

PRODUCT GUIDE



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2020

Why choose products from YieldMaster Solutions?

RESEARCH & PRODUCT DUE DILIGENCE

YieldMaster Solutions is one of the rare marketing companies promoting biologicals that has its own proprietary research farms. All products must earn their way into our elite portfolio.

UNDERSTANDING THE MICROBE PLANT RELATIONSHIP

By choosing to identify and isolate beneficial microbes rather than manufacturer them, YieldMaster Solutions can be selective about which products we choose to allow into our portfolio. Recognizing different crops have specific needs we offer tailored solutions to address critical phases and pathway efficiencies in the plant life-cycle.

YieldMaster Solutions (YMS) acts as a conduit from the manufacturer to the farm gate. Our mission is to achieve the following objectives in regards to yield enhancing products:

- IDENTIFY** | Capitalize on our industry connections to discover innovative products.
- RESEARCH** | Conduct in-depth due diligence and internal research on potential products.
- PROMOTE** | Advocate products that survive the performance protocols to earn their place into our elite portfolio.

All YMS products must show significant return on investment along with a dedication to environmental stewardship.



Interested in partnering with



**Visit our website for more information: www.yieldmastersolutions.com
or contact us by phone at: (605)-860-8534**

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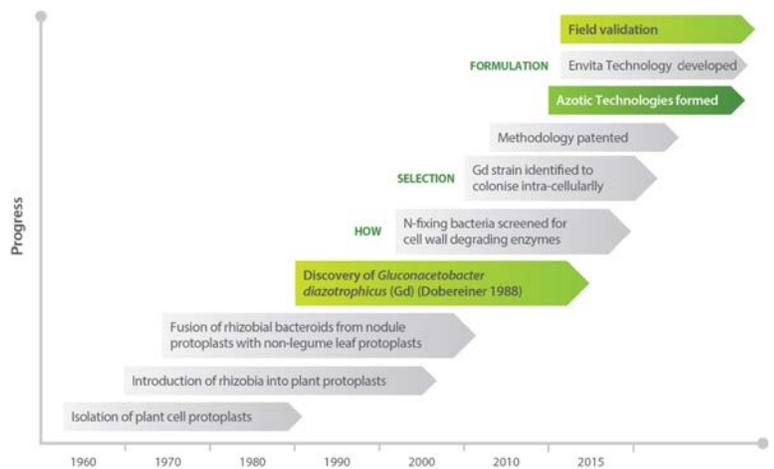
envita

Envita™ is a new mode of action for nitrogen fixation. Containing a unique bacteria called *Gluconacetobacter diazotrophicus* (Gd), Envita is a naturally-occurring, food-grade microbe discovered and isolated from sugar cane in 1988 by Dr. Ted Cocking of the University of Nottingham.

Azotic North America was formed in 2012 to introduce this natural nitrogen-fixing technology to farmers around the globe. A dedicated North American group was established in 2015 with offices in Raleigh, North Carolina and Guelph, Ontario. Azotic has taken more than 20 years of academic research and created the first large-scale, commercial nitrogen-fixation product now available to farmers across 49 states in the U.S.

RESEARCH AND DEVELOPMENT

Hundreds of trials and thousands of data points across corn and soybean growing states in the USA prove the benefits of Envita. Azotic has brought together world class scientists, agronomists and formulation chemists to create the product and precise formulation that works best in America. Producing a consistent and reliable biological product like Envita is no small feat and after decades of research, Envita is ready for farmers.



Giving farmers an easy, risk-free way to try Envita in 2019 is why we created the

