Q & A: From 2018

Source of Greenhouse Plastic

Q. During our visit you mentioned you had replaced the plastic on your greenhouse for the first time in 20 years! I thought greenhouse plastic had a life of 5 years. Where did you get your plastic? Courtney

We take the greenhouse down in the spring and put it up in the fall. Consequently, it gets little ultraviolet radiation, which is the main factor in damaging plastic. The 5 year life would obtain if you kept it on all year long. A good source for greenhouse supplies, and other farm supplies is www.farmtek.com. Their page for greenhouse plastic is listed below:

http://www.farmtek.com/farm/supplies/ProductDisplay?catalogId=15052&storeId=10001&langId=-1&division=FarmTek&productId=358875

Our wooden base of 2x4 dimensional lumber has suffered minimal degradation because microbes that cause rot are dormant in the winter.

Training a New Peach Tree

Q. Having killed my first peach tree, I've planted another one. So, starting from scratch, what should I be doing? Chris

Here is PSU’s advisory on training new peach trees: https://extension.psu.edu/pruning-and-training-home-fruit-trees-to-an-open-center. The details can be confusing, so if you have any further questions, let me know. The key is to form the scaffold early (the first year) as the
limbs harden by next year, and will be difficult to train. The above image shows an ideal mature open vase shape. The scaffold consists of the permanent main 4-5 branches emanating from the trunk.

I have found two tools useful in taking care of our fruit trees: a good set of pruners (we use Felco) and a Japanese pruning saw (small, lightweight and razor sharp for clean, easy cuts as you balance yourself in the tree or on a ladder). Get this saw with a scabbard that has a belt loop; you will find this particularly handy when up on the ladder. Lee Valley Tools has a wide selection of Felco pruners and saws. Look under the “Pruning & Tree Care” entry in the index: (http://www.leevalley.com/us/Garden/Index.aspx).

**Cover Crops**

**Q.** I'm taking up your suggestion to incorporate cover crops in my garden. Send me the link to that source you mentioned. Woody

While we were double-digging, you wondered about appropriate late winter-spring cover crops that would grow quickly before planting summer food crops. Peaceful Valley Farm and Garden Supply, a California supplier we use, has a great "Cover Crops Solution Chart" which you can download from this page: https://www.groworganic.com/cover-crop-seeds.html. Click on the third red-typefaced text in the upper left corner or click here → Download: Cover Crop Solution Chart. The rest of this page lists the various cover crops.

The chart is nicely arranged. The major categories are identified in the right-most column, starting with the category most relevant to you -- "Annual Cool Weather Cover Crops." The left hand column lists the kinds of cover crops, and the top header lists relevant criteria. You'll probably want to satisfy the following criteria: cold tolerant, germinate < 45 deg, adds organic matter, quick growth, loosens heavy soil, and is easily established. Cover crops that meet many of these criteria include bell beans, berseem clover, red double-cut clover, oats and (cereal) rye. Be aware that for Californians, cool weather is equivalent to "Fall Planted Cover Crops" planting for them, and you can click on that category in the left-hand menu of the page above to view those.

Remember that crops fixing nitrogen will require an appropriate inoculant. You may require the Alfalfa-Clover inoculant. For other legumes, the Garden Combination Mix is a good choice. Inoculants are good for 1 year, so buy after the first of the year for the coming year to ensure getting a fresh batch. Note that some inoculants come in bags of different sizes. For example, Garden Combo comes in two sizes -- treats 8 lbs of seed and 50 lbs of seed. Unless you're experimenting with small areas, you'll likely want the larger bag.

In a recent Jeavons' blog he recommended a SARE cover crop book, available for purchase or for free online. The free version is here: https://www.sare.org/Learning-Center/Books/Managing-Cover-Crops-Profitably-3rd-Edition/Text-Version

**Storing Garlic**

**Q.** When we open some of our stored garlic bulbs and break out individual cloves, we notice sometimes that the cloves have a tan to brownish hue. Some of the cloves become shriveled and hard, with the same tan color, and I wonder if this is a further progression of a disease.
checked out a Cornell Extension site on garlic diseases, but did not recognize our symptoms. In your experience, what do you think this indicates? Thinking it was due to low humidity, I tried increasing the humidity in the flats by keeping a large wet sponge in the flat under a loosely fitted cover. Not sure whether this helped, but things didn't get worse. We do have at least one of the other diseases mentioned on some of the cloves -- penicillium decay. During storage, this above condition seems to expand, affecting other bulbs, or cloves within the bulbs. We would appreciate any thoughts you have on the matter. Gene

We also get that brownish sometimes bumpy disease on garlic. Our best defense was a mustard then buckwheat cover crop and longest possible intervals between alliums in a given spot. We now do not try to keep garlic past Thanksgiving. Instead, we slice and dehydrate nearly all of the crop soon after harvest. We save the whitest most solid bulbs for storage in a cool airy pantry (semi heated). To put by garlic for its medicinal value, we make "fire cider". Or pickle, or ferment it.

Commercial garlic growers are having a hard time due to the increase of diseases and pests over time, especially the newest threat -- the allium leaf miner.

Thanks for the tips on garlic. Around mid-January or so we store the best remaining white garlic cloves in olive oil and freeze them, but maybe we should move this practice up a bit. I hadn't thought of fermenting garlic; I could add that to my fall tasks.

**Using Wood Chips to Amend Poor Soil**

**Q.** We bought a piece of rural land that had a patch that used to be a farm dump. We cleaned it up and the area around it -- quarter to half an acre. The topsoil has been scraped away, so we have c-horizon with no organic material and lots of boulders and fines with high pH. Basically, it's limestone and dolomite pulverized by the glaciers. We don't want to spend a lot of time nurturing this spot; nature will eventually take over. But how can we accelerate the re-colonizing of the ground surface? Is there something we can broadcast that will take to nutrient poor clay? Should we at least try to lower the pH somewhat, and if so, with what? What can we do to hasten reclamation? Picture attached. Oliver

You can try cover crops, but you will want to get organic matter mixed in to the top several inches. You will find good pointers here:

http://articles.extension.org/pages/63500/solutions-to-soil-problems:-high-pH

This article focuses on sulfur, mentioned in the above article:
https://www.agwise.com/educational-articles/high-soil-ph-can-we-fix-this-problem/
I focus on paragraph 3 under "Treatment of High pH Soil" in the first article: *

Additions of appreciable amounts of organic matter will help to acidify the soil as microbes decompose the material, releasing CO\textsubscript{2} which then forms carbonic acid. Organic acids are also released during humus decomposition. Peat and peat moss are highly acidic forms of organic matter but can be costly.

Around here, the cheapest amendment to get is wood chips. The townships collect yard debris and chip it up. Sawdust would also work. Work lots of this into the soil using a plow. Cover with 2-4 inches of wood chips. Let it molder. Worms will love it. You can let nature take over, but you may want to seed it with a mixture of things to get it started, perhaps in year 2 or 3. Make sure the wood chips do not include black walnut/butternut or locust/cedar which can be toxic.

As a preliminary step, to assess the scale of the problem, get a simple soil test through your extension service before you start. You are primarily interested in the pH, but you will also get phosphorus and potassium, plus calcium and CEC. In year 3 or so, repeat the test and compare results. You should see a marked improvement.

Thanks for your suggestions. Great ideas. It turned out woodchips aren't easy for us to procure. That's why we folded chipping into the project about to be undertaken by the tree service we hired to thin out some timber. Peat? Too expensive for the amount we would need when transport was taken into consideration. I'm guessing softwoods would be better just because I know pine needles are acidic.

