

Starting Your No Till Garden

Edwin Dysinger
AdAgrA 2022

“There is no system of production, or soil amendment, that will fix what is wrong with your soil. Only your understanding of how the soil functions will fix what ails your soil.” Jon Stika

- Gabe Brown (brownsranch.us), farming 5,000 acres in North Dakota said in 2020 that for the last 7 years, the only input he had put into his farm was **seeds!**
- “The most potent tool with which to build healthy soil is a living plant.” Jon Stika
- Gen. 1:29,30. God gave Adam and Eve “every tree with seed in it’s fruit and every plant yielding seed that is on the face of all the earth” and to all the other creatures God gave “every green plant for food”. Seeds (and plants) are the tools God gave mankind for Dominion, for soil health, plant health, animal health and human health.

What is it that is so special about plants?

- Plants, roots, photosynthesis, and root exudates.
- Bacteria and fungi and root exudates
- Bacteria and fungi provide the plant with nutrients.
- Root exudates, bacterial secretions, fungal secretions and hyphae - all contribute towards forming aggregates in the soil (the healthy “crumb” of the soil).
- Principles for soil health
 - Minimal Disturbance
 - Armour on the soil (mulch)
 - Diversity
 - Living Roots in the Soil
 - Incorporating Animals
 - Context

Our Experience with No-Till

- First Experience
 - Wheat and pea winter cover

- Cut and composted, beds tarped 3 weeks
- Mulch returned to beds after tarps removed, transplanted and seeded beds
- Second Experience
 - Putting hay field into production
 - Tilled field first
 - After 2 weeks, we tarped a portion, seeded a portion of it directly with corn, beans and sweet potato and seeded a portion of it to summer cover crop.
 - The portion with the cover crop had a lot of weed pressure, especially from Johnson grass. I mowed it twice, and then seeded it through the mulch, to a mixed winter cover in the fall.
 - The Hoss seeder did a decent job seeding through the mulch.
- Third Experience
 - We decided to start a new garden up at our house on the hill. The soil there is very hard and very rocky. I did not want to till.
 - We decided to make beds with on a heavy compost mulch. We put on 4" per bed straight on the grass and filled the aisles with woodchips.
 - We put down cardboard under part of the garden.
 - In the spring, we seeded and transplanted into the mulch.
 - We did have some moderate weed pressure from crab grass - 3 or 4 half days were required over a couple months.
 - We put down cardboard under part of the garden.
 - In the spring, we seeded and transplanted into the mulch.
 - We did have some moderate weed pressure from crab grass - 3 or 4 half days were required over a couple months.

Basic Steps to No-Till

- Mow
 - Rotary mower

- Flail mower
- Scythe
- Cut by hand with a knife
- Termination (killing) of current crop
 - Know the characteristics of your plants (is it sod, a cover crop, vegetables, annual weeds, perennials). What are you wanting to kill? Develop your strategy based on what plant you want to terminate.
 - Annuals are generally easier than perennials. Softer vs woodier. A number of strategies below address these.
 - A word about taproots and underground runners.
 - Frequent, low mowing and/or tillage
 - Herbicide - Organic herbicides seem to work well on small, fresh plants, not so well on older woodier plants.
 - Flame weeding - same as herbicide.
 - Winter kill - Most effectively used with a cover crop that winter kills and is left in place as a mulch. If you are letting a crop winter kill, keep in mind that you may have weeds that do not winter kill.
 - Rolling/Crimping
 - Mowing at flowering stage - the critical issue here is coordinating the timing of flowering stage with your planting schedule. Also, with a multi-species mix, all species will not be flowering at the same time.
 - Solarization (heat)
 - Caution: Don't want to do this too long - the high heat from this process can actually kill soil life.
 - Use old hoophouse plastic, 6 mil. Or purchase contractor plastic - 4 mil, 12'x100' from Lowes is \$65.
 - Usually 1 day or less. Depends on the crop being solarized and weather.
 - Need 75 F or higher temps and sunshine. (day length, angle of sun, clear skies and high temp). Lower temps and overcast conditions will extend

time needed or make it not work. Works for Bryan O'Hara in Connecticut from May-Sept.

- Pro's and Con's:
 - Fast
 - May not completely kill weeds
- Occultation (blocking light)
 - Silage Tarps, Landscape fabric
 - Cardboard, newspaper
 - Mulch, Compost
 - Pro's and Con's
 - Will kill weeds
 - Can be used to kill perennial weeds
 - Takes time, 2-3 weeks for most annuals, 3+ months for perennials (johnson grass)
 - Will kill weeds of the current season, not next season.
- Tillage
 - The fastest way to set up no-till
 - The best options for perennial weeds.
- Manage Residue
 - Residue can be left in place as a mulch
 - Residue can be taken out to compost and then reapplied
 - Residue will most likely need to be cleared if you are going to direct seed
- Amend
 - You may add additional amendments such as compost and rock powders
 - Keep in mind that although Gabe Brown now only adds seeds, it took him nearly 20 years of incremental improvements to reach this place. If you have the ability to add amendments, do it. If you don't, don't sweat it. Do the best you can. Farming God's Way anthills.

- Transplant
 - Transplanting into mulch - contact with soil
 - Following crop considerations, spacing
- Direct Seeding
 - Need to clear mulch/residue
 - Good experience with the Hoss Seeder
 - Compare Hoss Seeder with Earthway

No-Till Resources

A Soil Owners Manual: How to Restore and Maintain Soil Health by Jon Stika. 2016. A very good, and very concise explanation of the basics of soil function and health.

No-Till Intensive Vegetable Culture: Pesticide-Free Methods for Restoring Soil and Growing Nutrient-Rich High-Yield Crops, by Bryan O'Hara. 2020.

The No-Till Organic Vegetable Farm: How to Start and Run a Profitable Market Garden that Builds Health in the Soil, Crops and Communities, by Daniel Mays. 2020.

The Living Soil Handbook: The No-Till Grower's Guide to Ecological Market Gardening, by Jesse Frost. 2021.

The Organic No-Till Farming Revolution: High Production Methods for Small Scale Farmers, by Andrew Mefferd. 2019.

Farming God's Way. <https://www.farming-gods-way.org/resources.htm> An overtly Christian, no-till approach to farming and gardening adapted for Africa. I highly recommend these training course materials, especially for situations where resources are limited.