



Q & A: From 2017

Peach Tree Borer

Q. During our tour of your gardens you mentioned a paint you apply to your peach trees to protect these against insect damage and frost injury. What were the ingredients? Katie



Interior white latex paint and joint compound, mixed, say, 50-50 or in proportions that are spreadable. Apply with an old brush. Pull soil from around the base of the tree so you can apply the paint a couple of inches below the surface. Paint up a couple of feet or so. As the tree grows, the paint cracks and flakes off. Touch up or re-apply every year if necessary.

We read this suggestion in the Fedco Tree catalogue several years ago. It protects against the peach tree borer. At the same time, it prevents freeze damage to the trunk in late winter,

when sun shines on an unpainted dark trunk. The dark surface absorbs heat, and sap can begin to flow. During cold nights that typically follow, the sap freezes, causing damage to the trunk. We lost two Reliance peach trees several years ago, and the damage was identical on both trees – dead trunk surface on the south side of the trunk from the ground up about 18” or so. The borer can also attack apples as well.

Cover Crops

Q. We would like to introduce cover crops in our community garden. What are the main points we should consider? Nellie

Cover crops in your community garden plots will improve your soil while adding organic matter. Planting cover crops is one of the three main organic growing practices. We are now cleaning summer beds and turning them into cover crops for the winter. We use different seeds depending on whether we will be planting early spring crops (e.g., lettuce, spinach, carrots) or later summer crops (e.g., tomatoes, squash, corn).

September is the best time to plant fall cover crops. As fall advances, gardens get less sun and temperatures drop, making germination of seeds more difficult. If your plot is sunny, you

could probably plant over-wintering cover crops such as winter wheat or rye until mid-October.

However, oats winter kills, so you should plant early to benefit – mid-August to mid-September.

Wheat and rye grow a small amount in the fall, and do their main growing in the spring, during which they produce considerable organic matter – above ground as well as in the roots. When it begins to re-grow in the springtime, as shown on the left, you can, if you want to, clip some and make "green juice" with it; when it is young, it is very sweet. Following is a good web site on wheat grass juicing:



<http://www.drwheatgrass.com/info/newsletters/default.htm>

As the rye grass gets taller, say 12-18", cut it back to 8 inches or so and incorporate the cuttings within your compost pile. If it gets too tall, it will "lodge" (i.e., flop over) in a rainstorm, and you want to avoid this if at all possible, as the cover crop will be difficult to cut. It is much harder to cut the cover crop when it's flopped over!

Three weeks before you intend to plant in the garden bed that has a rye or wheat cover crop, cut the cover crop totally down and chop up and compost the tops. Then you "skim" the top 1 to 2" inches or so of soil to sever the tops of the cover crop plants from their roots.

We cut the sod up into blocks first, the size of the spade shovel blade, and then as you skim you can either move the blocks and stack them upside down elsewhere to decompose and use later, or flip them over on the bed so the top side is down. This causes the plants to die and decompose. In both cases the rye or wheat roots left in the ground will similarly decompose.



The picture to the left shows three stages of a rye and vetch cover crop: before cutting, after cutting, and after skimming and inverting.

We plant spring cover crops in early May (oats, barley with peas or vetch), and summer cover crops during June and July (e.g., Japanese millet, buckwheat).

Common seed combinations for the fall are:

- oats plus vetch for early crops the following spring such as lettuce, carrots, beets, onions;
- rye or wheat plus vetch for late crops such as beans, tomatoes, peppers, corn, squash.

You can get oats inexpensively at farm supply stores (ask for oats to use for cover crops, not for feeding horses). You can get wheat and rye berries from a health food store in the bulk section. Two pounds should be enough for a small to medium sized garden. You will want winter wheat berries (not spring wheat). Either hard or soft wheat berries will work.

Hard versus soft refers to protein content, hard being higher in protein. Hard wheat is used for bread, soft for pastries, cakes. This does not affect growing wheat for a cover crop. Spring wheat one would plant for harvesting later in the year.

For amounts, use the chart below. We determined the amounts by considering two sources, Bountiful Gardens (John Jeavons' group in Willets, CA), and Fedco Seeds.

Cover Crop Seeds: How Much to Use

Cover Crop	BG:amt/ 1000 sf	Fedco:amt /1000 sf	Amt Chosen	100 sf	
				wt	cups
vetch	3.4 lbs	1lb	6.8 lbs	11 oz	1.75 c
rye	8 oz	3-4 lbs	8 lbs	12.8 oz	1.25 c
oats	12.5 oz	3-4 lbs	8 lbs	12.8 oz	1.25 c
field peas	1.6 lbs	4 lbs	4 lbs	6.4 oz	1 c
buckwheat	26 oz	2-3 lbs	6 lbs	9.6 oz	1.5 c
fava 8" (bell beans)	2.5 lbs		225 seeds	5.3 oz	0.67 c
fava 6" (bell beans)	5 lbs		400 seeds	9.5 oz	1.2 c

In col. 4 I doubled the maximum recommendation from BG or Fedco. If you use a mixture (e.g., oats, peas, vetch soil building mix), then cut each seed amount to 1/3. If using two seeds, cut each seed amount in half. Favas lose weight & size as they age! For favas, we can calculate the number required/100 sq.ft. for 8" & 6" spacings as 225 & 400 seeds. Remember to use inoculant on vetch and fava. Just before planting we wet these seeds, drain excess water, sprinkle on a bit of inoculant, and mix.

Before broadcasting your cover crop seed, clean beds and loosen the soil first. To loosen, we use our spading fork (twisting motion, or digging down a bit if hard). Follow with breaking up clods with fork/rake and smoothing out with your garden rake. .

You can broadcast wheat, rye, oats and buckwheat, and then chop them into the bed with a garden rake. This mimics what farmers do with their mechanical drills.

Soaking vetch and fava helps germination. Soak overnight (or during the day), drain, and soak for another 8 hours. Then drain and let sit. After 8 hours, rinse and drain. Let sit, then rinse

again. I like to wait until the vetch or fava starts to show the tiniest white sprout before I add inoculant and broadcast. You can speed up this process by putting soaking seeds in a warm, sunny location. When planting vetch with oats, rye or wheat, broadcast each separately, then chop both in with your garden rake.

When done chopping in, spritz lightly. On subsequent days, spritz lightly during the day to prevent from drying out. You should see germination in 7-10 days or so. Longer if colder. During rainy weather, especially in the mid fall, you may notice failure of germination. If you look closely, you may notice that your sprouting seeds look like something has eaten them. SLUGS! Go out at night with a flashlight and a trigger sprayer containing a 10% solution of household ammonia. Set on narrow stream and aim at the slugs, hitting them with 2-3 squirts. We find that doing this three nights in a row puts a big dent in the slug population. If you don't do this, you may find you have to replant your cover crops.

Where you plant each will depend on what you plan to grow in each part of your plots next year. Hence, you will find a garden plan or map useful. This brings up another organic practice: crop rotation -- not planting the same crop in the same place one year after another, but leaving (hopefully) at least 4 years before returning to the same spot with that crop.

For other cover crop seeds and their descriptions and uses see Peaceful Valley's website <https://www.groworganic.com/> . Under the first menu "All Categories" you will find a pull-down menu with the entry "Cover Crop Seeds" which expands to a full index. You will find a useful chart summarizing properties of cover crop seeds in the early index entry "Solution Guide for Cover Crops." Another source is Fedco Seeds of Maine at www.fedcoseeds.com . Click on "Organic Growers Supply" and on that page, click on "Farm Seed."

Garden Hoses

Q. I would like to replace our garden hoses with drinking water quality hoses, and have had a hard time finding these. Can you help? Susy

We were faced with the same problem last year. Investigating, we came across a recent study which evaluated several garden hoses (<http://www.ecocenter.org/healthy-stuff/reports/garden-hose-study-2016>). Looking for confirmation, I came across another site referencing this study (<http://hubpages.com/living/Top-10-Lead-Free-and-Drinking-Water-Safe-Garden-Hoses>).

The second site gives top place to the Element Green & Grow 100' hose, which is claimed to be leached lead free and phthalate free. However, the first site ranked the same hose HIGH concern due to HIGH phthalates.

Another consideration is quality of the product, and for this, we looked for reviews of hoses ranked low in contaminants. We went with Water Right, made in America. More expensive, but a more durable hose (<https://www.waterrightinc.com/>). On the Water Outlet Store page they have discounted hoses. You can save money here if the available hoses meet your requirements.

Spacing Between Beds

Q. Loved your pictures of mini-farms around the world (<http://www.neo-terra.org/biointensive-exemplars.html>). Based on all the pics, I must be wasting lots of space in between beds. I have left about 3' so that I can get a wheelbarrow between the beds. What do you recommend for spacing in a garden (not commercial)? Clyde



I follow your criterion -- being able to get a wheelbarrow between beds. We may have a smaller wheelbarrow, and find 2' to be a minimum (left), but I have to admit, that is tight, especially since we're on a slope. At the outset, I was trying to maximize growing space in our limited sunny area. By the way, Jeavons uses only 1', and he's on a slope, too. I don't know how he does it.

