

A GARDEN GUIDE

What I've Learned So Far

As a kid, I dreamed of being a farmer. Having a garden satisfies the need to be out in nature, and getting my fingers in the soil. Watching things grow is exciting.

This is a very challenging place to raise a garden. We have a very short growing season, we're closer to the sun (compared to our old place, at 500 ft elevation!), and it's gravel, not soil. Not to mention the animals.

Our yard faces west, the entire yard gets good morning sun, some parts have afternoon shade which really helps. Other parts have full afternoon sun. Adding shades helped this year. Last year there was lots of rain to cool things off, the year before, there was only one small bed.

There's something new in the garden every year, like leveling the ground, adding bagged soil to the existing beds (some how, this seems understated, bagged soil is expensive, and it never goes as far as you'd like. Getting regular dirt from elsewhere has the potential of introducing unwanted things into your garden, fire ants come to mind, or grub eggs)

Putting in bricks below the deck to create a usable "garden shed" area and adding bricks to the fire pit area, both made the garden more functional and beautiful.

Adding raised beds adds growing potential. Ultimately, the goal is to add 3 more raised beds, which will help with crop rotation. Being able to move crops from one spot to another on a 4 year cycle helps prevent disease and pests from taking hold. (yeah, I know, it's a very small, crowded space, but it's still worth a try).

Just about everything to add to a garden is expensive, so I'm following the critical path, which, for me, means the raised beds are the priority, I can live with make-shift in other areas for the time being. Once the beds are established, I can look at other things, like a better rain capture system or a greenhouse, chickens or any number of things.

Disclaimer

What follows is an assortment of things I've noticed or experienced, things from the internet or from conversations with other gardeners, things I've tried or want to try. I consider myself to be a beginner, it's way harder to grow here, our last place had fertile soil, no monster bugs, no elevation or water challenges.

Monsoons are great but sometimes it's too much of a good thing. Last year all of the roses developed black spot, because of all the rain. This year the yellow rose is under a sunsail, which deflects a lot of water and it's doing much better.

I have considered putting up a shade many times. In the heat of the summer they really struggle, and get sun burned, same with tomatoes and squash. The beauty of sun sails is that they still allow sunlight through, but block enough to give the plants a break. Too much heat stress causes plants to abandon fruiting in order to survive. I think it's an elevation thing. In the old garden at 500 feet, if I had planted 11 squash plants it would have been a problem.

I am in the learning phase.

Compost

Composting was the second thing I did when we moved here. I had a hundred plus bulbs, which were planted immediately. While getting them in the ground, I recognized the "quality" of the soil,

so started on a compost pile. Compost is used to improve soil. It recycles kitchen scraps, yard waste, and to some degree paper waste.

Over time it turns your trash into a valuable soil building substance, that can make your garden thrive. It can be used in planting holes, around the plants on the surface, or brewed into a tea, which will deliver nutrients directly to the roots.

Or it can simply be turned into the soil. It can be used as a seed starter, by adding two parts compost, two parts coconut coir, and one part perlite or sand. Well rotted leaf mold can be substituted for the coir. Just in case things like that aren't available...it's good to know.

The compost should be comprised of both green and brown waste.

Green will be fruit and vegetable scraps, coffee grounds, grass clippings, green leaves, composted manure, and eggshells providing nitrogen or protein.

Brown will be dry leaves, newspaper, straw, corrugated cardboard, these provide carbon or the carbohydrate factor.

The ratio should be in the 3 or 4 parts brown to one part green. A note here, some people add weeds and grass clippings, I never have for fear of adding weed or grass seed to the compost, which just doesn't get hot enough to kill seeds.

This stuff needs to be turned REGULARLY. Probably a 2 week or so interval is a good ballpark number. The interior of the pile, in whatever container you use, needs to heat up, then cool down. The container should be situated in the shade, if it's getting blasted by the sun, it will dry out.

Conversely, too much moisture won't work. Sometimes, I get over zealous with coffee grounds, it'll turn into a big sloppy mess, so I'll add composted manure and/or straw to dry it up a bit. Turning the compost adds air into the pile, which is an element that makes all this work.

I use two trash bins, one is working and the second is ready or nearly ready. I happen to really hate cockroaches, so I keep a lid on it. I think part of it is keeping the compost clean, I've never seen one in the pile, here. Hoorah!

I usually start with a layer of straw, a little newspaper, leaves, whatever is available, then add foodscraps, more leaves and straw, and so on. I turn the stuff every 2 or 3 weeks, if it gets too wet, I'll add more straw.

Obviously, when it's half full it's harder to turn, I'll put the top stuff in a wheel barrow, turn the bottom, and return the top stuff to the bin. Sometimes, I'll get lazy, and blow it off. It doesn't matter, it's still going to break down, it'll just take longer. This can happen in late summer, the getting lazy, that is. It'll sit there all winter and is ready by spring when it's needed.

Turning compost in the winter is unnecessary, in fact it will cause a loss of heat.

There are **compost tumblers**, they seem like they'd be handy. They are a cylinder on a stand, with a crank for easy turning. There is a door on the side, for adding ingredients, layers of brown and green, turn it once or twice when more is added. My neighbor offered me one of theirs, so I'll get an opportunity to try it out.

Or you can build a **pen** with slats, or with chicken wire and posts, again the ingredients are layered and turned. The pile should be allowed to heat up, then turned to introduce air into the pile about every two weeks. If the pile dries out too much, add some water.

It can even be **piled** on the ground, I've done it that way, it will attract insects and rodents.

