

BiOWiSH[®] Crop Technology

Sweet Corn Trial Arise Research & Discovery, Inc., USA

Background

BiOWiSH[®] Technologies partnered with Arise Research & Discovery, Inc. to demonstrate the benefits of BiOWiSH[®] Crop on early-stage growth of sweet corn crops. Testing was done from April 21 through May 19, 2014 at Arise's research greenhouse in Martinsville, Illinois. Previous testing of BiOWiSH[®] Crop products has shown success at harvest stage for lettuce, cucumber, pepper, corn, rice, melon, tomato, and several other crops.

Objectives

The objective of this case study was to determine the effectiveness of BiOWiSH[®] Crop (made in the USA) on early stage sweet corn plant growth.

Solution

BiOWiSH[®] Crop technology contains a novel consortia of metabolically cooperative microorganisms, with endogenous and exogenous enzymes, and small molecule metabolic co-factors which support both biocatalytic and metabolic activity.

BiOWiSH[®] Crop technology can be impregnated or coated onto many fertilizers and fertilizer fillers. Because BiOWiSH[®] increases yields, it can help farmers globally increase production and achieve self-sufficiency. Our agronomy products increase micronutrient uptake in plants, improve plant vigor, and stimulate microbial activity in the soil, resulting in higher crop production.

Implementation Program

Plants were grown in single rows in 6.75" by 34.5" long plastic trays which were placed on heavy wire mesh tables 38 inches above the concrete floor of the greenhouse. Seeds were spaced 6" apart. All trays received 58 lbs./ac equivalent of 11-52-0 and 92 lbs./ac equivalent of 0-0-60. Supplement heat was added as needed with a kerosene space heater. Sweet corn seeds were planted April 8, and germination checked on April 14 and April 16. Plants were watered daily. Physical parameter measurements were conducted on May 12th, 34 days after planting.

Each treatment had six plots, with each plot consisting of 18 trays.

Three treatments were included in the test design:

1. Control (no BiOWiSH[®]) = current best management practice 130 lbs. N/ac (7.8 grams UAN per tray)
2. Control + BiOWiSH[®] Crop and 10% reduced Nitrogen (7.0 grams UAN per tray)
3. Control + BiOWiSH[®] Crop and 20% reduced Nitrogen (6.2 grams UAN per tray)

Methods

Stem diameters were measured with a Performance Tool 6" Digital Caliper. Chlorophyll was measured with a Konica Minota Spad meter. Root and plant mass weights were recorded with an Ohaus HH320 scale to the nearest 0.1g. Soil tests and plant tissue analyses were conducted by Midwest Laboratories (MWL), Omaha, Nebraska.

BiOWiSH[®] Crop



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

Available Sizes

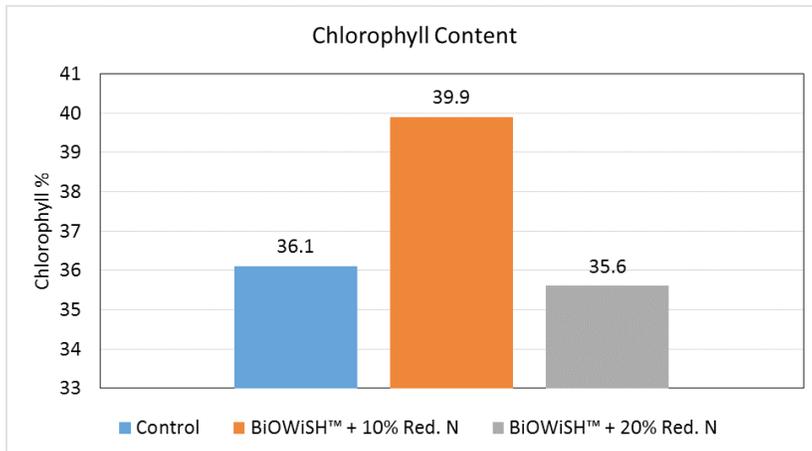
- 100g/3.5oz
- 1kg/2.2lbs
- 5kg/11lbs
- 10kg/22lbs

