Research Report: LIVESTOCK 2017
Amendments for pasture regeneration

Ecological Farmers Association of Ontario

FARMER-RESEARCHER

Tony McQuail, Meeting Place Organic Farm - West Region

WHY IT MATTERS

Productive pastures are paramount to organic grass-fed, grass-finished beef operations, especially when soil health and regeneration are also important farm goals. **To try to further regenerate specific areas of his rotationally-grazed pastures, Tony tested whether addressing micronutrient deficiencies would help pasture growth.**

RESEARCH QUESTIONS

Do micronutrient amendments improve pasture growth of rotationally grazed pastures?

METHODS

Tony chose the following organic approved micronutrients based on recent soil tests in consultation with his co-op:

Amendments

1 tonne Sulphate of potash (SOP)

300 lb Zn sulphate

200 lb Copper sulphate

55 lb Boron

On June 4, 2016, Tony applied amendments and no amendment controls in double passes or strips. It was not practical to randomize the location of the amendment strips throughout the field.

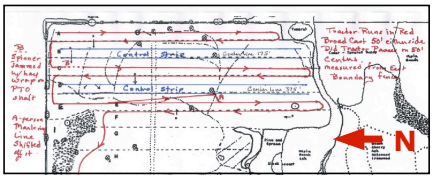

Figure 1. *Layout of amendment application in strips. Because of land use differences within the field, Tony further divided the field into 4 sections (north to south): 2013-2015 winter pasture; 2014-2015 winter pasture; manure/compost late fall 2015; 2016 winter pasture. He did not sample in the 2016 winter pasture area.*

Hot and dry weather in summer 2016 resulted in poor pasture growth in general, so Tony delayed sampling until the following growing season. On June 16, 2017, Tony took biomass samples along transections in the middle of fertilized and unfertilized strips. For each transect, he sampled biomass at 5 randomly assigned locations.

Tony estimated biomass at each point along the transect using a falling plate meter and forage stick; then air dried and weighed samples.

RESULTS

- Average biomass in two of three sections was greater in the control than the fertilized strips; there was no effect of the fertilizer amendments on biomass (P=0.75).
- Rather than fertilization, average biomass was different between field sections, with the third section (west) higher than first (east; P=0.002).

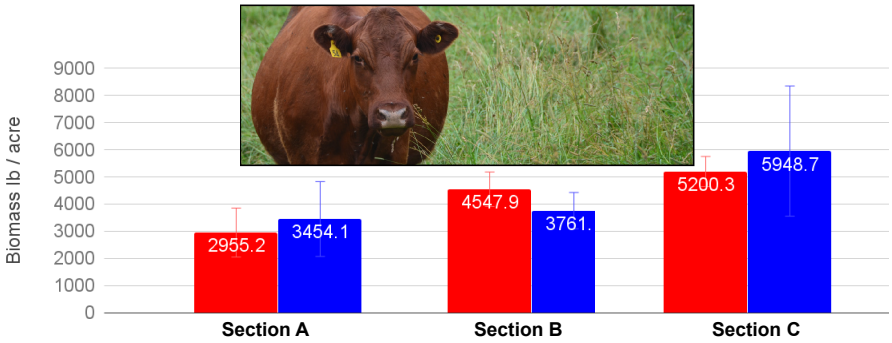

Figure 2*. Average biomass in fertilized and unfertilized strips in three of Tony's replicate sections.* ***Red*** *= fertilized;* ***Blue*** *unfertilized control.*

Section A		Section B		Section C	
Fertilized	Control	Fertilized	Control	Fertilized	Control
3070	2974	4510	2974	5853	6908
2782	2878	4414	4414	5853	9691
4222	3838	5181	3070	4510	4701
1439	5853	5181	4605	4893	4701
3262	1727	3454	3742	4893	3742

Table 1*. Raw biomass data (lb/acre) from Tony's three field sections.*

TAKE HOME MESSAGE

- Fertilizer application did not affect biomass estimates in Tony's pastures 1 year after application. It is possible that yield increases could manifest in future years or in the nutritional quality of the forage.
- Based on these results, Tony sees little value in adding these fertility amendments, which were recommended based on soil testing.
- Biomass growth was most affected by field location, or soil patterning in the field.

FUNDING

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Weston Seeding Stronger Communities

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Meeting Place Organic Farm Weather Data:

Monthly temperatures and precipitation for 2017 and historical averages.

Fergus Shand Dam was selected as the weather station for Meeting Place Organic Farm. It is located 90.67 km from the farm. Closer weather stations to the farm did not have processed historical climate data.