



Regenerative and Sustainable Agriculture for Climate Change Adaptation and Carbon Sequestration: Rebuilding Soil Health and Increasing Crop Productivity of Canadian Potato Production Systems



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Regenerative and sustainable agricultural practices (RSAPs) are being studied in several locations across Canada to mitigate soil degradation and loss of biodiversity caused by intensive farming practices and ensure long-term viability of potato farms.

At the start of the 2024 growing season, trials at four experimental hubs and 15 flagship farms were established and were maintained throughout the year. Researchers took samples of soil, plant and air throughout the growing season. In the fall, samples were processed to measure soil physio-chemical properties, plant biomass and yield, soil biodiversity and greenhouse gas emissions.

Trials conducted at McCain Foods Farm of the Future in New Brunswick are showing that crop diversity correlates positively with potato yield. There were no increases in soil-borne diseases noted with an increase in plant diversification among the trials in the short term. Preliminary results have shown increasing plant diversity in potato cropping systems raised marketable potato yields and crop resiliency.

KEY TAKEAWAYS:

- Samples from four experimental hubs and 15 flagship farms were processed to measure soil physio-chemical properties, plant biomass and yield, soil biodiversity and greenhouse gas emissions.
- Trials at McCain Foods Farm of the Future have found no increases in soil-borne diseases among the trials in the short term when increasing plant diversification. Preliminary results have shown increasing plant diversity in potato cropping systems raised marketable potato yields and crop resiliency.



Plot preparation for planting cash crops at Simcoe, Ont. crop rotation plots. Photo: Narges Atabaki





Plots after cultivation with potatoes, cash crop and green manure in Simcoe, Ont.

Photo: Narges Atabaki



Biofumigation preparation using rototiller for mixing the topsoil and chopped mustard before compacting in Simcoe, Ont.

Photo: Narges Atabaki



Biofumigation preparation using a mower for chopping the mustard plants at Simcoe, Ont. crop rotation plots. Photo: Narges Atabaki



Plots after biofumigation practices in Simcoe, Ont.

Photo: Narges Atabaki