envita Performance Guarantee

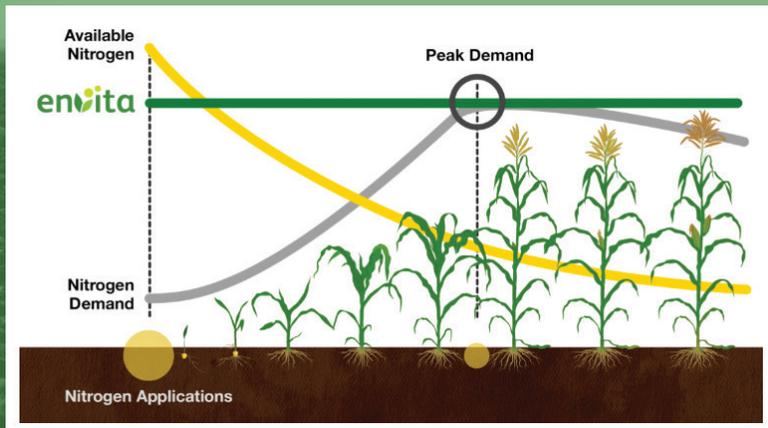
The Envita Performance Guarantee is built on the fact that Envita delivers, on average, a 7-10 bu/ac yield increase in corn and rarely delivers an increase of less than 3 bu/ac, roughly the yield difference required to cover the costs of Envita. If you try Envita in corn and don't get a minimum 3bu/ac increase we'll replace all your product.

HERE ARE THE PROGRAM DETAILS:

- Use at least 160 ac of Envita.
- Leave an appropriate check within the same field (i.e. minimum of 5 ac, side by side treated area, similar soil type and topography).
- Purchase and apply Envita by June 15, 2020 for use on corn.
- Apply within a registered state within the USA.
- Fertilize your field at recommended rates of nitrogen fertilizer (i.e. 100% of recommended N).
- Apply Envita on corn in-furrow at labeled rates and per use guidelines.
- Use a harvest monitor to measure the yield of the Envita treated area and the check area.
- Envita on average returns a 5-13% yield increase and up to 20%. If you do not see at least a 3bu /ac increase we will replace your Envita product on any field that did not perform for the 2020 season and provide agronomic support to optimize your Envita experience.
- If you do not wish to get product back in 2021, you have the option of taking \$5/ac back in the fall of 2020 instead of taking product in 2021.

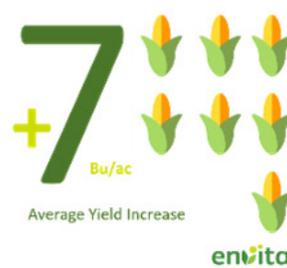
Envita. Nitrogen Now. In Every Cell.

Envita establishes itself within the plant cells and forms vesicles or small pockets for nitrogen fixation. Envita is unique because it develops that relationship with cells throughout the plant, rather than just in the roots like rhizobia do. Envita will live in the plant throughout the season to supplement nitrogen requirements.



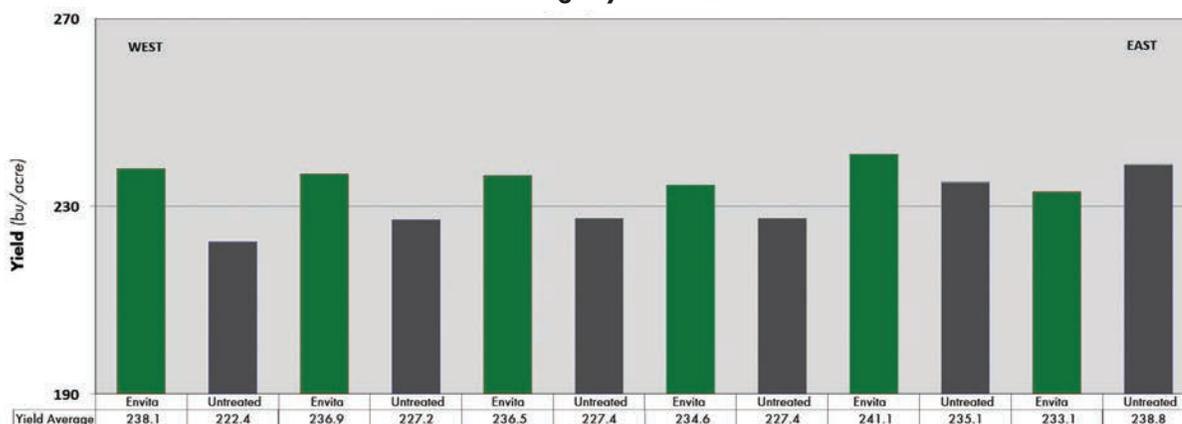
Benefits of Envita:

