Mount Vernon

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Two Years In

In the 2022-2023 fiscal year, the Mount Vernon LTARE completed its second cropping season, including the harvest and yield analysis of all crops in the four-year rotation, and began the third cropping season. Soil sampling and analysis for baseline bulk density measurements were completed in fall 2022 on plots that were not sampled in 2021 (bulk density is sampled after harvest during the grain phase of the rotation). All baseline samples have been analyzed for soil health parameters, except for aggregate stability, which is being held until analysis equipment arrives.

Graduate student Paul Martinez has been analyzing intact soil cores to measure soil water holding capacity, through soil moisture release curves, and soil saturated hydraulic conductivity, a proxy for water infiltration. Soils have also been analyzed for carbon pools, microbial biomass through phospholipid fatty acid analysis, and soil pH and nutrient levels. All baseline measurements will allow us to assess change over time.

We have continued to iterate and improve our record keeping protocols to track all inputs to the systems that will then be used for partial enterprise budget development.

In early spring of 2023, a series of three meetings were held with key groups interacting with the LTARE: the field management team, collaborating researchers, and the stakeholder advisory committee. The first meeting (February 20, 2023) discussed the timelines, protocols, and record keeping for key field management and sampling operations that would happen during the 2023 season.

Barley Harvest, August 2022

Building Capacity

On March 27, 2023, current and new collaborating researchers representing weed science, entomology, plant pathology, soil science, and economics, came together to discuss systematic research questions and plans for the coming year.

On March 31, 2023, a meeting of the stakeholder advisory committee, representing the potato, dairy, bulb,

Blog post

Read, "What does it take to start a long-term experiment?"

Blog post

Read, "How can we improve soil health in potato cropping systems?" in the Soils Matter blog by the ASA-CSSA-SSSA.

Audience reach: 189,935 (Mar 2023)

vegetable seed, and agronomic consulting industries, was held to discuss outcomes from the 2022 season and to get feedback on priorities for satellite "sandbox" trials, which are short-term experiments that will feed into for the main long-term experiment. Based on the feedback of this committee, a laboratory incubation was initiated to quantify nitrogen mineralization from soil organic matter in the plots that are planted to a perennial grass-clover cover crop between potato crops.

Plots were sampled in June 2023 for analysis of soil microarthropods, nematodes, and microbial communities, to assess the impacts of the systematic treatments on soil biological diversity and community composition.

In May 2023, a $10 million grant proposal was submitted to the USDA NIFA Specialty Crops Research Initiative program with Deirdre Griffin LaHue as co-PI that will leverage the Mount Vernon LTARE to be able to more thoroughly investigate the impacts of potato cropping system management on soil health functions, potato yield and quality, and economic outcomes.

Field Days and Tours

- Tour to participants in the annual meeting of the USDA NIFA Soil to Society project including the members of the stakeholder advisory team and project research team. The LTARE is being leveraged for additional research conducted under this grant. ~20 participants. June 30, 2022

- Tour to WSU Crop and Soil Science graduate students as part of a statewide agricultural tour. 15 participants. May 25, 2023

This site in Mount Vernon was the first WaSHI LTARE site to be established.