MYTH

~~Gardening is for people who can still get down on their hands and knees.~~

FACT

Horticultural therapists design gardens for people who use walkers, scooters and wheelchairs every day. The trick is height, reach and tools, and every one of those can be fixed cheaply.

THE CHEAP TRICK

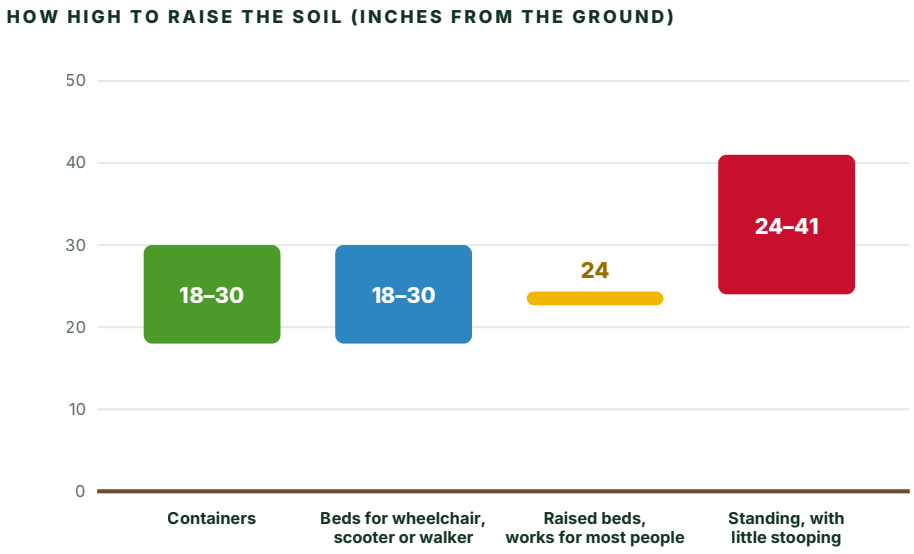
Lift the Farm, Not Yourself

In the video, I promised a cheap trick for people who are over 70 and can barely walk but still want to grow their own food. Here it is, in one sentence: **raise every growing surface to a height where you can work standing up straight or sitting down, and never put soil on the ground again.**

That's it. No special equipment required. You can do it with four concrete blocks per bucket, a planter on legs, or a garden tower. The garden tower from Chapter 5 is 3 feet tall. Its top third is in the no-bend zone. Plant your most-picked crops up there, and put slow, low-care plants (or nothing) in the bottom holes. Or stand the tower on a sturdy, level platform before you fill it.

So how high is "high enough"?

The Chicago Botanic Garden, home to a horticultural therapy program, publishes these numbers:



Find your band. Heights from the Chicago Botanic Garden, *Gardening with Containers and Raised Beds* (2025). If you sit to garden, aim low in the range; if you stand, aim high.

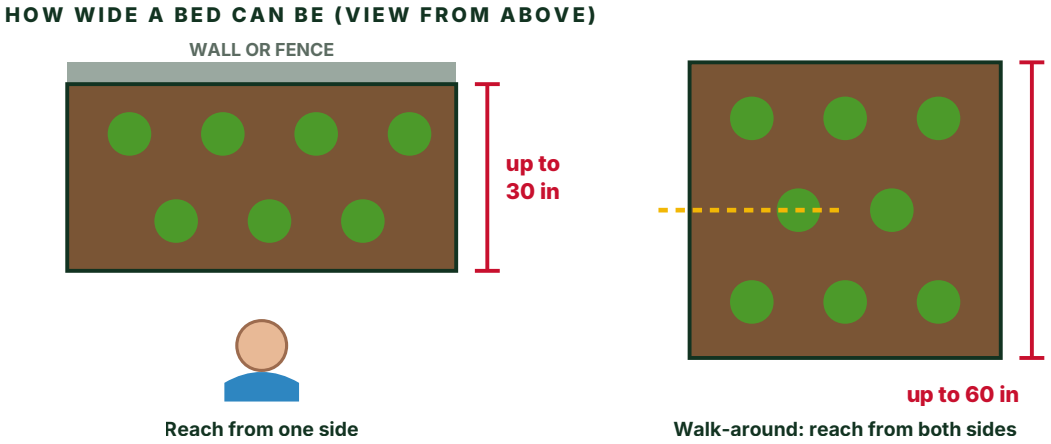
JASON'S TIP · MEASURE YOURSELF, NOT THE CHART

Stand or sit the way you'll garden, arms relaxed, elbows bent a little. Just below your hands is where the soil should be.

— Jason

Don't forget reach

Height is half the battle. The other half is **reach**. If you have to lean across a wide bed to get to the far side, you've just traded a sore back for a sore shoulder. The Chicago Botanic Garden says a seated person can reach about **30 inches**, and beds should be no wider than you can comfortably reach. A free-standing container you can walk all the way around can be up to 60 inches across, because you can reach the middle from both sides.



Reach sets the width. Measurements from the Chicago Botanic Garden. That's also why the 5-Foot Farm (Chapter 4) uses narrow beds and boxes with a foot-wide lane in front of the towers and a pocket behind the middle one, so you can step in to tend the back. If you use a walker or wheelchair, a 1-foot lane is too tight. Work the farm from its open sides, or widen the lanes to the 3 feet CalAgrAbility recommends.

DID YOU KNOW?

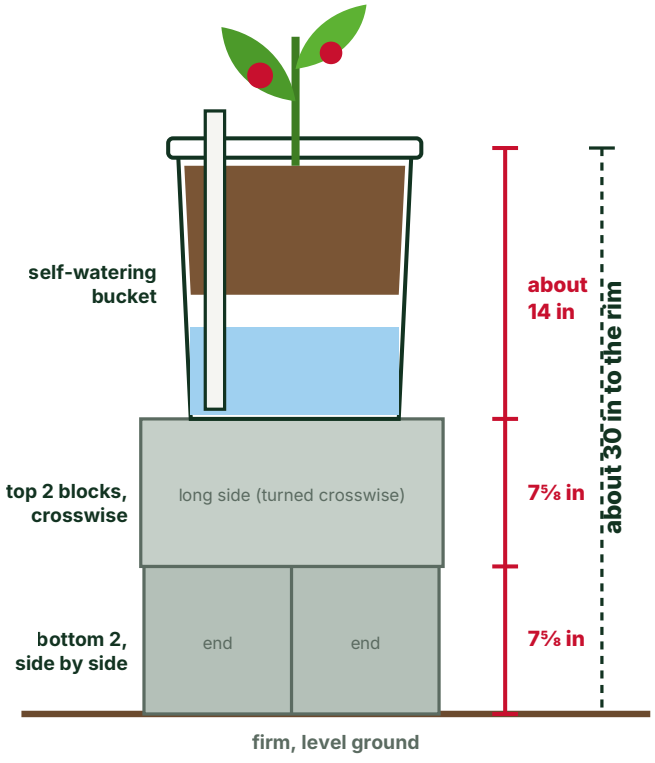
Raised soil dries out faster than ground-level soil. The Chicago Botanic Garden says raised beds packed with vegetables usually need a thorough soaking every two to four days, so put your raised garden close to the hose or use the self-watering buckets from Chapter 2. And fill raised beds with "a light, loose, and easily worked mix," as the Chicago Botanic Garden puts it, which is easier on your muscles and joints.

BUILD · THE BUCKET RISER

Four blocks. No bending once it's built.

Stand a self-watering bucket on two layers of concrete blocks, and its rim comes up to about 30 inches (a little more with nested buckets), right in the comfort zone for most gardeners, standing or seated.

TIME	DIFFICULTY	COST	BEST FOR
About 10 min	●○○ Easy	Low	Tomatoes, peppers, greens



WHAT YOU'LL NEED

- 4 standard concrete blocks (sold as 8×8×16 inches; actually 7⅝ × 7⅝ × 15⅝)
- A self-watering bucket (Chapter 2) or any 5-gallon bucket planter
- A carpenter's level (or a phone level app)
- A helper, or delivery: each block weighs about 35–40 pounds

WHY TWO SIDE BY SIDE?

A block is only 7⅝ inches wide, narrower than a 12-inch bucket. Two side by side make a base about 15 inches square, wide enough for the bucket to sit flat and steady.

Step by step

1. **Pick a firm, level spot** in full sun, close to your water. Patio pavers or a concrete slab are ideal. Soft lawn can sink unevenly.
2. **Have the blocks placed for you.** Each block weighs about 35–40 pounds. Have them delivered, or have a helper carry and place them. Don't lift them yourself if you have back, knee or balance problems.
3. **Lay the first two blocks** side by side, long sides touching, holes facing up. Check them with the level.
4. **Lay the second two** on top, holes facing up, turned the other way (crosswise), like a little brick wall. That locks the stack together.
5. **Set the empty bucket on top**, centered. Fill it in place with dampened mix. Never lift a full bucket up there: a bucket's worth of water alone weighs over 40 pounds.
6. **Plant and fill the tank** through the pipe, just as in Chapter 2. You'll be doing it standing up straight.
7. **Stake tall plants** from the start, and keep your riser out of strong wind. A tall plant on a raised bucket catches more wind than one on the ground. Risers suit peppers, greens, herbs and compact or dwarf tomatoes best. For a big tomato, set the riser against a wall or fence and tie the stake or cage to it.

> **ABOUT THE BLOCKS**
>
> Some concrete blocks contain fly ash. University of Maryland Extension notes that's a question when blocks form the walls of a vegetable bed. Here the blocks only hold up the bucket and never touch your soil.

COMMON MISTAKE · STACKING TOO HIGH

Two layers is my limit for a block stack with a heavy bucket on top. If you need more height, use a sturdy, purpose-built plant stand or a planter table, not a taller tower of loose blocks.

More ways to bring the garden up

Planter on legs

A waist-high wooden box on sturdy legs. Great for lettuce, herbs and radishes. Standing gardeners love them; seated gardeners can pull a chair right up to the side.

The garden tower

Chapter 5's wire tower is 3 feet tall. Its top third is in the no-bend zone, so put your most-picked crops there. Or stand the tower on a sturdy, level platform before you fill it.

The living wall

Chapter 6's bottle and felt walls hang on a fence or wall. Hang the rows where your hands already are, and skip the bottom row if you can't reach it comfortably.

Wheelchair users: leave room for your knees

If you garden from a wheelchair, you have two good choices. A **side-approach** bed is a solid raised bed you pull up alongside, at 18 to 30 inches tall. A **table-style** bed sits on legs, so you can roll right up to it facing forward. For the table style, leave at least 27 inches of clear space underneath. That is the knee-clearance height in the ADA's accessible design standards (which also call for knee space at least 30 inches wide). Keep the bed shallow so the soil stays within easy reach.

Make the path easy, too

A garden you can't get to safely isn't a garden you'll visit. CalAgrAbility at UC Davis recommends **even, firm surfaces** such as concrete, decomposed granite or compact, level dirt, and warns that brick walks can heave and trip you. Leave at least **3 feet** of space between beds for one person (6 feet for two), and make any gate at least **36 inches** wide so a wheelchair or walker fits through. My tip: set heavy pots on a rolling plant caddy before you fill them. Then you can roll them into the sun or out of a storm instead of lifting.



The cheap trick, in real life.

A bucket on a block riser puts the tomatoes at chest height, and a sturdy stool beside the planter table means I can pick a whole basket without bending once. My knees approve.

LET THE TOOLS DO THE WORK

Easy-Grip Tools

If your hands ache when you squeeze a trowel, the tool is the problem, not you. Laura Akgerman of Ohio AgrAbility and OSU Extension, who helps farmers and gardeners with arthritis and chronic pain, recommends tools that ask less of your grip.



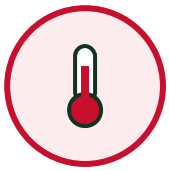
A no-strain toolkit. Padded handles, spring-action pruners, a long-handled weeder, a watering wand, two-handled cans and padded gloves.

Look for...	Why it helps
Padded or thick handles	A thicker handle doesn't need as tight a grip as hard plastic or wood (Ohio AgrAbility)
Ergonomic tools	Keep your wrist and hand in a neutral, straight position (Ohio AgrAbility)
Spring-action pruners	The blades open by themselves after each cut, easing hand strain (Ohio AgrAbility)
Long-handled tools and pruners	Cut, weed and trim without crouching or stooping (Ohio AgrAbility)
A watering wand	Reach hanging baskets and the back of the farm with minimal effort (Ohio AgrAbility)
A two-handled watering can	"Better maneuverability and control" (CalAgrAbility)
A rolling or adjustable seat	Sit to work instead of kneeling, bending or stooping (Ohio AgrAbility; CalAgrAbility)
A soaker hose	Lay it once at the start of the season and skip daily hose-hauling (Ohio AgrAbility)

My no-bend daily routine

About ten minutes, and nothing in it is below my waist.

1. **Coffee walk.** Early, while it's cool, I look before I touch. Wilting? Yellow leaves? Bugs?
2. **Finger test, standing up.** Raised buckets and the planter table put the soil right at my hands. Dry 3 inches down? Then it gets water (Chapter 2).
3. **Water with the wand.** The wand reaches the back of the farm and the top of the towers without stretching.
4. **Pick at chest height.** Ripe tomatoes, a handful of outer lettuce leaves, a few herbs, all from the stool or standing.
5. **One small chore.** Tie up one stem, pull one spent plant or add one handful of castings. Just one. Small and steady beats big and sore.



STAY SAFE

Gardening in the Heat

Summer is harvest season, and it's also the season that's hardest on older bodies. The U.S. Centers for Disease Control and Prevention puts it plainly: older adults don't adjust as well as young people to sudden changes in temperature, and many take medicines that affect how the body controls its temperature or sweats.

What the CDC recommends

Drink more water than usual, and don't wait until you're thirsty.

If your doctor limits your fluids or you take water pills, ask how much to drink when it's hot.

Ask about your medicines. Some make heat more dangerous.

Avoid very strenuous activity and get plenty of rest.

Stop and get help if…

You have **muscle cramps, a headache, nausea or vomiting** in the heat. The CDC says to seek medical care right away.

My own habits: chores in the early morning, a wide-brimmed hat, a water bottle on the planter table, and a kitchen timer set for 20 minutes on hot days. When it rings, I come in and cool off, even if I feel fine.

Your No-Bend Checklist

If you can tick these off, your garden fits you.

- [ ] **Height**
  Every growing surface sits in your band: 18–30 inches seated, 24–41 standing.
- [ ] **Reach**
  Nothing is more than about 30 inches from where you sit or stand.
- [ ] **Tools**
  Padded grips, spring pruners, a watering wand and a seat within easy reach.
- [ ] **Path**
  Firm, level ground, at least 3 feet wide, nothing to trip on.
- [ ] **Heat plan**
  Water bottle, hat, early-morning chores and a timer on hot days.

NEXT UP
Chapter 10: The Stealth Garden. How to grow your food in plain sight without anyone noticing.

SOURCES FOR THIS CHAPTER
Heights, reach, watering of raised beds, light mix: Chicago Botanic Garden, *Gardening with Containers and Raised Beds*, Garden for Life series (2025). · Paths, gates, surfaces, two-handled cans, seats: CalAgrAbility (UC Davis Biological and Agricultural Engineering), "Enabling Gardens." · Knee clearance (27 in high, 30 in wide): U.S. Access Board, 2010 ADA Standards §306 and its guide to Chapter 3. · Block weight: typical retail listings for standard 8×8×16 blocks (about 35–40 lb). · Tools for arthritis and chronic pain: Akgerman, L., "Don't let arthritis or chronic pain stop you from gardening: Choosing the right tools and equipment," Ohio AgrAbility / OSU Extension, *Ag Safety S.T.A.T.* (July 2017). · Concrete block sizes: Archtoolbox, "CMU Sizes, Shapes & Finishes." · Bucket size: Wikipedia, "Five-gallon bucket" (typically about 14 in tall, 12 in across). · Fly ash in blocks: University of Maryland Extension, "Safety of Materials Used for Building Raised Beds." · Heat and older adults: U.S. Centers for Disease Control and Prevention, "Heat and Older Adults (Aged 65+)." · Water weight: 1 U.S. gallon ≈ 8.3 lb, so 5 gallons ≈ 42 lb.



CHAPTER 10

The Stealth Garden

Your neighbors will see a pretty flower bed. You'll see dinner. How to grow food in plain sight, and keep it yours.

IN THIS CHAPTER

- Twelve edibles that pass for ornamental plants
- The front-yard plan that looks like landscaping
- Balcony privacy screens you can eat
- The rules: HOAs, city codes and "right to garden" laws
- Keeping it tidy, quiet and out of trouble

In the video, I said something I really believe: if your food-growing spot can be snatched away from you at any second, you're not really independent. A complaint from a neighbor, a letter from the homeowners' association, a landlord who doesn't like the look of buckets. Any of those can shut a garden down.

So here's my rule: **a garden nobody notices is a garden nobody complains about.** The best way to grow food without anybody noticing isn't to hide it. It's to make it so good-looking that people think it's landscaping.

That's not a trick I invented. University extension services call it **edible landscaping**: mixing vegetables, herbs and fruit right in with ornamental plants. University of Florida Extension's guide says front-yard edibles should be chosen for neat growth and good looks, like large leaves or colorful flowers. Pick the right plants, and your food blends right in.

MYTH

~~A vegetable garden has to look like a farm: straight rows, bare dirt, tomato cages.~~

FACT

Many vegetables and herbs are as handsome as any flower. Rainbow chard, frilly kale, purple basil and glossy peppers belong in a front border as much as petunias do.

HIDE IT IN PLAIN SIGHT

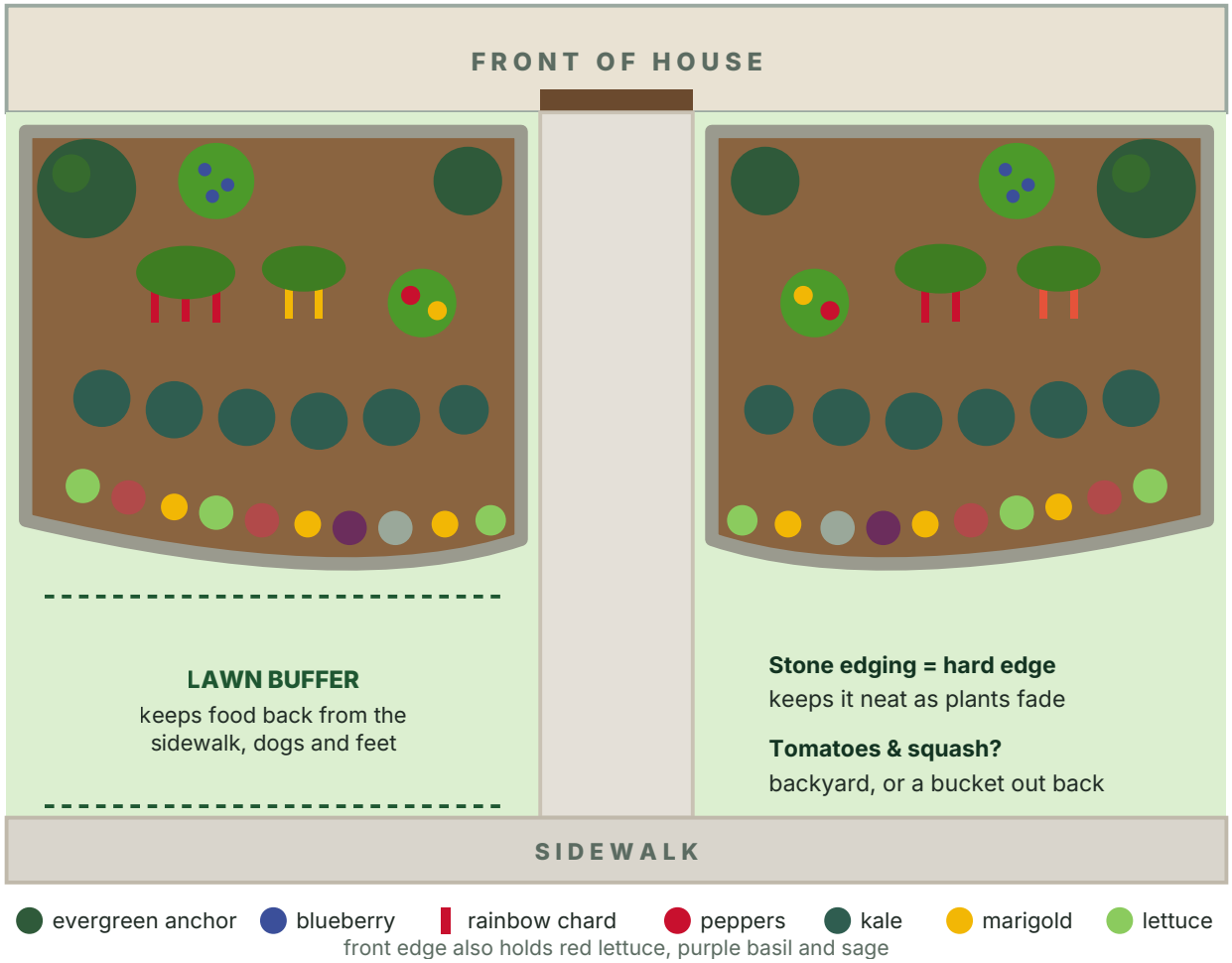
The Disguise Chart

University of Florida Extension's list of good-looking front-yard edibles (written for Florida) includes kale, chard, peppers, lettuce, eggplant, artichoke, blueberry, and herbs like basil, sage, rosemary and lemongrass, with strawberries as a groundcover. Here's how each one blends in. The "looks like" column is my own description.

Edible	Passes for...	Best spot
Rainbow Swiss chard	A bold foliage plant with red, yellow and pink stems	Middle of a border, or a front-door pot
Kale	Frilly blue-green or purple foliage	Border edges, containers
Leaf lettuce (red & green)	A neat bedding plant	Front edge of a bed, cool seasons
Sweet peppers	A compact shrub hung with red and yellow ornaments	Sunny middle of a bed, pots
Eggplant	Purple flowers and shiny purple "ornaments"	Sunny bed, big pot
Artichoke	A dramatic silver-leaved feature plant (it gets big)	Back of a bed, where it suits your climate
Blueberry	A tidy flowering shrub with fall color	Foundation planting, hedge
Purple basil	A dark-leaved bedding plant	Between flowers, pots
Sage	A soft grey-green perennial	Sunny edges
Rosemary	A fragrant evergreen shrub	Corners, low hedges (where hardy)
Lemongrass	An ornamental grass	Accent clump, big pot
Strawberries	A flowering groundcover	Edging, under taller plants

The Front-Yard Plan

Here's a sample front border built on UF Extension's design rules. From the street it reads as a tidy flower bed. Up close, almost everything in it is food.



Food, dressed as landscaping. Design rules from University of Florida Extension, *Landscape Design with Edibles* (ENH1214): evergreens for year-round structure, neat plants up front, hard edges, and edibles kept away from sidewalks. The exact layout is my example.

JASON'S TIP · LET THE CHARD SHOW OFF

UF Extension suggests letting some plants, like rainbow chard, grow a little larger after harvest so they keep working as ornamentals. I pick the outer leaves for dinner and leave the bright center stems standing, so the bed never looks picked over.

— *Jason*

UF Extension's five rules for a front-yard food garden

1. Keep some evergreen structure

Evergreen shrubs keep the bed looking finished when cool-season crops are done, so bare spots aren't as noticeable.

2. Put the neat plants out front

Choose edibles with tidy habits and good looks. Carrots, melons, squash and tomatoes are better suited to the backyard.

3. Give it hard edges

Walls, edging or raised planters keep the garden neat, especially as plants fade.

4. Use containers

Planters keep plants in reach, protect them from pests and trampling, and can set a style.

5. Mind the sidewalk

Don't plant edibles right along the sidewalk, where dogs and passersby can reach them.



Designer planter, or dinner? Rainbow chard, purple basil, thyme and marigolds by the front door, with curly kale in the little pot.

QUICK WIN · THE FRONT-DOOR SWAP

Replace the flowers in one pot by your front door with rainbow chard and purple basil. It looks like a designer planter, and you can snip dinner on your way in.

BALCONIES & PATIOS

A Privacy Screen You Can Eat

On a balcony or patio, the stealthiest thing you can grow is a wall of green. Set a long planter along the railing with a sturdy lattice or mesh panel behind it, and plant pole beans or cucumbers to climb it. By midsummer you'll have a living curtain between you and the neighbors, with dinner hanging in it. Fasten the screen and planter securely so wind can't tip them.

A see-through screen also does your plants a favor. The Royal Horticultural Society says slatted or mesh screens filter the wind, while solid walls can create turbulence behind them.



Beans make the curtain. A lattice panel on the railing, covered in pole beans.

JASON'S TIP

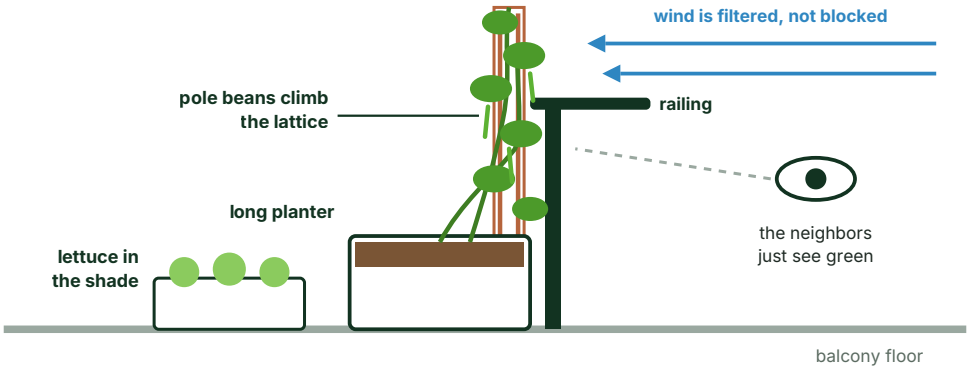
Put the screen on the side your neighbors see, and your buckets and lettuce boxes behind it. From outside, it's just a pretty green balcony.

— *Jason*

DID YOU KNOW?

The most private garden of all is indoors. A light shelf in the kitchen (Chapter 8) grows salad greens, herbs and microgreens that nobody outside your front door will ever know about.

THE EDIBLE PRIVACY SCREEN (SIDE VIEW)



Green wall out front, food behind it. Wind guidance from the Royal Horticultural Society. Check your lease or building rules before fixing anything to a railing.

STAY OUT OF TROUBLE

Know the Rules

Stealth is about looks, not about breaking rules. There are three layers of rules that can touch a home garden, and it pays to know which ones apply to you.

Your HOA or lease

Homeowners' association covenants and rental leases are private agreements. UF Extension advises checking with your HOA before planting edibles in the front yard, and notes that some associations prohibit front-yard edibles no matter how they're planted.

Your city or county

Local codes can cover things like setbacks, structures, water use and fertilizer. Your city or county website, or a phone call to its code office, will tell you what applies.

Your state

A few states have "right to garden" laws that stop local governments from banning home vegetable gardens. They don't necessarily override your HOA or lease.

TWO STATES THAT PROTECT HOME GARDENS

Florida (2019) and Illinois (2021)

Florida: state law says a county or city "may not regulate vegetable gardens on residential properties," and voids local rules that do. General rules, such as drought water limits, fertilizer use and invasive species control, still apply (Fla. Stat. § 604.71).

Illinois: the Garden Act (505 ILCS 87), signed in July 2021 and in effect since January 1, 2022, says any person may grow a vegetable garden on their own property, or on someone else's with permission. Local governments can still apply general rules that don't single out gardens, such as height, setbacks, water use, fertilizer and invasive species, as long as those rules don't effectively ban gardens.

The catch: both laws are aimed at local governments, not HOAs. Florida does have a separate HOA law (§ 720.3045): an association can't ban a vegetable garden that can't be seen from the street, the neighbors' lots or common areas. A front-yard garden is still up to your HOA's rules. Elsewhere, read your own covenants.

How to check your rules in one afternoon

1. **Find your documents.** HOA covenants (often called CC&Rs) and any architectural guidelines, or your lease.
2. **Search them** for words like "garden," "vegetable," "landscaping," "containers," "front yard" and "structures."
3. **Ask in writing** if anything's unclear. A short, friendly email to the HOA board or landlord gets you an answer you can keep.
4. **Check your city or county code.** Most cities and counties post their codes online, or you can call the code office and ask.
5. **Plan around the rules.** If the front yard is off-limits, the backyard, the balcony, containers and the indoor light shelf usually aren't.

