



Beat the Heat: Your Summer Garden Companion Guide

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Start here

It gets pretty hot out where I live. You can probably picture it.

The kale is looking limp by mid-afternoon.

The tomato leaves are curled up like little fists.

One bed has a yellow gradient running from one end to the other.

Your first thought is probably that something is eating your plants. "Where's the spray?" Or maybe, "is this finally the year I give up on tomatoes?"

Honestly? There's a good chance it isn't pests.

And it may not be a disease either.

It very likely could be heat stress, and heat stress shows up looking like other things. That's why so many of us reach for the wrong tool.

Here's the way Dad and I think about it on our place.

Bugs and disease tend to show up on plants that are already stressed. The bug is a symptom; the stress is the real problem.

A plant fighting heat at the root level can't also fight off pest pressure at the same time.

So a lot of your pest management in mid-summer is actually heat management. That's a big shift in how to see your garden in July.

We've been growing food on our family farm and now homestead here in middle Tennessee for a lot of years now. It gets pretty hot. It can be up in the nineties for stretches.

This isn't us figuring out a new problem.

This is the working summer system we run on our place. The goal is simple: walk into July with the heat layer in hand, not the spray.

Here's what we'll walk through:

1. How to read the heat signals before a plant collapses
2. The single highest-leverage move (shade cloth, the right way)
3. Watering during hot stretches without making things worse
4. Crop selection for your hot zone
5. What to do when a plant is already showing damage
6. The heat-to-pest cascade, and how to interrupt it
7. A week-by-week summer protocol from late spring into early fall

Depending on where you live, your version of this will look a little different. Take the principles. Calibrate the timing to your own last frost date and your own typical summer pressure.

Keep this handy. Fold it into your garden journal, or pull it up on your phone when you need it.

1. The summer stress signals plants give before they collapse

A plant in heat trouble tells you days before it dies. You just need to know what wilting at 2pm means versus wilting at 8am.

Signal	What it usually means	What to do
Wilting at midday, recovers by morning	Pretty normal summer stress. The plant is shedding water through its leaves faster than the roots can pull it up.	Mulch deeper, water at the soil before the heat hits. Not an emergency.
Wilting at dawn, even after a cool night	Root damage, soil-borne disease, or chronic drought stress that's finally caught up.	Poke your finger down into the soil four to six inches and find out how deep the moisture is going. If the soil is wet AND the plant is wilting, you've got a root issue. If the soil is dry, you've been under-watering.
Leaf curl with no insect visible	The plant is shrinking its leaf surface area to conserve water. A heat-protection move.	Bring shade over it during the hottest part of the day. The curl itself is fine. The curl plus brown crispy edges is real damage.
Brown crispy leaf edges	Direct sun scorch. Most often on leaves that were not acclimated to full sun.	Shade cloth, especially for transplants moved out of a greenhouse or hoop house.
Blossom drop on tomatoes, peppers, or squash	High temperatures interrupt pollination. For tomatoes and peppers, blossom drop kicks in when daytime highs run above the mid-80s, with the problem getting worse when nights either drop too cool or stay too warm to let pollen do its work.	This one usually passes. Fruit set picks back up when the heat breaks. Some varieties handle this better than others.
Bolting on lettuce, spinach, cilantro, basil	Heat triggers the plant to flower instead of leaf. Bolted greens turn bitter, and the plant doesn't reverse.	Pull the plant, replace it with a heat-tolerant variety in the same spot, or wait for fall.
Fruit cracking on tomatoes	Inconsistent watering during heat. The plant goes dry, then absorbs water faster than the fruit skin can stretch.	Even out the watering with mulch and drip. The crack isn't a pest.

If you see two or more of these signals at the same time, you're looking at a heat issue, not a pest or disease problem.

That's the diagnostic moment. Confirm it's heat before you treat for anything else.

A lot of mid-summer plant problems are heat, not pests. This is for the moment where you flip a leaf and the answer is "it's not actually a bug."

2. Shade cloth, the single highest-leverage move

If you do nothing else from what I share here, do this.

Shade cloth, used right, can knock the temperature inside a closed hoop house down a good 10 degrees. The open-garden effect is real too, though smaller than what you'll see inside a structure.

For tomatoes, peppers, cucumbers, and lettuce in the warmer southern zones, that swing is often the difference between a productive summer and a stalled one.

Think of it as a bigger sunhat for the garden. The plants still get plenty of light. They just stop running a fever.