Oliver, acidity of pine needles is one of those garden myths. (Reader, see next post, as I continue to discuss this with Oliver.)

**Are Pine Needles Acidic?**

Q. You really mean that pine needles are not acidic? Please explain. Oliver

Another myth, which we and at least one extension service researcher discovered Trees and their leaves and needles take on the pH of the soil in which they grow. Pine needles and oak leaves (another favorite) would be acidic if their trees grew in acidic soil. In basic soil these are basic.

When a local homesteader insisted I use our oak leaves instead of peat to acidify our high pH soil, I conducted a small test. I ground up a handful of oak leaves and composted them using neutral water. At the end of the summer I tested the pH of the remains. These were basic. I then realized I could have gone online and investigated whether anyone else had conducted this investigation and came across extension research confirming my findings.

If you say so, then OK, but I'm curious enough to do my own experiment. I'll collect some white pine needles the next time we're in the woods. Those trees are growing in sandy, peat-enriched soil on a metamorphic bedrock. These will be acidic. Also I'll collect some white pine needles here at home for comparison. Grind and compost them, as you did. Oliver

I could tell you wanted more evidence. Attempting, unsuccessfully, to find that extension pub which confirmed my own experiment with oak leaf compost some years ago, I found other entries which shed more light on the question of pine needles and oak leaves making soil more
acidic. These may help you either refine your projected experiment or abandon it altogether (as I might have done had I investigated further before jumping into my own experiment years ago). My search terms were "Are pine needles acidic?" and "Do oak leaves lower soil pH?"

You can find many posts, but here is one for each question:
Pine needles: https://www.gardenmyths.com/pine-needles-acidify-soil/
Oak leaves: https://www.hunker.com/13406949/how-do-oak-leaves-affect-ph

I'm glad you raised the question in my mind, which led me to revisit this myth and sharpen my thinking -- in particular, the distinction between fresh needles/leaves and composted needles and leaves. I was interested in the latter because we compost our leaves.

Still, I was left with the nagging question, "How does soil pH affect pH of tree leaves?" which I took to be the heart of the matter. Searching under this question I found the following 2010 study done in the Netherlands published by the British Ecological Society: https://besjournals.onlinelibrary.wiley.com/doi/full/10.1111/j.1365-2435.2010.01765.x

This is a thorough study conducted within a rigorous experimental design. The investigators found that tree leaf pH is a species characteristic, not a soil characteristic. This contradicted my own reading and my own experience. Our leaf compost pH is higher than our soil pH, to the point that we have to add sulfur every year to our vegetable beds, and peat to our shrubs and trees to prevent soil pH from increasing in our limestone soils.

Reading further in this article I found, in Table 1, that despite the authors’ claim that they had constructed soil pH over a wide range, in fact the soil pH varied from 6.51 down to 3.67 -- all acidic soils!! A big hmmm!

Further down in the article I found the following caveat:
We have to be careful, however, in extrapolating these findings to for instance calcium- or magnesium-rich soils, with soil pH ≥ 7. Dicot herbs in particular have been shown to take up and transport Ca and Mg partly passively through the apoplast and therefore may accumulate these base cations in rather high concentrations on particularly base-rich soils (Rorison & Robinson 1984; Marschner 1995; Thompson et al. 1997).

So, their study did not include the very kind of soils you and I have, and further acknowledged the uptake of Ca and Mg by (at least) dicot herbs.

This uptake seems to explain what is happening to our tree leaves (oak and maple), and explains why are compost pH is high. Leaves concentrate calcium, and that raises the pH.

So, there you have it, Oliver: MORE RESEARCH IS NEEDED. Hence, I urge you to push ahead with your proposed experiment, keeping in mind for its design, all you have read by way of background. Alternatively, you can just add peat and chipped wood and hope for the best.

I looked at your links and did a couple of searches myself, and I see what you mean about the (non) influence of pine needles on soil acidity. Funny that it's such a widespread myth. Not sure I'm interested enough in the question of how soil pH affects leaf pH to persist with this, but I might. Need to examine the references in the paper you cite, and look for scholarly stuff with an eye on methodology first. Thanks again, Oliver
Q. What do I do about ticks when I work in the garden? Garrett

People who work outdoors can pick up ticks and chiggers. Chiggers are immature spider mites, and are invisible. When they bite, they leave a large red welt on your body which itches severely. Tania especially, but I also, in particular, this season, are frequently bitten. Earlier in the season, I picked up 8 bites within a couple of days.

Tania showers off at night. I shower in the morning, which is too late to remove the chiggers, so I briskly rub my skin with a towel -- arms, legs, feet, especially thighs and backside. This knocks them off. To treat a bite, you can rub in an anti-itch cream, which helps a little. I find heat helps, as much as you can stand short of burning yourself. I use a hair dryer set to medium. This temporarily deadens the nerve endings, and at least allows one to sleep.

Ticks are another matter. Check your arms, underarms and legs carefully. Have your partner or housemate check your back and back of legs. You should check after coming in from outdoor activity -- working in a garden, hiking through wooded areas or through fields, along streams, etc. As with chiggers, ticks require a blood meal to survive. There are different kinds of ticks, and some may cause infections. Deer ticks are common in the northeast, and may cause Lyme disease if you are bitten, and the tick has been on long enough to engorge itself.

Lyme can be a debilitating disease. Tania and I pick off ticks several times a season. I was diagnosed with chronic Lyme last summer. This means I’ve had it for some indeterminate period. I don’t have any serious symptoms, at least so far.

If you find a tick, remove it by first rubbing a dab of dish detergent on it and waiting for a half-minute. The detergent dissolves the glue the tick uses to fasten itself to your skin. Then use tweezers and pull the tick gently away from its attachment. Tania saves hers in little plastic bags in case she develops the iconic bulls-eye rash or she determines the tick is engorged, and wants to send it to a lab for analysis. If engorged, this means the tick has been on you for a while. Not all ticks are deer ticks, and not all deer ticks are infected.

You can send the tick to a tick lab at the University of Massachusetts for analysis to ease your mind. Their website is informative, and gives directions on how to submit a sample: https://ag.umass.edu/services/tick-borne-disease-diagnostics.

The tick image to the left is one Tania made of a tick on her skin. According to the great reference site below, this shows one that is partially engorged.

Here is the reference site:
and then you can click on, for any given type of tick, "Click here to watch them grow" and use the arrows to sequence them. So, for the deer tick nymph, you get a closer view this way:

Should you get Lyme, and blood tests show an active case, you will be prescribed an antibiotic. It may not actually get rid of the parasite. For chronic cases, and for other related infections caused by ticks, see Stephen Harrod Buhner's web site at: http://buhnerhealinglyme.com/resources/herb-source-list/

Q. What do you use to control ticks? Marge

I add a footnote to Tania's exposition on what we use to repel ticks. Permanone, which a biologist friend of ours uses, set my warning bell off, as this pesticide is a synthetic, long-lasting, with a wide range of negative effects on people, animals, amphibians and fish. (1) It and its relatives Permethrin, and Permethroids, are not what organic growers can use.

Nantucket Spider, the product Tania found, borrows its formulation from "5 thieves," whose history goes back to the plagues of the middle ages. Locals wondered how it was that robbers who entered plague victims' homes and relieved their victims of their possessions didn't themselves come down with the plague. They anointed themselves with the essences of 5 herbs, included in Nantucket Spider's Extra Strength Tick Repellent of oils of clove, geranium, peppermint, rosemary, cedarwood, spearmint and cinnamon.

We, visitors, and interns used it throughout the summer with great efficacy. There are recipes online for making your own as well.