Keep It Tidy, Keep It Quiet

In my experience, most complaints about vegetable gardens aren't about vegetables. They're about mess: sprawling vines, dead plants, bare dirt and a jumble of buckets. Keep it neat and nobody gives it a second look. These habits are my own, built on UF Extension's design advice.

Do

✔ Harvest a little every few days, so nothing looks overgrown.

✔ Pull spent plants right away and replant the gap.

✔ Mulch bare soil so beds look finished.

✔ Keep a clean edge between the bed and the lawn.

✔ Use plain, matching containers, or slip buckets inside nicer pots.

Don't

✘ Put sprawling crops like squash and big tomatoes out front.

✘ Leave tomato cages, stakes and hoses on display all winter.

✘ Plant right along the sidewalk.

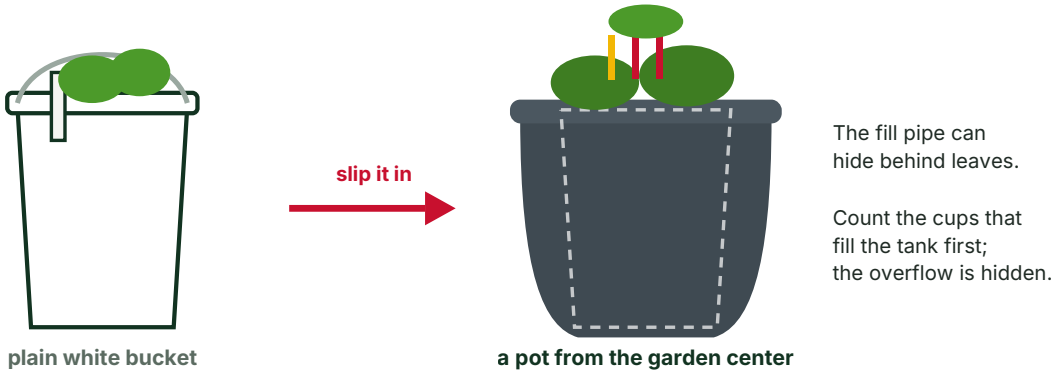
✘ Let anything drip, spill or blow onto a neighbor's property.

✘ Leave a crop standing after it's done or gone to seed.

COMMON MISTAKE · THE BIG REVEAL

Pulling everything out at once at the end of summer leaves a bare patch that says "vegetable garden" louder than anything else. Pull crops one at a time, and slip in something green, like a fall lettuce or kale, as each one comes out.

THE BUCKET COVER-UP: SLIP IT INSIDE A NICER POT



Same food, nicer outfit. A self-watering bucket (Chapter 2) fits inside a slightly larger decorative pot. Give the outer pot a drainage hole. You won't see the overflow trickle anymore, so count the cups that fill the tank before you slip the bucket in, and use that amount every time.

Your Stealth Garden Checklist

If you can tick these off, your garden blends right in.

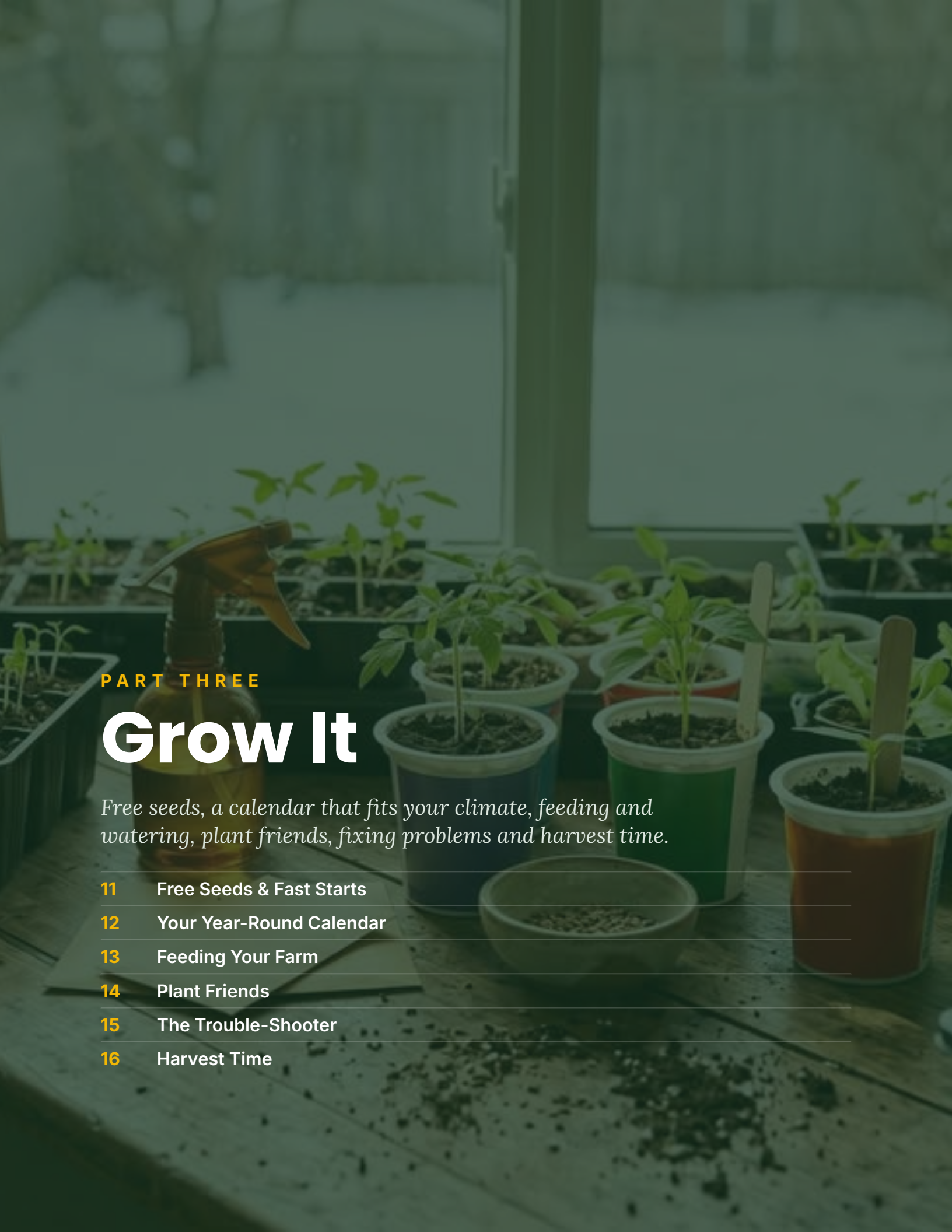
- [ ] **Rules**
  Read your HOA covenants or lease, and checked your city code?
- [ ] **Plants**
  Good-looking edibles out front; sprawling crops out back?
- [ ] **Structure**
  An evergreen or two, hard edges and mulch?
- [ ] **Placement**
  Food kept back from the sidewalk; screen on the neighbors' side of the balcony?
- [ ] **Upkeep**
  Harvesting often and replanting gaps as they open?

NEXT UP

Part Three begins. Chapter 11: Free Seeds & Fast Starts. The blatant truth about free seeds, and how to start your own plants the fast way.

SOURCES FOR THIS CHAPTER

Edible landscaping plants, design rules and HOA advice: Hansen, G., *Landscape Design with Edibles*, UF/IFAS Extension ENH1214 (2013). · Mesh screens and wind: Royal Horticultural Society, "Roof gardens and balconies." · Florida law: Fla. Stat. § 604.71, Vegetable gardens (2019). · Illinois law: Garden Act, 505 ILCS 87 (P.A. 102-0180, from HB 633, effective Jan. 1, 2022), Sections 15 and 25; signing date: Institute for Justice press release, August 2, 2021 (signed Friday, July 30, 2021); background: Kornei, K., *Civil Eats* (August 2022). · Florida HOA law: Fla. Stat. § 720.3045 (created 2023, amended 2024).



PART THREE

Grow It

Free seeds, a calendar that fits your climate, feeding and watering, plant friends, fixing problems and harvest time.

11 Free Seeds & Fast Starts

12 Your Year-Round Calendar

13 Feeding Your Farm

14 Plant Friends

15 The Trouble-Shooter

16 Harvest Time



CHAPTER 11

Free Seeds & Fast Starts

Most of the crops in your 5-Foot Farm can start from a seed packet. Here's where to get those seeds for free, and how to turn them into strong young plants on a windowsill.

IN THIS CHAPTER

- The free-seed "loophole" hiding in plain sight at your public library
- How to save your own seeds, and which ones come back true
- The 6-step windowsill seed start (no greenhouse needed)
- Hardening off: the 1-to-2-week habit that helps prevent transplant shock

Here's a little secret the garden center won't put on a sign: you rarely need to buy a seedling. The tomatoes, peppers and lettuce in this book can all start from seed on your kitchen windowsill, and many of those seeds can cost you nothing at all.

When I started growing food in small spaces, I bought six-packs of nursery plants every spring like everybody else. Then I learned two things. First, starting seeds is easier than most people think. Second, there are free seeds all around us if you know where to look. This chapter covers both.



Free seeds

Seed libraries, seed swaps and seeds you save yourself.



Fast starts

Six simple steps from seed to sturdy transplant.



Tough plants

Hardening off so your seedlings shrug off sun and wind.

JASON'S TIP

A single seed packet usually holds far more seeds than a small farm can use in one season. Check the seed count printed on the packet. Share the extras with a neighbor or a seed swap, and you'll get some of theirs in return.

— *Jason*

THE BLATANT TRUTH ABOUT FREE SEEDS

Yes, They're Real

Free seeds sound too good to be true. They aren't. There are four honest "loopholes" that put seeds in your hands for little or no money. The first one is the one almost nobody knows about.

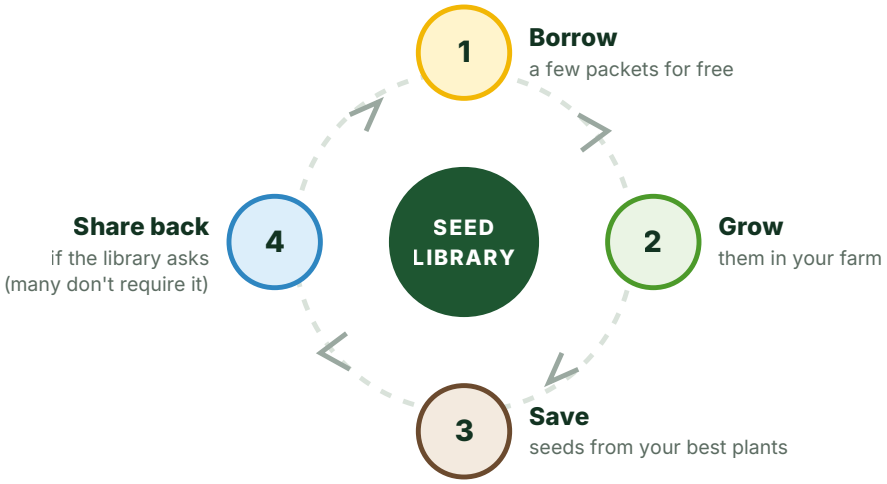


A seed library. Many are tucked into old card catalogs, right next to the books.

Loophole #1: The seed library

A seed library works a lot like a book library, except you check out seeds. Maricopa County, Arizona, describes them simply as "places where you can access free seeds that you can grow." Many live inside public libraries. Others are run by colleges, community centers or garden clubs.

Rules vary from place to place. For example, at Pellissippi State Community College's seed library in Knoxville, Tennessee, community members may take up to five packets at a time, and "there are no due dates for seeds."



How a seed library works. Some ask you to return saved seed; others, like Maricopa County Library District, say "there is no obligation to return seeds." Always check your library's own rules.

How to find a seed library near you

1. **Ask at the front desk.** Call or visit your public library and ask, "Do you have a seed library?" If they don't, they may know who does.
2. **Search online.** Type your town or county name plus the words *seed library*. Check college and community-center pages too.
3. **Call your county extension office.** Extension staff and Master Gardeners often know about local seed swaps and seed libraries. Some publish maps; Maricopa County links to a University of Arizona Cooperative Extension map of local seed libraries and gardens.
4. **Bring your library card**, just in case. Some programs need one and many don't. A 2016 survey of California seed libraries found only about 1 in 10 of the public-library seed libraries it studied required a card. Rules elsewhere may differ.

Loophole #2: Seed swaps and the Seed Savers Exchange

Seed swaps are just what they sound like: gardeners bring extra seeds and trade them. In my experience, many garden clubs hold one in late winter. You'll often end up with too much of one seed and not enough of another, and a swap fixes both.

For a nationwide swap, there's the **Seed Savers Exchange**, a nonprofit seed-saving group based in Iowa. Its online Exchange lets home gardeners offer seeds they've grown. Anyone can browse it. To request seeds, you need an account. The seeds themselves are exchanged for free; you pay the lister for packing and shipping, often about $3 for small seeds and $4 for large ones (listers can set their own prices).

20,000+
varieties held in the Seed Savers Exchange seed bank

5,000+
of those shared through its online Exchange

DID YOU KNOW?

The seeds traded on the Seed Savers Exchange are open-pollinated, not hybrid. That means you can save seed from the plants you grow and replant it next year. More on why that matters on the next page.

Loophole #3: Save your own seeds

This is the oldest free-seed trick of all. Our great-grandparents did it every year. The key is knowing which seeds will grow into plants like their parents.

OPEN-POLLINATED



Saved seed grows plants much like the parent. **Save these.**

HYBRID (OFTEN "F1")



Saved seed is a surprise: you can't predict the plant.

Open-pollinated varieties "set seeds that produce plants more like the parents," says the University of Minnesota Extension. Heirloom varieties are open-pollinated.

Hybrids are a cross between two parent varieties. Iowa State University puts it plainly: seed saved from hybrids "will not produce progeny that resemble the parent plant." Hybrids are still great to grow. Just buy new seed each year.

QUICK WIN · THE EASIEST SEEDS TO SAVE

Start with plants that pollinate themselves: **tomatoes, peppers, beans, peas and lettuce** (Iowa State and University of Minnesota extension). Skip carrots and beets for now; they take two seasons to make seed.



Seed-saving day. Beans dry in their pods, pepper seeds air-dry, and tomato seeds soak for a few days first.

Tomatoes: the 5-day soak

Scoop the seeds and gel from a fully ripe tomato into a jar with a little water. Swirl twice a day. In about five days the mix ferments and good seeds sink. Pour off the liquid, rinse, and dry the seeds on a paper towel. (U. of Minnesota)

Beans and peas

Leave some pods on the plant until they're dry and brown and the seeds rattle. Pick them, dry them indoors at least two more weeks, then shell. (U. of Minnesota)

Peppers

Let a few peppers ripen fully on the plant, until they start to wrinkle. Scrape out the seeds and spread them out to dry. (U. of Minnesota)

Store seeds like a pro

32–41°F
Keep seeds cool and dry. The refrigerator works well.

Sealed
Tight glass jar, a separate paper packet for each kind, plus silica gel or a little powdered milk wrapped in tissue to soak up moisture.

Labeled
Name, variety and the date you saved it. You won't remember. Nobody does.

Storage tips: University of Minnesota Extension, which also advises using home-saved seed within about a year for the best sprouting and vigor.

Is that old packet still good? The 10-seed test

1. **Lay 10 seeds** on a damp paper towel and fold it over.
2. **Seal it** in a plastic bag or container so it stays damp. Label it with the date.
3. **Keep it warm.** No sunlight needed. Wait the number of days on the packet.
4. **Count the sprouts.** 10 sprouted? Plant as normal. 7 to 9? Sow a few extra. 6 or fewer? Time for fresh seed.

Seed	About how long it lasts
Lettuce	6 years
Cucumber, radish	5 years
Tomato, beet, kale	4 years
Beans, peas, carrot, spinach	3 years
Pepper	2 years
Onion	1 year

Approximate seed life when stored well. University of Illinois Extension.

Method: University of Illinois Extension.

Loophole #4: The grocery store (what works and what doesn't)

You've probably seen videos promising a whole garden from kitchen scraps. Some of it is true. Some of it will waste your time. Here's the honest scorecard.

WORKS WELL

Green onions. Stand the root ends in a narrow glass of water with the top of the bulb above the water. Keep it topped up. Snip the green tops as they grow, and they'll continue to regrow. (WSU Extension Master Gardener)

Sweet potatoes. A store sweet potato can sprout "slips" you can plant. Full how-to in Chapter 7, Buckets, Boxes & Bags.

SO-SO

Lettuce and celery bases. Set the base in shallow water and change the water often. You'll get some new leaves, but celery regrows leaves, "not stalks." (WSU Extension Master Gardener) Fun for a windowsill, but not a real harvest.

SKIP IT

Grocery potatoes. Grocery potatoes are "typically treated with a sprout inhibitor," says Ask Extension, and they may carry disease. Its experts recommend buying certified seed potatoes each spring.

SKIP IT

Grocery garlic. It's usually a type grown in warmer regions, and "most garlic in stores is treated to prevent sprouting." It often rots before it sprouts. (Iowa State) My advice: buy planting garlic from a local grower or seed company.

MYTH

~~That bag of sprouting potatoes in the pantry will grow a great crop.~~

FACT

Even if a store potato sprouts, it can bring disease into your soil, and treated ones may not grow at all. Certified seed potatoes are inspected for disease.

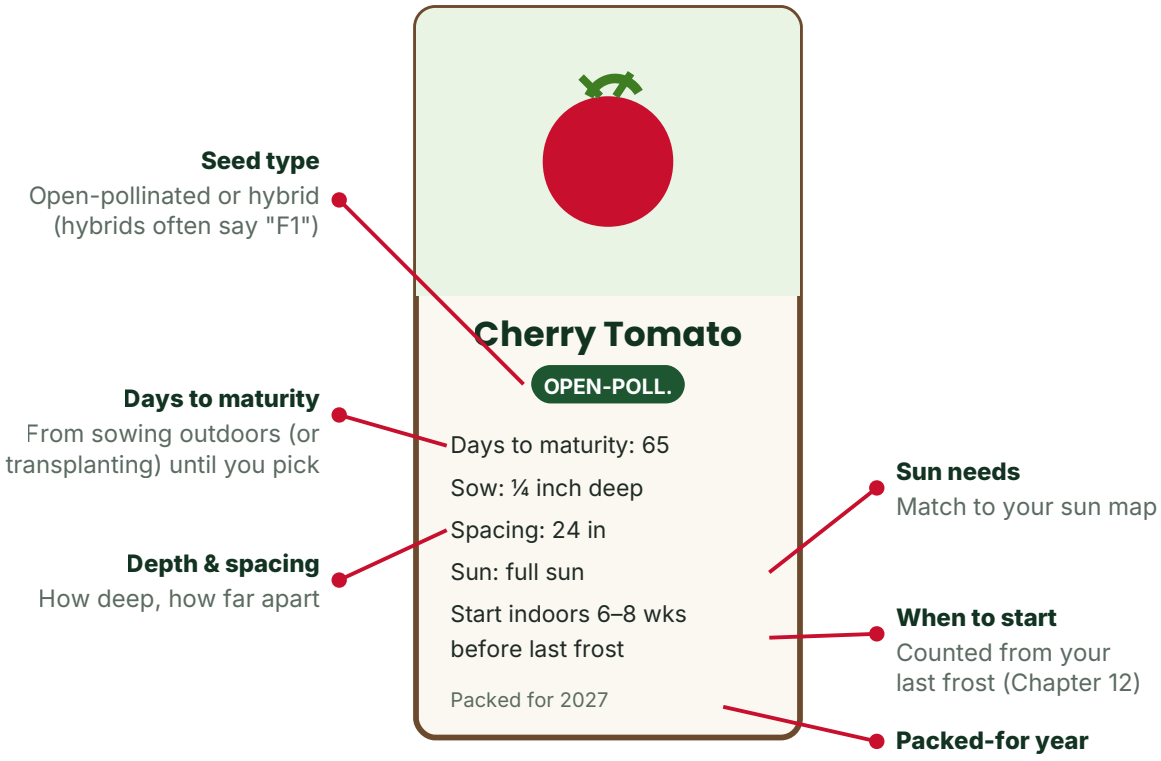
JASON'S TIP

Keep a jar of green onions growing on the windowsill all year. It's the easiest "free food" there is, and it's a good little reminder every morning that you're a grower now.

— *Jason*

How to read a seed packet

Whether your seeds come from a library, a swap or a store, the packet is your instruction sheet. Here's what to look for.



A sample packet (illustration). Real packets vary, but almost all include these details. Always follow your own packet.

BUILD · THE 6-STEP WINDOWSILL SEED START

Start your seeds the fast way.

No greenhouse, no fancy gear. A tray, the right mix, warmth and light will turn a packet of seeds into a tray of sturdy transplants in a few weeks.

TIME	DIFFICULTY	COST	BEST FOR
About 20 min to sow	●○○ Easy	Low	Tomatoes, peppers, greens

WHAT YOU'LL NEED

- Containers with drainage holes: cell trays or rinsed yogurt cups with holes poked in the bottom
- A tray or saucer underneath
- Seed-starting mix (**never** garden soil)
- Seeds and labels
- A clear cover or loose plastic bag
- A spray bottle
- A bright window, or a shop light or grow light on a timer



Sow a few extra. Two or three seeds per cell, then keep the strongest.

Step by step

1. **Moisten the mix first.** Stir water into the seed-starting mix until it's damp but not dripping, then fill your containers. The University of Vermont Extension says to never use garden soil: it's too heavy for containers.

2. **Sow at the right depth.** The rule of thumb is a depth of 2 to 3 times the seed's width (Cornell), or follow the packet. Drop 2 or 3 seeds per cell and cover them lightly. Some small seeds, including basil, need light to sprout, so use little to no mix to cover them (Utah State University Extension). If the packet says to sow on the surface, press the seeds gently onto the mix.

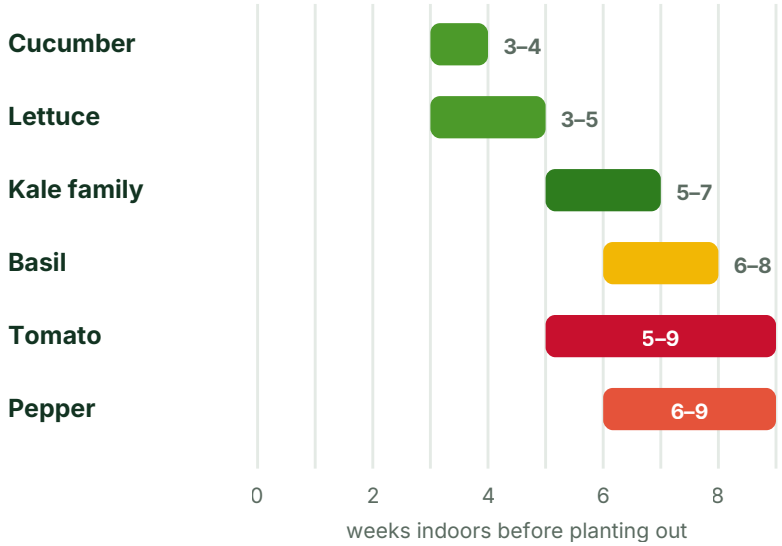
3. **Cover and keep warm.** Put the clear cover on to hold moisture. Most seeds sprout best in warm soil; see the chart on the next page. A heat mat made for seedlings, ideally with a thermostat, speeds things up for warm-loving crops like tomatoes and peppers. Take it out once the seedlings come up; after that they grow best with air at about 65 to 70°F (Cornell). Plug the mat and light into a GFCI outlet and keep cords and plugs away from the water.

4. **Give light the day they sprout.** Take the cover off as soon as you see green. Hang tube-style lights 2 to 4 inches above the seedlings (University of Idaho; University of Minnesota); for stronger LED grow lights, follow the maker's directions. Run them 12 to 16 hours a day, and raise the light as the seedlings grow.

5. **Water gently and thin.** Keep the mix moist but not soggy. Watering from below (setting the tray in an inch of water for up to an hour) works well. When seedlings have their first true leaves, snip off the extras so one strong plant is left per cell, and start feeding with a half-strength fertilizer.

6. **Harden them off.** Before your seedlings move outdoors, spend 7 to 14 days toughening them up. That's coming up at the end of this chapter.

How early to sow indoors



Tomato, pepper, lettuce and kale family: University of Idaho Extension (CIS 1209). Cucumber and basil: UNH Cooperative Extension. Sources differ by a week or two (UNH says 8–10 weeks for peppers); Chapter 12's chart counts from your frost date.

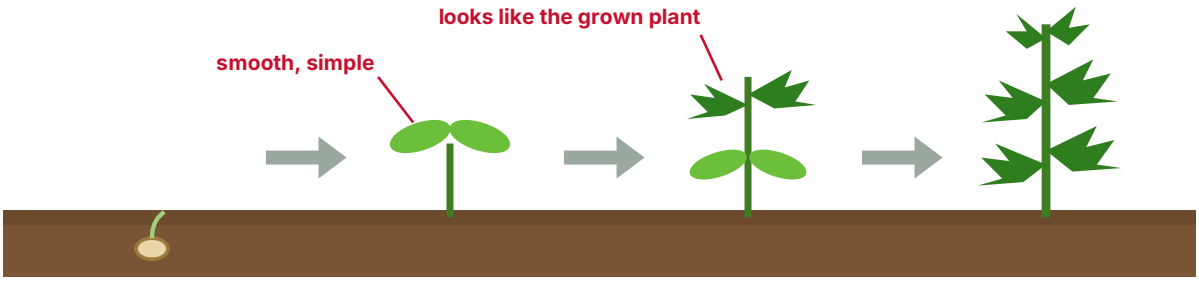
Best soil temperature to sprout

Crop	Soil temp
Tomato	75–80°F
Pepper	75–85°F
Kale, cabbage family	65–75°F
Lettuce	65–70°F

University of Idaho Extension (CIS 1209).

QUICK WIN · SOAK YOUR PEAS

Soak pea seeds overnight in a cup of lukewarm water before planting. It helps them take up water and sprout sooner (University of Maine Extension). Peas go straight into the farm, not into trays.



Seed leaves vs. true leaves. The first two leaves are simple "seed leaves." The next ones, the true leaves, look like the plant they'll become (a tomato is shown).

DAMPING-OFF

- Seedlings look fine for a few days, then the stem darkens at the base and they flop over
- Caused by fungi in dirty mix, trays or water
- Remove sick seedlings and their soil right away

HOW TO PREVENT IT

- Fresh, sterile seed-starting mix
- New trays, or scrub old ones and soak them in a 10% bleach solution for an hour, then rinse well
- Moist, not soggy; don't let trays sit in water
- Sow thinly so air can move

Source: Utah State University Extension

COMMON MISTAKE · LIGHT TOO FAR AWAY

Seedlings that are tall, pale and floppy are reaching for light. A sunny window often isn't enough in late winter. Lower tube-style lights to 2 to 4 inches above the leaves and keep them on 12 to 16 hours a day.

BEFORE YOU PLANT OUT

Hardening Off

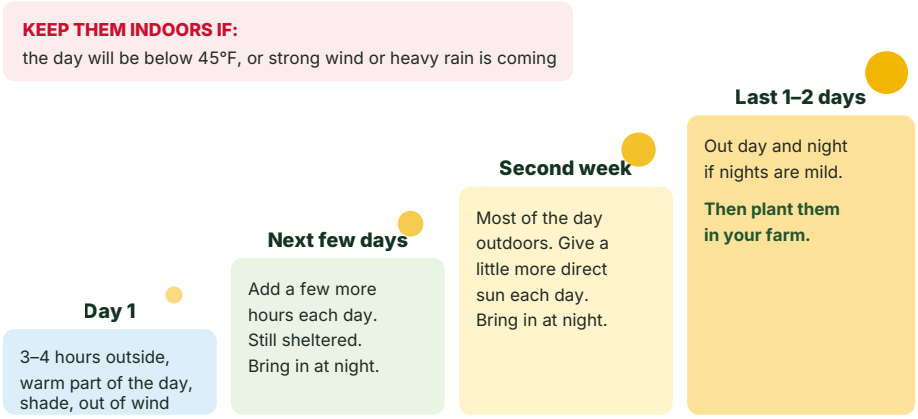
Seedlings raised indoors have never felt wind, strong sun or a cold night. Move them straight outside and many will wilt, scorch or stall. South Dakota State University Extension explains that hardening off slows growth and thickens the

leaves' waxy coating so they lose less water. It also helps them handle cold. The fix takes a week or two.



My wife's favorite spring job: carrying the seedling trays out to the shady porch steps each morning, and a little farther into the sun each day.

A sample 7-to-14-day plan



Hardening off, step by step. Based on South Dakota State University Extension: plan on 7 to 14 days, water a little less (but don't let them wilt), and skip fertilizer if they look healthy.