- Adapted to multiple crops (corn, soybeans, cereals, rice, etc.)
- Environmentally friendly
- Alternative source of N when plant can't access fertilizer N due to too wet or too dry conditions
- Studies have shown a 5-13% average yield increase
- Supplements or may replace a portion of fertilizer nitrogen application



Envita™ 2018 Corn Field Trials: State Avg. Yield Increase

Yield Average by Individual Treatment



Yield Average for all Individual Treatments (bu/acre)

236.7
Envita

229.7
Untreated

7.0
Yield Difference

For Use On: Soybeans

Soy_{fx}™ is a specific/unique combination of identified and tested microbials that elicit a positive crop response. Soy_{fx}™ unlocks the plant's ability to produce growth regulators and metabolites that enhance production through biosynthetic pathway efficiencies.

Benefits:

- Phosphate solubilization through microbial activity
- Increased total leaf area
- Reduced ethylene production (*associated with aging and senescence*)
- pH regulation
- Reduced Reactive Oxygen species, and general stress mitigation
- Stronger stems and more branching
- Enhanced pod set and larger beans
- Improved ability to withstand stress
- Increases in yield & test weights
- Soy_{fx}™ contains microbials that enhance regrowth following a hail event, so the point of stem breakage grows rather than growth from an axillary bud.

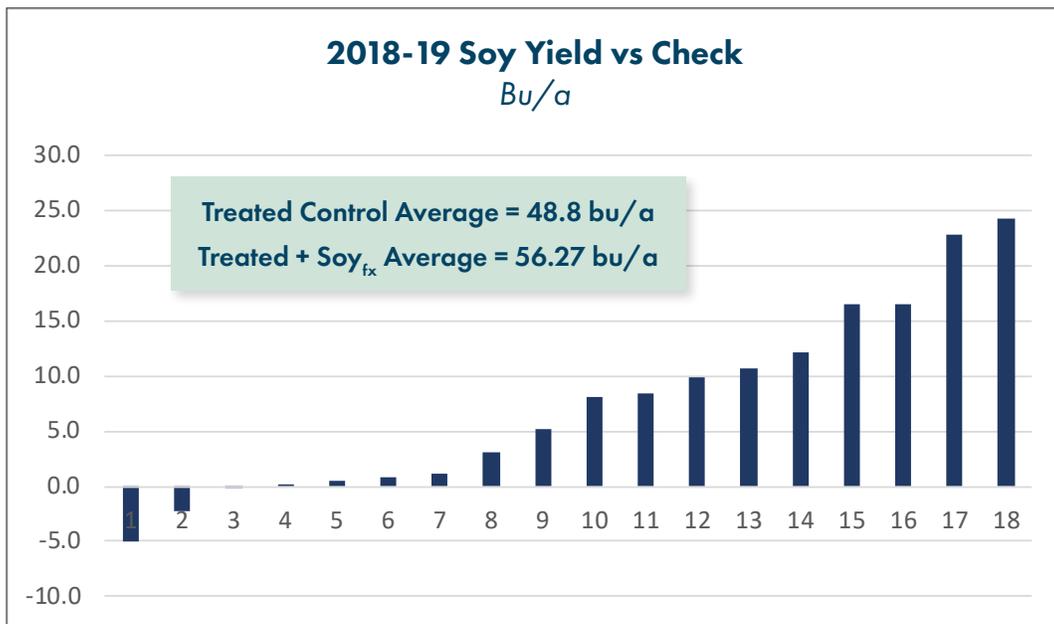
Soy_{fx}™

SOYBEANS



Modes of Action

- Plant pH modulation maximizes biosynthetic pathways
- Facultative anaerobic bacteria support the production of nodules in upper inch of soil
- ACC Deaminase bacteria reduce production of ethylene (stress hormone)
- ACC Deaminase bacteria interacts to reduce Reactive Oxygen Species (ROS) signaling and mitigates stress
- Continuous action microbes facilitate micro-nutrient availability within the plant



2018 & 2019 Research

Locations: 6 separate locations throughout 4 states (IA, MN, SD, WI)

Replications: 18 Replications, including 4 separate strip trials, 1 field trial with 4 replications, and a field trials with 5 replications

Results: 80% positive yield result with an average of 7.4 bu/a advantage across all trials.

