

Q & A: Growing Specific Crops



Apples and peaches

Q. We're interested in planting apples and peaches in our backyard, but don't know where to begin and how to select. What advice can you give us?

1. Go with dwarfs. Easier to prune, pick, and protect. We went with semi-dwarfs, and on a sloping site they require tricky ladder work. I should have stuck with dwarfs.
2. On apples, you will require two different varieties, unless your neighbors have apples. Lean toward

disease and pest-resistant varieties. A friend of ours, Thom Marti, who runs a small CSA in Franklin County gets all his fruit trees from Adams County Nursery: http://www.acnursery.com/acn_trees.php. Thom happens to be at the same elevation as you and I are, so we share similar temperature regimes. On the above page, click on "apples" and "peaches." You will find a list of apples in order of ripening date. What you want to click on, though, is "disease resistant trees" in the left menu. Many of these are for apples, but also other fruits. The latest ones to be introduced are those that end in "-ina" e.g., Galerina, Querina. Disease resistance is an ephemeral property. Diseases adapt and evolve, so the tree industry does the same thing, developing new cultivars.

3. Here are Thom's comments on apples:

I can keep scab under control with 3 sprays of lime sulfur + dormant oil, in late winter and then again before bloom, and one after fruit set – but for some varieties, which are very susceptible – I cut them out and they make nice fires in the wood stove. These include Fuji, Ginger Gold, Granny smith. Before global climate change I got good crops, but now they are hopeless.

As for curculios, we went back to the past for a scouting method. In mid-May, I lay plastic tube, form-fitted sheet, hoops under the tree and strike it with a wood mallet each morning starting in early May. I keep count of those that I squish, and when the population peaks, I spray in the evening with pyola/pyganic. I do two sprays ten days apart, and then stop. I concentrate on the apple trees near our shelter belt trees, where the curcs hide. We still lose some, but get a harvest. For each egg-laying wound, they do many, many feeding bites, visible as half moon skin scars. The egg wounds result in a larva inside that does make a mess.

Since this is an older man (aren't we getting there), I find the best cure is to get rid of big trees, and get new dwarf resistant varieties. You should see the lovely apples on our Williams Pride, Pristine, Crimson Crisp & Topaz, Sansa and Galarina. So, good luck! If they do go the chemical spray route, I hear that Imodan has less bad effects – a lot of Permaculture orchardists use it since chemicals are not forbidden by their cult. -- Thom

4. On peaches, stick with freestone (flesh comes off easily from pit). We have had good luck with Reliance, appropriately named. Our two have lasted well beyond the usual 7-8 years. We have two new Contenders to replace the Reliance. They were billed as replacements for Reliance, but we do not notice any difference in taste. Both varieties are semi-dwarfs, and on our sloping site, they require ladder work (sigh). Peaches are self-fertile, so you require only one. On our site, Reliance ripens late July, and Contender mid-August, which is nice, as that lengthens our peach season. This hot spring and summer, everything was about two weeks earlier.

5. You will face the treatment of diseases of apples and peaches later. Right now, the most important thing is to prepare a well-drained bed for your tree, not a simple hole. In our clay soil, water will sit in the hole and kill the tree from root rot. Perhaps your back yard has better soil than ours. We killed 14 fruit trees back in the '90s, and then gave up. We didn't know what we were doing. Now we do. I prefer spring planting to fall planting, as the tree can come out of dormancy at the same time it normally wants to grow.

6. The second important thing to do is to create a proper scaffold on your young tree. Scaffolding refers to the arrangement of the 3-5 main branches off the trunk. With peaches, you train to an open vase. With apples, to a central leader. I can show you what this means, and how to do it by referring you to our apples and peaches. You must start this the very first year you plant, and continue for the next 2-3 years. Failure to do this, and attend to the details, will lead to a stunted tree with poor scaffolding, more disease and low fruit yields.

7. The third important thing you do is to prune. All fruit trees require pruning. There are two kinds of pruning: spring "major" pruning, and summer "tip" pruning. To get regular and nice fruit, you must do both types every year. You will not be pruning the first year at least.

8. The fourth most important thing to do is to thin your fruit. Blossom set usually produces much more small fruit than the tree can grow to a reasonable size. You must thin to reduce disease, improve size and fruit quality. This is done by hand. If you don't do enough, the tree will shed excess fruit anyway, but often not in a way that maximizes size and quality.

9. Compared to fruit trees, fruit shrubs require much less care. Of course, nothing replaces peaches, but we now grow a wide variety of fruit-bearing shrubs, and they complete our fresh fruit season. Consider gooseberry, currant, bush cherries, in addition to the more usual raspberries and blueberries. Lee Reich's book, *Uncommon Fruit for Every Garden* is excellent, and you can probably get a decent copy on Amazon if your library does not have it.

