

## Hydroponics

### Chesapeake Greenhouse LLC, Maryland, USA

#### Background

BiOWiSH™ was tested by John Maniscalco at his Chesapeake Greenhouse LLC lettuce hydroponic farm in Maryland, USA.

The greenhouse consists of eight bays, 128 ft long by 22 ft wide. Many varieties of lettuce, including Bibb lettuce, are grown on Nutrient Film Technique (NFT) tables. The total capacity of the greenhouse is 34,920 plants. The greenhouse NFT tables are irrigated with water circulated through two 1,700 gallon tanks with each serving four of the eight bays.

A typical lettuce growing cycle takes five to six weeks, depending on season and weather conditions. Minimum Bibb lettuce weight to market is 4.0 oz.



*Bibb lettuce on Nutrient Film Technique (NFT) Growing System*

#### Existing Hydroponic Nutrient System

In addition to standard nutrient solution mix, the following growing conditions are maintained in the greenhouse as the typical management practice:

Electrical Conductivity	1.9 (mS/cm)
Temperature	65 (°F) / 18 (°C)
Humidity	75 (%)
pH	5.8 (S.U.)

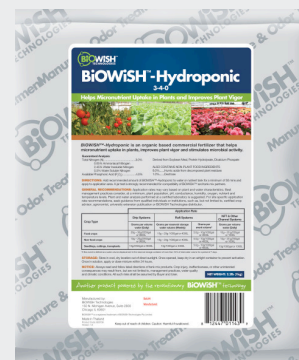
#### BiOWiSH™-Hydroponic

Benefits experienced using BiOWiSH™-Hydroponic:

- Improved yield
- Improved plant vigor
- Increase in total number of crops per annum
- Increased nutrient availability to plants
- Improved water quality and clarity
- Reduced sludge and algae accumulation
- Reduced habitat for fungal spores
- 100% natural and non-toxic

#### Available Sizes

- 8 x 10 gram (tea bags)
- 75 x 10 gram (tea bags)
- 2.2lb
- 11lb



## BiOWiSH™-Hydroponic Implementation

On a daily basis, BiOWiSH™ was added directly into one of the irrigation tanks serving half of the bays or 17,460 plants. In addition to the typical management practice, BiOWiSH™ was added at a concentration near 10 ppm, or 50 grams per day. The “control” irrigation tank also serves 17,460 plants and was operated under typical practices for comparison purposes. The total BiOWiSH™ cost of each fully grown lettuce was approximately \$0.01.

## Growth Observations

The implementation of BiOWiSH™ into the fertility program reduced the required time to produce a market crop by over 10% from 37 days to 33 days. The impact of this production time saving results in an additional crop rotation for each bay per year.

Since the original BiOWiSH™ trial and supplementary trial at his facility, John Maniscalco has instituted BiOWiSH™ as a routine addition to his general management practice to improve profit. His observations and resulting comments include “the BiOWiSH™ treated plants had tighter heads, a noticeable difference in vigor and better overall appearance”.

## Implementation Outcomes

BiOWiSH™ treated lettuce were:

- Harvested more regularly
- Improved vigor
- Improved production economics
- Increased palatability
- More vibrant
- Thicker and more consistent



## About BiOWiSH™-Hydroponic

The result of over 18 years of research and development, BiOWiSH™ is a powerful blend of biocatalysts that speeds up biochemical reactions at a rate faster than unaided processes or current technologies. 100% natural and non-toxic, BiOWiSH™ is safe for everyday use in a very diverse range of consumer and industrial applications. Developed specially for the Hydroponics industry, *BiOWiSH™-Hydroponic* is a revolutionary water treatment solution that helps increase nutrient availability, improve plant vigor, and stimulate microbial activity while preventing sludge build-up and problematic scaling in dripper lines, micro-tubes and Nutrient Film Technique (NFT) gully floors.

## Contact

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## Manufacturer

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