> **JASON'S TIP**
>
> Don't park seedlings in a dark garage for days to "toughen up." SDSU warns that plants left in unlit garages too long can stretch and turn yellow. Light is part of the training.
>
> — *Jason*

Your Free-Seed & Fast-Start Checklist

Work through this each late winter, and you'll rarely need to buy a seedling again.

- [ ] **Find your free seeds**
  Ask your library about a seed library, look for a local seed swap, and browse the Seed Savers Exchange.

- [ ] **Count back from your frost date**
  Tomatoes and peppers go in trays first; Chapter 12 shows exactly when.

- [ ] **Harden off**
  7 to 14 days, a little more sun and wind each day, before planting out.

- [ ] **Save seeds this fall**
  Tomatoes, peppers, beans, peas and lettuce from open-pollinated plants.

NEXT UP
Chapter 12: Your Year-Round Calendar. Find your two frost dates and plant every crop at the right time, even in freezing winters and blazing summers.

SOURCES FOR THIS CHAPTER
Seed libraries: Maricopa County (AZ) Department of Public Health, "Seed Libraries" (maricopa.gov/5822); Pellissippi State Community College Libraries, "Seed Library & Gardening: How It Works"; N. Lenstra, *Public Libraries Online* (Public Library Association), Nov. 16, 2017, citing D. Soleri, *Agriculture and Human Values* (2017). · Seed Savers Exchange, "About the Exchange" (exchange.seedsavers.org/about). · Seed saving and storage: University of Minnesota Extension, "Saving vegetable seeds"; Iowa State University Extension, "Which plants are easiest to save seed from?" · Seed viability and germination test: University of Illinois Extension, "Seed Viability" info sheet. · Kitchen scraps: Washington State University Extension (Ferry County), "It Doesn't Take an Acre: Kitchen Scrap Gardening" (2024); Ask Extension, grocery-store potatoes; Iowa State University Extension, "Can I plant garlic cloves from the grocery store?" · Seed starting: L. Brewer, "Indoor Vegetable Seed Starting," Cornell Garden-Based Learning; University of Idaho Extension, *Start Seeds Indoors with Success* (CIS 1209); UNH Cooperative Extension, *When to Plant Your Vegetable Garden* (2016); University of Vermont Extension, "Seed starting basics"; University of Maine Extension, "Should I soak my peas?"; Utah State University Extension, "Damping-off"; University of Minnesota Extension (seedling light height). · Hardening off: South Dakota State University Extension, "Harden your transplants prior to planting your garden." · Utah State University Extension, "Starting Vegetable Seeds Indoors: Germination" (seeds that need light, including basil).



CHAPTER 12

Your Year-Round Calendar

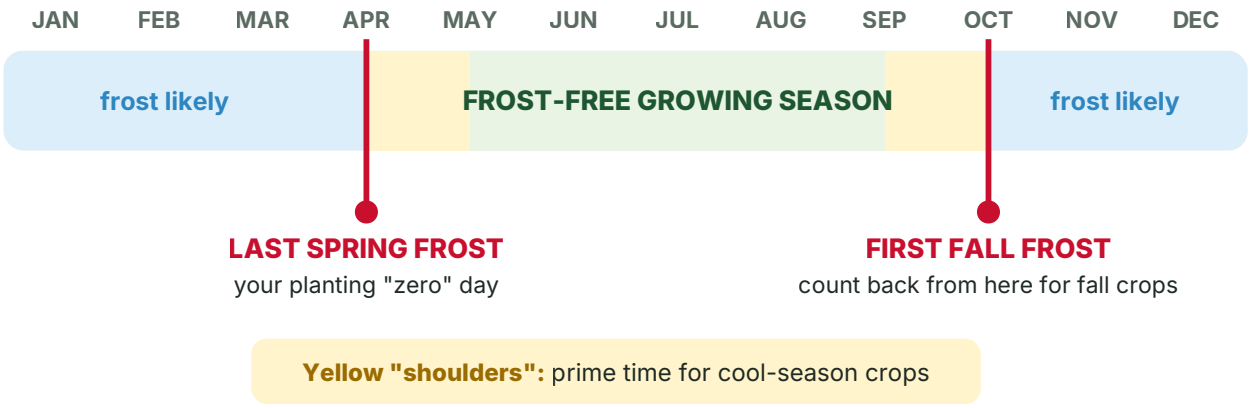
Forget the month on the seed rack. Two dates that belong to your own backyard, your last spring frost and your first fall frost, tell you when to plant everything in this book.

IN THIS CHAPTER

- Find your two frost dates and your zone in two minutes
- One planting chart that works anywhere, counted in weeks from your frost
- The cold-weather trick for freezing climates (and the Christmas-light bonus)
- How to keep growing through a blazing Southern summer

The old version of this book had a calendar that said "plant in early March, transplant in mid-May." That works fine if you happen to live where the author did. In Maine it's too early. In Florida it's far too late.

So this new calendar doesn't use months at all. It counts weeks **before and after your own last spring frost**. Look up that one date, and the same chart works in Tennessee, Texas, Oregon or Ohio.



Your two magic dates. An example year. Your own dates may be weeks earlier or later; the pattern is the same everywhere.

STEP ONE

Find Your Two Dates

Your **average last spring frost** and **average first fall frost** come from decades of local weather records. Here's how to find yours:

1. **Call your county extension office.** There's an office in or near almost every U.S. county, usually run through your state's land-grant university. They'll give you your local frost dates and often a free planting calendar for your area.

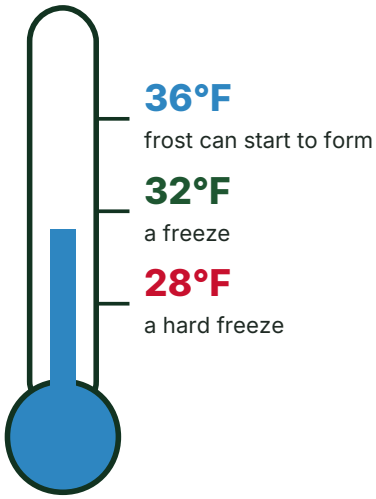
2. **Or look it up by ZIP code.** The University of Vermont Extension points gardeners to the free frost-date lookup at *garden.org/apps/frost-dates*.

3 **Write both dates** on the inside cover of your garden journal and on the Printables calendar at the back of this book.

If your area rarely or never frosts (much of Hawaii, South Florida, parts of coastal California), use your county extension office's planting calendar instead.

DID YOU KNOW? · WHAT "AVERAGE" REALLY MEANS

NC State Extension explains that the usual "average" last frost date is a 50/50 date: in about half of years the last frost comes before it, and in about half it comes after. Want to play it safe with tender plants like tomatoes and peppers? Many frost-date lookups also show a low-risk (10%) date; plant tender crops after that one. My rule of thumb: keep a frost cover handy either way.



Frost, freeze, hard freeze

NC State Extension uses three temperatures. Frost risk rises once the air drops below about **36°F**. Below **32°F** is a freeze. Below **28°F** is a hard freeze.

Tender crops like tomatoes, peppers, beans and basil can be hurt by any frost. Many cool-season crops shrug off a light frost, and the toughest ones survive a hard freeze.

And what about my "zone"?

You've probably seen a USDA Plant Hardiness Zone printed on plant tags. The current USDA map, the 2023 edition, is based on the **coldest night of each winter, averaged over many years**. Each zone covers 10°F, split into "a" and "b" half-zones of 5°F. You can look yours up by ZIP code at *planthardiness.ars.usda.gov*.

MYTH

~~My zone tells me when to plant my tomatoes.~~

FACT

Your zone tells you which perennial plants (like strawberries and herbs) can survive your winters. For planting dates, use your frost dates.

JASON'S TIP

Your patio or balcony can run a little warmer or colder than the official numbers. A spot against a sunny brick wall warms up early; a low corner where cold air settles frosts late. Keep notes in your journal, and after one year you'll know your farm better than any chart.

— *Jason*

STEP TWO

Cool Crops & Warm Crops

Every crop in your 5-Foot Farm falls into one of four groups, based on how much cold it can take. Purdue University Extension sorts them like this:

HARDY · 4–6 weeks before last frost

Peas, spinach, kale, radishes, onions, potatoes

SEMI-HARDY · 2–4 weeks before

Lettuce, Swiss chard, carrots, beets

TENDER · after last frost

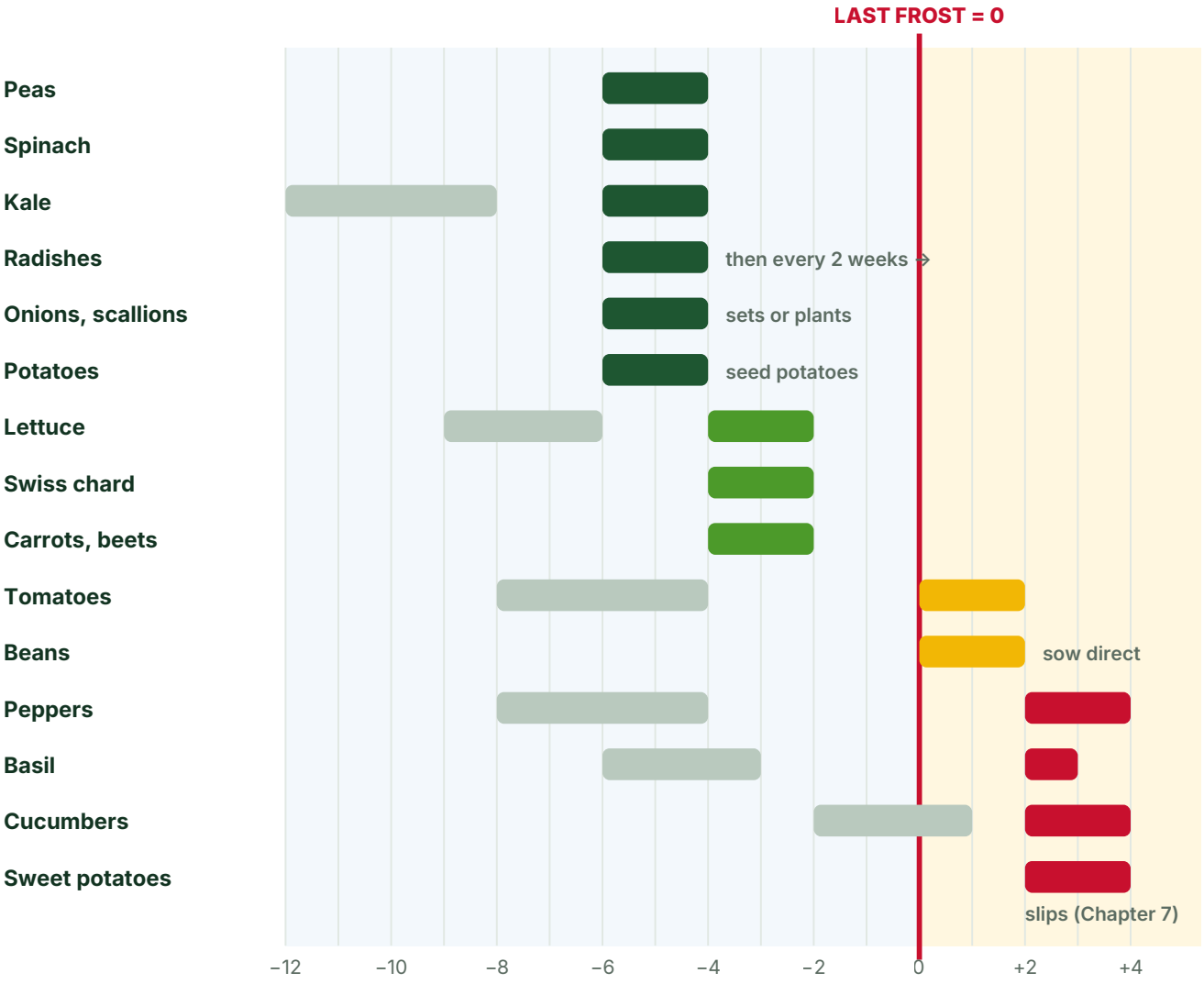
Tomatoes, beans. Purdue says to wait for nights of at least 50°F.

VERY TENDER · 2+ weeks after

Peppers, cucumbers, sweet potatoes, and basil (UNH Extension). Nights of 60–65°F.

The 5-Foot Farm planting chart

Find your last frost date. That's week **0**. Then read across. **Gray bars** = start seeds indoors. Colored bars = plant or sow outside (**dark green** = hardy, **green** = semi-hardy, **yellow** = tender, **red** = very tender).



Outdoor timing: Purdue University Extension, *Indiana Vegetable Planting Calendar* (HO-186), frost-hardiness groups. Indoor start times (weeks before transplanting): UNH Cooperative Extension, *When to Plant Your Vegetable Garden*. Basil timing: UNH. Purdue also advises waiting until the soil is at least 60°F for warm-season crops; a cheap soil thermometer settles it. Always check your seed packet, and use local advice from your county extension office.

QUICK WIN · STRAWBERRIES

Strawberry plants go in early. Oregon State University Extension says to plant "as soon as soil can be worked" in spring. For a 5-Foot Farm, choose **day-neutral** types, which produce again and again from late spring into early fall.

WORKED EXAMPLE

Say your last frost is April 15

Crop	Start indoors	Plant outside
Peas, spinach	—	March 4 – March 18
Lettuce	Feb 11 – March 4 (optional)	March 18 – April 1
Tomatoes	Feb 18 – March 18	April 15 – April 29
Peppers	Feb 18 – March 18	April 29 – May 13
Beans	—	April 15 – April 29

Each row is the chart above, counted in weeks from April 15. Swap in your own date and count the same way.



STEP THREE

Never an Empty Square

A 5-Foot Farm is small, so every square should be working. Two habits keep it full all season:

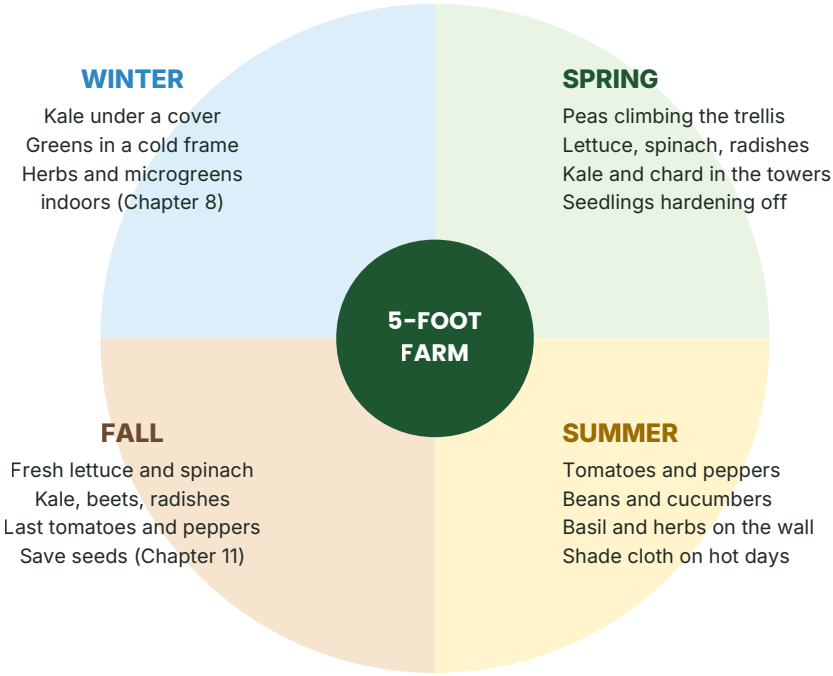
1. Plant a little, often

Instead of sowing all your radishes at once, sow a short row every two weeks. An N.C. Cooperative Extension agent expects that planting radishes every two weeks can stretch the harvest to six to eight weeks. The same idea works for lettuce and scallions.

2. Follow one crop with another

When spring peas finish, pull them and plant beans or a summer crop in their place. When summer beans slow down, pull them and plant fall greens. The soil never takes a vacation.

Your farm through the year



A year in the 5-Foot Farm. A typical pattern for much of the U.S.; in the hottest areas, many "spring" greens do better in fall and winter. Your county extension office can tell you what works best locally.

FORMULA · WHEN TO PLANT FOR FALL

Count back from your first frost

Fall crops grow slower than spring crops because the days are getting shorter and cooler. The University of Nebraska–Lincoln Extension builds that into a simple formula.

Days to count back =

Days to maturity (from the packet)
+ days to grow a transplant (if you start indoors)
+ the harvest period you want
+ a **"fall factor" of about 14 days**
+ another 14 days if the crop is frost-tender

Example: leaf lettuce

50 days to maturity (direct sown)
+ 21 days of picking
+ 14-day fall factor
= **85 days** before first frost

If your first frost is **October 25**, sow on about **August 1**.

Formula: University of Nebraska–Lincoln Extension, *Fall Vegetable Gardening* (G1343). Example dates are for illustration; use your own packet and frost date.

FOR FREEZING CLIMATES

The Cold-Weather Trick

Here's the trick in one sentence: **trap the day's warmth around cold-hardy crops, and they'll keep growing long after your neighbors' gardens have quit.** The ground soaks up heat during the day and gives it back at night. A clear or fabric cover holds that heat close to your plants.

Pair the right crops with the right cover, and you can harvest later in fall, start earlier in spring, and in many places pick hardy greens all winter.

Choose crops that like the cold

Hardy

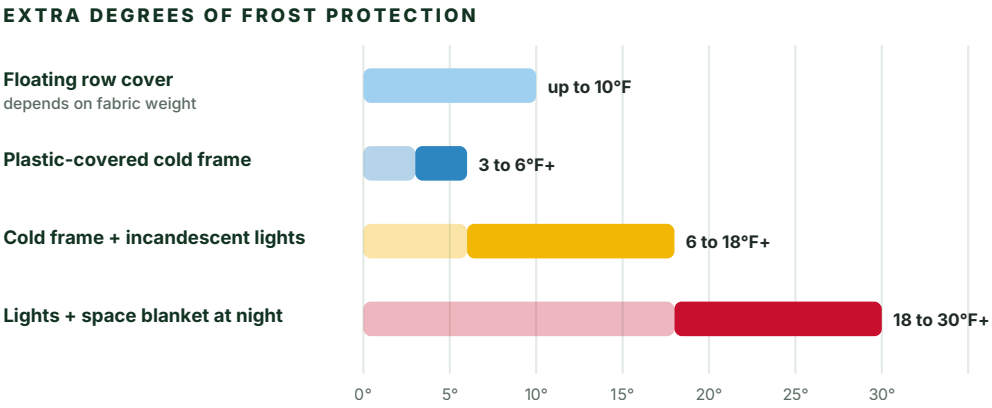
Kale, carrots, cabbage, broccoli. UNL Extension says hardy crops can take several frosts and are killed when temperatures drop near 20°F.

Semi-hardy

Lettuce, spinach, Swiss chard, beets, radishes, green onions. These handle a light frost of 30–32°F (UNL Extension).

Sources group a few crops differently. For spring planting dates, use the chart above. For fall cold tolerance, UNL puts spinach and radishes in the semi-hardy group and carrots in the hardy group.

Then pick your cover



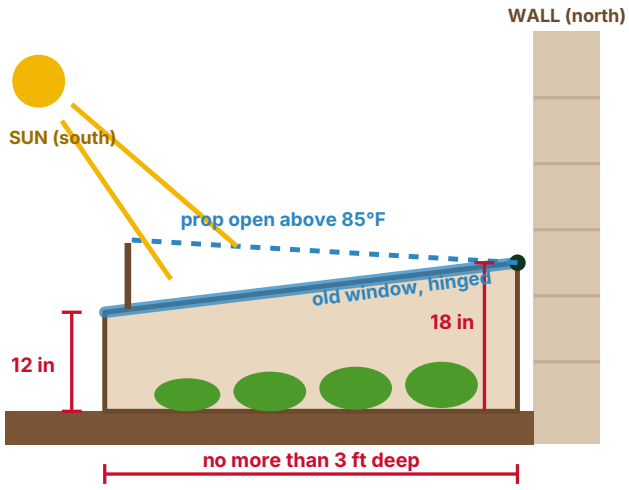
How much each cover helps. Colorado State University Extension figures; cold-frame numbers come from its trials in Fort Collins, Colorado. Faded bars show the low end of each range. Results vary with weather and setup.

BUILD · THE OLD-WINDOW COLD FRAME

A mini greenhouse from a spare window.

A cold frame is a bottomless box with a clear lid that tilts toward the sun. Iowa State University Extension says one can stretch your season by two to four weeks in both spring and fall.

TIME	DIFFICULTY	COST	BEST FOR
An afternoon	●●○ Moderate	Low with a salvaged window	Lettuce, spinach, kale



WHAT YOU'LL NEED

- An old glass storm window or window sash (or a clear plastic panel)
- Untreated boards or other sides; avoid creosote-treated wood
- 2 hinges and screws
- A stick or block to prop it open
- Optional: a straw bale or two for insulation

Dimensions and tips: Iowa State University Extension, "All about cold frames." Old windows can contain lead paint; skip any with peeling paint, or wear gloves and wash up.

Step by step

1. **Pick a sunny, south-facing spot.** Put the back of the frame against a wall, fence or garage to cut heat loss (Iowa State). Make sure the spot drains well.
2. **Size the box to your window.** Keep it no more than about 3 feet front to back so you can reach the far side.
3. **Cut the sides on a slope:** about 12 inches tall at the front and 18 inches at the back, so the glass tilts toward the sun.
4. **Hinge the window** to the back board so it lifts like a lid.
5. **Vent it.** On sunny days, prop the lid open once the inside goes above 85°F, and close it before sunset. Iowa State warns that temperatures can climb fast, even on cloudy days.
6. **Insulate for cold snaps.** Stack straw bales or pile soil around the outside to even out temperature swings.

SAFETY · HEAVY GLASS

Old glass windows are heavy and can break. Wear gloves, get a helper to lift, and prop the lid securely so wind can't slam it. A clear polycarbonate panel is lighter and safer.

DID YOU KNOW? · THE CHRISTMAS-LIGHT TRICK

In Colorado State University trials, one string of 25 incandescent (not LED) C-7 bulbs per 4×5-foot cold frame, turned on at dusk and off at dawn, gave about 6 to 18°F of frost protection. Adding a space blanket over the frame at night (aluminum side down) raised that to about 18 to 30°F. LED strings stay cool and won't warm the frame. Use outdoor-rated lights on a GFCI outlet, and keep the bulbs from touching the plants, the plastic, the space blanket or any straw.

Row covers and low tunnels

Floating row cover

A light, white garden fabric laid right over the plants or over hoops. Water and sunlight pass through. UConn Extension says it holds in "about five degrees" of heat; heavier grades protect more. Weigh down the edges.

Low tunnel

Wire or PVC hoops every 3 to 5 feet with clear 4-mil plastic over them (Colorado State). **Vent it on sunny days:** CSU warns it can top 130°F inside after an hour of sun. Cutting 2-inch vent holes every 2 to 3 feet helps.

JASON'S TIP

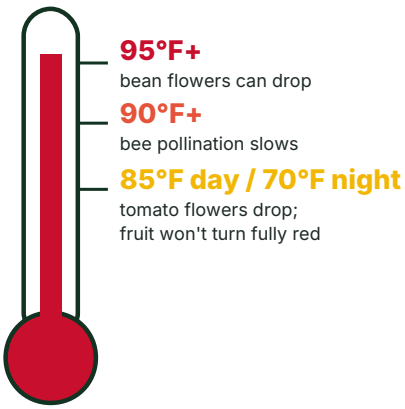
Setting tomatoes out early? A water-filled plant protector (a ring of water-filled plastic tubes around each plant) protects down to temperatures in the mid-teens, according to Colorado State University. It's a cheap way to win a couple of extra weeks in spring.

— Jason

FOR HOT CLIMATES

Beat the Heat

If you live in the South or Southwest, summer heat can be harder on a garden than winter cold. In a heat wave, many plants simply stop producing.



The University of Minnesota Extension reports that when days stay above about **85°F** and nights above **70°F**, tomato flowers often drop before they're pollinated. Bean flowers can drop above 95°F, especially in dry soil.

The good news: UMN Extension notes that "cool nights will solve many of these issues." Keep plants watered through the heat.

Five ways to keep your farm cool

1. **Shade cloth.** A fact sheet from a Wisconsin growing program says a 30 to 50% shade cloth is enough to protect vegetables from strong sun, and that it can keep the air underneath at least 5 degrees cooler. It also slows lettuce and spinach from bolting (going to seed). In very hot regions, ask your county extension office what shade level growers use locally.

2. **Water early.** UMN Extension says to water "in the morning as early as possible," before the afternoon heat steals it.

3. **Mulch the soil.** A layer of straw or compost slows evaporation and keeps roots cooler. More in Chapter 13, Feeding Your Farm.

4. **Wait to prune.** UMN advises waiting to prune tomatoes until a heat wave passes.

5. **Grow greens in the cool months.** In the hottest regions, many cool-season crops do best planted for fall and winter. Ask your county extension office for its local planting calendar.



A simple shade cloth. A few stakes, some twine and a piece of shade cloth turn a scorching patio into a comfortable spot for greens.

COMMON MISTAKE · FORGETTING THE GARDENER

Heat is hard on people too. UMN Extension says to take breaks and drink plenty of water while gardening, and to watch for headache, dizziness and heavy sweating. Do your chores in the cool of the morning, and sit down to work whenever you can (see Chapter 9, The No-Bend Garden).



Fresh kale in the snow.

A simple fabric cover over hoops kept this kale going through a cold snap. Hardy greens like kale can take several frosts; the cover buys them extra degrees on the coldest nights.

Your Year-Round Checklist

- [ ] **Two dates**
  Write down your average last spring frost and first fall frost.
- [ ] **Count in weeks**
  Use the planting chart: hardy crops early, tender crops after the frost.
- [ ] **Plan for fall**
  Count back from your first frost, adding the 14-day fall factor.
- [ ] **Cover up or cool down**
  Row cover or a cold frame for cold; shade cloth, mulch and morning water for heat.

NEXT UP
Chapter 13: Feeding Your Farm. Smarter watering, a simple feeding schedule, and the under-sink worm bin.

SOURCES FOR THIS CHAPTER
Frost probabilities and thresholds: N. Nelson, L. El-Khoury & M. Boyette, "Interpreting Freeze/Frost Probabilities from the National Centers for Environmental Information," NC State Extension AG-873 (2020, rev. 2024). · Frost-date lookup: University of Vermont Extension, "Seed starting basics." · Hardiness zones: USDA Agricultural Research Service, Plant Hardiness Zone Map (2023), planthardiness.ars.usda.gov. · Planting groups and soil temperature: R. Lerner, *Indiana Vegetable Planting Calendar*, Purdue University Extension HO-186 (2020). · Indoor start times and basil: K. Downing & O. Saunders, *When to Plant Your Vegetable Garden*, UNH Cooperative Extension (2016). · Strawberries: Oregon State University Extension, "Plant strawberries in early spring." · Succession planting: N.C. Cooperative Extension, Carteret County Center, "Succession Planting in the Vegetable Garden" (2022). · Fall planting formula and cold tolerance: D. Lott & D. Lindgren, *Fall Vegetable Gardening*, University of Nebraska–Lincoln Extension G1343. · Cold frames: Iowa State University Extension, "All about cold frames." · Frost protection figures, low tunnels, Christmas-light trial, Wall O' Water (water-filled plant protector): Colorado State University Extension, "Frost Protection and Extending the Growing Season." · Row cover: UConn Home & Garden Education Center, "Extending the Season in the Garden." · Heat effects, morning watering, heat safety: University of Minnesota Extension, "How excessive heat affects the vegetable garden" and "Gardening in hot weather." · Shade cloth: Mohican Nation Agricultural Department, SARE-funded fact sheet "Shade Cloth."



CHAPTER 13

Feeding Your Farm

Watering and feeding are the two jobs you'll do most often. Set them up the smart way once, and those jobs get much quicker and easier.

IN THIS CHAPTER

- Five ways to water less often
- A simple drip setup on a timer, and the ancient clay-pot trick
- Your crop-by-crop feeding schedule
- Build: the under-sink worm bin that makes the "weird byproduct" for free

Back in Chapter 2 you learned the three growth triggers: light, water and food. You picked a sunny spot for the light. This chapter is about the other two, the daily care that keeps a small farm producing all season long.

The old version of this book promised a watering section "later in this book" and never delivered it. Here it is, along with a feeding schedule and the build I get asked about most: a worm bin that fits under the kitchen sink.