Application Rates

Seed (1 Gallon Jug): 1 fl. oz. per 50 lbs. Can be applied alone or in combination with other seed treatments.

In furrow: 16 fl. oz. per acre and minimum of 5 gpa total volume.

Foliar: 16 fl. oz. per acre with 10 to 20 gallons water. May be tank mixed with other products. Early vegetative application (V2-V4) would be ideal.

BIOPRYME™

To maximize pod fill and the benefit of Soy_{fx}™, include BioPryme™ in your program. BioPryme™ is a nutrient and energy source to enhance microbial treatments, to help reduce the negative effects of herbicides and other pesticides on growth and yields of soybeans and other crops.

Guaranteed Analysis

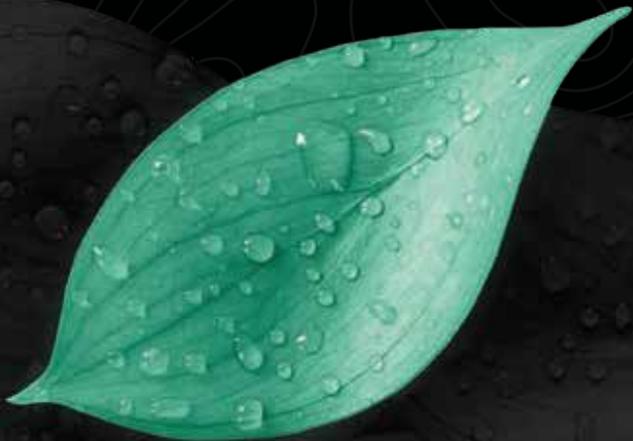
Nonplant food:

Bacillus megaterium
Bacillus pumilis

1x10⁵ CFU/ml
1x10² CFU/ml

Microorganisms exempt from CFR requirement – 40 CFR 725

Packaging: 4x1 gallon jugs, 2 x 2.5 gallon jugs, 275 gallon bulk shuttles



ION_{fx}™

For Use On: Corn, Sorghum, Small Grains (Foliar), Cotton, Canola and Flax

ION_{fx}™ is a mix of genetically identified and patented bacteria, along with archaea and fungi. While many microbes live naturally in a plant, this mix of microorganisms has been selected to support, enhance, or supplement plant functions. ION_{fx}™ unlocks a plant's ability to produce growth regulators and metabolites.

Benefits:

- Increased yield
- Phosphate solubilization through microbial activity
- Reduced ethylene production (associated with aging and senescence)
- pH regulation
- Reduced Reactive Oxygen species
- General stress mitigation.
- Improved early vigor and less purpling
- Increases forage quality and yield
- Better heat and drought stress tolerance
- Increases occurrence of tillering and/or second ear with corn

2020 Warranty Program

We stand behind our products. If you don't receive a 3.5 bu/a increase in corn on a side-by-side comparison using ION_{fx}™, Agrovive will replace your product for the following growing season!

PROGRAM DETAILS

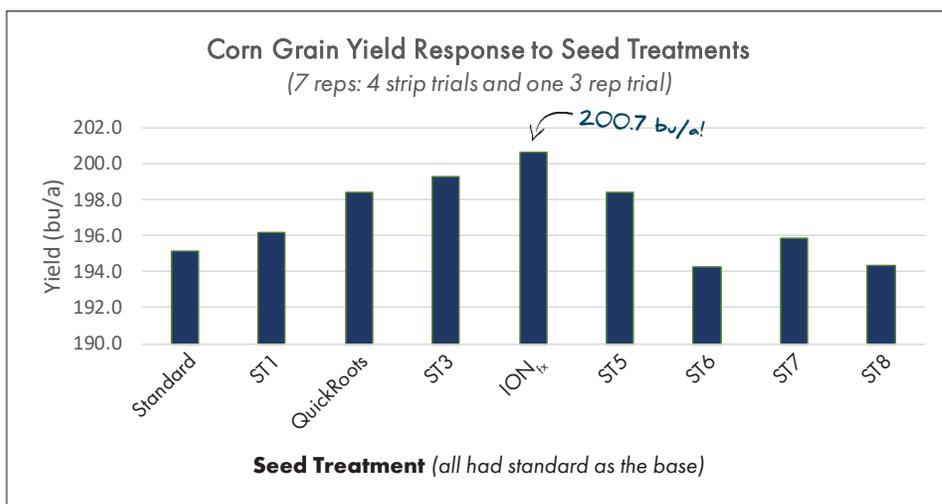
Product:	ION _{fx} ™
Crop:	Corn
Bushel Increase:	3.5 Bushels per acre in side-by-side comparison
Minimum Treated Acres:	160 Acres
Minimum Untreated Acres:	2 Acres (must be immediately adjacent to the treated test in same field with similar soil types)

