Q. Attached are two pictures from our raspberry patch. The close-up does not actually describe our problem, so here goes. We have a healthy Raspberry patch, but the tiniest of berries. Is it likely the wrong variety of berry, or are we doing something wrong? We love berries. My dad used to have big, delicious berries, but ours are so small, they are not worth the effort. Any comments appreciated. Clyde

You're right: the berries look healthy. First, I require more information.

1. Are these in full sun?
2. Do you know the varieties?
3. Are these summer bearing or fall-bearing? The latter can bear twice with proper pruning.
4. These are heavy feeders. Do you use compost? Mulch?
5. How old are the shrubs?
6. Do you prune and if so, how and when do you prune?

Gene, Answers follow (as much as I know - but I don't know the key answer). Clyde
They are very much in full sun. Good.

**I don't know the varieties** or whether they are summer or ever-bearing (I think I ordered both, but most of the plants are similar, and prickly, with a few pale-green, no thorn plants). Which they are will determine when you prune. Here is a Rodale link that might be helpful: [http://www.rodalesorganiclife.com/garden/grow-your-own-raspberries](http://www.rodalesorganiclife.com/garden/grow-your-own-raspberries)

I have not used compost or fertilizer, but have mulched heavily with 3+ year old wood-chips - quite dark but not fully composted. (Sigh) Big problem here. In preparing any bed for perennials, such as fruit trees or shrubs, it is essential to prepare the bed well, meaning deeply with lots of organic matter, as it is hard to work the bed after the stock is planted. Wood chips are not fertilizer.

The whole bed is now fairly old (4+ years)

I pruned heavily last fall after fruit ended (and I think I mulched heavily this spring, but the mulching could have been last fall also). See Rodale site, above. Pruning is done every year. In general, all fruit trees and fruit shrubs require some kind of annual pruning to get nice fruit regularly. In addition, trellising is important to enable proper care, picking, and pruning. You can build a simple trellis using green metal garden stakes and wires or cords to keep the brambles erect and organized. Avoid overkill (here is one example of overkill: [https://www.youtube.com/watch?v=9tZqzZZTzQU](https://www.youtube.com/watch?v=9tZqzZZTzQU)). Here is a verbal description of the concept: [https://www.plantvillage.org/en/questions/152-raspberry-best-way-to-trellis-raspberries](https://www.plantvillage.org/en/questions/152-raspberry-best-way-to-trellis-raspberries)

The end posts should be firmly planted in the ground, as the wire or cord will be under tension. We use another, smaller garden stake at 45 degrees inside trellis area attached to the vertical post at the upper end, and set butt end in the ground against a short backstop cut from a metal garden stake.

I have pruned in prior years also, but not as heavily as last year (I pruned heavily last year because of my frustration with the berry size, and I thought the hedge was getting too crowded). See Rodale site.

Except for your "heavy feeder" comment, I'm fearful I ordered the wrong variety. The biggest berries we ever had were Caroline. Giant, red, good flavor, fall bearing. We got them from Gurneys ([http://www.gurneys.com/category/raspberry-plants](http://www.gurneys.com/category/raspberry-plants)).

Clyde, summing up:
1. this fall, or next late winter, scrape off mulch and add good compost mixed with peat moss (acidic). Work into the soil with a spading fork. Cover with mulch when done, 1-2"
2. study how to prune summer and fall bearing varieties.
3. build a trellis.
4. try all this for another year or two before replacing varieties.
5. consider replacing poor performers with another variety, say, Caroline, which is a fall bearer.

Thank you so very much. I was fearful of doing something wrong, but I did not think I'd do everything wrong.

I have stakes and wire with which we can build a trellis, and we are composting three or four "squares" in our very back yard. We should have enough compost for both the garden and the raspberry patch. Does the variety of berry affect whether I should use lots (or less) peat moss? No. I'd use peat moss with compost in a 1:4 ratio -- 1 part peat moss folded into 4 parts
compost to start. Mix batches in a barrow, then spread and work in gently with your spading fork. Add mulch when done.

One last Q: do I need to rip out (not rip out, but prune to the base) canes to keep them at a certain number per (let's say) 10 square ft? Prune June bearing in late winter, when you see buds form, which tells you which are dead and which are alive. Prune canes on average 6-8" apart. Keep the thicker ones, prune out the thin ones. This is to allow for larger fruit, and space and light for new cane to grow from the roots. Top remaining canes at 4-5 feet. Thus, your trellis wire should go, say, to 40" so that you're securing the cane below the height at which you will prune. On fall-bearing red raspberries, prune cane in late winter (or the dormant season) down to 2". The different pruning requirements make it preferable to plant your June bearers separately from your fall bearers.

**New Disease-Resistant Red Raspberry**

**Q.** We and others we know have had difficulty growing red raspberries beyond the 3rd or 4th year after planting. You mentioned a variety that is disease resistant. What is it?  Gene

Here is the info on raspberries I mentioned from Larry Campbell.

My raspberry problem was diagnosed by the Penn State Plant Disease Clinic in Plant Pathology. Most of my canes died and the others were stunted. They diagnosed it as a bacterium in the soil - Phytophthora spp. which causes Phytophthora root rot. It is common, especially along the Mid-Atlantic and there is no cure or practical method of control. It has wiped out entire commercial raspberry operations in New Jersey.

I found a new variety which is relatively resistant to Phytophthora at Nourse Farms, Deerfield, MA. which is the highest rated supplier of berry plants in the US according to Dave's Garden website. Here is their description of this variety:

Himbo Top®, a primocane red raspberry variety introduced in 2008, has demonstrated high tolerance to Phytophthora root rot disease. This variety produces extremely large, firm, bright red fruit that does not darken. Berries have good flavor, are conic shaped, have small, well-constructed drupelets and are easy to pick. For best results in commercial production, we recommend closely managing your cultural practices, especially water and plant density. This variety is extremely vigorous and will require less fertilizer. It ripens a few days later than Autumn Bliss. We feel it has the potential to be the most productive of any variety we offer today.

Nourse farms is the exclusive supplier of this variety. Their website is [www.noursefarms.com](http://www.noursefarms.com). I have now had this variety for 3 years with great production and no disease problems. I hope this is of help. Best wishes, Gerry

**Pernicious Weeds**

**Q.** I have never resolved since I started gardening how to prepare my gardens for planting. All I have done thus far is pull out woody stems, such as those from Brussels
sprouts, peppers, etc.; grade the mounded areas such as where my potatoes were; rake out the major debris; and take my soil samples. My next task is to add compost and amendments, but, and this is the crux of my question, I already have lots of weeds! In years past I have gently loosened the soil and pulled them out.

Thanks for any thoughts, Andy

I assume you'd like to have fewer weeds! There are three main sources of weeds: (1) compost you add that was not hot enough in preparation to kill the weed seeds; (2) birds and wind depositing weed seeds onto your beds; (3) weeds growing near your beds that go to seed, either propelling their seeds onto your bed and other grassy areas (e.g., PA bittercress, a highly invasive member of the mustard family and speedwell, with tiny blue flowers whose seeds can be carried by rainwater onto a bed).

Conduct further investigation to determine which of these three may be going on. Are you able to identify what weeds you have growing in your beds? That could give you clues as to the source. For example, horse manure usually has lots of grasses, and weed seeds you do not have elsewhere in your yard. Grass clumps spread by rhizomes from adjacent areas of lawn. Dandelions blow in.

In the meantime, I recommend the following:

(1) **on making compost**, two suggestions: (a) get your pile hotter if it is cold by turning more often and adding sugar water as you turn. I use 1# white sugar to 1 gallon unchlorinated water, heated to aid dissolving. This will feed bacteria and heat up the pile. (b) be careful and do not add material that has already gone to seed.

(2) **protect your bed surfaces** by mulching. Close-spaced planting, forming a living mulch, helps by shading out soil, making germination more difficult. Mulching using straw, chipped wood, or other materials works for larger plants spaced farther apart (e.g., corn, tomatoes).

(3) **weed grassy areas** near your beds, especially if the weeds you find in your beds are the ones growing in your grass nearby.

(4) **edge your beds**, if these are adjacent to grassy areas, with a spading shovel to cut off rhizomes.

(5) use cover crops on any bare soil in your beds to crowd out weeds. However, you should still check your cover crops from time to time to pull highly invasive weeds (for us, this means PA bittercress).

If the above practices are followed, you should see a marked reduction in weed pressure.