Pruning apple trees

Q. Some days ago you said you were pruning fruit trees. I had done a search on pruning apple trees, found out that it should be done early spring. Is this true? Why not in the fall?

All fruit trees require pruning. There are two types of pruning: spring pruning to shape the tree and tip pruning in mid-summer to promote new bud formation. Pruning in fall is not advised because the tree does not have time to heal from the cuts, and disease may enter the wounds. In addition, you will have missed the period for new bud formation.

Apple trees are traditionally pruned to a central leader -- one major trunk with branches coming off this trunk. I gather yours is an older tree, perhaps even a standard. If it is relatively young, you can start a pruning routine this coming spring. If it is an old tree with many gnarled branches criss-crossing all over the place, then there is a procedure for a one-time rejuvenation. Here are the main questions:

1. What is the size of your tree: standard, semi-dwarf, or dwarf?
2. How old is it: old (came with property) and gnarled with lots of branches all over the place, mature but not old, young?
3. Is there a main trunk with branches coming off?

If you like, send me a picture once the leaves drop so I can make out the structure of the tree. Have Selcuk take the picture with you standing next to it, and that will give me a sense of the size.

Footnote: Commercial orchardists may not follow these rules. For them, ease of picking is important. To reduce ladder work, orchardists may prune in a totally different way, sort of like finicky homeowners who prune their hedges with an electric hedge trimmer so that it is flat on top and on the sides. This can work, but you must train the tree this way from the beginning. You may notice this approach in orchards -- apple trees with wide but shallow canopies. This is usually done to standards.

Storing apples

Q. I have been hauling apples from the tree that has tons this year. They are small (1" - 2.5") and making apple sauce is arduous, mostly due to having to peel and core them. They are very tasty, and I have been eating 15 or so a day. Is there a way to keep them for a long period, so I can continue eating them? There isn't space in the fridge. I also looked for juicers but I am not sure if any of those in the market would work for so many without the motor burning out, and apple presses are too expensive.

Storing apples for any length of time requires cool temperatures and high humidity. Apples keep best at 32 degrees and 80-90% relative humidity. Every ten degree increase in storage temperature doubles the aging process. Do you have a cool cellar? That would help. Store in shallow crates, boxes, or bushels so you can check on them. Bruised or damaged ones will rot faster. Pick apples with the stems intact if possible. Pulling the stem may cause injury and provide entry points for infection. So much depends on the type of apple. Some store better

than others.

Another possibility is to dry them, but this requires the same peeling, coring, and slicing that you are trying to avoid. In addition, you will require a dehydrator.

A good quality juicer, such as a Champion, will not get overworked with continuous use.

Sweet potatoes

Q. How do you grow sweet potatoes? Karl, Jackie, Dana

At our garden tour, you were asking about how to grow your own sweet potato slips. There are numerous procedures described on websites and you-tube videos. The following accords with the procedure I have used successfully, and is perhaps best adaptable to we urbanites:

<http://www.food-skills-for-self-sufficiency.com/sweet-potato-slips.html>

A few pointers:

1. Last year we got to the point where we grew enough roots to allow us to save a couple to grow this year's slips. We grew 20 plants, and got a nice supply of small to medium roots. This year we doubled to 40 plants.
2. The best variety for the shorter season northeast is Beauregard. We used to get a bundle of Beauregard slips at Shuey's farm, left-hand side on the Benner Pike. A bundle of 25 was ~ \$10, which is expensive, given how inexpensive sweet potatoes are in the market. Once you save your own, you can easily grow 25-50 slips from one sweet potato.
3. I cut a medium-size tuber in half, using each half to grow sprouts. I got 20 or so slips from each half, and when done, gave the jar with sweet potato to another gardener for him to grow his own.
4. Sweet potatoes are sensitive to cold. You must harvest before soil temperature drops below 55 F, or use the first frost as your signal to harvest. In addition, we cover with plastic during cold nights, as can easily occur after planting in late spring or before harvest in late summer. Harvest before first frost s
5. A good target date for starting slips is April 2. Immerse about 2/3 rd in wide-mouth quart mason jars supported by barbecue sticks in 1" of water. Sprouts will form in ~ 10 days. Put in sunny window, and on a heat mat. Change water every 3 days or so. Use rainwater or filtered water.
6. When slips develop 6 nodes, pull off (do not cut) and put in separate jar of water, also placed in sunny window on heat mat. Grow lights help, but you can probably get by without them. Set timer for 16 hrs/day.

7. After slips develop roots, pot up individually in 3-4" pots.
8. Transplant to a prepared bed around June 2 if warm enough. Best to acclimate the plants to the outdoors gradually by hardening (withholding water) and putting gradually in sun so seedlings do not burn.

You can find more information and videos using search terms "growing sweet potato slips."