I once bought a **compost box**, it had a door on the top for adding, and a small door on the bottom to scoop the finished product out. Things in real life aren't that neat, and it turned into a big junk heap. Waste of money. I'll take the trash cans, thank you. And we'll see about the tumblers.

A note about newspaper, it is slow to break down because of the high lignin content, so limit its use. It needs to be SHREDDED. Also, don't use the colored pages or the slick advertisement pages.

Another note: there aren't that many trees here, sure, lots of oak. Oak should be only 20% of your brown content, they have a high lignin content and low nitrogen and calcium, as do beech, holly and sweet chestnut.

Pine needles are also very slow to break down, therefore are not recommended. I may add them to the longer project of leaf mold.

Interestingly, black walnut and eucalyptus both contain a natural herbicide that will inhibit seedling germination. Laurel (with the exception of Bay Laurel) and juniper are toxic.

Walnuts of any type, have toxin concerns. I unknowingly, I used to use the leaves as a mulch for the garden, then turn them into the soil in the spring. YIKES!

Eggshells and Coffee Grounds

These are both collected separately. Eggshells are rinsed, dried and finely crushed. Some claim that eggshells carry salmonella into your compost, others say this is a myth. I have always rinsed them, I don't care to attract insects into the house before there's enough to add to the bin.

Eggshells help prevent blossom-end rot, because of the calcium, which is slowly released.

They are on the alkaline side of the scale.

They are said to keep snails and slugs out of your garden, they don't care for the sharp edges.

Coffee grounds on the other hand are highly acidic and if you use them directly on the soil, take care and use a very light hand. Too much acid will burn the plants.

When the soil tested alkaline recently, I mixed up the vinegar fertilizer and cast a little coffee around the plants. The plants perked up and started producing.

Eggshells in the compost bin feed the earthworms.

Eggshells and coffee grounds both can be used in compost bin, they can be added to spent container soil or added directly around the plants, depending on your soil's Ph.

The Ph scale looks like this 1(acid)_____7(neutral)_____14(base or alkaline)
Most plants like the 6-7 range. A Ph meter is a useful tool.

Vegetable and Fruit Scraps

Peels, cores, watermelon rinds, are finely chopped to speed decomposition, avocado skins, chopped up, but not the seed. You'll always want to cut up things that are slow to break down.

Peanut shells might seem like a good idea, but they never go away, and they have salt content. All nut shells fall into that category. It might be possible to use them if they were ground up into fine particles.

If you throw cantalope guts or bits of tomato in the bin, you're going to get volunteers.

Banana peel tea?

Bananas and their peels are a great source of potassium, calcium, phosphorus, magnesium, and more. To make a tea, cut up the peels and soak in water for 3 or 4 days or a week, strain the water off, mix with water 5 to 1 and water plants once a week. Compost the peels.

Banana peels can also be turned into a powder fertilizer by drying in the sun for 2 or 3 days, until crispy, or in the microwave if there's no sun, and crushing them into a fine powder. Apply to plants every 15 days. Both of these seem like they will work well for potted plants, like herbs.

Like all good stories, there's usually a different perspective or contradiction. In this case, I dug a little deeper and found other, opposite opinions. They stated that the tea and fertilizer made from banana peels do not provide that much benefit, that water is not enough to draw nutrients out and what nutrients they do manage, are unbalanced. Composting breaks things down, making nutrients available, and also adds microbes to your soil. I'm going to stick with composting. Compost tea, on the otherhand sounds like a better option. Recipe below.

The nutrients in teas are immediately available. People are making teas of all types, snoop around the internet to see what they're doing and try some of it for yourself. Write it down!

Compost No-Nos

Meat, dairy, oil

Never add meat, dairy, oils. And no briquette ash or pieces, these may contain chemicals that can kill earthworms. Miracle Grow, reportedly will harm or kill earthworms, or drive them away, at the very least, it IS chemicals.

Nightshade No-No

And NEVER put spent tomato, eggplant, squash, pepper or potato plants in your compost, these plants are prone to lots of diseases that will contaminate your precious compost.

There's a concern about introducing Fusarium and Vermicularium Wilt, which could lead up to fungal buildup in the soil. Others argue that a microherd will be generated capable of decomposing the disease. I say, it's better to err on the side of caution.

Squash is not a nightshade, but they have problems with diseases and pests, so leave them out, as well.

Human Waste

Do I need to say it? No human or pet waste! I have heard of using DILUTED urine for fertilizer, as it'll add nitrogen and phosphorus to the soil. (Dilution ratio is 10-15 parts water to 1 part urine for plants in growth stage. And for potted plants, 30-50 parts water to 1 part pee) There are different opinions, and different ratios, which sounds like another experiment, my rule of thumb is to start small and gradually increase as you go. Watch what happens and write it down!

One more thing, UNCOMPOSTED scraps will work against building the soil by stealing nitrogen from it, for decomposition.

Reusing Potting Soil

Recharging container soil at the end of the season is a big money saver and a convenience, in that you'll always have potting soil handy. The soil in pots is depleted in a season, so the soil needs to be dried in the sun then put into a trash bin, add eggshells, coffee grounds, leaves, straw, and newspaper. Mix it all up, let it sit ALL winter.

Every now and then I'll add coffee grounds, eggshells and straw. In spring, mix in some compost and composted manure (it's cheap, and I don't have chickens...yet) and use it in planting beds and containers.

