

# Deep Mulch Gardening: Building a Habitat for a Whole-Soil Ecosystem

Or, Why work at tilling?

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According to the literature, hügelkultur can remain fertile for up to 30 years without adding new materials. However, it can be difficult to plant into the logs and branches. We call our latest experiment a hügel mulch. It is a base of logs and branches covered with a wood chip sheet mulch that should give us many years of growing without any labor except planting and harvesting.

At the Living Systems Institute we work with the theory that nature maintains a habitat for a whole soil ecosystem that retains nutrients. By “whole soil ecosystem” we mean a complete set of organisms that cycle nutrients through complete growth, decay and regrowth cycles. I have been working with the concept over ten years now and I know I can grow more vegetable with substantially less work using a deep mulch system than with any of the other gardening technique that involves turning the soil. In my experience maintaining a habitat for that whole soil ecosystem is why it works.

## Experimenting with Deep Mulch Systems

I started the experiment in 2004 using the permaculture technique called sheet mulching.[1] By 2011 our gardening teams were incorporating ideas from a technique called hügelkultur.[2] One third of our 2011 experimental sheet mulch garden was built with varying sizes of branches, sticks and wood chips twelve inches deep, then covered with an inch of horse manure. The section using hay has been renewed annually, the section using only wood chips will need to be renewed this fall. We planted the section built with branches for the 4th year in 2014 and it shows no sign of slowing down.

Typically, organic gardening involves a cycle of composting, tilling in compost, planting, weeding, watering, harvesting and removing plant debris for composting. We spent a morning. We followed the sheet mulching formula contained in Toby Hemenway's *Gaia's Garden* except that we used the sticks instead of the recommended materials. I then went in and “drew” pathways on top with more wood chips and put in drip irrigation. Since that morning we have done nothing but plant and harvest with an occasional mulching of volunteer plants. You can see how productive it is in the pictures.

I have given this explanation to people in my garden where they can see the results and yet they go home and crank up their rototillers. Many gardeners who have achieved success using labor intensive methods seem loath to try the deep mulch approach. How is it that we can do so much less work and still get this kind of production? Let's look at how the theory of whole soil ecosystems applies to our observed results.

## **Building a Habitat for a Whole Soil Ecosystem**

Have you ever wondered how nature grows things without depleting nutrients from the soil? How can nature increase the nutrients in the soil while the land is fallow? Why is it that human gardening and farming depletes the soil?

The way a forest builds soil is by a regular addition of carbon on top. The wind blows, branches break off, old trees fall over, and the leaves fall each autumn. The animals make their contribution of nitrogen. That process creates layers of decomposition. That is the habitat for the soil ecosystem that developed in the forest. The ecosystem itself is a complete set of organisms that evolved to decompose the carbon and nitrogen raw materials and convert them into the food required by the forest plants which in turn produce the food for the forest animals. As soon as something excretes a substance, or dies and releases the nutrients contained in its body there is another species there ready to take up those nutrients and process them further. Nutrients of all types are produced continuously. The nutrients cycle through the system over and over. The nutrients build up in the system rather than being depleted from the system.

When we till the soil we destroy the habitat for that whole soil ecosystem and start losing the participation of specific species. Without the participation of the primary decomposers we have to gather the carbon and nitrogen and do the composting ourselves. When we till in the compost all of those nutrients are available for our plants immediately. Our plants do not need all of the nutrients all at once and the unused nutrients are taken up by weeds or leach out in the rain. Then we have to supply more nutrients next year.

Tilling creates the perfect habitat for nature's pioneer plants. Because we have no bare soil in a deep mulch system many of the species considered weeds are not a problem. Seeds will blow in or are carried in by animals and those plants may volunteer in the mulch. These volunteers are rooted in the mulch, not the soil, and are easy to pull. A weed, by definition, is a plant growing where it is not wanted. If we want that plant for mulch it is not a weed. It is a gift and when you pull it and lay it down the decomposers will take up and cycle those nutrients right away.

We also have no pests in our gardens. We want to foster a healthy system that includes as many different species as possible. That means that the insect eating our plants is not a pest. It is food for the species that want to protect our plants.

Each species participating makes its contribution by processing nutrients as a part of its life cycle and excreting them and releasing them in death as a part of the nutrient cycle. The more species participating the more “whole” our ecosystem becomes.

This fall, when the first hard frost is predicted, I will dismantle the drip systems and bring in the head strings for the winter.[3] Every thing in the garden, tomato cages and all, will stay just where they are. That way, when the wind blows, the garden will collect organic matter and improve the habitat for our soil ecosystem. In the spring we will plant directly through the accumulated mulch. The habitat that we maintain for our soil ecosystem forms the basis for the integrated closed loop production systems we explore at the [Living Systems Institute](#).

## Building a Hügel Mulch



1. Start by soaking the area to be mulched with water.
2. Spread manure over the area about 1/2 to 1 inch thick.
3. Assemble a weed barrier by laying down a layer of cardboard with as little overlap as possible. Take newspaper and lay it out over the seams in the cardboard. Don't do a lot of unfolding. Just lay it out whole sections at a time. You will want to wet the paper as it is laid out if there is any wind at all. Lay out a second layer of cardboard and cover all those seams with newspaper.
4. Spread another layer of manure 1/2- to 1-inch thick.
5. Keep the water running and wet each layer as you go.

6. Cover the area with logs and then fill in the gaps between the logs with smaller branches and sticks.
7. Fill in any remaining gaps with wood chips.
8. Spread a third layer of manure about 1-inch thick.
9. Add 12 inches of wood chips on top.
10. Spread a final layer of manure about 1-inch thick.
11. You can now mark your pathways by laying out a line of wood chips about 2 feet wide and maybe 1 or 2 inches thick.

## **Resources**

[1][http://en.wikipedia.org/wiki/Sheet\\_mulching](http://en.wikipedia.org/wiki/Sheet_mulching)

[2]<http://en.wikipedia.org/wiki/H%C3%BCgelkultur>

[3]The head string is the timer, filter, pressure regulator and back flow preventer that attach to the outdoor faucet.

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