Q. Our sweet potatoes are almost ready. The leaves are just starting to yellow, but the vines are still quite green and some of the leaves are still green, but starting to get darker. I know that I shouldn't wait to harvest the potatoes until after the frost, but do I need to wait until all of the leaves are yellow? Although I haven't ever grown them myself, I have looked up some information, so know to be very careful when harvesting, for they grow close to the soil. Will curing the potatoes for a few weeks in our house under our heater work?

The key to harvest time is soil temperature. You do not want to let soil go below 55 degrees. We harvested our sweet potatoes several weeks ago, even though the leaves were still green, because we wanted to put in our cover crop. I would harvest yours now (Oct. 15, Central PA).

Handle carefully during and after digging them out. Avoid injury. Bring them inside to cure. Ideally, cure at 85-90 degrees, and high humidity, until skins toughen and end wounds become corky -- 10-14 days. If temperature inside is only 75 degrees, it will take 2 weeks. To get high humidity, Tania puts roots in plastic trays and covers with a wet towel, wetting towel daily to keep humidity up. Keep edges of towel open, so some air circulates around roots under towel.

Store at 55-60 degrees, at high relative humidity. Wrap each one in newspaper or other material that will still let them metabolize as usual, while keeping in moisture. You can pack them in a box to trap humidity. Will keep up to 4 months, but I would check every now and then for rot.

Rateaver says, "Do not use any with the skin damaged or discolored, as these contain toxins that cause liver and lung damage in animals, and may do the same to humans."

Small carrots and beets

Q. Results from our first year gardening were mixed: carrots were small and deformed, and my wife did not really like the beets, and they were generally small. We seem to have some difficulty with the root crops - perhaps I did not "double dig" deep enough? Will a soil test show up "pathogens?"

Successful gardening is a vast puzzle. Two points:

1. Small, deformed, and diseased beets may be due to a boron deficiency. You will discover this through a soil test such as Timberleaf Soil Testing offers (basic plus trace minerals package). This was our problem, and our beet size and health easily doubled and tripled with adding boron.

2. Deformed carrots may be due to: (a) a parasitic nematode, if forked; (b) poor, shallow and stony soil – carrots prefer deeper, sandier soil, and It has taken us years to improve our soils to the point where carrots do well; (c) inexpertise in transplanting seedlings, if you transplant. If your soils are heavy and shallow, try Danvers or Half-danvers. We have had good success with these.

Growing rice in the northeast

Q. I've attached a document on growing rice because it sounds as if it may be a highly productive grain growing method and less complicated than traditional rice growing (although, maybe it wouldn't work in our climate). Perhaps you're familiar with it already. I found it while reading my "Green America" newsletter (under lotusfoods.com). I've grown other grains, as I've mentioned, but never rice. What do you think of its productivity compared to other grains?

This fascinating article on SRI rice raises many points similar to Jeavons biointensive method, which reflect traditional growing methods from Asia and other places. I've experimented with spacing distances for root crops (beets, onions and carrots) and found that for beets and carrots I get both higher yields and larger roots by *increasing* the planting distance over the distance recommended by Jeavons. Jeavons of course encourages experimentation as does this rice growing article. The points about compost, water, canopy preventing weed growth, also are similar to biointensive.

You raise the relevant question about growing rice in the northeast. There have been articles and studies on this, so it is being considered:

1. <http://www.mofga.org/Publications/MaineOrganicFarmerGardener/Fall2008/Rice/tabid/983/Default.aspx> ; This article is based on a SARE grant for a Vermont farm, wherein the farmers are familiar with the SRI method referenced in your article.
2. The farmers involved in the SARE study (Akaogi) also produced a manual for growing rice in the NE (see attached pdf).

Neither mentions yields as far as I could tell, so it is hard to compare it with the high yields reported in the SRI article. Jeavons yields for rice (8-16-32 lbs/100 sq.ft. for low-med-high yields) translates to 4.3-8.6-17.2 tons/ha under Jeavons. This compares to yields of 9-12 tons/ha mentioned in the SRI article, so the results are comparable.

Really, though, if it's calories from vegetables you want, turn to roots. These produce much higher yields per square foot than grains. Compare 13,304 calories/100 sq.ft. for rice with almost 28,000 calories/100 sq.ft. for potatoes and almost 35,000 calories/100 sq.ft. for parsnips. Even brussels yields are 13,000 calories/100 sq.ft. These are all low yield Jeavons figures. The key to growing calories, whether grains or roots, is good sun exposure.

Let me know what results you get from any experiment you undertake. One could try a small experiment in a bucket, flat, or small bed section. We don't have good sun exposure, so growing calories is not something we can do well. We grow 95% of our vegetables but only

11% of our calories, and half of this comes from fruit! Surprisingly, we grow 22% of our protein; this is vegetable protein and therefore not a complete protein).