REQUIREMENTS

Contact your local distributor for full program details, or visit yieldmastersolutions.com

Modes of Action

- Plant pH regulation through the ability to exchange electrons in chemical pathways
- pH regulation overcomes “slowdowns” during the heat of the day
- A unique microbe group triggers larger leaves early on and a thicker stalk later
- Movement of lignin on vascular bundles to the outer rind of the stem. This may aid in movement of nutrients and water through the plant
- Bacteria elicit a hormone response to insert the ear higher and support a second ear
- Reactive Oxygen Species (ROS) response microbes become more active later in the season
- Stresses such as heat or drought increase become mitigated
- Slow acting, continuous action microbes facilitate micronutrient availability within the plant



2019 Research Data

Locations: 4 Locations throughout Minnesota & South Dakota

Replications: 7 replications consisting of 4 separate strip trials, and 1 field trial with 3 replications

Results: An average of 5.4 bu/a advantage over standard treatment using ION_{fx} Seed Coat at recommended rate

Application Rates

Seed (1 Gallon Jug): 1 fl. oz. per 80,000 seeds via seed treater. Can be co-applied with other products

In furrow: 16 fl. oz. per acre and minimum of 5 gpa rate

Foliar: 16 fl. oz. per acre with 10 to 20 gallons water. May be tank mixed with other products. For corn or sorghum, V3-V7 would be ideal application stage

Guaranteed Analysis

Nonplant food:

Pseudomonas fluorescence 1.0 x 10⁵ CFU/ml

Microorganisms exempt from CFR requirements: 40 CFR 725.

Packaging: 4x1 gallon jugs, 2 x 2.5 gallon jugs, 275 gallon bulk shuttles



For Use On: Alfalfa

Alpha_{joule}™ is a mix of genetically identified and patented microorganisms selected to stimulate or support plant growth and physiology. While many microbes live naturally in a plant, this mix of microorganisms has been selected to benefit the development of alfalfa. Alpha_{joule}™ unlocks a plants ability to produce its' own growth regulators and metabolites.

Benefits:

- Increased yield
- Improved root structure and nutrient flow
- Better regrowth after cutting
- More branches from the crown after cutting
- Larger leaves and more branching on the stems
- Better leaf retention
- Delayed flowering under heat and drought stress
- Phosphate solubilization through microbial activity
- pH regulation
- Reduced Reactive Oxygen species
- General stress mitigation.