Weed Killers

Q. Do you have any suggestions for non-industrial weed killers? I want to control weeds in my garden. Daniel

Here is a recipe for killing broad-leafed weeds perennial such as plantain. Get a gallon of ordinary grocery store vinegar, white distilled (5% acetic acid), to which you add 2T vegetable oil and 1 T dish soap. Shake. Spray is most effective above 70 deg on a hot sunny day. Spray weeds in full sun. Repeat applications are usually required for perennial weeds.

I came across this next recipe, but wonder at the salt level, which will kill grass as well.

1 gallon vinegar
1 cup ordinary table salt
1 T dish soap.

Q. This is one of the more frightening agriculture stories that we've seen in the paper lately. It provides a good example of how a technology solution fails and actually makes the problem worse. A bigger question: is there any turning back? Chris

https://www.washingtonpost.com/business/economy/this-miracle-weed-killer-was-supposed-to-save-farms-instead-its-devastating-them/2017/08/29/33a21a56-88e3-11e7-961d-2f373b3977ee_story.html?utm_term=.cb20f1a73c49

I suppose we could talk about closing down Monsanto and their ilk, but that is likely out of the question. I suppose we could talk about forcing Monsanto to pay for damages, under ordinary liability, but they might try to shift the responsibility to the Federal crop insurance program. Then there is going completely organic. Hmmm. Probably undiscussable, as there is a large segment of farmers who don't have a clue what that is all about, and are not prepared to shift

(together with their abettors at USDA, state extension programs, and faculty at agricultural colleges).

The underlying problem is weeds. Let's focus on that. Last year I came across an industrial farmer and former Marine who, working with technicians at Virginia Tech over the years, has perfected "no-till cover cropping" on a scale suitable for industrial agriculture.

No till by itself leaves stubble in the field and sprays herbicides to prevent new weed growth. This still uses damaging chemicals. Cover cropping is an organic (and traditional) practice of planting cover crops between your main crops to replenish the soil and suffocate weed growth. Works, but conventional farmers complain that it takes fields out of production when you have to grow cover crops part of the time (plus it is WAAYY too complicated).

No till cover cropping uses mixtures of cover crops in a given field, rolling these down at the proper time, and planting directly into the rolled cover crop. Results are amazing -- healthier soil, no weeds, and healthier main crops. Here is that farmer I mentioned above giving a talk to fellow farmers: https://www.youtube.com/watch?v=wqPc5C_JsAk (45 min). This is also practiced by some small farmers growing greens for urban markets using specialized walk-behind tractors on narrow beds.

Deer Control

Q. At a recent meeting I heard someone mention using fishing line to control deer. How can that work? Elisa

We heard a similar suggestion from a fellow grower, and are trying it this fall to protect a new spruce and a mature rhododendron. So far, the results are mixed: deer already broke into a two-strand square around our spruce and nibbled the ends of some of the branches. We replaced the line with our traditional fencing, and the next night deer crashed through that and ripped it: first time ever! Our local deer population has mushroomed in recent years.

Here are some growers who have tried the fish line tactic:

<http://vomitingchicken.com/deer-fencing-cheap-and-easy-and-effective/>

These folks suggest 30 lb test strength monofilament fishing line strung at 12-18 inches, and, even better, a second course higher up: <http://blog.seedsavers.org/blog/deerfence>

Another person tried strands at 6" and 3 feet: <https://permies.com/t/7921/critters/Fishing-line-deer>

This next person reports "I bought some 8 lb. test line but it's better to go 15 lb. or higher. I tried to find dark blue or purple line but was unsuccessful. Apparently, deer see colors the same as a color-blind human. They see blue and purple very well. If they see the fishing line they won't try to go through or over the fence (at least that's the theory). I have not seen deer approach my fence but people believe monofilament fences work by startling deer. They walk into it because they don't see it. This causes them to recoil and stay away from it next time (again, a nice theory!)." He has a photo of his garden fence in daytime. Here's the link: <http://growseat.blogspot.com/2010/07/fishing-line-deer-fence.html>

The same guy posted an update and as of 2015 wrote, "Relying on horizontal runs does not keep the deer out. I switched to vertical runs of 20 lb. test filament. This has worked very well. No deer have entered the garden in 5 years. I have to make a half-dozen repairs each year where the line breaks due to rubbing/snagging. I try to keep the vertical runs of fishing line no more than 6-8 inches apart."

<http://growseat.blogspot.com/2014/03/fishing-line-deer-fence-update.html>

Aeroponics

Q. What do you think of aeroponics? I came across this suburban grower. Julian
<https://www.youtube.com/watch?v=H4gsnFJRAB0&feature=youtu.be>

Hydroponics, aquaponics, verticalponics, aeroponics are all updated tech-enhanced versions of von Liebig's mid-19th century concept that all plants require is nitrogen, phosphorus and potassium. (1) Nothing about ecosystems, working with nature, improving soil. Kirsten Dirksen's approach, as in so much industrial agriculture at any scale, is simply not sustainable. Of course, so little in our lives IS sustainable one might cogently argue "so what?"

That this is endorsed or developed by NASA is not, in my book, a recommendation worth following. After all, they developed this to feed astronauts living in REALLY hostile environments in outer space or on other planets. Nothing like totally ruining your own backyard which forces you to look elsewhere for something else to spoil.

In this video he offers no performance data -- how much all this costs, how much he produces, etc. He is growing greens, not calories. Greens is what you can sell in the market.

His portrayal exemplifies the divide between growing food for yourself and growing food for market. When pursuing the former, one has the opportunity to grow food sustainably. When trying to earn a living at it, you are subject to market conditions, which means reducing costs, mass production, manufactured inputs imported from who knows where and at costs not properly assigned. I give this a thumbs down.

Buried in the comments, which are almost universally favorable, is an interesting exchange on just this point of sustainability. (2) You can tell from this exchange just how little the concept of sustainability is understood, embraced, or practiced. As with so many internet exchanges, it ends in profanity.

(1) http://cpor.org/concept_of_organic.cgi

(2) ABetterNewWorldOrder : "Burning gas to grow plants not very sustainable."

As a demonstration of this point about sustainability, consider this "tower aeroponics garden" product: <http://www.towergarden.com/shop> . Doubtless there are others. If you want to see how far such stupidity can go, check out <http://www.aerogarden.com/> where one of the options is wi-fi so you can monitor and control your planting device from ANYWHERE! As Tania says, "aeroponics is a rich-man's hobby."

Greensand Suppliers

Q. Fertrell stopped selling greensand. Where do you get yours? Cindy

Checking into this, the EPA has closed down mines in New Jersey because of air pollution! Fedco sells it. Shipping, even for the 5# bag (\$7) adds over \$15. I found a number of choices on Amazon from 5 to 50 pounds (link below). One of these is a 5# bag for ~ \$16 including shipping. https://www.amazon.com/s/ref=nb_sb_ss_i_2_6/157-9557590-5263525?url=search-alias%3Dlawngarden&field-keywords=greensand+fertilizer&srefix=greens%2Caps%2C205&crd=20VYX6QVZP1F9

Voles!

Q. Do you think that garlic, planted as close as you can get, to the trunk of fruit trees, would deter voles? Cindy

This could work, but is hardly sufficient. Voles will just move elsewhere. Unless these are new trees, I would wonder why voles would tunnel beneath fruit trees. The tender roots they might eat are way out from the trunk. There may be some feeder roots near the trunk. We're more likely to find burrows beneath perennial plants with fibrous roots, on which the voles can feed. They did a lot of damage to ferns and Siberian Iris last winter.

Voles are prolific. They breed in the spring and in the fall in large numbers. This past year I undertook a full court press as they say in basketball, starting in the late winter when I noticed vole runs in the snow. We usually lose 1/4 to 1/3 of our carrots and beets, plus damage to perennials. I used traps, repellents, and poisons. I scored with the traps. The repellents may have repelled, but so what? I had used an electronic repeller in previous years with only modest success.

At the end of the season I was shocked at our haul -- 76 rodents, including 32 voles, 26 chipmunks, 9 mice, 5 squirrels, 3 rabbits and 1 possum. What surprised me was the number of chipmunks resident in our garden. At the end of the season we suffered zero damage from rodents. Our carrots and beets were free of nibbles.

I used two wind-up traps on the small rodents (link below) and our Havahart trap on the larger rodents. I checked traps twice daily and transported them elsewhere. That was a nuisance, and one alternative which a fellow gardener uses is to empty the trap into a bucket of water. A small number end up dying inside the chamber. The scent and movement of one already inside the chamber attracts others.

Voles are carbo junkies, so I bait the trap with a mixture of oatmeal and bird seed. I sprinkle a bit on either side of the trigger with a spoon, and put some inside the chamber. Chipmunks love this combo as well. They are a bit too big for the trap, and sometimes squeeze their heads out through the trap and asphyxiate themselves. Extricating them is tricky.

Here is the trap I used, which I purchased from Farm-Tek:

<http://www.farmtek.com/farm/supplies/ProductDisplay?catalogId=15052&storeId=10001&langId=-1&division=FarmTek&productId=15853>

They sell a smaller one which I have not used, but may also work:

<http://www.farmtek.com/farm/supplies/ProductDisplay?catalogId=15052&storeId=10001&langId=-1&division=FarmTek&productId=15851>

With the traps, put them directly in the run or just outside the hole. Voles are hard of seeing, and will walk into the trap, drawn by the smell of bait. Voles don't hibernate, so protecting your garden is a year-round effort. Concentrate control efforts during the breeding season (spring to summer) to make a serious dent in the population. Try one of the following techniques to keep voles in check.