Raised Beds

Size matters, very true. I built the first raised bed this year, using redwood 2x6s, and these cool blocks that have slots on all four sides that 2x6s slide into. They can be stacked and secured with a small piece of rebar. I mistakenly made the bed 4x8' to utilize the expensive wood efficiently. Then ran it along the fence. Guess what I can't do easily? That's right it's hard to water, especially when I'm using a 2 gallon watering can. That size is fine if there's access all the way around.

Height

It's 3 high, so about 18". That's a lot of soil to buy, some people use branches, shredded cardboard and/or newspaper, maybe gravel at the bottom for drainage. In ours, I used gravel, cardboard, some newspaper, local "dirt" (which may have been a mistake, the grub eggs were probably in that dirt) and then bagged garden soil. This is plenty high, giving the plants lots of room to grow. 12" would probably work, without the filler. We had a bunny problem, so higher seemed like a better option.

Materials

The pine boards, 2x6, are only slightly cheaper than redwood. The redwood will last much longer, so that was a no-brainer. I put a sheet of 9 or 10 mil plastic on the walls, as a moisture barrier. A couple of inches extra at the top, to secure it with a thin strip of wood, and just to the ground. You don't want to block off drainage. (I really don't know if plastic is necessary) It might help with evaporation.

Raised beds are spendy, but I look at it as an investment, like getting a generator, communications gear, or water purification systems. Some people use plastic containers or buckets to grow in, and I'm thinking the cardboard boxes Claudia uses for potatoes will probably work for other vegetables. The point is to start a garden.

In-ground vs Raised Beds, watering

One more thing, watering raised beds is different than watering an in-ground garden, this is yet another learning curve for me and maybe you. Containers are different from both, they dry out much faster, so will need more attention. Plants in raised beds seem to do better with water every day, not the once or twice a week deep watering for in-ground gardens.

Watering roses here was a big question mark, when it rains a bunch, they develop black spot, which can eventually kill your rose. Every infected leaf left in your bed will spread the disease. So, removal is an imperative. Getting back, the roses confused me, they weren't happy. Too much water, not enough, back and forth. I've finally decided it's not only the water but also the elevation. That little bit of shade over the yellow rose helped confirm that, it helped deflect water and the heat of the sun.

Watering should be done at the ground level, if you can. Wetting the plants causes problems, specifically fungal problems. I know, what about rain, that's just not a controllable factor. So, to minimize the risk, water as close to the ground, in the early morning so the water has time to penetrate into the soil and the leaves have time to dry. This, also reduces potential evaporation.

Some say to water in the evening, to avoid evaporation. But then you may end up with root rot, especially if the soil isn't perfect and doesn't drain fast enough.

Water Collection

There are different systems to do this. There are systems that tap into down spouts, and can

hook up via piping to multiple barrels. when it rains, the barrel fills, then the overflow goes to the next barrel and so on. These barrels have a spigot to fill your watering can or attach a hose. I imagine if your garden is below your system, it'll have decent pressure. They're pretty cool, but they can get pricey.

And there's always the handy trash can. Relatively cheap and they come with lids. Like their compost cousins, they require a little more effort to use. During my first monsoon, I noticed one spot more than others shed a lot of water, it occurred to me to capture it for the garden. One can turned into 5. One is under the "flood" spot, to catch the rain off the roof, with another next to it, that I use to fill the watering can. It has a mosquito dunk in it, so I like to cycle all the water through it to treat any mosquito eggs in the catch barrel. I keep lids on all of the cans, but as soon as I take a lid off, here they come!

The Plastics Concern

I capture rainwater and dish rinse water in plastic trashcans, they are not food grade.

I also fill my 2 liter club soda bottles with filtered water and store them, for emergency drinking water.

If push comes to shove, I will use the water from 3 of the rain barrels (these are generally not used in the garden, they are being saved for emergencies) The plan is to filter and boil the water, hopefully the gravity filters will clean out plastics, like they claim.

Beyond that, rain water, world wide is contaminated with microplastics, we just aren't getting away from that. Microplastics may be BAD news, but I'd rather have the water, than not. I look at this water saving as a temporary solution, to tide us over until alternatives are available, like getting spring or creek water. Or town water goes back on line, oh yes, call me Pollyanna.

A note about **dish rinse water**, I use eco friendly dishsoap, and try to get most of the soap off before rinsing, to minimize the amount of soap in the water.

In the heat of the summer the garden can use one full can, that is 32 gallons, not including the trees. That's a lot of water! If it rains, I'll use the moisture meter, just to make sure the soil is wet enough.

Mosquito control is an on-going battle. Last year I was spraying a diluted solution of horticultural oil and water on top of the water, it doesn't affect adults, but it suffocates the little baby mosquitos as they emerge from the water. This is kind of a long range solution, that I'm not sure I have the patience for. It worked in our old town, but they have a mosquito abatement program in the wider community. Here is different. No abatement program and different, tiny, sneaky, smart and hard to kill bloodsuckers.

The mosquito dunks are another option, they slowly dissolve in a rain barrel, releasing *Bacillus Thurgiensis*, which eats the eggs and is a little more eco friendly.

Next will be a fine mesh tightly secured to the opening, to keep them out in the first place.

One more concern about mosquitoes, when the beds are watered, and there's a layer of mulch on the ground (this helps retain the moisture) mosquitoes will hang out in the mulch. Probably laying eggs for future generations of misery. Bottom line is that if you have a garden, chances are, you will attract mosquitoes.

