

Urban Soil BMPs: Tilling, Biochar, & Edible Forests

Naim Edwards
MSU - Detroit Partnership for Food, Learning, and Innovation

We can manage soils to:

- Enhance nutritional value and yield of food
- Sequester Carbon Dioxide
- Support biodiversity



Urban Soil

- Disturbed
- Compacted
- Contaminated
 - Litter
 - Metals
 - Debris
 - Chemicals
- Not always though!



Photo cred: trugreen.com

Methods – Study Plots



- 12 plots per tillage treatment
- 3 replicates of each cover crop mix/tillage group + compost
- 1 null plot – no cover crop mix seeded

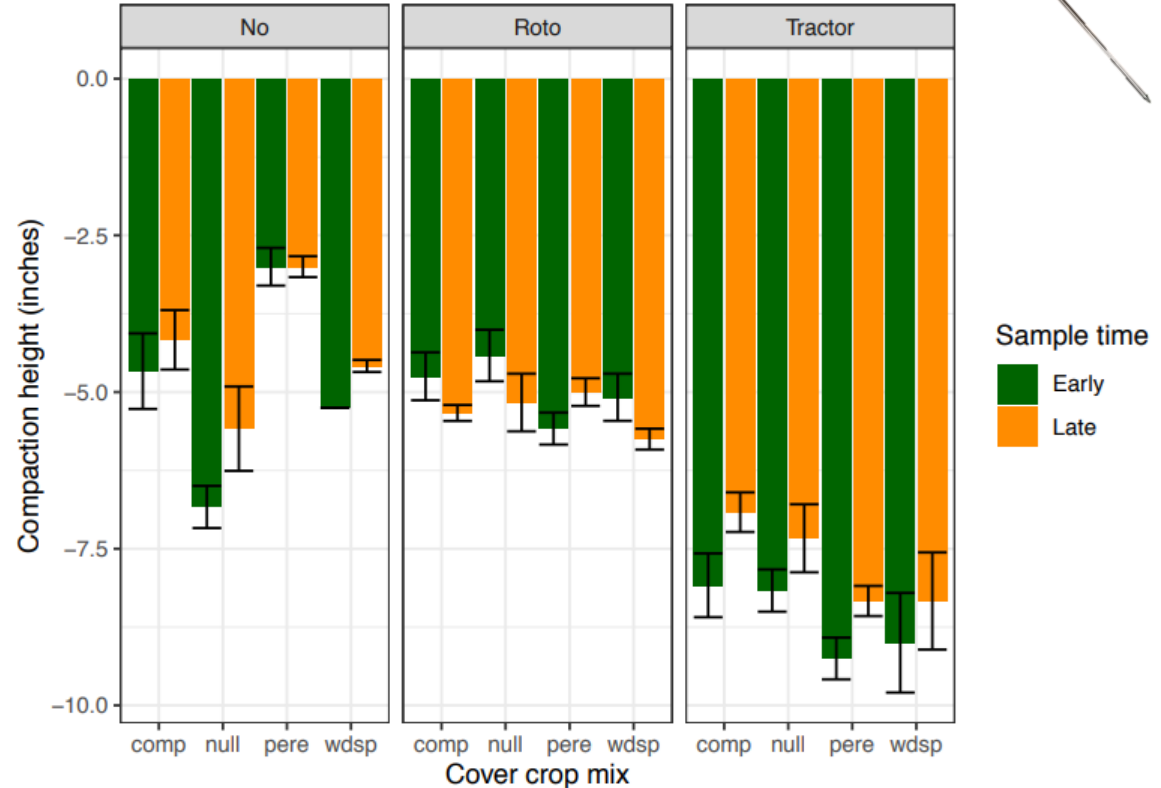


Crop Mix	Species
Compaction	Crimson Clover, Forage Radish, Cereal Rye
Weed Suppression	Buckwheat, Cowpeas, Sudex
Perennial	Red Clover, Hairy Vetch, Wheat

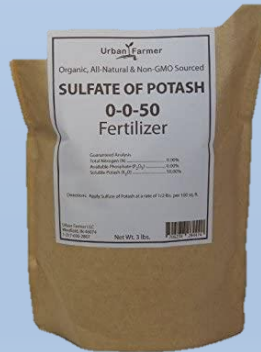
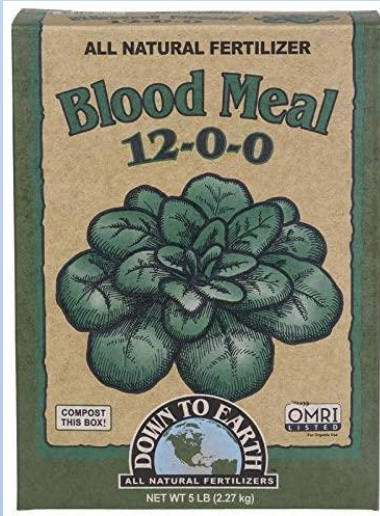
Results: Compaction



- Tractor tilled soils had least compaction
- Rototill and no-till had similar compaction depths
- Compaction crop mix did not perform better than other groups
- Compaction depth is less of a concern if primary crops only utilize top 4-5 inches of soil



Managing Soil Chemistry



TRIFECTA+
The Ultimate Soil Supercharger
5-10-4

TRIFECTA+ is a NATURAL BASE, ALL PURPOSE, PREMIUM BLEND FERTILIZER guaranteed to make your plants insanely healthy, boost production and give you professional results for a fraction of the cost. Give your plants a boost in flower production, increased plant health and vigor, and a stronger healthier root system! All these results and more can be seen with TRIFECTA+

What Makes TRIFECTA+ Different?

