



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

LEAD RESEARCHER

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This research activity is working to develop, validate and implement bacterial inoculum to improve field vegetable yield and plant diseases while reducing fertilizer and pesticide inputs. The research team has developed an automated and standardized protocol to quantify growth inhibition on artificial media. They have completed the screening of their bacterial strains collection against many fungal and oomycetes pathogens. Preliminary assays to test the bacterial strains against plant pathogens in-planta have begun.

The research team has found biocontrol potential after finishing screening of a large collection of bacterial strains. Three highly promising bacterial strains were selected and tested in-vitro against 16 economically important plant pathogens. It was discovered the bacteria strain B21-024 significantly increased the yield of lettuce in the early stages of plant growth.

Field trials in Agassiz, B.C. are testing three plant growth promoting rhizobacteria (PGPR) strains in lettuce and broccoli. Field trials were started in Québec in collaboration with lettuce growers to benchmark three PGPR strains in lettuce production. PGPRs and biological control agents can reduce the risks associated with pesticide use.

The research team is planning to complete a first cycle of in-planta trials to assess the performance of their top three bacterial strains against onion pathogens (Stemphylium and leaf blight), lettuce pathogens (Pythium, Rhizoctonia and Sclerotinia) and pepper pathogens (Phytophthora capsici).

KEY TAKEAWAYS:

- The bacteria strain B21-024 can significantly increase the yield of lettuce in the early stages of plant growth.
- Field trials are happening in B.C. and Quebec to test three PGPR strains. PGPRs and biological

control agents can reduce the risks associated with pesticide use.

- The research team is planning to complete a first cycle of in-planta trials to assess the performance of their top three bacterial strains against onion, lettuce and



The bacterial strain Pythium.



The bacterial strain Botrytis.



A field trial of lettuce in Sainte-Clotilde Experimental Farm in Quebec.

Photos: Melanie Cadieux

