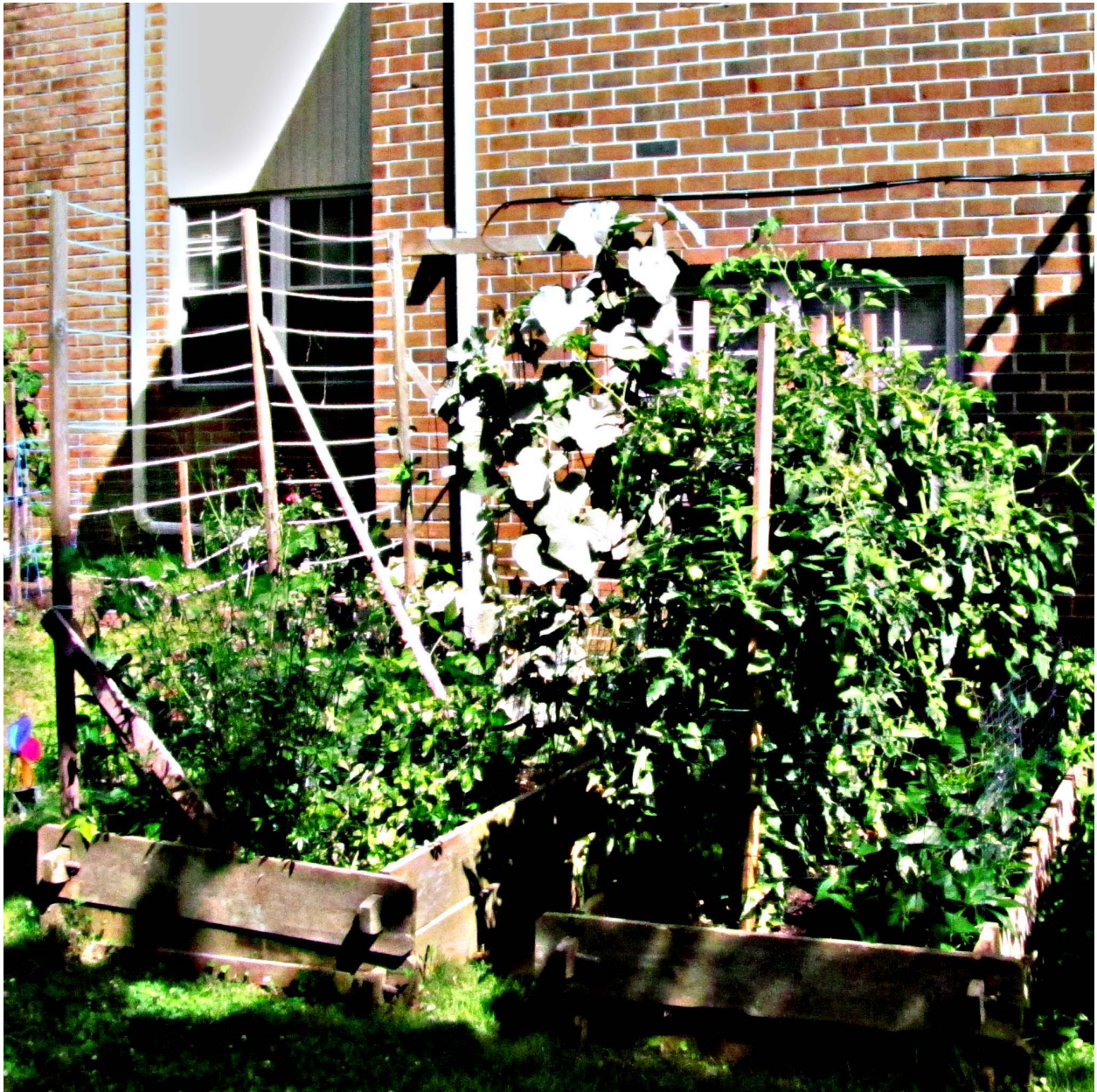


' SO, YOU WANT TO START A GARDEN



Smokey Stack

SO, YOU WANT TO START A GARDEN

OBJECTIVE: Establish a soil that will provide a vigorous vegetable growth without using commercial fertilizer or insecticides.