In addition, we recently came across two other alternatives which have research backing up their efficacy: stevia leaf extract for ticks and coconut oil for insects. (2) (3)


(3) Coconut oil better than Deet: http://www.greenmedinfo.com/blog/coconut-oil-beats-toxic-deet-repelling-insects?utm_source=Daily+Greenmedinfo.com+Email+List&utm_campaign=e7ea9978ee-Coconut&utm_medium=email&utm_term=0_193c8492fb-e7ea9978ee-91505645&ct=t( Coconut) &mc_cid=e7ea9978ee &mc_eid=53612fe722

Here is a site featuring home-made tick repellents. The first part is for pets, the second for people: https://www.ehow.com/way_5608181_homemade-tick-repellent-recipe.html?utm_source=aol.com&utm_medium=referral&utm_content=way_5608181_homemade-tick-repellent-recipe&utm_campaign=AOL-Campaigns
Q. What's with chiggers? I've never had these intense bits before that itch like crazy, but I never see the bugs themselves! Cindy

Tania suffers from chigger bites, and here is what she has compiled from other sources. Chiggers never seek another host but what happens to it depends on whether the chigger finished its meal or not. If it finishes its meal before being brushed off then it turns yellow and moves into the soil as a vegetarian adult. If it doesn't finish its meal, then it dies. Thus, it is important to brush your skin off after coming in from outdoors! (More on this later.)

Chiggers are not bugs or any other type of insect. Chiggers are the juvenile (or larval) form of a specific family of mites, the Trombiculidae. Mites are arachnids, like spider and scorpions, and are closely related to ticks.

Chigger mites are unique among the many mite families in that only the larval stage feeds on vertebrate animals; chiggers dine on us only in their childhood, and later become vegetarians that live on the soil.

Chiggers are born red; they do not become red from feeding on blood as some believe. An engorged, well-fed chigger changes to a yellow color.

Chiggers do bite us, much like ticks do. Chiggers attach by inserting minute specialized mouth parts into skin depressions, usually at skin pores or hair follicles.

The chigger's piercing mouth parts are short and delicate, and can penetrate only thin skin or where the skin wrinkles and folds.

That's why most chigger bites are around the ankles, the back of the knees, about the crotch, under the belt line and in the armpits. The insertion of the mouth parts is not perceptible. The bite alone is not the source of the itch.

The reason the bite itches so intensely and for such a long time is because the chigger injects saliva into its victim after attaching to the skin. This saliva contains a powerful digestive enzyme that literally dissolves the skin cells it contacts. It is this liquefied tissue, never blood, that the chigger ingests and uses for food.

A chigger usually goes unnoticed for one to three hours after it starts feeding. During this period the chigger quietly injects its digestive saliva. After a few hours your skin reacts by hardening the cells on all sides of the saliva path, eventually forming a hard tube-like structure called a stylostome.

The stylostome walls off the corrosive saliva, but it also functions like a feeding tube for the hungry chigger. The chigger sits with its mouthparts attached to the stylostome, and like a person drinking a milk shake through a straw, it sucks up your liquefied tissue. Left undisturbed, the chigger continues alternately injecting saliva into the bite and sucking up liquid tissue.

It is the stylostome that irritates and inflames the surrounding tissue and causes the characteristic red welt and intense itch. The longer the chigger feeds, the deeper the
stylostome grows, and the larger the welt will eventually become. The idea that the welt swells and eventually engulfs the feeding chiggers is also a myth. Many people have seen a small red dot inside a welt (usually under a water blister), but this is the stylostome tube and not a chigger body.

The time required for a chigger to complete its meal varies with the location of the bite, the host and the species. If undisturbed, chiggers commonly take three or four days, and sometimes longer, to eat their dinner. This is not surprising when you consider that this is the first and last meal of the young chigger’s life.

On human hosts, however, chiggers seldom get the chance to finish a meal. The unlucky chigger that depends on a human for its once-in-a-lifetime dinner is almost sure to be accidentally brushed away or scratched off by the victim long before the meal is complete.

It may give you some consolation to know that when a chigger is removed before it has fully engorged, it cannot bite again and will eventually die. Seems only just, doesn’t it?

Itching usually peaks a day or two after the bite occurs. This happens because the stylostome remains imbedded in your skin tissue long after the chigger is gone. Your skin continues the itch, allergic reaction to the stylostome for many days. The stylostome is eventually absorbed by your body, a slow process that takes a week to 10 days, or longer.

It is of little comfort to learn that North American chiggers only bite humans by accident. Although our chiggers can feed on most animals, they are really looking for reptiles and birds, their preferred hosts. The itching reaction human skin has to chigger bites occurs because we are not their correct hosts. Chiggers that specifically prey on humans in Asia and Pacific Islands cause no itching!

The best precaution against chigger bites is simply taking a warm soapy bath with plenty of scrubbing as soon as possible after exposure. If you bathe at once, while the chiggers are still running over your body, you can wash them off before they bite. A bath will also remove any attached and feeding chiggers before you start to feel the itch.

Warm soapy water is all that is necessary to remove and kill chiggers. There is no need, and it is rather dangerous, to apply household products such as kerosene, turpentine, ammonia, alcohol, gasoline, salt or dry cleaning fluid. Don’t do it.

Attached chiggers are removed by even the lightest rubbing. If you are away from civilization, you can remove attached chiggers before they do much damage by frequently rubbing down with a towel or a cloth.

Regular mosquito repellents will repel chiggers. All brands are equally effective. Applying these products to exposed skin and around the edge of openings in your clothes, such as cuffs, waistbands, shirt fronts and boot tops, will force chiggers to cross the treated line get inside your clothes. Unfortunately these repellents are only potent for two to three hours and must be reapplied frequently.

By far, the most effective and time proven repellent for chiggers is sulphur. Chiggers hate sulphur and definitely avoid it. Powdered sulphur, called sublimed sulphur or flowers of sulfur,
is available through most pharmacies. Dust the powdered sulphur around the opening of your pants, socks and boots. If you plan to venture into a heavily infested area, rub powdered sulphur over the skin on your legs, arms and waist. Some people rub on a mixture of half talcum powder and half sulphur.

But a word of warning: sulphur has a strong odor. The combination of sulfur and sweat will make you unpleasant company for anyone who has not had the same treatment. Sulphur is also irritating to the skin of some people. If you have not used sulphur before, try it on a small area of your skin first.

Some families have problems enjoying summer backyard activities because of chiggers. The most effective means to eliminate these chiggers is just remove the habitat favored by the adults and juveniles. Clearing away brush and weeds, keeping the grass cut close to the ground and removing conditions which attract small animals that can serve as hosts is the best way to get chiggers out of your yard. Chiggers seldom survive in areas that are well groomed.

