

EFAO HORTICULTURE 2020: Research Protocol

Regeneration of Fallow Fields

Farmer-Researcher: Eric Barnhorst, Eva Mae Farm - East

Research Priorities: Soil Health, Cover Crops

EFAO Contact: Sarah Hargreaves, sarah@efao.ca, 226-582-06

Objective

What is the best method to raise organic matter in a full year fallow, balancing regeneration and cost effectiveness?

Background

Eric has a 1 acre field (280-165') in a perfect location for new intensive vegetable production. It is sandy, well drained soil that warms up well in the spring with good road and water access. However, the topsoil was stripped by a previous owner and the organic matter is very low. Eric would like to assess different methods for regenerating the field.

Experimental Design

Treatments:

- Control: mowing weeds as needed
- Micronutrients (surface application) + mow as needed
- Micronutrients + cover crops
- Micronutrients + cover crops + chicken manure
- Micronutrients + cover crops + chicken manure + woody compost

Details:

- Micronutrient application is based on soil tests and consultation with Ken Laing. 50 lb per acre S equivalent, 200 lb per acre Mg-K-Sulp
- Cover crop is a blend of rye, oat, vetch, phacelia, pea, crimson clover, radish, fava, sunflower, sorghum sudangrass, flax.
- Granulated chicken manure @ 100 lb N / ac equivalent
- Woody compost, chicken manure as above + 10 ton per acre equivalent high-C compost (on farm produced)

Measurements:

- Soil health using active carbon
- Relative cost, including labour, for each treatment

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Eric will divide the area into 20 plots and lay out the treatments in a randomized complete block design with 4 replicates. All plots will be 30' by 30'.

	30'	30'	30'	30'	30'
30'	Micronutrients + cover crops + CM	Micronutrients + cover crops + CM + woody compost	Micronutrients + cover crops	Micronutrients + mow	Control
30'	Micronutrients + cover crops	Control	Micronutrients + cover crops + CM	Micronutrients + cover crops + CM + woody compost	Micronutrients + mow
30'	Micronutrients + cover crops + CM + woody compost	Micronutrients + mow	Control	Micronutrients + cover crops + CM	Micronutrients + cover crops
30'	Control	Micronutrients + cover crops + CM + woody compost	Micronutrients + mow	Micronutrients + cover crops	Micronutrients + cover crops + CM

Research Plan

Time	Task	Methods & Measurements or Action Item
April 2020	Take baseline soil samples for active carbon	3 throughout entire field
April 2020	Add amendments, incorporate for all but control	Record date, labour, fuel, etc.
Late May 2020	Seed cover crops	Record date, labour, fuel, etc.
April 2020	Add compost or wood chips	Record date, labour, fuel, etc.

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April-September	Mowing	Record dates, labour, fuel, etc.
April 2020, October 2020 (?) April 20201	Soil testing	Decide this fall if we re-test in fall 2020 or spring 2021
Throughout, completed October 2020	Economic tally	Make spreadsheet of all costs, including labour, for each treatment
Deadline October 15	Submit data and photos	Submit data and photos to Sarah/Rebecca
After data submission	Invoice	Send Sarah invoice for farmer-fee

Materials

Please list all the equipment that you need for this project. Indicate “in-kind” under Total Cost for any materials that you already own or have access to. For pre-approved research expenses, for which you will be reimbursed, please indicate cost.

Material	Quantity Required	Total Cost*	Note
Tractor, seeders, mower, rototiller, etc.		In-kind	
Compost	16 yards	In-kind	
Soil tests + shipping	3 for initial + 20	\$410	Active carbon, \$15.75 + HST each - 69% HST = \$16.40
Seed	rye, oat, vetch, phacelia, pea, crimson clover, radish, fava, sunflower, sorghum sudan, flax	~\$200	
Chicken manure	325 lb	~\$110	
Amendments	50 lb actual S,	\$210	

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	200 lb Sul-po-mag		
Total		(\$1000 max)	

* For approved research expenses

Farmer-fee: \$500, invoiced to EFAO after farmer-researcher submits data.

Memorandum of Understanding

Farmer-researchers agree to keep an active membership with EFAO throughout the duration of their trial. Reimbursement for research expenses and farmer-fees will be paid to current members only.

Please also refer to efao.ca/farmer-led_research for a **Memorandum of Understanding** of other responsibilities. Specifically refer to sections:

- *What is expected of me as a farmer-researcher?*
- *What support will I receive from EFAO as a farmer-researcher?*

To check the status of your membership, log in here:

<https://efao.z2systems.com/np/clients/efao/login.jsp> or contact Martina, martina@efao.ca.