Small-scale commercial growers raising greens for market are using heavy fabric covers to kill weeds by depriving them of light and heating up the beds. I've never done this. We have occasional outbreaks, but by following the correctives above we have reduced our in-bed weeding to 1-2 hours all summer.

One last question: Has this problem gotten worse over the years? My neighbor Jack
complained to me one year about the increasing problem of weeds in his garden. I went over to look. He had a wild mint growing in about a half of his garden area! Mint is a perennial, spreading by rhizomes (beneath the ground). Every year he would rototill his soil. The problem would get worse. What he was doing with his rototilling was breaking up the rhizomes into small pieces and spreading them around. Each rhizome segment acted as a root for a new plant!! At this point, it was pretty hopeless.

Let me know what your investigation and reflection reveal.

Thanks for the advice about my weeds. I'm not sure if it’s quackgrass or not, but that's one of the main early types of weeds I get. Quackgrass is a horrible invasive perennial grass with LONG, DEEP rhizomes that travel feet in any direction. It is hard to get rid of if. We have a small bunch in a bed of perennial flowers, so it is impossible to dig it up without damaging the other perennials. I pull out what I can, especially rhizomes. My aim is to control it so that I limit it to this small area. Other possibilities are some sort of ground ivy, plantain, and perhaps a wild mint. I was just out gently loosening my soil and pulling out some weeds and noticed that the weeds are most prevalent in my two newer, less established gardens. Does it make sense that regular gardening over the years gradually pushes out weeds in favor of the vegetables I am planting and nurturing? Yes, but that depends on getting OUT weeds that are already IN your beds out before they go to seed.

Plantain. I have attacked plantain using the Chinese method. I started years ago with a small area in the back yard and removed all of it. When I finished, I expanded the area. I just kept at it. I have now cleared the entire enclosed garden, the back and side yards, driveway area, small front area, and about half the upper yard. These are the highly visible areas. I'm satisfied with that. I've given up on the remainder. My task now is merely to maintain what I've cleaned, and that is easy, as plantain sticks up like a sore thumb.

Ground ivy. This overwinters, and if I clean our perennial beds of this weed in early to mid spring, it is easily visible and removed. If you wait, it entwines itself among other perennials, and is hard to see among mature growth of other plants. Next thing you know, it has taken over. It's throughout our grass, so hard to control in general.

I will keep in mind what you said about weed sources. It is possible that the quackgrass has migrated from the edges of the garden, for I seem to be finding it most heavily along the sides.

I bought some peat moss at Tyrone Milling, will probably buy more. I could also order a load of either leaf compost or mushroom compost from Nature’s Cover in order to add nitrogen and organic matter. Do you have any recommendations of one of these over the other? The difficulty with both is that you may not be able to determine their provenance -- that is, of what materials these were made, and whether chemicals were used. You can ask at Nature’s Cover, but they may not know. Leaf compost is fungally dominant, and better to use on perennials. Our leaf compost is largely leaves, plus cover crops and garden debris. It seems to work well for us. Mushroom compost also worked well for us. Years ago we got a load from the Penn State Mushroom Research Facility for a small fee, delivered. At the time there was a long waiting list. We understood that Penn State had stopped using harsh chemicals (mainly fungicides) in growing mushrooms, so that made it ok for us.
Q. How can I get rid of quack grass? We also have a horrible weed in our hoop house. Randy

Quack Grass. Here are two sites on quack grass. The first summarizes several methods, some of which might work for you: http://www.wikihow.com/Get-Rid-of-Quack-Grass

The next has a second section on non-chemical control. If you go with cover crops, I would be wary of using crown vetch. This sends down deep roots, and is difficult to remove. I would stick with hairy vetch or some other vetch in combination with the winter rye. You can get organic winter rye berries at Nature's Pantry in the back, where the bulk beans and grains are. Look for "rye berries." Vetch you can get from Fedco in small bags. http://www.extension.umn.edu/garden/yard-garden/weeds/controlling-quackgrass-in-gardens/

The other weed. Last night Tania checked out our field guides for weeds meeting your description: long white taproot, incised leaves as with dandelions, but spiny, prolific. She settled on a member of the sow thistle family. Several possibilities: field sow thistle (1.5 to 4 feet), common sow thistle (1 to 8') and spiny leaf sow thistle (1 to 5'). The flowers are dandelion type, but smaller, and the flower turns to a tight fluffy white ball which distributes hundreds of seeds. Another possibility is prickly lettuce (2 to 7').


Flowering aids identification, so you might let a couple go to flower. If these sites do not help, take pictures and send to us.

Soil Amendments

Q. just received the soil report for each of my three gardens. I know I need to continue adding sulfur, certainly to Garden 1, which has a pH of 7.6. I'm also low on organic matter in each garden. The report recommends "acid peat moss" as an amendment for organic matter in alkaline gardens. Nature's Cover doesn't have this, so I'm wondering if you have any ideas on where I could find something similar.

I've attached the reports in case you have a chance to look at them and offer any additional suggestions. Thanks, Andy

Fascinating how much your soil conditions vary in your backyard! Can you account for this in any way? Did you apply compost consistently on one, but not the others? Imported topsoil for one area, but not others? Also, how many sq.ft. in each area?

May I assume you will be practicing organically and not following the soil report recommendations for chemical fertilizers? Do you have your own compost? My suggestions below assume "yes" to both questions.
You can improve soil conditions of all areas by: (1) a regular application of compost; (2) using cover crops; and (3) judicious use of nutrients now deficient. From your earlier email of March 6, I gathered you will be trying different cover crop mixes; these will add organic matter and nitrogen. Peat moss and sulfur will decrease soil pH. Reducing pH will take some time -- years -- so proceed patiently. In general, we use sulfur on vegetables and peat moss on fruit-bearing shrubs and trees (reasons below).

**Sulfur.** When you purchase sulfur, get pastilles (little pellets shaped like split peas), not powder, as powder is hard to apply without blowing away and sticks to heavy soil clumps. I get it in 40# bags. Tyrone Milling may have it on hand, perhaps even in smaller quantities. Otherwise, try Fedco (8247-A 5#$6). Figure out, from the chart on the back of the soil test, how much to apply. For example, to go from pH 7.5 to 7.0 takes 3/4#/100 sq.ft. It is best to apply small amounts at a time, as the sulfur, a fungicide and bactericide, kills living organisms, and will upset growth of legumes for sure (peas and beans), reportedly growth of brassicas, and we have noticed damage on tomatoes. Do not use sulfur on fruit-bearing trees and shrubs (especially blueberries), which rely on mycorrhizal relationships in their roots. Stick to peat. You can use sulfur (along with peat to add organic matter) on trees and shrubs when you first prepare the soil prior to planting, but not later once established. Sulfur does not move easily through the soil, so adding it on top, say annually later, doesn't do much.

**Peat Moss.** You can get bales of peat moss at garden supply centers (e.g., Walmart, Lowes, Home Depot). Get as big a bale as you can handle to reduce cost (usually ~ 3-4 cu. ft.). Since peat moss is sterile and has no available nitrogen, you must also add a nitrogen source (compost for this season, and regular use of cover crops with nitrogen fixing crops such as legumes and clovers). Costs are about $10-15/bale, depending on size and source. You want to buy sphagnum peat moss. This peat moss consists of tubules of material, which hold air, and this prevents waterlogging of your soil mix.

Estimates vary as to how much peat moss to use, so I give you one rule of thumb. Figure 1”/100 sq.ft. mixed into top 6” to reduce pH by your required 0.5 points. That's 14,400 cu.in./1728 cu.in./cu.ft. = 8.33 cu.ft. That's almost 3 bales of 3 cu.ft. each. Don't do this all at once, as the peat will deplete nitrogen as it breaks down. As peat comes compressed in the bale, there is an expansion factor of 50% on using it, so perhaps you can get away with less -- say 5.5 cu.ft. (or just under 2 bales). As peat moss is light, and blows around in the wind, work on a still day. Spread the peat, layer compost on top, mix in. Or mix in a wheelbarrow with compost in small batches.

Note that it takes a LOT MORE PEAT to reduce pH than sulfur. You may want to adopt a mixed strategy on your vegetable beds -- say, half sulfur and half peat moss. That works out, per 100 sq.ft., 3.6 oz sulfur and 2.75 cu.ft. peat. Round up: 4 oz sulfur and 3 cu.ft. or 1 bale. Do this every year for the next 2-3 years and re-test.

