

Goldfinch Gardens – Craft Tour 4/14/2019

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Reducing Tillage on the Farm

Goldfinch Gardens is going into its' 10th season this year. We farm 2 acres at our main farm using intensive methods and an addition 1 acre of potatoes, sweet potatoes and winter squash up the road. We have 3 hoop houses and 2 of them are movable. The stationary one uses a propane heater in the winter and spring. We also raise beef cattle on a very small scale. We utilize 2 Kubota tractors for field prep, cultivating, and mowing. Though we have a BCS, we don't use it for much besides flail mowing. Our primary tools for field prep are a spader, a 3 shank chisel plow, hilling discs, and occasionally a disc cultivator. We also do a lot of hand work for bed prep. In that process we use tarps, a broadfork, a rake, a tilther and occasionally a shovel. We market to restaurants in Asheville (mostly) and through our self styled online CSA. We also keep a small farm stand (just 2 fridges really) for those same member customers.

Thoughts on reducing tillage:

- Reducing tillage allows you to leave as much organic matter as possible in the soil since tilling increases biological activity.
- Reducing tillage also allows a healthy, diverse soil ecosystem to develop with minimal disturbance.
- A healthy soil community should increase a plants access to nutrients and water.
- Increased organic matter improves water retention during a drought and absorption during wet periods.
- We started by switching from plowing/discing and tilling to purchasing a spader which reduces the harm from soil tillage. The spader incorporate material while while leaving large clumps of soil undisturbed. The top inch or so is worked finer with the rear harrow.
- We jumped to using tarps in some areas to reduce our tillage even further. In the tarped areas we prep beds by broadforking and sometimes tilthing. Where it is feasible, we use the three shank chisel plow in place of the broadfork.
- Reducing tillage is easier in areas where transplants are going in rather than direct seeding. We use the tilther when we need to seed. The tilther can be used as a power rake or a 2" tiller depending on how it is used.
- After a workshop at Singing Frogs Farm, we have added the practice of cutting plants out of the ground rather than pulling them in order leave the root system in the soil where it can decompose. Again, this works better when transplanting into that bed.
- We are experimenting with sheet mulching with our removed crop residue and weeds (only if they haven't gone to seed and don't have disease). We don't do a good job of composting, but I want to keep my organic matter in my soil. Also, since bare soil is what we are trying to avoid, it gives us another way to cover bare patches.
- Pros - Improved soil texture, improved soil life communities, occultation, soil sometimes stays drier under tarps and so can be worked after a rain, warms soils, beneficial flowers can be planted at the ends of beds without getting in the way of tractor work, cheaper start up costs for a new farmer, feeling virtuous.

- Cons – A lot more work, moving heavy, wet, muddy tarps is not fun, in the winter the tarps don't kill very quickly, in the summer the tarps can overheat the soil, storing tarps and keeping the sizes organized, they blow away, you need a ton of sandbags, tractors are much more efficient, it can be hard to figure out cover crops.
- It's unlikely that we will get rid of the spader any time soon. It is hard to imagine us scaling this system up without more labor. We are not purists and see any reduction in tillage as a good thing. We hope to keep nudging our farm in this direction.
- Large scale organic no-till relies on crimping cover crops and does not quite fit with the diverse small scale farm that we run.
- We continue to brainstorm techniques, as do others exploring how we can move our farms in this direction. It is an exciting area to explore, but there are no easy answers yet.

Resources on this topic:

[The Market Gardener](#) by Jean-Martin Fortier

Elaine Ingham <https://www.soilfoodweb.com/>

Singing Frogs Farm www.singingfrogsfarm.com/

<https://smallfarms.cornell.edu/projects/reduced-tillage/tarping/>

Google no till organic tarps for more interesting articles.

Silage or bunker tarps are available at Ag Care in Enka on Smokey Park Hwy..

Tilther is from Johnny's Select Seeds.

The broadfork we like is from Lee Valley Tools (\$140).

Imants Spader