> **JASON'S TIP**
>
> Before you buy any gadget, remember the two-second finger test from Chapter 2: push a finger into the mix, and water only when it's dry a few inches down. Every system in this chapter just makes that job easier.
>
> — *Jason*



WATER SMARTER

Five Ways to Water Less

Containers dry out faster than garden soil, and in summer the University of Minnesota Extension says container plants may need water at least daily, sometimes more. These five tools cut that chore way down. Pick one or combine a few.

1. The self-watering bucket

Water waits in a tank under the soil and wicks up as the plant needs it. Full build in Chapter 2.

Best for: tomatoes and peppers.
Watch out: check the tank daily in summer heat.

2. Drip on a timer

Thin tubing carries water to a small dripper in each pot. A timer runs it for you. Drip keeps leaves dry, and dry leaves mean less disease.

Best for: a row of buckets and pots.
Watch out: check drippers for clogs.

3. Ollas (clay pots)

An unglazed clay pot buried in the soil and filled with water slowly seeps moisture to nearby roots.

Best for: the Doormat Strip.

4. Mulch

A layer of straw or compost on top of the soil slows evaporation and keeps roots cooler.

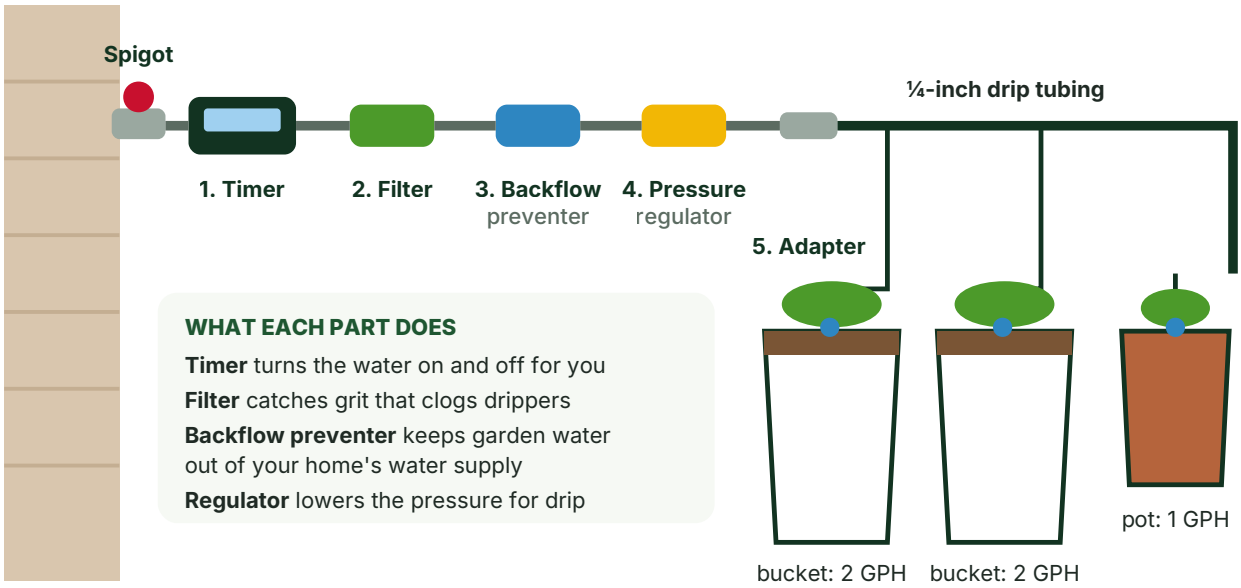
Best for: every bucket and bed.

5. Morning water

Water early, before the afternoon heat. UMN Extension says more water soaks in that way.

Best for: hand watering.

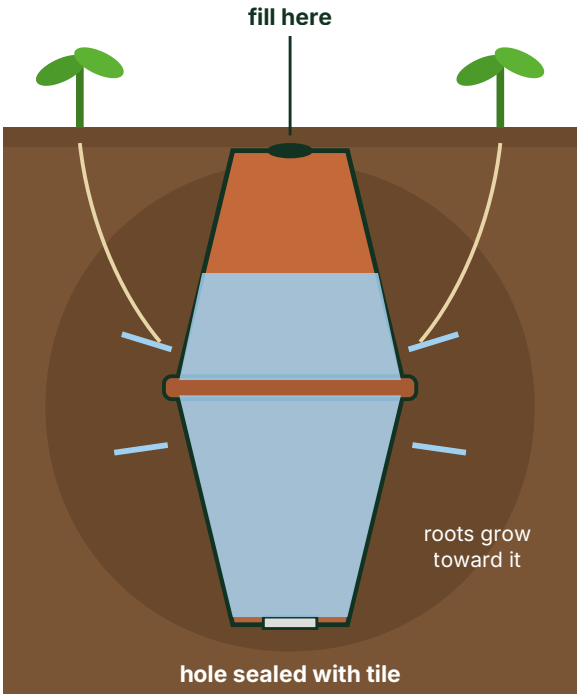
A simple drip system for containers



A patio drip kit, start to finish. Part order and dripper sizes follow a drip kit maker's container guide (1 gallon-per-hour drippers for small pots, 2 GPH for larger containers; use two drippers in a big container). What each part does: University of Vermont.

The ancient clay-pot trick: ollas

An **olla** (say "OY-ya") is an unglazed clay pot buried up to its neck. You fill it with water, and the water seeps out through the clay into the soil. The University of Arizona Cooperative Extension calls it a water-saving method that may save 60 to 70% compared with a watering can, and notes that roots often grow right up to the pot.



Make one from two flowerpots

1. Use two unglazed terracotta pots the same size.
2. Seal the drain hole of one pot with a piece of tile and food-grade silicone.
3. Glue the two rims together, rim to rim, with the same silicone. The open hole on top is where you pour.
4. Bury it so only the top hole shows. Cover the hole with a stone or saucer.

Method: University of Arizona Cooperative Extension, "Irrigating with Ollas."

COMMON MISTAKE · EXPECTING NEW PLANTS TO FIND IT

Seedlings and new transplants need regular watering for a month or more, until their roots reach the olla (University of Arizona). Ollas also take up some space in a small bed, and minerals can slowly clog the clay.

Mulch: the five-minute water saver

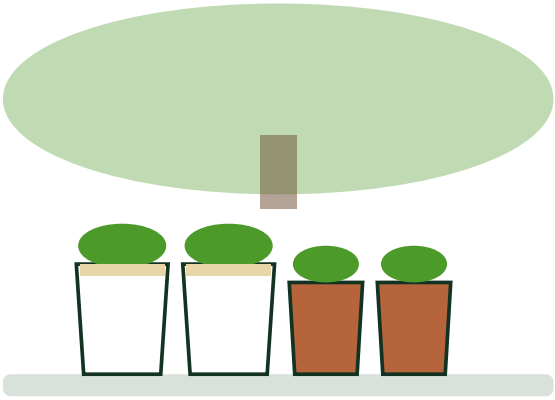
What to use

Weed-free straw, compost or leaf mold. Colorado State University Extension says mulching can cut garden watering needs by around 50%. On buckets, a thin layer helps too (UGA Extension).

What to avoid

Grass clippings from a lawn treated with weed killer, and straw from a field sprayed with herbicide. Some herbicides can carry over and harm vegetables (CSU). Fresh clippings piled thick can mat and smell; add them in thin, dry layers.

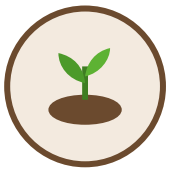
Going away? Your vacation plan



grouped together, in light shade, mulched

1. **Group your containers** together in a cool, lightly shaded spot. Together they hold humidity and dry out slower (UGA Extension).
2. **Mulch the tops** with a thin layer.
3. **Fill every self-watering tank** and water everything deeply the morning you leave.
4. **Set the drip timer,** if you have one. UGA calls a timer "the best way" to keep plants watered while you're gone.
5. **Ask a neighbor** to check in, and pay them in tomatoes.

Plants moved to shade may stretch a little, but UGA notes they recover once they're back in full light.



FEED SMARTER

The Feeding Schedule

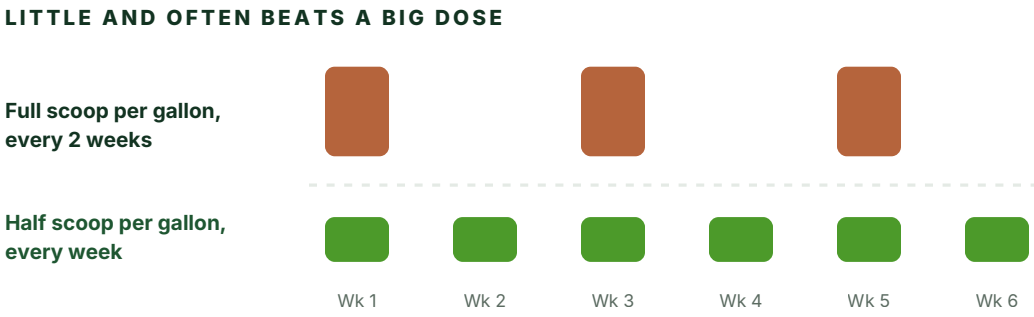
Every time you water a container, a little plant food washes out the bottom. That's why the University of Minnesota Extension says to start regular feeding **two to six weeks after planting**, even if your potting mix came with slow-release fertilizer.

Water-soluble fertilizer

A powder or liquid you mix into the watering can. Plants can use it right away, so it's the fix when a plant needs food fast, like a tomato with yellowing leaves (UMN).

Slow-release fertilizer

Little pellets mixed into the soil that release food each time you water. Handy, but UMN notes big, fast-growing plants may still need a top-up.



Same total food, steadier supply. UMN Extension's example: instead of one scoop per gallon every two weeks, use a half scoop per gallon every week, so less washes out the drain holes. Always follow your fertilizer's label rate.

When to feed each crop

Crop	When to give extra food
Tomatoes	When they start setting fruit; then every 2 to 3 weeks
Peppers	After the first fruits set
Cucumbers	One week after flowering starts, and again 3 weeks later
Beans and peas	After heavy flowering and pod set
Kale, spinach and other greens	When plants are about one-third grown
Lettuce, carrots, beets	Usually not needed if the soil was fed before planting
Potatoes	When plants are 4 to 6 inches tall
Onions	2 to 4 weeks after planting
Sweet potatoes	Don't. Extra nitrogen can lower yield and quality

University of Missouri Extension (2024), table from Kansas State. Containers lose food faster, so also follow the little-and-often rule.

MYTH

~~More fertilizer means more tomatoes.~~

FACT

Too much nitrogen early gives you "lush vegetative growth and poor fruit set" (University of Missouri). Too much of any fertilizer can burn roots and build up salts (University of Maryland Extension). Follow the label.



THE WEIRD BUT POWERFUL BYPRODUCT

Worm Castings, Up Close

In Chapter 2 you met worm castings, the rich, earthy material worms leave behind. You learned to mix about 1 scoop into every 9 scoops of potting mix. Here's the rest of the story, and how to make your own for free.

Gentle

A mild, natural food that also improves the texture of your mix.

Modest

A home bin makes a small amount. UConn says a typical harvest covers part of a garden about ¼ inch deep.

Free

Made from kitchen scraps you'd throw away anyway.

DID YOU KNOW?

Because a home bin makes castings slowly, save them for where they count most: the potting mix for new seedlings and transplants, and a handful on top of each bucket. Heavy feeders like tomatoes still want regular vegetable fertilizer once they're setting fruit.

BUILD · THE UNDER-SINK WORM BIN

Kitchen scraps in. Free plant food out.

A covered plastic bin, damp shredded paper and a pound or two of the right worms (about a pound per square foot of bin). Done right, it doesn't smell, and it fits under the sink or in a closet.

TIME	DIFFICULTY	COST	FIRST HARVEST
About 45 min	●○○ Easy	Low	About 4 months

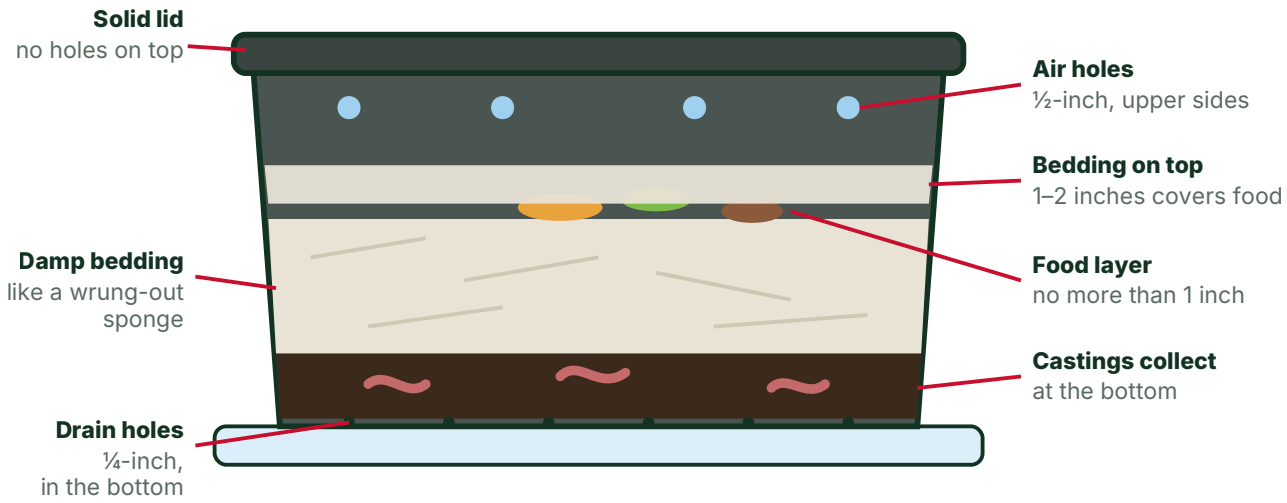


A worm bin under the sink. Food stays tucked under the bedding; pull it back and you'll find worms and dark castings. A tray underneath catches any drips.

WHAT YOU'LL NEED

- A dark, opaque plastic bin with a lid (not clear). Size: about 1 square foot of surface for each pound of food scraps you make per week. Example: 2 lb a week → a bin about 2 × 1 ft, 8 to 20 inches deep.
- A tray or second container to set it in
- Drill with ½-inch and ¼-inch bits
- Shredded black-and-white newspaper, plain paper, cardboard, dead leaves or coir (no glossy paper)
- A handful of garden soil
- **Red wiggler worms** (*Eisenia fetida*) from a worm grower, about 1 pound (roughly 1,000) per square foot of bin surface. Not bait-shop or backyard earthworms.

Specs: NC State Extension (R. Sherman).



Inside a worm bin. Layers and holes follow NC State Extension's design.

Step by step

1. **Drill the holes.** Make four ½-inch air holes along the upper sides (not the lid, which lets in light and dries the bedding). Drill six ¼-inch drain holes spread across the bottom.
2. **Set it on a tray** or inside a second bin to catch drips.
3. **Make the bedding.** Soak shredded paper for 5 to 10 minutes, then wring it out until a squeeze gives only two or three drops. Fill the bin about halfway and mix in a handful of garden soil.
4. **Add the worms** and close the lid. Keep the bin between about 59 and 77°F and out of direct sun (NC State). Under the sink or in a closet is perfect.
5. **Feed them.** Chop scraps small, spread no more than an inch, and cover with 1 to 2 inches of bedding. Don't add more until the last feeding is mostly gone.
6. **Harvest in about four months.** Feed only one side of the bin for a few weeks. The worms move over to the food, and you scoop finished castings from the other side.

What to feed your worms

YES, PLEASE

- Vegetable and fruit scraps
- Coffee grounds and paper filters
- Tea bags
- Crushed eggshells
- Plain cooked grains

NO, THANKS

- Meat, bones, fish and dairy
- Greasy or oily food, fat, salty food
- Onions, garlic and citrus
- Pet waste
- Glossy or brightly printed paper

Food lists: NC State Extension and UConn Soil Testing Lab, "Vermicomposting."

Quick fixes

Problem	Likely cause	Fix
Bad smell	Overfeeding	Stop feeding for two weeks; take out anything that isn't food or bedding (NC State)
Fruit flies	Food left uncovered	Bury every bit of food under bedding (NC State)
Liquid in the tray	Too many watery scraps, not enough bedding	Add dry shredded paper (UConn)
Food not eaten	Overfeeding, or a food the worms don't like	Remove food left untouched for a couple of weeks (UConn)

JASON'S TIP

My wife was sure a worm bin would make the kitchen smell. A well-kept bin shouldn't smell at all, and ours doesn't. The secret is simple: feed a little, and always tuck the food under the bedding.

— *Jason*

WHAT ABOUT A COMPOST PILE?

A worm bin handles kitchen scraps indoors. Leaves, garden trimmings and spent plants go into an outdoor compost pile or a no-dig lasagna bed. Chapter 3, The No-Shovel Method, covers both, including the one way to speed up composting.

Your Feeding & Watering Checklist

- [ ] **Finger test first**
  Water when the mix is dry a few inches down; water early in the day.
- [ ] **Save water**
  Self-watering buckets, drip on a timer, an olla for the bed, and mulch on top.
- [ ] **Feed on time**
  Start 2 to 6 weeks after planting; little and often; follow the crop chart.
- [ ] **Plan for trips**
  Group pots in light shade, fill tanks, set the timer, ask a neighbor.
- [ ] **Start a worm bin**
  Red wigglers, damp bedding, small meals tucked under; harvest in about 4 months.

NEXT UP

Chapter 14: Plant Friends. Which plants really help each other, and which old garden "rules" are just folklore.

SOURCES FOR THIS CHAPTER

Container watering and feeding: University of Minnesota Extension, "Fertilizing and watering container plants" and "Gardening in hot weather"; University of Maryland Extension, "Maintaining container-grown vegetables." · Drip parts: V. Grubinger, University of Vermont, "Drip Irrigation for Home Gardens" (2026); Rain Bird, "How to Set Up an Automatic Drip Watering System for Your Container Plants." · Ollas: University of Arizona Cooperative Extension, "Irrigating with Ollas." · Mulch: Colorado State University Extension, "Mulches for the Vegetable Garden." · Vacation care: S. Kennedy, UGA Extension Forsyth County, "Vacation care for landscape and house plants." · Side-dressing schedule: D. Trinklein, University of Missouri, "Side-Dressing: Mid-season Boost for 'Hungry' Plants" (2024), table credit G. Eyestone, Kansas State University Extension. · Worm bins: R. Sherman, *Worms Can Recycle Your Garbage*, NC State Extension (2017); UConn Soil Nutrient Analysis Laboratory, "Vermicomposting – Indoor Composting with Worms."



CHAPTER 14

Plant Friends

Some plants really do help each other. Others are just old garden gossip. Here's how to tell the difference, and how to pack good neighbors into a small space.

IN THIS CHAPTER

- The honest truth about those companion planting charts
- Four pairings with real research behind them
- The Friends Wheel and the old chart, corrected line by line
- Trap crops, bee helpers and hand pollinating a cucumber

You've probably seen the charts. Tomatoes love basil. Beans hate onions. Carrots adore radishes. They get passed around like family recipes, and nobody remembers where they came from.

Here's the honest truth. Some of those friendships are real, and scientists have measured them. But a lot of them were never tested at all. As the University of Illinois Extension puts it, many recommended companions are "not always tested out in a research study." They're one gardener's experience, written down and copied for a hundred years.

That doesn't make companion planting silly. In a 5-Foot Farm, plants live closer together than in any backyard garden, so it pays to know which neighbors truly help. In this chapter I'll show you which ones have real evidence, which ones are harmless folklore, and the one pairing you really should keep apart.

Four ways plants really help each other

When a friendship does work, it almost always comes down to one of these four jobs:



Shade

Tall plants shade shorter ones in summer, which keeps roots cooler and discourages weeds (UC Master Gardeners). This is the idea behind stalk stacking in Chapter 4.



Feed the soil

Beans and peas work with soil bacteria to pull nitrogen from the air. In pasture research with clover and alfalfa, some of it reached neighboring plants (Auburn University).



Bring in the good bugs

Flowers feed lady beetles, lacewings and hoverflies, whose babies eat aphids. University of Minnesota Extension recommends flowers that bloom at different times.



Take the hit

A "trap crop" is a sacrificial plant pests like better than your food crop. Nasturtiums are often used to lure aphids away (Washington State University).

MYTH

~~Every pairing on a companion chart has been proven by science.~~

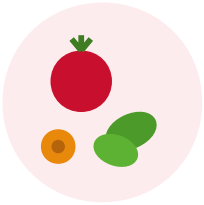
FACT

Results are mixed. Mississippi State University Extension sums it up: "Sometimes yes, sometimes no; and other times maybe." A few pairings have good research behind them. Many don't.

THE REAL ONES

Four Pairings With Research

These four have real research behind them. After them come two good habits that aren't measured pairings.



1. Tomatoes + basil + marigolds

The classic, and it holds up. Studies found that basil and marigolds planted together reduced thrips (tiny insect pests) on tomatoes in both greenhouses and fields.

Source: Mississippi State University Extension



2. Lettuce + sweet alyssum

USDA scientists in Salinas, California, studied planting little white sweet alyssum flowers among organic lettuce. The flowers feed adult hoverflies, and hoverfly larvae prey on the aphids that hide deep inside lettuce heads.

Source: USDA Agricultural Research Service



3. Cabbage + marigolds, nasturtiums and onions

In one study, planting marigolds, nasturtiums and onions with cabbage helped reduce two of its worst caterpillar pests, the cabbage looper and the imported cabbageworm. It's a single study, but it's a cheerful, pretty one to try.

Source: Mississippi State University Extension



4. Corn + beans + squash: the Three Sisters

When Cornell researcher Jane Mt. Pleasant grew this traditional Haudenosaunee planting in field trials, it produced more food energy and more protein per acre than any of the three crops grown alone. More on this beautiful story at the end of the chapter.

Source: Mt. Pleasant, *Ethnobiology Letters*, 2016

Two good habits (not measured pairings)

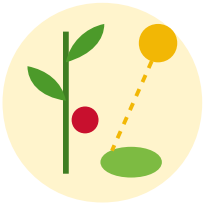
These two aren't tested pairings, but they're habits I use every season.



Habit: beans or peas near hungry neighbors

Beans and peas host bacteria in little root bumps (nodules) that turn nitrogen from the air into plant food. Research on clover and alfalfa in pastures shows living legumes can pass some nitrogen to their neighbors. I haven't found a test with garden beans, so I treat it as a good habit, not a promise.

Source: Auburn University, Alabama Cooperative Extension (pasture legumes)



Habit: tall plants + low leafy greens

Sun-loving tall plants can shade shorter neighbors, which "discourages weed growth" and keeps roots cooler (UC Master Gardeners). My rule of thumb: in a hot summer, tuck lettuce on the east side of a tall plant for afternoon shade. In my experience it lasts longer before it turns bitter.

Source: University of California Master Gardeners, Fresno County



Lettuce with sweet alyssum. Those little white flowers feed hoverflies. Their larvae hunt aphids hiding deep inside the lettuce heads.

MYTH

~~A pot of marigolds keeps harmful nematodes (tiny root worms) away from your tomatoes.~~

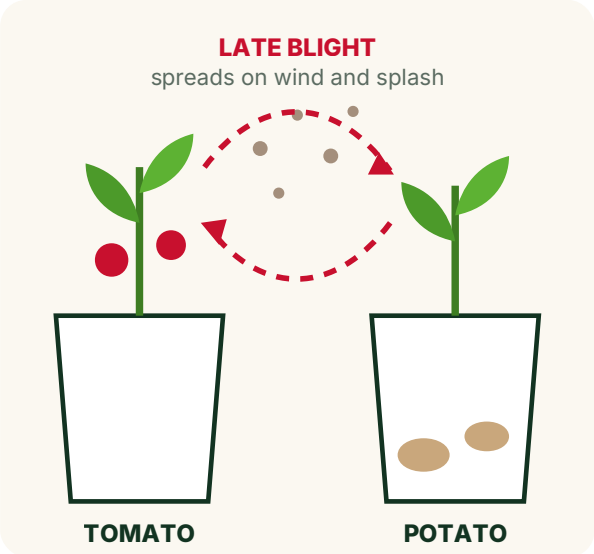
FACT

The nematode effect showed up only after marigolds were grown as a crop and the spent plants were turned into the soil, and even then "not always." A few marigolds in a pot won't do it. Plant them anyway: they're cheerful, and paired with basil they help with thrips.

THE ONE TO WATCH

Keep These Two Apart

If you remember just one "bad neighbor" rule, make it this one: **tomatoes and potatoes.** It isn't folklore. They're cousins in the same plant family, and they share some of the same diseases.



Late blight is the famous one. Penn State Extension says it "occurs worldwide where tomatoes and potatoes are grown." Its spores ride the wind and splash in rain, and infected transplants and seed potatoes are major early sources.

University of Minnesota Extension also advises not planting tomatoes where tomatoes, potatoes, peppers, eggplants or tomatillos grew in the past three or four years.

What that means in a 5-Foot Farm

1. **Separate containers.** Penn State notes late blight spores can travel by wind up to 30 or 40 miles, so a few feet of space won't stop them. But separate containers, fresh mix and clean starts lower the risk.

2. **Start clean.** Penn State advises carefully inspecting purchased transplants for disease, and notes that infected potato tubers are a major early source. Plant only firm, healthy potatoes, and grow tomatoes from seed if you like (Chapter 11).

3. **Don't follow family with family.** My rule of thumb in containers: don't plant tomatoes, potatoes or peppers in last year's tomato or potato mix. Use that mix for beans, greens or herbs instead, and give the tomatoes fresh mix.

4 **Bag it.** If a plant gets late blight, Penn State advises cutting off and bagging affected parts daily, and putting badly infected plants in a garbage bag.

DID YOU KNOW?

Peppers and eggplant belong to the same family as tomatoes and potatoes, which is why they're on the "don't follow" list too. Beans, lettuce, kale, chard and basil are from different families, so they make great "next year" crops for last year's tomato mix. Skip strawberries there: tomatoes, peppers and potatoes can leave behind a wilt disease that strawberries catch (Utah State; Ohio State). Give strawberries fresh mix.

JASON'S TIP

Don't stress about getting every pairing "right." My rule of thumb: put flowers in every container you can. A marigold at the foot of each tomato bag, sweet alyssum in the gaps of the Doormat Strip, and a nasturtium spilling over the edge. Even where the science is thin, flowers bring bees, and a farm full of color just makes you happy to step outside.

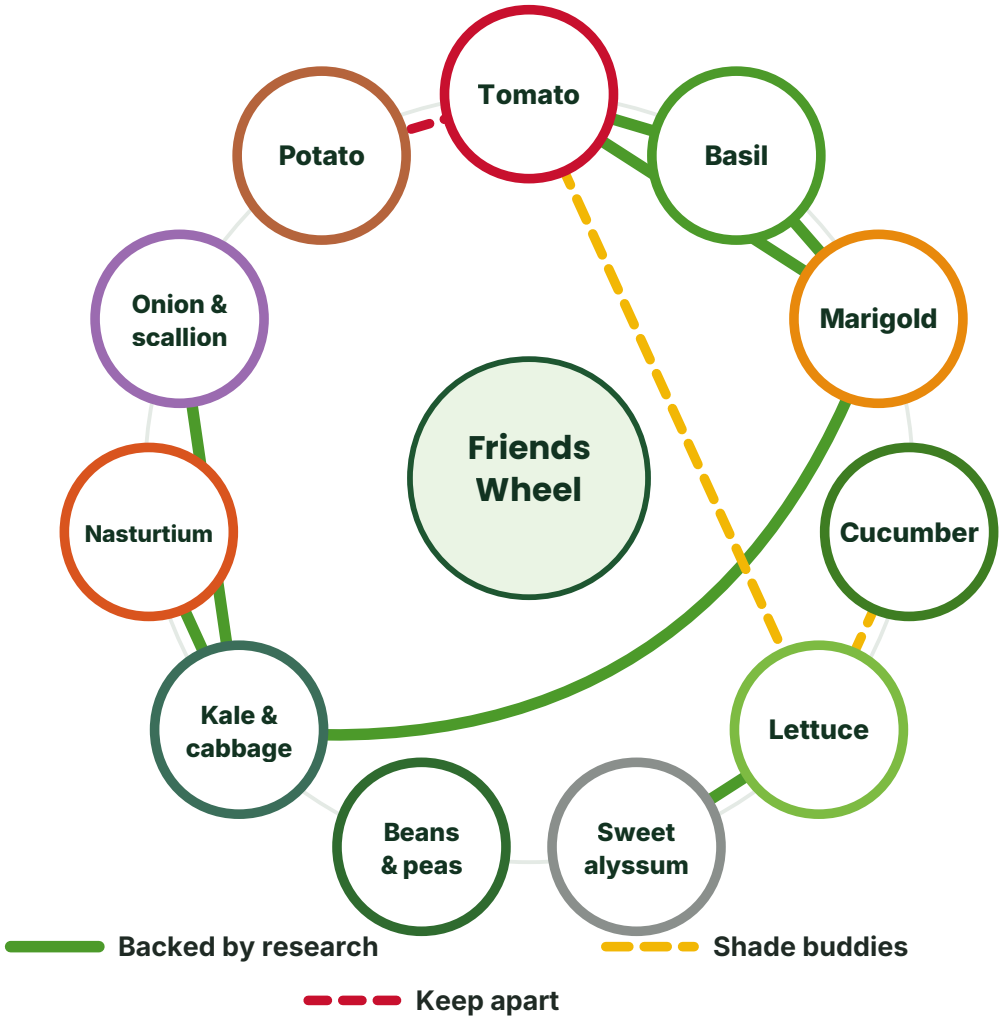
— *Jason*



Flowers in every container. Marigolds and nasturtiums at the foot of a tomato, with basil next door.

