



## Garden Maintenance Guide

Once established and planted the hard work in a garden is done. However, gardens do require some attention to maximize production. Try to spend 5-10 minutes each day and you will be rewarded with a bumper crop of vegetables. The basic steps for garden maintenance are:

- Watering
- Thinning
- Mulching
- Fertilizing
- Cultivating
- Weeding
- Pest and disease control

### Overview:

The key to healthy plants is healthy soil - loose, rich, living soil produces plants less susceptible to pests and diseases. By "living" soil, we mean soil alive with micro and macro organisms like earthworms, fungi, bacteria, and protozoa. The good news is that you don't need to worry about the details, just follow these simple steps and the organisms will thrive:

- Keep the soil covered with plants and/or mulch to avoid the direct, baking sun
- Maintain adequate moisture levels
- Top-dress bed regularly with 1-2 inches of compost

### Watering

Plants cannot survive without water but too much water can also be an issue.

- For a new garden, daily watering (if it doesn't rain) is necessary until the seeds have sprouted and the new plants are established.
- Once the plants are established, water less frequently but deeply. In the summer heat, even established plants may require water every 2 or 3 days.
- Feel the soil - don't assume. Different beds may require different watering durations and frequency. This can be due to foliage covering a majority of the soil in the bed, mulch, organic content of the soil, etc.

- If you have the time, split watering into two times maybe 1 hour apart. The first watering begins to soak in then the 2<sup>nd</sup> watering is absorbed like a sponge.
- Watering in the morning is best and if possible, avoid letting the water contact the plant leaves.
- Tomatoes like roughly the same amount of water at regular intervals - see “blossom end rot” and “cracking” under the pest and disease section below for signs of uneven watering.

## **Thinning:**

Thinning is typically only needed only for seeds after they have germinated and are about 2 inches tall. For example, if two radish seeds sprout next to each other, you should thin (clip) one of them so the other can thrive. Refer to the provided seed planting guide but if you’re unsure of the spacing, visualize the size of the mature plant and thin accordingly.

### *Why Thin?*

- Plants need room to grow and overcrowding can reduce the amount of output. If there is less contention for nutrients you will get larger plants that produce more.
- Airflow and sunlight is improved reducing fungal diseases.

### *How to Thin?*

- The amount of space needed varies by plant - look at thinning instructions on your seed packages or the seed planting guide GCP provided. If those sources aren’t available, there’s plenty of information online.
- It’s best to use scissors or clippers to snip the stem just above the soil line. Pulling the plant may damage the roots of the plant you want to keep.
- If you have a choice, remove the smaller weaker plants.
- The trimmings of some plants are edible - basically if you eat the greens of the plant, the trimmings are edible. For example, radishes, kale, collards, swiss chard. If you’re in doubt look it up or consult an expert.

Here are a few guidelines:

- Radishes and carrots - 2-3 inches
- Beets - 4 inches
- Bush beans - 6 inches
- Broccoli, cabbage, collards, Swiss chard - 12 inches

## **Mulching:**

Following are three benefits of mulching:

- Keeps the soil temperature more constant - cool in summer, warm in winter
- Weed Control
- Water retention

Note, don't add mulch where seeds have been planted until they've sprouted and are established and when it's time to add compost and replant, it's best to pull the mulch back first and then reapply after planting.

Types of mulch include pine straw, leaves, compost, and wood mulch. Leaves can mat or pack down so they work best after they've been shredded. A mulching mower works well. If shredding isn't feasible, compost them slightly before applying them to the garden.

## Fertilizing:

When to fertilize and what to fertilize with is tricky due to several factors:

- Plants need a variety of nutrients and need them at different stages of growth.
- How nutrients are made available to plants depends on a variety of factors like soil pH, moisture levels, and the balance between nutrients in the soil - too much of one mineral can block the absorption of another mineral.
- Different plants have different requirements - for example, tomatoes and winter greens are heavy feeders.

All of this boils down to the fact that there's not a single recommendation that fits all environments and conditions. In general, a good quality, slow release, organic fertilizer applied during the growing season is helpful for the plants and the soil, but too much is not only wasteful but it can run-off and cause environmental problems in rivers and creeks. Synthetic, water soluble fertilizers are more susceptible to run off and do very little to improve soil health.

Following is a recipe for mixing an organic fertilizer with readily available materials from most garden centers:

- 1 T fish emulsion (there are alternative nitrogen sources if you prefer to use only vegan material)
- 1 T seaweed extract
- 1 T molasses
- 1 Gal water

Stir the ingredients together and water in with a watering can or apply as a foliar feed with a sprayer. This can cover a typical 4 foot by 12 foot GCP garden bed.

