

Background and Objectives

Part of the national Agricultural Climate Solutions – Living Labs program, the BC Living Lab collaborates with local producers to improve farming practices, reduce greenhouse gas emissions, and sequester soil carbon through the implementation of several priority beneficial management practices (BMPs).

The objectives were to:

1. Increase adoption of tested BMPs.
2. Understand barriers to adoption.
3. Quantify the climate mitigation effects.

Three Trials in 2023

- ❖ Compost application in potatoes (four fields).
 - ❖ Compost was applied to a 5-acre area of the field and compared to a standard grower practice in the rest of the field.
- ❖ Split nitrogen application in potatoes (one field).
 - ❖ Nitrogen application was split with 50% applied at planting and 50% applied at hilling on 10 acres, compared to a standard practice of applying all required nitrogen at planting.
- ❖ Winter cover cropping in peas (three fields).
 - ❖ A winter cover crop was planted with 2-2.5 acres of the field left fallow for comparison.

Methods

- ❖ Data collected:
 - ❖ Soil samples for all three trials.
 - ❖ Petiole samples and yield assessments for compost and split nitrogen trials.
 - ❖ Ground cover assessments for the cover crop trial.

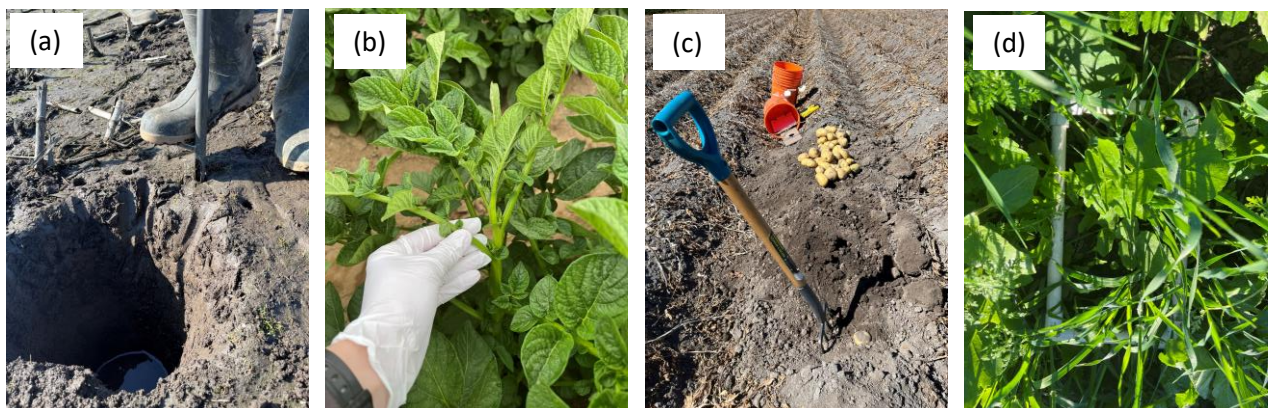


Figure 1. Pre-planting baseline soil sampling for compost trial (a), petiole samples (b), yield assessments (c), and ground cover assessments (d).

Results

- ❖ Compost trial:
 - ❖ Three out of four fields had increased yield where compost was applied compared to standard practice; difference ranged from 1.04 to 3.13 tons/ac.
 - ❖ For petiole samples taken across all four fields, 70% indicated a higher level of potassium (K) in the compost-treated area.
 - ❖ For all fields, soil organic matter (SOM) in the compost treatment increased more through the season.
 - ❖ Split nitrogen trial:
 - ❖ Higher yield in the split nitrogen area compared to standard practice; extrapolated to 25.9 tons/ac in split nitrogen compared to 22.43 tons/ac in standard practice.
 - ❖ Petiole nitrate levels were slightly higher in the split nitrogen area for most of the sampling period.
 - ❖ Post-harvest nitrate was higher in the split nitrogen area (158.0 kg/ha) compared to area where all nitrogen was applied at planting (113.1 kg/ha).
 - ❖ Cover cropping trial:
 - ❖ Cover cropping provided high ground cover (up to 100%) compared to areas left fallow.
 - ❖ Soil nitrate was noticeably lower in areas that were cover cropped, with a decrease in nitrate of 60, 59, and 22 kg/ha in each of the three fields.
 - ❖ Field-specific results were shared with the participating growers to provide an overview and assist with management decisions.
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Preliminary Conclusions and Next Steps

- ❖ These results are observational, and so the focus is on trends. These trials will be repeated over the next several seasons to continue to evaluate those BMPs and their effect on yield and other parameters.
 - ❖ 2023 results summary:
 - ❖ Potato yield and SOM tended to be higher in the areas where compost was applied.
 - ❖ Potato yield and post-harvest nitrate was higher in the split nitrogen area than the standard practice area.
 - ❖ Soil nitrate post-establishment of the cover crop was considerably lower in areas that were cover-cropped.
 - ❖ Refining petiole and soil sampling methodology and increasing grower and field participation will contribute to the continued success of this project in future.
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