**Taking each of your soil samples individually:**

Sample 1: My above calculations apply to this sample, as this has the highest pH (yellow highlight above as a mixed recommendation of sulfur and peat -- namely 4 oz sulfur and 3 cu.ft. peat). Everything else looks ok. Use compost for nitrogen.
Sample 2: This is in the best shape. pH fine. You require phosphorus. Try bone-char (Fedco8226-A 5#$/6.25). You will require 1.5#/100 sq.ft. to meet the soil test requirement. Also, compost for nitrogen.

Sample 3: pH fine. You require phosphorus and potassium. Use bone-char as for sample 2 for phosphorus (1.5#/100 sq.ft.). Also potassium. As sample 3 is also deficient in magnesium, use (New Jersey) greensand (Fedco 8211-A 5#$/7.00). This is (0-1-7). It has a bit of phosphorus, which will help your phosphorus deficiency a tiny bit, and potassium at 7%. Use 2.5# greensand/100 sq.ft to meet the soil test requirement. Also, compost for nitrogen.

How much compost? All your samples show nitrogen/organic matter deficiency. Sample 3 is the worst, samples 2 and 1 middling. Use compost. Try 1”/100 sq.ft. That works out to 12 5-gallon buckets/100 sq.ft. Do you have that much? If not, go with whatever you have, and remember, plant cover crops. These produce organic matter below ground (roots) and above ground (grassy tops) which latter you compost together with leaves, garden debris, etc. To heat up your pile, if it is cold, use 1# white sugar/gallon unchlorinated/well water. Sprinkle on pile as you turn. This feeds your bacteria and speeds up decomposition. I heat the sugar water in a pot to aid dissolving, then pour into my watering can and top up. We have a 2 gallon watering can, so I heat 2 # sugar with rain water in a pot, decant to my watering can, and top up to 2 gallons.

You may have more questions, so fire away.

Hi Gene, Thanks for the detailed response. My gardens probably vary in soil composition for a variety of reasons, one of which I added wood ash (and possibly some coal ash) in the early days, before I realized this was detrimental, to Garden 1, but did not do so with the other plots, as these were not even gardens at that point. I also have added compost to Garden 1 and not much at all to the other two. Finally, I added some greensand for two or three years to Garden 2. Garden 3 has only been used for a couple of summers and, especially b/c I don't believe I have added compost or any amendments to it, it may represent the closest among all my gardens to natural undisturbed soil.

I will be practicing organic gardening techniques, but not entirely biointensive ones, as, for instance, I haven’t double dug in past years and probably won’t this year either. I guess this approximates no till gardening as an alternative. However, I will be continuing companion planting, use of cover crops/composting, close spacing, and use of open pollinated and/or saved seeds.

I have been using sulfur pellets that I usually buy from College Gardens. It is 90 percent sulfur, which I assume is the concentration of Fedco’s and other sources you mentioned.

For some reason, my compost pile did not break down as quickly as in past years, so I don't have much to add this year. I may be able to get some from Ferguson Township; I'm guessing you would recommend caution in using this because its composition is unknown, i.e., could contain pesticides, etc.? Thanks again! Andy

Judging from everything you've said, you are in a good position to move ahead. College Gardens sulfur pellets will work fine. Yes, the wood ash will increase soil pH, so this makes matters worse, as you conclude. Our compost pile from last season did not break down well
either, and we don't know why. We suspect snakes nesting therein, which we saw from time to time. Snakes eat earthworms. Hmmm. Always new aspects to learn!

Ferguson leaf mold will work in a pinch. There is the hazard of herbicides, but maybe your neighbors are not big users of herbicides. One of our interns in the past used the University compost to fertilize her plot at the Center for Sustainability garden site. Her seeds suffered poor germination! We know that the university uses herbicides on campus to treat lawn and landscaped areas.

We have used sewage compost to double dig new beds when our supply has been insufficient. We get this at the local sewage authority. It has been cleared for garden use, and now that the heavy polluters have moved out, it is cleaner than it used to be. Once our new beds are dug, we start using our own compost and cover crops.

Keep me posted on how your garden goes this season!

**Cover Crops**

Q. Hi Gene, I hope you're doing well during this "winter". We've had signs of spring at our house since probably mid-February, including spring plants emerging and, more recently, robins.

I have a question about cover crops. Historically, I've been planting oats and vetch in the spring on a fourth of my beds and letting those go fallow all summer. I've also added a layer of compost each spring.

I have yet to apply cover crops in the fall. Furthermore, last spring was the first time I did not plant cover crops in the spring either, only applying compost.

So I'm wondering the best way to go this spring. I'm tempted to get soil samples to check for organic matter as a start. I could apply cover crops as I have in the past, using oats and vetch again. Or, as a guy at Tyrone Milling suggested, I could "frost seed" with a deer clover blend ASAP, then apply buckwheat in July, and then winter rye and September.

Any thoughts on all of this? Thanks Gene! Andy

On cover crops, a general principle is to rotate your cover crops, that is, use different cover crops in your beds. As with vegetables, this prevents disease buildup, allows for better utilization of and contribution to soil nutrients, and acts to attract a broader array of beneficial insects and soil microbes. So, I would try the Tyrone Milling person’s suggestion. What is in the deer clover blend? Annuals?

I assume you are still talking about applying the suggested cover crop mixture to 1/4th of your beds. The only suggestion I would make is to add vetch to your fall crop of winter rye. In that case, use half as much of each as you would use if you're just using one of them. Don't wait too long before sowing the rye and vetch. We sow our rye and vetch from early Sept. to early October, as our beds fall into shade, and germination drops precipitously as sun declines. Remember to use inoculant on the vetch.
Yes, getting a measure of soil organic matter would be useful. 6% would be good. Ours is higher -- 10%, and crops do well.

**High Quality Plastic Trays for Germinating Seeds**

**Q:** I’m looking for plastic trays, the nice solid ones you use on your plant stand. Where do you get them?

These are Perma-Nest trays. Best price I could find at IGS: $26.58 for 2 sets, tray + cover (+ shipping). Perma-Nest trays for $8.56 each at: https://indoorgardensupplies.com/product-category/accessories/plant-trays/ Dome for $5.73 each at: https://indoorgardensupplies.com/product/humidity-domes/clear-humidity-dome-for-the-22x11-plant-tray/

Park Seeds sells a package of 2 Perma-Nest trays ($19.95), and a package of 2 covers ($12.95), so 2 sets, tray + cover would cost $32.90 (+ shipping) at: Ke http://parkseed.com/large-perma-nest-plant-trays-and-domes/p/v1590/

By the way, there is a good website on garden info at: http://www.livingwebfarms.org

**Growing Ginger and Turmeric in the Temperate Northeast**

**Q.** Any news from Kenny Point and the ginger and turmeric? Karl

Kenny Point’s package with ginger and turmeric roots arrived! Three of each. I’ll give you three -- two of one and one of the other. I will drop off with printed instructions unless you will be driving this way on some other business.

Here are backup instructions:

1) Kenny grows ginger and turmeric. He gets these from Hawaii -- puna organics (http://www.hawaiianorganicginger.com/). Order early Nov. for following year. Using grocery store ginger may introduce diseases that contaminate the soil!

2) Plant inside in Feb. in shallow trays with humidity tops using good potting mix. Use a heat mat. Avoid overwatering. Transplant w. tomatoes. Some shade ok, even desirable in hot weather. When these sprout, pot up to larger and deeper pots, and then take outdoors and plant same time as tomatoes.

3) Best planting medium: coir. Does not require light to sprout (30 days to sprout).

4) One farmer’s planting medium: Sphagnum moss, vermiculite, perlite (5:1:1), to which you can add some compost (hard to say how much), phosphorus, blood meal, and gypsum (looks like 0.3% for last three by volume).

5) Hill the base of the plants with additional soil or compost as they grow up and slightly out of the soil.

6) Here are links to a two articles that Kenny wrote a number of years ago:
   a) http://www.veggiegardeningtips.com/growing-baby-ginger-as-a-backyard-garden-vegetable-crop/
   b) http://www.veggiegardeningtips.com/potted-ginger-plant-yields-an-unexpected-surprise/

7) Harvest Sept.-Oct. < frost. Ginger is a heavy feeder, Kenny has gotten good results without fussing over extra fertilizer but the grower does recommend feeding, adding compost, and
good microbial life. You are also supposed to hill the base of the plants with additional soil or compost as they grow up and slightly out of the soil.