The Friends Wheel

Here's every friendship in this chapter on one page. Find a crop on the wheel and follow its lines.



Each line is explained in this chapter. No line just means no good evidence either way.

The Friends Wheel. Green lines have research behind them. Gold lines are shade buddies (a habit, not a measured pairing), and the red line is the pairing to keep apart.

The old chart, corrected

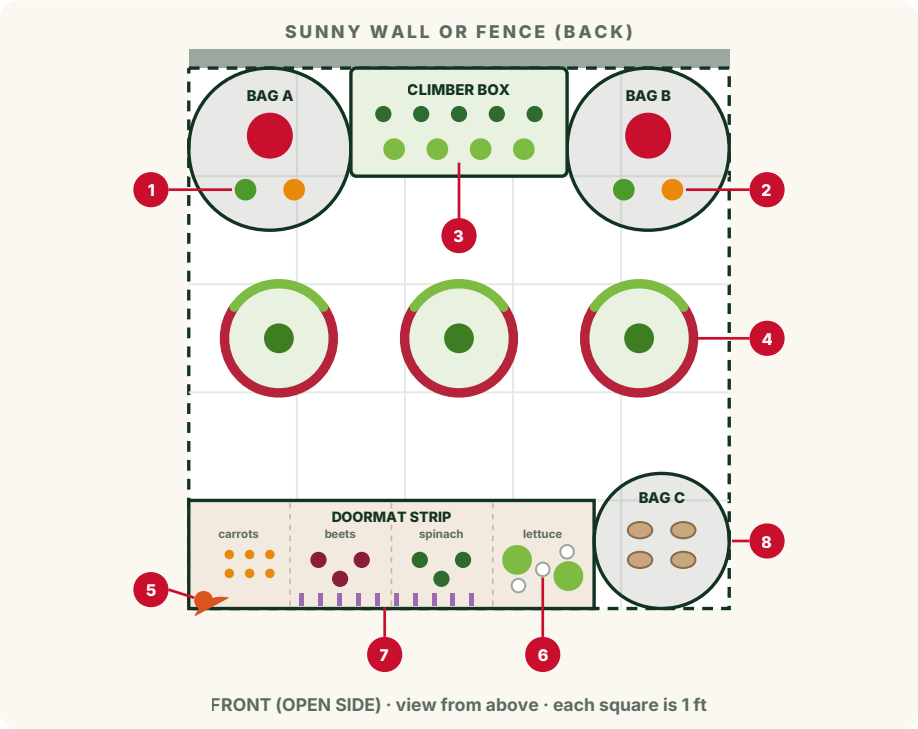
I checked every line of the first edition's chart against university research. Here's what held up.

✔ = research supports it · ○ = folklore or untested, harmless either way · ✖ = a real reason to separate. "No research found" means I looked in university and extension sources and couldn't find a test of that pairing. It doesn't prove the pairing is wrong.

PAIRING	WHAT THE OLD CHART SAID	WHAT THE RESEARCH SAYS	VERDICT
Tomato + basil + marigold	Good friends (basil)	Basil and marigolds planted together reduced thrips on tomatoes (MSU Extension).	✔ PLANT TOGETHER
Tomato + potato	Bad company	Real reason: they share late blight (Penn State, UMN).	✖ KEEP APART
Cabbage + marigold, nasturtium and onion	Good friends (onion)	One study: together they cut cabbage loopers and cabbageworms (MSU).	✔ PLANT TOGETHER
Beans/peas + cucumbers, beets, cabbage	Good friends	Pasture studies (clover, alfalfa) show living legumes can pass some nitrogen to neighbors. I found no test with garden beans and these crops.	○ YOUR CALL
Tomato + celery, onion, parsley	Good friends	I found no research testing these. Harmless if you have room.	○ YOUR CALL
Peppers + carrots, onions, basil	Good friends	No research found. Harmless.	○ YOUR CALL
Onions/garlic + beans/peas	Bad company	On almost every chart, but I found no good research.	○ YOUR CALL
Tomato or peppers + cabbage family, fennel, beans	Bad company	No good research found. Give each plant enough room and light.	○ YOUR CALL
Carrots + radishes, lettuce, peas	Good friends	No research found. I like radishes with carrots: they're picked before the carrots need the room (my practice).	○ YOUR CALL
Lettuce + sweet alyssum	(not on the old chart)	Alyssum feeds hoverflies whose larvae eat lettuce aphids (USDA-ARS).	✔ NEW FRIEND
Nasturtiums near food crops	(not on the old chart)	A common trap-crop practice (WSU Extension guide). Not a measured pairing.	○ COMMON PRACTICE

Where the friends go in your 5-Foot Farm

Here's how I tuck companions into the 100-Pound Plan from Chapter 4. Nothing here takes extra floor space. The flowers live at the edges of the bags and boxes.



Companions in the 100-Pound Plan (drawn to scale). Flowers and herbs tuck in around the food crops; the tower holes stay for food.

1 & 2 · Tomato bags A and B: basil and a marigold at the foot of each tomato (the thrips team). A 15-gallon bag has room at the rim.

3 · Climber Box: lettuce and radishes at the foot of the spring peas, then spinach after the beans in fall. The towers shade the bottom of this box around midday in spring and fall; lettuce and spinach get by on 4 to 5 hours of sun, and the peas climb above the shadow (see Chapter 4).

4 · Towers: chard on the sunny sides (red ring), spinach on the north side (light-green ring) and a pepper on top. Every hole is a food hole, so I keep the flowers off the towers.

5 · Front corner: a nasturtium spilling over the edge of the strip as a trap crop. Check it often.

6 · Doormat Strip: sweet alyssum tucked between the lettuce heads at the right-hand end (carrots, beets and spinach fill the rest).

7 · Strip edge: a row of scallions along the front. That's not a measured pairing; they just fit neatly along the edge.

8 · Bag C (potatoes): their own bag with fresh mix every year. Never plant potatoes in last year's tomato mix, or tomatoes in last year's potato mix. Late blight spores can still ride the wind, so check both crops' leaves often.

SACRIFICIAL PLANTS

Trap Crops

A trap crop is a plant you grow on purpose for the bugs. Pests go for it first, so they leave your food crop alone. Washington State University lists a few that suit small spaces:

Nasturtiums
Often used to draw aphids away from food crops. Also listed for flea beetles.

Radishes
Intercropped to trap flea beetles. Also lure root and cabbage maggots away from cabbage-family plants.

Mustard
Planted in among cabbage to attract cabbageworms.

How to use a trap crop

1. **Plant it first, or nearby.** Put the trap plant at the edge of the container or bed, close to the crop you're protecting.
2. **Check it often.** Every few days, look under the leaves. That's where aphids cluster.
3. **Remove the pests, or the plant.** Pinch off infested leaves or pull the whole trap plant. WSU warns not to leave infested trap plants unattended, or the pests will keep breeding and the problem grows.
4. **Replant.** Nasturtiums and radishes are cheap and fast. Sow another.

COMMON MISTAKE · THE FORGOTTEN TRAP

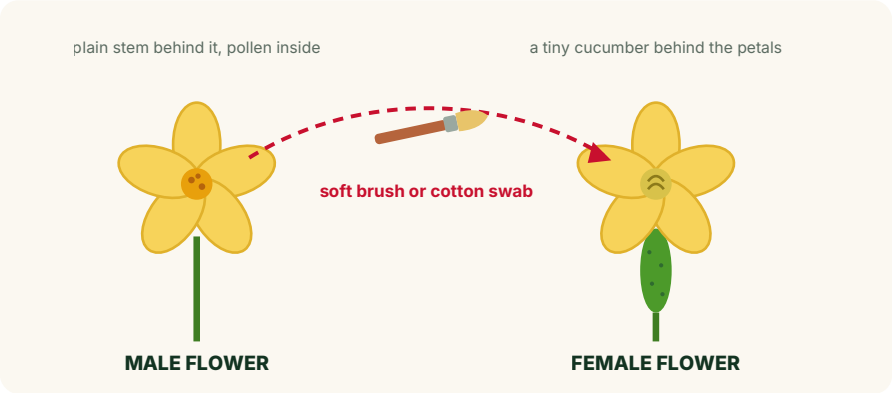
A trap crop you never check isn't a trap. It's a nursery. Five minutes a week looking under the nasturtium leaves is what makes this trick work.

BEE FRIENDS

Help for the Pollinators

Some crops can't make a single fruit without a visitor. Cucumbers are the big one. North Dakota State University Extension calls bees "the primary method of pollination for cucumbers." No bee, no cucumber: the female flower simply withers and drops off. (Some newer varieties set fruit without pollination. University of Minnesota Extension says those fruits are "seedless or nearly so." Look for "seedless" or "parthenocarpic" on the seed packet or in the catalog.)

In my experience, bees don't always find a high balcony. University of Minnesota Extension notes pollination is best between 60°F and 90°F, and many bees slow down at 90°F. That's when you can play bee yourself.



Tell them apart, then play bee. Collect yellow pollen from a male flower and dab it onto the center of a female flower (NDSU Extension).

QUICK WIN · HAND POLLINATING

1. Find a male flower (no baby fruit behind it). 2. Roll a small soft brush or cotton swab in its yellow pollen. 3. Gently dab the pollen onto the center of a female flower. I like to do it in the morning, when the flowers are wide open.

DID YOU KNOW?

UC Master Gardeners suggest mixing flowers that bloom one after another, like dill, tubular flowers and daisy-type flowers, so pollinators and helpful insects find food all season long.

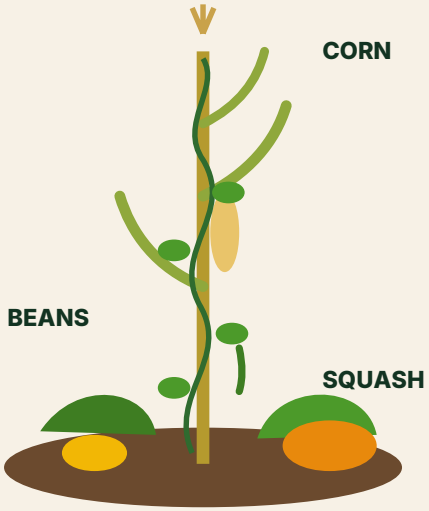
A STORY WORTH KNOWING

The Three Sisters

Long before anyone printed a companion chart, Native farmers in many parts of North America were growing corn, beans and squash together in the same mound. The Haudenosaunee (Iroquois) call them the Three Sisters.

Each sister does a job. The corn stands tall and gives the beans a pole to climb. The beans add nitrogen to the soil. The big squash leaves shade the ground, which keeps roots cooler and helps hold weeds back.

It isn't just a lovely story. When Cornell University researcher Jane Mt. Pleasant grew the system in field experiments, the Three Sisters together produced more food energy and more protein from the same land than any of the crops grown alone, or than a mix of separate single-crop plots.



JASON'S TIP

I don't grow corn in the 5-Foot Farm. Each stalk takes a lot of room for a couple of ears, and I'd rather give that space to tomatoes and greens. But I borrow the Sisters' best idea every season: something tall, something climbing and something low, all sharing one spot. That's exactly what stalk stacking is (Chapter 4).

— *Jason*

Your Plant Friends Checklist

Use this when you plant each container.

- [ ] **Tomatoes**
  Basil and a marigold at the foot of every tomato bag.
- [ ] **Lettuce**
  A few sweet alyssum plants tucked in between the heads.
- [ ] **Cabbage**
  Marigolds, nasturtiums and onions nearby. Worth a try with kale too.
- [ ] **Keep apart**
  Tomatoes and potatoes in separate containers. Don't plant the tomato family in last year's tomato or potato mix.
- [ ] **Trap crop**
  One nasturtium at a corner, checked every few days.
- [ ] **Pollination**
  No cucumbers forming? Hand pollinate with a small brush.

NEXT UP
Chapter 15: The Trouble-Shooter. How to read yellow leaves, spots and bugs, and fix them the gentle way.

SOURCES FOR THIS CHAPTER
University of Illinois Extension, "Companion Planting: Anecdotal or Tried and Tested?" (2015). · Mississippi State University Extension, "Companion Planting: Myth or Truth?" · University of California Master Gardeners of Fresno County, "Companion planting: a proven, sustainable strategy for home gardens." · USDA Agricultural Research Service, "In the Field, the Right Flower Arrangement Can Improve Organic Pest Control" (2014). · Auburn University / Alabama Cooperative Extension, "Legumes and Nitrogen" FAQ (forage and pasture legumes). · Mt. Pleasant, J., "Food Yields and Nutrient Analyses of the Three Sisters: A Haudenosaunee Cropping System," *Ethnobiology Letters* 7(1), 2016. · Penn State Extension, "Tomato-Potato Late Blight in the Home Garden." · Utah State University Extension, "Strawberries in the Garden." · Ohio State University Extension, Ohioline PLPATH-FRU-32, "Verticillium Wilt of Strawberry." · University of Minnesota Extension, "Growing cucumbers." · University of Minnesota Extension, "Growing tomatoes in home gardens"; "Aphids in home yards and gardens"; "How excessive heat affects the vegetable garden." · Washington State University Extension, "Trap Cropping." · North Dakota State University Extension, "Dakota Gardener: The birds and the bees and the cucumbers."



CHAPTER 15

The Trouble-Shooter

Every gardener gets bugs, spots and droopy leaves. Here's how to read what your plants are telling you, and fix it the gentle way.

IN THIS CHAPTER

- The 3-step detective routine and the gentle-first ladder
- Yellow leaves, white powder, rotten tomato bottoms and floppy seedlings
- Who's who in the bug world, and what to do about each one
- Squirrels and birds, plus a one-page symptom finder

First, take a breath. A few holes in a leaf don't mean your farm is failing. Every garden on earth has bugs and the odd spotted leaf, including mine, every single summer.

Most problems trace back to one of the three growth triggers from Chapter 2: light, water or food. The rest are usually a hungry bug or two. And here's some good news from University of Minnesota Extension about aphids, one of the most common pests: "In most cases they cause little or no damage to the health of plants," and treating them "is usually unnecessary." Check your plants regularly instead.

That's the spirit of this chapter. Look closely, figure out what's really going on, and start with the gentlest fix.

The gentle-first ladder

Start at the bottom rung and only climb when you need to.

5	**Targeted products, as a last resort.** Bt for caterpillars, iron phosphate bait for slugs. Always read and follow the label.
4	**Soaps and oils.** Insecticidal soap or horticultural oil, on the bugs, top and bottom of leaves. Follow the label, spray in the cool of early morning or evening, test a few leaves first, and don't spray open flowers while bees are visiting. (See the heat cautions under powdery mildew.)
3	**Barriers and traps.** Netting, row covers, mesh cages, slug traps, trap crops.
2	**Hands and water.** Pick bugs off, snip bad leaves, knock aphids off with a strong spray of water.
1	**Prevent.** Right light, steady water, good spacing, flowers for helpful insects, a quick look twice a week.

MYTH

~~See a bug? Spray it.~~

FACT

Many bugs are on your side. Lady beetles, lacewings, hoverfly larvae and tiny parasitic wasps eat aphids. University of Minnesota Extension warns that long-lasting pesticides like bifenthrin and permethrin "kill natural enemies and should be avoided."

BE A PLANT DETECTIVE

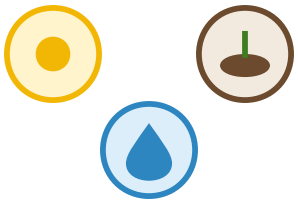
The 3-Step Routine

1 LOOK



Which leaves? Old or new? Under the leaves too.

2 CHECK



Light, water and food first (Chapter 2).

3 FIX GENTLY



Start at the bottom of the ladder.

Look, check, fix gently. Most mysteries are solved by step 2.

JASON'S TIP

Do your detective work with your morning coffee. Twice a week, I walk around the farm, flip a few leaves, and push a finger into each container. University of Minnesota Extension recommends checking tomato plants for hornworms at least twice a week in summer, and that habit catches almost everything else early too.

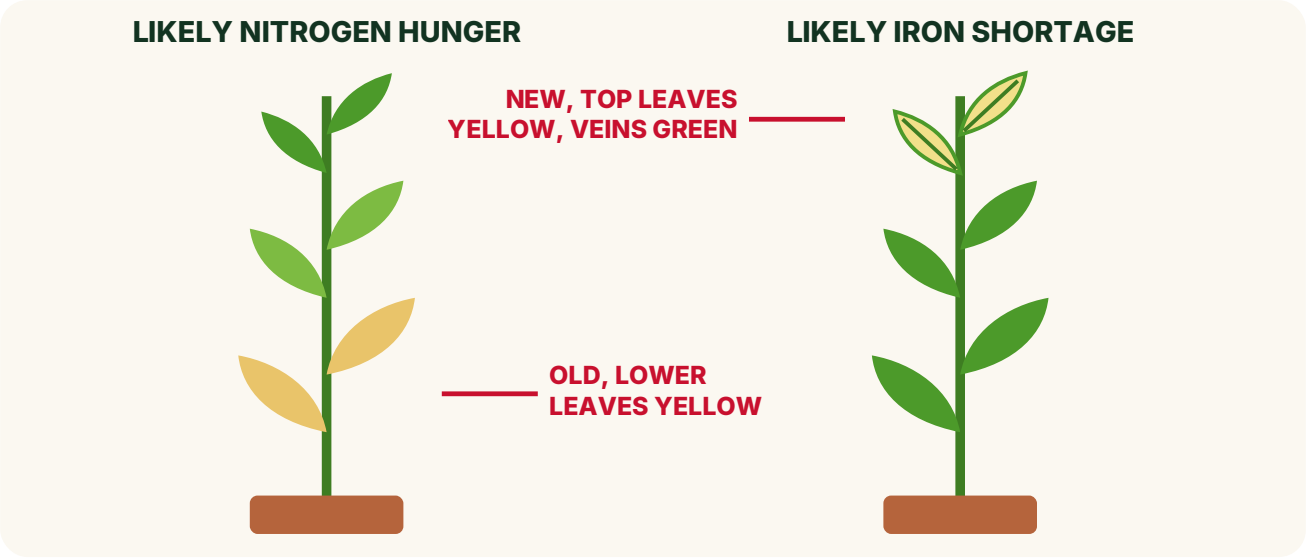
— *Jason*

LEAF PROBLEMS

Reading the Leaves

Yellow leaves: where they turn yellow is the clue

A plant short on nitrogen pulls it out of its old leaves to feed the new ones. So, as the University of Georgia explains, nitrogen hunger shows up as yellowing "typically in the older, mature foliage of the lower limbs." Iron shortage is the opposite: yellow between the veins on the *new* leaves at the top, with the veins staying green. UGA says the most common cause of iron shortage is soil that's too alkaline (high pH). Over- or underwatering can also cause it.



Old leaves or new? Based on University of Georgia Extension. Look for a pattern across several leaves, not just one.

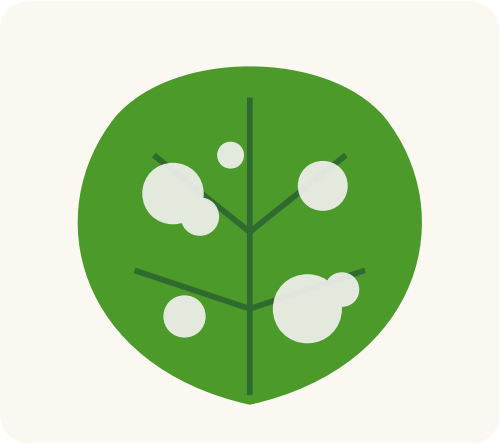
If it's the old leaves

Do the finger test first (Chapter 2): soggy mix also yellows leaves. If watering is fine, the plant is probably hungry. Feed it (see the schedule in Chapter 13).

If it's the new leaves

UGA says the most common cause is soil that's too alkaline (high pH). Over- or underwatering can also do it. Check your watering first, and use a fresh potting mix made for containers. If it keeps happening, have your mix or water pH checked through your county extension office.

White powder on the leaves



What it is: powdery mildew, a fungus. Utah State University Extension describes white-to-gray, powder-like patches on leaves, stems and even young fruit. Squash, cucumbers, peas, beans, beets, chard, kale and tomatoes can all get it.

Why it shows up: warm temperatures, humid crowded leaves and poor airflow. Outbreaks are most likely around 75–85°F with humid evenings.

What to do

1. **Space plants out.** Wider spacing lowers humidity inside the leaves.
2. **Water in the morning, at the soil.** Leaves and soil dry during the day. USU prefers drip watering where possible.
3. **Remove badly affected leaves** and throw them in the trash. USU says not to compost them, because home piles don't get hot enough to kill the fungus.
4. **Next season, choose resistant varieties.** Look for "powdery mildew resistant" in the seed packet or catalog description.
5. **Products are optional.** USU lists sulfur, plant-based and mineral oils, copper and *Bacillus subtilis* for home use. Check that the label lists your crop.

COMMON MISTAKE · SPRAYING IN THE HEAT

Utah State warns: don't apply oils above 85°F, don't apply sulfur above 80°F, and never mix oil and sulfur or use them within 2 weeks of each other. Spray on a cool morning, or not at all.

FRUIT & FLOWER PROBLEMS

When the Fruit Goes Wrong



Blossom-end rot. A dark, sunken, leathery patch on the bottom of the fruit.

Blossom-end rot

It isn't a disease or a bug. University of Illinois Extension calls it "a physiological disorder caused by low levels of calcium" in the fruit. Usually the soil has enough calcium. The trouble is getting it into the fruit, and drought, uneven watering, cold or soggy soil and too much nitrogen all get in the way.

The fix is steady water. Water deeply once fruit starts forming, and add mulch to even out moisture. Go easy on nitrogen early in fruiting.

MYTH

~~Spray calcium on the leaves and blossom-end rot goes away.~~

FACT

Illinois Extension: "Foliar applications of calcium don't help much because the calcium doesn't move into the fruit well." Affected fruit won't recover. Illinois advises removing it. Montana State says you can cut off the damaged part and eat the rest (my rule: only if there's no mold or soft rot).

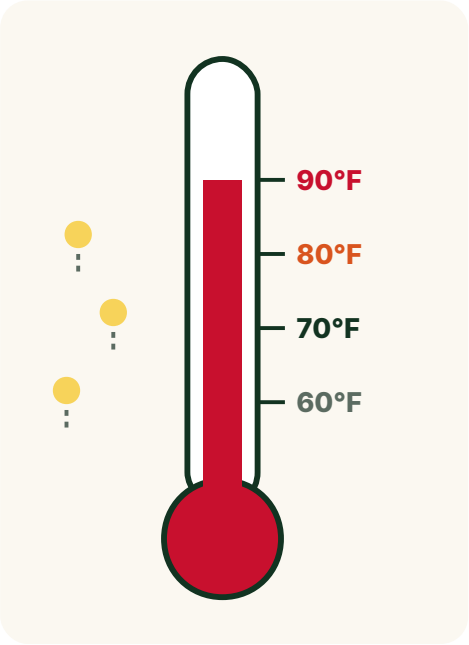
Cracks around the top

Growth cracks happen when the fruit grows too quickly, usually after heavy rain in warm weather (University of Minnesota Extension). Steady watering and mulch help. A self-watering bucket (Chapter 2) is a big help here.

Flowers but no cucumbers

Usually a pollination problem: bees aren't visiting. Hand pollinate with a small brush (see Chapter 14). Remember, cucumbers make male and female flowers, and only the females grow fruit.

Flowers falling off in a heat wave

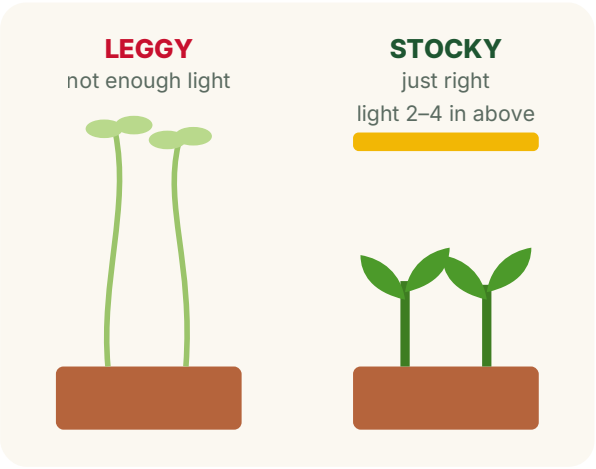


University of Minnesota Extension explains what heat does to your crops:

- **Tomatoes:** days above 85°F and nights above 70°F stress the plant, and flowers become harder to pollinate and often drop. Each round of flowers has only about a 50-hour window to be pollinated.
- **Beans:** flowers can drop above 95°F, especially in dry soil.
- **Cucumbers and squash:** days above 90°F and nights above 70°F bring more male flowers than female, so fewer fruit.
- **Bees:** pollinate best between 60°F and 90°F.

What to do: keep the soil from drying out, go easy on nitrogen, and be patient. Cooler nights usually fix it. Next year, try heat-tolerant varieties (Chapter 12 has more on beating extreme heat).

Seedling problems



Tall, pale and floppy? "Lack of light is the major cause of elongated, skinny stems" (University of Minnesota). For tube-style grow lights, keep them no more than 4 inches above the seedlings (2 inches is ideal) for 12 to 16 hours a day. Stronger LED grow lights: follow the maker's directions.

Seedlings suddenly flop over at the soil line? That's damping off, caused by fungi at the surface of the mix. Use fresh sterile seed-starting mix, keep it warm, drain extra water from the tray, and wash reused containers. Chapter 11 walks through seed starting step by step.

WHO'S WHO

The Bug Line-Up

Meet the regulars you're most likely to see in a small container farm. For each one: what to look for, what it does, and the gentlest fix that works.

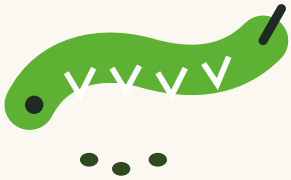


Aphids

LOOK FOR Tiny (about 2–4 mm), soft, pear-shaped bugs in clusters, often on new growth and under leaves. Green, black, red, yellow, brown or gray, with two little "tailpipes" at the rear.

DAMAGE Curled or yellow leaves, sticky "honeydew" that draws ants, sometimes black sooty mold.

FIX Knock them off with a strong spray of water. Then insecticidal soap, horticultural oil or neem, on leaf undersides too. Expect to repeat. Follow the label and spray in the cool of morning or evening. (UMN Extension)



Tomato hornworm

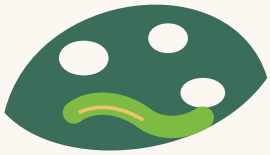
LOOK FOR A fat green caterpillar up to about 4 inches long, with white V-shaped marks along its sides and a black horn on its tail end. Dark green or black droppings on the leaves are often the first clue.

DAMAGE Can strip leaves and chew into fruit, fast. The last stage eats nearly as much as all the earlier ones combined.

FIX Handpick. UMN calls it the most effective control. Drop them in soapy water. Bt works best on very young caterpillars. (UMN Extension)

DID YOU KNOW? · LEAVE THIS ONE ALONE

See a hornworm covered in little white, rice-like cocoons? Don't pick it. Those are baby braconid wasps eating it from the inside. University of Minnesota Extension says to leave it in the garden so the adult wasps can hatch and go hunting for more hornworms. Free pest control!

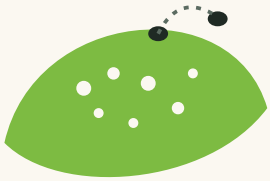


Cabbageworm

LOOK FOR A velvety green caterpillar, about an inch long when grown, often with a faint yellow-orange stripe. The parents are the white butterflies with black spots you see fluttering around kale.

DAMAGE Large, ragged holes in kale, cabbage and broccoli leaves, and green-brown droppings.

