

BiOWiSH[®] Crop Liquid

Evaluation of BiOWiSH[®] Crop Liquid on Forage Maize in New South Wales, Australia



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 coated onto urea to create an Enhanced Efficiency Fertilizer (EEF) on forage maize production in the Riverina region of New South Wales, Australia.

The trial compared two treatments:

- Control, Standard Urea Fertility Program
- Control + BiOWiSH[®] Crop Liquid

This trial was performed as part of a series of trials in Australia. The results indicate that the addition of BiOWiSH[®] Crop Liquid optimized yield potential by improved nutrient uptake for the grower's maize program. In this study, a 19.4% (3.73 MT/ha, 1.66 tons/acre) yield increase was observed for the Control + BiOWiSH[®] treatment, resulting in higher profit.

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 gCenseo

gCenseo provides independent agricultural research in evaluation for crop products in Australia. Additionally, they provide scientifically based recommendations as part of a consultancy service as well as market research and assurance services.

Objectives

The purpose of this study was to evaluate the performance of BiOWiSH® Crop Liquid coated onto urea as an Enhanced Efficiency Fertilizer (EEF) compared to the Control fertility program for forage maize in New South Wales, Australia. The evaluation focused on forage maize total harvestable yield and economic benefits for the farmer.

Implementation Program

gCenseo conducted the study comparing two treatments, the Control program and the Control + BiOWiSH® program. The Control is a standard regional fertility program consisting of urea applied three days prior to planting at the rate of 270 kg/ha (241 lbs/acre). BiOWiSH® Crop Liquid was applied to the urea at the manufacturer's recommended rate for the Control + BiOWiSH® fertility program. The treatments were planted with "Pioneer P1467" at a rate of 85,000 plants/ha (34,413 plants/acre) in single, unreplicated treatments of 3.5 ha (8.6 acre), and then compared on the basis of total harvestable yield.

Table 1. Treatments, Fertilizers, and Application Timings

Treatment	Application Rate kg/ha [lbs/acre]	Application Timing
Control, Standard Urea Fertility Program	270 [241]	Preplant
Control + BiOWiSH® Crop Liquid	270 [241]	Preplant

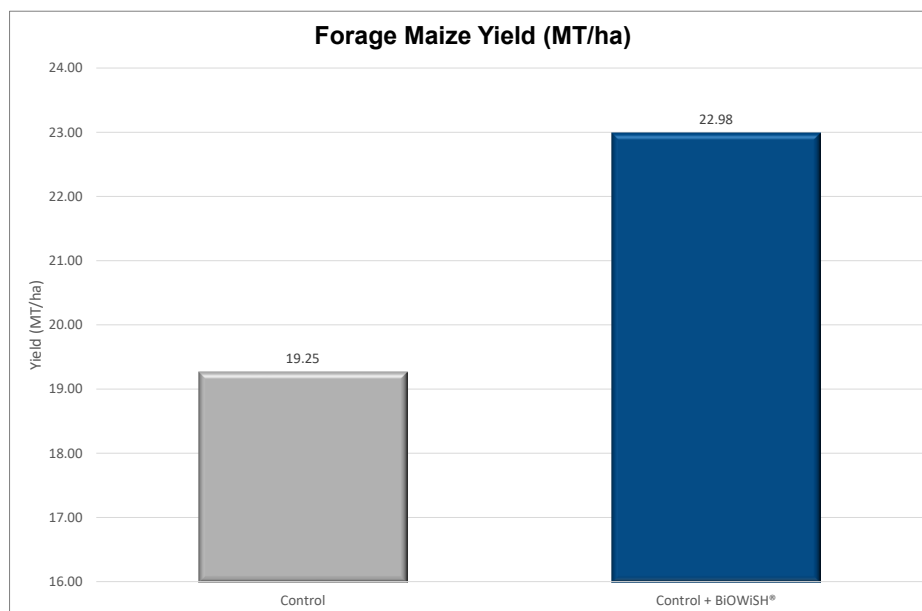
*BiOWiSH® Crop Liquid used at manufacturer's recommended rate.

Results

Yield Data

Yields were measured with weigh scales located on the haulout trailer. The results show that BiOWiSH® Crop Liquid increased yield by 19.4% over the Control.

Figure 1. Forage Maize Yield Data



*Yield in table is calculated on a "Dry Matter Basis".

Table 2. Yield and Net Income Table

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]
Control, Standard Urea Fertility Program	19.25 [8.59]	-	-	3312 [1340]	-
Control + BiOWiSH® Crop Liquid	22.98 [10.25]	3.73 [1.66]	19.4	3971 [1607]	659 [267]

*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. Together, the cycle improved soil conditions for increased plant vigor in this study. This enabled optimized yield potential by improved nutrient uptake, which led to a profit increase of \$659 USD/ha (\$267 USD/acre) for Control + BiOWiSH® treatment in this study. This demonstrates that fertilizer coated with BiOWiSH® Crop Liquid is a useful fertility management tool for farmers.



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