Is collecting water legal? According to SRP, it's their water! The water that comes from the sky and runs off your roof belongs to SRP. My story is that I save my dish rinse water, (I do). And beyond that, I'm merely delaying the water. I don't think a gardener here and there is what they are worried about. And to be blunt, if things really go sideways, they won't have time to

bother with people collecting a little garden water, they'll have bigger fish to fry.

Homemade Fertilizers and Other Things

Fertilizer # 1

mix 1/2 gallon water
T epsom salt
t baking soda
1/2 t ammonia
mix 1 cup to a 2 gal watering can
(did not have remarkable results, maybe adjust amounts of ingredients?)

Fertilizer #2

2T epsom salt per gallon
(this worked ok, if epsom is all you have on hand, you've got fertilizer)

Fertilizer #3

4T white vinegar
2 T epsom salt
T baking soda
mix in 2 gallons water
(this is working very well, applied every 2 weeks.
trying once a week with all the rain)

Note: Below is a formula for weedkiller, using vinegar. I read an article about not using vinegar because it is a killer! Before reading that, I tested soil for ph, found it to be alkaline, so tried this light dose of vinegar, it seems to be helpful. There's substantially more vinegar in the weedkiller, so, no harm with this light solution.

Compost Tea

It is said to increase mycorrhizal fungi and predatory nematodes, which help defend plants against a variety of microorganisms and improve soil nutrients. I thought merely adding an amount of compost to a bucket of water and done. Nope, not so fast.

It's recommended to fill a bucket and allow it to sit for 24 hrs to allow the chemicals to dissipate. Or use well water or rain water.

Brew time is 24-36 hrs, any longer than that it will create an anaerobic environment increasing possibility of bacteria, viruses and molds to thrive.

A recipe:

5 gal NON-CHLORINATED water
2 cups fully finished compost or worm castings
1 T unsulfured blackstrap molasses to feed the bacteria
1 T liquid kelp fertilizer to feed the fungi
1 T fish fertilizer likewise, to feed the fungi

Brew for 24-36 hrs, pour it off, dilute to at least a 1: 4 ratio. Apply with a watering can or use as a foliar spray, which is helpful to sick or infested plants. Once brewed, it should be used. I've read bits about brewing for way longer times, but am cautioned by the above statement.

Bonemeal

Clean the bones(any kind of bones), pressure cook for 5 minutes, to remove everything
Bake the bones at 425*, until they are fragile and dry
(usually about an hour for small to medium sized bones, larger bones take longer)
Allow them to cool
Crush! Grind! Destroy! WEAR GOGGLES. Use a rolling pin, a mallet, a blender, until

it's a fine powder. This can be used to brew a tea. Or it can be sprinkled directly to the soil. Bone meal adds calcium and phosphorus to the soil. It will balance out other amendments that may be low in calcium and phosphorus. It can be applied any time from Feb - Nov

Weedkiller

1 qt white vinegar
3 T salt
3 T dishsoap
Mix in a spray bottle
(haven't tried this, yet)

Aphid Spray

T Castille soap, Dr. Bronner's
10 drops lemon essential oil
mix with water in a spray bottle
(this works!)

Mosquito Repellent

4 c white vinegar
100 drops citronella oil
(5 droppers full)
mix in spray bottle
(limited success with this, I keep a spray bottle of this stuff on front porch, the mosquitoes like to hang out there, they don't like the smell and will leave long enough for us to get in and out the door)

Powdery Mildew

T baking soda
T horticultural oil
Mix these in a spray bottle with water.
(I barely included this, because it hasn't been a problem. Until today. I just tore out all crookneck squash, they've been very poor producers, and 2 of 3 had powdery mildew. The more I looked, the more I found, so I just pulled the plug. This formula works, spray once a day for a week, then once a week after that)

Powdery mildew can be caused by wet, humid conditions, it was certainly wet last year, but no powdery mildew. It can also be caused by crowding plants too close together, which explains the squash but not the cucumber. The cucumber had aphids, sprayed with the aphid spray, but then the plant developed powdery mildew, sprayed, but not the suggested intervals. It came back, so I researched it and found the recommended spray intervals.

Powdery Mildew #2

1 teaspoon potassium bicarbonate
1 liter water
If you've added this to your arsenal, it's pretty simple and instantly deadly to powdery mildew. It's also approved for organic gardening.

What to Plant

My very best advice here would be to plant what works for you. For me, I have never had any luck with cucumbers, so I'm not taking up any more space, or wasting any more time with them! This year was the final straw, killer aphids, then powdery mildew, with ants on top. Just NO! And yet the girl at Tractor Supply with the "black thumb" has an abundant crop of cucumber. I haven't had much success with growing tomato from seed, not peppers, or eggplant and

strangely no success with radishes! I will keep trying.

The garlic this spring was an utter failure, but I've read up and think that the fall planting is the answer. Gary, the blackberry (a joke) did not survive, I didn't have the bed ready, so it stayed a little too long in the fridge, and lost a lot of the root, entirely my fault. Other people I know here are also having challenges with berry bushes. Berries are pretty fussy to start, but once underway are easy care, or so I hear. I'm going to keep trying, anyway.

So, watch how well certain plants do, WRITE it down. If you're really set on something that hasn't done well, then by all means, do try again. Just try to tweak what you did the last time, to see if it will work with the adjustment. It's all an experiment.

How to Plant

First things first, in order to be able to save seeds, you have to start with Heirloom seeds. I like Sweet 100s, they are smaller and sweeter than cherry tomatoes and they aren't heirloom. I've grown them for years and will continue to as long as they're available.