FIX Handpick. Cover young plants with floating row cover to stop egg laying. Bt or spinosad (follow the label) are "very effective." (UC IPM)



Flea beetles

LOOK FOR Tiny shiny beetles, 1/16 to 1/8 inch, that jump like fleas when you touch the plant.

DAMAGE Lots of small round "shot holes" in leaves. Common on radishes, cabbage-family greens, eggplant, peppers, tomatoes, potatoes and spinach. Seedlings suffer most.

FIX Row cover over seedlings (remove it before flowering crops bloom). Bigger plants usually shrug it off. Radishes make a good trap crop. (UMN, WSU)

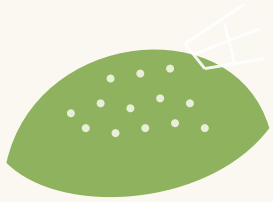


Slugs and snails

LOOK FOR Irregular holes with smooth edges, and silvery slime trails. They feed mostly at night and on cloudy days, and hide in cool shady spots by day.

DAMAGE Chewed seedlings, leaves and flowers.

FIX Hunt them after dark with a flashlight and gloves. Set boards or melon rinds as daytime traps. Copper tape around containers. Iron phosphate baits are safer around kids, pets and wildlife. UC IPM warns metaldehyde baits are "particularly poisonous to dogs and cats." (UC IPM)



Spider mites

LOOK FOR Not the bug, which is nearly invisible. Look for tiny white or yellow speckles ("stippling") and fine webbing, especially under leaves in hot, dry weather.

DAMAGE Leaves look bronzed or bleached, then dry up.

FIX A strong water spray knocks them off and washes away webbing. Insecticidal soap or horticultural oil, both sides of the leaves, repeated. Water well and mulch. Avoid long-lasting insecticides. (UMN Extension)

QUICK WIN · THE WHITE PAPER TEST

Think you've got spider mites? University of Minnesota Extension suggests holding a sheet of white paper under a speckled leaf, then shaking the leaves and looking for mites that have fallen. In my experience, if the tiny specks move, they're mites.

JASON'S TIP

My favorite pest tool is a plain garden hose with a good spray nozzle. A blast of water every couple of days takes care of most aphids and spider mites without anything else. Just do it in the morning so the leaves dry fast. Wet leaves overnight invite fungus.

— *Jason*

DID YOU KNOW?

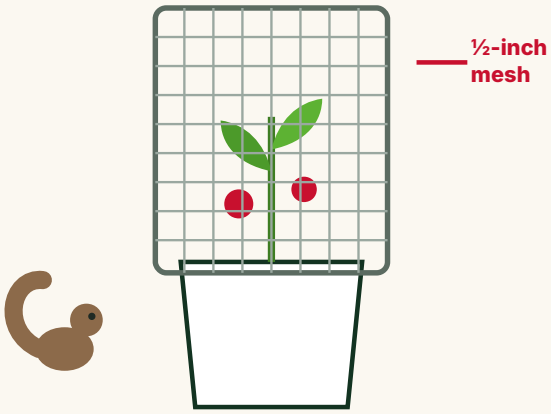
The underside of a leaf is where the action is. Aphids, spider mites and pest eggs usually hide there, out of the sun and out of sight. If you only ever look at the tops of leaves, you'll miss most of the story.

FURRY & FEATHERED

Squirrels & Birds

University of Massachusetts Extension notes that squirrels and chipmunks go mainly after tomatoes, strawberries and sprouting seeds, and leave leafy greens alone more often. Squirrels forage at dawn and dusk. Chipmunks feed during the day. Crows pull up sprouting seeds, and goldfinches go after beet and chard sprouts.

A CAGE FOR ONE CONTAINER



Barriers beat everything

Squirrels and chipmunks: fine-mesh domes or cages over single plants or small rows. UMass specifies ½-inch mesh to keep chipmunks out. Leave covers on until the crop is ready.

Birds: lightweight row cover over seedlings, and bird netting held up above fruiting crops.

Take away the snacks: bird feeders, pet food, open garbage and loose food scraps all draw critters in.

MYTH

~~A spray-on repellent or a plastic owl will keep critters away for good.~~

FACT

UMass notes that few independent studies have tested repellents, hungry animals may ignore them, and birds "acclimate quickly to scare tactics and repellents." If you try one, apply it before damage starts, reapply after rain, and make sure the label says it's safe for food crops.

The Symptom Finder

Find what you're seeing in the left column. The likely cause and the first fix are on the same line.

WHAT YOU SEE	LIKELY CAUSE	FIRST FIX	MORE
Lower, older leaves turning yellow	Hunger (nitrogen) or soggy mix	Finger test, then feed	Ch 2, 13
New top leaves yellow, veins green	Iron shortage (often alkaline mix; watering can also cause it)	Check watering, then pH	This ch.
White powdery patches	Powdery mildew	Space plants, water mornings at the soil, trash bad leaves	This ch.
Dark sunken patch on bottom of tomato	Blossom-end rot	Steady deep watering, mulch, less nitrogen	This ch.
Cracks around the top of tomatoes	Fruit grew too fast after heavy rain	Even moisture, self-watering bucket	Ch 2
Flowers drop, no fruit (hot weather)	Heat stress	Water, patience, heat-tolerant varieties	Ch 12
Cucumber flowers but no cucumbers	No pollination	Hand pollinate with a small brush	Ch 14
Tall, thin, pale seedlings	Not enough light	Lights 2–4 in above, 12–16 hrs	Ch 11
Seedlings collapse at the soil line	Damping off	Fresh sterile mix, warmth, drain trays	Ch 11
Curled leaves, sticky shine, tiny clustered bugs	Aphids	Water spray, then soap or oil	This ch.
Leaves stripped overnight, dark droppings	Hornworm (tomatoes, peppers)	Handpick (skip ones with white cocoons)	This ch.
Big ragged holes in kale or cabbage	Cabbageworm	Handpick, row cover, Bt	This ch.
Many tiny round "shot holes"	Flea beetles	Row cover on seedlings, radish trap crop	Ch 14
Smooth-edged holes, silvery trails	Slugs or snails	Night picking, traps, iron phosphate bait	This ch.
Fine speckles and webbing, hot dry weather	Spider mites	Water spray, soap or oil, water well	This ch.
Fruit missing or bitten, seeds dug up	Squirrels, chipmunks	½-inch mesh cage or netting	This ch.
Seedlings pulled up	Birds	Row cover over seedlings	This ch.

Your 5-Minute Patrol

Twice a week, with your morning coffee.

- [ ] **Flip leaves**
  Look under a few leaves on every plant for clusters, eggs, speckles or webbing.
- [ ] **Look for droppings**
  Dark pellets on tomato leaves mean a hornworm is close by.
- [ ] **Read the yellow**
  Old leaves or new? That one clue points you to food, water or pH.
- [ ] **Finger test**
  Every container, every check. Steady water helps prevent blossom-end rot and cracking.
- [ ] **Gentle first**
  Hands and water before soap. Soap before anything stronger. Always follow the label.

NEXT UP
Chapter 16: Harvest Time. When to pick each crop, how to keep it fresh, and what your harvest is worth.

SOURCES FOR THIS CHAPTER
University of Minnesota Extension: "Aphids in home yards and gardens"; "Tomato hornworms"; "Spider mites"; "Flea beetles"; "Growing tomatoes in home gardens"; "Starting seeds indoors"; "How excessive heat affects the vegetable garden." · University of California Statewide IPM Program: "Snails and Slugs" (Pest Notes); "Imported Cabbageworm" (Pest Management Guidelines, home gardens). · University of Georgia Cooperative Extension, Bulletin 1569. · Utah State University Extension, "Powdery Mildew on Vegetables." · University of Illinois Extension, "Tomato gardeners beware; blossom end rot can be prevented." · Montana State University Extension, Roosevelt County, "Blossom End Rot." · University of Massachusetts Amherst Extension, "Wildlife: Excluding and Repelling Problem Wildlife from the Garden." · Washington State University Extension, "Trap Cropping."



CHAPTER 16

Harvest Time

This is the fun part. Pick at the right moment, keep it fresh the right way, and turn it into something delicious.

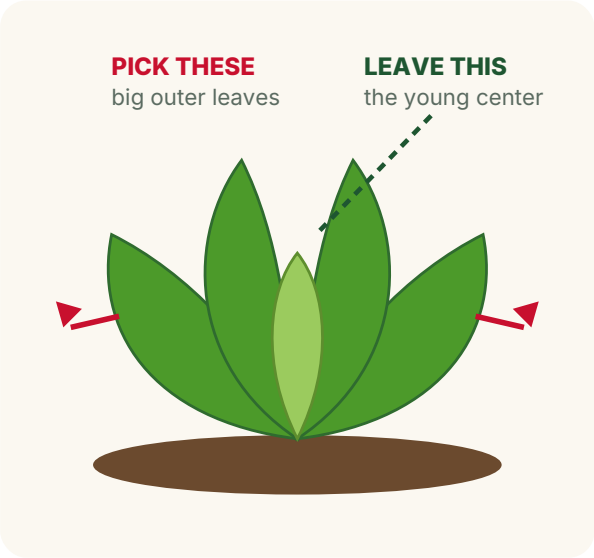
IN THIS CHAPTER

- Exactly when to pick every crop in the 5-Foot Farm
- Ripening green tomatoes indoors, the right way
- Where each crop keeps best: cool spot, fridge or dark closet
- Six simple recipes, and what your harvest is worth at the store

There's nothing like it. You step outside in your slippers, snip a handful of lettuce, pull a few radishes, pick a warm cherry tomato and pop it straight in your mouth. That's the moment all the planning was for.

Picking at the right time makes a bigger difference than most people think. Leave beans too long and the seeds swell inside the pods. Let basil flower and the plant slows down. Pick tomatoes at the first blush of pink and they'll finish ripening safely on your counter, out of reach of birds and squirrels.

And many crops in a small farm aren't "one and done." Leaf lettuce, spinach and Swiss chard can be picked again and again, a few leaves at a time. New Mexico State University Extension lists all three as crops you can harvest repeatedly.



Cut-and-come-again

For leaf lettuce, spinach, kale and chard, pick the big outer leaves and leave the young center growing. NMSU notes that pinching older outer leaves of spinach near the base lets you harvest many times, and that cutting just above the growing point lets it regrow.

Do this every few days and a single tower of greens keeps feeding you for weeks.

QUICK WIN · YOUR HARVEST KIT

Keep three things by the back door: a big bowl or basket, a pair of clean kitchen scissors or garden snips, and a kitchen scale. My rule of thumb: snip, don't yank. Pulling can tear stems and tug at roots. The scale is for the fun part at the end of this chapter.



READY OR NOT

When to Pick Each Crop

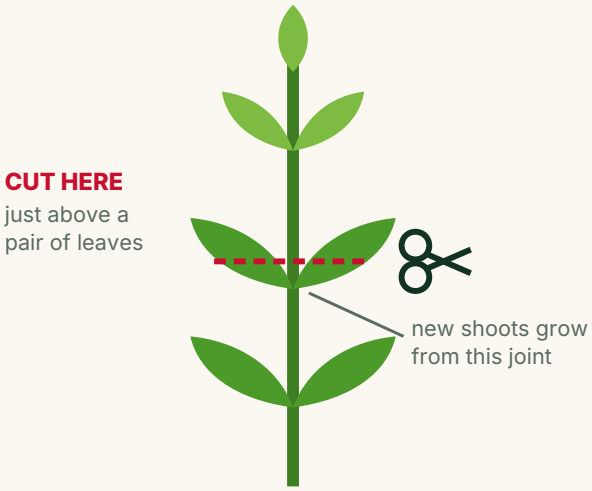
Here's the picking guide for every crop in the Master Plan. Unless noted, these come from New Mexico State University Extension's harvest guide.

CROP	IT'S READY WHEN...	HANDY TIP
Tomatoes	At the pink stage or beyond, while the fruit is still firm.	Tomatoes picked at the pink stage finish ripening indoors.
Peppers	Full size, firm and crisp. Pick green, or leave on the plant to reach its mature color.	Fully colored peppers are sweeter.
Leaf lettuce	Outer leaves any time. Whole plant before hot weather arrives.	Cut-and-come-again.
Spinach	Pinch older outer leaves, or cut just above the growing point to regrow.	Many harvests from one planting.
Kale	Young plants, or the lower leaves of older ones, while young and tender.	Flavor improves in cool weather.
Swiss chard	As soon as leaves are big enough.	Keeps going all summer and into fall.
Bush & pole beans	Full-length pods with small seeds, before bumps show along the pod.	Bumpy pods mean you waited too long.
Shelling peas	Bright green, pods fully developed but still tender. Peas taste sweet raw.	Taste one. Sweet means ready.
Snap & snow peas	Pods fully developed, before the seeds inside reach half their full size.	Eat pod and all.
Cucumbers	Slicers 5 to 8 inches long and 1½ to 2½ inches wide, before any yellow.	Pickling types at any size you like.
Radishes	As soon as roots reach eating size.	Check every few days.
Carrots	About ¾ to 1½ inches across the top, depending on variety.	Brush soil back to peek.
Beets	1½ to 2 inches across.	The tender tops are good greens.
Green onions	Before they get thicker than ½ inch.	Eat both the green and white parts.

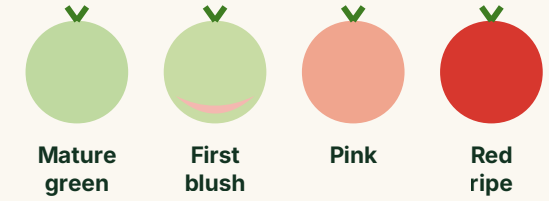
CROP	IT'S READY WHEN...	HANDY TIP
Potatoes	"New" potatoes at any early stage. Storage potatoes after the vines yellow or die.	Skin rubs off? Wait a week (OSU).
Sweet potatoes	Before frost, or before the soil cools to about 55°F (Penn State).	Must be cured first (see storage).
Basil	Any time. Cut stems just above a pair of leaves (UMN).	Don't let it flower: yields drop.
Strawberries	When the berries are red. Check plants every day once color starts (UMN).	Pick dry, chill right away.

Two small skills that pay off all summer

PINCHING BASIL



TOMATO RIPENING STAGES



Before frost, even mature green ones can come inside.

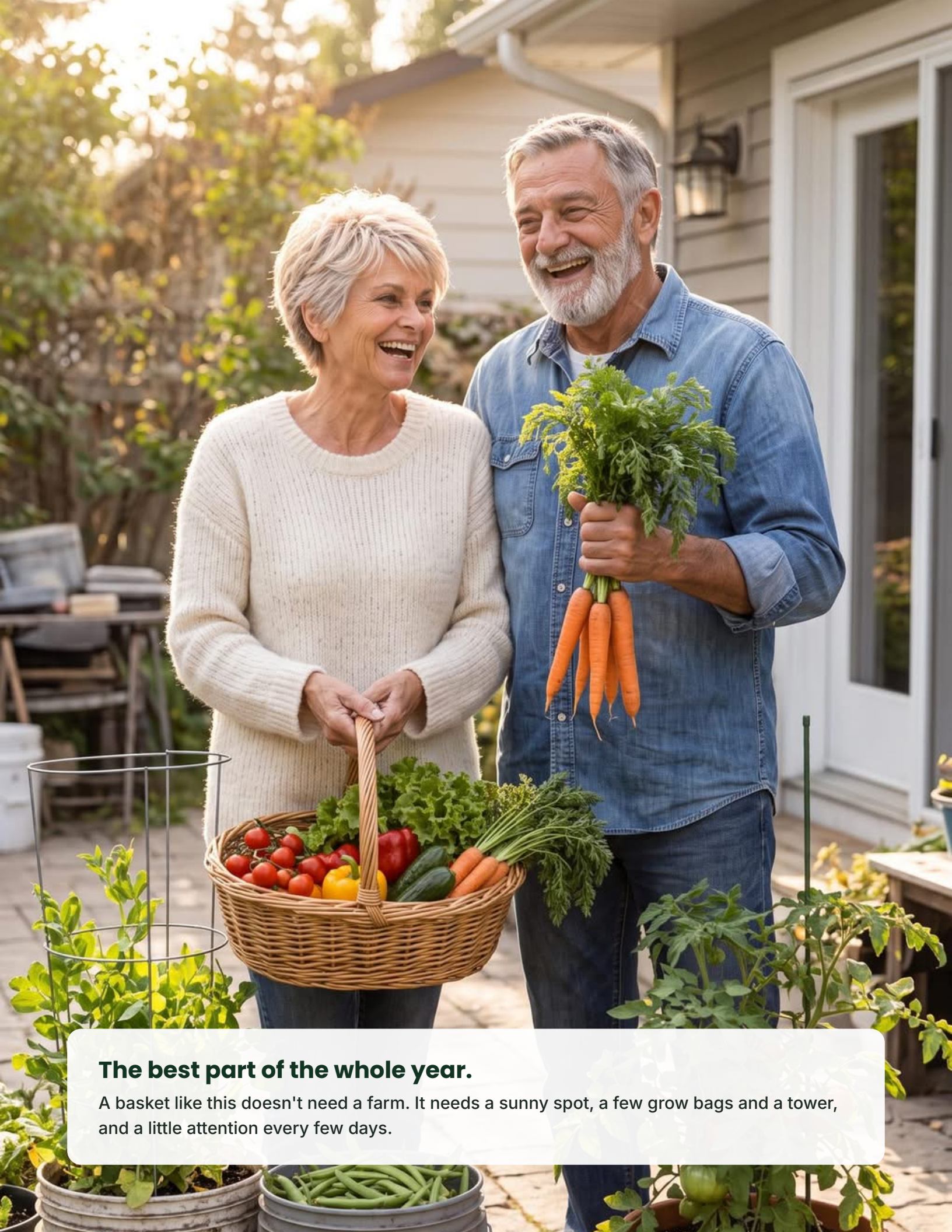
Basil. Cut just above a pair of leaves. University of Minnesota Extension says new growth shows within about a week.

Tomatoes. University of Minnesota Extension: fruit picked when the green is fading and turning white or pink "should not disappoint."

JASON'S TIP

Pick on a schedule, not a whim. I do a quick harvest walk every other morning with a bowl and a pair of kitchen scissors. Beans and cucumbers can go from perfect to past it in just a few days, so a regular walk means nothing gets away from you.

— *Jason*



The best part of the whole year.

A basket like this doesn't need a farm. It needs a sunny spot, a few grow bags and a tower, and a little attention every few days.

ON THE COUNTER

Ripening Tomatoes Indoors

When frost is coming, or when birds and squirrels start taking bites, bring your tomatoes inside to finish. Ripening fruit gives off a natural gas called ethylene that helps itself and its neighbors ripen. Here's how the university experts do it.



A ripening box. A single, spaced-out layer at room temperature, out of direct sun. A ripe banana adds a little extra ethylene.

1. **Pick the right ones.** Fruit that's starting to turn white or pink ripens best (UMN). Full-size, glossy "mature green" fruit from healthy vines will ripen too (Iowa State). Fruit that's fully green and not yet full size often won't ripen to good flavor.

2. **Keep them at room temperature.** At 65–70°F, mature green tomatoes ripen in about two weeks. At 55°F ripening slows and quality suffers. (Iowa State, Cornell)

3. **Keep them out of direct sun.** Warmth matters more than light. They can even ripen in the dark. (UMN, Iowa State)

4. **Spread them out.** Iowa State says one or two layers deep in a box. University of Minnesota prefers a single layer with the fruit not touching, which also makes soft ones easy to spot.

5. **Speed it up if you like.** Add a ripe tomato, a banana or an apple to the box for more ethylene. A few fruit can go in a paper bag. (Cornell)

6. **Check every couple of days.** Eat the ripe ones, and remove any that soften or spoil.

MYTH

~~Line green tomatoes up on a sunny windowsill to ripen.~~

FACT

University of Minnesota Extension says "warm temperatures are more important than light in ripening the fruit." Iowa State advises keeping fruit out of direct sunlight. A box on the counter beats a hot windowsill.

COMMON MISTAKE · THE FRIDGE

Don't refrigerate tomatoes you want to taste good. Iowa State notes ripe tomatoes keep about a week in the fridge "but will lose their flavor," and University of Minnesota Extension warns that temperatures below 40°F cause loss of color, firmness and flavor. A cool spot around 55°F is ideal for ripe ones.

DID YOU KNOW?

Handling matters. University of Minnesota Extension notes that the less you bruise, nick or break your produce, the longer it keeps. And never store a rotting vegetable with good ones, because the rot spreads.

KEEP IT FRESH

Cool Spot, Fridge or Dark Closet?

Every crop has a favorite spot. Put it in the wrong one and it wilts, pits or loses its flavor. Here's where each Master Plan crop keeps best, based mostly on University of Minnesota Extension's storage guide.

COOL SPOT · ABOUT 55°F



- **Tomatoes:** don't refrigerate. About 5 days.
- **Peppers:** pit below 45°F. About 2 weeks.
- **Cucumbers:** about 1 week. Keep away from apples and tomatoes.

FRIDGE · COLD & MOIST



- **Lettuce:** about 1 week. **Spinach:** about 10 days.
- **Snap beans and peas:** about 1 week.
- **Carrots, beets, radishes:** cut the tops off first. Carrots keep for months, radishes about a month.
- **Strawberries:** pick dry, chill right away, eat soon.

DARK & COOL (NOT THE WARM PANTRY)



- **Potatoes:** cure 7–10 days in a dark, airy spot, then store dark at 40–46°F: a cold garage, basement or the fridge. Below 38°F they turn sweet. (OSU)
- **Sweet potatoes:** cure first (below), then a cool closet at 55–60°F for 3–6 months. Never refrigerate. (Penn State)
- **Onions:** cure at room temperature 2–4 weeks, then cold and dry.

Basil is the odd one out: keep it at room temperature with its stems in a glass of water. The fridge turns it dark. About 5 days (UMN).

Curing sweet potatoes

Penn State Extension: hold freshly dug roots at 80–85°F and 85–95% humidity for 4–7 days. Brush off soil, don't wash, and handle gently. Curing heals nicks and improves flavor. Below about 50–55°F they suffer "chilling injury," with hard centers and off-flavors.

Green potatoes

Light turns potato skins green. Oregon State University Extension explains that the green itself is harmless chlorophyll, but it "often signals the presence of solanine," a toxic compound. Store potatoes in the dark, and throw out heavily greened ones.

Too much at once? Save it for later

A good problem to have. Here are the easiest, safest ways to stretch a big harvest.

Freeze basil

University of Minnesota Extension calls freezing the better method for basil: whole leaves in bags, chopped leaves in ice cube trays, or frozen in oil. Use within a year.

Dry herbs

Hang small bunches or lay leaves on a rack in a warm, dry, airy room for about a week. Store airtight, away from heat and light. Dried basil keeps about a year (UMN).

Quick fridge pickles

No canning needed, but they must stay in the fridge. A recipe from the Wisconsin Safe Food Preservation Series (University of Wisconsin–Extension) says to store them at 40°F or colder for up to 2 weeks. Recipe below.

SAFETY FIRST · GARLIC, HERBS & OIL

Fresh garlic or herbs in oil, including homemade pesto, can grow botulism bacteria if left out. Oregon State University Extension says pesto "must be refrigerated and used within 4 days or frozen for long-term storage." Never keep homemade garlic or herb oil at room temperature.

WANT TO CAN?

Canning is a wonderful skill, but home canning must follow tested recipes and processing times exactly. I don't give canning times in this book. For tested, research-based recipes, go to the National Center for Home Food Preservation at **nchfp.uga.edu**, or call your county extension office.

FROM FARM TO TABLE

Six Simple Recipes



One harvest, four dishes. Salsa, garlicky greens, quick-pickled radishes and pesto, all from the 5-Foot Farm.

Garden Salsa

MAKES ABOUT 2½ CUPS · 15 MINUTES · NO COOKING

YOU'LL NEED

- 2 cups chopped ripe tomatoes
- ½ green pepper, finely chopped
- 3 green onions, sliced
- 2 Tbsp chopped cilantro
- Juice of 1 lime
- ½ tsp salt

STEPS

1. Chop everything into small, even pieces.
2. Stir it all together in a bowl with the lime juice and salt.
3. Let it sit 10 minutes so the flavors mingle. Taste and add salt if needed.
4. Serve with chips, eggs or grilled fish. Refrigerate leftovers within 2 hours and eat within 3 to 4 days (USDA).

Garlicky Greens

SERVES 2–3 · 10 MINUTES · KALE, CHARD OR SPINACH

YOU'LL NEED

- 1 big bunch kale or chard (about 8 cups chopped)
- 2 Tbsp olive oil
- 2 garlic cloves, thinly sliced
- Pinch of red pepper flakes (optional)
- Squeeze of lemon or splash of vinegar
- Salt to taste

STEPS

1. Strip leaves from tough stems. Chop chard stems small. They're delicious.
2. Warm the oil in a big skillet over medium heat. Cook the garlic (and chard stems) about 1 minute.
3. Add the leaves with the water still clinging from washing. Stir until wilted, 3–5 minutes.
4. Finish with lemon or vinegar and a pinch of salt.

Quick Pickled Radishes

MAKES ABOUT 1 PINT · 10 MINUTES + CHILLING · REFRIGERATOR ONLY

YOU'LL NEED

- About 2 cups thinly sliced radishes
- 1 cup vinegar labeled 5% acidity (white or cider)
- ½ cup sugar
- 1 Tbsp + 1 tsp canning salt
- A clean pint jar with a lid

STEPS

1. Pack the radish slices into the jar.
2. Heat vinegar, sugar and salt in a small pan, stirring until dissolved.
3. Pour the hot liquid over the radishes to cover. Cool, lid, and refrigerate.
4. They're tasty by the next day.

These are not canned. Keep them in the fridge at 40°F or colder and eat within 2 weeks. (Adapted from a Wisconsin Safe Food Preservation Series refrigerator pickle recipe written for cucumbers and other vegetables, not radishes. The ratios and storage are the same.)

JASON'S KITCHEN TIP

Treat these recipes as starting points and use whatever is ready. Chard instead of kale. Snap peas in with the green beans. And that pickle brine works for sliced cucumbers too: the Wisconsin recipe it's based on was written for cucumbers in the first place. Same rule applies: fridge only, eat within 2 weeks.

— Jason

Fresh Basil Pesto

MAKES ABOUT 1 CUP · 10 MINUTES · BLENDER OR FOOD PROCESSOR

YOU'LL NEED

- 2 cups packed basil leaves
- ⅓ cup walnuts or pine nuts
- ½ cup grated Parmesan
- 2 garlic cloves
- ½ cup olive oil
- Pinch of salt

STEPS

1. Pulse basil, nuts and garlic until finely chopped.
2. With the machine running, pour in the olive oil.
3. Stir in the Parmesan and salt.
4. Toss with hot pasta, spread on toast, or swirl into soup.

Refrigerate and use within 4 days, or freeze in an ice cube tray for later (Oregon State University Extension).

Roasted New Potatoes & Green Beans

SERVES 3–4 · 35 MINUTES · ONE PAN

YOU'LL NEED

- 1 lb small new potatoes, halved
- ½ lb green beans, ends snapped off
- 2 Tbsp olive oil
- Salt and pepper
- A few chopped herbs (parsley, chives or basil)

STEPS

1. Heat the oven to 425°F.
2. Toss potatoes with half the oil, salt and pepper. Roast on a sheet pan for 20 minutes.
3. Toss the beans with the rest of the oil, add them to the pan, and roast 10–15 minutes more, until the potatoes are golden and tender.
4. Scatter the herbs on top and serve.

Fried Green Tomatoes

SERVES 3–4 · 25 MINUTES · THE END-OF-SEASON TREAT

YOU'LL NEED

- 3 firm green tomatoes, sliced ¼ inch thick
- ½ cup flour
- 1 egg beaten with 2 Tbsp milk
- ½ cup cornmeal
- Salt and pepper
- Oil for frying

STEPS

1. Season the slices with salt and pepper.
2. Dip each slice in flour, then egg, then cornmeal.
3. Heat about ¼ inch of oil in a skillet over medium heat. Fry 2–3 minutes per side until golden.
4. Drain on paper towels and serve hot.

AT THE STORE

What Your Harvest Is Worth

Here's a fun way to see your farm: what would that same food cost at the store? The U.S. Department of Agriculture and the Bureau of Labor Statistics both track average grocery prices. This chart shows what one pound of each crop costs, on average, across the country.



Not all crops are equal. Strawberries are priced from the BLS's 12-ounce pint ($2.84), converted to a pound. Most prices are 2023 USDA averages; four are September 2026 BLS averages. Prices vary a lot by region, store and season, and organic produce usually costs more.