Source: http://askville.amazon.com/chigger-falls-host-seek/AnswerViewer.do?requestId=2756522

Cold-Hardy Greens

Q. Can you recommend any good cold-hardy greens that can survive the winter under a thick straw mulch? Bill

These are from Fedco (www.fedcoseeds.com):
* arugula: Consider 3020SO for mild, 3021CO for better cold hardiness
* radicchio: Four choices in Fedco: 3187FR, 3188ND, 3189RT, 3190PR
* claytonia: 3050CL
* mache: 3102VC
* tatsoi: 3220TS or 3221TO
* winter lettuce mix: 2988WM

Row Covers and Fabrics

Q. You mentioned you use mesh fabric to keep out insect pests on your vegetables. What size mesh do you use? Karl
We use tutu cloth. Tulle is too lightweight, and the agricultural meshes are too fine, block out too much sun (critical in our somewhat shady garden), and block out too much air (leading to increased powdery mildew on susceptible crops). In the image, from left to right respectively, you will see mesh cages for collards (against cabbage moth), cucumbers (against cucumber beetle), and brussels (against cabbage moth). We use ent – electrical metal tubing – for supports. Details on request. Here’s a summary of sources of mesh:

1. [http://www.greenhousemegastore.com/category/insect-screen](http://www.greenhousemegastore.com/category/insect-screen) We might switch to this to replace cages for brussels, collards. 90% light transmission, 75% air transmission. Mesh size: 1.35 mm. (354 holes/sq.in)


3. ProtekNet insect nets (Canada). [http://www.duboisag.com/en/proteknet-exclusion-insect-netting.html](http://www.duboisag.com/en/proteknet-exclusion-insect-netting.html) Sold through Johnny’s. Their highest light transmission, 89%, has a 1-3 season life. Not very long. We get 2 years out of tutu cloth. Sturdier material has lower light transmission: 87% light transmission 5 year life (1.9mm x 0.95mm). 14 holes x 25 holes (358 holes/sq.in). However, sold in LONG strips.

4. Tutu-net. (165 holes/sq.in.) [https://tutu.com/collections/tutu-net](https://tutu.com/collections/tutu-net) Our old tulle fabric is 144 holes/sq.in. but was too flimsy and tore easily. A friend of ours uses tulle to protect his grapes from a voracious insect pest. The vines get tangled up in it. He tosses it out after every harvest. It is cheap. This site also sells tulle.

For the time being, we’re sticking with (4) – tutu cloth.

**Hot Water Treatment of Pepper and Tomato Seeds**

Q. I’ve read that fungi can ride on seeds you save from your own plantings. How do you get rid of the fungus without damaging the seeds? Jean

There are two principal methods: bleach and heat treatment. Bleach is quick and easy, and done at time of planting. This is what we do. Heat treatment is more complicated.

**Bleach:** Make a 1:9 solution of ordinary household bleach and water, that is 1 part bleach mixed with 9 parts water in a small bowl. Let seeds soak for 90 seconds. Rinse and plant. For the small number of seeds backyard gardeners use, you won’t require much solution. Try 1 tsp
bleach into 9 tsps (3T) water. We use this procedure on all tomato seeds we save, and caraway seeds, which we noticed picked up a fungus, especially in wet weather. By bleaching our seeds we've improved germination and reduced diseases and fatalities after transplanting.

**Heat:** Penn State Extension has an article on heat treating. [https://extension.psu.edu/hot-water-treatment-for-tomato-and-pepper-seeds](https://extension.psu.edu/hot-water-treatment-for-tomato-and-pepper-seeds)

**Deer Resistant Plantings**

**Q.** We bought our first house recently in a nice Pittsburgh neighborhood, and soon noticed damage to shrubs around the yard. Then we saw deer – in the daytime! Is there a connection? What can we do? Loghan

First, on deer resistant landscape plants, Rutgers University has an excellent site: [https://njaes.rutgers.edu/deer-resistant-plants/](https://njaes.rutgers.edu/deer-resistant-plants/). You will note that daylilies are ranked C, "occasionally severely damaged." Yes, we agree with that. Forget daylilies. Also, these require good sun, so unless you have that, don't bother. The deer eat the blossoms. Hostas rank D, "frequently severely damaged." If you have hostas, pull them up and compost them. Deer LOVE hostas. Hostas will attract deer to your garden, and once they eat those down, they will browse on other plants. By contrast, ferns are rarely damaged. If you have a dry yard, stick with male ferns and varieties that require less water. These withstand abuse and dry weather. Avoid ostrich ferns. These require damp to wet conditions, and will become invasive. They are nice in the spring and early summer under ordinary conditions, but then turn brown and die back under drier conditions.

Second, nurseries sometimes have sections on deer resistant plants. One example is here: [https://www.waysidegardens.com/deer-resistance/c/RS_1003_3/](https://www.waysidegardens.com/deer-resistance/c/RS_1003_3/). Bear in mind that nurseries tend to be optimistic; after all, they are hoping to sell you something. Check such selections against the Rutgers list to determine level of deer resistance.

Third, Tania has tried numerous repellent sprays, and has not found any that work. Deer seem to habituate to these. Also, rain washes these off. For a fuller assessment of repellents and other deterrents, check out this article from The Washington Post: [https://www.washingtonpost.com/news/capital-weather-gang/wp/2017/08/14/want-to-keep-the-deer-out-of-your-garden-heres-what-works/?utm_term=.386fefa8d9d](https://www.washingtonpost.com/news/capital-weather-gang/wp/2017/08/14/want-to-keep-the-deer-out-of-your-garden-heres-what-works/?utm_term=.386fefa8d9d). Among devices mentioned is a motion-triggered water spray. This is more elaborate, but our neighbor used it successfully this past summer to protect her large bed of hostas. You will find one mentioned among yet other sprays in this "Best Reviews" article for Jan. 2019: [https://bestreviews.com/best-deer-repellents](https://bestreviews.com/best-deer-repellents). Forget battery or solar operated sonic repellers.

Fourth. One technique a rural friend of ours swears by is ordinary nylon fish line. You string this about a foot above the ground, on short poles, a few feet in front of the landscaping. At night they bump into this with their shins. They can't see the line in the dark, and shy away. Tania tried this around our bed of roadside daylilies, but had to add a second tier at the 30” mark. In addition, she covered the bed with bird netting. The deer leaned into the bed over the fish line and nosed under the bird netting to get blossoms around the perimeter. At one point the deer broke the fish line. I used this at the 24” height to block off a passage way and so far it has worked, judging from the lack of deer prints in the snow.
Fifth. When planting new shrubs and trees, make sure you surround with fencing until these become larger and more mature. Deer will eat down new pine trees, ends of rhodos and azaleas, etc. Deer will even eat the new growth of older pine trees if they can reach them. We have a 15’ spruce out front I grew up from a tiny seedling I found in the yard. We surround it every fall with plastic deer fencing. Same with our rhodo and azaleas. Rhodos get a D on the Rutgers list.

Here is a short article with recommendations for deer-resistant annual flowers: https://www.hgtv.com/outdoors/flowers-and-plants/deer-resistant-annuals. We have grown many of these successfully under high deer pressure. Keep in mind, however, that other animals may go for some of these. Rabbits and groundhogs will eat the peppery nasturtiums that deer avoid. Groundhogs will go for marigolds and morning glories. By the way, while morning glories are attractive and flower heavily, when planted in open garden soil they self-seed prolifically and invasively. We are still pulling up morning glory seedlings years after having stopped growing these.

You can also do a lot with perennials if you select plants judiciously. In the image above we have, above the sidewalk from left to right, Russian sage, lavender, yellow sedum ground cover, mints (toxic to deer), the annuals basil and zinnias, and behind the zinnias male ferns. In front of the sidewalk from left to right are red sedum, peonies and bee balm (Lavender Queen).

**Soil Tests**

A local backyard gardener of some experience was invited to give a talk on how he was able to keep fertility going in his organic greenhouse and avoid accumulating salts from using animal manures. My first piece of advice was to get his manure tested by the Soil Testing Laboratory at Penn State. (Land grant institutions have such labs. You can also use a commercial lab).

Q. Here is my soil test results. Tell me what you think and what I have to do. John

All looks good! Trace minerals are in line. For the purposes of your presentation, your attendees would likely wonder what your nitrogen levels are. Fertilizers are rated on their N-P-K values. Your test gives the P and the K values, but N requires an optional N test, which will cost extra. This would require submitting another sample with the request for an N reading.

