

Green Thoughts

Conversations and ideas about growing at The Spring Gardens

Mid-June, a few days after a period of occasionally heavy rains, plants are growing exponentially.

Decisions

Some tomato plants have reached an impressive height of 2 to 3 feet already. And many tomato plants, even those of more modest height, are setting fruit. Most tomato plants



Does Soil

Wear Out?

are being buttressed by cages but keep in mind a month from now when the plants are sky high, unless the cages are adequately anchored, strong, gusty winds can bring down plants and cages. Squash plants have already produced flowers and we talked to people who are eating their first zucchini. Strawberries were plentiful this year. One plot had a yield of more than 10 pints, mostly in May with a spillover into June. And peas were successful for those who planted seeds in mid-Feb and replanted weekly for a few more weeks.

Decisions There are always decisions to be made when weather conditions are changing rapidly and it is confusing when we have to make these decisions in the absence of full knowledge. After the plant sale in early May we saw a fellow gardener taking home his newly purchased tomato plants rather than plant them in his plot. That seemed peculiar. But he remembered a year or two ago a cold spell followed the plant sale and debilitated his newly planted tomatoes. But this year the 10 day forecast was accurate and the weather stayed mild. Some gardeners are like army generals who fight the current battle with plans appropriate to previous battles. And we ourselves had beautiful, dark green spinach

growing beautifully under polypropylene cloth. But there was a forecast of 3 days of weather with temperatures around 90 degrees. So what to do? Leave the cloth in place or remove it so the dear plants don't get over-heated? We did the latter and the spinach plants were attacked by flies. The leaves went from a robust dark green to an unsavory mottled appearance in a very short time. Oh dear.

Does Soil Wear Out?

I ran into some fellow Spring Gardeners who were deep in conversation about what to do with the soil in the Gardens. They felt that the soil was "worn out" after growing

and sustaining plants for more than 20 years of use. They thought that perhaps it is time to replace the soil. The underlying assumption is that soil, like people and plants and animals, wear out. But is that the right metaphor?

No doubt you and I wear out. Somebody once said that our bodies are built mostly around bags and tubes. Our lungs are bags and within them there are still more bags: from large lobes all the way down to tiny alveoli. We have a bag to store urine and release the contents when necessary and convenient. Every one of our body's cells is a bag made of an elegant bilipid membrane that shields its inner contents. Protein partners inserted into the cell membranes allow only certain molecules and atoms entrance to and egress from the cells' inner sanctum. Our eyes have a tough scleral membrane to allow for a spherically shaped bag to view the world. And we all started out spending months in a cozy bag aka, a uterus.

And what a collection of tubes we have! All multicellular animals that are bilaterally symmetric have a tube that runs the length of the body from the mouth to the other end. Biologists sub-divide animals into protostomes and deuterostomes depending on, during embryonic development, which end of the tube develops first. (For the record, worms and insects and molluscs are protostomes, i.e. the mouth develops first; we humans and chordates in general, are deuterostomes). But there are many more tubes than the gastrointestinal tract. We have hundreds of millions of fine axonal tubes that can stretch 3 or 4 feet. And

kidneys are chock full of fine tubes surging with fluids to regulate multiple physiological functions. And please don't forget the circulatory system of arteries, veins, capillaries and lymphatics all propelled by the 4 bags/chambers of the heart (which will beat about 3 billion times if we live to 100).

The bags and tubes cooperate to make us who we are. If we didn't know any better we'd think it's a Rube Goldberg contraption. Rather, it's a finely tuned interactive machine that has been tweaked over evolutionary time. But stuff happens. Any of the bags and tubes can abnormally deform and get inflated or shrink or get cluttered with cells that don't belong there. Or leak. Or get clogged. Or lose elasticity. Even though we need them, individual cells conk out and desert us. The more hypochondriacal we are the more extensive is the list we can generate of things that can go wrong. We indeed wear out. But does soil wear out in a similar way?

To answer that question it might be helpful to head to central Illinois, home of the University of Illinois at Urbana/Champaign.



Recent photo of Morrow plots looking north

If you look in any direction the land is flat - all the way to the Mississippi River to the west and through Indiana and Ohio to the east. It is also flat north beyond Chicago and almost as far south as St. Louis. It's a great place to grow corn and other grains and soy beans too. 12 million acres of corn are farmed every year in Illinois. Farmers are curious and pragmatic people who want to protect their land and learn what are best practices. So people at the University, which started out in the 19th century as a land-grant school with a strong commitment to the study of farming practices, asked basic questions. Can you grow the same crop over and over? Should crops be rotated regularly? Does the soil have to be enriched with other material? After a while will the soil not support the growing of plants? Right on campus they set aside some land in 1876, called the Morrow Plots (after George Morrow, Professor of Agriculture) and it has been farmed continuously ever since. The



Agronomists taking a soil sample at Morrow plots 1904 note the same building, an astronomical observatory, in the background of both photos.