Crops that give us the most calories are apples, peaches, pears, paw-paws and grapes, all in the 12,000 calorie range. The only vegetable that comes close to this is burdock. The highest caloric yields (calories per sq.ft.) come from burdock (600 cal/sq.ft.), onions, collards, garlic, dried beans and sweet potatoes (300-370 cal/sq.ft.). We have this all arrayed on an Excel spreadsheet which we can send to you if you are interested.

Caraway seeds

Q. The caraway seeds you gave us did very well in the learning garden behind the farmer's market in Millheim. They are now full of LOTS of seeds. I would appreciate any tips on what to do next, in particular, WHEN, HOW, to harvest and store and package.

We're pleased to read the caraway worked out. The seeds mature over a longish time, so as they turn dark, you harvest by cutting the mature umbels holding all the seed heads, leaving the rest to mature. Unfortunately, they shatter if left on the plant too long, so keep at it. We store the umbels in a large paper (grocery) bag, open at the top, until the harvest is over. Then we remove seeds from umbels by pulling, rubbing between hands, etc. We then separate seeds from chaff by dropping in front of a fan set at an appropriate speed. We do this over our workbench by first taping newsprint on top of the workbench. This winnowing also separates the larger seeds from the smaller seeds. We save a portion of the larger seed for next year.

The fan works partially, as little sticks with the same weight as seeds collect with the seeds, and have to be separated by hand. Another way to undertake the separation is to get an appropriately sized sifting screen. These are often sold as sets of different sized openings. We do not have a set of these, but perhaps neighbors in Penns Valley do. Sifting screens or fan usually benefit from repeated trials.

We store the seed to eat in glass jars, and the seeds to use for next year's crop in small paper envelopes we make. These we store in a large tightly sealable plastic bin with silica gel, and put this bin in a cool location (cellar in our case). The cooler the better.

Berries

Q. We are thinking of building a "berry garden" area of 30' x 30' that would be fenced and covered by mesh to protect the berries from birds. Our Q's are whether the plan is practical, and how many berries we are likely to get.

The 30' x 30' area would allow for 4 roughly 16' x 4' areas (probably all raised beds): one for 4 bush cherries, one for 4 blueberry plants (two short, two tall) and two for strawberries, plus paths. We have the plants in a current garden. They are less than two years old, so they are immature, and they have to be moved from the barn site. We would like the netting to be "permanent" in that we would not remove it. It is an open area, so no branches will fall onto the "structure." We are not sure how big the mesh would be - too large, the birds enter, too small, it is more likely to tear (my guess). We are also not sure what options for net material

are ideal.

We have used plastic bird netting to good effect to cover our blueberries during fruiting season. Peaceful Valley Farm and Garden Supply has a nice selection including large sizes (<http://www.groworganic.com/> under "bird control netting" item numbers PBR004 and following). Their grid is 3/4" square. It is dimensionally easier to work with than the cheaper diamond-shaped material which we find too stretchy and difficult to manipulate.

One difficulty with plastic mesh is that it can trap snow in the winter, which weighs it down and may cause damage if the snow is not brushed/shaken off. I remember one blueberry cage I saw in W. VA at the home of a horticulturist who had fashioned a permanent structure out of chicken fencing, including a door for entry. Very nice, practical, sturdy and durable against snow. Probably a lot more expensive.

Q. We love berries, and Donna knows how to make jam from berries, but we don't know how much produce we might get from four bush cherries, and four blueberries. Will it be just enough to eat, or enough to likely require canning? What we don't know is whether four mature bush cherries and four mature blueberries will give us enough berries to make the effort worthwhile. What do you think?

Here are our estimated yields, based on our experience:

1. Strawberries. Assuming 4 years of yield per planting of strawberries, which includes the last year when production declines, we have averaged 43#/100 sq.ft. Our conditions are less than ideal, and you could probably do better. Using 12" spaced planting between plants, Jeavons estimates 40# low, 80 medium, and 320 high. Figure 1#/qt. We eat many fresh, and freeze whole the rest, ranging from 10-18 qts.

2. Raspberries. We grow blacks and reds in a 125 sq.ft. bed with trellis. The five year average for blacks is 16#/100 sq.ft. (Jeavons is 6, 12 and 24#/100 sq.ft., low, med, and high respectively, so we do pretty well there). Bear in mind we are growing 62 sq. ft. of blacks, which gives us ~ 15 qts at 1#/qt. Our five year average for June red raspberries is 34#/100 sq.ft., which is phenomenal compared to Jeavons. This comes to 21 qts at 1#/qt for our 62 sq.ft. bed. Fall bearing reds do less well, at 21#/100 sq.ft. (13 qts for 62 sq.ft.).

3. Blueberries. We have 6 shrubs in our roughly 100 sq.ft. bed and have averaged 31# over the past 4 years. This compares favorably with Jeavons (19-32-75#/100 sq.ft., low, med, and high yields respectively). Our blueberries weigh in at 1.4#/qt. We have frozen 5-9 quarts for winter use, preferring these fresh, but delighting in blueberry pie, crumble or clafouti in the winter.