Second, growers would probably not be adding the amounts you showed me with your hand spread (was that 6”? 8”?). For a bed that has already been double dug and initially fertilized, Jeavons recommends adding annually 1/2” of compost prepared without soil, 1” if prepared with soil. You could easily get by with much less and save yourself work collecting, hauling,
spreading, and turning in.

Third, unless you are planting largely in compost, growers might want to know something about your greenhouse soil into which you’re planting. If you’re adding 6-8” of compost, and have been for years, I suppose the existing soil plus compost would be close to the results for compost. Not sure what to advise here. Do you have a soil test for the greenhouse soil? Might be good to have on hand for your presentation.

Thanks for offering an opinion of the manure analysis. I'll do the Nitrogen test. Should I do the salts too? Having the high tunnel soil tested is a good idea and I appreciate the advice on the spreading. Thought of having the main garden and the general soil outside the garden done too for comparison. John

Yes, I agree with your expanded plan. Get salts if you can. Accumulation of salts and heavy metals in a greenhouse environment is a potential concern. Tania was able to trace the breakdown of the evapotranspiration greenhouse at Julian Woods Community to toxic levels of boron in the reclaimed wastewater. They were using borax as a supposedly safe cleaner. They had to change out the soil (and use different cleaners). For more on Tania’s study see our page on Living Technologies (http://www.neo-terra.org/living-technologies.html) in which you will find a summary of the ET Greenhouse at Julian Woods, PA with a live link to Tania’s study.

Footnote: John’s presentation before commercial growers went well. He wowed them with his data.

Q. What’s required to get a soil test done through Penn State? Dan

Info on 4 steps for collecting sample: https://extension.psu.edu/dont-guess-soil-test

You can get a soil test kit, or submit your soil sample in your own container (e.g., ziplock bag in mailing envelope). This latter seems easier.

Fill out the proper form which you can download and print from here: https://agsci.psu.edu/aasl/soil-testing/soil-fertility-testing/soil-fertility-submission-forms/individual-submission-form-for-turf-home-garden-noncommercial-fruit-flower-woodlot-christmas-trees-and-landscape-plants

Include form with soil sample and check for $9 and send to lab address on form. May take 2 weeks, so I would move on this.

Cover for Compost Piles

Q. Would black weed cloth be a good cover to put over a compost pile? It is water permeable which would let some moisture into the pile. The black would be an advantage for getting the pile warm. Any thoughts you have would be greatly appreciated. Please note that these piles with the cloth might not be used for vegetable gardens, but simply to break down leaves and small cuttings into soil out in a field. Chris.

Worth a try if you already have a piece. As you say, it would let air in and trap heat, two pluses. However, any water that gets through the fabric would likely wet only the top few inches. For
the pile to break down, it should be moist throughout, but not wet. Dry leaves will just sit there like mummies in Egypt. When we build our piles, with raked leaves, we spritz lightly with water. We will turn the pile two times, adding more water if necessary. To speed up decomposition, we sprinkle sugar water onto the leaves as we turn. We mix 1# ordinary white sugar to 1 gallon of non-chlorinated water and sprinkle from a watering can. To dissolve the sugar we stir into water heated on our stove.

If you've just been accumulating compost material in this pile, you may want to check to determine how moist it is. If it is dry, consider turning it while spritzing with water and adding sugar water. Sprinkle in some soil if you have it to add bacteria.

Finally, check the pile every week and stick your hand down in it to test for warmth and decomposition.

It sounds like as long as I keep the piles underneath the weed cloth moist, the weed cloth should help break down the pile faster than simply having uncovered piles. Yes. Turning helps in two important ways -- it adds oxygen and loosens compacted material. If, when you do this, you notice a white powdery material, this is a sign your pile is anaerobic. What you are looking at is actinomycetes, a bacteria. Once you add oxygen, it disappears. By the way, as you turn, stay upwind; you want to avoid breathing in the bacteria as it becomes airborne.

Plus the weed cloth also has the advantage that when it rains it will let a bit or moisture into the top of the pile which will help if I don't get out to check the moisture on a regular basis. Yes. One factor to consider is how soon you would like to use the finished product. It takes us the summer to break down the previous falls leaves and organic matter, and this is with two turnings, moisture, and sugar water. Absent these steps it will take much longer to break down your material.

Gene, Thanks for the very helpful comments! Chris

Black Rot on Grapes

Q. I'm investigating ways to deal with black rot of grapevines this year. Last year, the disease was rampant and organic soap shield with copper did not control it. I see that a non-organic spray called mancozeb is approved for home gardens, has such low toxicity that the LDL rate is over a pound for an average person. It is supposed to be a powerful preventive of black rot. Do you know anything about using it in the garden? Of course, I bag up all my grape clusters, mainly to keep the fruit black rot free. So the spray would not touch the fruit. Any ideas? Bill

We get black rot, too, but only on the fruit, not the leaves. I cannot speak to chemical treatments, as Tania and I follow organic practices, so I am not qualified to render an opinion on mancozeb. Immature grapes are more susceptible to black rot infection. As the grapes mature, the skins become thicker and are less susceptible to infection. I don't know whether leaves become more or less susceptible as the season progresses.

Here is the organic protocol we use which, if followed, should also reduce disease pressure and spray frequency of chemicals.

1. Clean the area around your grape vines to remove diseased material, which you can
dispose of in the trash, or bury. One should do this in the fall after leaves have fallen. This is a good time to add compost and minerals (or whatever fertility you use). Follow that with mulch. The mulch covers any diseased material that is left behind and prevents sporulation next season.

2. In the late winter at bud break spray vines with sulfur or copper. This kills overwintering spores on the cane. I do this after pruning. No sense spraying what you are going to prune. I have already pruned my grapes for this season, taking advantage of a warm spell earlier in January.

3. I monitor the grapes for first signs of grape rot, which appears as small dark dots on the fruit, usually surrounding what looks like a puncture. This grows quickly, especially during damp weather, and will consume the fruit, causing it to drop, and continue the cycle. I pick off any suspicious-looking fruit and bury or dispose in trash immediately. If bagging your clusters prevents black rot from affecting your grapes, then I suppose you would monitor your leaves and canes for signs and remove and dispose of any diseased material.

4. Repeat spraying at least once/month after grapes begin to form. For us, that means July 1, then August 1. I add a bit of liquid detergent to aid sticking of the spray solution to the grapes. On leaves, spray both sides. If disease pressure is high, I spray more frequently, particularly if it rains. Avoid spraying blossoms. I did this one year accidentally, as the blossoms are quite small, and I didn’t notice them. I got next to no fruit that year. I don’t know if this warning applies to mancozeb.

5. Concors are only moderately susceptible to black rot. Still, in some years it has been quite severe. However, the greatest losses have been to rodents -- raccoons and skunks we think. Now we surround the trellis with deer fencing, and that keeps them out.

Thanks for your thoughts. Since I bag my grape clusters as soon as they are pollinated, I get no black rot on the fruit.
1) I do immaculately clean up all diseased grape material and dispose of these before winter sets in.
2) Late this winter I will spray prior to pruning as soon as the weather warms up a bit.
3) I do spray every 10 days or so through the growing season with copper soap shield. I suppose the wild grapes growing in the wild areas around my garden are a constant source of fungus spores. I will consider getting rid of the wild grape vines in my woods. I have gotten rid of the very black rot susceptible grape varieties. These are mainly seedless varieties.
4) With the LDL50 dose of mancozeb being about one pound for a human, it seems that it is relatively harmless. I will investigate and see why it is not organically approved. I'm thinking of attempting to grow my vines under row cover to prevent spores from contacting the leaves.