What grade to use

The standard percentages most home gardeners run with: 50 percent is the workhorse for hot southern zones. The lighter 30 percent option works for cooler summers and all in all is actually our personal favorite.

50 percent blocks half the sun while still letting enough light through for the plants to keep producing.

Go much heavier than that and you start cutting too much light, which can cost you fruit set.

White cloth reflects heat. Black cloth absorbs it. Use white if you have the choice.

The reflective side does real work.

When to deploy it

- When a stretch of 90-degree-plus heat is forecast
- When you see midday wilting that doesn't fully recover as the afternoon cools
- When an unusual stretch of high temperatures is forecast
- For seed germination beds in mid-summer (some seeds won't germinate when the soil gets too hot)
- For transplants moved from a cool greenhouse or hoop house out into the open garden

How to deploy it

You can drape it over hoops, suspend it on stakes, or run a frame over the bed.

The cheapest move is bamboo stakes at the corners with the cloth draped on top, weighted at the edges. The pricier-but-easier move is a pre-made shade frame.

One important rule for shade cloth on hoop houses or caterpillar tunnels: keep it ventilated.

A closed hoop house with shade cloth still gets too hot. Open all four sides so air moves through.

Otherwise the shade cloth holds heat in like a greenhouse, which is the opposite of what you want.

Free alternatives if you don't have shade cloth on hand yet

- Plant heat-sensitive crops in the shade of taller ones. Lettuce, spinach, and other greens tucked on the east or north side of tomatoes, trellised cucumbers, or corn will hold up longer into summer before bolting. Pole beans on a trellis work the same way. Skip this trick for heat-lovers like peppers and eggplant - they want the sun. And be careful with sunflowers:

they cast good shade but their roots release growth-inhibiting compounds that bother a lot of neighbors, so they're not the universal solution they're sometimes made out to be.

- Use natural shade from bean trellises (pole beans grown over a hoop create a live shade canopy for crops underneath)
- Drape old sheer curtains, a lightweight burlap, or a cracked-open patio umbrella for spot shade
- Plant on the east side of a fence so the afternoon sun is blocked

I'll be honest, we don't always have shade cloth pre-deployed before a heat wave shows up 😅

Sometimes it's time to just grab what's around - or see if your plants can pull through on their own.

The point is to get something between the plant and the sun before the leaves crisp.

3. Watering during hot stretches without making things worse

Hot weather watering is really important. Here's what we suggest.

Water in the cool of the morning, at the soil, deeply.

Morning because evaporation is lower before the heat hits.

At the soil because wet leaves overnight is what most fungal disease needs to take hold.

Deeply because shallow watering trains roots to stay near the surface, where they're most vulnerable to heat.

A deep watering means soil moisture actually reaches down to the root zone.

Poke your finger down into the soil after you've finished watering and given it a little time to soak in. If you can only feel moisture in the top inch or two, you watered shallow.

The fix is more time on the same spot, not more frequent waterings.

Mulch deeply. Around 4 to 6 inches of bulky mulch (straw, hay, shredded leaves) on a garden bed. A thinner 2 to 3 inch layer of compost also works as a mulch on top of a clean seedbed.

Mulch evens out soil temperature, slows evaporation, and keeps the soil from splashing onto leaves during watering or rain (which is how a lot of fungal disease moves).

It also slowly feeds the soil as it breaks down.

Here's something I've seen firsthand on mulch as a water tool.

We mulched our flower beds a while back, and the next summer we hardly had to water them at all. Maybe just a couple or a few times.

The mulch did the heavy lifting.

Bare soil heats up to 130 degrees or more in the sun, and at 130 degrees the microbes in your soil start dying off 😬

Mulch keeps the soil cooler, holds the moisture, and keeps the biology working.

Three jobs in one layer.

Drip irrigation or soaker hoses are more water-efficient than sprinklers in summer.

Sprinklers lose a meaningful share of their water to evaporation in heat.

They also wet leaves, which is the disease-spreader on the susceptible crops, especially tomatoes and melons.

Deep and infrequent beats shallow and frequent. Better to water deep once every few days than to water lightly every day.

Roots follow water down. Deeper roots mean more heat resilience.

Target about an inch of water per week, on average. That's the standing rule for the garden.

Young plants need more frequent moisture. Established plants can stretch longer between waterings.

Adjust for your soil, your sun exposure, and what your finger-test is telling you.