Q. We have four varieties of bush cherries, and so far yield has been low and highly variable from year to year. You do not mention what kind of bush cherry. Since bush cherries have pits,

this poses a labor problem for jams, storage. We tend to eat our bush cherries fresh, as there are too few to do anything with, and bush cherries tend to be smaller than tree cherries.

Our experience with bush cherries is the same as yours: variable yield, pits, and therefore best for fresh eating if the birds don't get them.

Q. We must move about 40 raspberry plants. An ideal spot for the raspberries is a little bit away from the eastern edge of a woods that runs N-S. The raspberry bed would get early morning sun until about 2:30 or 3 PM, but then would be shaded for the late PM by the trees. Will that be a productive area, or is late PM sun vital?

Horticultural research, plus our own experiments with root crops, has shown that morning sun leads to higher yields than afternoon sun.

Q. We have eight (open, not fenced) immature elderberries in another part of the yard, and we have no plans to move them, unless you advise that it is worth moving four into the enclosed berry patch (moving out one of the strawberry beds). We know we like strawberries, we are not sure if we like elderberries.

We make decoctions with elderberries, which we can and use in the winter time. This is heavenly, and Tania has a good recipe. We also make a tincture, which, in addition to the decoction, is great for building one's immune system in the winter months. We are not fans of elderberry pies, or other such baked goods with elderberries. The flavor is a little odd for us. General practice and wisdom suggests that elderberries should be cooked, not eaten raw, but I leave it to you to investigate this on the internet. Deer can decimate your shrubs.

Q. Any final thoughts on raising bush and cane will be greatly appreciated. We remember that you have a similar enclosed patch, and we would appreciate your practical advice.

We are big fans of enclosing anything productive that animals or birds can go for. We net strawberries, blueberries and now even grapes! Birds do some damage to raspberries, but not enough to warrant netting. Our juneberries are maturing, and based on experience from others, birds can devour a shrub in one afternoon! On our sweet scarlet gumi, Tania was fighting cardinals even as she was putting up netting against them! We gave up on hazlenuts because squirrels climb over or chew through plastic netting, or jump down from adjacent trees. And of course, deer.... The best defense is ... de fence. See our posting on fencing on our "Organic Gardening Primer" page.

Q. When I was visiting your gardens I noticed the great crop of brussels sprouts you have. I would like to grow these for my family. Can you give me some advice on growing them?

For starters, here are a couple web sites:

<http://cedarcirclefarm.org/tips/entry/brussels-sprouts-tips-from-seed-to-harvest>

<http://www.organicgardening.com/learn-and-grow/brussels-sprouts>

Here are the practices we follow:

1. We start seeds April 23 outdoors in flats in a mini-greenhouse we set up on the brick patio.
2. We pot up 12 or so into larger pots so they grow larger, and transplant 9 of the best into our bed section.
3. The cabbage moth is the worst pest. This last season we used a fabric cage left in position the entire season. Before this we checked the plants daily for eggs and caterpillars. We scraped off the pale yellow eggs usually found singly underneath the leaves, and hand-picked and squished the green caterpillars. They can do a lot of damage on the growing tips and young leaves. Cool seasons are the worst -- spring and late-summer-fall.
4. When the plants get tall, we stake to hold the heavy plants upright.
5. In late August we cut off the top 5-6" of the plant. This forces growth to the sprouts. This is important!
6. Brussels sweeten up after a couple of frosts. When real cold sets in, we cover with plastic.
7. Leaves yellow from the bottom up. Pull these off and compost.
8. You can find great recipes on the internet, and if you grow these, we can give you our favorites.

Q. Hi Gene, Do you have seaberry growing? If so, has it produced yet? Here are several interesting links:

<http://www.garden.org/articles/articles.php?q=show&id=697>

<http://www.territorialseed.com/Seaberry>

<http://seaberry-hippohaerhamnoides.blogspot.com/>

I'm trying to think about where I could fit it in.

We planted Leikora female and a male plant in 2003. They suckered profusely, produced overall little fruit compared to the area the plants (plus suckers) occupied. Dieback on older branches was considerable, and pruning didn't seem to stimulate fresh growth. In 2010 they looked terrible. Lots of thorns. We salvaged what we hoped was a surviving male, pulled out the others, double-dug the bed again, and replanted with two "dessert quality" seaberry I found at a specialty nursery along the Hudson River in NY. This coming year will be the second in their new location.

I say "dessert quality" in quotes because we bought two black currants that Lee Reich described as "dessert quality" in the hopes Tania would like these. They had the same thick, strong resinous taste of our Titania black currant, which Tania cannot stand. Perhaps calling something "dessert quality" is just a marketing ploy.