Ground clearing

Voles need cover to survive and avoid open ground. Cleared spaces as narrow as 10 inches inhibit their movements; wider areas are even better. Remove weeds, mulch, and any crop litter around the garden. In addition, either create a bare border space around your vegetable garden or dig a trench 12 inches deep and wide enough to step over easily

Repellents

Check with your local extension office or garden center to learn which repellents are labeled for use on voles. Some success has been reported with garlic tubes inserted into tunnels and hot sauce applied to the vegetation you wish to protect (avoid applying to portions you eat). Castor oil (granules or liquid) also has a repellent effect, as do sound-emitting spikes inserted into the soil. Note, though, that no repellent is 100 percent effective in all situations.

Mowing

Don't let grass grow too high. Longer grass provides easy cover for voles to escape predators.

Fencing

Protect plantings from voles with a fence that's buried 3 to 6 inches below the soil surface and bent outwards into an L-shape. Above ground, the fence should be from 4 to 12 inches tall. Use non-rusting, one-quarter-inch mesh. Hardware cloth works well.

Predators

One of the best defenses against voles is a cat. Other predators include owls, foxes, hawks, bobcats, some snakes, and coyotes.

Garlic

A permaculture site went into detail on using garlic. Again, this is merely a repellent, but maybe that will be enough for you. The author was Daven Midtown, dated July 20, 2012.

"The natural repellent nature of garlic makes it a perfect tool for keeping pests off plants. Garlic water is simple to make and easy to administer. It can be used on vegetables or on flowering plants. This simple to make garlic tonic works well for pests such as aphids, but gardeners who are concerned about harmful chemicals can kick up the benefits of garlic water for plants by simply adjusting the ingredient list. Below is a recipe that can help dispel the vermin and pests from your garden. The heavy garlic smell dissipates quickly but is active enough to keep bugs away

“Moles and voles leave a shallow tunnel near the surface of the ground because they are looking for roots to nibble on. Often the sign of a mole in the garden is a wilted plant that when pulled has significant root damage. Using garlic to combat mole, voles and gophers is a positive and non-toxic way to keep nibbling pests out of the garden.

“To Prepare: Use whole or crushed garlic and place directly into their tunnels. The odor of garlic is very strong to their sensitive nose and this will encourage them to abandon the area. Garlic plants also work as a great deterrent so planting garlic as a companion plant is helpful to eliminate a mole or vole problem before it even begins. Using garlic water for plants can also work as a tonic that seeps into the soil and disrupts the harmful denizens that may abide there. Gophers, moles and voles will avoid digging in dirt that is treated with garlic water.

Garlic Water Recipe:

6-cloves of garlic peeled and sliced fine.

2-quarts of tap water or purified water.

1 TBLS natural soap (Castile is a good brand)

1 Spritzer bottle.

1 Mason Jar with lid (recycled jar works fine too)

“In a sauce pot, warm water until it begins to steam. Add sliced garlic and maintain temperature for 20 minutes. Allow water to cool, remove garlic from water and compost. Add soap to spritzer bottle. Using a funnel add enough water to fill the spritzer bottle almost full but leave at least 1/2 inch of room. Put the lid on the spritzer bottle and shake slightly when ready to use. Spray plants early in the morning or in the evening time after the hottest part of the day has past. Several applications may be needed. Avoid using the spray on hot days as the liquid and sunlight may burn the plants. Extra liquid can be stored in the jar in the fridge for up to two weeks. You can also improve the kick of this recipe by adding two hot peppers, chopped fine.”

High Quality Plant Trays

Q. Where can I get high quality seedling trays? Garrett

Two sites:

http://www.greenhousemegastore.com/product/perma-nest-1020-tray/1020-trays_1

<https://indoorgardensupplies.com/product/perma-nest-plant-tray-tan-11x22x2-5/>

Pawpaws

Q. We're moving back to the north east, and heard about pawpaws. Since you grow them, what advice can you give us? Lodina

Two points about pawpaws:

- 1) Pawpaws require a second variety for cross-pollination.
- 2) Get good cultivars. Avoid wild ones. We have one wild and two cultivars (Sunflower and Wells). The wild one produces less fruit, and took longer to bear. Avoid Wells: too many seeds.

Two experts on pawpaws are Andrew Moore, from Pittsburgh and Neal Peterson. Peterson has a page on cultural advice at: <http://www.petersonpawpaws.com/CulturalAdvice.php> . He also sells six varieties he regards as excellent (for various reasons). Moore has a book on paw paws, published by Chelsea Green, at his site: <https://thepawpawbook.wordpress.com/>

Kentucky State University is a world center for pawpaw research. They have a nutritional information page at: <http://www.pawpaw.kysu.edu/pawpaw/cooking.htm> and a recipes page at: <http://www.pawpaw.kysu.edu/Recipes.htm>

Tulle vs Row Covers for Insect Control

Q. I did wonder why you used that tulle tent over the beets. I would think that a row cover would do the same. Fran



Years ago we tried a summer row cover (92% light transmission) over rutabagas and experienced three drawbacks: (1) sunlight reduction turned the leaves yellow under the cover, and returned to green when we removed it. We have a somewhat shady garden, and this reduction seems to have been critical; (2) lower air circulation, leading to explosion of powdery mildew; and (3) too opaque -- you cannot monitor what's happening inside unless you lift the row cover. Next, we tried tulle, but that turned out to be too lightweight. We now use tutu cloth, shown on the left (www.tutu.com).

Q. Where do you buy your current and gooseberry plants? What cultivars do you recommend? Fran

The impetus for adding currents and gooseberries came from Lee Reich's masterfully composed book, *Uncommon Fruits for Every Garden*. He has separate chapters devoted to each of a wide variety of fruits, with straightforward instructions on cultivation, propagation, pests and diseases. At the end of each chapter he gives thumbnail sketches of many varieties, including their pluses and minuses. Then, in an appendix, he lists each fruit alphabetically with a long list of sources. Armed with this information, we purchased a number of different varieties. Almost all fruit trees and shrubs require proper pruning and growing conditions. Each fruit constitutes its own encyclopedia entry. I have come to appreciate that the descriptions one finds in nursery catalogs are woefully inadequate. Reich fills the gaps. Here is his Amazon link: https://www.amazon.com/Uncommon-Fruits-Every-Garden-Reich/dp/0881929441/ref=sr_1_1?s=books&ie=UTF8&qid=1495142126&sr=1-1&keywords=lee+reich%2C+uncommon+fruits+for+every+garden

As to general principles for selecting fruit shrubs, I look for disease resistance, absence of

blind wood, erect habit, great flavor and decent fruit size.

Among currants, you have the European black currants, red currants, white currants, pink currants, and American black currants. I am partial to Titania, a European black currant, as it is disease resistant to cedar apple and other rusts, a big plus. I find the variety Pink Champagne refreshing and reasonably prolific. I also got two Rovada currants, a large, tasty red currant superior in size and flavor to common ones such as Red Lake. I learned later it is susceptible to cane blight, but this has not affected ours so far. Source for our Rovadas was Whitman Farms in Oregon (<http://www.whitmanfarms.com/>).

Among gooseberries, I am partial to Red Honnemaki and Poorman, two easily available, that have performed well for us. Stay away from Invicta, a green variety. Large but insipid fruit. I found some other great varieties at Whitman Farms, where I got Jeanne and Welcome, both large and tasty. The shrubs are vigorous and erect. Another great selection for disease resistance and flavor was Jahns Prairie, which I got from Indiana Berry (<https://indianaberry.com/>). If you are interested in tasting these, let me know and I will contact you when they are ripe -- sometime in July.

Elderberry Problems

Q. I don't know what happened to my elderberries last year. I remove a third of the patch each year. I've grown them for years but last year the berries were very small and after I removed the berries from the clusters and washed the berries, I swear there were little insects in the water. I felt that they came from inside the fruit. I ended up pitching the berries and going into the woods for more elderberries. I know that raspberries can get an insect in the fruit. Maybe elderberries can too. I've read the PSU extension paper. Maybe I will cut them all down this year if the insects appear again. Am I confused or is this possible? Fran

Elderberries require annual pruning to keep them productive and manageable. Is this what you mean by removing a third of your patch each year? The Vermont Extension circular is more detailed than the PSU one, particularly on pruning, pests and diseases, starting on page 27: <http://www.uvm.edu/~susagctr/resources/ElderberryGuideComplete.pdf> .

The main pests we have are the cane borer and the sawfly larvae. You have to stay on top of these two. Neither publication mentions the sawfly larvae. It comes out in the spring, and is a greenish to yellow caterpillar with dots, later turning white, that munches leaves, blossoms and fruit quickly. So far we have had small infestations which we control by hand-picking. For large infestations you might use Pyola on infested leaves (canola oil plus pyrethrin), taking care not to spray pollinators that are hovering around. Pyrethrin is a natural insecticide from a member of the chrysanthemum family. It breaks down quickly, especially in sunlight, and acts as a knock-down remedy. Don't confuse pyrethrin with permethrin, which is a long-lasting synthetic. If you are suffering berry damage, you may have the spotted wing drosophila, which you can read about in the Vermont circular. You mention insects. Are these larvae, beetles, flies? If you are able to take a picture of these, send to us and Tania will attempt to identify. Here are two examples of sawfly larvae that Tania has seen on our elderberries.