What NOT to do during heat

- Don't water late in the evening. Wet leaves overnight plus warm humid air is exactly what fungal disease wants. You don't like to go to bed soaking wet, and neither do your plants.
- Don't water from above with a sprinkler in midday. Evaporation losses are highest then, so most of the water never reaches the roots.
- Don't water tomatoes, melons, or other disease-susceptible crops with overhead sprinklers. Use drip, soaker, or hand-water at the base. Keep the leaves dry.
- Don't increase watering frequency to fight wilting. Increase depth instead. More frequent shallow watering pushes roots toward the surface, which is the last thing you want in heat.

Run those rules through the summer and you'll spend a lot less time hauling a hose around.

You'll spend a lot more time looking at plants that are actually still producing in August.

4. Crop selection for your hot zone

Some crops handle heat well. Some don't. Plant accordingly, depending on where you live.

Heat-tolerant (will keep producing through 90 degree weather)

- **Tomatoes.** Heat-set varieties handle high temperatures better than standard slicers. Ask your seed supplier for varieties bred for heat tolerance in your zone. Standard tomatoes often drop fruit set in extended high heat and resume when conditions cool.
- **Peppers.** Most peppers tolerate heat well. Fruit set can slow in extreme heat and picks back up after.
- **Squash and zucchini.** Generally heat-tolerant. Watch for blossom drop in the hottest stretches.
- **Cucumbers.** Heat-tolerant with consistent water. They turn bitter under stress, so the watering rules above are doing real work here. Try Armenian cucumbers for a super heat tolerant option that tastes amazing!
- **Eggplant.** Loves heat. Wants warm nights to keep setting fruit.
- **Sweet potatoes.** Thrive in heat.
- **Okra.** Built for heat.
- **Common beans.** Pole and bush beans set pods well in moderate warmth but drop blossoms and stall once daytime highs push past the mid-80s or nights stay above 70°F. Consistent water keeps the plants healthy through a heat wave, but pod set usually pauses until temperatures moderate. Pole varieties tend to bounce back better because they produce over a longer season. For reliable production through hot summers, look at yardlong beans, cowpeas, or lima beans - they're genuinely heat-loving where common beans aren't.
- **Heat-tolerant lettuce.** Slow-bolt mixes do exist. We've grown Territorial's heat-tolerant lettuce mix in our own garden and it really slows down its growth in the heat, but it never went bitter. We don't get any perks for promoting it. You could go get it from them.
- **Swiss chard, kale (selected varieties), collards.** Tolerant in the heat when given shade. We've done kale straight through the summer but didn't really harvest off of it during the heat. Collards are known to be the most heat tolerant brassica of all!

Heat-vulnerable (plan around them)

- **Standard lettuce, spinach, cilantro.** Bolt early in the heat. Shift to fall, or grow under shade.
- **Peas.** Stop producing once summer heat sets in. Plant for spring or fall.
- **Broccoli, cauliflower, cabbage.** Stress in the heat. In hotter zones, plant for fall harvest instead of trying to push them through the summer.
- **Strawberries.** Need cooler nights for fruit set. Struggle in extreme heat.

The succession trick

In hotter zones, plant the heat-vulnerable crops in early spring AND late summer for a fall harvest. Reserve the middle of summer for the heat-tolerant list.

Trying to grow lettuce in July in a hot southern zone is fighting the season instead of working with it.

Working with the season is the easier path.

And honestly, the cooler-microclimate move is one of the underrated tactics.

A bed on the north side of a fence, or under the afternoon shadow of a taller crop, can carry greens further into summer than the same variety in full sun would.

5. Mid-season recovery, what to do when a plant is already showing damage

You walked outside, the plant looks bad. Here's how to think about it.

Step 1: Identify what kind of damage

Use the signal table above to categorize.

If you see leaf curl plus crispy edges plus a hint of bolting, that's heat.

If you see white powdery patches, that's more likely fungal.

If you see chewed leaves with no other signals, that's a pest.

Different problems take different fixes. Don't shotgun.

Step 2: For confirmed heat damage

- Get shade over it within 24 hours (cloth, sheet, umbrella, anything that blocks sun)
- Water deeply at the soil that evening once the worst of the heat has broken. (Yes, normally we suggest watering in the morning but this plant needs a sip right away). Skip the peak-heat window so the water has time to soak in instead of running off or evaporating.
- Mulch heavier if you haven't already
- Hold off on fertilizing until the plant has had a few days of cooler conditions to recover. Heat-stressed roots can't take up nutrients well, so feeding before the plant has settled doesn't help.
- Then wait several days. Quite often a heat-stressed plant recovers on its own once conditions improve. If the damage is severe, or it's wilting at dawn even after a cool night, it might be time to consider pulling it.

