EFAO 2024: Research Protocol Working Draft

Examining Potential Soil Drivers of Alfalfa Persistence

Farmer-researcher(s): Ken Laing, Orchard Hill Farm - West

Project type: Research trial

Research priorities: Pasture regeneration, Soil health

EFAO Contact: Sarah Larsen

Objective

To determine the correlation between alfalfa persistence and soil nutrient status, both in the upper soil profile and at depth.

Background

Ken has various strips of pasture that have different levels of alfalfa persisting in them, which he thinks is related to past fertility applications of micronutrients such as boron, sulphur; or general fertility.

Experimental Design

Ken will locate 5 areas in his pastures that have side-by-side areas that have received micronutrient/fertility amendments in the past and beside areas that have not.

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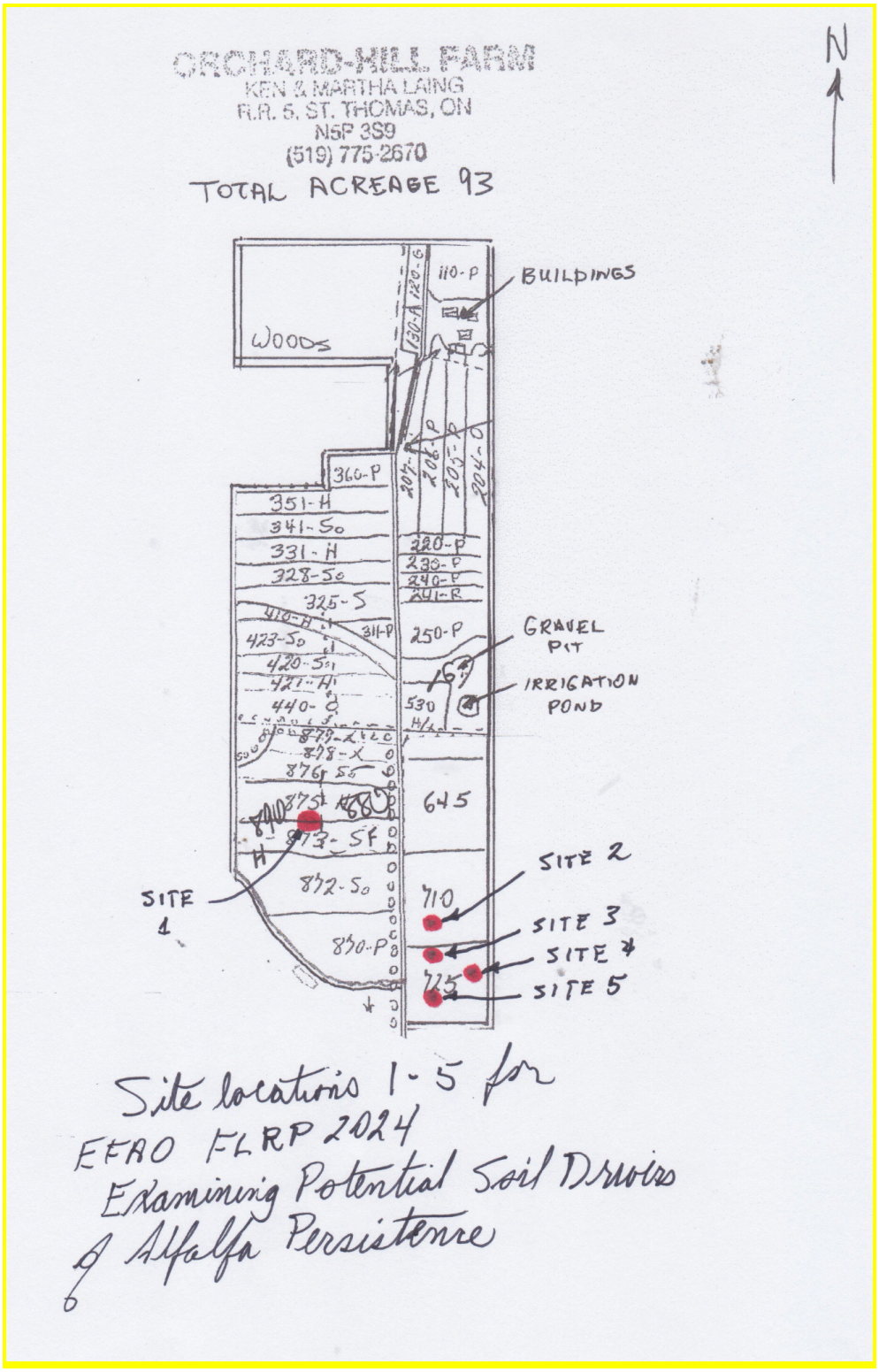
Field Layout



Statistical model

We will use a paired t-test to compare the nutrient status between areas of persistent and less persistent alfalfa.

Measurements

Soil nutrient status

%OM, pH, Ca, Mg, Mn, K, P, B, S04, Cu, Zn, Fe

- From each of those 5 paired areas (10 sampling sites total), he will take a representative soil sample (0-15 cm) and send them to A&L Laboratories for analysis of **S1B + S4**.
- He will also dig 2 pits at one site and test at 30 cm, 60 cm, 90 cm and 120 cm send them to A&L Laboratories for analysis of **S1B + S4**.

Plant nutrient status

- Ken will also take representative samples of the pasture biomass, place in a perforated sampling bag provided by A&L, and send them to A&L Laboratories for analysis of **PT1 and molybdenum**.

Stand density

- Count alfalfa crowns within 60x60cm square

Photos

- Take photos at time of sampling, and monthly of the five pairs of strips representing persistent and less-persistent alfalfa.

Social media

If you are posting about your trial on social media, please tag EFAO, @efao2.

Research Plan

Please note that if data is submitted after the submission deadline, EFAO staff cannot guarantee that your data will be analyzed and written up before the Research Symposium and/or the next growing season.

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Time	Task	Methods & Measurements or Action Item
April	Soil sampling	
At appropriate growth stage may be different at different sites because of pasture rotation	Biomass sampling	Upper ⅓ of plant at bud stage[30-40 plants]
At sampling and monthly	Photos	Take representative photos of the five paired areas.
December 31, 2024	Farmer-fee and research expense invoice with receipts for expenses	Submit invoices at this site: https://efao.ca/data/
January/February 2025	Finalize and publish research report	Work with EFAO staff to review polished research report for publication.

Staff check-ins

End of April and August 1st.

Materials

Please list all materials, supplies and equipment that will be reimbursed for this project. If possible, please also indicate a short-list of any in-kind materials, supplies and equipment that you will use.

Material	Unit	Quantity Required	Total Cost*	Note
S1B + S4 soil test	$26.50	10	$260.50	0-15 cm
S1B+S4 soil test	$26.50	8	$212.00	2x 30cm, 60cm, 90cm and 120cm
PT1+ Molydenum	$35.30 +Moly	10	$300-ish	

Total				

Farmer-fee

Farmer-fees for this project are $1000 in total. You are eligible for 50% ($500) for implementing the trial, and 50% ($500) for submitting data and photos. EFAO staff will be in touch in the fall with invoicing instructions and deadlines. If you decline, cancel, or defer the trial, you also forfeit the payment.

Memorandum of Understanding

Please fill out the MOU at https://airtable.com/appPSElrt17OMWXia/shrgHQSEj7yONdGSm.