Farmer-Led Research 2019: **Basalt for Heritage Grains**

SOIL HEALTH

Farmer-Researcher(s):

Shelley and Tony Spruit, Against The Grain Farms - East

EFAO Contact

Sarah Hargreaves, sarah@efao.ca, 226-582-0626 (chat and textable)

This document outlines the steps that Shelley and Tony will follow to execute their research project, *Basalt for Heritage Grains*, including design, execution, data collection and data sharing. It also serves as a Memorandum of Understanding between Shelley and Tony and the EFAO.

Background

Basalt rock dust is a 100% natural mineralizer that is certified organic and is used as a mineralizer and a liming product with a high level of paramagnetism. Scientist have been researching the benefits of this Canadian mined product since mid 1980 and documenting the benefits for organic farmers (Rocks for Crops by Peter van Straaten). Some studies are suggesting an 35% increase in fruit production and yield in potatoes but no trials have been done on cereal grains as of yet.

With interest in this organic fertilizer, Shelley and Tony asked the question:
Does a rock mineralizer increase yield in heritage grains?

Experimental Design

Shelley and Tony will compare an application of basalt rock dust to a control without application to **Heritage Amber Spring Wheat** at an application rate of 1 tonne per acre (43,560 square feet).

Their design is a paired design (analyzed with a 2-way paired t-test) with 8 plots (30 x 100' each) and 4 replicates (24,000 square feet). They will randomly assign control and basalt treatment as follows:

Pair 1		**Pair 2**		**Pair 3**		**Pair 4**	
control	**basalt**	**control**	**basalt**	**basalt**	**control**	**control**	**basalt**

They will prepare all plots in a similar way for planting, seed on the same day, and cultivate and manage similarly throughout the season, and mark plots using wooden posts that they can write on.

Measurements

Yield

- Weight of grain harvested from each of plot, for 8 weight measurements total.

Observations

- Resistance to blight, fusarium
- Resistance to drought
- Growth of wheat plant
    - Seed head
    - Strength of wheat shaft
    - Lodging
- Days to maturity of grain head

Research Expense Budget

Prices are approximate; NA or in-kind for any materials that you already own or have access to. Please indicate if you intend to give any of the supplies to EFAO's Tool Library for others to use after you are finished with them.

Material	Quantity	Unit	Total Cost	EFAO's Tool Library (Y/N
Grain seed	140 lb/acre @ $300	55% acre*	$165	N
Basalt rock mineralization, Huplaso	1 tonne per acre @ $640/tonne	27.5% acre*	$176	N
35-100-1--NPK plus 10% sulphur	$795.00/tonne	55% acre*	$437.25	N
Total			**$778.25**	

24,000 square feet / 1 acre

Research Calendar

Time	Task	Action Item
Mid May	Seeding	Sarah will email
Late August	Harvest	Sarah will email

Deadline for data, progress report and photo submission

October 15, 2019

Memorandum of Understanding

Please refer to efao.ca/research-mou for Memorandum of Understanding.

Acknowledgements

We thank members of the Advisory Panel, Jason Hayes, Matt Jones, Ken Laing, Annie Richard, Darrell Roes, Steven Wolgram and Dr. Ralph Martin, for their thoughtful input that helped guide the design of this trial. We also thank Peter van Straaten for his help with basalt recommendations.

Funding

Funding for this project was made possible by support from the Ontario Trillium Foundation, an agency of the Government of Ontario, and Robert and Moira Sansom Ideas Foundation, a fund within London Community Foundation.

The Robert and Moira Ideas Foundation,
a fund within the

Ontario Trillium Foundation
Fondation Trillium de l'Ontario
An agency of the Government of Ontario
Un organisme du gouvernement de l'Ontario

LONDON COMMUNITY FOUNDATION

Crop Management Records

Task	Date	Rate	Notes
Planting			
Basalt amendments			
Fertilization			
Harvest			
Other: _____			
Other: _____			
Other: _____			

Other management notes and dates:

Notes on observations about

Blight, *Fusarium*
Resistance to drought
Growth of seed head, strength of wheat shaft, lodging

Yield and Maturity Records

Days to maturity of grain head

Control	**Treatment (Basalt)**

Days to maturity of grain head

Date	**Pair**	**Plot**	**Yield (UNIT _____)**	**Notes**
	1	Control		
		Basalt		
	2	Control		
		Basalt		
	3	Basalt		
		Control		
	4	Control		
		Basalt		