HELPLINE HOT TOPIC for JULY 2018

Solarization

by Cynthia Zimmerman

Soil solarization: *a nonchemical method used to manage weeds, nematodes, diseases, and insects; a process by which the soil temperature is raised by capturing radiant energy from the sun to levels lethal to many fungi, nematodes, weeds and weed seeds, and other organisms.*

Our cloud free sunny summer days in June, July and August make this the ideal time of year to consider using solarization to ready beds for Fall vegetable planting and to remove unwanted grass in order to replace a lawn with more water conserving landscaping. This simple process leaves no chemical residues as well as often speeding up the breakdown of organic material providing the added benefit of releasing soluble nutrients which makes them more available to plants.

According to UC ANR Publication 74145 plants grown in solarized soil often grow faster and produce higher and better quality yields due to the improved disease and weed control, greater proportions of helpful soil microorganisms, and an increase in soluble nutrients such as nitrogen, calcium, magnesium and potassium.

Solarization is done by placing clear 1 to 4 mil polyethylene plastic sheeting on the soil surface for 4 to 6 weeks. Soil in the Central Valley can usually be solarized in 4 weeks any time from June through September. Using clear plastic with UV inhibitors will help prevent the deterioration of the plastic over time, but is not necessary.

Before solarizing the area must be cleared of existing weeds and debris. Tilling and smoothing the soil is helpful to increase penetration of heat into the top 6 inches of soil. If the beds will be raised, preform them prior to solarization so that the soil isn't disturbed later bringing up new viable weed seeds. Wet the soil to be solarized thoroughly, but not soggy, as moist soil conducts heat better than dry soil making the soil organisms more vulnerable to being killed.

Lay the plastic down flat on the soil surface with one edge in a trench, avoiding air pockets underneath it. Cover that edge with soil to hold it down, then pull the plastic tight from the other side and bury that edge. Continue this process on all sides of the bed. The closer the plastic to the soil surface, the better the heating. Leave the plastic on for 4-6 weeks. After solarization, remove the plastic, disturbing the soil as little as possible. If after removing the plastic, cultivation for planting is necessary, it must be shallow (less than 2" deep") to avoid bringing up viable seeds and undesirable pathogens to the surface.

It's important to remember that no pest management method eliminates all pests. Solarization can greatly increase temperatures in the upper 4-6" of soil, but deeper soil usually does not heat up enough to kill pests that are located there. Weeds that are difficult to control such as Johnson grass, bermudagrass, and yellow nutsedge are suppressed but not completely killed. Nematodes are reduced but the heat may not go deep enough in the soil to kill all of the population. The beneficial effects of solarization typically last for 3-4 months. After that time, those surviving pests deep in the soil can work their way up to the upper layer of soil, and weed and grass seeds can blow onto the solarized soil.

One caution, irrigation tape or other irrigation plastic should not be buried near the surface of the soil to be solarized. Some types of drip tape may melt because the soil temperatures may be in excess of 120 deg. F near the surface. Lines buried below 6" probably won't be affected.

Further information can be found at the following websites:

Soil Solarization for Gardens http://ipm.ucanr.edu/PMG/PESTNOTES/pn74145.html
Introduction to Soil Solarization http://edis.ifas.ufl.edu/in856
Solarization http://ucanr.edu/sites/mgfresno/files/41836.pdf
Remove a Lawn https://www.lowes.com/projects/lawn-and-garden/remove-a-lawn/project
How to Kill Grass Naturally https://www.gardeningknowhow.com/plant-problems/weeds/how-to-kill-grass-naturally-kill-unwanted-grass-in-your-yard.htm