Contrary to what the person in the above link stated, Tania has, at times, picked off as many as 70 from ONE of our elderberry shrubs, and they DID do a lot of damage, not only to the leaves, but in chowing down the blossoms before they could even open!

They curl up on the undersides of the leaves, so you can pick them off that way or else catch them while they are munching on the edge of the leaves or the flower buds. They eat the emerging fruit too. Very annoying. The following link shows the one with spots when it gets bigger and turns more white:

<http://www.biodiversegardens.com/2013/06/some-sawfly-on-my-elderberry.html>

The elder borer is a beetle. Evidence -- drooping new leaf shoots on the plant. These will hollow out the stem as they eat their way down, so you have to watch for any wilting growing tips and cut them off before the larva tunnels down further and does more damage. Watch for any hollow hole in the cane. Cut off and burn or otherwise discard in trash lest the borer larvae return to the scene of the crime for more fun.

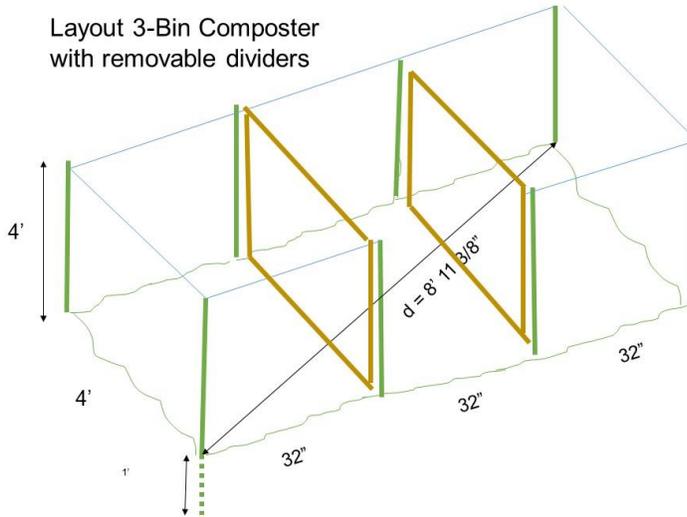
Another sawfly larva infests gooseberries as well. These are green. Look for damaged leaves at the margins in early spring. We hand-pick for small infestations, and spray with Pyola if whole stems are involved. The spring infestation is heavier, and you may get another, lighter infestation later in the season. Blossoms on gooseberries open early, so avoid spraying beneficials hovering around their nectar sources (or shoo them away while you spray).

Compost and Compost Bins

Q. Since visiting your garden, I've covered our "cooking" compost pile with a tarp and stopped using unfiltered water for watering. I also plan to add straw to my current compost pile. Lots to chew on. Trevor

Organic matter fuels your garden. Learning how to make and use good compost is essential. We cover this in our Organic Garden Primer, bottom of page 16 through top page 21 (http://www.neo-terra.org/uploads/2/5/6/4/25644359/og_primer_website_2013.pdf). Consider building a 3-bin composter. There are two principal designs. The first has removable dividers between the bins. This makes transferring material from one bin to the next easier. We show

Layout 3-Bin Composter with removable dividers



the schematic on the left, followed by an image of an actual 3-bin composter using this design (below). This was built by Garden Starters and is on display at the Millbrook Marsh Environment Center on Puddingtown Rd. You will find it past the barn and near the garden growing area.



There is one major modification – each successive bin is smaller to reflect that as the compost breaks down, it occupies less space. On the other hand, if you intend to produce several batches, you might want to keep the bins the same size, to allow accumulation of finished compost in bin 3 after the second turning.

The second design has fixed dividers, with removable slats in front. In this case, you transfer material by taking your loaded fork outside the first bin and dumping it into the second bin.



An image of this design is shown to the left, which you can view behind the Radio Park Elementary School off West Cherry Lane (off N. Atherton).

Both work well in producing finished compost in two turnings – from bin 1 to bin 2, and then from bin 2 to bin 3.

The second design requires more carpentry skills. Here are links to three versions:

From Rodale: <http://www.rodalorganiclife.com/garden/how-to-build-compost-bin> .

This looks like it uses chicken wire fencing, which may not provide sufficient protection from animals. I would suggest 1/2" hardware cloth. This design relies on removable slats in front, rather than removable dividers between the bins.

From Earth 911: <http://earth911.com/home-garden/three-times-the-action-build-your-own-triple-compost-bin/> Good pics, plus descriptive text. Includes two links to specific designs, the first of which is excellent: <http://www.instructables.com/id/The-Best-Triple-Compost-Bin/>

From Seattle Tilth: <http://www.seattletilth.org/learn/resources-1/compost/wood-and-wire-stationary-3>

Q. Michael is building a compost bin. We plan to place it by the shaded area under the trees. (Some of these walnut trees will be cut down in the near future.) We had started composting there a few weeks ago on a large plastic, so the area is a bit wet and the weeds are dying, but there are still lots of weeds in the area. Michael wants to leave the bottom of the bins off, and place the compost directly on the ground so worms can also get to it. I think that we should at least put a heavy cardboard down. Advice? Thanks, Carline

Wherever there are nearby tree roots, these will find their way into your compost. Did we peel back the double layer plastic underneath our compost area to show you the tree roots when you and Michael visited?

I had two early experiences with tree roots. In one, I amended the soil beneath a large Norway maple in our lower yard, which was totally bare from the trunk to the drip line, a radius of perhaps 12'. I planted various ground covers. None did well. When I investigated later in the summer, I found fresh maple roots had invaded the entire area, sucking water and nutrients from the newly planted area.

Later, when we began practicing biointensive mini-farming, I piled up sod beneath maple trees in our upper yard. Later that summer I went to use the sod, thinking it would have nicely decomposed into beautiful top soil. What I found instead was a solid mass of new roots. The pile was dry and hard, and I had to use a pick ax to break it up.

At the bottom of our compost bin in our spring garden, nearby which are large maples and a black walnut, we put down a layer of 6 mil plastic covered by a woven plastic tarp. We curl it up on the sides a bit, as roots will jump over through debris that inevitably spills from the bin to the surrounding soil. When we empty the bin, we pull up the tarp and plastic to free the rootlets that have tried to penetrate the barrier.

I recommend you do something like this. Cardboard is organic matter. It will become wet and break down. Roots will go right through it. On worms: as you come across these in your garden, or dig around the adjoining soil to find some, put them in your compost pile. They will multiply on their own.

Sweet Corn Trellis

Q. We lost our sweet corn patch to wind last week. Do you have this problem? Kathy



We've experienced this so many times in the past that we contrived a trellis whose current manifestation is illustrated in the pics following.

Our corn patch is in a 5' x 8' bed section containing ~ 32 plants (8 offset rows of 4, planted roughly on 1' triangles). Our trellis consists of two sets of two poles and a cross brace, on the long sides, with twine crossing the bed, looped around each plant and tied at each end around the braces. The poles are emt (electrical metal tubing) and the braces are 1" x 2" pine strips.

Each of the 4 poles has one end flattened with a sledge hammer so I can drive it easily into the ground. I drilled two holes 24" and 40" from the pointed end, allowing for raising the brace as the corn plants grow. This requires untying the string and re-looping it around the taller plants. It also requires that your corn be planted in rows so the string holds the plants in a straight line. I use

sheet metal screws to hold the wooden braces to the metal poles.

Our beds face north-south, so the west-facing windward side is the long side, and the string holds the corn against the wind.



This has worked out well. After the corn is finished, I take down the trellis, bundle it in a long-narrow column tied and labeled, and store it in our garage. I leave the sheet metal screws in the wood braces so I'm ready to go next year.

We switched from wood to metal as wood rots in our heavy wet soil. If I think of it, I cover the open end of the metal pole with a piece of duct tape after pounding it into the ground to prevent rainwater from getting inside and rusting it from the inside. If I forget, on dismantling I tip the poles upside down to let them drain.



Exchange on Sweet Potatoes



Chris,

We harvested our sweet potatoes today, anticipating cold nights. I am interested in obtaining your yields using your vertical trellis. Let me know what your sweet potatoes weigh, and remind me the size of your bed. We've been pretty consistent getting just over 50 pounds from 40 sq. ft. for the last four years, and this year the yield was higher quality -- higher average weight per potato, more uniform size and shape, and many fewer small ones. I attribute this to a later start date for growing slips, and a later potting-up

date; this avoided root-bound plants which I got in the past. Still learning!

Hi Gene,

Our yield this year was less than yours – 38 pounds from 44 square feet ... maybe next year we won't bother trellising to see what happens. Chris

Chris,

How many plants did you have? You may be doing better than you realize. We planted 40 plants in 40 sq.ft., or 1.25 pounds per plant.

