

Green Thoughts

Conversations and ideas about growing at The Spring Gardens

It was a very mild winter and so several gardeners assumed spring would also be mild. So why not get some tomato plants in the ground in early April and be off to the races? Hold that thought...

Time to plant tomatoes?

We talked to fellow gardener Joe Trout who is also in the Physics Department at Stockton University near the Jersey shore.

Composting

He has installed a *weather station* on his plot in the southwest section of TSG. It looks like a scaled-down

version of a module used to explore another planet.

Whither the weather?

The station is powered by solar cells. It measures wind speed, wind direction, temperature, input from solar radiation, and relative humidity. It wirelessly updates local conditions every five minutes to a Stockton computer. On 25 April he planted 15 different varieties of tomatoes that were started at Stockton's green house. They



ranged from types grown in Alaska to more conventional types. He and colleagues planted the same varieties on a plot at Stockton which is in a different growing zone than Philadelphia. Their long-range research

aim is to see if they can predict the spring weather so we can reliably know when it is safe to plant tomatoes. According to Joe, it is not an easy problem. Weather is noisy so calculations of probability are difficult. What Joe means by safe weather means that the temperature won't drop to the middle 30s or below.

We haven't had the temperature drop below freezing since sometime in March. But we have had several April nights when the temperature dipped into the 30s and that produces sad results: Below right are some very unhappy, ragged, tomato plants that looked vigorous when first planted in early April. They are wounded but not dead. Let's see whether they do recover. I'll report in the next issue.



See the back of this issue for progress. By comparison, below are tomato plants photographed in mid-April 2019



As a bonus, Joe will also tell us how the various tomato plants he introduced fare over the growing season.

Discretion being the better part of valor, I'm waiting until May to plant my tomatoes.

Compost update

I'm always amazed when I see those big brown paper bags from Lowes (or wherever). Fellow gardeners are stuffing the bags with last year's weeds and detritus from their plots. They start the new growing season with a pristine plot! It is an esthetic, I guess. But the subtext is that they are throwing away organically rich material and they are leaving behind the equivalent of a botanical parking plot. There is no accounting for taste. The point is that over the growing season, plants, through photosynthesis, create new organic molecules, lots of them, mostly from air (CO_2) and water (H_2O) and they enrich our soil. The way to extract all those molecules is by composting. There are many ways to do composting but let's talk about the conventional way and a newer higher tech way - static aerobic piles.

Microorganisms that naturally exist in the soil break down plant materials into their component parts. It is a complicated, multistep process and it depends on the fact that plant molecules are made up of relatively simpler building blocks that interlock. For instance, proteins are mostly long strings of connected amino acids. These proteins can be structural, found in stems and leaves or have enzymatic properties to break down the interlocking connections, so-called proteases. Other protein enzymes build up new proteins. There are only about 20 naturally occurring amino acids that make up all the millions of different types of proteins in the world. Our genetic material, DNA, is made up of long strings of only 4 different types of nucleotide building blocks. You can chop up your plant detritus, put it in a pile, throw in some soil and if you water it and wait, you will get high quality extra soil for free. It doesn't take up much space. While the composting is going on there are no obnoxious smells and in mid-summer the pile gets quite warm. My rule is that everything I grow except for the veggies that we eat and flowers that we use for decoration stays in our plot. Each year I produce more high quality top soil.

Earthworms

Earthworms also help immensely. They have a gut that runs the length of their bodies. They ingest both living and dead organic material. Their gut is a digestive machine containing all kinds of enzymes. It also is a grinding machine to physically break down material. What they excrete (castings) is high in nitrogen and phosphates and potassium and makes the soil richer and less dense. They dig burrows that let air into the soil. When I turn over my compost and encounter earthworms I always stop and say hello, and

thank you. Charles Darwin wrote a whole book on earthworms *The Formation of Vegetable Mould Through the Action of Worms, with Observations on their Habits*. What a lovely Victorian title. It is still in print. He estimated there were hundreds of thousands of earthworms per acre. And over time they have an immense impact on the environment. He even attributed part of the reason that rocks sink into the ground is because of the earthworms. Darwin, being Darwin, took a train to Stonehenge to investigate the sinking of the monoliths there and speculated about the action of worms.

During the growing season all my pulled weeds go into a pile to let them dry out a bit and then into my compost that I cover with soil. When spring crops are finished their nonedible parts go into the compost. And same thing in the fall. I turn over the compost a few times during the growing season. When spring comes, voila, I have more top soil.

Newer Method – Static Aerated Pile

The Spring Gardens produces a lot of organic material. Not just from the individual plots but also from the plants in the periphery, leaves from the cherry trees and cuttings from the lawn and pathways. We either pay some company to cart the stuff away or we can compost it ourselves. This year we will be carrying out a pilot project. The basic composting principle is what we have talked about above. We will take our organic material and put it in a large bin and make sure there are plenty of micro-organisms to break down the material. If the pile is not too tall then the composting takes place under aerobic conditions. But if it gets too tall, air, which is 20% oxygen, can't get to the whole pile and towards the bottom we have anaerobic conditions – very smelly. To keep the pile fully oxygenated you can add

earthworms but that can be slow too. Or turn it over frequently, which is hard on the back. A commercial way is to put pipes underneath the pile and pump in air (oxygen) through the pipes. There is a company that will provide the bins and pipes and air pumps and give free advice as we work our way through the process. For this kind of composting you don't have to keep on turning over the material, that is why it is a "static pile." It also gets very warm – over 130 degrees F. Enough to kill weeds and germinated seeds and worms. Compared to traditional methods composting is much faster this way – 6 to 8 weeks (?).

This growing season we'll find out how well it works. We'll learn how many bins and air pumps will satisfy all our needs. It requires making sure that the pile stays moist and oxygenated. It is not necessary to pump air into the pile continuously but only a minute or two every 30 minutes. The other thing we don't know yet is how noisy the air pumps are. Let us know what you think.

Water

The new water system is in place. No longer do we have to hook up a hose to a fire hydrant daily, we now have water directly available from hydrants inside the Gardens. This year

we will still draw water from the blue barrels.



One of the new hydrants next to the soon to be reseeded central lawn

with grass.

The central area of TSG will start to look much better once it is seeded



Please send your ideas, thoughts, suggestions and observations to:
e.gruberg@temple.edu
that address can also be used for getting on the mailing list for **Green Thoughts**, or getting off.
Prepared by Ed Gruberg

Back issues of Green Thoughts can mostly be found on The Spring Gardens Website under Resources



Two weeks after the mid 30 temperatures – tomatoes plants are recovering