8) Additional info:  
http://www.hawaiianorganicginger.com/growing-guide/  
and  

9) It overwintered for Kenny:  

Tania found some interesting, even inspirational links on growing ginger and turmeric:

- This video makes it look pretty simple to harvest and keep the ginger going in pots:  
https://www.youtube.com/watch?v=3KwlkuqEYt4

- This guy grows ginger and turmeric in his hoop house and in containers:  
https://www.youtube.com/watch?v=iKjrfsZTrA0&spfreload=5

- Same guy from Australia has a good overview and tips on growing and propagating turmeric:  
https://www.youtube.com/watch?v=90zjyharSEM

- Making our own turmeric powder from the tubers looks straightforward:  
https://www.youtube.com/watch?v=SUHeOg61meQ

**Composting Tools**

Q. Hey Gene, How are you? We enjoyed the harvest this year. I wanted to ask your advice on a way to cut (a) leaves and (b) plants for the compost pile. We have lots of leaves from a couple maple trees which could be composted if properly chopped up. A leaf mulcher or chipper would be ideal, but I'm looking for something <$50. Daniel

Daniel, you don't need to cut up leaves. They break down on their own in a proper compost pile. However, to speed things up, you could run over them with your lawnmower in a thin layer before raking them up and placing them in your compost pile. Chopping them in this way makes them harder to rake up, as pieces are left behind, but if you insist on this extra step, give it a try.

By the way, on leaves, what kind of trees are you collecting leaves from? I hope these are not black walnuts, as these are toxic to tomatoes, potatoes, peppers and eggplants, among other vegetables, and a wide variety of shrubs, including blueberries, rhododendrons, and azaleas.

Q. We also have lots of tomato plants and sweet potato vines which can be composted, but they need to be chopped up first. I was thinking a sharp/durable pair of loppers/shears/pruners would be ideal - do you have a recommendation? Daniel

We find having two tools on hand is useful: a good set of bypass pruners, and a good set of garden shears. The pruners will cut thicker stems, the shears thinner stems and vines such as upper parts of the tomato plants, and sweet potato vines. In bypass pruners, the cutting blade is curved and overlaps the other half. In anvil pruners, the blade is flat and hits the meeting part (anvil) head on. Bypass pruners are used for green material, anvil for dried material. We find that a combination of a bypass pruner and garden shears covers all requirements, obviating the necessity for a separate anvil pruner.
For good hand tools, we recommend Lee Valley Tools. Here is their page for pruners: http://www.leevalley.com/US/Garden?page.aspx?cat=2,42706&p=40718. We use Felco pruners (upper left icon), and recommend #2, 8 or 11. These are right-handed pruners. If you are left-handed, your choice would be: #9. These are top of the line, beautifully made, durable pruners for which you can get replaceable parts. If you're tight on budget, get the yellow-handed one, 2nd row, 2nd icon. AVOID PRUNERS FROM LOWES AND HOME DEPOT. THE ONES I HAVE SEEN AND TRIED ARE LOW QUALITY.

The best, and only shears I would recommend, is also from Lee Valley Tools: http://www.leevalley.com/US/Garden?page.aspx?p=10197&cat=2,2160,40708&ap=1; I have tried the shears offered by Lowes and Home Depot, and they DO NOT WORK. Save yourself grief. Buy these.

Note on composting tomato debris. Tomato plants are susceptible to all kinds of diseases, some easily transmitted through compost back to your garden. Unless you are confident that your tomato plants did not have any diseases, I would either bury or dispose of tomato debris in your garbage. Cut up to make your bag more compact, then wash your cutting tool in a bleach solution to kill fungal spores.

**Small animal traps**

**Q.** Gene, you mentioned a small animal (voles, chipmunks, mice) trap that rotates to trap the animal. Can you point me to that? Daniel

Here is the link to the farm supply company selling these: http://www.farmtek.com/ and then type in “rodent traps” in the Product Search window. Select “wind up repeating mouse trap” for the deluxe model. Ours has a window allowing you to check, which you should do daily if you don't want them to die. You will have to take them somewhere. Farmtek sells a second, smaller one which we have not tried: Repeater Multi-Catch Mouse Trap.

These require no bait, but to catch voles and mice, I sprinkle inside the entrance holes near the trigger a mixture of oat flakes and bird seed. Voles (and rodents) love carbs. I also sprinkle some inside the chamber. They smell it and go for it. Once you trap one, its odor stays behind and attracts others. For voles, if you identify a vole run, put the trap squarely in the path of the run. This past growing season I got serious for the first time and captured 67 voles, chipmunks and mice. In recent years we had lost a third or more of our beet and carrot crops. This year not one was damaged. These critters also like sweet potatoes.

**Mulching around trees**

**Q.** When I was asking you about putting mulch in an orchard you explained to me that roots near the tree should not be covered. Could you find a link to a good article that talks about these roots and why it is important not to cover them?

Unfortunately the people at the farm behind the Humane Society put mulch covering their entire small orchard. In many cases the thick mulch goes right up to the tree trunk.

I’d like to forward a good link to the person who manages the farm. He got a bit exasperated when I mentioned concerns about mulching widespread areas of the farm. But it would really
be a shame if they end up killing the orchard trees. Chris, Sebastopol, CA

Here is a good article which describes the root system of trees. It reinforces my understanding of the role of nutrients, minerals, water, and oxygen availability to feeder roots, which are the uppermost roots of trees, and usually near the top of the soil, which is why it is important to water, add minerals and compost, mulch the area around a tree, and avoid soil compaction.

The article also corrected my understanding about the location of feeder roots near the trunk. That would be true when the tree is young, which is why when I plant a new sapling, I keep the radius above the planting hole unmulched (except for a loose mulch such as straw, or cut perennial stalks, so water and air can get through, and soil doesn't get compacted or dried out). However, as the tree matures, the feeder roots are found farther out as the main roots extend farther out. I have noticed small roots near the base of our fruit trees. While these may be feeder roots, they may also be adventitious roots. Here is the link:


In addition, I found this paragraph on another site:

"In contrast, feeder roots, although averaging only 1/16 inch in diameter, constitute the major portion of the root system's surface area. These smaller roots grow outward and predominantly upward from the large roots near the soil surface, where minerals, water and oxygen are relatively abundant. The major function of feeder roots is the absorption of water and minerals. Under normal conditions, feeder roots die and are replaced on a regular basis. Large roots and small feeder roots occupy a large area underground. Typically, the root system of a tree extends outward past the drip line, two to four times the diameter of the average tree's crown."

From: http://extension.colostate.edu/docs/pubs/garden/02926.pdf  ; (3rd paragraph)

On mulch, see a UC Davis extension, bottom page 2: http://ceyolo.ucdavis.edu/files/53454.pdf
"A layer of mulch 3 to 6 inches (7.5 to 15 cm) thick, such as wood chips, helps control weeds and conserve moisture. Mulch should be kept several inches away from the trunk to minimize the occurrence of crown rot and eliminate hiding places for insect pests."

Another University of California study focusing on mulch, in this summary published through Ventura County Extension, is here:
http://ceventura.ucanr.edu/Com_Ag/Subtropical/Citrus/Weeds/An_Alternative_Weed_Control_Mulching/
"In a citrus orchard, a mixed-source, chipped urban yardwaste (mulch) was applied to the orchard floor at the depths of 1, 3 and 6 inches, in a band 6 feet wide down the tree row. So as not to encourage gummosis, no mulch was applied within a 2 foot radius of the trunk."


Under "Applying Mulch" you will find: "Pull mulch away from the bases of tree and shrub trunks creating a donut-hole (image on left.) Do not pile it up against the trunk ("volcano mulching"). Excessive mulch on the trunk causes moisture to build up, creating ideal conditions for insect
Let me know if this helps.
Gene

**Gardening in poor, hard clay soil**

Q. I would love to have a mulberry tree. Will mulberry trees grow in this region (Boulder, CO)? I did not see any around here. Since they grow in Madison, why not here? But more importantly: our yard has really poor soil, it is hard as a rock. I had planted 8 fruit trees and only one survived. After all the trouble, I would be very disappointed if it died. Fahriye

Our soil is hard clay, especially in the summer when it is dry. In addition, it is full of limestone. We killed two sets of 8 fruit trees back in the mid-1990s before we discovered Jeavons' method of using beds. We then put all our fruit trees in beds and they all survived. Earlier, we had dug holes in the clay and amended the soil with compost. Problem was the soil did not drain, so it was like putting tree roots in a basin of water. The roots rotted in wet weather (late winter and spring). With beds, the soil gets good drainage.