To make **seed starting soil**, take 2 parts fine compost, 2 parts coconut coir (substitute with leaf mold) and one part perlite (substitute with sand). Mix it well and moisten, then stuff the cells in your jiffy tray, egg carton, salvaged 6 packs or pots from your store bought plants. I like the jiffy tray because it creates a good environment for seedlings, the bigger tray retains the water, the clear top traps the condensation, and creates a little humidity.

The lid is a good height, giving a little growing room. Another bonus is that it doesn't need to be watered everyday, even so, it should be monitored, especially in summer. Clear egg cartons work about the same, except they don't have enough grow room.

One more thing about Jiffy trays, use a paper clamp on the long sides, the lids do not stay put in the wind, if it comes off, it defeats the purpose. AND, jiffy trays save seeds. One year I planted sunflower seeds in the ground, the hungry little birds took care of them, no sunflowers.

With bigger seeds, like squash, beans, sunflower, cantalope, I'll put one seed per cell. They seem to have a high germination rate. Smaller seeds, 3-6 per cell.

Hardening off seedlings, what this refers to is when seeds are started at the tail end of winter, too cold to be outdoors, they either need the protection of indoors or a greenhouse or some other means of protection.

They will need to be gradually introduced to the outside weather. I'll find a container to move them around in, if they're already in the potting cups. Take them out to bask in the morning sun, for a while. Then, put them back in their protected area. Do this until the weather is mild so they will survive.

One more thought: when transferring seedlings from seed tray to the larger potting cup, make sure the soil is at least damp. Transferring a delicate seedling into dry dirt is a recipe for failure.

Dry soil will suck the moisture out and destroy the seedling.

Bagged soil, once it's dried out is tricky to re-moisten, it needs time to absorb water, like hours. If you're in the middle of transplanting, it's a bummer to have to wait, or take a chance with dry-ish soil.

When to Plant

Potatoes can be planted in March, with a blanket of straw, and a second crop in mid June. Preparation for planting potatoes goes like this, cut potatoes into pieces,

leaving an eye or two in each piece, let the cut side(s) scab up a bit and then plant eyes up. You can either buy at Tractor Supply, a big bag for \$5 or \$6, Never! Home Depot (their taters don't do well) OR you can plant your pantry potatoes that have decided to grow. I've got both types in the garden, right now. I'll let you know how the pantry potatoes do. This year I bought two bags, because garden potatoes are the best, and I read about staggering a second crop, so wanted to try it. I kept the second bag in refrigerator and planted in late June. The next thing to know about potatoes, is that as they grow, they'll need soil mounded around the plant as potatoes will grow up into that fresh soil and/or straw.

Last year I read about potato crates, fully intended to build some and save some space in the garden beds. Ended up building a big raised bed instead. Claudia mentioned using sturdy boxes to grow them in, similar premise as the crate method, except there's no/less cash outlay and no building the crates. With the crate method, the sides are slated instead of solid, which allows for ventilation and less of a cost factor. Potatoes are planted in several inches of soil, let's say 6 inches, as the plants grow, add layers soil and layers of straw. When ready to harvest, simply lift the crate up and the potatoes will fall away. I imagine the boxes work the same, except they will fall apart easily at harvest time and then can be composted.

One more thing about potatoes is the curing process for long term storage. Lay them out in a cool, dry, dark place. Keep temps between 50 and 60 degrees. Allow the potatoes to rest for two weeks. This will cause the skins to toughen, which helps them store longer. So far this hasn't been necessary, the garden isn't big enough to grow a huge amount of potatoes. In case someone has that kind of space, this information will be useful.

Tomatoes, squash, peppers start seeds in March. This needs to be done in the house or a green house. If using a Jiffy tray, the seedlings will need to be transplanted into slightly larger pots and will have to be acclimated to the outside, putting them out in the sun for an hour or two at a time. It's kind of a pain, once, I forgot a little group of seedlings and burned them up.

Jiffy trays are pretty handy, they can be reused. They have 2 smaller trays that fit into a larger tray, and a tall, clear cover. Each of the smaller trays have 36 cells to plant seeds in, just think, 72 opportunities for success. They need to be cleaned before reusing. I left one in the sun and ruined it, probably the same day I burned the seedlings.

Last year AND this year, I pushed the panic button and bought tomato plants. Some seeds just take longer to germinate, like tomato seed. Beans on the other hand seem eager to grow! I do have one heirloom beefsteak from seed, not many tomatoes. I've got a lot to learn about tomatoes.

All of the squash this year are from seed. Another thing about squash, I just learned is that there are male and female blossoms, one produces pollen and the other produces fruit.

When I plant seedlings, I'll put cages around them, to protect and mark where they are. This year, I left the cages too long, and the squash started growing upright, so I left it. It worked pretty well until they got too big and fell over. I'm going to try beefier cages, or some steel fencing, next year.

After the tomatoes, squash, second round of potatoes were underway, I planted five types of beans. (Inspired by an article about the Three Sisters, squash, beans and corn)

Beans, it turns out do very well here. I liked the idea of beans because they can be dried and stored, and they fix nitrogen in the soil. I like the fact that the beans are also the seeds. And they grow like mad.

When I planted the seedlings I placed a 5' bamboo stake at each plant, then strung white cotton string back and forth on the stakes to create a ladder for the beans grow on for support. The

bamboo works well enough, even now that the plants are bigger and heavier with pods. They also helped with the watering, once the plants got dense making it harder to see where to water.