RECOMMENDATION: Use a raised bed. The primary benefit of a raised bed is that wet conditions will not harm the plant roots because the soil will have a better opportunity to drain. Generally, containment for the bed is constructed of wood and has a height of 8 to 12 inches. Block or brick might be used. Size is not too important, but you do want to be able walk between beds and to reach across beds for management and harvest. The beds in the cover picture are 4 feet by 8 feet by 8 inches high. Two frames have been stacked to provide a total frame depth of 16 inches.



The fence is to deter rabbits. Providing vertical support for plants that climb (cucumbers, peas, pole beans, lima beans etc.). Cantaloupe will climb, but net bags will be needed to support the melons.

In preparing the site, it just needs to be free of anything that sticks up. Don't worry about grass. Put the structure in place and fill with top soil to a depth of about 6 inches. Sprinkle lime over the surface of the top soil, and then put down about 2 inches of good compost, such as mushroom soil, and work it in.

- If the preparation is in the fall, you can leave the bed at this point. In the spring, add two inches of compost, but do not work it in. Sprinkle the top of the compost with lime.
- If the preparation is in the early spring, add the top soil, 2-inches of compost, sprinkle lime over the surface and mix in. Then add two inches of compost to the bed, do not mix it in, and sprinkle it with lime. All of this should be completed one month before planting

Note: The use of lime is to establish a suitable soil pH for vegetable growth. Lime will initially raise the pH a little higher than desired, but reaction with carbon dioxide in the air or in the soil will establish essentially a neutral pH. If the compost is mushroom soil, it has been prepared at a slightly acid pH for mushroom growth. Lime will remove the acidity.

The use of 2-inches of compost that is not worked in:

- Serves as mulch that will stop weeds.
- Provides most of the nutrients that plants will need during the growing season. As water passes through the compost, it forms "compost tea", which carries nutrients to plant roots.
- The mulch also provides a home for insects that will attack insects that eat your plant. Use of an insecticide should not be needed.

This preparation is done only for a new bed. Thereafter, the approach at the start of growing season will be different.

In subsequent years, start bed preparation in about March (at least one month before the first plantings).

1. Do not work the site (fork or turn it)
2. Cover the site with 2 inches of compost
3. Sprinkle lime over the compost.

Note: The initial preparations have allowed development of a good growth of micro and macro organism that benefit the soil and plant growth. The compost addition has a fertilizer rating of about 2-2-2. All fertilizer labels have three bold numbers. The first number is the amount of nitrogen (N), the second number is the amount of phosphate (P_2O_5) and the third number is the amount of potash (K_2O).

The microbial growth can increase the available N and P_2O_5 . Some organism can fix nitrogen from air, and others can release phosphorus from soil compounds that is not normally available to plants. If commercial fertilizers are used, these beneficial organisms are damaged. You will also find a healthy growth of earth worms that work and benefit the soil. After a few years the entire depth of the bed will be rich black soil.

PLANTING

Planting of seeds

The temperature need for practical germination of seed needs to be considered. Examine the attached Table. Seeds can be started inside, and the seed packet will suggest the number of weeks to plant seed before moving plants to the beds

- Some seeds do better if planted direct in the compost on the bed. These vegetable included those that have a minimum germination temperature of 35°F. These can be planted as soon as it is feasible to get into the garden.
- Seeds for some of the favorite vegetables (for example: tomato, cucumbers, and peppers), those with a minimum generation temperature in the 50 to 60°F range, can be started in doors or in a heated germination unit.
- Germination success and rate will be temperature dependent. Consider the “Optimum Generation Range”. At the lower end of the range, germination will be slow, and the percent of seed that germinate may be less. Better germination success will be achieved at the “Optimum Germination” temperature.

Planting of Plants

Consider putting plants outdoors only after all threat of frost has passed. If you wish to “push the season” be prepared to cover plants when frost is threatened. Some plant, such as lettuce, spinach, cabbage and broccoli, can stand a light frost.