QUICK WIN · USE YOUR OWN STORE'S PRICES

National averages are just a starting point. For the truest number, use what your own grocery store charges per pound.

> *Grow the food that's expensive to buy and quick to pick. In a small space, that's where your harvest is worth the most.*

Look at the top of that chart: spinach, cherry tomatoes, strawberries, kale, lettuce and green beans. Every one of them grows beautifully in a grow bag, a tower or the Doormat Strip. Potatoes and bulb onions are cheap at the store. If space gets tight, you could give their room to greens (that trades pounds for dollars: the 100-Pound Plan counts on Bag C's potatoes). Carrots and scallions in the Doormat Strip are still worth it for flavor and freshness.

A quick example

Say your two tomato bags give you 30 pounds of tomatoes (15 per plant, the middle of Cornell University's 10 to 20). At the September 2026 BLS average for field-grown tomatoes, $1.99 a pound, that's about **$60** worth of tomatoes. Add the three peppers on the tower tops at Cornell's 4 pounds per plant: 12 pounds at the 2023 USDA average of $1.50 a pound for green peppers is another **$18**. This is just an example to show how the math works, not a promise. Your own harvest depends on your sun, your season and your care. Chapter 4 has the 100-Pound Plan's yields crop by crop.

Your harvest value tracker

Weigh what you pick on a kitchen scale and jot it down. At the end of the season, multiply by the price and add it up. It's surprisingly motivating. (More printable logs are at the back of the book.)

CROP	POUNDS PICKED	PRICE PER POUND	VALUE
Example: tomatoes	30	$1.99	$59.70
		SEASON TOTAL	

Your Harvest Checklist

Every other morning, bowl and scissors in hand.

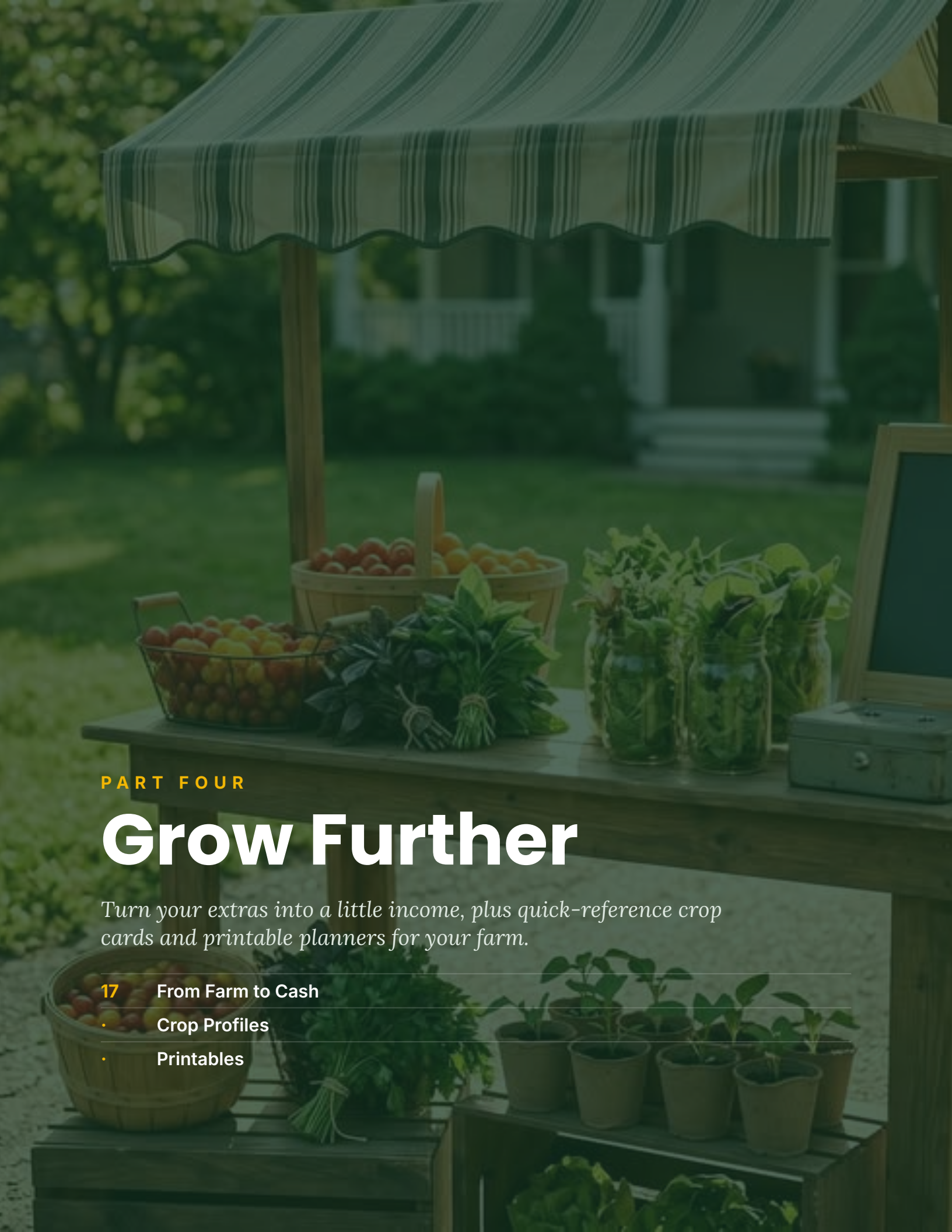
- [ ] **Greens**
  Outer leaves only. Leave the center to keep growing.
- [ ] **Beans, cucumbers, radishes**
  Pick young and often, at the sizes in the picking guide.
- [ ] **Tomatoes**
  Pink and firm is perfect. Finish ripening on the counter, out of the sun, never in the fridge.
- [ ] **Basil**
  Cut above a pair of leaves. Pinch off flowers.
- [ ] **Store it right**
  Cool spot, fridge, or dark and cool. See the storage chart.
- [ ] **Weigh it**
  Log your pounds in the harvest value tracker.

NEXT UP
Chapter 17: From Farm to Cash. How to turn your extra seedlings, herbs and produce into a little side income.

SOURCES FOR THIS CHAPTER

New Mexico State University Extension, Guide H-216, "When to Harvest Vegetables." · University of Minnesota

Extension: "Growing tomatoes in home gardens"; "Harvesting and storing home garden vegetables"; "Growing basil"; "Growing strawberries in the home garden." · Iowa State University Extension, AnswerLine, "Ripening Tomatoes and Green Peppers Indoors" (2013). · Cornell Cooperative Extension, "Ripening green tomatoes indoors" (2021). · Penn State Extension, "Sweetpotato Curing and Storage." · Oregon State University Extension: "Best practices for harvesting and storing homegrown potatoes"; "Herbs and Vegetables in Oil" (SP 50-701). · Wisconsin Safe Food Preservation Series (University of Wisconsin–Extension; series author Barbara H. Ingham, UW–Madison food science), No. 52, "Cucumber pickles with onions or vegetable medley" (copy hosted at class.ucanr.edu). · USDA Food Safety and Inspection Service, "Leftovers and Food Safety." · S. Reiners, "Recommended Spacing & Expected Yield for Garden Vegetables in New York," Cornell Cooperative Extension (2017). · National Center for Home Food Preservation, nchfp.uga.edu. · USDA Economic Research Service, "Fruit and Vegetable Prices" (2023 data, Circana retail scanner data). · U.S. Bureau of Labor Statistics, Average Retail Food and Energy Prices, U.S. city average, September 2026.



PART FOUR

Grow Further

Turn your extras into a little income, plus quick-reference crop cards and printable planners for your farm.

17 From Farm to Cash

· Crop Profiles

· Printables



CHAPTER 17

From Farm to Cash

Your little farm can do more than feed you. With a few extra seeds and a folding table, it can put a little money back in your pocket, and make you some friends along the way.

IN THIS CHAPTER

- Five ways a doormat-sized farm can pay you back
- The 15-minute rules check before you sell anything
- How to price like a good neighbor (with a worksheet)
- The Garden Share: free help, free buckets, free everything

Here's a funny thing about growing food. Sooner or later you'll have more than you can eat. Three cherry tomato plants in July will see to that. You can give the extra away (I do plenty of that), or you can turn it into a small "secret" income stream that pays you back in cash.

Let me be straight with you, the way I'd want someone to be straight with me. A 5-foot farm isn't going to replace a paycheck. What it **can** do is pay for your seeds and soil, buy a few nice dinners, and put some fun money in a coffee can. For a lot of folks, that's the most satisfying money they make all year.

MYTH

~~You need a real farm and a business license to sell anything you grow.~~

FACT

Many small growers start with a table at the end of the driveway. Some things are simple to sell, others need a permit. The rules depend on what you sell and where you live, and I'll show you exactly how to check yours.

Five ways your farm can pay you back



WAY #1

Seedlings

Start a few more tomato, pepper and herb plants than you need, using the method in Chapter 11. In spring, neighbors who want a garden but missed seed-starting season will be glad to have them. Check your state's plant rules first (see the rules check).



WAY #2

Herb bundles

Basil, parsley and chives grow back after you cut them. A twine-tied bundle of fresh herbs is pretty, light and easy to hand across a table.

WAY #3

Microgreens

Tiny, tender seedlings you cut and sell by the box. They're ready in about 1 to 3½ weeks (7 to 25 days), and they grow on a kitchen counter.

WAY #4

Extra produce

A basket of cherry tomatoes, a bag of salad greens, a bunch of chard. Sell or swap what you can't eat before it goes soft.

WAY #5

Swaps and barter

Not every payment comes in cash. Trade your tomatoes for a neighbor's eggs, your basil for a loaf of bread, your extra seedlings for a ride to the doctor. Swaps keep money in your pocket just as surely as sales put it there. Many of my best "sales" never involved a dollar.

THE FASTEST CASH CROP

Microgreens



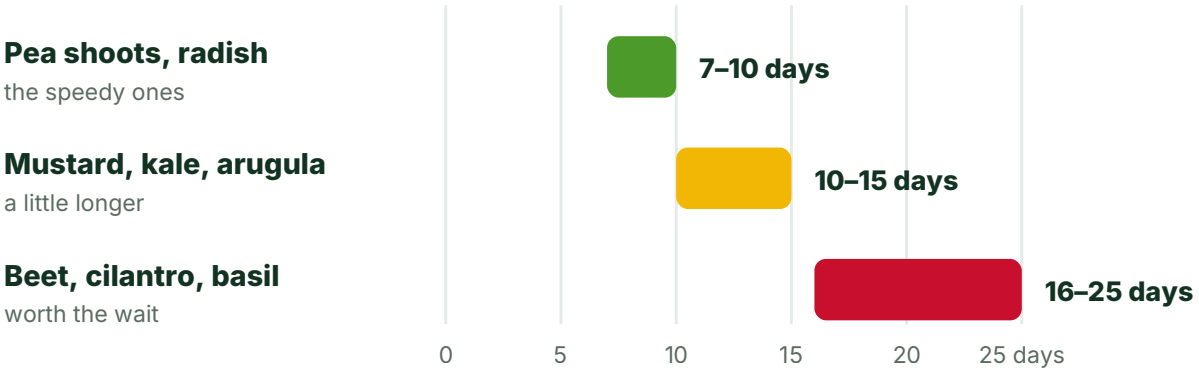
Harvest day. Microgreens are cut once with sharp scissors.

Mississippi State University Extension describes microgreens as "young, immature, densely grown seedlings of selected vegetables and herbs." You sow seed thickly in a shallow tray, give it light, and snip the whole tray in one go.

They're the speediest crop in this book. Depending on what you grow, harvest comes about **1 to 3½ weeks (7 to 25 days)** after the seeds sprout, and you don't need a yard, a balcony or even good weather.

Chapter 8, The Apartment Farm, shows you how to grow them step by step. Here's why they belong in a chapter about cash.

DAYS FROM SPROUTING TO HARVEST



Pick your speed. Approximate days from sprouting to harvest, from Mississippi State University Extension, Publication 2857.

Why chefs like them

A University of Florida Extension guide on microgreens noted that their commercial sales mainly go to "restaurant chefs or upscale grocery stores." That guide reported prices of $30 to $50 a pound back in 2010. Prices change, so treat that as history, not a promise, and ask locally.

Handle them like salad

Microgreens are fresh food, and they're very perishable. The Florida guide says to wash and cool them "as quickly as possible," and Mississippi State advises keeping them in a bag or container in the refrigerator.

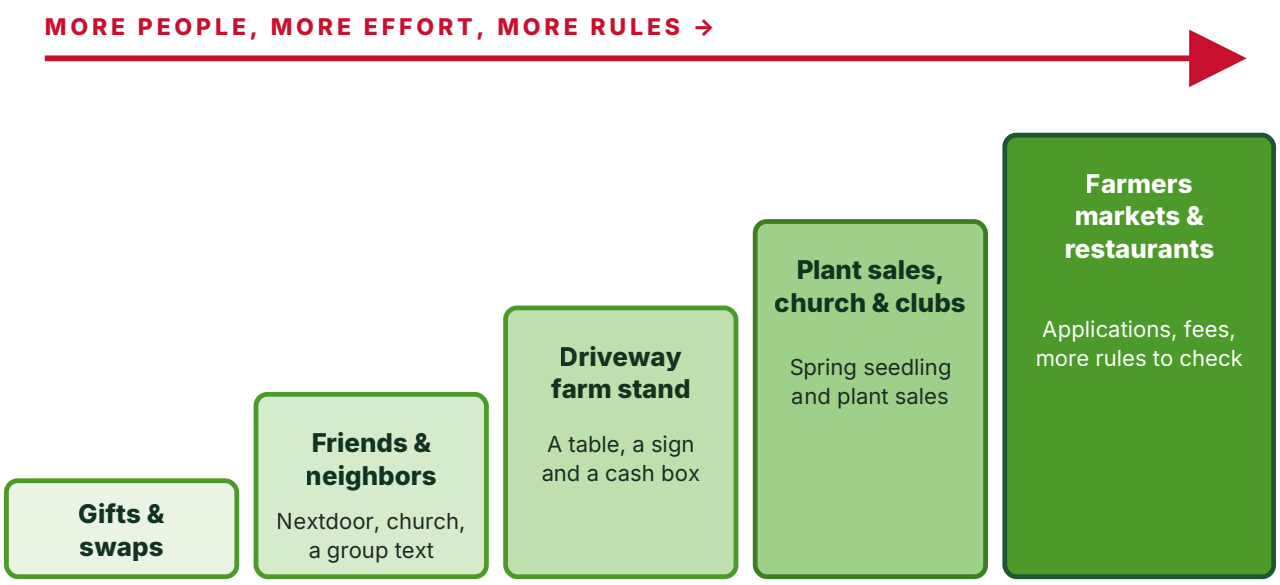
JASON'S TIP · START WITH ONE TRAY

Grow one tray of radish or pea shoots for yourself first. Once you've done it twice and know how much one tray gives you, take a sample box to the chef at a local café. A free taste does the selling for you.

— *Jason*

Where to sell (from easiest to biggest)

You don't have to start big. In fact, please don't. Start at the bottom step, and climb only if you're having fun.



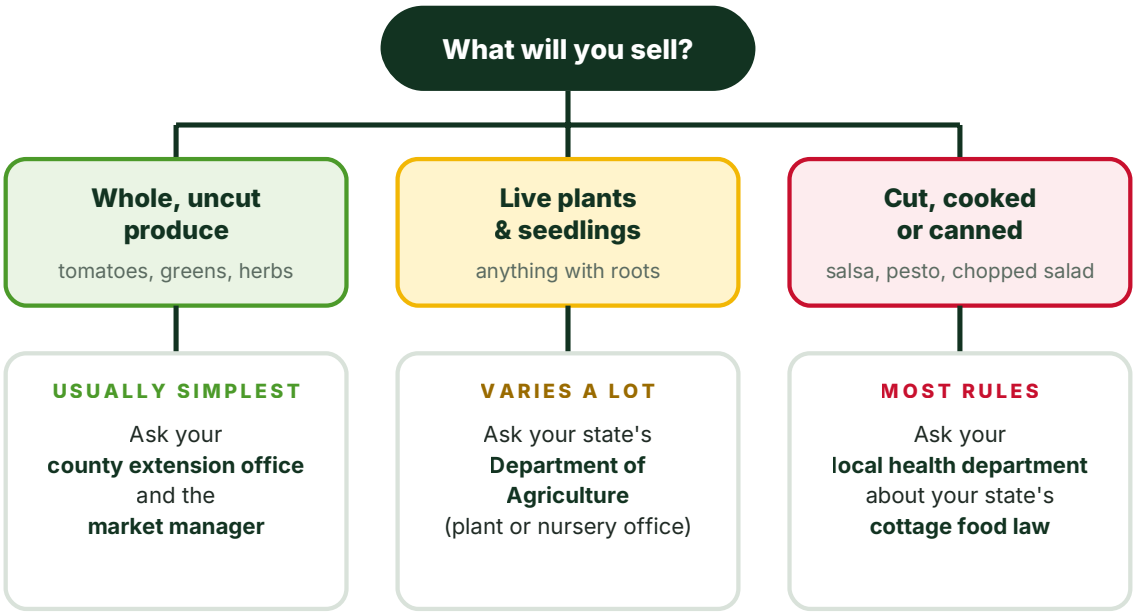
The selling staircase. My own rough guide to where small growers usually start. The rules to check grow with each step (see the next pages).

Where	Best for	Ask before you start
Neighbors & friends	Extra produce, herb bundles	Nothing fancy. Keep it friendly and fresh.
Driveway farm stand	Cherry tomatoes, greens, herbs, seedlings in spring	Your city or HOA rules on signs and stands; whether plants need a license in your state
Plant sales (church, club, school)	Tomato, pepper and herb seedlings	The organizer, and your state's plant rules
Farmers market	A little of everything	The market manager: each market sets its own application, fees and what you may sell
Restaurants & cafés	Microgreens, herbs	The chef (ask whether their health inspector needs anything from you); your local health department

BEFORE YOU SELL

The 15-Minute Rules Check

Here's the honest truth: **the rules for selling food and plants vary from state to state**, and sometimes from county to county. Nobody can give you one answer for the whole country, and I won't pretend to. What I can give you is a quick way to find *your* answer, plus a few real examples so you know what to ask.



Selling anything? Also ask your state revenue office whether sales tax applies.

Who to ask, by what you sell. This tells you who to call, not what the answer will be. Rules differ by state.

COMMON MISTAKE · SELLING HOME-CANNED FOOD

Pesto, salsa and home-canned vegetables feel like the natural next step. But they're the most regulated thing you could sell. Never sell anything cut, cooked or canned until your local health department confirms it's allowed under your state's rules.

DID YOU KNOW? · THE WASH-ME SIGN

Michigan's Department of Agriculture recommends that farmers market vendors post a sign reminding customers to wash their produce. It's a smart, friendly touch for any stand: "Fresh from my garden. Please wash before eating."

Real examples: see how different the rules can be

These are snapshots from public sources, so you can see the range. **They are not legal advice and they can change.** Always confirm your own state's current rules.

MICHIGAN · PRODUCE

The state agriculture department says there are "no licensing requirements for farmers selling fresh, whole, uncut fruits and vegetables" at a farmers market. Once produce is cut, it counts as processed food and must be prepared in a licensed place.

MICHIGAN · HOME KITCHEN FOODS

Some home-made foods are allowed under Michigan's cottage food rules if they're packaged, labeled and sold directly by the maker. Foods considered "potentially hazardous" (the kind that can grow germs quickly) can't be made at home for sale there.

NORTH CAROLINA · SEEDLINGS

An NC State Extension article explains that selling transplants in North Carolina to people who will plant them in a home garden is exempt from inspection and certification. Selling to someone who will resell them probably means getting a nursery certificate from the state agriculture department.

TENNESSEE · LIVE PLANTS

Tennessee's Department of Agriculture licenses anyone who grows "annual plants for sale or distribution on a commercial basis," with fees starting at $150. One large Chattanooga market tells vendors a state license is required to sell any live plant, tomato plants and herbs included.

MARYLAND · SEEDLINGS

In a 2017 Ask Extension answer, an expert told a home grower that selling vegetable seedlings didn't need a license, only "woodies" like trees and shrubs. But Maryland law does require a license to sell "nursery stock," and which plants count is set by the state, so perennial herbs or strawberry plants may. Check with the Maryland Department of Agriculture.

FEDERAL · FOOD SAFETY RULE

The FDA's Produce Safety Rule doesn't cover farms that average $25,000 or less a year in produce sales over the previous three years (adjusted for inflation since 2011). That's a federal rule only. State and local rules still apply.

QUICK WIN · YOUR 15-MINUTE CALL LIST

1. Your county extension office (search "[your county] extension office"): "I want to sell a few vegetables, herbs and seedlings from my home garden. What do I need?" **2.** Your state Department of Agriculture's plant or nursery office, if you'll sell live plants. **3.** Your local health department, before anything cut, cooked or canned. **4.** The market manager, if you join a market. **5.** Your state revenue office about sales tax. Write the answers on the Rules & Sales Log in the Printables section at the back of this book.



FAIR AND FRIENDLY

Price Like a Good Neighbor

Pricing scares people more than growing does. It shouldn't. Here's the simple method I use. It's my own rule of thumb, not a formula from a textbook, but it keeps things fair for everyone.

1. **Look at three prices.** Check what the grocery store charges for the same thing, what other farmers market or roadside sellers charge, and what your neighbors would happily pay.
2. **Land in the middle.** Homegrown and picked this morning is worth more than the grocery store's, but you're not a fancy boutique either.
3. **Use round numbers.** $2, $3 and $5 make change easy and keep the line moving.
4. **Sell by the bundle, basket or bag.** "One basket, $3" is easier than weighing things. A kitchen scale helps you keep baskets about the same.
5. **Keep a record.** Note what sold out and what came home. Next week, grow and pick more of the winners.

My price finder

Item & size	Grocery price	Market / stand price	What neighbors say	My price
Herb bundle				
Basket of cherry tomatoes				
Bag of salad greens				
Tomato or pepper seedling				
Box of microgreens				

My farm stand starter kit

- [ ] A sturdy table and some shade
- [ ] Baskets, bags or small boxes
- [ ] Round-number price tags
- [ ] A cash box with small bills for change
- [ ] A "Please wash before eating" sign
- [ ] A cooler or damp towel to keep greens crisp
- [ ] A notebook to record sales
- [ ] A chair for you

JASON'S TIP · KEEP YOUR PAPERWORK SIMPLE

Money you make selling is income. Keep a small notebook with what you sold, when and for how much, along with your receipts for seeds and soil. If it grows into a real side business, a tax preparer will thank you.

— *Jason*



The best part isn't the money

If you set up a little stand, some weeks you'll come home with only a few dollars. But you'll almost always come home with news, recipes and a new friend or two. A farm stand is the friendliest spot on the street.

TWO HEADS, ONE HARVEST

The Garden Share

Some folks have the space but not the time. Some have the time but bad knees. And plenty of people are itching to grow food but have no place to do it. Put two of those people together and you've got a **garden share**: one person brings the space and supplies, the other brings the time and muscle, and you split the harvest.



Agree on the split up front. Half and half is simple and fair.

How a garden share works. It's also a great vacation plan: your partner keeps things watered while you're away.

Twenty years ago you'd have put a notice on a bulletin board or Craigslist. Today most neighbors find each other on **Nextdoor**, local **Facebook groups** and church or club newsletters. Here's a notice you can copy. Fill in the blanks and keep it short.

COPY THIS · NEXTDOOR, FACEBOOK GROUP OR CHURCH BULLETIN

Garden helper wanted: share the harvest!

I have a small, sunny food garden in _____ (neighborhood) and all the supplies. I'm looking for a friendly neighbor to help set it up on one Saturday and then lend a hand about _____ hours a week.

In return, we'll split the harvest 50/50: tomatoes, peppers, salad greens, herbs and more. No experience needed; I'll show you how. Message me if you'd like to grow some food together!



THE LAZY GARDENER'S SHOPPING LIST

Free Supplies

Before you buy, ask. People give away an amazing amount of good garden gear. Here's where to look:

Where	How it works	Great for
Buy Nothing groups	The Buy Nothing Project describes itself as a gift economy with local Facebook groups and an app, where neighbors give and get things "completely for free."	Pots, tools, seeds, leftover soil
Freecycle	The Freecycle Network describes itself as "made up of thousands of local town groups," a nonprofit sharing movement that "reduces waste" by passing things along free.	Containers, fencing, lumber scraps
Facebook Marketplace & Nextdoor	Search "free" plus what you need; people often give away buckets and planters.	Buckets, trellises, planters
Bakeries & delis	Ask whether they have empty food buckets they'd let you have. Plant only in food-safe buckets (Chapter 7 shows how to tell) and wash them well.	Buckets for your self-watering planters
Neighbors in fall	Bagged leaves and grass clippings are free compost ingredients (see Chapter 3). Ask whether the lawn was treated with weed killer; if so, skip the clippings (Chapter 13).	No-dig layers, compost

Stay safe when you meet new people

A little care goes a long way (adapted from Fairfax County, Virginia's online-transaction safety tips):

- **Meet in public first,** in daylight. Some police stations offer a "safe exchange" spot; ask yours. Meet a garden-share partner in public before you invite them home.
- **Bring a friend** along when you can.
- **Check them out:** get a name and look at their profile.
- **Share only what's needed,** never your Social Security number.
- **Skip risky payments:** no large wads of cash, no wire transfers or money orders.
- **Trust your gut.** It's fine to walk away, and report anyone suspicious.

Your Farm-to-Cash Checklist

- [ ] **Grow a little extra**
  A few more seedlings, one more herb pot, one tray of microgreens. Ask for free supplies before you buy.
- [ ] **Make your 15-minute calls**
  Extension office, state agriculture (for plants), health department (for anything cut, cooked or canned).
- [ ] **Fill in your price finder**
  Three prices, land in the middle, round numbers. Start with gifts, swaps and neighbors.

NEXT UP
Crop Profiles: 18 easy crops at a glance, with everything you need on one card.

SOURCES FOR THIS CHAPTER
Microgreens: Mississippi State Univ. Extension, Pub. 2857 (Bachman); Treadwell et al., *Microgreens: A New Specialty Crop*, HS1164, UF/IFAS (2010). · Michigan: MDARD, Farmers Markets FAQ. · North Carolina: J. Davis, NC State Extension (2010, updated 2022). · Tennessee: Tenn. Dept. of Agriculture, Plant Certification Forms; Chattanooga Market vendor rules, "Live Plants." · Maryland: Ask Extension KB 385152 (2017); Maryland Dept. of Agriculture nursery/plant dealer license application. · Produce Safety Rule: U.S. FDA; Univ. of Maine Bulletin #4281. · Safety tips: Fairfax County, "10 Safety Tips for Online Transactions." · Buy Nothing Project press kit; The Freecycle Network nonprofit profile (every.org/freecycle); Colorado State Univ. Extension, "Mulches for the Vegetable Garden."



REFERENCE

Crop Profiles

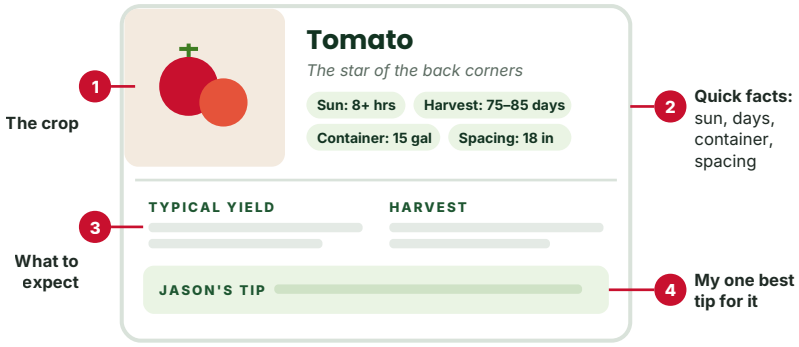
Eighteen easy crops that thrive in small spaces, each on its own card: how much sun, how big a container, how long to wait, and where it lives in your 5-foot farm.

IN THIS SECTION

- How to read a crop card
- The quick-pick chart: all 18 crops on one page
- 18 crop cards, from cherry tomatoes to strawberries

Think of these cards as the seed packets you wish you'd had all along. Flip here whenever you're deciding what to plant, where to put it, or whether it's time to pick. Every number on a card comes from a university extension guide, unless it's marked as my rule of thumb, and the sources are printed right on the card.

How to read a crop card



Each real card also shows its best spot in the Master Plan and its sources.

Anatomy of a crop card. The quick facts are the four things you'll want to know before you plant.

