

BiOWiSH® Agronomy Technology

power your biology. produce more with BiOWiSH®.

Why are Farms Turning to BiOWiSH?

BiOWiSH® microbial solutions are biologically-based products that, when applied to crops, stimulate natural processes. These products can help improve yield, restore damaged soil, improve nutrient use efficiency, and extend soil fertility among many other benefits.

In partnership with fertilizer manufacturers and growers, BiOWiSH cultivates an agronomic first approach. Our unique microbial strains are produced by a proprietary manufacturing process which promotes the expression of specifically desired characteristics.

Designed for the agricultural industry, our biology uses multiple modes of action and performs the intended effects reliably across broad operating conditions. The final result is our range of microbial solutions, proven to consistently improve crop yields and stimulate soil biology.



BiOWiSH® Agronomy Technology

BiOWiSH® Agronomy Technology comes in a solid, soluble formulation for on-farm application and a liquid formulation for fertilizer manufacturing. BiOWiSH® Crop Liquid can be coated onto a wide range of fertilizers and fertilizer fillers, or mixed with liquid fertilizers at your fertilizer manufacturer, to create an enhanced efficiency fertilizer.

BiOWiSH® Agronomy Technology is an advanced microbial solution that helps farmers sustainably increase crop production, without further depleting the soil or reducing the value of the crop. The unique composition stimulates the natural processes that improve yield and extend soil fertility, helping farmers produce more.

Benefits

- Optimizes yield potential
- Increases nutrient availability
- Enhances root development
- Improves plant vigor
- Enhances native microbial activity in the soil
- Improves soil productivity



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Modes of Action

BiOWiSH® Crop Products have two modes of action: they shift the soil microbiome and increase endophytic activity.

Soil Microbiome Shift

When BiOWiSH® organisms enter the soil, they encourage more beneficial plant growth promoting (PGP) microbes to thrive, building a stronger rhizosphere.

The results of stimulating an increased number of beneficial PGP microorganisms are:

- Increased nitrogen fixing bacteria
- Increased phosphate solubilizing bacteria
- Mitigated plant stress signaling pathways
- Increased plant vigor
- Plant transcriptome shift
- Improved soil quality and moisture retention
- Increased hydrolytic enzymes for breakdown of organic residue

Endophytic Activity

As BiOWiSH® organisms populate the root system, they upregulate, or encourage, beneficial biochemical pathways while downregulating others.

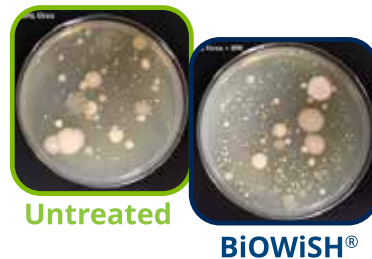
The results of BiOWiSH® endophytic activity are:

- Increased production of beneficial root exudates
- Increased plant vigor
- Increased nutrient uptake
- Increased root mass

Broad Operating Conditions

A unique feature of BiOWiSH® is its ability to provide consistent performance across a wide range of operating conditions and management practices:

- pH 3.5 to 9.5
- Salinity up to 35,000 ppm
- Low oxygen content (0.5 ppm), active in water logged conditions
- Active below wilting point
- In oligotrophic (very low nutrient level) conditions
- Effective across a broad range of organic materials
- Optimal performance as temperatures increase, high performance starting at 50°F soil temperature



Note the high number of beneficial, plant growth promoting species in the BiOWiSH®-treated sample.

Consistency

BiOWiSH® uses multiple modes of action and works in broad operating conditions so that growers can consistently see positive results. We have conducted over 200 trials around the globe with varying crops, soils, and environments. Below are a few summaries from our library of studies which show success in many geographies, management practices, and economic conditions:

Crop	Third Party Test Partner	Yield Increase (%)	Net Income Gain (%)
Grain Corn	USA Independent Research	9.8	9
Grain Corn	Asia Government Entity	13.1	41
Rice	Asia Government Entity	12.0	12
Rice	USA Independent Research	36.4	40
Wheat	USA Independent Research	7.2	7
Wheat	USA Independent Research	10.7	10
Silage Corn	USA Independent Research	27.5	32
Silage Corn	USA Independent Research	32.9	37
Tomato	USA Independent Research	11.0	9
Tomato	USA Independent Research	15.4	20
Choy Sum	Asia Government Entity	11.1	11
Bok Choy	Asia Government Entity	13.8	14
Potato	USA Independent Research	13.2*	13
Walnut	USA Independent Research	7.9	8
Walnut	USA Independent Research	11.8	12

* converted from bu/ac to ton/ac using 53 lbs per bushel

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