Alternate plant location - Don’t place a plant in the same location used last year. This approach is needed to limit the impact of plant viruses. Viruses normally attack plants late in the fall and the viruses will migrate throughout the entire plant including the roots. Even though the plant is removed, the viruses will remain the soil. The soil will be OK for the same plant after skipping a year. If it is necessary to plant (say tomatoes) in the same soil, buy grafted plants that have a root system that will not be affected by the viruses.

Plants are planted by simply digging a hole into the mulch and soil to a suitable depth and then pulling and firming the soil around the plant. Water the plants.

- Tomato, pepper, and squash plants require available calcium. If calcium is not available, blossom rot (a black area where the blossom existed) may occur. To prevent blossom rot, sprinkle a small handful of gypsum around each plant, repeat in about a month.

Watering

Some plants (tomatoes, squash, cantaloupe) do not like to be continuously wet. The flavor of tomatoes or cantaloupe will be “weak” if the plants are heavily watered. When soil becomes dry, soak it thoroughly and wait for four or five days before adding more water. Of course, water anytime that leaves start to wilt.

Greens (lettuce, spinach, etc.) need to be kept moist most of the time. Peppers and cucumbers will benefit from regular watering.

Other Nutrients to Consider

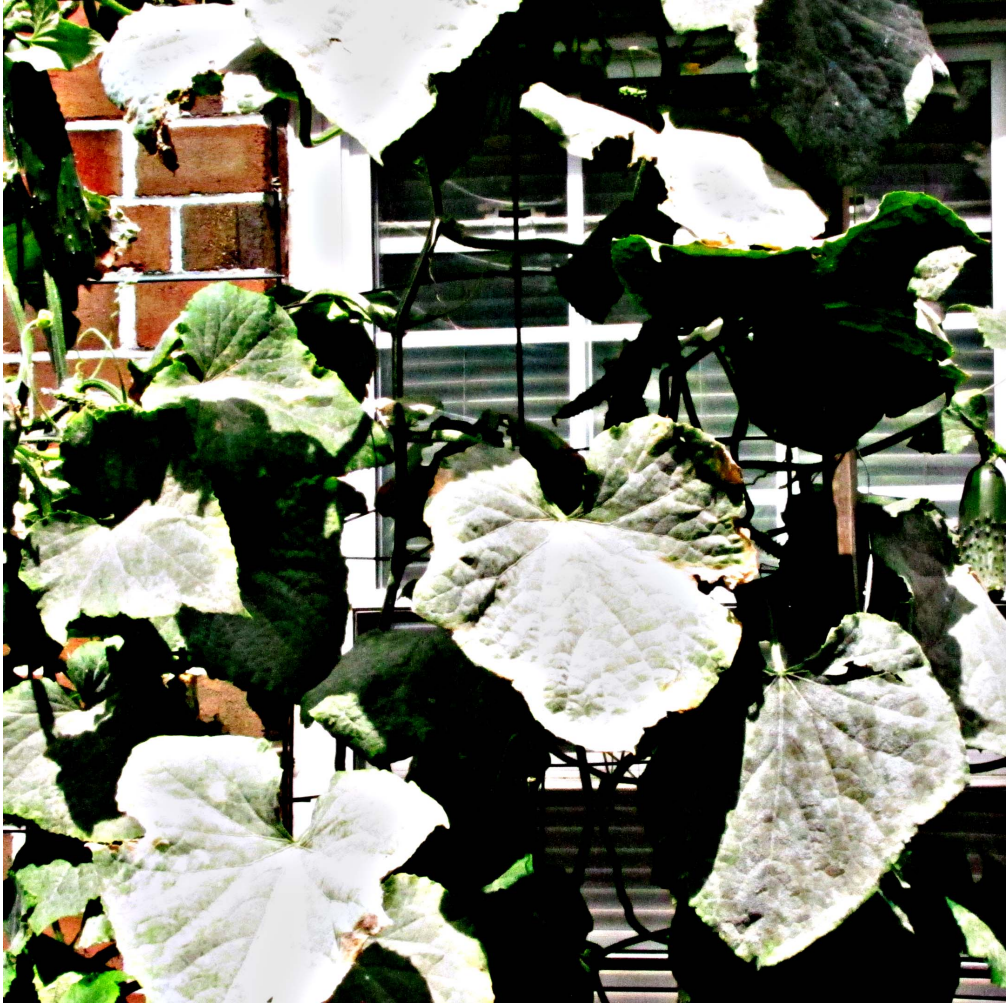
- Use of a bed for a few years may reduce the amount of phosphorus available. A good source for phosphorus supplement is bone meal. If you suspect that plant size is less than normal, sprinkle bone meal over the bed before putting down 2 inches of compost. A small amount of bone meal might be added each year.
- Onion and leeks need more nitrogen. Calcium nitrate is a good supplement.
- You are probably not going to grow corn in a bed, but corn needs nitrogen supplement. A good supplement is a handful of urea at the base of each stalk at the time of tasseling.
- Check if any particular vegetable may need a particular supplement.