Step 3: When to pull a heat-damaged plant

- Most of the plant is browned out
- Wilting at dawn for several mornings in a row, even after cool nights
- The crown of the plant has gone soft (root rot can follow heat stress when the roots have been damaged and the soil stays wet)
- The plant has bolted and you don't want the seed (lettuce, spinach, cilantro past their prime)

When you pull, don't waste the bed. Replant for fall.

Most heat-damaged spring crops can be followed by a heat-tolerant summer crop or a fall succession.

Step 4: For damaged crops that are still producing

- Tomatoes with cracking: keep harvesting. Crack-prone varieties stay productive even with the cosmetic damage.
- Peppers with blossom drop: leave them. Fruit set picks back up when temperatures moderate.
- Bolting greens: pull. The leaves stay bitter and the plant won't reverse.

We don't always catch every heat-damaged plant in time.

Sometimes one slips past, and by the time we notice, the only move is the compost pile and a fresh start.

That's part of the season. Pull it, replant, keep going.

6. The heat-to-pest cascade, and how to interrupt it

This is the connection I want to make sure lands.

Heat doesn't just stress plants directly. It opens the door for pest pressure to land on a plant that's already weakened.

Here's how my Dad and I think about it.

Bugs and disease tend to show up on plants that are already stressed. The bug is the messenger, not the root problem.

A plant fighting heat at the root level can't also fight off pest pressure at the same time.

The pests find the weakest plant in the row, and that's usually the most heat-stressed one.

So most of your pest management in mid-summer is heat management.

Keep the plant healthy through the heat, and you keep the pests from getting a foothold.

Pest	Why heat opens the door	What to do
Spider mites	They show up in dry, dusty, hot conditions, often after a plant has been moisture-stressed for a while. Tiny webbing and dusty-looking leaves are the usual signs.	Spray plants down with strong water to knock them off, then keep up with watering and mulch so the plant isn't running dry. Insecticidal soap if they don't move along.
Aphids	One of the first things to think about when aphids show up is whether the plant has enough water. The aphid is often a stress signal, not the root problem.	Knock them off with a strong water spray (add some natural dish soap or insecticidal soap to kill the first batch), then run the three-step rescue protocol below. Encourage lady beetles and lacewings, the predators that quietly work the aphid population down for you when you give them the habitat.
Caterpillars (hornworms, cabbage worms)	Heat speeds up their growth cycle. A small worm becomes a big worm faster than you might expect.	Walk the garden more often. For tomato hornworms specifically, look for ones with little white rice-shaped cocoons on their back. Those are braconid wasp parasites already doing the work for you. Leave the parasitized ones in place. For the rest, BT (short for <i>Bacillus thuringiensis</i> , the natural soil bacterium most home gardeners reach for on caterpillars) is the standard organic response.
Squash bugs and squash vine borers	Adult activity peaks in the heat. Eggs go on the leaf undersides. The vine borer arrives as a moth and the larva tunnels into the stem.	Inspect leaf undersides every few days during heat. Crush egg clusters. For squash bugs, hand-pick adults into soapy water. For vine borers, watch for sudden midday wilt and frass at the base of the stem.
Whiteflies	Heat speeds reproduction. They sit on the undersides of leaves and lift off when you touch the plant.	Spray with a mild soap and water mix aimed at the underside of the leaf, where the adults sit. You have to make contact for the soap to work, otherwise you're just misting the plant.

Michael Kilpatrick joined us at our Summit one year and walked through how he handles vine borers and squash bugs. The timing tips above come from him.

The second-line response: our three-step rescue protocol

When you find pests on a heat-stressed plant, here's the rescue protocol I teach. Three steps in this order.

What we call the NOW formula: **N**uke (Naturally Of course), **O**rganically fertilize, **W**ater in well.

1. **Nuke (Naturally Of course).** Identify the pest, then hit it with the lightest tool that actually works (a strong water spray for soft-bodied pests, hand-picking for the big ones, insecticidal soap for stubborn pressure, BT for caterpillars).
2. **Organically fertilize.** Side-dress the plant with a balanced organic fertilizer to boost its immune system so it can recover.
3. **Water in well.** This is the step most people skip. Soak the plant in deeply after the fertilizer goes on. Without the water, the plant can't take up the nutrients.

The point of the protocol isn't just to kill the pest. It's to address the stress that let the pest in.