Seaberry fruit is SOUR, almost inedible by itself, which is why the recipes call for so much sugar. We have blended it to good effect with fresh pressed grape juice in the fall. The pulp has the vitamin C, the seed vitamin E, and you have to chew the seed to get that (or, I suppose, press it to extract the oil).

How much fruit? 1-3 cups per season, not the 30 pounds per female plant suggested.

While the descriptions suggest the plant thrives in a broad range of soil conditions, I have read that it prefers slightly acidic soil. On this second planting, we added extra sulfur and peat moss. Since the shrubs were small, we planted broccoli on the edge of that bed and got our best and biggest broccoli crop ever.

Wondering if our problem was juglone from nearby black walnuts, I searched online and found a reference that gives a guild with *black walnut* that includes choke cherry, currant, goumi or *sea buckthorn*, elder, mulberry and wolfberry.

Perhaps you'll have better luck.

By the way, when we bought the new seaberry shrubs three years ago we planted them temporarily nearby in big pots and they quickly began to sucker. I'm sure they will do the same in their new bed, perhaps as soon as next year. Both males and females sucker. If you're not in a hurry, we can give you some suckers. You'll have "dessert quality" fruit.

I'm leaning more toward plants that do well (acknowledging that it takes an effort and time to find this out, plus an internal agreement with yourself to pull out failed plants and try something else). Our new successes are paw-paws, gooseberries, and a dwarf cherry. Black currants do well if you like the resinous flavor.

Potatoes

Q. I've signed up for your Organic Gardening Workshop in April. I have a question on potatoes. I have set aside potatoes to plant late next month or early May. Is there a limit to how long the sprouts should be before putting them in the ground? In other words, can the sprouts be too long before planting? I have a purple variety of potato that have sprouts that are growing fairly well and I just want to make sure that I haven't started them too soon.

Also, I am growing only heirloom seeds this year. I bought a couple different varieties of winter squash (buttercup, delicata, king acorn, and Galeux D'eyesines). I would like to plant an area with all of these squash. Does it hurt to plant them in the same area (like alternate seeds) or should I plant separate rows of each? Laura

Dear Laura, Nice hearing from you, and I look forward to meeting you in April. Please introduce yourself to me when you arrive!

Judging from your questions, I gather you have been gardening for a while, and garden at a larger scale. Are my two assumptions close to the mark? Where do you garden and how big is your garden? Do you get plenty of sun?

Potatoes. Usually growers, commercial and backyard gardeners, buy seed potatoes. There are two reasons for this: (1) disease prevention overwintering on saved potatoes; and (2) difficulty in storing potatoes for a long period of time without having a good cold-storage facility with high humidity. Such seed potatoes do not have sprouts when you buy them.

Judging from the sprouts, are you using potatoes you grew from last year? Is this your general practice? I am not recommending against it, particularly if you have been successful at it. We began growing sweet potatoes a few years ago and last year grew enough that we have a couple left over we can use to grow slips for this year's crop. Buying slips is expensive, and it is easy to grow your own.

The main difficulty with long sprouts is that they can break, even taking care to plant carefully. We have done this with potatoes growing long sprouts a farmer friend of ours gave us one year that he had saved in his cold storage cellar.

FEDCO, a Maine seed source, sells a lot of seed potatoes (www.fedcoseeds.com). You can usually get these at a local farm supply store (e.g., Agway in Reedsville). There may be a similar vendor in Lewistown. You are aiming for short stubby sprouts. To get these, work back from your planting date. My guess is that you may be warming up your potatoes too early if your sprouts are long. No harm done -- it just increases the chance of breakage.

Squash. You are ambitious and must have a lot of space! *First*, are the varieties bush or vining? If vining, these will require a lot of space. I would grow each variety in its own area or row, leaving more space for vining than for bush varieties. Even bush varieties vine a short distance in our experience. If your rows are wide, you could plant two of the same variety next to each other (say, 18" apart). *Second*, varieties may cross. This will not affect this year's fruit, but if you then save the seed from the squash and plant the following year, you may get undesirable fruit. The seeds are quite nutritious. We save ours and roast them with a bit of tamari for a tasty snack.

Have you planted winter squash before? Have you gotten decent yields? If not, consider hand pollination to increase yields to compensate for low numbers of pollinating insects.

Q. One more thing I've been studying is the potato box, some people have managed to get over 100 lbs from 4 sq ft. On this site (<http://www.irisheyesgardenseeds.com>) scroll down and click on "Growing Directions" and then "Potatoes" and scroll down to "The Cage Method." Since you said you don't have enough sun for potatoes I thought you might be interested! Even if you could just get half that would be a lot! Best, Jackie M (Canada)

Jackie, thank you for your suggestion! Worth trying!