Insects and disease

With compost mulch, insect attacks are normally not much of a problem. Insects that are enemies of the attacking insects will probably grow in the compost and the attacking insects. You can expect the invading insect to disappear in a few days.

If you are growing cabbage, cabbage worms can be treated with diatomaceous earth (DE). DE is an off-white talc-like powder that is the fossilized remains of marine phytoplankton. When sprinkled on a bug that has an exoskeleton it kills them. Put DE in a sock and dust it on the plant. Worms or any chewing insect that eats it die, but it doesn't hurt mammals. We can eat it, but don't breathe the dust.

Leaves on the cucumber vines in the next picture are white because they are covered with "milky" mildew. I generally ignore it, but it will shorten cucumber production. Cucumbers will grow for a while even if the mildew is heavy. It can be combated with the following solution: mix one tablespoon of baking soda with a teaspoon of dormant oil and one teaspoon of insecticidal or liquid soap (not detergent) to a gallon of water. Spray on plants every one to two weeks.



Soil Temperature Conditions for Vegetable Seed Germination

Vegetable	Min (°F)	Optimum		Max (°F)
		Range (°F)	Optimum (°F)	
Asparagus	75	80-85	75	95
Bean	60	60-85	80	95
Bean, Lima	60	65-85	85	85
Beet	40	50-85	85	85
Cabbage	40	45-95	85	100
Carrot	40	45-85	80	95
Cauliflower	40	45-85	80	100
Celery	40	60-70	70	85
Chard, Swiss	40	50-85	85	95
Corn	50	60-95	95	105
Cucumber	60	60-95	95	105
Eggplant	60	75-90	85	95
Lettuce	35	40-80	75	85
Muskmelon	60	75-95	90	100
Okra	60	70-95	95	105
Onion	35	50-95	75	95
Parsley	40	50-85	75	90
Parsnip	35	50-70	65	85
Pea	40	40-75	75	85
Pepper	60	65-95	85	95
Pumpkin	60	70-90	90	100
Radish	40	45-90	85	95
Spinach	35	45-75	70	85
Squash	60	70-95	95	100
Tomato	50	70-95	85	95t
Turnip	40	60-105	85	105
Watermelon	60	70-95	95	105

Soil temperatures should be taken by inserting a soil thermometer 3 to 4 inches deep into the soil surface and noting temperature. Soil thermometers are available from garden centers, feed and seed stores, and from many garden supply catalogs. Soil temperatures should be consistent for several days before seeds are sown to ensure that the seeds are being exposed to optimal temperatures for germination.

www.aces.edu

Joseph Kemble, Extension Horticulturist, Associate Professor, Horticulture, Auburn University; and Mary Beth Musgrove, former Extension Associate

About the Author – Vernon “Smokey” Stack, has had an illustrious career working on many engineering projects around the world. He patented the Dissolved Oxygen Probe (D.O. Probe) in 1970. He recently celebrated his 70th wedding anniversary with his wife Lee in Thorndale, PA.