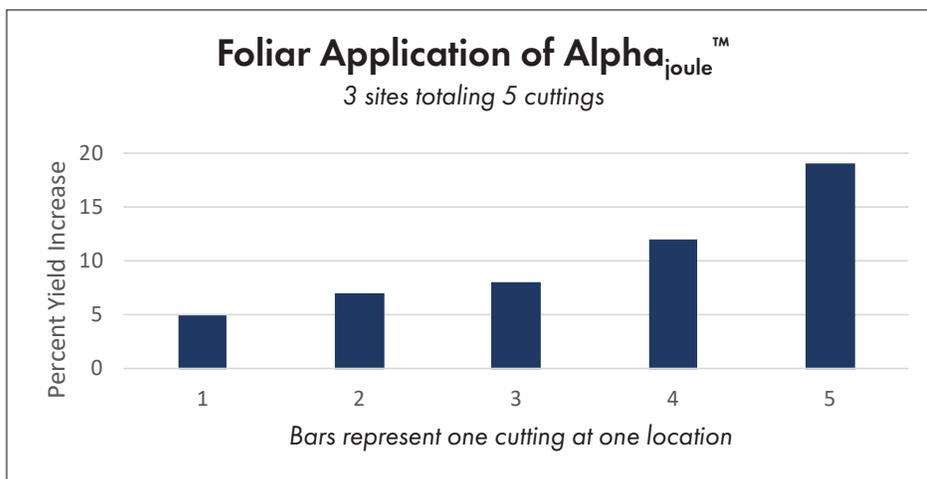
alpha*joule*™

ALFALFA



Modes of Action

- Plant pH regulation through the ability to exchange electrons in chemical pathways
- Reduced ethylene production causing better leaf retention & delayed stress flowering
- Continuous action microbes facilitate micronutrient availability within the plant
- Improved nutrient loading in rooting system to support regrowth and longevity



2019 Research Data

Locations: 4 separate locations throughout Wisconsin & Colorado

Replications: 7 total cuttings

Results: 11% average increase in yield
3% average increase in crude protein percentage

Alpha_{joule}TM is sold as a copack with PrymerTM to supplement the yield enhancing properties of Alpha_{joule}TM. PrymerTM serves to help in energy movement and microbe support to strengthen the plant/microbial interaction and efficiency.

Alfalfa (one time application cutting)

alpha_{joule}TM

2ND TO 3RD TRIFOLATE



NEW PLANTING &
SPRING GREEN UP

AFTER CUTTING



APPLY WHEN AXIAL
LEAF RE-GROWTH
APPEARS

Application Rates

Foliar: 16 fl. oz. per acre of alpha_{joule}TM and 16 fl. oz per acre of PrymerTM along with 10 to 20 gallons water. Alpha_{joule}TM may be applied with water alone or tank mixed with other products (perform a jar test to verify compatibility). While the window of application is not limited, earlier plant growth stages provide better response. Apply to small regrowth alfalfa (about 2-3" in ht) for best results. Can apply following each cutting or at spring greenup.

Guaranteed Analysis

Soluble Potash (K2O): 1.00% from potassium carbonate

Nonplant food:

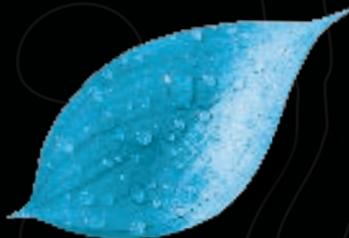
Pseudomonas fluorescence 10x10⁵ CFU/ml
Bacillus megaterium 10x10² CFU/ml

Microorganisms exempt from CFR requirements – 40 CFR 725.

Packaging: 2.5 gallon jug + 2.5 gallon jug of PrymerTM

HAIL HAS MET ITS MATCH.

R₃Plant™ RECOVERY



For Use On: Soybeans

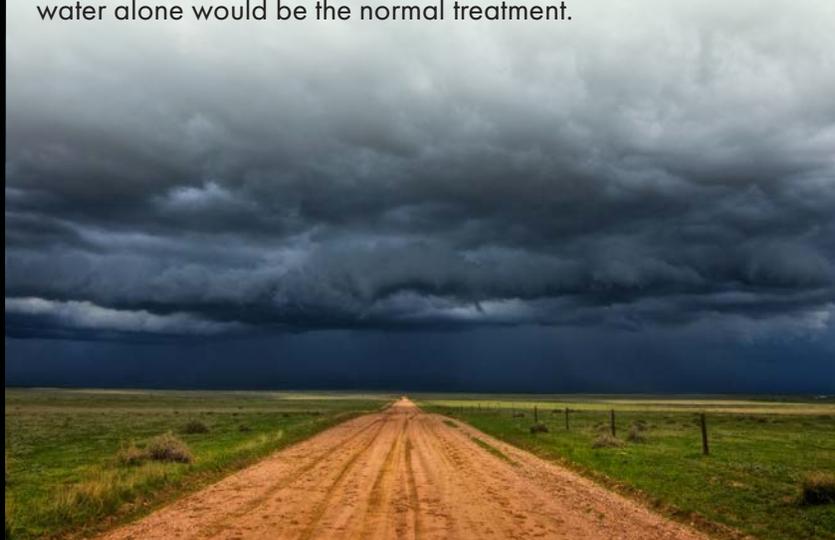
R₃Plant™ RECOVERY is a selected mix of microbials used following an early hail event to stimulate regrowth from the point of breakage rather than a lateral bud. This mix of microbials is found in Soy_{fx}™ seed applied and is offered for those who didn't use it in their seed treatment program. Soy_{fx}™ contains microbials that enhance regrowth following a hail event, so the point of stem breakage grows rather than growth from an axillary bud. Therefore, if there is a hailstorm early enough that replanting is an option, Soy_{fx}™ reduces the need to replant.