Garlic

Q. I planted garlic in the fall in some flower bed areas around my house, and it's coming up very nicely. I am anxious to see what kind of yield I will get. Is there a 'best' time to pick it?

On garlic, two points:

1. The growing plant will begin to produce "scapes," long curling stalks with a white devil's tail seed head. Cut these off well below the white part. This is necessary to allow growth to go into

the garlic head below ground, not the seed head. You can cut these fine and use them in cooking! Tasty!

2. After a while the garlic leaves turn yellow. For us, this happens in mid to late July. Stop watering. Push the tops down so the bulbs can start to cure for 3-5 days. If rain threatens, cover with a plastic tarp to reduce chance of rot. Dig up and place in a dry, cool, shady place (garage, porch) in a single layer. When really dry, prune off leaves and roots. Keep ~ 1" of a neck. To check if they are dry enough, prune 1-2 necks about 1" above the bulb to check for wetness. If wet, let dry longer. Store in cool, dry place. Save biggest bulbs for next season. Plant in early October.

Protein in vegetables

Q. Gene, Are there any combinations of vegetables on your records that give a complete protein? Corn/beans? Others? Cindy

Your question is sufficiently provocative that I thought to copy my reply to the others on yesterday's tour.

The only readily available information I have on this is Frances Moore Lappe's Diet for a Small Planet, wherein she lists in Table VI (Vegetables) the key amino acids and their imbalances. You've already mentioned the classic corn and beans combination, but keep in mind that not all beans are equal. The best beans for complementing (sweet) corn are soybeans and black beans. Other beans are low in trypsin, as is corn.

Vegetables, in general, are deficient in Isoleucine and sulfur containing compounds. However, fresh lima beans, green peas, brussels, broccoli, cauliflower, spinach, okra and chard are high in isoleucine, all rated at B except lima beans rated at A. On sulfur-containing compounds, mushrooms are rated A, and corn and spinach B. Spinach has the best balance of these four amino acids, though its overall protein content is modest. Also, there is the problem of oxalates in spinach, which ties up calcium.

From this I draw the conclusion that a well-rounded garden should contain as many of the above as you like and can grow, to complement the other vegetables. Lappe does not include tomatoes in her chart, which she may regard as a fruit, and she does not have a table for fruits. Fruits are generally low in protein.

I had never noticed this before, but she does not include roots in her charts! These would include beets, carrots, onions, garlic, burdock, rutabagas, turnips, parsnips, all of which one could grow with ease, and consume in decent quantities. Some of these are high in protein (e.g. burdock) while others, while high, we would eat in only small quantities (garlic, horseradish). On the other hand, beets, carrots, and potatoes (Irish and sweet), while having modest quantities of protein, we would eat in larger quantities. I do not have on hand the amino acid profiles of these roots, so more investigation would be required to fold in their complementarity with other vegetables.

For us, the vegetables making the largest contribution to our total protein intake from the garden are collards (623 gms), dried beans (407), tomatoes (350), lettuce (333), onions bunching and bulbing (307), brussels (306), corn (299), summer Lebanese squash (255), garlic (253), peaches (240), beets roots and greens (214), lettuce (205), paw-paws (204). While spinach has a nicely balanced amino acids profile, it is low overall in protein; we derive only 103 grams of protein from it. By the way, winter greens provides quite a bit of protein (689 gms), and we have included some of these in the list above.

The above data is taken from our 2013 growing season. I hope this provides a partial answer to your question.

Blueberries

Q. Do blueberries require pruning? Mine seem to be going into decline.

Yes. Here is a good link from the University of Maine. The pruning section is farther down, but the rest is informative. <http://umaine.edu/publications/2253e/>

Amaryllis: how to grow and make bloom

Q. Have you any Amaryllis bulbs about to bloom in your home? I remember the photos Tania sent a few years ago and they were gorgeous. Mine was outside all year; I potted it up and brought it inside, and all I'm getting are leaves again! Groan. Well, I'll try again next year!
Lodina

Amaryllis require a period of dormancy. Around October 1 we stop watering them and put them inside the garage to dry out. The leaves die back, and I pull these off. Around November 1 I bring them inside and put them in a cellar back room where it's cool and dark. In early January I bring them up, scrape off the top soil, clean off debris, taking them out of the pot if necessary. I return to the pot and put fresh potting soil on top, water once, and put it in the living room. I do not water again until it shows new growth.

On first watering, the water will run through the dried soil pretty quickly. I have a saucer beneath to catch this, and return it to the top 1-2 more times to make sure the soil becomes wet.

My question to you is: did you give your amaryllis a period of dormancy?

When did you bring it inside? Were the leaves dying back when you did this? With our amaryllis varieties, I have noticed that some put out leaves first, followed by the flowering stalk, while others put up the flowering stalk first followed by the leaves. You may still be in luck. I wouldn't give up hope.