**Fruit Shrub Recommendation for Shade**

Q. I am seeking a recommendation for an indigenous/native fruit tree/shrub that might do well in the yard of our neighbors (on the low slope side of our garden). The conditions are not generally favorable (high clay, low light). This young couple has sought inspiration from Rodale (rodalesorganiclife.com) and other sites. Dana
With the restrictions you pose, your choices are drastically limited. What comes to mind quickly is elder (as in elderberry, in particular, sambucus nigra). Here are two sites that describe the shrub more clearly:

https://plants.usda.gov/core/profile?symbol=sani4 confirming its native and indigenous status; and
https://www.pfaf.org/user/Plant.aspx?LatinName=Sambucus+nigra which describes growing conditions.

It can stand a clay soil, but it likes a moist environment. It can take some shade, but does better in sunnier sites.

Elder is a highly medicinal plant, one of Stephen Harrod Buhner’s top seven anti-viral plants. You can make syrups, tinctures, decoctions with elder, and we do this. Tania also makes a fantastic elder flower shrub, a refreshing drink in the summer with ice. It makes having a cold or flu bearable, especially the decoction.

The plant has cyanide, which is destroyed easily by heating. If the family has children who eat fresh leaves or fresh berries, they might get sick, but the extent of this is vomiting (makes a great purgative if you have to get rid of other toxins).

We have three growing in a semi-shaded area that produces well, but we have to say that we have amended the soil by preparing a double dug bed, adding compost, and mulching. The plant suckers modestly, but can be controlled. If your neighbors want to view our growing conditions, they are welcome to come over.

The variety Nova is self-fertile. Others require another variety. A good pairing would be Nova and York, which is what we have. The York supposedly improves the yield of the Nova. Our York is still small, and our Nova has produced nice crops of berries.

There are two pests of elder: the stem borer (left image below) and the sawfly larva (right image below). Watch out for these and get rid of them quickly. The first drills through the stems, killing the part above the drill hole. Luckily, the shrub seems to recover by sending up new suckers the following year. The second, the sawfly larva, eats the leaves and can defoliate whole branches quickly.
**Interactions of Medicinal Plants with Pharmaceuticals**

**Q.** I’m worried about taking plant tinctures with pharmaceuticals, e.g., prednisone or corticosteroid drugs. What can you tell me about this? Tonya

Standard Process posts this nice chart arranged by each major herb, with drugs for which there are contraindications. Licorice root doesn't work with prednisone or corticosteroid drugs: [https://www.standardprocess.com/MediHerb-Document-Library/Catalog-Files/herb-drug-interaction-chart.pdf](https://www.standardprocess.com/MediHerb-Document-Library/Catalog-Files/herb-drug-interaction-chart.pdf)

The University of Michigan has a pretty good database of contraindications of foods, herbs and other supplements with medications listed as a function of the medication. Here’s the page for prednisone: [http://www.uofmhealth.org/health-library/hn-10000612](http://www.uofmhealth.org/health-library/hn-10000612)

I also saw online that medical drugs contraindicated with prednisone include antifungal drugs and aspirin! So, hold off on your antifungal herbs. Ashwaghanda is contraindicated with prednisone also. Ashwaghanda is an important Ayurvedic plant that Stephen Harrod Buhner includes in his Herbal Antibiotics. You can read a summary of it on our Medicinal Plants page under item (2) at this link: [http://www.neoterra.org/medicinal-plants.html](http://www.neoterra.org/medicinal-plants.html).

Other tidbits: one shouldn't take St. Johns Wort with prednisone. For those taking thyroid hormone, some say it makes them more hypothyroid and others say it makes the thyroid med work extra strong and they get the shakes and heart palpitations. In his two books on Herbal Antivirals and Herbal Antibiotics, author Stephen Harrod Buhner covers contraindications for medicinal plants. For more on Buhner see our Medicinal Plants page: [http://www.neoterra.org/medicinal-plants.html](http://www.neoterra.org/medicinal-plants.html).

**Growing Currants**

**Q.** I just checked your website, and I was wondering if I could come to your mini-workshops for getting currants ready? We would like to plant some in our yard. Amanda

Of course, this Saturday, 1 pm. By the way, there are several kinds of currants: black European; red, white and pink; and Crandall (plus the less well known American currant). We have the first three kinds, and we can give you a broad introduction or focus on those in which you have an interest, or already have in your yard.

The single most helpful source I have come across on currants is Lee Reich’s "Uncommon Fruits for Every Garden." He has separate chapters on black currants, and red and white currants. He gives detailed advice on cultivation, pruning, diseases and pests, and propagation. At the end of the chapters, he has an extensive list of cultivars, with thumbnail sketches of each. He also covers many other fruits, both shrubs and trees. We have a copy which you can look at when you visit. You can find out more about Reich’s book (and others of his) on Amazon: [https://www.amazon.com/s/ref=nb_sb_ss_i_2_9?url=search-alias%3Dstripbooks&field-keywords=lee+reich+books&sprefix=lee+reich%2Caps%2C160&crid=2P0JGWZ5E1U7B](https://www.amazon.com/s/ref=nb_sb_ss_i_2_9?url=search-alias%3Dstripbooks&field-keywords=lee+reich+books&sprefix=lee+reich%2Caps%2C160&crid=2P0JGWZ5E1U7B)
**Pruning Apples**

**Q.** We have an old apple tree in our yard that requires pruning. What do you advise for it?

**Cody**

On growing organic apples and pruning of same, the recognized expert is Michael Phillips. Here is one article on pruning based on his knowledge:  
https://www.suburbanhobbyfarmer.com/pruning-apple-trees/

I noticed your new apple tree planted in the front yard. The branches are curling up too tightly to the main leader, and would benefit from spreaders or being tied down with twine to the ground. Aim for 45-60 degrees from the vertical. You can make spreaders from lath or other wood of appropriate length and notched at both ends. Twine tied to the ground with short stakes also works and allows for easy and gradual adjustment. Don't straighten a limb all at once, to avoid breaking the limb. Best to do this with new wood when it's flexible. Once the branches harden, you can't change them.

**Monoecious vs Dioecious**

**Q.** Yes, yes...exactly! I knew that mono and di were involved, but couldn't put my senile finger of a brain on it. **Glenn**

During your visit you were mentally hunting for a specific term in botany that had something to do with fertilization (not monocots nor dicots). I searched my sources and could come up only with two terms, monoecious and dioecious, used to describe, respectively, whether the flowers of a plant had both male and female parts (monoecious) or just one or the other, requiring two different plants to complete fertilization (dioecious). Thus, corn is monoecious (male tassel and female silk leading to emergent corn kernel). In our garden, the spiny seaberry (sea buckthorn) is dioecious. We have a small male plant and several females. These are the ones in the upper part of the garden I would like to remove, as they are unproductive. We also have a perennial decorative plant, aruncus dioecious (goatsbeard). Do these terms ring a bell?

**Sweet Potatoes**

**Q.** I was curious whether advice I had heard was correct — that sweet potatoes would be sweeter if allowed to remain in the ground until a frost. **Mel**
I have never come across this assertion. What makes sweet potatoes sweet is curing them -- at high temps and high humidity: 80-90 F and 80-90% relative humidity. I enclose our plant stand with 1\" foam board and put an electric radiator heater with a pan of water on top. I use a towel to wick water from the pan in front of the heater. In addition, I lay wet towels on top of the trays of sweet potatoes. I also use a small fan to blow the humid air around to break up stratification. I check once a day to re-wet the towels, and hang a thermometer to monitor temp. It's a bit of work. You could do this outside (in the south) but not up here. Here are two images of our improvised humidity chamber.

