

Hydroponics

CropKing, USA: Extended Lettuce Trials

Background

After initial success with using BiOWiSH™-Hydroponic on lettuce plants at the CropKing greenhouse in Ohio, BiOWiSH Technologies and CropKing decided to conduct additional testing.

CropKing specializes in the business of controlled environment agriculture and hydroponics and has been in business for 30 years. The company manufactures and distributes commercial facility structures, hydroponic growing systems, supplies and equipment throughout the United States, Canada, Mexico, Europe and the Caribbean.



Objectives

The main goal of this validation was to obtain laboratory data to supplement the anecdotal evidence that BiOWiSH™-Hydroponic increases yields, nutrient levels and head size of lettuce grown in greenhouse environments.

Solution

BiOWiSH™-Hydroponic was chosen for the trials because of past successes using the product.

Developed for the protected cropping and hydroponics industry, BiOWiSH™-Hydroponic is a revolutionary water treatment solution that enhances microbial activity in crop production, helping to increase nutrient availability and improve plant vigor. It also prevents sludge build-up and problematic scaling in dripper lines, micro-tubes and Nutrient Film Technique (NFT) gully floors

BiOWiSH™ is certified organic and is safe for everyday use in a very diverse range of consumer and industrial applications.

BiOWiSH™-Hydroponic

- Improves yield
- Reduces growth time
- Improves nutrient availability
- Improves consistency across harvest
- Improves root development
- Better plant health (vigor)
- Improves budding
- Longevity of flowering
- Storage stability

Available Sizes

- 3.5oz
- 2.2lb



Results

In less than a week, plants treated with BiOWiSH™ showed increases in growth. Visually, lettuce treated with BiOWiSH™ was tighter and had better color and more uniform head size. Anecdotal evidence also said the lettuce grown with BiOWiSH™ tasted better.



Treated with BiOWiSH™



Not Treated with BiOWiSH™

Average head weight in ounces	
BiOWiSH™	4.47
Control	3.80
Difference	0.67

Note: Weights were taken of five heads without their roots weekly for multiple crop rotations over 22 weeks.

There were also increases in content of key nutrients, including nitrogen and phosphorus. Measurements were taken from the plant tissue.

	Nitrogen	Phosphorus
BiOWiSH™	5.09	0.85
Control	4.76	0.76

Brix levels, which are a measurement of sugar content that's tied to better taste, also increased by an average of 7.3%.

BiOWiSH™-Hydroponic Lettuce Program Advantages		
Yield Increase	Brix Increase	Increased rotations per year
15.1%	7.3%	Up to 2

Conclusion

At a cost of about one cent per head, BiOWiSH™-Hydroponic offers growers a cost-efficient way of increasing their yields and improving their crops. The latest data from CropKing's research facility shows BiOWiSH™-Hydroponic increased lettuce head weight by up to 19 percent over a 22-week testing period. The fact that the lettuce grows faster means it can be harvested sooner. That leads to an additional 1.5 to two rotations per year, increasing the amount of food harvested and also increasing growers' profits.

Because of this unmatched performance, BiOWiSH™ has an outstanding customer retention rate. To date, 100% of growers with who have compared the results of BiOWiSH™-Hydroponic versus a control group have repurchased the product. 90% of growers who have tried BiOWiSH™-Hydroponic without setting up a control harvest have also bought more.

Implementation Program

BiOWiSH™-Hydroponic was added on a daily basis into one of the nutrient solution tank systems. The control system also maintained normal environmental, nutrient solution and other management practices. BiOWiSH™-Hydroponic was applied at the rate of 10 ppm or 3.5 ounces of BiOWiSH™ per 250 gallons.

The research greenhouse has a hydroponic Dutch Bucket system and hydroponic NFT leaf crop system.

The state of the art testing facility has two separate hydroponic NFT channel systems consisting of 30 channels on each side (360 plants) allowing for side by side testing of different growing methods, nutrient solutions and new products intended for use in the hydroponics industry. Each system re-circulates the nutrient solution with its own tank, pumps and nutrient monitor/controller.

Each side is divided into five groups of six channels each allowing for a weekly harvest schedule. To compare the BiOWiSH™ treated and untreated (control) systems, CropKing's research staff randomly harvest 10 heads of lettuce. The weekly harvest weights are compiled as part of the economic and performance evaluation.

Contact

CropKing, Inc

134 West Drive
Lodi, OH 44254
Toll Free: +1 800 321 5656
Web: www.cropking.com

Manufacturer

BiOWiSH Technologies

Bill Diederich
Senior Executive Vice President

Agri-Business

Tel: +1 402 321 6568
Email: bdiederich@biowishtech.com
Web: www.biowishtech.com

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