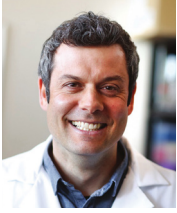




Increasing Field Vegetable Yield and Resilience to Abiotic and Biotic Stresses through Soil Microbial Engineering



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Through soil microbial engineering, this research activity is working to reduce the amount of chemical fertilizers and pesticides needed to produce vegetable crops. Soil-microbial-based engineering is being used to improve field vegetable yield, increase resilience to extreme weather events and plant diseases, and reduce fertilizer and pesticide inputs/runoff. New biological alternatives to chemical crop inputs will be provided through the research. This will help boost plant health and crop yields, and discover biofertilizers and biopesticides which are suitable for sustainable farming practices.

Emerging microbial-based technologies are being developed and reviewed to address crop-input-use efficiency. This research activity will support the development of new microbial inoculants and microbial-based inoculants to be used on vegetable crops instead of chemical fertilizers and pesticides.

KEY TAKEAWAYS:

- Develop novel microbial inoculants to reduce farm inputs without impacting yields.
- Make field vegetable yields better able to fight climate change effects and extreme weather events.
- Develop and transfer monitoring tools to support sustainable ag and integrated pest management (IPM).
- In the 2023–24 growing season, plant-growth-promoting rhizobacteria were found to increase lettuce yield by more than 15 per cent in both greenhouse and field conditions. Lettuce yields were maintained with 25 per cent less synthetic nitrogen fertilizer used, and some of these bacteria were also able to suppress growth of important pathogens impacting vegetables when tested under in-vitro conditions.