northern parts of the plots were subdivided into 1) growing corn every year or 2) growing corn rotated with oats or soybeans, or 3) growing corn every third year with oats or hay in the other years. The northern parts were not fertilized. The southern parts grew the same crops in the same order but were treated with agricultural limestone, manure and phosphate. The crops yielded mountains of data. And there are take-home lessons: after 100 years the yields for growing continuous corn with no soil treatment was 54 bushels of corn per acre. So the soil isn't dead or far from "worn out." Nonetheless, in contrast, the plots with treated soils and with crops rotated between corn and oats and hay had yields of approximately 200 bushels of corn per acre. Also, when the soil is treated properly the soil maintains its organic material. Translating this to the Spring Gardens there are questions: can (or should) we follow practices similar to those at the Morrow Plots? Not replace our soil but enrich it? We aren't trying to maximize the yields of our crops as commercial farmers try to do but just be good custodians of our individual plots and see that we get the crops we want. It seems like a good idea to compost as much as possible, weeds included (if they are really composted) and when ready, mix all that organic-material-laden compost back into the soil. Use crops (such as beans and peas) that indirectly enrich the soil with nitrogen. Soil contains living entities. It has all kinds of resident species - earth worms of course, and nitrogen-fixing bacteria too that reside on the fine roots of legumes, and of course a wide variety of weeds (some Spring

Gardeners can go on and on about bind weed).

To some extent we are vitalists appreciating this complicated matrix we call soil that supports our plants. On the other hand this past winter there were amazingly tasty tomatoes sold locally but from New York State and Canada of all places. But here is the catch: they weren't grown in soil at all but hydroponically. Put in the right kinds of atoms and molecules (only a few different kinds) in the water, maintain a proper temperature, shine the right kind of light and voilà – tomatoes. You can't get more reductionist than that. Using the hydroponic example, perhaps we gardeners should be reductionists when it comes to the soil in our plots. Enhance the soil rather than feel the need to replace it....

The Old Sinking Feeling (Cont'd) – another piece of the church, taken



North side of church with annex to left and main church to right. Note rectangular hole in the annex on the lower right side due to partial collapse. Photo April 2018

If you remember, in the last issue we talked about the paths of subsidence caused by rain run-off from the Francisville Plateau through suspected underground stream beds. One piece of evidence was a new rectangular hole at the back of the Enon Baptist Church on 19th and Green (photo lower left)

Unfortunately the disintegration has continued. An upper chunk of the annex, above the original rectangular hole, collapsed in early June (below). It looks like extensive structural repairs will be needed: we spoke to someone from the church who said they *do* have insurance.



North side of church with another chunk of the annex collapsed. It is partially covered with orange tarp. Photo June 2018

From the eMail Bag

Hi Ed,

Enjoying your articles. Kept meaning to send you a message about the creek - I have this old print from 1838 [below] of the penitentiary. It shows a creek running down roughly maybe where 21st is? Picture didn't come out great through frame but you get the idea. It is not on any of our later maps. You can also see that the grade of the street was different than it is today. And of course everything is different! The whole neighborhood changed quite a bit during a relatively short period not long after this image.

Looking forward to running into you in the garden one of these days.

Your garden neighbor,

Sarah



This is fantastic! thank you so much for putting it together.

Best,
Catherine

Really a great piece Ed. Thanks for compiling and sharing the information. I wonder if this would make an interesting project for one of the engineering schools in the area such as Drexel or Temple. Do you have any contacts at Temple's Department of Civil and Environmental Engineering? If we can prove that this is an issue, then perhaps we can work with the CDC to present the data to the city to try remedy this not just for our garden, but for the neighboring homes that could be threatened with collapse like the church.

Sergio

Thank you Ed for the wonderful newsletter. This is such a good benefit for all of us. Just wanted to send my gratitude, [Also,]Thought you'd enjoy this article. Hope it comes thru correctly.

www.gardenista.com/posts/my-garden-story-a-secret-rooftop-oasis-on-manhattans-upper-west-side/

Jane Likens

Hi Jane,

Thanks so much for your kind words about Green Thoughts. I thought I would run out of topics but there is always something to catch our fancy. And plenty of fellow gardeners have commented or contributed material.

And thank you for the link to the article about that community garden in the upper west side of Manhattan. What a lovely space! I wonder how they achieve that look - strong central control? I went on-line to Google maps earth view. It sits above a garage that must be mostly underground. The Lotus Garden, as it is called, is only one flight up from street level. And so it is at the bottom of an urban canyon surrounded by walls of high rise apartment buildings. So it must be quite shady. I'll put in a link to that article in the next Green Thoughts.

Thanks Ed.

Great research job! It's a shame so many of the creeks and streams have been captured and/or covered. It would be great to have a stream running through the garden, wouldn't it?

Doris

In the Next Issue (#10):

- Our resident **Bees** and how they are tended.
- Nicotine-like pesticides that are nasty to bees, what Europe is doing about them and the US is not.
- Whatever else comes sprouting up



A single day's harvest from one 10' x 20' plot.

Please send your ideas, thoughts, suggestions and observations to:

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that address can also be used for getting on the mailing list for **Green Thoughts**, or getting off.

Prepared by Ed Gruberg