Yeah, I've thought about this some more; we planted just 12 plants down the middle of a four foot wide bed and when we excavated the tubers they were only in the central zone ... leaving a foot on both sides with no production ... so my guess is that we would have gotten roughly the same yield in half the area if our bed width had been two feet instead of four feet. Perhaps, we'll play with this next year. Chris

Chris,

At over 3#/plant, that seems respectable. Thinking about a vertical trellis on our 5' wide bed, I considered using two parallel vertical trellises to maximize yield. That would mean plants between both trellises, which makes reaching through the trellises to weave the inside vines to the trellis problematic. Let me know what happens as you experiment further. Gene

Garden Esthetics

Q. We enjoyed your visit. You both must come next spring. I admire your work to keep your garden so orderly. I don't know how you do it. The pawpaws are wonderful. We had one with dinner tonight. Bill

I realized that inside your generous compliment lurks a real question. How DO we keep our garden so orderly? Here are my reflections:

1. **BEDS.** We organize the garden and landscape around beds, delineated from the grassy paths by edges. We protect the edges from intrusion in either direction by plastic edging in the case of perennial beds or edging with a spading shovel for our biointensive vegetable beds.
2. **WEEDS.** We have assiduously eliminated weeds from our beds, grass and groundcovers. Once done, it is easy to spot new ones, so maintenance is necessary but straightforward. We have identified what, in our yard, are the problematic ones -- garlic mustard, PA bittercress, speedwell, plantain, fleabane, violets (but ok in the grass), pelatory, wood sorrel, dandelion, gill over the ground, and of course black walnut and mulberry.
3. **ORGANIC PRACTICES.** We follow organic practices. These include producing and using weed-free compost, cover crops (which reduce weeds and improve soil), and crop rotation among our vegetables (which reduces disease and pest pressure). .
4. **MULCH.** We clean our perennial beds in the late winter once snow has melted, then mulch with 1-2" of chipped wood (from the township mulch pile). We do this before spring bulbs emerge. This smothers weed seeds, provides organic matter as it breaks down, and conserves soil moisture during the hot summer. Mulching early is the trick to saving time. If you mulch after the bulbs and perennials come up, it is difficult to spread mulch without damaging flowers and requires a lot more hand labor. With biointensive on vegetables, the close-packed offset

rows create a living mulch which blocks sunlight and, coupled with clean compost, reduces weed pressure to almost zero.

5. MASSING PLANTS. Plants look better in masses, rather than mixtures of single and different plants. The first is relaxing to the eye, the second cacophonous. Of course, specimen plants (e.g., your canna lilies, cardoon) can provide magnetic focal points of interest.

6. PRUNING. Necessary on fruit trees and shrubs to improve yields and health, important on landscaping to shape and improve flowering and display. This includes removing suckers to prevent thickets from forming (e.g., plum and cherry root stock, paw-paw, elderberry, etc.).

7. HIERARCHY. We create or build on three levels: trees and larger shrubs in background, smaller shrubs and perennials in mid-ground, ground covers and small plants in front.

8. ROOMS. Imagine your garden as a house with rooms. Some rooms are large open public areas, others smaller peripheral and private areas. These rooms have transition zones or "doorways". I noticed you have this as you took us around your yard along your main path, which carved a meandering circuit from the house back to your house, passing through smaller and interesting places.

Gene, What an elegant system! It really works for you. We do use black plastic as a temporary cover to kill off weeds. But they reseed themselves eventually.

I especially like your mulch use ideas. Next spring I will be getting a load of oak chips from an Amish source near here. They will serve double duty: to use for the landscaping and gardens, and also to grow wood-loving wild mushrooms.

Gerry has been urging me to plant things in masses, as you describe. I will be implementing some of your recommendations next spring.

Thanks,
Bill

Neonicotinoids

Q. I've been thinking of keeping honey bees as a way of getting organic honey, free from pesticides. What do you think? Terri

From the map in this article, no place near us has had the honey tested, but there's an area up north (Maine? Canada?) where adjacent regions have very high levels and below detectable levels of the neonicotinoids:

<https://www.sciencenews.org/article/much-worlds-honey-now-contains-pesticides-harm-bees>

The impact of neonicotinoids would seem to affect "organic" as well as regular local honey.

Transforming Deserts into Ag Land

Q. What do you think of this method of turning deserts into agricultural land? Alexis (<https://www.facebook.com/ScienceNaturePage/videos/1164294410369482/>)

Thanks for this link. I looked up the article listed at the end of the video. (1) The Chinese researchers used a paste consisting of two ingredients: CMC (sodium carboxymethyl cellulose) and NPK synthetic fertilizer. CMC is used in food processing and other applications as an emulsifier, thickener, stabilizer, etc. It is recognized by the FDA as GRAS. (2) Their process stabilizes sand, thereby allowing plants to grow. However, there is a major caveat which the authors mention further down in the article -- it requires lots of water:

However, large-scale desert control must take into consideration the risks of excessive or undue exploitation of underground water resources [29–32], and make good preparation for the potential impacts including the regional climate and bio-diversity changes brought about by extensive desert “soilization.” Therefore, before the large-scale application of desert “soilization,” scientifically comprehensive planning and assessment must be carried out first, and desert “soilization” might start from areas with access to adequate water resources.

The authors clearly appreciate Jeavons' point that a viable method has to accelerate the formation of soil:

Natural soil usually takes thousands of years to form. However, by means of sand “soilization,” sand can be turned into “soil” such that it instantly becomes an ideal habitat for plants.

I'm not dinging it out of hand; however, their method uses lots of water and chemical fertilizers. Thus, we can raise the question, "Is this approach sustainable in the long term?"

At the outset of the article the authors identify three prevailing methods for controlling desert erosion: engineering methods (physical barriers), chemical methods (spraying oil, bitumen or latex onto the sand to solidify it), and vegetation methods (through the planting of desert-tolerating species).

They overlook in this last category the permaculture work of their own fellow Chinese in the Loess Plateau (3) and, for example, the work of Australian Geoff Lawton in Jordan (4). Still, an interesting alternative.

I am copying Matt, Steve and John on this, wondering what they would say about this approach.

Yours,
Gene

(1) <http://www.sciencedirect.com/science/article/pii/S2095809916311560>

(2) <http://www.livestrong.com/article/424545-what-is-sodium-carboxymethyl/>

(3) <https://www.youtube.com/watch?v=8QUSIJ80n50>

(4) <https://www.youtube.com/watch?v=ycLbO02lb7w>

Reply from John Jeavons:

Gene, Great to hear from you. Good observations. Two books that might be of interest in this regard are by Richard St. Barbe Baker – Sahara Challenge and Sahara Conquest. The latter

discusses his recommendations for stabilizing sand. Unfortunately, it focuses on using oil among others, if I remember correctly. Regards, John

Turmeric

Q. Now that I'm growing turmeric in the northeast, what do I do with it? Emily



Two years ago we were introduced to growing turmeric (and ginger) by fellow gardener Kenny Point (www.veggiegardeningtips.com), who gifted us with three tubers each of turmeric and ginger. That first year Tania got almost nothing, but overwintered the plants. They survived, and this year she grew black, red and yellow turmeric, shown respectively from left to right on the accompanying image, and got enough to make it worthwhile. Still, by the time she boiled, dried, and powdered the red (culinary) turmeric, she ended up with a little over a tablespoon. She

potted up the plant and will overwinter it inside. She learned there are lots of ways to use fresh turmeric here:

<https://www.turmericforhealth.com/general-info/how-to-make-turmeric-powder-at-home-from-raw-turmeric> . In particular, black turmeric has potent medical uses:

<http://positivemed.com/2017/02/28/black-turmeric/> It has demonstrated effectiveness against cancer, improving bronchitis and pneumonia, acting as an anti-oxidant, combatting inflammation, and relieving pain. Black turmeric is often paired with black pepper. As a footnote, fresh ginger is fantastic – you can use it directly and totally, as the skins have not hardened; no peeling is necessary.

Spotted Wing Drosophila

Q. We have dug a 40' x 3.5' raspberry raised bed and have ordered 20 raspberries from Nourse Farms for next spring, We also have a new 40' x 3.5' blueberry bed and have 10 blueberry plants coming next spring (also from Nourse). In each case of raspberries and blueberries, we have ordered two varieties, one supposed to be early, and one late. We are hoping we can get enough berries before the birds sniff us out. Anything wrong with this picture? Clyde

I hate to be the bearer of bad news, but have you heard of the spotted wing drosophila? This fruit fly is now becoming endemic in the mid-Atlantic and racing through PA. The regular fruit fly prefers overly ripe fruit that is fermenting. The SWD lays its eggs in ripening fruit, and damages the fruit, turning it to mush. It appears later in the season, opening to severe damage later bearing blueberries and late summer and fall bearing raspberries. In our backyard we have now noticed these on our blueberries that ripen later. A friend of ours with a stand of late

summer raspberries suffered considerable damage. Penn State Extension has a lot to say about this in a 3-part series. You should read this and re-visit your raspberry and blueberry selections. Short overview article: <https://extension.psu.edu/spotted-wing-drosophila-in-orchards>

For more details:

Part 1: <https://extension.psu.edu/spotted-wing-drosophila-part-1-overview-and-identification>

Part 2: <https://extension.psu.edu/spotted-wing-drosophila-part-2-natural-history>

Part 3: <https://extension.psu.edu/spotted-wing-drosophila-part-3-monitoring>

pH testing

Q. I have tested our soil in multiple areas and sent the soil samples to PSU extension to see if we need to change the pH or add fertilizers. Recently, I read of soil testing equipment that would allow me to make more frequent pH tests - especially because the range of ideal pH from normal veggies to blueberries is so wide. Google quickly showed me how little I know! There are ads for pH testing "gadgets" from \$10 to \$120 and almost every price point in between. Obviously, something is going on and I have no idea what. Do you have an opinion on pH testing and possible gadgets? Clyde

The inexpensive gadgets are next to worthless. You cannot get a stable reading from them. The expensive ones require a reference solution and some expertise in using them. Too expensive and complicated. Moreover, all you get is a pH reading. We get our soil tested every 3 years or so by a professional service (www.timberleafsoiltesting.com) where we get the combined basic + trace minerals tests. If all you want is pH, I would send in samples to PSU from time to time, and do a separate test on your blueberry bed.