The image on the left consists of two beds. The left one has a pear tree. The one on the right has two American plums trained with three trunks to reduce the overall height from 25' to a more manageable shrub-like shape. The older plum is in front, and a new one is barely visible farther up the bed. The rest of the bed has ground covers (sedums), mints for tea, and perennial flowers such as Russian sage and lavender. This bed formerly had a pear tree that died from fireblight and a cherry that produced only one year and was a bear to prune. I pulled it out.
In another bed we have two fruit trees -- peach and apricot. When the trees were young, we planted strawberries between the trees. Within a few years the trees leafed out and shaded the strawberries, so we replaced these with fruit-bearing shrubs and Echinacea. Our property slopes, so water drains well. This fruit tree bed is wide -- almost 8 feet. Another bed, just visible in the upper right, is 5' wide, and contains a peach and cherry trees, and several pink champagne currants. Had we more room, I would have made it 6' wide for semi-dwarf trees.

You asked about mulberries. We find mulberry seedlings coming up all over the yard. If you want one, I can grow one out and send it to you as a small tree which you can plant in your yard. Selcuk will hate the way it drops fruit all over the place, and the way the birds flock to the trees. On the other hand, if he doesn't go outside much, he may not notice. If you plant the tree yourself, you can just say "I don't know -- it came up in the yard...."

I'll consider your offer. In the pictures you have large patches of grass coming though; must be hard to maintain among all the other plants there. Fahriye

Not sure what you mean by this. We keep the grass out of the beds using plastic edging (see image on left). Maintaining the plants inside requires some modest weeding and pruning back of lush plants (e.g., mint that spreads). Fruit trees, of course, require pruning and spraying against diseases (organic compounds such as sulfur). There are insect pests, which we mostly put up with. Then, there is the "work" of picking and eating fruit....

Sorry to hear of your account of failed landscaping and gardening. I'm not at all trying to bend your arm on this, but have you thought of container gardening? Get big planters. Start with one, fill it with potting soil (which you can purchase or have delivered). Plant a few highly desired items. Water and fertilize. If you like it, and it fits within your
capabilities and interests, expand into a second one. Here's an Extension pub on container gardening: [https://extension.illinois.edu/containergardening/](https://extension.illinois.edu/containergardening/)

Here's a series of "idea" videos: [http://www.hgtv.com/remodel/outdoors/container-gardening2-videos](http://www.hgtv.com/remodel/outdoors/container-gardening2-videos) You can even plant a mulberry variety called Morus nigra in a container: [https://www.youtube.com/watch?v=KNTbTgEJzys](https://www.youtube.com/watch?v=KNTbTgEJzys) Logee's has a larger fruit mulberry, Issai: [http://www.logees.com/growingmulberry](http://www.logees.com/growingmulberry)

**My mulberry tree died**

**Q.** My mulberry tree died. Can't figure out why, unless it was from my watering it from rainwater collected off a galvanized barn roof. Any thoughts? Randy

I found a useful site on the effects of galvanized metal on plants. The author answers questions at the end. It looks like your mulberry tree died of something else.


**Growing cucumbers**

**Q:** Hi Gene, I have had tutu fabric over our cucumbers for the last 10 days, lots of blossoms... I will remove it tomorrow. After it's removed, is there any further treatment that you recommend ... e.g., pinching off future blossoms... hand removal of beetles? Chris

Great! Let new blossoms open. Yes, you can do hand removal of beetles, and hope that does something. Pick early am when they are sluggish.

This year we were a bit late getting our cover on. As we put the cover on, we noticed a couple of beetles inside the mesh, so we killed them. Then we saw a couple more, and then a couple more. Over the next 45 minutes we killed 50 beetles! Shocking!

Next year I will install the mesh as soon as I transplant the cucumbers into their bed, which is what the Penn State and Michigan State investigators recommended. You then count ten days from opening of first blossoms.

Cucumbers require lots of water applied evenly. Otherwise, they get misshapen and bitter (as some of ours did, especially during the recent heat wave). Mulch to help retain soil moisture, as roots are shallow.
Distinguish between parthenocarpic (produce without pollination) and gynoecious (mostly female flowers, and therefore high yielding) varieties. With the first, you could keep your cover on longer (or even the whole season) to ensure even greater fruit set.

We grow pickling cucumbers (as opposed to slicing). We've tried a lot of varieties over the years, and have settled, for now, on Calypso (gynoecious), which are high yielders, but require pollination (which removing the mesh cover ensures). In their 2016 catalog Fedco is offering a new hybrid variety, 1214RN Ronda, which is gynoecious, parthenocarpic and early! It is expensive (note the packets come with a fixed number of seeds). Their 1239LO Little Leaf is also parthenocarpic, and open pollinated if you're into saving cucumber seeds. I tried this once, and got poor results -- low germination the following year -- so there must be some technique I overlooked. Since we only grow ten plants, we don't require that many seeds, so saving them doesn't make much sense to us.

Q. since you didn't mention removing future blossoms we won't do that.

Correct. That's where the cucumbers come from.
Q: Thanks for coming over and looking at my peach tree, bereft of peaches. What are your suggestions on preventing this from happening next year? Chris

A couple of solutions occurred to me. The first is a Chinese hat. I made one out of a scrap piece of stainless steel some years ago to keep squirrels off the bird feeder, and it has worked well. Could work for you. (Images on left.) Galvanized sheet metal might substitute.

Another approach would be to cut a rectangular piece of sheet metal and wrap it around the trunk a few feet off the ground so the critter couldn't jump over it. Imagine a section of stovepipe. You could smear this with Vaseline. Get a piece long enough to accommodate trunk growth over the years. You can overlap the excess. Install the sleeve early, and remove after harvest to allow air exposure of trunk, accommodate trunk expansion, and prevent insects from nesting underneath. You can use small gauge wire to secure the sleeve top and bottom, probably 20 gauge or something like that.

Yes, this just might work. Thanks for the idea and the detailed pictures. Best, Chris

Pruning my peach tree

Q. On your visit you mentioned I was pruning my peach incorrectly. How should I be doing it? Chris

My observation is that you have lots of new growth but little 1 year old wood. Peach blossoms (and therefore peaches) are borne on 1 year old branches. Apparently you pruned too severely last year, so this year your tree is compensating by producing a lot of new wood, which is too much for the tree to support with fruit next year. I am wondering if the following history has transpired: you pruned only modestly in prior years, then last year pruned, as you said, vigorously. If you pruned late in the season -- say July or after, you would have taken out new growth, which would have been this year's 1 year old wood. If your cuts were also heading
cuts, you would have promoted a lot of new shoots, which is what we are seeing this year.

My suggestion: refine your pruning. The reference below is excellent and detailed. Note in particular the overall skeleton of a mature tree with its fine reticulation of branches. If you remove, in your mind's eye, all the new growth on your tree, the skeleton that remains will have few branches other than the major ones. You have realized the correct and desired open vase shape, so now what remains is fine tuning your pruning -- the kind of cuts you make and when you make them.


Trouble getting our fig tree to fruit

Q. Why are we having trouble getting our fig tree to fruit? It fruits too late! Maude

Tania couldn’t find much online, but this may be a bad year due to the heat and drought. Here is one comment: http://www.nj.com/homegarden/garden/index.ssf/2008/04/helping_a_fig_tree_bear_fruit.html

Another person writes: “Thankfully I did know that fig tree roots should be constricted, so that the plant puts all its efforts into producing fruit rather than putting down a never-ending root system in search of water. My fig tree is planted in compost in a wooden half barrel, with broken terracotta pots in the bottom to aid drainage, and it’s in a very sheltered sunny spot.” http://www.express.co.uk/life-style/garden/441141/How-to-grow-fig-trees-and-improve-your-harvest

Lastly, from postings on this website: http://forums.botanicalgarden.ubc.ca/threads/how-to-get-our-brown-turkey-fig-tree-to-bear-fruit.55621/

I gather that the key thing is to keep the roots confined. In hot, dry weather like what we’re having this year, the fig tree will put its energy into the root system to try to get water. Most people advocate "pruning your fig tree in March" - ha ha ha! Ours hasn't emerged from the ground again at that time!

People who get a ton of top growth but no figs are usually guilty of over-fertilizing. At most they should get some phosphorous, according to one person, but go easy on nitrogen - one "feeding" per year in the early spring is more than enough for plants in the ground, if at all, or you'll get too much leafy top growth. Of course for figs kept in pots, they need to be watered and fertilized regularly but are more likely to produce fruit because the roots are confined.

Fig prefer sandy, alkaline soils, so we have that going for us!

Organic herbicides

Q. I have weeds in my garden, but don’t want to use toxic chemicals. Are there any organic herbicides? Faye
Here are two organic weed killers. Both come in quarts of concentrate. *Weed Zap* contains clove and cinnamon oils. *Avenger* contains d-Limonene, from citrus fruits. I have not used either.  