Benefits:

- Specific bacteria to trigger plant response
- Enhanced plant growth after application
- Regrows from scars rather than lateral branching
- Rescued yield potential

Application Rates

Foliar: 32 fl. oz. per acre with 10 to 20 gallons water. Applying R₃Plant™ RECOVERY can be both a preemptive application and a rescue treatment to soybeans. If preemptive, apply to small plants (V2-V4) with water alone or it may be tank mixed with other products (perform a jar test to verify compatibility). If using as a rescue treatment apply within three days to a week of the hail event to maximize benefit. As a rescue treatment applying with water alone would be the normal treatment.



For Use On: Potatoes

Set_{fx}™ is a selected combination of fungi, bacteria and microorganisms that have been tested to colonize within potatoes and enhance tuber set and size. It enhances the plants ability to metabolize nutrients to efficiently support growth. Set_{fx}™ can be applied at three different timings to influence production.

Benefits:

- Enhances the plants ability to metabolize nutrients to efficiently support growth
- Seed Coat promotes root and stolon development prior to vegetative growth, leading to a dominant potato set and uniform size
- In furrow, increases overall yield by influencing size and number of potatoes of each set
- Applied to foliage in early development increases overall yield
- Phosphate solubilization through microbial activity
- Increased total leaf area
- pH regulation
- Reduced Reactive Oxygen species
- General stress mitigation
- Better stems and increased yield

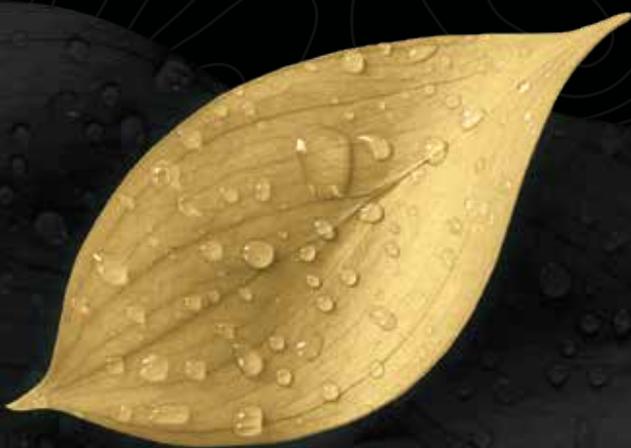
Application Rates

Seed: 4 fl. oz. per cwt before planting.

In furrow: 32 fl. oz/acre. Apply with a minimum of 5 gpa total solution.

Foliar: 32 fl. oz/acre with a minimum of 10 gallons solution.

Set_{fx}™
POTATO



For Use On: Edible Beans

POD_{fx}™ combines a mix of selected and tested microbials that support a positive crop response, leading to yield. POD_{fx}™ aids the plant in producing growth regulators and metabolites that enhance production through biosynthetic pathway efficiencies.