Blueberry Bed

Q. The soil in the blueberry bed now measures 5.8 pH, and I think I need the pH to be between 4 and 5, resulting in a suggestion from PSU to add a tad more than 3 lb per 100 sq. ft. of sulfur. Clyde. Yes, do this. Mix in well throughout the soil profile, as sulfur does not move well in soil. As an organic grower, I added peat moss in place of some of the sulfur, and compost, both mixed well throughout the soil profile. I also have read that adding wood chips to the soil can help with the acidity over time as the wood chips decompose. This process of acidification happens under anaerobic conditions, which you do NOT want in your garden. Further, the acidity of wood chips depends on the tree and its parent soil. Thus, leaves from trees in calcium-rich soils (high pH), when composted, concentrate calcium and will raise the pH of your garden soil when tilled in. This is even true of oak leaves and pine needles, which many gardeners think automatically makes soils acidic. This is a myth. Wood chips, buried in your soil, will steal nitrogen from the soil as these break down, and your blueberries require nitrogen. Limit wood chips to mulching on top to prevent moisture loss. Limit to 1-2" and replenish as necessary. Mulch breaks down through fungal decomposition. As this happens, the fungi build a web locking the wood chips together and form a fungal mat. This mat becomes hard and crusty, and prevents rain water from getting through. Finally, you do not want to use chips made from black walnut, as these are allelopathic to blueberries. Nourse has suggested adding 3" of this spring's chip pile to the bed, incorporating them to a depth of 6" or so, and adding in the sulfur. How does this sound to you - and am I better doing this now, or in early March of next year, anticipating a spring planting? I forgot to ask them about

[the timing](#). I would definitely NOT do what Nourse recommends with wood chips. Stick with sulfur, peat moss and compost. Mulch with wood chips. You can prepare the bed whenever you have time. If you do this now, the sulfur will have had a chance to break down a bit. When you go to plant your new stock, make a mix of your soil and peat moss and compost for the planting hole and area around the new roots. Sulfur is an antibiotic. It kills bacteria and disturbs fungal relationships in the soil. Perennial plants such as blueberries and fruit trees rely on these fungal relationships. Once a bed is prepared, we use sulfur only on vegetable beds, and use peat moss on our beds with fruit trees and fruit shrubs.

Remember, the first season of growth (2018) pull off ALL blossoms. You want the shrub to put its energy into root and cane development, not struggling to produce fruit.

Keep in the back of your mind the general principle that (almost) all fruit bearing shrubs and trees require pruning. For blueberries, you won't have to do anything until year 5 or so.

There is also a disease (phomopsis) which affects new cane tips growing from the ground. Hopefully, you won't have to deal with this immediately. Here is a link:

<https://ohioline.osu.edu/factsheet/plpath-fru-45> I spray once in the fall with sulfur right after leaf fall.

Three Sisters Planting

Q. There were two disappointments this year (not too bad for a novice). One was a bed behind our chicken coop (we've had 10 chickens for two years now) that was to be a "three sister" garden (corn, pole beans, and pumpkins all together) like the Indians used to plant. We got no corn, limited beans (partly because access was so difficult through the pumpkin vines), and monstrous pumpkin plants, but relatively few pumpkins. These were in 12 beds of roughly 3.5' x 3.5' each. I think next year, I'll move the pole beans to the veggie garden, buy corn locally, and plant the pumpkin patch by itself. Clyde

Smart move on all three counts. In my observation and experience, three sisters plantings do not work. For starters, the Indians planted maize, not sweet corn. Second, the hillocks were quite some distance apart. Third, the pole beans pull down the sweet corn and create a tangle.

Too Much Leaf, Too Little Produce

Q. Our second dud was a bit similar, but in the veggie garden – we had lots more tomato plant than the corresponding tomatoes. Are these imbalances of plant and fruit correctable by pruning the plants back to focus more energy to the pumpkins and tomatoes? Or is something else going on? Clyde

Judging also from your comment that your pumpkins were leafy with few fruits, I would say you're using too much nitrogen. That leads to high vegetative growth and low fruit production. Cut back on your nitrogen. Second, on pumpkins, what we realized on our summer and winter squash was that it was important not to cram too many together, as the large leaves would obscure the flowers from insects required to pollinate them. Once we opened up our squash patches and planted fewer, our yields improved considerably.

Powdery Mildew on Lilacs

Q. My lilacs suffer from powdery mildew. Are there varieties that do not get this? Barbara

Here's the link to a large study on many lilac varieties and their resistance to powdery mildew. Scroll to the end of the article for the informative tables.

<http://joa.isa-arbor.com/request.asp?JournalID=1&ArticleID=171&Type=2>

Back to Eden Video

Q. Thank you for sharing the link to Tatuta (<http://www.tatuta.org/>). I am aware of Tatuta. They are part of Bugday Association in Turkey and WWOOF and they are doing a good work. When I have a farm in Turkey, I want to be part of Tatuta.

Meanwhile, I mentioned to you about a person using wood chips a lot for his orchards and vegetable beds. Here is the link of documentary: <http://vimeo.com/m/28055108> What do you think of this? Bulent

Thanks for the link. Tania and I watched it tonight. There is a lot less here than meets the eye. We have a few comments, and are confident you will figure out how to apply this to your garden in a sensible manner.

1. The gardeners featured in Back to Eden are all importing organic matter, and processing it using petroleum-powered machines: trucks, tub grinder, conveyor belt, front end loader, etc. This is not a low-energy practice. That is, this practice is not sustainable.
2. This organic material is allowed to break down -- that is, it is composted. Gautschi then runs this through a sifter. What he is adding to his garden is compost, not wood chips. Wood chips are merely one of the raw material inputs.
3. They are all using tremendous amounts of organic matter, transporting fertility from numerous locations to their farming or gardening operations. From what we can tell, they are all using a lot more material than is required to grow food. The better part of this organic matter should be returned to its source. Thus, horse manure should be returned to the fields in which the horses grazed, chips to the forests or areas from which the trees were taken down. This is closing the circle and improving soil. The procedure featured in this video takes from the many and gives to the few. Hmmm.
4. By using compost as a mulch, and planting in it directly, they are exposing this organic matter to the air. It gets converted to CO₂ quickly, which is why it has to be replaced every year. Sure, some gets into the soil by the action of animals, insects, worms, etc. Eventually, you will build up soil, but the larger part of the organic matter gets oxidized.
5. It is odd that we didn't hear the phrase "organic practices" or "organic farming" in the video (even though the phrase "organic growing methods" is used in the home page text). Bob Rodale developed organic gardening for the American audience in the 1950s. He was borrowing practices that F.A. King (Farmers of 40 Centuries) wrote about over 100 years ago.

F.A. King was a USDA soil scientist who visited China, Korea and Japan.

6. Finally, one small point: you have to guard against using certain trees as the source of wood chips for your compost pile. One should not use walnut or beech-based compost, for example, on a wide range of crops and landscaping plants. Of course, in any load or pile of wood chips one would hope that the proportion of such toxic trees would be small.

We look forward to hearing (and seeing) how this procedure works for you.

Paleo Diet

Q. Do you have any opinion on the Paleo diet? Ed

Michael Pollan treated this topic in the following article a few years back:

<http://m.motherjones.com/environment/2014/01/michael-pollan-paleo-diet-inquiring-minds>

Planting Fruit Trees

Q. We are thinking of putting a few (perhaps 3 - 6) apple, and possibly cherry trees, on a hill in front of our house that faces SW toward an open meadow. It would be sunny all day except early morning. We don't want to spray, but would try to regularly prune the trees to keep the branches open. The space is well away from foot traffic, so drunken bees and yellow-jackets would be a problem only for those who want to collect the fruit. We'd like to use the apples for crisps, pies, and cider (but we don't know anything about the latter). Donna has no intention of picking seeds out of cherries, so we would compete with the birds for "just off the branch" eating.

Can you direct us to sources in which you have confidence?

I know you have said previously that we should not plant fruit trees unless we were ready to spend lots of time and effort with them. These are in a spot that would be beautiful from the kitchen as they bloom, however, so even if the fruit winds up a dud, the grove may still be a plus. Clyde

Ah! The prospect of fresh fruit drove us to a frenzy of mistaken purchases and soil preparation back in the mid-1990s. Not knowing what we were doing, we killed two sets of 7 fruit trees and gave up until we understood that fruit trees (and many fruit-bearing shrubs) require well-drained soil, which our heavy clay is not, even though we are on a slope.

Coincidentally, our slope faces southwest, too, so I think your slope will work out fine. Here are my suggestions:

1. Stark Bros has a nice catalog with lots of choices. Call to get a catalog at 1-800-325-4180.
2. Think carefully about size. I would strongly recommend dwarfs. Anything else requires ladder work, which, on a sloping site is treacherous. We old folks must avoid falls. Dwarfs are easier to prune and pick. If you prepare your soil well, you will get larger trees. A farmer friend of ours in Adams County, now close to retirement, had a small CSA with 200 fruit trees, mostly



apples, all dwarfs. No ladder work. Pruning easy. Picking easy. His goats treed out the deer.