They also sell concentrated vinegar -- in 55 gallon drums! You can get one gallon of 20% vinegar at Amazon:  
https://www.amazon.com/Natures-Wisdom-20-Vinegar-Gallon/dp/B0031AY1LA?ie=UTF8&camp=1789&creative=390957&creativeASIN=B0031AY1L A&linkCode=as2&redirect=true&ref_=as_li_ss_tl&tag=thegardcoun-20; This stuff will burn your hands, so be careful and follow instructions.

I have used ordinary household vinegar (5% acetic acid) to kill top growth. It requires multiple application to kill tenacious weeds, and on this latter, I have not been able to get rid of Pennsylvania bellflower, but possibly because I have not applied it frequently enough.

Make the following mixture in your sprayer (I have a 2-gallon sprayer):

1 gallon ordinary white distilled vinegar  
2T vegetable oil  
1T liquid dish detergent

Shake well, spray on a hot sunny day, say, late morning in full sun, temps above 70 degrees. The tops will die. When you see regrowth, spray again -- and again -- and again!

**Trellis arrangements for vegetables**

**Q.** Planning on making the horizontal trellis for the sweet potatoes, but couldn't absorb all the great info you gave me the other day! Can you fill in? Here are my specific questions. Daniel

**Q.** Why is the trellis important for them? What I recall: it keeps the vines from establishing new roots to suck energy from the main potatoes. Yes, correct. I don't quite see how it actually gives more room for the plant to grow, since you're just making it grow on a flat surface a couple feet off the ground instead of on the ground. Again, correct. You are providing a platform on which to pile up the tendrils and keep them off the ground.

**Q.** Also, what else can I use the horizontal trellis for again? In general, seems like a vertical trellis is better due to space efficiency. Would block sun though. Correct. If you were growing just a few in a bin or half-barrel, then a vertical trellis might work better. For a bed, though, you would require several vertical trellises compared to one horizontal trellis. I suppose one could conduct an experiment on this to determine which gives the highest yield. You produced a huge tuber when you grew the plant(s) against the fence. How many plants did you have then, and were other tubers also large? Perhaps you can now appreciate that keeping track of yields is necessary to establish whether one practice is better than another. Yields is measured by weight of crop per unit area. We follow Jeavons and convert all yields to a standard 100 sq. ft. bed. Thus, if we grew 10 lbs of a crop in 20 sq. ft., we would calculate the yield as 50 lbs/100 sq.ft.
Q. What about cucumbers, peas, and squash – these have tendrils? While they probably couldn't grab onto the metal easily, could they be trained to do so?

On cukes, I use a vertical trellis using the welded wire mesh you saw for our Japanese anemones and asparagus (see image left). The tendrils grab wonderfully. I fastened the welded wire mesh using brads to a sturdy square frame as the weight of cukes hanging off a trellis can be heavy.

On peas, we use 7" square nylon mesh arranged vertically. Tendrils grab wonderfully. We hang this off our collapsible pea trellis (below left). We designed a simpler version in which the nylon mesh is stapled to 1 x 2" wooden frames (below right).

On squash, we let them ramble inside a bed section. Even bush varieties have long vines. I have read that gardeners try vertical trellises, but you have to support the heavy squash to prevent them from pulling down the vines. Where do you put all that growth? If you figure this out, let us know.
Q. I imagine pole beans would do better on a vertical trellis since they grow so much. Correct. We use poles. I have seen gardeners who use an inclined trellis for pole beans, but it shades the area behind it. Our poles are 2"x2"x8' with nails driven in 1' apart along one side angled upward so that the vines can rest on something as they climb; otherwise, they tend to slide down the pole. If you go this route, consider a pounding block near the ground bolted to the pole. This avoids standing on a latter pounding from 8' up. We plant our poles 2' apart, and plant 6 beans around each pole at 6" out from the pole, with one next to the pole on the south side. Thus, each pole supports 7 vines. Due to variable germination, we plant extra beans nearby and transplant them if the ones around the poles fail to germinate.

Q. Tomato plants grow high, so a vertical trellis makes sense here, too, would it not? Or wires as we talked, or cages if you can get (and afford) big ones. By the way, In an effort to locate 14 gauge wire (unsuccessfully), I remembered the plastic-coated wire I use for our outdoor clothes line. It's stranded (a plus) and coated (preventing rust). It also can be made taut without kinking, unlike single strand ductile wire. I found an inexpensive role at Home Depot, and I would recommend trying this. A fellow gardener used this for trellising his red raspberries. Worth a try: http://www.homedepot.com/p/The-Hillman-Group-100-ft-Plastic-Coated-Galvanized-Wire-122100/202497552

Needlecast of blue spruce

Q. Are there any organic treatments for needlecast of blue spruce? We are hoping to avoid using the standard fungicides, because frankly, they look nasty. And one of the big spruces that needs treatment is right next to, and upwind from the garden area. Roberta

Here is one informative article on needlecast (http://www.extension.umn.edu/garden/yard-garden/trees-shrubs/spruce-tree-diseases/rhizosphaera-needle-cast/). There may be two different fungi affecting your tree. This article suggests simple observational tests to confirm. Perhaps you have already done this, or had your tree needles examined by the Plant Pathology Lab.

Yes, the chemicals look nasty. The following site gives 4 organic cultural strategies, and suggests copper products you can investigate (strategy 5): http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/help-for-the-home-gardener/advice-tips-resources/pests-and-problems/diseases/needlecasts/rhizosphaera.aspx
This excerpt suggests time frames for treatment. Go with copper.

Fungicides also can be used as part of a management program. Infected trees can be sprayed with bordeaux mixture 8-8-100 (8 lb hydrated lime, 8 lb copper sulfate, 100 gal water) or chlorothalonil fungicide. Fungicides should be available at local nurseries, garden supply stores, or feed stores. Fungicides provide protection against infection and prevent spread of the disease within the tree. They should be applied to the tree when the new needles are half developed and again when they are full length.

Two years of treatment usually restores moderately affected trees to full foliage. Severely affected trees may require more years of treatment. Homeowners who have blue spruce trees that are losing needles can contact their pest control person to inspect their trees and spray if appropriate. Tree owners can spray their own trees if they have the equipment to adequately cover the tree. Label directions for using pesticides should be followed to the letter.

Let me know what you determine. We probably have this fungus endemic among our spruce, as so many of the lower branches, and even some higher up, are dead. We never investigated as we had higher priorities, the trees are quite mature and tall, and having spoken with an arborist many years ago about our pine trees in general, realized that that harsh petrochemicals were required on a regular basis.

**Building and using a Jeavons’ mini-greenhouse**

**Q.** I’m trying to decide how to manage my new greenhouse, and would welcome your thoughts. One of my thoughts is to actually have it on a fifth dug bed which would be planted last, and either fully disassemble it on planting or leave it up but open for the remainder of the summer. So in the early spring I’d start seeds in flats in that space, then as those seeds are transplanted it would start functioning as a (deeper) bed. Cody.

I think that could work. It will require experimentation, which will also be in continual flux as your interests become clear. Avoid leaving it out over the winter. We did this one year for a friend who wanted a small winter garden, and we regretted it, as it was damaged by snow loads, winter conditions, and late winter winds, which tore the roof off.

Our main mini-greenhouse on the brick patio is in constant use from late March until October, when we transplant the last crops into our winter bed. We have a second one we set up on the deck for warmer crops -- tomatoes, peppers, flowers etc. -- that we start indoors and then pot up and put outdoors on the deck until transplanting. That one comes down by end of June.
Strawberries

Q. Another decision I'm trying to make regards strawberries - raised bed? rotation? I've just left them were they were last year for this season, but after they're done fruiting I'm hoping to move them. Cody

Strawberries have a usual life of 4 productive seasons in the same location. In year 1 you plant and pinch blossoms. You harvest in the next 4 years (years 2-5). You will notice decline setting in by the 4th and 5th year. If you want continual production, in year 5 you plant a new crop in another bed. In year 6 you harvest from the new bed and retire the old bed.

It is good to mulch the strawberries with straw during production to keep the berries off the ground and to conserve moisture. We add more straw to cover them to protect them over the winter. In the spring we rake off the old straw, prune old and dead leaves off the plants, and add minerals and compost, followed by clean straw. Strawberries prefer slightly acidic soil, so if you're using your own compost, add some peat moss. There are also organic acidifying fertilizers you can get (Espoma organic Hollytone brand).