Reply from Lodina: I did give my Amaryllis a period of dormancy, but it probably wasn't long enough. It was about eight weeks.

I brought it inside sometime in September and placed in the closet, again, for about eight weeks. Prior to pulling, the leaves were beginning to die off, but not entirely. The bulb produced two new bulblets, so I'm happy about that.

So far, no flower. Perhaps I ought to give it a longer period of dormancy next year.

My further reply to Lodina: Bulblets drain the mother bulb of energy! What you should do right now is bring the pot to your sink, counter, or outside workbench; pull away the soil near the bulblets; and slice them off with a sharp knife. These are probably small, without roots, so may not grow on their own, but you can try. Put the bulblets in a pot with soil, bury a bit, letting the top of the tiny bulb protrude a bit to prevent rotting, and see what happens.

Amaryllis tend to produce bulblets in pots that are too big. Did you pot up the plant recently? Amaryllis bloom better in confined pots.

As to your mother plant, let it leaf out. It will regenerate the bulb and likely bloom next year. Two months dormancy should be enough. During the spring and summer, water every now and then with some fertilizer -- say, fish fertilizer. We bring our plants outside once the danger of frost is past. In your zone, let them acclimate to sun gradually; otherwise, the leaves may burn.

Tapping maple trees for sap

Q. Your reverse osmosis rig for harvesting maple syrup sounds wonderful! Can you provide more details? (This was our question of fellow gardener Eric Hagen, and he replied below).

I hooked up three under-the-kitchen-counter RO filters in series (not in parallel) and used a pump to push the sap through. We got the idea from this website:

<https://sites.google.com/site/mattatuckmadnessmaplesyrup/home/homemade-reverse-osmosis-system>

and implemented the low-budget schematic fairly faithfully. The main challenge was to get the connections between different fittings leak-proof. Connections from plastic tubing to brass fittings like the pressure gauge or the needle valve were very tricky to get leak-free -- lots of fiddling around. But at the end of the day it worked and we managed to get leak-free operation. Using Teflon tape helped make the joints leak-proof.

Asparagus

Q. I would like to put asparagus in my community garden plot, which is 10' x 15'. I realize that it is a perennial and that I may not have a harvest for a couple of years. I have two questions for you about planting asparagus.

1. How much should I plant? Just one of my seed catalogs gave any recommendation--15 plants per person in the family. If I put in 60 plants, that may take up my whole plot.

2. How much room does asparagus require? My plant books say 12-18 inches between plants and 4 FEET between rows. Does asparagus really require that much room?

I am planning to grow shallots, edamame, bush beans, garlic, tomatoes (3-5 plants), and asparagus in my 10x15 foot plot. Thanks, Cathy

My suggestions are based on dividing your plot into two beds, 4' x 15' with a 2' wide path down the center. That gives you two beds of 60 sq. ft. each

If you allocate **Bed #1** to asparagus, you can fit ~ 60 plants, each planted 1' apart. You would have 4 plants per row and 15 rows. You might end up with fewer than 60 plants by the time you finished. This is a lot of plants. The rule of 15 plants per family cannot apply to those with small garden plots. You would be making the same error with asparagus as others make thinking they can grow all their tomatoes in a small plot.

You might want to consider planting 30 plants in half that area. I've seen asparagus sold in sets of 25; that would be a reasonable number. Make sure you get those advertised as males. Males are more productive and recommended for small plots. Females are less productive and produce viable seeds which can germinate, creating additional weedy asparagus plants that will be a nuisance and suck nutrients from your original planting.

Small point on asparagus. When the plants mature to the point where they are thick enough to pick (year 2 or 3), you must leave the smaller ones to go to fern. These grow into tall stalks that regenerate the roots for the following year's growth. This fern can reach 5-8' in height. The patch will require staking to hold it all together.

Second small point: you will want to put your asparagus in the bed that shades out the other bed the least.

We have been using a neater way to stake our asparagus, which I can show you. We use metal pipe (emt from Lowes, which stands for electrical metal tubing) and wire mesh (same source, used in laying reinforcing concrete). This makes for a neat appearance, and does away with wooden stakes which rot, and the tangle of string. You won't have to worry about this until the 2nd or 3rd year anyway.

On **Bed #2**, to attain a 4 year rotation with your tomatoes (and other crops) to reduce disease and pest pressure, I would divide the bed into quarters. Each quarter is 4' x 3.75" or 15 sq. ft. You could squeeze 4 tomato plants in the first quarter, and use the remaining three quarters for beans, shallots, edamame and garlic. Perhaps beans occupies quarter 2, garlic and shallots quarter 3, and edamame quarter 4. On the tomatoes, you might want to consider using determinate plants; these grow to a fixed height, are easier to manage in a small bed, and being smaller allow for better air circulation. Indeterminates sprawl all over the place and create a haven for disease.