Onions and garlic, plant in fall, as well as cilantro, parsley, kale and snap peas. These all seem to do better in cooler weather. Cilantro, parsley and kale all like to bolt in the hot weather, so I planted all these in the fall and had better luck with them.

A note about cilantro, last year I planted some in the spring, first sign of hot weather, they bolted. Meaning they went to seed, when a plant goes to seed the leaves get smaller and rattier. Then, I planted a tray of cilantro in the fall, and they came up very well.

Later I read a trick for germinating cilantro. You roll the seeds on a hard surface and gently crush them a bit, this is supposed to help with germination. Easier said than done, I just planted 2 trays of cilantro, they are very hard to lightly crush.

I planted garlic this spring, only a few survived. After doing a little research, I found a grower that won't even ship until it's our grow zone's time to plant. Our average first frost date is October 22nd, according to the internet. (We all know the internet is a big fat liar)

According to Old World Garden Farms, you get your average first frost date and count backwards by 6-8 weeks and this is your fall planting date. If all that's the case, it's past time to plant onions and garlic. But I'm going to rely on Urban Farmer to send them at the right time.

Both garlic and onions need a longer growing season, so planting in the fall gives them a head start, they develop roots, then go dormant in winter, and resume growing again in spring.

Urban Farmer also had information about **preparing the sets**, like soaking overnight in distilled water with a few tablespoons of baking soda to help get the ball rolling. If you decide to use store bought garlic to plant, it should be organic, or so says the internet. The reason being, some produce is sprayed with an anti-sprouting agent.

To plant, make a furrow 6 or 7 inches deep, add 3" or so of compost. Garlic goes in 3" deep, and onions are planted at 2". Pointy tips up, 4" apart. Cover and spread 1" of mulch on top. This can be straw, shredded leaves or grass clippings(!)

As the plants grow, add mulch until early winter, it should be 4" to 6" deep. This will protect the plants through the winter.

Garlic cloves are the seeds, onions will flower, produce seeds, and if you're patient, sets, which will be faster, the seeds take two years, but the sets will produce in the next season.

Parsley is a two year plant, in the second year it produces seeds.

Sage and mint will survive the winter, this was a revelation after my years old basil croaked when it experienced the first winter, as did a 20 year old ocotillo. I'm thinking about frost cloth and some of these herbs getting together this winter, just to see what else can survive. A suggestion about mint, keep it in a pot, it spreads. Mexican primrose, POT! Bamboo, DON'T!

Our two smallish peach trees, produced so much fruit last year, I made about 3 1/2 gallons of jam. This year it was going to be preserves. But we had that late, surprise frost which did in the setting fruit and blossoms. Zero peaches. Next year I'm thinking to cover with frost cloth. This needs to be done from the top to the ground to trap any warmth. Someone mentioned spraying something to protect against frost. Which will need to be researched.

Another thing about fruit trees: dehydrated roots during a hard frost will stress the tree so much it won't produce fruit in the spring. Don't rely on rain, learned this the hard way with the 60 years

old apricot tree at the old place. Kept waiting for rain that didn't come, hard freeze, no fruit. Do your trees a favor and water them in the fall.

Last year the peach trees were being damaged by ants. A little reseach told me to wrap the trunks with white tree wrap. For some wierd reason, it works. This wrap also protects the trees from sunburn, so I plan to wrap the trees higher, because they are sunburned.

I think asparagus does well here, so I plan on dedicating a raised bed to growing it. It's a long term crop. The first year there's no harvest, second year, a short harvest and in the third year a full harvest. Asparagus comes back year after year.

Sunshade for the delicate doilyls. Squash seems to need a little shade in the afternoon, after putting up some sunsails they did much better. Our yard faces the west, most of the garden area starts getting sun in the 9 o'clock hour, in mid afternoon some areas are shaded by trees, but other areas are blasted with relentless heat, and the plants suffer. Shading has helped. But this may be a double edged sword, by not having enough sun may bring on a powdery mildew problem. After shading, the squash and cucumber developed powdery mildew. The squash had the added complication of being crowded, meaning not enough airflow.

Companion Planting

This list is by no means complete. There are any number of reasons why companion planting works. Some plants have anti-pest qualities or bring pollinators to the garden, also maximizing garden space is another consideration. Some plants add nutients that other plants need.

The primary example would be the Three Sisters. By planting corn first, a little shade is established, then plant beans 2-3 weeks later, or when the corn is around 6 inches tall, as the beans grow they will be supported by the corn. And finally the squash one week after the beans have emerged. The beans fix the nitrogen and thereby fertilizing the other two.

An interesting observation, there were sunflowers in a bed, when it came time to plant that second batch of potatoes, they went in with the sunflowers. The sunflowers did not fare well, aphids, mold, it wasn't pretty. And as it turned out, the potatoes didn't do well either.

VEGETABLE	PLANT WITH	NOT!
Asparagus	basil/parsley/peppers	onion/garlic/potato
Broccoli	celery/dill/rose	oregano/tomato
Califlower	beans/celery/oregano	peas/tomato/potato
Celery	cabbage/spinach/tomato/onion	potato
Eggplant	spinach/pepper/potato/beans	fennel
Garlic	cucumber/lettus	asparagus/peas
Leek	carrot/celery	legumes
Lettus	beet/carrot/radish	beans/parsley
Onion	broccoli/cabbage/lettus/tomato	beans/peas
Peas	beans/carrots/corn/cucumber	onion/garlic
Pepper	tomato/parsley/basil/carrot	fennel
Potato	corn/cabbage/eggplant/peas	sunflower/cucumber
Radish	bean/beet/carrot/peas/spinach	cabbage/califlower
Thyme	beneficial to all	grows with all
Tomato	asparagus/basil/celery/garlic	fennel/potato
Turnip	mint/peas	none listed

Heavy feeders are asparagus, beetroot, broccoli, cabbage, califlower, carrots, celery, corn, cucumber, eggplant, lettus, parsnips, potato, pumpkin, radish, spinach, squash, tomato and turnip.