Benefits:

- Increased Yield
- Increased flower retention
- Increased leaf area
- Larger seeds
- Phosphate solubilization through microbial activity
- pH regulation Reduced Reactive Oxygen species (ROS)
- General stress mitigation.
- Improved root development and nodulation
- Improved pod set and bean fill
- More robust stems and enhanced leaf area
- Stronger pod clustering and formation

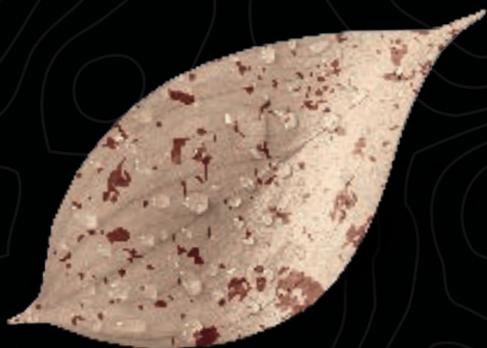
Application Rates

Seed: 1 fl. oz. per 50 lbs. (2 fl. oz./cwt) via seed treater

In furrow: 16 fl. oz. per acre and minimum of 5 gpa total volume

Foliar: 1 pt. per acre with 10 to 20 gallons water

POD_{fx}™
EDIBLE BEANS



For Use On: Small Grains

Crown_{fx}™ is carefully chosen combination of microbials that have been tested and selected to elicit a positive crop response. Crown_{fx}™ enhances the plant's ability to metabolize nutrients and efficiently support growth.

Benefits:

- Increased Yield
- Phosphate solubilization through microbial activity
- Increased leaf area and tillering
- Reduced ethylene production (associated with aging and senescence)
- pH regulation
- Increased early vigor, tillering/head formation
- Reduced Reactive Oxygen species
- General stress mitigation
- Stronger stems and increased seeds per head as well as total number of heads per plant
- Increased protein and grain quality
- Greater stem strength and plant mass

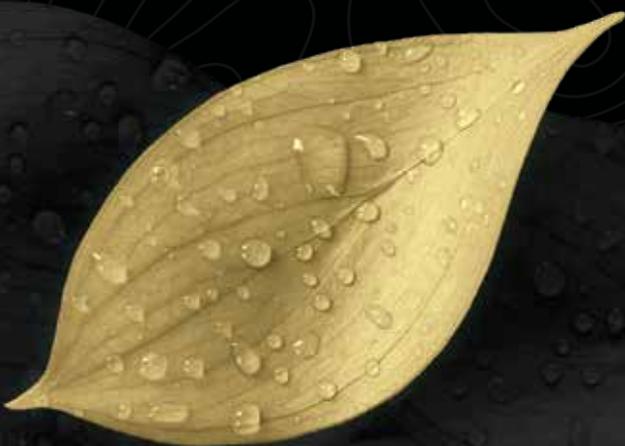
Application Rates

Seed: 1 fl. oz. per 50 lbs. seed via seed treater. Crown_{fx} is intended for application to the seed. If considering a foliar application, use Ion_{fx}.

Cautions: Should not use hormone-based plant growth regulators (PGR) with this product because the combination may result in stunted growth. Do a jar test to verify compatibility with other products.

Crown_{fx}™

SMALL GRAIN



Hydra^{val}™

For Use On: Sunflowers

Hydra^{val}™ is a targeted mix of microbial endophytes screened for and selected to induce a favorable crop response in sunflower and safflower.

Benefits:

- Head stays upright longer
- Reduced daily leaf wilt for better plant health
- Promotes additional head growth from damaged stems
- Increased yield
- Increased head size
- Increased pollination success
- Stronger roots and stalks
- Larger leaves on the plant
- pH regulation
- General stress mitigation

Application Rates

Seed: 1 cup dry powder per 50 lbs. in planter box or box-to-box.

In furrow: 16 fl. oz. per acre and minimum of 5 gpa total volume.

Foliar: 16 fl. oz. per acre with 10 to 20 gallons water. May be tank mixed with other products. Generally, a V3-V6 application is ideal.

Hydra^{val}™

SUNFLOWER



BIOPRYME™

Benefits:

- Facilitates the conversion from growth to fill
- Replenish ions necessary so microbes flourish
- Provide energy co-factors that strengthen the interactions between microbes and plants
- Tank mix compatible with Roundup and most herbicides as well as most fungicides
- Can see the effects in as little as a few hours
- Helps build the plants Microbiome more efficiently.