3. Dig a \$100 hole for a \$20 tree (old saying when prices were lower), but you get the drift. In our case, once we adopted Jeavons biointensive practices and began double-digging beds, we realized this is how we could plant fruit trees that would survive. We failed earlier because we dug nice big holes which, however, did not drain. Our trees developed root rot. Beds drain. (Bed on left of image contains an Asian pear and a peach amidst fruit-bearing

shrubs – currants, bush cherries and gooseberries – and forget-me-nots. Bed on right contains juneberries, Echinacea, sage, and perennial flowers.) Of course, if your soil is nice, this will be less necessary, but I would recommend you prepare holes that drain to the south-west. Perhaps you can achieve this through tear-drop shaped beds for each tree. Or dig long beds and plant 2-3 trees per bed. You can plant dwarfs at 10 - 15' apart. You'll figure it out.

4. Apples (and pears) grow usually to a central leader -- that is, one trunk. Stone fruit (cherries, plums, peaches) one prunes to an open vase to promote air circulation. Pruning is done twice a year -- in the spring to shape, in the mid-summer as tip pruning to promote new bud growth and keep the tree from getting too leggy.

5. You must stake. See p. 49 of the Stark catalog for example.

6. The first two years are critical. You will be creating each tree's scaffold. This refers to the 3-5 permanent branches that spread out from your tree, on which smaller branches form. You must make sure these form properly. If you ignore this, you tend to get scaffold branches that are too tightly arranged around the tree, that is, with small angles between the branch and the trunk. This leads to poor air circulation (and therefore diseases) and low fruit yields. You can use spreaders wedged between the branches and the trunk, or twine tied to the branches and secured to the ground with stakes, to help open up the branches. Do this carefully and gradually on new trees to avoid breaking. Stark sells spreaders on page 49 of their catalog. I make my own using pieces of lath with V notches cut out from each end. This allows me to cut to the length I want, but if you are ordering 3-6 trees, you may want to get their collection of each size for \$16.99 and have a supply on hand. You want to aim for an angle of 45 to 60 degrees between the limb and the trunk.

7. Deer. Deer nibble trees, and will prune your new ones to stumps. If you have deer, you should protect each tree with fencing, or surround the entire "orchard" with plastic deer fencing. Protect the trunk from rabbits and other gnawing rodents with plastic spiral guards (p. 50 catalog).

8. You do not want fruit the first two years. That means picking off blossoms as they turn to

fruit so that the trees' energy goes into root formation and scaffold development.

9. We will leave diseases and pests for another time, a few years down the road. I think you can now appreciate my comment about fruit trees requiring lots of time and effort.

10. By the way, cherries are great. Lehman's, supplier to Amish, sells cherry pitters which we understand work well. If you think you would like to eat on a hot summer day a nice cold sour cherry soup with red wine and heavy cream, let me know and I will send our recipe. It is heavenly and makes pitting worthwhile. With a device such as Lehman's sells, this might break down your wife's resistance. Here is the link to this device: <http://non-electric.lehmans.com/search?w=cherry%20pitter>

Growing Grapes

Q. Do you have any thoughts on growing grapes? California Growers' videos say you get grapes in two years, and they make it look easy. Stark Bros. promises three years. I was thinking of perhaps one to three plants, each with a 15' or 20' wire between two posts, with the vine in the middle, or perhaps a high wooden trellis to be built over an eight foot wide gate (the gate already exists) in the back yard fence. Each can be sited for full sun. We also have a back trellis from the back yard to a wetlands area, but it gets only partial sun as it is in a woody area. That area, however, is where we planted elderberries several years ago, and they are doing great. Any thoughts or advice you have will be gratefully appreciated. Clyde

I have a few observations for you to consider:

1. Grapes are magnets for deer and small rodents -- skunks, raccoons, possums. Rabbits may gnaw the new growth in the winter if it is within reach. Out of the blue one late summer, about 8-9 years ago, these began to chow down the grapes as they ripened. We now fence with 6' high deer fencing we got on a big roll from www.farmtek.com. We also use the same fencing earlier to protect our blueberries from birds. Here is the link: (<http://www.farmtek.com/farm/supplies/ProductDisplay?catalogId=15052&storeId=10001&langId=-1&division=FarmTek&productId=15969>).



We erect it in place in late August and take it down after we pick all the grapes. We hold it in place with six 7' green metal garden stakes. Our row is about 25' long and 5' across. We then secure the plastic deer fencing to the grassy ground to keep rodents from burrowing under using u-shaped pins made from 14 gauge wire. To make insertion and removal easy, and visible, as the grass grows over them, we tied a short section of yellow ribbon to a loop we make at the top of the U-pin. I can send you a pic of one of these if you're interested.

2. Before deciding on a trellis arrangement, which would be necessary in any case, you must select a pruning system. Stark has a growing guide for grapes you should look at, but it defaults on one diagram, and scants the details of pruning: (<https://www.starkbros.com/growing-guide/how-to-grow/berry-plants/grape-vines>) . For a fuller must read, study the Oregon State University extension publication, Growing Table Grapes (<https://catalog.extension.oregonstate.edu/ec1639>).
3. Grapes do best in full sun. Since this is a permanent bed, make sure it is well prepared and edged in such a way to prevent grass from growing into the planting area.
4. Do you have Japanese beetles in your yard? These love grape leaves. If this turns out to be a problem, consider a spray treatment of beneficial nematodes that eats the beetles in their grub stage. You spray this on the surrounding grassy areas in May. You may also want to use a pheromone trap.
5. You mention "a high wooden trellis to be built over an eight foot wide gate." This reminds me of a pergola. It is up in the air, hard to prune because you are always reaching up. I would DEFINITELY avoid this unless you like ladder work. Grow your grapes as commercial growers do.
6. Stark's red, white and blue collection seems reasonable.

Reading up on the above should answer your questions, but if not, get back to me. You will doubtless have more questions once your vines start producing, but we'll save these for later (e.g., grape cane girdlers, zebra caterpillars, black rot, etc.).



Well, you scared me with your opening line about deer. We have never had a garden deer problem. They can, but won't jump into a confined area, at least to date. The garden looks as good as it ever will, and the attached pic (left) shows what we've been able to build.

We'd give up about 15% of our bed space if the back bed were all grapes. We'd have to figure out a trellising scheme on or near the back wall. However, I think the SW exposure would be perfect (unless you think the wall's reflection would bake the grapes).

Thanks for the advice - do you think the back wall is a good place for grapes (wall shown on left)? I'll have to attack the Japanese beetles, but that seems doable, based on your description. Clyde

Your pics rate an article in Better Homes & Gardens! Seriously! Good job! Couple questions before I get on to your comments. (1) Did you lay all that brick yourself? (2) Are the raised beds on top of brick or are they on top of parent soil?



Assuming that what you refer to above as your "back wall" is shown in your pics as the concrete retaining wall, I would say it looks like it could work for grapes. Since grapes are a perennial crop, I would make sure the soil is well prepared down deep so grapes have room to grow. I'm guessing the bed is 2' wide. Roots will move laterally, so that works. The light color of the concrete will reflect some light on the back of the grapes, so that's a plus. I say "go ahead" if you want grapes in a protected area. Our fenced-in area is 100' x 100', and is where we focus our food production. We have small herds of deer prancing down

our street from Mt. Nittany IN BROAD DAYLIGHT!

Once you've planted your grapes, mulch (chipped wood works well) but keep it shallow -- 1-2". Wood chips break down under fungal attack, and form fungal mats which bind the chips together and actually prevent rain from entering. Sort of like the crust that forms on soil pelted by rain. The mulch will keep the soil moist and provide habitat for earthworms. By the way, while the grapes are getting established, consider planting a row of strawberries right in front along the border. They'll be good for 5 years -- 1st year pick off the blossoms. Pick fruit next four years.

You asked about the bricks. We built a new barn and wanted a brick floor in the basement (the pool room). The bricklayer said we needed to cut the bricks in half lengthwise, and I asked, "What will you do with the rest?" "Chuck them," was the response. So we wound up with 3 trays of unused half brick which our landscape people laid in grit for the garden paths.

The beds are on top of the old barn soil, while the fill for the beds came from my old (double-dug) garden, with compost added to fill the bed space. It is very light dirt (my daughter calls it dry cake mix). The dirt below the old garden soil is nowhere near as good, but still open to roots, water, etc.

BTW, I love the idea of strawberries in front of the grape vines. Again, thanks so much.

Q. Hi Gene, I was just about to prune my vine back and discard all of the cuttings, which are full of mummies, when I read on line that pruning should be done in March or April. What do you think? Andy

I agree. Late winter to early spring when the vines are dormant. This will lead to easier healing. Now you could clean out the mummies.

Harvesting Basil

Q. You mentioned Jeavons has a way for harvesting basil. Please elaborate. Garrett

- 1) Once basil reaches 4-6 growth nodes and is at the point of flowering, cut back to 2 growth nodes (starting from the ground up), as long as there are enough leaves for photosynthesis.
- 2) Water well after each cutting.
- 3) After 7-10 days, it should be ready for second cutting (again, just at the point of flowering).
- 4) Cut back to 1 growth node on the side stems (counting from the main stem).
- 5) Repeat every 7-10 days until plant starts to get leggy, around the third cutting. Then cut back to 6-8" and wait until it re-grows. (2 weeks).
- 6) Repeat the entire process – taking 3 or more cuttings.
- 7) Cut back to 8" and repeat process.
- 8) Of course, let some go to seed to save seed.