That's what makes it a heat-response tool, not just a pest-response tool.

A scouting note

There's an old farming line about this: the footsteps of the farmer are the best fertilizer.

Walking the garden regularly catches problems early, when they're still small and still fixable.

In heat, the cadence picks up. What was a once-a-week walk in spring becomes an every-few-days walk in mid-summer, because heat-driven pest cycles move faster than cool-season ones.

Run heat checks first when the answer isn't obviously a bug. A lot of mid-summer plant problems are stress, not pests.

7. The week-by-week summer protocol

Here's a rhythm to keep up with everything without burning out.

Late spring, heading into summer:

- Lay down deep mulch on every bed (4 to 6 inches with bulky materials, 2 to 3 inches with compost)
- Switch to drip irrigation or soaker hoses if you haven't yet
- Have shade cloth ready on hand. Don't wait until you need it.
- Start fall succession crops (broccoli, cabbage, Brussels sprouts transplants) where appropriate for your zone
- Stake or trellis tomatoes, peppers, and beans tall. Vertical growth means better airflow, which means less disease, which means less stress when the heat shows up.

Early summer, the first heat waves:

- Deploy shade cloth as soon as a 90-degree-plus stretch is in the forecast
- Adjust watering to deep and infrequent (every few days for established beds)
- Step up scouting to every few days so you catch aphids, squash bug egg clusters, and other early pest pressure before it multiplies
- Pull bolting spring crops and replant the bed

Mid-summer, peak heat:

- Walk the rows on a regular cadence to catch problems early
- Water before sunrise or after the heat breaks in the evening (not at night)
- Top-dress mulch wherever it has thinned

- Pull heat-damaged plants quickly so you can succession plant in their place
- Direct-seed fall crops (carrots, beets, kale, lettuce) into bed corners that get some afternoon shade

Late summer, the transition out:

- Pull spent summer crops
- Replant fall succession (spinach, lettuce, broccoli, cabbage transplants)
- Ease off on heavy feeding. Start preparing soil for cover crops or winter mulch.
- Save seed from the heat-tolerant cultivars that did well for you this year

Early fall:

- Heat is winding down. Watch for late-season pest pressure as plants enter their final push.
- Disease pressure usually drops sharply once nights cool down consistently
- Plant garlic, onions, and overwintering crops

Honestly, the cadence is what makes the system work.

None of these tasks are hard on their own.

The trick is doing them at the moment they have the highest leverage, instead of doing them all at once in August when everything's already on fire.

A note on extreme summers

If you live in a zone where summers regularly run past 100 degrees and stay there (Phoenix, Las Vegas, parts of Texas), the standard advice gets adjusted. In those zones:

- A lot of crops just won't grow through July and August in those conditions. Treat summer as a planting break rather than a growing season. Plant in fall for winter harvest, in February for spring harvest, and skip the worst

months.

- Shade cloth becomes essential at those temperatures, not optional, on anything you do try to grow.
- Watering may need to happen daily on shallow-rooted crops if you're pushing them through summer.
- Hoop houses become heat traps without shade cloth plus full ventilation. Sometimes it's easier to skip the hoop entirely in summer and grow in open ground with shade.

Depending on where you live, your version of this is going to look different.

Use the principles. Adjust the timing to your own first and last frost dates and your own typical summer pressure.

You can grow this

Honestly, I think heat is one of the most under-managed risks in a home garden, right alongside soil quality.

Most gardeners notice it too late.

If you've made it this far, you're already ahead.

Three things to take with you:

1. **Watch the signals.** Plants tell you days before they collapse. Walking the garden in the cool of the morning, every few days, catches almost everything.
2. **Shade cloth and/or growing the right crops is the single biggest move.** Light-colored, ventilated, ready to go before you need it.
3. **Deep and infrequent watering beats shallow and frequent.** Roots follow water down. Train them deep, mulch them heavy, and the heat does a lot less damage.

We've been working through hot summers on our family farm and now homestead for a lot of years now, and I'm not going to pretend we have every season figured out.

We still get caught off guard sometimes.

We still lose a plant or two in the worst stretches.

Each of us has areas we can improve at, and the heat layer is one where there's always more to learn.

But the system I just walked you through includes the tips and strategies we keep coming back to, year after year, because they work. 😊 And no, we don't always do everything listed in this doc either. Even a few of the points here can make a big difference and you'll be surprised how resilient plants can be - even in the heat!

Be fruitful, and keep growing.

Paul