

BiOWiSH® Crop Liquid

DAP 57% Coated with BiOWiSH® Crop Liquid Increases Waxy Corn Yield and Profitability in China

Executive Summary

BiOWiSH Technologies engaged China's Wuding County Agronomy Technology Center in the Yunnan province to evaluate the effects of BiOWiSH® Crop Liquid coated onto DAP. The trial compared two treatments. The first treatment was a control treatment using a farmer standard fertilizer program, which consisted of DAP 57%, urea, and KCl. The second treatment was the same farmer standard program with BiOWiSH® Crop Liquid coated onto the DAP 57% fertilizer. Data suggested that fertilizing waxy corn with BiOWiSH® Crop Liquid coated DAP 57% resulted in higher average yield which positively affected net income and increased profitability.

Background

China is a large agricultural country with a vast number of distinct soil types and production environments. Agriculture plays a strategic role in the development of the national economy. BiOWiSH Technologies has conducted numerous trials on many different crops in China to illustrate the commercial effectiveness of BiOWiSH® Crop Liquid coated fertilizers. Waxy corn, which originated in China, has nearly 100% amylopectin in the endosperm, which makes it an important crop for both food (primarily Asia) and as a raw ingredient in several global industries (textiles, papermaking, and feedstuff). Because of its excellent characters in terms of starch composition and economic value as an industrial crop, it is harvested and processed wet.

BiOWiSH® Crop Liquid is a microbial biostimulant that can be added to fertilizer to create an enhanced efficiency fertilizer. BiOWiSH® Crop Liquid Technology stimulates native microbial activity and promotes root development, increasing nutrient uptake and improving plant vigor. BiOWiSH® Crop Technology is proven to enhance the effects of applied fertilizers by increasing yield and soil health.

Objectives

The objective of the trial was to determine if BiOWiSH® Crop Liquid coated at the recommend application rate onto DAP 57% would improve yield and profitability in a standard fertility program typical to this region's dryland waxy corn production.

Implementation Program

This study was conducted on a site that was idle during the winter and planted in the spring. The site had acidic sandy loam soils with medium fertility. The experiment consisted of two treatments, each having three replicates arranged in a randomized block design. Each replicate was 4.5 m wide x 6.75 m long (30.4 m²). Seed was planted 45 cm apart with a row spacing of 75 cm. Each replicate consisted of 9 rows of 20 plants per row (180 plants per replicate). Seven days before planting (Day 0), the fertilizer was applied to soil followed by planting 7 days later. The second application of fertilizer was carried out 35 days after planting followed by a third application (urea only) 54 days after planting. Table 1 shows all fertilizers and application timings:

BiOWiSH® Crop Liquid



- Improves crop yields
- Increases nutrient availability
- Enhances root development
- Improves plant vigor
- Stimulates native microbial activity in the soil
- Improves soil health

Available Sizes

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

Table 1: Treatments, Fertilizers, and Application Timings

Treatment	First Application (7 days before planting)	Second Application (35 days after planting)	Third Application (54 days after planting)	Total NPK (Units/ha)
Control	Urea – 112 kg/ha + DAP 57% – 99 kg/ha + KCl – 99 kg/ha	Urea – 148 kg/ha + DAP 57% – 39 kg/ha + KCl – 36 kg/ha	Urea – 112 kg/ha	194.58-55.2-70.74
Control + BiOWiSH® Crop Liquid coated DAP 57%	Urea – 112 kg/ha + DAP 57% – 99 kg/ha (coated with BiOWiSH® Crop Liquid) + KCl – 99 kg/ha	Urea – 148 kg/ha + DAP 57% – 39 kg/ha (coated with BiOWiSH® Crop Liquid) + KCl – 36 kg/ha	Urea – 112 kg/ha	194.58-55.2-70.74

Data collected included agronomic traits, plot yield, net income gain, and profit change. Pest and disease management techniques were implemented on site when required.

Results

Agronomic Traits

Ear height and stalk diameter were measured at 11-leaf stage, whereas ear length and ear diameter were measured after full maturity (see Table 2). In each case, 6-7 plants were selected at random from each replicate in each treatment. Waxy corn plots fertilized with BiOWiSH® Crop Liquid coated DAP 57% showed a trend of increased ear length and diameter.

Table 2: Agronomic Traits

Treatments	Avg. Ear Height (cm)	Avg. Stalk Diameter (cm)	Avg. Ear length (cm)	Avg. Ear Diameter (cm)
Control	138.0	2.3	18.9	4.9
Control + BiOWiSH® Crop Liquid coated DAP 57%	138.4	2.3	21.3	5.3

Yield and Economic Results

Plot yields and a market price at the time of the study were used to calculate net income, net income gain, and profit change (see Table 3). Data suggest that waxy corn plots fertilized with BiOWiSH® Crop Liquid coated DAP 57% showed increased plot yields by 4.72%, resulting in a net income gain of 4.64% and an increase in profit of \$303 USD/ha (\$123 USD/ac).

Table 3: Yield and Economic Results*

Treatments	Wet Grain Yield MT/ha (US tons/ac)	Yield Increase MT/ha (US tons/ac)	Yield Increase (%)	Net Income* USD/ha (USD/ac)	Net Income Gain** (%)	Profit Change*** USD/ha (USD/ac)
Control	22.26 (9.93)	-	-	\$6529 (\$2642)	-	-
Control + BiOWiSH® Crop Liquid coated onto DAP 57%	23.31 (10.40)	1.05 (0.47)	4.72	\$6832 (\$2765)	4.64	\$303 (\$123)

**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 gain 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

In this trial, BiOWiSH® Crop Liquid coated DAP 57% showed trends of increased agronomic traits associated with ear length, ear diameter, and grain yields when compared to the Control program. These factors interacted to increase net income and profitability in the Control + BiOWiSH® Crop Liquid treatment. This case study demonstrated that the addition of BiOWiSH® Crop Liquid to a waxy corn production program offers a significant return on investment opportunity to the farmer.



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