The above category search gave way too much conflicting information, there were too many

crossovers, meaning this needs more research. I'm really thinking, ALL are heavy feeders, so plan for that. SHRUG. I'm just not seeing any clear answers. Heavy feeding means the plants draw more nutrients out of the soil, so added nutrients are needed.

Worms, Grubs, Rabbits and Elk

Earthworms are good for the soil, in fact you can buy earthworm castings to help your soil. But, Asian jumping worms are not, they leave behind ruin. They look very similar, but the big tell is the difference in the clitellum, in the earthworm it's puffy and doesn't go all the way around it's body. In the jumping worm it is smooth and flat and completely encircles the body and is closer to the head. Beware of buying bait worms to build your worm population, sometimes they sell them for fishing. Work on the compost, they (earthworms) will come to your garden if you feed them. Do look jumping worms up on the internet to see for yourself.

Grubs are the offspring of beetles, they sometimes eat roots, sometimes not. They do eat the little bits of wood in the bagged soil. They, unlike the jumping worms, leave good things behind. The problem is when they emerge as adults they may eat your plants. And grubs attract other creatures who like to eat them, like moles. Moles tore up the potato patch last year, I built a short chicken wire fence around them, thinking it was a rabbit. Turns out, moles like grubs and are uninterested in potatoes. I've tried Neem oil, the timing for that stuff is tricky.

Hand picking is reliable. A couple of these things is ok, but if there's dozens in a small area, it's time to start picking.

Update: grubs DO eat potatoes! What I'm thinking now, is that the grubs are more developed in September than they are in June, and need a hardier meal in September. Both last June and this June, the grubs didn't touch the potatoes, but really went at them in September.

And I now think potatoes attract the beetles in the first place.

Rabbits can squeeze through a tiny space in your fence. They like our flowers and vegetables. This year I lucked into some wire racks, which are placed at the gates and some weak areas along the fence. Bingo-bango, no more rabbits.

At one time, javalinas would raid the backyard but the previous owners put in a ton of rebar where they broke through. I added a big clod-buster and have had no problems. I got nothing on squirrels, uggg. Hundreds and hundreds of dollars of damage to my car's wiring, more to come. Tore our old yard to shreds. NOT a fan! I'm gunning for you, Rocky.

Elk have broken the hearts of many gardeners in this town. They can jump as high as eight feet. For some reason, they have left our backyard alone, I don't understand why. Maybe the tree placement, the slope between yards. (I hope I didn't just jinx it) They sure enough visit the front yard, along with javalina. This year a young male got the apples in front, and then a big bull came along and hard pruned the whole tree. I think it's ok.

I've heard of people putting in big, covered chain link kennels to grow in. The internet suggested using 8' high chain link fence, electrified. Lots of places here don't have fencing or easy to jump fences. A possible solution could be borrowing some space in a buddy's backyard. I'm always eyeballing big backyards.

Purslane, the weed in your yard, is emerging as a superfood. I'm letting mine grow.

Collecting, Drying and Storing Seeds

Some plants are super easy to collect seed, onions develop a big flower, it turns into black seeds, and then develops into sets from there, I think. I had to go out of state for 3 weeks and came back home to decapitated onion flowers, so blacks seeds only, they take 2 years,

instead of one. Note: onion sets are the bulbs that grow from the flower, if you let them go long enough, that is.

Flowers are easy to collect seeds from. I think squash might be easy as well. Let them go in the garden, they get big and tough, so do the seeds. I didn't collect squash seeds this year. Parsley, cilantro and oregano send up flowers that produce seeds. Cantalope, EASY!

I went to gather some more Calandula seeds but found some green worms chowing down. Fortunately, I had saved some from earlier in the summer.

Any seed you gather should be dried, single layer on newspaper for 1-3 weeks, no direct light and with space around the seeds. The outer shell of the seed needs to dry and cure. Seeds also need to rest.

I've read that seeds are good for about 3 years if properly cared for. This would be drying properly, bagging and sealing, marking what they are and the year. It's suggested that the seed packets be placed in a zip lock with the air squeezed out. Then, put in a seed vault, this can be a Lock Lock, or similar container. Throw an oxygen absorber in and shut and seal. Replace every 6 months. Also keep this container in a cool dark place. I wonder what the Egyptians did?

Or you can wrap them in waxed paper packets and throw them in a coffee can, or the kitchen drawer.

Keep a Garden Journal

This, like composting, is an absolute must. You think you'll remember, you will not! I'll draw a diagram of the garden, showing what is planted where, the date, the following crop, how things did in the spot. This also helps with crop rotation. This pertains to moving crops to different spots to break the cycle of diseases, pests and weeds, it also helps build the soil. Three to four years are generally recommended. (Kinda tough in a limited space backyard garden)

I draw pics of what is planted in seeding trays. If I read something interesting, I'll put it in the notebook. I'm not going to rely on the internet being available at all times, just like I don't want to count on buying seed, my goal is to learn how to harvest seed for the next season and to be able to grow from seed.