ABOUT THE NUMBERS

Sun is direct sun per day. **Harvest** is the typical number of days to harvest from the planting guides cited; your variety and weather will change it, so check the seed packet too. *For tomatoes and peppers, count from the day you set plants outside; starting from seed adds about 5 to 10 weeks indoors (Chapter 11). For sweet potatoes, count from the day you plant the slips (Chapter 7). **Container** is a minimum: bigger usually means less watering and bigger plants. **Yield** figures mostly come from in-ground garden trials (often per 10 feet of row), so a container plant may give less. Treat them as a friendly guide, not a promise.

SOURCES FOR THE CROP PROFILES

Rutgers NJAES FS129; Iowa State Ext.; NC State Leaflet 1; UGA Circular 963; Virginia Coop. Ext. 426-408 and SPES-789; Utah State (2020); Wisconsin Master Gardener; Texas A&M AgriLife (2014); Univ. of Maryland Ext.; Oregon State Ext.; Cornell (Reiners, 2017); LSU AgCenter; UMass Ext.; Univ. of Minnesota Ext.; West Virginia Univ. Ext.; Univ. of Illinois Ext.; UW–Madison Ext. (Marinette Co.); UC Master Gardeners of San Francisco; Univ. of New Hampshire Ext.; Univ. of Idaho CIS 1209. Each card lists its own sources.

The quick-pick chart

All 18 crops at a glance. Find your sun hours first, then pick from the crops that match.

Crop	Sun	Days to harvest	Container	Where it goes
Tomato	8+ hrs	75–85*	15 gal (full-size)	Bags A & B
Sweet pepper	8+ hrs	75–80*	tower top or 5 gal	Tower tops
Leaf lettuce	4–5 hrs	40–50	1 gal / 2 plants	Tower N sides, strip, Wall
Spinach	4–5 hrs	40–70	1 gal / 2 plants	Tower N sides, strip
Kale	4–6+ hrs	40–55	2–5 gal	Tower swap for chard
Swiss chard	4–6+ hrs	first cut ~4 wks	1–2 gal	Tower sunny sides
Bush beans	6+ hrs	50–55	2+ gal	Strip (summer swap)
Pole beans	6+ hrs	65–70	2+ gal + trellis	Climber Box
Peas	6+ hrs	60–70	trellis	Climber Box (spring)
Cucumber	8+ hrs	40–65	8–10 gal per plant	Climber Box (1) or bag
Radish	5–6 hrs	25–35	4–6 in deep	Edges and swaps
Carrot	5–6 hrs	55–80	12+ in deep	Doormat Strip
Beet	5–6 hrs	45–80	12+ in deep	Doormat Strip
Green onions	4–6 hrs	60–90	1 gal / 3–5 plants	Edges everywhere
Potato	6+ hrs	70–90	10-gal grow bag	Bag C, front-right
Sweet potato	6+ hrs	100–110*	large	Beside the farm
Basil	6–8 hrs	clip weekly	1–3 gal	The Wall
Strawberries	6+ hrs	4 wks after bloom	8+ in deep	The Wall, tower swap

JASON'S TIP · SHORT ON SUN?

With only 4 to 5 hours of sun, stick to the greens: lettuce, spinach, kale, chard and green onions. Save every spot with 8 hours or more for tomatoes, peppers and cucumbers.

— Jason



Tomato

The stars of the back corners

Sun: 8+ hrs | Harvest: 75–85 days | Container: 15-gal bag | Spacing: 18 in

BEST SPOT IN THE MASTER PLAN
Bags A & B (15-gal grow bags), the back corners

SHARES SPACE WITH
The 24-in Climber Box between them

TYPICAL YIELD
10–20 lb per staked plant (Cornell); Ch. 4 counts 20–40 lb from the two bags. Less in a 5-gal bucket.

HARVEST
Pick when evenly colored but before the end softens. Green ones ripen indoors.

JASON'S TIP Full-size types go in the 15-gal bags on a sturdy stake or cage. For the Doormat Starter or a balcony, grow a compact patio type like 'Tiny Tim' or 'Tumbling Tom' (Texas A&M) in a 5-gal self-watering bucket.

Sources: Rutgers FS129; NC State Leaflet 1; Cornell (Reiners, 2017); Texas A&M; UMass; Univ. of Minnesota; UW–Madison Extension; UC Master Gardeners (San Francisco); EarthHero (bag sizes)



Sweet Pepper

Steady, sturdy, colorful

Sun: 8+ hrs | Harvest: 75–80 days | Container: tower top or 5 gal | Spacing: 18 in

BEST SPOT IN THE MASTER PLAN
Tower tops, one per tower (or a 5-gal bucket)

SHARES SPACE WITH
Chard and spinach in the tower sides below

TYPICAL YIELD
About 4 lb per plant (Cornell); Chapter 4 counts 12 lb from three tower tops.

HARVEST
Pick when firm and full size. Leave some on the plant if you want red ones.

JASON'S TIP Green peppers are simply picked early. Leave a few on the plant to ripen to red (or yellow or orange, depending on the variety).

Sources: Rutgers FS129; NC State Leaflet 1; Texas A&M; Cornell; UMass



Leaf Lettuce

Salad on demand

Sun: 4–5 hrs | Harvest: 40–50 days | Container: 1 gal per 2 plants | Spacing: 4–10 in

BEST SPOT IN THE MASTER PLAN
Tower north sides, the Doormat Strip, the Wall

SHARES SPACE WITH
Spinach; a bonus crop, not counted in the 100 lb

TYPICAL YIELD
One plant's worth of leaves (Cornell counts lettuce by the plant), or weeks of leaves if you pick from the outside in.

HARVEST
Start when plants are 5–6 in tall. Take older outer leaves first.

JASON'S TIP Heat and long summer days make lettuce bolt and turn bitter. Grow it in spring and fall, in shade in summer.

Sources: Rutgers FS129; NC State Leaflet 1; Texas A&M; Virginia Tech 426-408; UMass



Spinach

The cool-weather green

Sun: 4–5 hrs | Harvest: 40–70 days | Container: 1 gal per 2 plants | Spacing: 2–4 in

BEST SPOT IN THE MASTER PLAN
The towers' north sides, plus the Doormat Strip

SHARES SPACE WITH
Chard on the sunny side

TYPICAL YIELD
About 2 oz per plant (Cornell). Plant plenty.

HARVEST
Pinch outer leaves off; don't pull them.

JASON'S TIP Long days and high temperatures make spinach bolt, so sow it early in spring and again for fall.

Sources: Rutgers FS129; Virginia Tech 426-408; Texas A&M; Cornell



Kale

Tough as nails, sweet after frost

Sun: 4–6+ hrs **Harvest: 40–55 days**

Container: 2–5 gal, 12 in deep **Spacing: 12 in**

BEST SPOT IN THE MASTER PLAN
Optional swap for chard on a tower's sunny side

SHARES SPACE WITH
Chard and spinach in the towers

TYPICAL YIELD
3–5 lb per 10 ft of row (Utah State).

HARVEST
Strip the older lower leaves first and let the young ones keep growing.

JASON'S TIP Mature kale handles very cold weather, and frost actually improves the flavor of a fall crop.

Sources: Utah State Univ. (Drost & Johnson, 2020); Iowa State; NC State Leaflet 1; Oregon State



Swiss Chard

Pretty enough for the front yard

Sun: 4–6+ hrs **First harvest: ~4 weeks** **Container: 1–2 gal**

Spacing: 6–12 in

BEST SPOT IN THE MASTER PLAN
Tower sunny sides, 8 per tower: the backbone of the plan

SHARES SPACE WITH
Spinach on the north side, a pepper on top

TYPICAL YIELD
About 1½ lb per plant (Cornell), picked a few leaves at a time until a moderate freeze.

HARVEST
Break off outer leaves and leave the center to keep growing.

JASON'S TIP Chard handles summer heat better than spinach and rarely bolts, so it bridges the gap between spring and fall greens.

Sources: Wisconsin Master Gardener; Virginia Tech 426-408; Texas A&M; Cornell; UMass; Iowa State



Bush Beans

Quick, compact, no trellis

Sun: 6+ hrs best **Harvest: 50–55 days** **Container: 2+ gal** **Spacing: 3–4 in**

BEST SPOT IN THE MASTER PLAN
Optional: swap them into the Doormat Strip for summer

SHARES SPACE WITH
Carrots and beets nearby

TYPICAL YIELD
About 8 lb per 10 ft of row (Cornell).

HARVEST
Pick when pods are firm and snap easily, before the seeds bulge.

JASON'S TIP Bush types need no support, so they're perfect where you can't add a trellis.

Sources: NC State Leaflet 1; Texas A&M; Cornell; UMass; Univ. of Minnesota; Iowa State



Pole Beans

The climber that loves to stack

Sun: 6+ hrs best **Harvest: 65–70 days** **Container: 2+ gal + trellis** **Spacing: 4–5 in**

BEST SPOT IN THE MASTER PLAN
The 24-in Climber Box trellis (build in Ch. 7)

SHARES SPACE WITH
Greens and radishes at its feet in spring, before the vines fill in

TYPICAL YIELD
About 11 oz per plant (Cornell).

HARVEST
Same as bush beans: firm pods that snap, before the seeds swell.

JASON'S TIP Give them netting or twine to climb from day one. They're the top layer of stalk stacking (Ch. 4).

Sources: NC State Leaflet 1; Texas A&M; Cornell; UMass; Univ. of Minnesota; Iowa State



Snap & Snow Peas

Spring's first sweet treat

Sun: 6+ hrs best **Harvest: 60–70 days**

Grow in: Climber Box **Spacing: 2 in**

BEST SPOT IN THE MASTER PLAN
The 24-in Climber Box in spring

SHARES SPACE WITH
Pole beans take the trellis over in summer

TYPICAL YIELD
About 3 oz per plant (Cornell). Sow them thick.

HARVEST
Pick snow peas when pods are about 3 in long, before the seeds are half-grown.

JASON'S TIP Peas are a cool-season crop. Plant them early in spring and enjoy them before summer heat arrives.

Sources: NC State Leaflet 1; UGA Circular 963; Cornell; UMass; Iowa State



Cucumber

Goes up, not out

Sun: 8+ hrs **Harvest: 40–65 days**

Container: 8–10 gal per plant **Spacing: 6 in on a trellis**

BEST SPOT IN THE MASTER PLAN
Climber Box trellis, 1 plant instead of beans (or a 10-gal bag beside it)

SHARES SPACE WITH
Spring greens at its feet before the vines fill in

TYPICAL YIELD
About 4 fruit per plant on a trellis (Cornell).

HARVEST
Pick bright, firm and green, before they get too big.

JASON'S TIP The Climber Box holds about 8½ gallons, the low end of what one cucumber needs; a 10-gal bag is roomier. Trellised fruit grows straighter and cleaner.

Sources: Rutgers FS129; NC State Leaflet 1; UGA Circular 963; Univ. of Maryland; Cornell; Univ. of Minnesota; UMass



Radish

The four-week wonder

Sun: 5–6 hrs | Harvest: 25–35 days | Container: 4–6 in deep | Spacing: 1 in

BEST SPOT IN THE MASTER PLAN
Climber Box or Strip edges, or as a quick swap crop

SHARES SPACE WITH
The ground layer of stalk stacking

TYPICAL YIELD
About 10 bunches per 10 ft of row (Cornell).

HARVEST
Pull them at 1 to 1½ in across.

JASON'S TIP Hot weather makes radishes send up seed stalks and turn hot-tasting, so grow them in spring and fall.

Sources: Rutgers FS129; Virginia Tech SPES-789; Oregon State; Univ. of Maryland; Cornell



Carrot

Sweet roots for patient people

Sun: 5–6 hrs | Harvest: 55–80 days | Container: 12+ in deep | Spacing: 2 in

BEST SPOT IN THE MASTER PLAN
The Doormat Strip

SHARES SPACE WITH
Beets, spinach and lettuce in the same strip

TYPICAL YIELD
About 2 oz per carrot (Cornell).

HARVEST
Usually ready at ½ to ¾ in across.

JASON'S TIP Carrots need deep, loose soil to grow long and straight. In a container, use one at least 12 inches deep.

Sources: Rutgers FS129; Virginia Tech SPES-789; Oregon State; Cornell



Beet

Two crops in one

Sun: 5–6 hrs **Harvest: 45–80 days**

Container: 12+ in deep **Spacing: 2–3 in**

BEST SPOT IN THE MASTER PLAN
The Doormat Strip

SHARES SPACE WITH
Carrots, spinach and lettuce in the same strip

TYPICAL YIELD
About 12 lb per 10 ft of row (Cornell).

HARVEST
Pull at 1 to 3 in across. Beets bigger than 3 in tend to get woody.

JASON'S TIP The greens are delicious too. Just don't take too many, or the roots won't size up.

Sources: Rutgers FS129; Virginia Tech SPES-789; Oregon State; Cornell



Green Onions

Tuck them in anywhere

Sun: 4–6 hrs **Harvest: 60–90 days**

Container: 1 gal per 3–5 plants **Spacing: under 1 in**

BEST SPOT IN THE MASTER PLAN
Strip and Climber Box edges

SHARES SPACE WITH
Almost everything; they take little room

TYPICAL YIELD
About 12 bunches per 10 ft of row (Cornell).

HARVEST
Pull or snip as needed.

JASON'S TIP Green onions tolerate partial shade, so they fill the gaps your sun-hungry crops leave behind.

Sources: UGA Circular 963; Texas A&M; Iowa State; Cornell



Potato

A buried-treasure hunt

Sun: 6+ hrs | Harvest: 70–90 days | Container: 10-gal grow bag | Spacing: 12 in (row); 6 in (Bag C)

BEST SPOT IN THE MASTER PLAN
Bag C (10-gal, 15 in), front-right, about 4 seed pieces

SHARES SPACE WITH
Its own container; it needs the room

TYPICAL YIELD
2–3 lb per plant in a garden row (Cornell); Chapter 4 counts 8–12 lb from Bag C as a best case, since the bag is shallower and more crowded than a row.

HARVEST
Dig "new" potatoes before the vines die. For full-size ones, wait until the vines die back.

JASON'S TIP Plant about 4 seed pieces in the 10-gal bag (Chapter 7). For the most potatoes, Oregon State suggests containers at least 18 in wide and 3 ft deep. Choose certified seed potatoes.

Sources: UGA Circular 963; Oregon State; Univ. of Maryland; Cornell; UMass; Iowa State



Sweet Potato

Grown from a grocery-store spud

Sun: 6+ hrs | Harvest: 100–110 days | Container: large | Spacing: 12 in

BEST SPOT IN THE MASTER PLAN
A large container or grow bag beside the farm (Ch. 7)

SHARES SPACE WITH
Its own container; vines spread

TYPICAL YIELD
About 2 lb per plant in a garden (Cornell). Often less in containers (Illinois).

HARVEST
Dig in fall, before frost.

JASON'S TIP Cure roots 10–14 days somewhere warm and humid (about 85°F), then store them cool (about 55°F) and dry.

Sources: Univ. of Illinois Extension (Enroth); Cornell; UMass; Iowa State



Basil

Summer in a leaf

Sun: 6–8 hrs | Start indoors 4–6 wks early | Container: 1–3 gal | Spacing: 10–18 in

BEST SPOT IN THE MASTER PLAN
The Wall, or a pot by the tomato bags

SHARES SPACE WITH
Tomatoes and peppers nearby in the sun

TYPICAL YIELD
No reliable per-plant figure in the guides I used. My rule of thumb: two or three plants keep a kitchen in fresh basil if you clip weekly.

HARVEST
Clip the top 2–3 in of each stem, leaving about 4 leaves.

JASON'S TIP Pinch off flowers. Once basil blooms it turns woody and bitter and stops making leaves. Plant outside only after frost.

Sources: Univ. of Illinois Extension (Haag, 2020); West Virginia Univ. Extension; Univ. of Maryland; Iowa State



Strawberries

Dessert that grows sideways

Sun: 6+ hrs (10 ideal) | Fruit: ~4 wks after flowers | Container: 8+ in deep | Spacing: 12–18 in

BEST SPOT IN THE MASTER PLAN
The Wall, or a tower sunny-side swap

SHARES SPACE WITH
Lettuce and herbs on the Wall

TYPICAL YIELD
About 17 lb per 10 ft of garden row (LSU AgCenter); container plants give less.

HARVEST
Pick berries fully red all over. Day-neutrals fruit most of the season.

JASON'S TIP Pinch off flowers for the first few weeks after planting so roots and leaves get established. With day-neutral types (best for this farm, Chapter 12) or everbearing types, you'll still pick fruit later that summer.

Sources: Univ. of Minnesota Extension; Univ. of Maryland; LSU AgCenter

NEXT UP · Printables: worksheets, logs and checklists to print or copy.



REFERENCE

Printables

Your calendar and your journal are the two best garden tools you'll ever own, and they're free. Print these pages, or copy them into a notebook, and your farm gets smarter every season.

IN THIS SECTION

- Sun map, Master Plan grid and planting calendar
- Seed-starting log, seed inventory and garden journal
- Weekly check, harvest log and shopping checklist
- A rules & sales log for your farm stand

Here's a secret that experienced gardeners won't always tell you: a lot of their "green thumb" is really a good memory, written down. When did I plant those peas last year? Which tomato did best? When did the first frost hit? Your notes answer those questions, and they make next season easier than this one.

Every page in this section is designed to print on regular 8½ × 11 paper. Print as many copies as you like for your own garden. Don't have a printer? Copy the headings into a spiral notebook. It works just as well.

Plan

Sun Map
Master Plan Grid
Planting Calendar
Shopping Checklist

Grow

Seed-Starting Log
Seed Inventory & Swap List
Weekly Garden Check

Remember

Garden Journal Page
Harvest Log
Rules & Sales Log

JASON'S TIP · KEEP TWO COPIES

I keep the paper pages on a clipboard by the back door, because dirty fingers and phone screens don't mix. Once a month I snap a photo of each page with my phone, so a spilled watering can never wipes out a year of notes.

— *Jason*

DID YOU KNOW? · YOUR LOCAL PLANTING DATES

Your county extension office can tell you the typical frost dates and planting times for your exact area. Write them at the top of your Planting Calendar. Chapter 12, Your Year-Round Calendar, shows how to use them.

PRINTABLE 1

Sun Map

Name: _____

Year: _____

On a clear day in the growing season, check each spot at the four times below. Write **S** for sun or **–** for shade. Count each S as about 3 hours of direct sun (a rough estimate; see Chapter 2).

Spot (where is it?)	9 a.m.	Noon	3 p.m.	6 p.m.	Number of S	× 3 = about hrs	Good crops here

1 S (about 3 hrs)

Too shady for most food crops. Try the Apartment Farm lights (Chapter 8).

2 S (about 6 hrs)

Greens, roots, beans, peas and herbs

3–4 S (about 9+ hrs)

Tomatoes, peppers and cucumbers

Based on minimum sun hours from Rutgers Cooperative Extension Fact Sheet FS129 (greens 4–5, roots 5–6, fruiting crops 8+) and Iowa State University Extension (light shade, 4–6 hours).

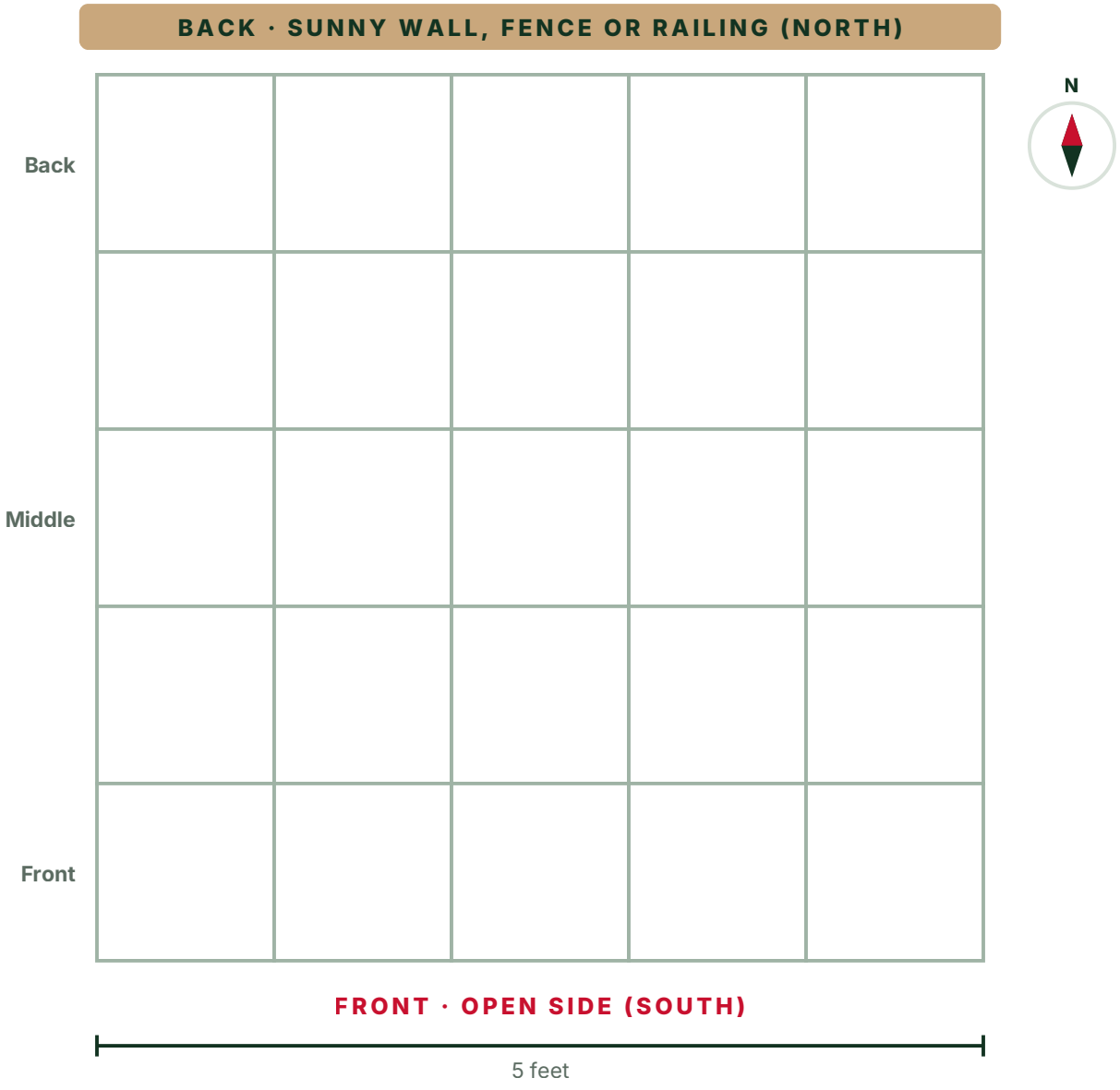
PRINTABLE 2

Master Plan Grid

Name: _____

Year: _____

Each square is 1 foot. Sketch where your grow bags, towers, Climber Box and Doormat Strip will go, and write what you'll plant in each square. Chapter 4 shows the full Master Plan.



PRINTABLE 3

Planting Calendar

Name: _____

Year: _____

My average last spring frost: _____

My average first fall frost: _____

Columns are weeks before (–) and after (+) your last spring frost. In each crop's row, write **S** = start seeds indoors, **H** = begin hardening off, **P** = plant outside, **R** = ready to harvest. Chapter 12 has a filled-in chart to copy from.

Crop	−12	−10	−8	−6	−4	−2	FROST	+2	+4	+6	+8	+10	+12	+14

PRINTABLE 4

Shopping Checklist

Name: _____

Year: _____

The main items for the full 5-foot farm, the 100-Pound Plan; each chapter's materials list has the details. Check your free sources first (Chapter 17), then tick items off as you gather them.

GROW BAGS (CH. 7)

- [ ] 2 grow bags, 15 gallons each (Bags A & B, tomatoes)
- [ ] Tomato stakes or cages, one per bag
- [ ] 1 grow bag, 10 gallons (Bag C, potatoes)
- [ ] Certified seed potatoes

TOWERS (CH. 5)

- [ ] Welded wire fencing (size in Ch. 5)
- [ ] Landscape fabric
- [ ] Zip ties
- [ ] Watering-tube materials and a stake for each tower (Ch. 5)

BOXES & TRELLIS (CH. 7)

- [ ] Lumber for the 24-in Climber Box and 45-in Doormat Strip box (cut list in Ch. 7)
- [ ] Exterior screws
- [ ] Trellis netting or garden twine, plus a crossbar to hang it

OPTIONAL: SELF-WATERING BUCKET (CH. 2)

- [ ] 2 food-safe 5-gallon buckets (Doormat Starter or balcony)
- [ ] 1-inch PVC pipe (about 2 ft), a wicking basket, 2 screws about 1½ in

THE WALL (CH. 6)

- [ ] Materials for your Bottle Wall or Living Wall (list in Ch. 6)

SOIL & FOOD (CH. 3 & 13)

- [ ] Potting mix, or the mix ingredients in Ch. 3
- [ ] Compost
- [ ] Worm castings
- [ ] Vegetable fertilizer

SEEDS & STARTS (CH. 11)

- [ ] Seeds from your crop list (try a seed library first)
- [ ] Seed-starting mix and trays

TOOLS

- [ ] Drill and bits (plus a 1⅜-in hole saw for the optional bucket)
- [ ] A saw for lumber; a hacksaw for PVC
- [ ] Wire cutters and pliers
- [ ] Hand trowel
- [ ] Garden scissors or pruners
- [ ] Watering can and saucers
- [ ] Gloves
- [ ] Kneeling pad or garden stool
- [ ] Kitchen scale (for your harvest log)

PRINTABLE 5

Seed-Starting Log

Name: _____

Year: _____

One line per batch. **Sprouting rate** = number sprouted ÷ number sown. Over a few seasons this log tells you which seeds and varieties do best for you.

Crop & variety	Seed source	Date sown	# sown	Date sprouted	# sprouted	Hardening off began	Planted out	Notes

PRINTABLE 6

Seed Inventory & Swap List

Name: _____

Year: _____

Know what you have before you shop, and bring this list to seed swaps and your public library's seed library (Chapter 11). Mark **OP** for open-pollinated seed you can save, **H** for hybrid.

Crop	Variety	Year	Source	OP / H	Amount left	To trade?	Notes

PRINTABLE 7

Weekly Garden Check

Name: _____

Year: _____

A ten-minute walk-around once a week catches almost every problem early. Write the date at the top of each column and tick each line as you go.

This week I checked...	Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8
Date								
Light: spots still sunny enough?								
Water: finger test, dry at least 3 in down?								
Bags and bucket: watered or refilled (daily in summer)								
Food: fertilizer or castings due?								
Pests: leaves checked (tops and undersides)								
Support: vines tied, trellis secure								
Harvest: picked what's ready								
Plant: gaps filled, next sowing done								
Notes written in my journal								

Things to watch

PRINTABLE 8

Garden Journal Page

Name: _____

Year: _____

Use one page for each crop each season. Your future self will thank you.

Crop:

Variety:

Type (bush, vining, determinate...):

Where it grew in my farm:

Seeds started (date):

Sprouted (date and how many):

Planted outside (date):

First harvest (date):

Last harvest (date):

Total harvest (lb, oz or count):

Last spring frost this year:

First fall frost this year:

Weather that made a difference

Pests or problems

What worked

Next season I'll...

PRINTABLE 9

Harvest Log

Name: _____

Year: _____

Weigh or count what you pick. At the end of the season, these numbers show you what your farm really grows, and which crops earn their space.

Date	Crop	Amount (lb / oz / count)	From (bag, tower, strip...)	Notes

This page total: _____

Season total so far: _____

PRINTABLE 10

Rules & Sales Log

Name: _____

Year: _____

Before you sell anything, make the calls from Chapter 17 and write down what you learn. Then track what sells, so you know what to grow more of.

Who I called	Date	What they told me
County extension office		
State Dept. of Agriculture		
Local health department		
Market manager		
State revenue office		

Sales and swaps

Date	What I sold or swapped	How many	Price each	Total	Where / notes

A LAST WORD

From My Farm to Yours



My wife and me, with a good day's picking.

You made it to the end, and I hope you enjoyed the trip.

If you only remember three things from this book, make them these. Plants need light, water and food, and nothing else you do can make up for missing one. A small space you can reach and tend every day can grow a surprising amount of food. And the best time to start is with one bucket, this weekend.

You'll lose a plant or two along the way. Everybody does. Write it down in your journal, figure out which growth trigger was missing, and plant again. That's all a "green thumb" ever was.

When your first tomato turns red, take a moment and enjoy it. You grew that. Then go share a few with a neighbor. You might just start a new 5-Foot Farmer.

Happy growing,

— Jason Adams