Red Raspberry Problems

Q. Well, we tried scraping away the raspberry bed wood chips, and adding very old composted horse manure, but we still have (a) very healthy plants, and (b) extremely tiny raspberries that are not worth picking. What's going on?? Clyde

I found this entry on an Ohio State Extension page: *Home fruit growers look forward to a bountiful harvest of large, juicy, sweet, and flavorful raspberries each year. Sometimes, the results can be disappointing. Berries might be small and sour, if there are any at all. Many factors contribute to poor fruit quality in raspberries. Sunlight, pruning, cane density, age of the patch, pollination, weather, fertilization, and watering are some of the common factors. Raspberry plants need full sun. Hence, shading will decrease fruit quality. If there are too many canes, the canes will shade each other. With everbearing raspberries, such as Heritage or Caroline, floricanes should have been thinned to 5 - 6" between canes. Pruning is the way to achieve this goal.*

Clyde, are you pruning your raspberries? Here is the Ohio State Extension Fact Sheet on Raspberries, black and red. Review the sheet for the reds.

<https://ohioline.osu.edu/factsheet/hyg-1421>

In the middle of the bed I'm digging out the dirt, and mixing in 1/3 of very old horse manure compost with 2/3 of the existing dirt. Clyde, are you putting the new plants in the same soil and bed where you had the previous red raspberries? If you have a fungus or other diseases in the soil, you will transmit these to the new plants.

Norse has me on their list for 25 Himbo-Top plants next spring. I've read both the Norse and St. Lawrence planting guides, but am not sure whether to retain the weed bedding by cutting holes for the berry plants, or to just use straw or pine needle mulch for the winter of 2018. Have you used weed bedding on raspberry rows? The bedding might suppress natural "runners" from the raspberry plants. Is that bad - or actually good?

Clyde, you WANT runners from red raspberries. This is how the plants regenerate themselves. Use straw or pine needles as your mulch, not weed bedding.

Also, since we do not seem to have fungus problems, are Himbo-Top berries the ones you still recommend? I would try these on general principles. And I'm not sure whether to get 2 per season berries, or just go for the stronger 1 fall crop berry. I think I can partially control 1 or 2 per season by my pattern of pruning each year. Any thoughts?

Consult the Ohio State University fact sheet above.

Biochar Revisited

Q. What do you think about using biochar to improve one's soil? Clinton



Back in 2014 in our entry on our Questions and Answers page under the topic "Improving the Soil," we made some tentative comments about biochar (also called terra preta). While we continue to come across enthusiastic proponents we remain hesitant to endorse its use, as analysts from NGOs and others have raised some cogent objections which I include below.

1. I came across a Norwegian who has a recipe for making bio-char: (<http://holon.se/folke/carbon/simplechar/simplechar.shtml>). If you make it incorrectly, you can produce a tremendous amount of greenhouse warming gasses, so figure out how to do it right. One example of doing it right may be given by Bob Wells and others who have developed equipment to produce it in an ecologically sensible way on a large scale: <http://livingwebfarms.org/multimedia/videos/complete-hands-on-workshops/biochar-workshop/>

Abraham Cluxton has a video on producing biochar on a small scale, also on the Living Web Farms site: <http://livingwebfarms.org/multimedia/videos/hands-on-demonstrations/backyard-biochar/> . By the way, the Living Web Farms site has a great collection of instructional videos.

2. I also found the following item in the October 2010 issue of Hort Ideas:

Environmentalists Pan Biochar as Climate Change Mitigator. The following is from a news release dated August 30, 2010 from several environmental organizations (including the African Biodiversity Network, Biofuelwatch, the ETC Group, the Gaia Foundation, the Global Forest Coalition, Rettet den Regenwald, Save America's Forests, and the World Rainforest Movement, among others).

Twenty-one groups today expressed their dismay at an article by leading biochar advocates, published by the science magazine Nature [actually Nature Communications—Eds.], which proposes that an area larger than the land mass of India could be turned into charcoal plantations in the name of climate change mitigation. (1) The paper’s own figures contradict the authors’ claims that biochar will not lead to large-scale land grabbing in the global South. The article, posted online ..., claims that 12% of worldwide greenhouse gas emissions could be avoided by producing vast quantities of charcoal and adding it to soils ... [as] “biochar.” Although the authors claim that this could be done without the conversion of natural habitats and agricultural lands, the figures and forecasts used as a basis for their calculations tell a very different story, implying land-conversion on an unprecedented scale. The authors claim that there are nearly 500 million acres of “abandoned cropland” that could be converted to crops and trees to produce biochar. (2) In addition, 420 million acres of tropical grasslands could be turned into short-rotation tree plantations to produce both biochar and animal fodder. (3)

Co-authors Johannes Lehmann and Stephen Joseph are Chair and Vice-Chair of the International Biochar Initiative, which lobbies for carbon credits and subsidies for biochar. The concept of “abandoned or marginal cropland” has been strongly criticized by social movements and civil society groups around the world because the term is being widely used to refer to land upon which millions of peasant farmers, indigenous peoples, and pastoralists depend. Referring to community lands rich in biodiversity as “abandoned and marginal” and assuming those lands are “available” for conversion is already resulting in massive land grabs—especially in Africa, Asia, and Latin America. Such lands in fact play an essential role in maintaining biodiversity and regulating the climate. (4)

The groups critical of the Nature Communications article are among more than 100 organizations worldwide who signed an international declaration last year urging caution about large-scale biochar deployment and opposing carbon credits for biochar. (5) Two UN reports and various scientists are among those who have warned against large-scale biochar deployment because it could lead to even more land being turned into monoculture plantations. (6)

Anne Maina from the African Biodiversity Network states: “Groups have been warning for years that the biochar techno-fix will mean land-grabbing on a vast scale. Time and time again, biochar advocates have misled the public with claims that we can produce vast amounts of charcoal from [crop] residues alone. Now they are showing their true colors: Large-scale biochar means large-scale land-grabs.” Raquel Nunez from the World Rainforest Movement adds: “Authors of the study couch their vast land-grabbing plans in terms like ‘conservative,’ ‘small scale,’ and ‘sustainable’ and try to hide those plans in obscure supplementary notes and tables. They call for ‘sustainability standards’ but there can be nothing sustainable about converting lands on which millions of people depend and which are also important for ecosystem integrity and biodiversity protection. This must be a wakeup call.”

110 HORTIDEAS, September-October 2010, 27(5) Wally Menne from Timberwatch, African Focal Point for the Global Forest Coalition, states: “The ‘sustainability’ myth used by individuals and institutions promoting large-scale biochar is underpinned by the dubious notion of ‘sustainable production guidelines.’ This is based on tree plantation certification systems such as that of the FSC (Forest Stewardship Council), and it will not prevent harm to local

communities and ecosystems.”

Helena Paul from Econexus adds: “By using terms like ‘agroforestry’ or ‘silvo-pastoral systems,’ the authors mask large plantation plans which in no way resemble the sustainable practices used by small farmers and pastoralists around the world.”

For more information ... [contact] Diana Bronson, ETC Group, e-mail diana@etcgroup.org, phone 514-273-6661.

Notes:

(1) The article “Sustainable Biochar to Mitigate Global Climate Change” by Dominic Woolf, et al., was published in Nature Communications on August 10, 2010, and is publicly available at www.nature.com/ncomms/journal/v1/n5/full/ncomms1053.html . The land and biomass figures referred to can be found mainly in the Supplementary Notes.

(2) The “abandoned cropland” figure is ... derived from the only reference on which [the] authors rely when calculating potential biomass from such lands: “Biomass Energy: The Scale of the Potential Resources,” Christopher Field, et al., www.cas.muohio.edu/~stevenmh/Field%20et%20al%202008.pdf

(3) This practice is referred to as “silviculture” and would consist of dense short-rotation plantations of “fodder trees,” such as acacia, to produce both animal feed and wood for biochar. Fodder trees play an important role in many farming and pastoral communities, particularly in Africa. Those sustainable and traditional practices differ fundamentally from the dense plantings with short-rotation fellings envisioned in the biochar article. The latter are called “fodder bank,” and, according to the [United Nations] Food and Agricultural Organization, they are not a traditional practice, but one invented by the predecessor of the International Livestock Research Institute.

(4) Also see: “Biochar Land Grabbing: The Impacts on Africa” ... www.biofuelwatch.org.uk/docs/biochar_africa_briefing.pdf .

(5) www.regenwald.org/international/englisch/news.php?id=1226 (no longer works).

(6) The UN reports are “The Natural Fix? The Role of Ecosystems in Climate Mitigation,” UNEP, June 2009, and the Report of the Second Ad-Hoc Technical Expert Group on Biodiversity and Climate Change, UNEP and Convention on Biological Diversity, 2009. See also “A Horizon Scan of Global Conservation Issues for 2010,” William Sutherland, et al. 2010, www.cbd.int/doc/emerging-issues/2010-TREEhorizon-scan-conservation.pdf (no longer works).