Cultivating Onions

Q. Happy Spring Gene and Tanya! We have a question for you about dates for putting ONION starts into the ground. In your charts you indicate that you do it about now and we have lots of onion starts that are, indeed ready to go in the ground. We are planting varieties that store well as we hope to draw on them through the winter and spring.

Now the question: If we waited for three more weeks to plant these starts, would this mean that their harvest would be delayed by roughly 3 weeks and THEREFORE that they would keep in storage roughly three weeks later into the spring?

My thinking on my own question is that now is the ideal time to get them in the ground and that waiting 3 weeks will have very little, if any, effect on how long into the spring they will store, especially if we leave them out in the ground at the end of the growing season for several weeks to dry and harden off ... but we are curious to know your experience with this. Thanks, Chris and Dana

I would approach your questions from the end criterion -- lengthening storage time rather than adjusting planting time. Right now, we have Stuttgarter onions left over from last year, and it is
almost May. We usually plant onion sets around April 1; however, this year, because of the cold, we delayed and planted these April 12.

The keys to storing most root crops are cool storage temps, darkness, and proper humidity. With onions, aim for 32-50 F, and relatively dry. Store covered to keep out light, but allow some air circulation. I have read that smaller onions store longer than bigger ones. Our Stuttgarters are medium size, and this rule doesn't seem to apply, so we arrange the onions in our flats from small to large, and eat the smaller ones first.

Curing procedures are critical to long-term storage. The usual procedure is to knock down the greens when half start to fade and bend over. Then you leave them in the ground for a week or so to cure. Do not water. This works unless you're soil is heavy and it rains; moisture promotes premature rotting. If, while curing in the ground, rain threatens, we cover them with plastic until the rain passes. We harvest, drying them on our garage drying rack, without cutting off the stalk. We use a small fan to promote air circulation (very important, especially on hot, humid days). We do not cure in the sun, as some texts advise, as they may get sunburned, which prevents the protective scales from forming. We prepare for cool storage once the stalks dry out, and you are able to cut the stalk off at the 1.5" mark without it bleeding. We store in the garage in flats until late fall, and then move to the cellar once the heating season starts.

Cull onions that have bolted, have thick necks, are soft or damaged, or are showing signs of rot. These will not store well, so use first.

In the north, one usually plants short night-long day onions. You can't wait too long to plant sets, as you want the onions to start setting the bulb when days are longest. I would get yours in the ground now, and aim for earlier next year. I noticed you used the word onion "starts." Do you mean sets (the small hard onions) or transplants (green onions one generally buys, and then plants). One plants the latter later, so now would be a good time (daytime temps up to 60F, nights 50F). Bargyla says transplants must be hardened off, but I would follow the vendor's instructions for the varieties you have purchased.

By the way, you can extend your onion season by planting scallions in the fall, say, in your greenhouse. They will grow modestly during the late fall, but take off in late winter-early spring. We are now harvesting nice-sized scallions. Under warm conditions, they tend to bolt, so keep your greenhouse cool by ventilating. Of course, you can also plant scallions in the spring, and harvest these during the summer. This takes the pressure off using your storage onions during the summer and fall.

Another way to extend your storage onion season is to plant a "summer" onion. Red onions are good for this. We plant these sets later than Stuttgarters as they bolt if it gets too cold in the late winter. We planted our reds April 25. Reds do not store well, so you can use these in the summer and early fall. Again, use damaged ones and those with thick necks (having bolted) first.

So, plant now (and earlier next year). Mulch with straw!! Onions hate being dried out. Put the straw down early, as it is hard to lay on straw later without damaging stalks. Leaving storage onions in the ground "for several weeks" is too long, as this increases the chances of rot and subsequent poor storage.
Replacing Grass on an Embankment

Q. On our rural property we have a large sloping embankment shoring up our pond. It is hazardous to mow, and I would like to plant it in something that is low maintenance and doesn’t require mowing. The sloped area is large – 300’ along the embankment. What do you suggest? Terry

I consulted with a permaculture colleague and here are my and Jackie’s suggestions:

Top pick: cotoneaster dammeri (bearberry). You can read about it and see pictures here: http://www.perennials.com/plants/cotoneaster-dammeri.html. This plant is tolerant to a wide variety of soil conditions. Great for slopes. Deer and drought resistant. Low maintenance.

You can get this one at Lowes for $8.98 for a 2.5 quart container. That’s a good price. Pots are better than bare root plants, which latter are harder to get going. You might want to call and make sure they have these: https://www.lowes.com/pd/2-5-Quart-White-Bearberry-Cotoneaster-Flowering-Shrub-L5176/1000037435

Lowes has three other varieties, but these seem less suitable. For example, the Monrovia is more shrub-like, and will create a thicket. Probably not what you want. https://www.lowes.com/search?searchTerm=cotoneaster.

There are other varieties of cotoneaster (ka tone’ ee aster -- emphasis on the second syllable) some of which you can read about here: http://springmeadownursery.com/search/eyJrZXl3b3JkcyI6ImNvdG9uZWFzdGVyIn0.

Another one is cotoneaster Little Dipper: https://www.waysidegardens.com/little-dipper-cotoneaster/p/47985/ $14.95. Pricey if you require a lot of them. Wayside is a premium nursery. You might be able to get this variety less expensively elsewhere.

Other picks:

1. Other ground covers for sunny slopes: https://www.thespruce.com/ground-cover-for-sun-2132155. In this list are creeping junipers (04) which may be worth looking at. The cotoneaster mentioned here, at 3 feet, is too shrubby, and probably too high for you.

2. Another one is creeping Phlox. https://www.thespruce.com/creeping-phlox-plants-2132214. You’ve probably seen these around. These don't spread very far per plant (2' this one says), so you will require a lot more plants. Still, worth a look if you want to break up your embankment and give it some variety.

3. A vining plant with fragrant white flowers showed up in our yard last year. I identified it as an invasive clematis -- clematis terniflora, or sweet autumn virginsbower. Here are the specs:

Common Name: sweet autumn virginsbower
Type: Vine
Family: Ranunculaceae
Native Range: Japan
Zone: 5 to 9
Height: 15.00 to 30.00 feet (if use a trellis; otherwise, 6-12" if you let it grow across ground)
Spread: 15.00 to 30.00 feet
Bloom Time: August to September
Bloom Description: Creamy white
Sun: Full sun to part shade
Water: Medium
Maintenance: High (blooms on new wood, so recommended that you cut back shrub in fall after blooming or in spring. I don’t think this is necessary if you just want to cover a large area.)
Flower: Showy, Fragrant
Tolerate: Deer, Black Walnut

Link:
http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a300

Another site describes several possible problems with this plant: Wilt, powdery mildew, rust, fungal spots, and stem cankers are common. Scale insects, whiteflies, earwigs, aphids can occur: https://www.finegardening.com/plant/sweet-autumn-clematis-clematis-terniflora

Tips on Planting a Groundcover:

1. Here is a short video on cotoneaster: https://www.youtube.com/watch?v=8BsnNEtW8wk.

2."If you have existing sod, it is preferable to kill the sod and plant into it. This limits the potential for serious erosion before the new groundcover becomes established. You may want to mulch around the plants."