Mine is a short summary. You can find more online. There is the question of what to do with runners. We prune them out, but you can save some in the last year to plant your new bed; some varieties -- northeasters -- produce more runners than others and this can be a nuisance. Commercial growers use a row system. Varieties are important, too. Select for disease-resistant varieties. All-stars have worked well for us. Northeasters are too leafy, and are prone to gray mold because of this. Of course, you have to cover to protect fruit from birds and chipmunks. We prefer June-bearing over everbearing so we can collect a decent crop in a short period of time and freeze some.

Q. I can't seem to produce strawberries that have nice, rich strawberry flavor. My efforts seem to be more geared to (excess) quantity than quality (maybe because I just like to see stuff growing, or want to produce so I don't have to worry about not having enough food). Is there anything I can do to improve flavor? Taj

I've been investigating how to make strawberries sweeter, and have come up with a small experiment we could try on your strawberries. I wouldn't suggest this if your berries weren't already big and red, and your plants not healthy looking! Here's my proposal:

1. Identify a small area, say 5' x 5', that we would mark off with, say, 4 short wooden stakes and twine. (I have stakes and twine.)

2. We'll work into the soil kelp and azomite, both of which I'll bring in appropriate amounts, to introduce trace minerals. We'll water with fish emulsion, which I'll also bring.

3. From another part of your strawberry area, select two young plants for me to transplant into our strawberry bed for comparison purposes. In addition, clip off two runners from plants, which we would also transplant into our strawberry bed as a further control.

4. In your test area, clip off all runners as they come on.
5. In the winter, mulch the test area with straw to prevent damage, heaving.

6. Next year, probably around mid-April, we'll clean the test area, remove old mulch, add some more kelp and Azomite, in addition to compost, and add fresh straw, all of which I have and will bring.

Gene, sounds great! I’m ready when you are.

What crops to grow?

Q. We have found ourselves focusing more and simplifying our planting. Smart thinking. We are focusing on things that aren't plentiful in good condition (or are expensive) at the farmers markets, or things that are exceptional when from your own garden (such as tomatoes). In all likelihood we'll have one to two beds of onions and leeks, one to two beds of tomatoes, and a bed of more miscellaneous cooking vegetables like basil and the like. Our focus has been more on establishing berries and fruits - currants, gooseberries, red/black/yellow raspberries, blueberries, apples, etc. More smart thinking. Cody

To maintain a 4 year rotation for tomatoes in a 4-bed arrangement, the minimal for disease control, you would be limited to 1 bed for tomatoes. Such a rotation is an attempt to limit levels of soil-borne fungal infections. Of course, fungal diseases become airborne when they sporulate, so perhaps I am imposing an ideal state where it cannot exist in reality, as your beds (and those of backyard gardeners in general) are so close to each other. Still, rotation is good to practice.

Replanting blueberries in high pH soil

Q. I hope to start my blueberry replanting project this spring. I was advised to replant my sad blueberries using one part peat to one part compost, and add sulfur to that in the original hole in about a five gallon size. The guy at the new Organic Garden Center in Lemont suggested it might help. I must find a good priced source of garden sulfur. Do you have a source for sulfur? I might get the big bag if it can keep. Roberta

What the guy at the Organic Garden Center recommends might work. If your soil-peat mix has a nice consistency, the powdered version of sulfur would work. However, if your soil is heavy clay, I recommend using pellets, sometimes called pastilles or prills. The fine powder version blows around, and sticks to clay. If you use this, mix on a calm day, and wear a filter mask. The pellets look like split peas. Sulfur does not move through the soil, so you would add it as the guy recommended -- mixing it with your soil and peat moss. The bag will say something like "90% elemental sulfur". You would not add sulfur to blueberries after this one-time addition, as sulfur may interfere with the mycorrhizal relationships blueberry roots have. Use peat moss and compost for annual fertilizing. Mulch your blueberries to retain moisture.

Here is a note on treating alkaline soils with sulfur which you should read before proceeding. It describes the difficulty in lowering pH in soils with free lime. In the third section on "Lowering pH" you will find a simple test for determining whether you have free lime. Do this on a soil sample as described: http://www.ext.colostate.edu/mg/Gardennotes/222.pdf
To test for free lime, place a heaping tablespoon of crumbled dry soil in a cup. Moisten it with vinegar. If the soil-vinegar mix bubbles, the soil has free lime. On soils with free lime, a gardener will not effectively lower the pH.

This is one of an excellent set of notes published through Colorado State’s Master Gardener Program at [http://www.cmg.colostate.edu/GardenNotesUpdate.shtml](http://www.cmg.colostate.edu/GardenNotesUpdate.shtml)

If you do NOT have free lime, proceed to using elemental sulfur.

The article goes on to describe how much sulfur to use. On our vegetables, and based on our soil test, we add 8 oz/100 sq.ft in the spring along with compost and other minerals when we prepare our beds. We have found that certain vegetables are sulfur shy, so do not add sulfur in these beds in the year we are planting them: Irish potatoes, peas, beans, tomatillos, broccoli.

Since we use sulfur annually with our vegetables, but only once with perennials such as blueberries at first planting, what is more important is ease and safety of application. That is why we use pellets (also called pastilles or prills). Since we aerate our beds in the spring, the previous application gets mixed more thoroughly in the soil. With a permanent planting, as with blueberries, powder might be preferable as you get better mixing. Sulfur does not move easily through the soil.

As you want sulfur for both blueberries and vegetables, consider a mixed strategy. Get a small bag of powder for the blueberries, enough for your initial application. Get a larger bag of pellets for your vegetables, which you will use annually.

In subsequent years, do not use sulfur on your blueberries, but mix peat moss with your compost and work that in gently around your shrubs. In high pH soils, also mix in magnesium if your soils are low in this mineral. One good source of this is sul-po-mag, an ocean bottom mineral. Apply annually. Fedco sells this in their Rock Powders and Soil Amendments section as K-Mag Sulfate of Potash Magnesium. It is certified organic.

**Sources of sulfur:**
1. I checked the big box garden centers online (Lowes, Home Depot, Walmart) but none carried a decent sized bag at a reasonable price. For example, Walmart has a 20# bag of Arizonas Best AZB40003 for ~ $20 but wanted $29 for shipping. Call College Gardens Nursery.


3. I buy 40 lb bags of pellets at Gro-Mark outside Pleasant Gap (359-2725), but that may be way too much for you. However, when I called this year, they have only the microfine sulfur in 50# bags for $17.50 (+ tax). To get there, travel through Pleasant Gap, through the next traffic light, and look out for Feidler Road on your left. Take that road (~ 1/2-3/4 mile), and you will see the feed mill on your left.
Sulfur is stable, so lasts forever.

To give you some encouragement in your endeavor, I visited my neighbor this weekend, and viewed his blueberry patch. The prior owners planted the shrubs too closely, in hard clay, and likely without acidifiers. They were sickly. The ones he replanted are doing better. He has put fencing around the shrubs to protect them from rabbits, which had chewed them back over the past couple of years. Perhaps they will improve even more!

Our own blueberries had an excellent but brief run of three years in the beginning (we planted in 2007), but yields have dropped to 1/4th of their peak. In our case, we suspect damage from black walnuts -- roots and leaves. It is a big disappointment, and the shrubs are in decline, now even including the one farthest from the black walnuts. We replanted two of the six two years ago, but I am not sanguine about prospects. By contrast, black raspberries, currants and gooseberries do well, and are not affected by black walnuts.

Well. The soil did fizz. Not hugely, but I could hear it fizzing. So I guess this is a lesson in not being attached to blueberry stock that is weak. I think that I will try to rejuvenate the two best and consider whether replacement is even worth it for the others. So many lessons. But it was tremendously helpful to read that article. Thank you, as always. I will let you know how it goes. Now I am keen to do this test on the veggie beds and the compost! Roberta

When I replaced two of our blueberries two springs ago, I was shocked at how large the root ball was. Of course, most of the root mass had been inactivated. This should serve as a cautionary warning on thinking that a mere replanting of your blueberries in rejuvenated soil would improve their condition. The new soil material has to be accessible to the roots, but they are shielded by the root mass, much of which no longer functions properly, and is bound up in old soil.

My thought? Replace your blueberries with new stock at the same time you rejuvenate your soil. If you find this painful, then consider an experiment: replace half of your stock with new, and replant the other half, in the rejuvenated soil.

I have found that trying to recover nutritionally damaged stock problematic. The tree or shrub has been permanently damaged. Its vigor has been sapped. Recovery will be limited.