## Cultivating

After a few weeks, soil tends to crust over (especially if it's not covered in mulch). The heavier soil particles tend to move deeper into the soil structure and the finer, lighter ones move up to fill in the gaps. This process creates a panning effect and water tends to absorb slowly or often just runs off without penetrating deeply into the root structure. Cultivating breaks up the panning soil

and allows water and nutrients to penetrate deeper. Cultivating also helps with weed control as it loosens the soil making it easier to remove weeds.

Both a 3 pronged hand rake or a traditional hoe work well - just scratch the soil surface and minimize any disturbance to root zones.

## Weeding

Weeds should be removed because they contend for the same nutrients, water and air flow as your vegetables and they can shelter insects and disease. Make it part of your daily routine to remove weeds since they will be much easier to control when they are young and less established.

Over time, you'll learn to recognize the weeds and distinguish them from intentional plants. Weeds tend to grow where the ground is bare so mulching is a good tool for weed prevention.

In an organic vegetable garden, do not use herbicides to control weeds in or around your garden.

## Pest and Disease Control

Healthy soil, planting the right varieties for the season, adequate water, and sufficient nutrients result in healthy plants less susceptible to pests. A balance of good and bad insects is also important so it's best to identify a problem, determine if it's serious enough to take action, and if so, start with the least toxic solution first.

For example, first correct any cultural issues, like removing weeds or removing damaged fruits and leaves. Next, consider handpicking insects like caterpillars on the underside of the leaves of green, leafy vegetables, or use a hard stream of water to remove aphids from the underside of leaves. Also, consider removing out-of-season crops. For example, cool season vegetables like kale and broccoli can attract harlequin beetles as temperatures rise in late spring.

There are numerous local and online resources for pest control - if in doubt, consult an expert:

- Green Corn Project - [greencornproject@usa.net](mailto:greencornproject@usa.net)
- Travis County Agri-life -  
<https://www.traviscountytx.gov/health-human-services/individuals-families/agrilife-extension>
- Any of the many local Austin nurseries

Note that for any suggested products below or other products suggested by a local nursery, read the label and follow the manufacturer's directions. GCP only recommends organic approved products (for example, OMRI listed) but even so, organic insecticides are still insecticides and should be used with caution.

## Common Problems

*Fire ants:*

Fire ants not only make gardening unpleasant (to say the least) but they can also be destructive to plants. You'll never eradicate them completely but you can keep them at reduced levels and away from garden areas. There are 3 good, organic controls:

- Orange oil - mix 2 ounces of orange oil concentrate with a gallon of water and drench the mound.
- Boiling water - bring a pot of water to a boil or near boil and drench the mound.

- Fertilome make a bait - Come and Get It - that's effective in dry conditions.

These methods will usually need to be repeated and can be used in succession a few days apart. Note that orange oil breaks down the waxy coating on plant leaves and thus acts as an herbicide. Therefore it should not be applied directly in a planted garden bed. Boiling water can also damage existing plants.

*Caterpillars:*

Cabbage looper worms and army worms are common on many fall, green leafy vegetables like cabbage, broccoli, collards, and Brussels sprouts. If you have either of these pests, you'll first notice holes in the leaves. There are natural predators for worms - e.g. trichogramma wasps - so a few holes and a few caterpillars are acceptable. If the population gets out of balance they can do extensive damage to your greens. The first step can be to pick them off and drop them in a glass of soapy water or feed them to your chickens. If they're still out of balance, a commercial product with the active ingredient bacillus thuringiensis (BT) is effective.

*Leaf-footed bugs and stink bugs:*

You may find these on your tomatoes late in the season. They're fairly large bugs - .5 inches - and can be green or brown. They're both sucking insects so you may first notice blotches on your vegetables. The bugs can be hand picked and dropped in a glass of soapy water or sprayed with a commercial insecticidal soap. Note that spraying the plant with water tends to drive the bugs to the top of the plant making picking or spraying easier.

*Tomato problems:*

- Black spot areas on the bottom of tomatoes is a condition called blossom-end rot. Blossom-end rot (BER) is caused by either a lack of calcium in the soil or the plant's inability to draw calcium from the soil due to stress or inconsistent or insufficient watering. Remove the damaged fruit - they're still edible as long as the BER didn't spread above the top half of the fruit.
- Another sign of inconsistent watering for tomatoes is splitting. This is caused by overwatering once the fruit is fully grown.
- Various fungal diseases can cause leaves to turn brown. Remove affected branches and prune lower branches to avoid contact with the soil (these diseases are often soil born). Also, when watering, try to avoid splattering the soil onto the lower leaves - mulching around the plants can help with this. When pruning tomatoes that might be diseased, clean or sterilize your pruners between cuts and throw trimmings into your city compost bin or trash since a typical home compost pile won't kill the pathogen. A hydrogen peroxide solution is a good way to sterilize.