

BiOWiSH® Crop Liquid

Prince Edward Island Potato Demonstration Trials Summary



Executive Summary

BiOWiSH Technologies partnered with Genesis Crop Systems and engaged six growers to host on-farm demonstration trials. The trials were conducted to assess the yield effects of BiOWiSH® Crop Liquid added to liquid starter fertilizer to create an Enhanced Efficiency Fertilizer (EEF) for potatoes in the Canadian province of Prince Edward Island (PEI).

The six demonstration trials compared two treatments:

- Control, Standard Fertility Program
- Control, Standard Fertility Program + BiOWiSH® Crop Liquid

The study determined that the addition of BiOWiSH® Crop Liquid optimized marketable yield potential by improved nutrient uptake in potato by 17 cwt per acre (1.91 MT/ha) on average across the six on-farm demonstration trials.

Background

About BiOWiSH Technologies

Headquartered in Cincinnati, Ohio, BiOWiSH Technologies, Inc. is a global provider of biotechnology solutions. As a leader in the agricultural market, we help farmers increase crop production sustainably, safely, and cost effectively. Our revolutionary BiOWiSH® Crop Liquid is a blend of proprietary microbial cultures that can be coated onto dry fertilizer or mixed with liquid fertilizers to create an enhanced efficiency fertilizer. BiOWiSH® endophytic *Bacillus* deliver soil nutrients to crops through the rhizophagy cycle creating a symbiotic relationship between the plant and soil microbes. This helps farmers achieve consistent results across a broad range of operating conditions, climates, and environments. By unifying nature and science, BiOWiSH reinvents the way food is grown. For more information, visit biowishtech.com.

BiOWiSH® Crop Liquid



- Optimizes yield potential by improved nutrient uptake
- Increases nutrient use efficiency and supports nutrient uptake
- Optimizes soil conditions for greater root mass
- Improves soil conditions for increased plant vigor
- Enhances beneficial microbes in the rhizosphere

Available Size

- 264 gal/1000 L

About Genesis Crop Systems

Genesis Crop Systems (GCS) began operations in 2012. The primary GCS business model involves working in a grower group environment to identify current constraints to potato crop yields and profitability, and subsequently identify, evaluate and implement potential solutions that may help alleviate these challenges. Work to date has focused primarily on areas of soil health/crop rotation, seed physiology and performance, and crop nutrition strategies. GCS also provides support to peripheral projects for various companies/entities including the Canadian Fertilizer Institute 4R Initiative, PEI Potato Board Research Projects, Bayer Crop Sciences, DuPont Canada, Engage Agro, EZ-Gro, Island Lime, Premier Tech, Real Potatoes Ltd. and others.

Objectives

The objective of each demonstration trial was to evaluate the performance of BiOWiSH® Crop Liquid mixed with liquid starter fertilizer delivered at planting for potato as compared to the Control.

Implementation Program

GCS facilitated six on-farm demonstration trials where BiOWiSH® Crop Liquid was mixed into starter fertilizer and delivered at the manufacturer's recommended rate. The on-farm trials were located across PEI, Canada and conducted as farmer side-by-sides with a single planter strip for a Control immediately adjacent to the BiOWiSH® treatment. BiOWiSH® Crop Liquid was mixed into the liquid starter NPK (6-24-6) on each farm, with the target application rate of 40 L/acre (10.6 gal/acre).

All other crop fertility and field management were applied per current grower standard practices for production of commercial potatoes on PEI.

Table 1. Treatments, Fertilizers, and Application Timings

Treatment	Application Rate L/acre [gal/acre]	Application Phase
Control	40 [10.6]	In-furrow at planting
Control + BiOWiSH® Crop Liquid*	40 [10.6]	In-furrow at planting

*BiOWiSH® Crop Liquid used at manufacturer's recommended rate.

Results

All tubers were sized according to current CFIA Canada No. 1 grading standards to assess marketable yield proportions, and a composite sample from each treatment at each field was tested for specific gravity (SG) using the weight in air/weight in water method. It is an important indicator of quality, especially for processing. SG values were similar among both Control and Control + BiOWiSH® Crop Liquid treatments averaged across the sites. [Learn more about CFIA Grade Canada No. 1 standards here \(Section 177-179\).](#)

Table 2. Treatments and Specific Gravity

Treatment	Specific Gravity
Control	1.097
Control + BiOWiSH® Crop Liquid	1.100

Yield and economic parameters averaged across the six on-farm demonstration trials are presented below. The Control + BiOWiSH® Crop Liquid treatment optimized marketable yield potential by improved nutrient uptake by 5.1% on average. Net Income and Profit Change were averaged based on local input and crop values at the time of planting and harvest in Canadian Dollars (CAD) and converted to USD, respectively.

Table 3. Yield and Economics

Treatment	Yield cwt/acre [MT/ha]	Yield Increase cwt/acre [MT/ha]	Yield Increase (%)	Net Income USD/acre [USD/ha]	Profit Change USD/ha [USD/acre]
Control	333 [37.32]	-	-	4,029 [9,956]	-
Control + BiOWiSH® Crop Liquid	350 [39.23]	17 [1.91]	5.1	4,233 [10,460]	204 [504]

*Calculations for conversions between imperial and metric units are based on the original source data; slight rounding differences may occur within reported publication values.

**Net income is the crop value minus the fertility program cost. It does not account for non-fertility expenses.

***Profit change is the difference between net income of the respective program and the Control.

Conclusion

BiOWiSH® endophytic *Bacillus* deliver soil nutrients to crops through the rhizophagy cycle creating a symbiotic relationship between the plant and soil microbes. This leads to optimized yield potential by improved nutrient uptake. BiOWiSH® Crop Liquid, when added to a standard potato fertility program, increased yield by 17 cwt per acre (1.91 MT/ha) on average across the six on-farm demonstration trials. Based on average crop and input cost values, this resulted in an average profit increase of \$204 USD/acre (\$504 USD/ha) for the farmers taking part in this demonstration program.



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