

BiOWiSH® Crop Liquid

Evaluation of BiOWiSH® Crop Liquid on Yield in Maize



Executive Summary

BiOWiSH Technologies partnered with a leading global fertilizer manufacturer and gCenseo as a third-party Contract Research Organization (CRO) to conduct a study to determine the effects of BiOWiSH® Crop Liquid enhanced fertilizer on maize production. The trial compared three treatments of grower's standard urea 46-0-0:

- 100% Urea (Control)
- 100% Urea (Control) + BiOWiSH® Crop Liquid
- 90% Urea (Reduced Control) + BiOWiSH® Crop Liquid

This trial was performed as part of a series of trials in Australia. The study determined that BiOWiSH® Crop Liquid increased yield when coated onto the urea fertilizer used in the grower's standard fertilizer management program (Control) and with a reduced rate of fertilizer, which led to higher profits.

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 can be coated onto dry fertilizer or mixed with liquid fertilizer to create an enhanced efficiency fertilizer that optimizes yield potential, expresses plant vigor and improves soil productivity 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
- Increases nutrient availability
- Enhances root development
- Improves plant vigor
- Enhances native microbial activity in the soil
- Improves soil productivity

Available Sizes

- 50 gal/190 L
- 264 gal/1000 L

About gCenseo

gCenseo has been providing independent agricultural research in evaluation for both crop and non-crop products in Queensland, Australia. Additionally, they provide scientifically based recommendations as part of a consultancy service as well as market research and assurance services.

Objectives

The objective of this research study was to determine the effects of BiOWiSH® Crop Liquid technology, manufactured in the USA by BiOWiSH Technologies, Inc., on maize production when added to a fertility program common to the production area in Queensland, Australia. The focus was on total harvestable yield in maize at two different urea rates when coated with BiOWiSH® Crop Liquid.

Implementation Program

This study was conducted as a replicated trial under a randomized complete block trial design with five replications. The trial was planted as a double skip configuration to conserve field moisture. The variety planted was “Buster” and the planting rate was 65,000 plants/ha (26,316 plants/acre). Pest and disease management techniques were independent of the study and performed as needed.

In this trial, the common regional fertility program included 100 kg/ha (89.2 lbs/acre) of urea fertilizer (100% Control). This program was compared to the same program coated with BiOWiSH® Crop Liquid as well as a reduced rate of urea at 90 kg/ha (80 lbs/acre) coated with BiOWiSH®. The urea was applied as a sidedress application.

Treatment	Application Rate kg/ha [lbs/acre]	Application Phase
100% Urea (Control)	100 [89]	Sidedress
100% Urea (Control) + BiOWiSH® Crop Liquid	100 [89]	Sidedress
90% Urea (Reduced Control) + BiOWiSH® Crop Liquid	90 [80]	Sidedress

Results

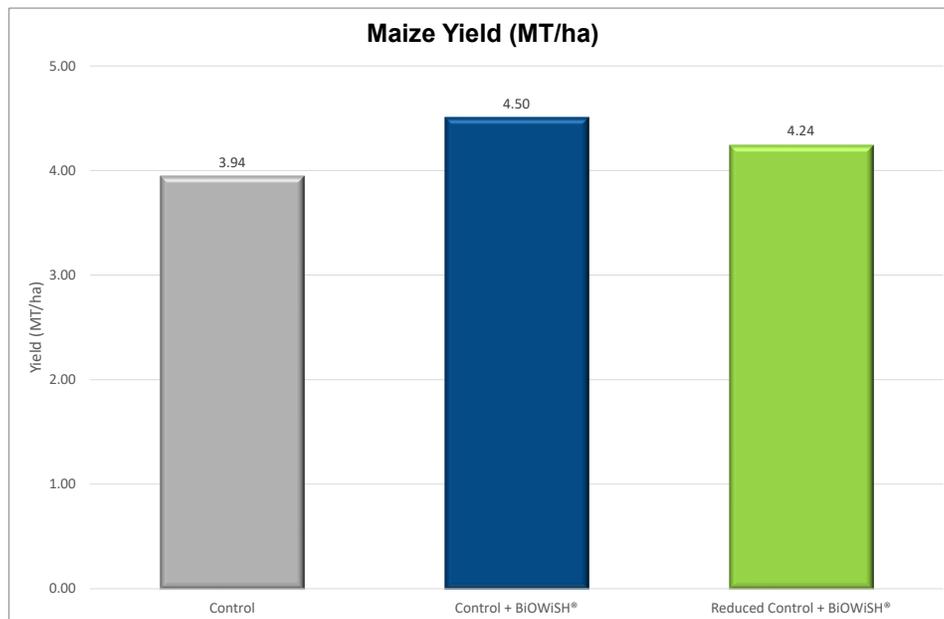
Normalized Difference Vegetation Index (NDVI)

Normalized Difference Vegetation Index (NDVI) ratings were collected 14 and 28 Days After Application (DAA). NDVI data indicated a significant greening response after 28 days of BiOWiSH® (0.760) in comparison to the conventional urea program (0.722), when urea was applied at 100% of the recommended rate.

Treatment	NDVI 14-DAA	NDVI 28-DAA
100% Urea (Control)	0.708	0.722
100% Urea (Control) + BiOWiSH® Crop Liquid	0.730	0.760
90% Urea (Reduced Control) + BiOWiSH® Crop Liquid	0.712	0.704

Yield

When compared to the Control, the 100% BiOWiSH® coated urea treatment had an increase yield of 0.56 MT/ha (0.25 tons/acre) and the 90% BiOWiSH® coated urea treatment had an increase yield of 0.30 MT/ha (0.13 tons/acre).



Economics

Both BiOWiSH® Crop Liquid treatments exhibited higher yields of maize compared to the Control in this study. Based upon the yield increase of 14.21%, net income increased by 14% and profit increased by \$127 USD/ha (\$52 USD/acre). The Reduced Control + BiOWiSH® showed that profit increased by \$72 USD/ha (\$29 USD/acre).

Treatment	Yield MT/ha [tons/acre]	Yield Increase MT/ha [tons/acre]	Yield Increase (%)	Net Income USD/ha [USD/acre]	Profit Change USD/ha [USD/acre]
100% Urea (Control)	3.94 [1.76]	-	-	852 [345]	-
100% Urea (Control) + BiOWiSH® Crop Liquid	4.50 [2.01]	0.56 [0.25]	14.21	979 [396]	127 [52]
90% Urea (Reduced Control) + BiOWiSH® Crop Liquid	4.24 [1.89]	0.30 [0.13]	7.61	924 [374]	72 [29]

*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® coated urea 46-0-0 was evaluated on maize as a sidedress application at two urea application rates. In-season measurements showed that there was a significant increase in plant NDVI 28 days after application with BiOWiSH® treated urea where the rate of urea was 100% of the grower's standard.

The study determined that the BiOWiSH® Crop Liquid enhanced fertilizer programs increased yield over the Control by 14.21% in the 100% BiOWiSH® treatment, and it also increased yield by 7.61% in the reduced rate urea. The improved yield increased profitability of maize up to \$127 USD/ha (\$52 USD/acre) over the Control in the 100% BiOWiSH® treatment, and up to \$72 USD/ha (\$29 USD/acre) in the reduced urea rate treatment. The yield increases demonstrate the addition of BiOWiSH® Crop Liquid to the common regional fertility program offers a significant return on investment opportunity to the farmer.



BiOWiSH® is a registered trademark of BiOWiSH Technologies International, Inc.

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