

#### Farmer-Researchers:

- Paul DeJong**, Ventry Hill Farm, Grey County  
**Ken Laing**, Orchard Hill Farm, Elgin County  
**Tony McQuail**, Meeting Place Organic Farm, Huron County

#### Research Question: *To what extent are soil health tests reproducible and sensitive to practices on ecological farms?*

It is widely recognized that standard soil tests often don't reflect the fertility or production potential on ecological farms. So, the question remains: what soil tests help ecological farmers assess whether different farming practices improve soil health (i.e. soil structure, biology and carbon storage)? This project will compare different soil tests from farm fields and natural reference sites (e.g. fence row, prairie, etc.) to test their reproducibility (how similar are replicated samples?) and sensitivity (how well does a soil test differentiate between fields?)

#### Farmer-researchers will:

- Take photos throughout the project
- Keep in contact with EFAO with updates and questions
- Establish and conduct experiment as outlined in Protocol below
- Complete farmer-led research program training and surveys
- Present at the Farmer-led Research Meeting in Kingston, November 29-30
- Maintain current membership in EFAO

#### EFAO will:

- Organize the collection and shipping of soil samples
- Conduct training program
- Help set up Research Protocol, write and publish Protocol
- Help analyze data, write and publish Research Report
- Reimburse one night's hotel stay for the Farmer-led Research Meeting in Kingston, November 29-30

#### Research Protocol & Data Collection

- In early summer (late June/early July), collected replicate soil samples following Experimental Design (page 2)
- Take dummy core (discarded soil core) between sites
- Store soil on ice or refrigerator
- Hand homogenize soil and divide into two bags for shipment to Ward Laboratories and Cornell Soil Health Test Laboratory
- Ship samples in cooler with freezer packs and appropriate permit and sample information

#### Experimental Design - continued on Page 2

#### With support from:



#### Contact:

Sarah Hargreaves, sarah@efao.ca, cell (226) 582-0626

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**Experimental Design:** At each field, haphazardly choose 10 representative sites from which to sample. At each of the 10 sites, take 5 soil cores (2.2cm diameter x 15cm length) and place into 5 pre-labeled bags. For each field, this results in 5 replicate samples (bags) each with 10 cores taken at the same 10 sites.

### Paul DeJong

**Fields:** **1)** Hay field with historically higher yields; **2)** hay field with historically lower yields; **3)** fence row adjacent to hay field with higher yields (5 replicates \* 10 cores \* 3 fields = 150 cores in 15 bags)

**Tests:** Haney soil test, wet aggregate stability, active carbon

### Tony McQuail

**Fields:** **1)** Hay field with historically higher yields; **2)** hay field with historically lower yields; **3)** fence row at hay field with higher yields (5 replicates \* 10 cores \* 3 fields = 150 cores in 15 bags)

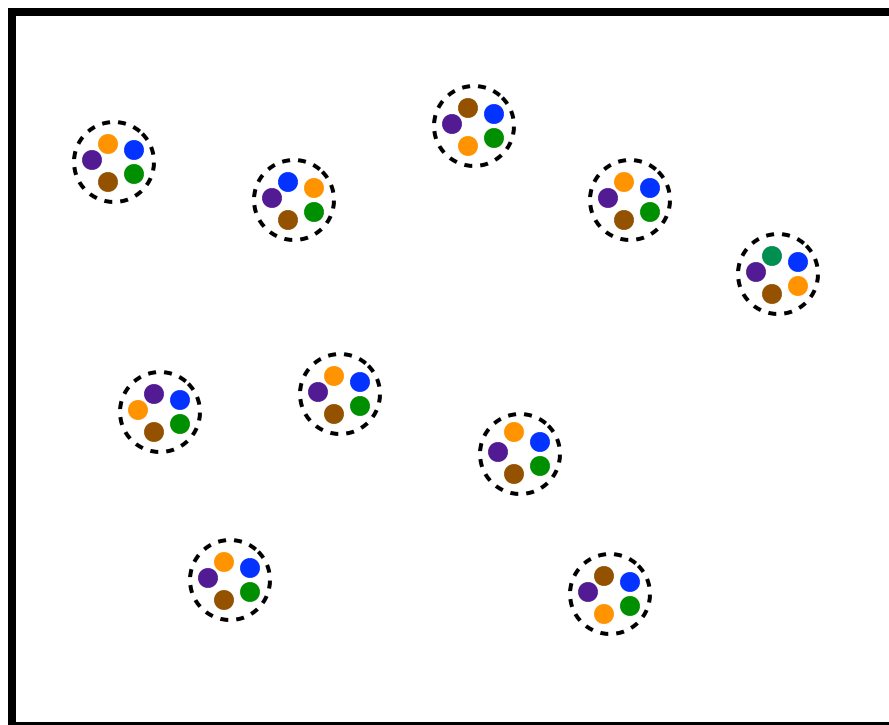
**Tests:** Haney soil test, wet aggregate stability, active carbon

### Ken Laing



**Fields:** **1)** Organic vegetable field with high production value; **2)** adjacent fence row ((5 replicates \* 10 cores \* 2 fields = 100 cores in 10 bags)

**Tests:** Phospholipid fatty acids, Haney soil test, wet aggregate stability, active carbon

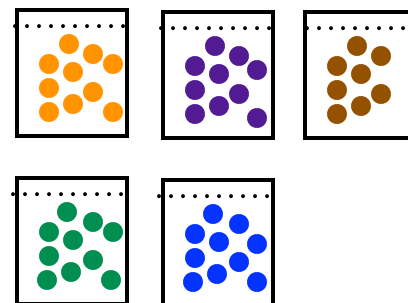
**Example field: hay field**



### LEGEND

-  Haphazardly chosen site
-  etc. Soil core

**5 replicate bags with 10 cores each.** Each bag will be analyzed for the tests specified above.



This is repeated at each field and farm, for a total of 40 bags with composited samples:  
(3 sites \* 2 farms + 2 sites \* 1 farm) with 10 core each