- TRIFECTA+ offers both fast release and slow release nutrients
- Feeds ALL Season long!
- Contains over 50 trace minerals
- Contains Beneficial Bacteria & Fungi
- All crops can benefit
- Top Quality Ingredients
- High NPK Levels!

Suggested application rates:

Tomatoes & Corn - 1 lb. per 15 sq. feet
OR 1/4 Cup ea. plant

Beans & carrots - 1 lb. per 100 sq. feet
OR 3 Tbs. ea. plant

Peppers & cucumbers - 1 lb. per 25 sq. feet
OR 3 Tbs. ea. plant

Guaranteed analysis:

Total Nitrogen (N) 5%
Available Phosphate (P₂O₅) 10%
Soluble Potash (K₂O) 4%
Total Sulfur (S) 3%

nutrient source: Rock Sulfate
Calcium (Ca) 8.5%
Magnesium (Mg) 0.8%
Iron (Fe) 0.8%

Derived from: Bone meal, greensand, Potash, kelp meal, blood meal, Poultry manure, Urea, feather meal, cottonseed meal, dolomite lime, calcium dryhydrate, rock gypsum, epsom salt, azomite, rock phosphate, chelated iron, alfalfa meal, humic acid

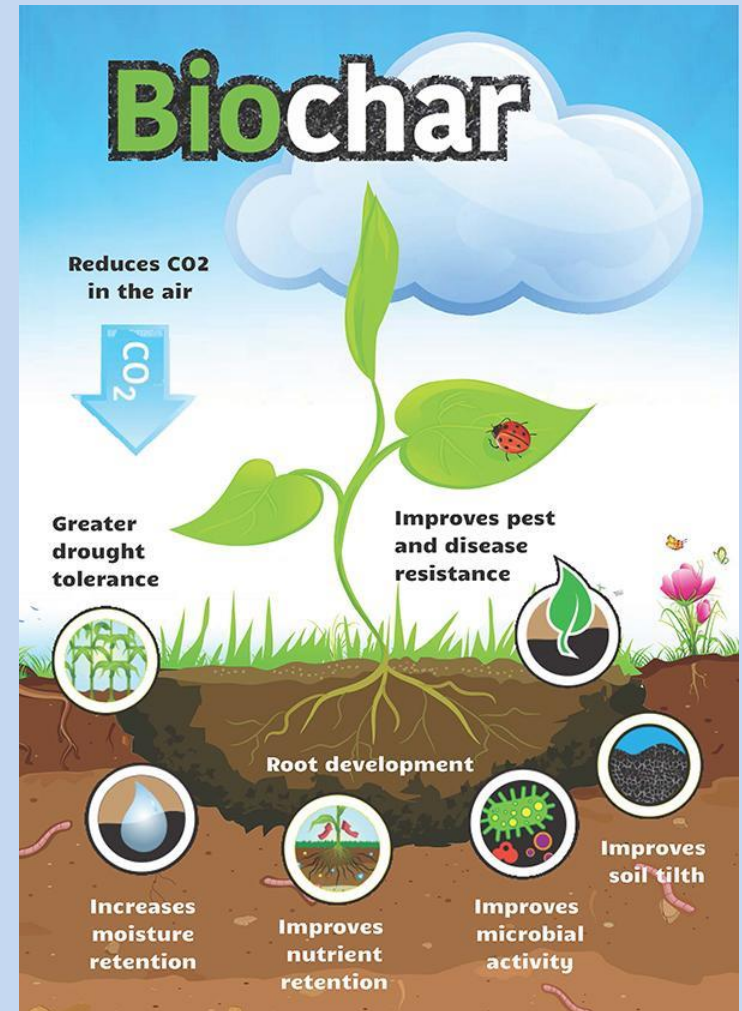
Migardener
1117 S River Pointe Dr.
St. Clair, MI 48079

Product®



Biochar

- New frontier or red herring?
- Porous charcoal substance
- Holds stable carbon in soil
- Seems most practical for clay soil
- Best utilized when production system captures energy



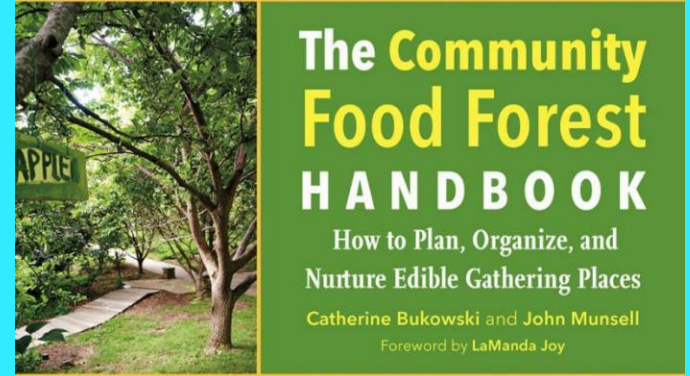
Edible Communities

<https://www.facebook.com/ediblecities/>



Perennial Edible Forest/Landscapes

- ❖ Add fruit and nut trees to streetscapes, parks, yards
- ❖ Feed people, reduce poverty, create jobs
- ❖ Sequester carbon, reduce stormwater runoff
- ❖ Regulate climate, protect biodiversity



Edible Forest Layers

Layers of a Forest Garden



- Tall shade trees
- Shorter understory trees
- Vining fruits
- Shrubs, brambles, bushes
- Herbs, ground cover, root crops



Thank You! 😊 Questions?

Naim Edwards |
edwar649@msu.edu
Instagram: msu_Detroit_ag