**pH of sawdust**

**Q.** Just a quick inquiry. Our ash tree died. Its trunk is now a pile of rough sawdust. Is ash sawdust good for garden soil that is still too high in pH? Would it be best to let it sit awhile? Roberta

In general, tree sawdust can vary from 3.5 (acidic) to 7 (neutral) depending on variety. But any acidity is short-lived, and occurs during the early stages of decomposition. In the long term, sawdust (and wood chips) tend to raise pH slightly.

If the sawdust ferments (oxygen deprived), it will become more acidic and may harm plants. Best to compost sawdust. Let it sit a while and turn from time to time to prevent it from becoming too acidic. Or, if you have a small amount, mix in with your regular compost pile.
I would not use sawdust as a mulch. It will repel water and cause stress to plants whose roots are beneath it. Don't mix it into the soil either, as it will take up nitrogen from the soil to help it break down. You can use it on garden paths.

Ash is apparently a lime-loving tree, so it does better in higher pH soils; I would surmise that its residue is probably higher pH.

On a related garden myth, leaves from oak trees do NOT become acidic when composted. The tree leaves take on the pH of the soil, and can concentrate it. This has been confirmed by extension studies, and I confirmed this for myself using our oak leaves in a small experiment. I have also had our compost tested, which is predominately maple leaves. The pH was higher than the soil pH. I now add sulfur to our vegetable beds, and peat moss to our perennial fruit shrubs and fruit trees.

I always really appreciate your advice. I did not do anything much with the sawdust pile from the tree. I realized that it is a pile of wood shavings plus soil from the roots of the tree. I did put some in the first compost chamber. The rest is sitting next to the compost in a pile. I will let it sit until next year.

So my current plan is to follow your advice and add sulfur to the vegetable beds and some peat to my third chamber of compost as I shovel it out as it is also too basic.

**Plum knot fungus**

**Q.** I have some kind of disease on my plum. What are your thought? Randy

Judging from your description of symptoms over the phone, my first guess is that you have black knot fungus. This Ohio State Univ. site is pretty informative: [http://ohioline.osu.edu/factsheet/plpath-fru-31](http://ohioline.osu.edu/factsheet/plpath-fru-31) This second site describes other diseases and pests of plums, but unaccountably does not mention plum knot fungus. [http://www.gardenfocused.co.uk/fruitarticles/plums/pest-disease.php](http://www.gardenfocused.co.uk/fruitarticles/plums/pest-disease.php)

**Microwaving herbs**

**Q.** Can herbs be microwaved safely? SueJ,

I did some quick investigating, and couldn't find any deleterious health effects on using microwaves, but rather generally favorable results. I came across the following articles:

1. An excellent short summary from Oregon State University Extension with a paragraph on microwaving: [http://extension.oregonstate.edu/gardening/node/1066](http://extension.oregonstate.edu/gardening/node/1066)


4. Abstract from research on different ways of drying basil leaves picks microwaving as best:

Basil (Ocimum viride) leaves were dried using five different drying methods: microwave-drying at power 3, oven-drying at 110°C, hot-air-drying at 100°C, sun-drying at 33°C, and ambient-air-drying at 28°C. The object was to analyse the effect of the drying methods on the nutritional characteristics of the spicy basil leaf. Moisture content of the fresh and dried leaves was determined using laboratory oven kept at 105±3°C for 24 h. Extracts from fresh and dried leaves samples were analysed for protein, iron (using UV spectrophotometer), and carbohydrates (using handheld refractometer). Microwave-drying and oven drying were the methods that produced the best results for preserving most nutrients compared to the fresh herb, whereas ambient-air-drying, hot-air-drying, and sun-drying brought about substantial losses in basil leave nutritional values. Microwave-drying was the optimum method for basil leave drying as it required shorter treatment time of 4 min and gave the best retention of protein and carbohydrates when compared to oven-drying which required 17 min, preserving 42% (wt) of iron.


5. Another abstract, also on basil, focusing on oil retention in basil, found air drying best and heating of any kind worst. Abstract here:

Sweet basil, a plant that is extensively cultivated in some countries, is used to enhance the flavour of salads, sauces, pasta and confectioneries as both a fresh and dried herb. To determine the effect of drying methods on qualitative and quantitative characteristics of the plant and essential oil of basil, two landraces, Purple and Green, were dried in sunlight, shade, mechanical ovens at 40 °C and 60 °C, a microwave oven at 500 W and by freeze-drying. For comparison, the essential oils of all samples were extracted by hydrodistillation and analyzed using GC and GC-MS. The highest essential oil yields (v/w on dry weight basis) were obtained from shade-dried tissue in both landraces followed by the freeze-dried sample of the purple landrace and the fresh sample of green landrace. Increasing the drying temperature significantly decreased the essential oil content of all samples. Significant changes in the chemical profile of the essential oils from each of the landrace were associated with the drying method, including the loss of most monoterpenes hydrocarbons, as compared with fresh samples. No significant differences occurred among several constituents in the extracted essential oils, including methyl chavicol (estragole), the major compound in the oil of both landraces, whether the plants were dried in the shade or sun, oven at 40 °C or freeze-dried, as compared with a fresh sample. The percentage methyl chavicol in the oil, however, decreased significantly when the plant material was dried in the oven at 60 °C or microwaved. In addition, linalool, the second major compound in the purple landrace, and geranial and neral, major compounds in the green landrace, decreased significantly when the plant tissue was dried in the oven at 60 °C or microwaved.

From: Food Chem. 2013 Dec 1;141(3):2440-9 by Ghasemi Pirbalouti A1, Mahdad E, Craker L.

**Juicing cover crops**

Q. While we sprout wheat berries and run them through our juicer in the winter time, it
occurred to us that we could also harvest wheat from our cover crops in the late winter and spring. Any thoughts on this? Jasmine

Below is an image of my juicer & the rye grass juice. The plastic cup is 30 ml to near the top which is about an ounce. Gene and I do an ounce each per day 2 hrs after breakfast. Best to take on an empty stomach; they say to hold the juice in your mouth for 2-3 minutes before slowly swallowing it. I dilute it with water and add stevia to sweeten it for Gene; for myself, I dilute it with water and also add some pineapple juice to it to make it palatable! Do NOT combine it with any citrus juice because that de-activates some of the enzymes in it.

Most of the information online is under "wheatgrass" but they all concur that "any cereal grass" is more or less the same (rye, oats, barley, etc.). Conventional medical websites claim there is insufficient research to make health claims, such as this one:

http://www.webmd.com/vitamins-supplements/ingredientmono-1073

But then there are companies that have developed highly effective products based upon the very research that supposedly is "lacking"! Hmmm! Check out these two:

Dr Wheatgrass:  
http://drwheatgrass.businesscatalyst.com/_blog/Wheatgrass_Research/tag/cereal_grass/ and Oralmat (an Australian company):  
http://oralmat.co.uk/index.php?route=information/information&information_id=7

What we lack are detailed studies that provide info on what dosing works for various health conditions, but there are raving testimonials online if you poke around. Meanwhile, Gene and I are doing daily doses of it (or more in my case). Seems to take away my hormone headaches as soon as they start to threaten to come on! Yaay! Tania

Container gardening

PT: Many readers of this blog live in apartments where they may only have a small balcony and room for just a few containers. If they wanted to grow some of their own food, what could they do?  

John Jeavons: It's really pretty exciting what you can do in these small spaces. One book that I would recommend is The Apartment Farmer, The Hassle Free Way To Grow Vegetables Indoors, On Balconies,
**Starting plants from cuttings**

**Q.** How do I start plant cuttings? I'm thinking rosemary cuttings.  Melissa

I picked up another tip on starting plants from cuttings, especially herbs and other plants difficult to grow from seed. When you strip off the lower leaves from a cutting, the place where the leaves meet the stem is full of plant stem cells, from which roots, leaves and flower buds can grow. When you plant the cutting, the spots you cover with soil will produce new roots better than the bottom end of the cutting. Put cut stem in potting soil with these spots below the surface, and pack soil around these spots. Water. Covering with a plastic bag to retain moisture helps, too.

Tip from the 17 part workshop given by Patryk Battle at [http://www.livingwebfarms.org/seed-starting-series/4570738248](http://www.livingwebfarms.org/seed-starting-series/4570738248)

For cuttings you put in water, place in only a small vial of water to allow a higher concentration of growth hormones and the enzymes surrounding these to promote rooting. If you put your cutting in too much water, the action of these hormones is diluted, and rooting will be less likely.