3. Mulch when done planting to prevent weeds from taking up residence until the ground cover gets established. However, cotoneaster roots and spreads when its horizontal branches touch the ground, so mulch only lightly immediately around the plant to retain moisture, but enabling spreading branches to touch the soil. Reserve heavier mulching in the open areas between the plants. Another technique is to mulch with your straw, and pin the longer branches to the soil so they touch with little U pins you can make out of, say, 14 gauge wire. That's a lot of pins and a lot of work.

4. You may want to experiment using the cotoneaster on a smaller area than the entire 100 yard long embankment. But, maybe you just want to get this entire project off your "to-do" list! If your slope is 2 yards down and 100 yards across, that’s 200 square yards. At 1 plant per square yard, that’s 100 plants. If you take the maximum spread of 6' (2 yards), that's 4 sq. yds per plant. That reduces your total cotoneaster plant requirements fo 25 plants. If you go to Lowes to look at the cotoneaster bearberry, check the label to get their estimated spread.

Fireblight on My Pear Tree

Q. My neighbor said my new pear tree has fire blight!! Agh! What do I do? Nancy

Peaceful Valley has a 3-minute tutorial on how to deal with fire blight. Get on it right away. https://www.youtube.com/watch?v=nwPG7zqA5N0
**Carrot Spacing**

**Q.** I liked the way you plant your carrots, in contrast to the row planting I use. I wonder, with carrots planted so close together, do you still get big carrots? Kathy

In mentioning we plant our carrots in offset rows at 4” apart, I omitted the important distinction between carrot size and yield. Jeavons’ Grow Biointensive method maximizes yields, not size, as he is concerned about how to grow a lot of food in a small area. This is one of the reasons we adopted his school of thought.

His results show that planting carrots at 3” maximizes yields, but he encourages experimentation on your own soils. Several years ago we did this, and determined that by going to 4” we got both bigger carrots and higher yields. Same with beets: by going from 4” to 5” we realized both larger beets and higher yields. Remember, yield means weight per unit area.

However, with bulbing onions, when going from 3” to 4” we would lose on yield but gain on onion size. We went for the latter, as I'd rather peel one larger than two or three smaller onions. A friend of ours grows onions in long rows, and gets even larger onions, but I don't know what his yield is.

I don't know how you grow your carrots -- how far apart between each plant and each row. You may be getting really nice big carrots. When switching to the close-spaced planting of Grow Biointensive, you may end up with higher yields but smaller carrots than you are currently getting. Experimentation, and your own preferences, would settle this for you.

**Mulberry Trees**

**Q.** Our Mulberry tree is getting ripe, so we're trying to figure out how to harvest that and process the Mulberries. Amanda

Tania freezes them whole. She first soaks them in a big bowl to get rid of the bugs, then lays them out on an old towel to dry. Then she freezes them in empty 1 quart yogurt containers, labeled.

**Coir vs Peat Moss**

**Q.** Why don't you use coir instead of peat moss in your potting mix? Lucky

Here is an article on coir vs peat moss: https://www.planetnatural.com/peat-vs-coir/. The pH of coir is near neutral. This wouldn't work for us, as our pH is high. We require something to reduce pH. We use sulfur on vegetables and peat moss on fruit shrubs and trees.

**Efficacy of Commercial Potting Mix**

**Q.** I'm trying my hand at container gardening, as I live in an apartment building with a balcony. I bought a bag of potting mix at a big box garden supply center, and bought seedlings from a local nursery. I potted up four chard plants. Six weeks have gone by, and it's as if the
seedlings have gone into suspended animation. Though they are still alive, none has grown at all. I water, and put them in a sunny area. What am I doing wrong? Roger

I suspect the problem is the potting mix. I suggest an experiment. We’ll transplant one into our own potting mix. For two others we’ll keep as is and add an organic liquid fish fertilizer. For the fourth plant, we’ll keep as is, and water as you have in the past. (Roger did as I suggested, and reported the following results after several weeks had gone by.)

Gene, the plant in good soil is 10-11 inches tall (top). Two plants in the commercial potting mix fed fish meal are 4-5 inches tall (middle). The plant with commercial potting mix and no fertilizer is still in suspended animation at 3 inches (bottom). I learned an important lesson: soil health is critical, and while commercial potting mixes may look ok, these may not have the proper nutrients and soil microorganisms for health plant growth. Thanks!

Late Tomato Blight

Q. Late tomato blight hit us this summer, what with all the rain and cool temperatures. What should we do? Alice

Funny you should ask. Our tomatoes got it, too. The usual advice is to pull the entire plant, because treatment is ineffective, and unless you remove the plant, fungal spores will contaminate other tomatoes. However, if you’re willing to spend time, you can try the following, which has worked for us in the past, and worked for us this summer.

1) Leaves tend to be affected first, so pull or prune off the diseased leaves. If stems show blotching from the late blight fungus, prune off those as well. Dispose all diseased material in your trash or bury.

2) Check for disease lesions on the tomatoes, and pull off those and dispose those.

3) Then spray with Serenade or similar beneficial bacterial product. Spray on both sides of the leaves and all stems.
4) Continue inspecting every day and prune off diseased leaves, stems and fruit.
5) RESULTS: Our tomatoes were mature but green. The rain and cool temperatures lifted and we had warm, sunny days. Miraculously, the tomatoes ripened and we had a nice crop. The picture above shows our intern Dan and me severely pruning one of our eating tomatoes. This recovered as well, and produced fruit. Clearly, commercial growers can't do this, but backyard gardeners can give this a try.

**High Quality Garden Tools**

**Q.** Where can I get high quality garden tools? Dan


You probably want "Clarington Forge/Bulldog Spades and Forks." You probably want C and/or D, which if you get both, are cheaper (C&D). ($127 for both plus shipping).

I mentioned Peaceful Valley Farm and Garden Supply. Here is their page for spading forks and shovels: [https://www.groworganic.com/quality-garden-tools/mid-handled-garden-tools.html](https://www.groworganic.com/quality-garden-tools/mid-handled-garden-tools.html). The comparable tool here is the Spear and Jackson set, both for $120 + shipping. You will notice a pair on top of this page for $39.96 each -- plastic handle and made in China. Stick with quality. My shovel is over 20 years old, and still looks new (I use linseed oil on the wooden handle).

**How Do Tomatoes and Beans Pollinate Themselves?**

**Q.** I've been learning a lot from Brian Capon's fascinating book, "Botany for Gardeners." He covers a number of examples, but not tomato and beans, which I'm keen on growing. How do tomato and bean plants pollinate themselves? Dan

I had to do a little digging but found the following:

**Tomato.** The stamen (male part) is up against and surrounds the ovary and pistil (female part), and both are too small to distinguish, which explains why we couldn't see these in the flowers we looked at. Also, flowers we looked at weren't quite far enough along. Here is a good picture (labeled Figure 3). You may have to copy and paste this link, as I couldn't get it to open on a direct click: [https://www.researchgate.net/figure/Tomato-flower-structure-Credits-Carlos-Ozores_fig1_272166180](https://www.researchgate.net/figure/Tomato-flower-structure-Credits-Carlos-Ozores_fig1_272166180). You will find a good description here: [http://www.plb.ucdavis.edu/labs/rost/Tomato/Reproductive/flrfert.html](http://www.plb.ucdavis.edu/labs/rost/Tomato/Reproductive/flrfert.html).

**Bean.** The bean flower strikes me as even more complicated: [http://www.backyardnature.net/fl_beans.htm](http://www.backyardnature.net/fl_beans.htm).

*Ethnobotanist and Herbal Medicine Advocate James Duke Died at 88. He was an inspiration and hero to many, including us.* [https://www.citizens.org/6333-2/](https://www.citizens.org/6333-2/)

END