Results

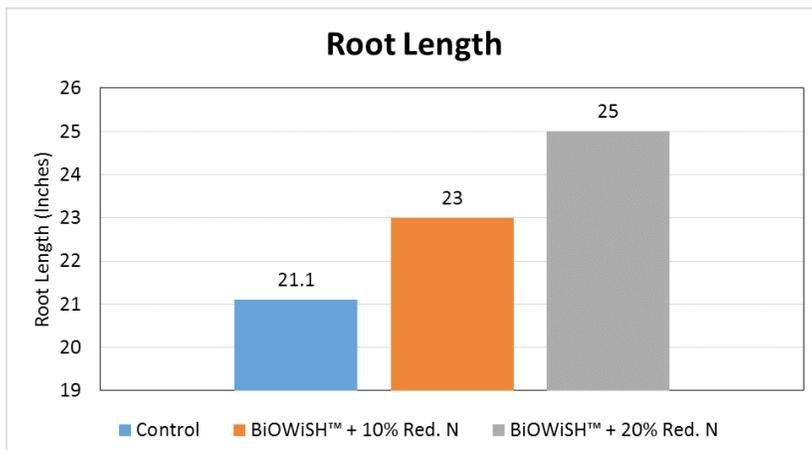
BiOWiSH® treated plants bore fruit earlier, appeared healthier, and produced higher yields than plants in the control. At the time of measurement the BiOWiSH® treated plants showed higher overall plant tissue scores (34% and 23% increase respectively), and longer root lengths (9.0% and 18.5% increase respectively) versus the control. The 10% reduced nitrogen treatment also showed higher chlorophyll content (10.5%) and stem diameter (10.3%) versus the control (common management practice for the area).

Sweet Corn 2014 Greenhouse Study Plant Analysis by MWL													
	%N	%P	%K	%Mg	%Ca	%S	%Na	Fe (ppm)	Mn (ppm)	B (ppm)	Cu (ppm)	Zn (ppm)	Average
Control	3.03	0.11	4.05	0.39	0.72	0.2	0.017	95	42	52	6	21	na
BiOWiSH® + 10% less N	3.02	0.19	4.58	0.48	1.05	0.28	0.011	114	59	121	7	29	na
BiOWiSH® + 20% less N	3.09	0.21	4.67	0.46	0.99	0.28	0.011	93	48	74	7	29	na
Control	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
BiOWiSH® + 10% less N	100%	173%	113%	123%	146%	140%	65%	120%	140%	233%	117%	138%	134%
BiOWiSH® + 20% less N	102%	191%	115%	118%	138%	140%	65%	98%	114%	142%	117%	138%	123%

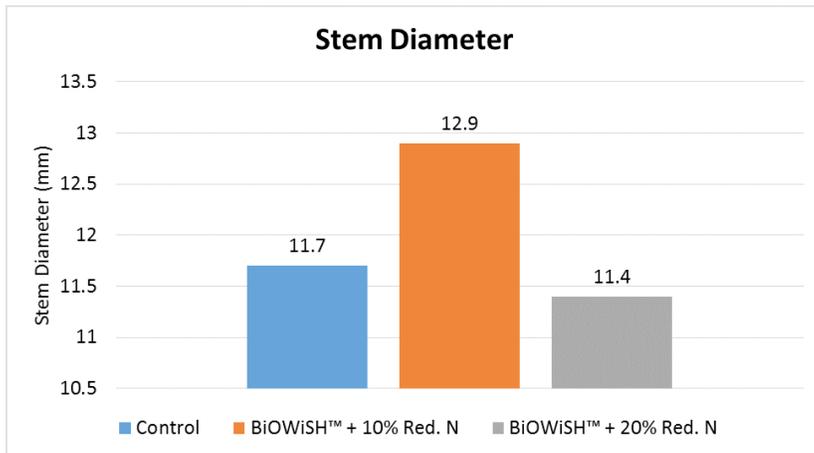
The BiOWiSH® treatments averaged higher levels of P, K, Mg, Ca, S, Mn, B, Cu, and Zn versus the Control. It appears that using 10% to 20% less nitrogen than the control allows the plant to increase its use of many other key nutrients particularly P, Ca, S, Mn, B, and Zn which are key to plant structure and protein manufacturing, without sacrificing any of its nitrogen requirements. The overall nutrient percentages for the Control (100%), BiOWiSH® +10% less N (134%), and BiOWiSH® + 20% less N (123%) illustrated the combined nutrient uptake impact.



The data showed a trend toward higher Chlorophyll content for the BiOWiSH® + 10% reduced Nitrogen leg.



Both BiOWiSH® treatments showed increased root lengths relative to the control.



The BiOWiSH® + 10% reduced Nitrogen leg showed increased stem diameter versus both the control and the BiOWiSH® + 20% reduced Nitrogen leg.

Conclusion

Compared to the control, less nitrogen than the traditional best management practice combined with BiOWiSH® Crop provided the overall best results in early sweet corn plant growth stages. At these early plant growth stages, the biology in BiOWiSH® Crop demonstrated the ability to improve nitrogen management in sweet corn promoting the development of other nutrient building blocks. BiOWiSH® Crop application rates vary by management practice and growing environment. The ability to reduce nitrogen application early in sweet corn plant development combined with maintaining or improving production offers a significant return on investment opportunity to the grower.



Contact us:
 agronomy@biowishtech.com
 +1 312 572 6700
 biowishtech.com

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

V 3.0-T

Biological Help for the Human Race®