Last year I put cantalope seeds in compost, and had surprise plants come up here and there, didn't know what they were, and being curious, I let them grow, just to see. They've produced several bonus cantalopes. Update on those volunteers, they didn't produce very good melons and then developed powdery mildew. Next year, I'll just plant melons in their own spot and dispense with the volunteers

Things I like to have on hand are straw, which needs to be "noxious seed free", at the very least. (I hear they have sterilized hay) Newspaper, composted manure, maybe a bag or two of raised bed soil, just in case. Epsom salt, Horticultural oil, citronella, lemon, and lavender essential oils. Neem oil for grubs. Vinegar, baking soda, castille soap, ammonia. Spray bottles.

A little seed starting soil, seed trays. For me this is going to take the form of compost, coir and perlite, the alternative is the bagged stuff from Home Depot which contains peat moss, which is controversial because extracting it causes eco damage, it's not sustainable. Whereas coconut coir is highly sustainable, and does the same thing. Mushroom compost, this is light and can be put on top of the seeds.

Stakes, plastic coated steel, and bamboo. An airtight container for seeds. If I buy plants, I'll save the little pots to use for transferring seedlings. In fact, any plastic container can be used for that purpose, as long as holes are made to allow drainage. Frost cloth, a moisture meter with a Ph meter (Amazonk). Plastic coated clothesline is great for hanging sunsails. It stands up to UV,

coming undone isn't an issue, but it does stretch a bit, so needs retightening.

Some products or companies I'll avoid in the future, Seedra seeds on Amazon, bought 2 packages of radish seed, one had 7 seeds! Made of GOLD. Bonnie plants from Home Depot. Made a note to never buy Bonnie bell pepper plants, last year. This year, the note will be not to buy Bonnie "Original" tomato plants, it's looking like a pattern. There's something going on with the tomatoes, yeah, I don't know what it is. I certainly don't know it all, I'm just sharing my observations, failures and successes, so you can avoid my mistakes, and hopefully enjoy success in your garden. There is just not enough time to research every single issue!

Resources

Here are some websites with great articles.

oldworldgardenfarms.com many, many very interesting topics

garden.org tons of articles, fertilizers, a vast warehouse of information

ocregister.com article on pruning

donotdisturbgardening.com earthworms

heeman.ca articles on vegetable gardens, and companion planting for beginners

ruralsprout.com grow harvest store beans

growveg.com recipe for seed starting soil, tons of articles under gardening

guidehomeguides.sfgate.com has a step by step guide to make bone meal, how to use

diyncrafts.com also has a bone meal recipe, I'm including it above, in the recipe section. (it was hard to navigate the site to find the recipe, sometimes a google search is the simplest path. garden.org is also a hard one to navigate, there are probably 1000s of articles)

theprovidentprepper.org has an extremely detailed article on water storage for food grade barrels, in fact they've put together an entire website on preparedness that is easy to navigate.

At the top of the page is a menu, click on it and then click on categories, from there click on your topic. They do advertising, in the section about filters they lean heavily towards Berkey Water Filters, because they like them. They discuss many brands, give a brief overview and a ballpark price.

The big PS here, is that many things just aren't available through the links. I don't know if it's because these things are selling out or what. Lots of good how-to information, though.

ufseeds.com (Urban Farmer) is a good resource for non-GMO seeds, fertilizers and such. They have some fertilizers made with fish and seaweed that I've been curious about.

Their prices are slightly higher than Amazon's (of course) and there's free shipping on orders over a hundred bucks. A few of us going in on an order would help. I'm sooo tired of Amazon's stranglehold.

I have a love/hate relationship with the internet, (mostly lies). At one point I felt it was a good resource tool, but now feel that the information is compromised. I loathe social media.

I really like the idea of hard copy. Once again, if things go sideways, there might not be an internet or Home Depot or supplies to depend on. Having books and tools, some simple things

on hand might make all the difference.

I am sorry for the length, but I was asked to make this understandable to the "village idiot".

I hope you will find it helpful.

A Brief Glossary

Mulch is applied to the surface of a garden bed to help retain water in the soil. It also protects the top soil from weeds and erosion.

It can consist of wood chips, shredded leaves, straw. Shredded rubber, not for gardens! Also dyed wood chips, also not for gardens, I have some around the roses, and have to be vigilant that they don't slip into the vegetable area. Will not be using them again!

Leaf mold is at least a 2 year project. It is a very good mulch that can replace coconut coir or peat moss. And remember these are used in the seed starting mix. It's pretty simple, just pile up some leaves and allow it to do its thing for a couple of years. Have you ever seen that rich, black stuff beneath the pine and spruce trees? That's leaf mold. Same thing under the apricot tree. And any other tree where the leaves are allowed to rot in place.

Soil amendments are things added to the soil, that improve soil structure, moisture retention, drainage, aeration, providing a better growing environment.

Fertilizer improves nutrients in the soil.

Compost is an amendment that also adds nutrients to the soil.

Coconut coir is the outer coconut husk, it adds structure, drainage and aeration. Lower grades can have a high salt content. So you'll want to get the grade intended for growing plants. It can be substituted with COMPOSTED manure, and leaf mold.

Perlite is made from volcanic glass, it helps with drainage and aeration. It can be substituted with rice husks, pumice, vermiculite, if you happen to have any of that stuff laying around. Sand can be used, but is heavier. For seeding soil, lighter mix is better, the fewer obstructions, better.