

2023 PLANT PERFORMANCE GUIDE



GROWMARK CROP PROTECTION

SM

GROWMARK is an agricultural cooperative headquartered in Bloomington, Illinois, serving cooperatives, retailers, businesses, and customers in the U.S. and Canada. We provide customers with fuels, lubricants, crop nutrients, crop protection products, seed, construction services, equipment, and grain marketing assistance. In addition, **GROWMARK** provides a host of services from warehousing and logistics to training and marketing support. For more than 90 years, **GROWMARK** has been one of the most successful agriculture and energy suppliers in the United States, focused on the long-term goals of our customers.

GROWMARK Crop Protection offers customers a full line of herbicides, pesticides, and insecticides. We also carry starter fertilizers and a complete line of adjuvants to meet your needs. Our distribution network is well-positioned throughout the Midwest and the Eastern U.S., with warehouses in Illinois, Ohio, Kentucky, Pennsylvania, New York, North Carolina as well in Ontario, Canada.

GROWMARK Crop Protection has an excellent logistics network that strives for same-day or next-day product delivery in-season. Whether it's the early application of starter fertilizers or weed and pest management systems, **GROWMARK** has the crop protection products your business needs to succeed.

WAREHOUSE LOCATIONS



YOUR **GROWMARK** CROP PROTECTION TEAM

JEFF BUNTING

Crop Protection Division Manager
309.557.6867
jbunting@growmark.com

TOM WHALEN

Crop Protection Marketing Manager
309.557.6871
twhalen@growmark.com

ERIC MOWEN

Crop Protection Specialty Products Manager
309.557.6868
emowen@growmark.com

DENNY GLOTZBACH

Crop Protection Procurement and
Operation Manager
309.557.6890
deglotzbach@growmark.com

Contact your sales and service representative.

ORDER OPTIONS

CPOrders@growmark.com
mygrowmark.com

CUSTOMER SERVICE

888.222.4405 ext 2
309.557.6403

FOR A SYSTEM THAT FITS YOUR HIGH YIELD GOALS

When it comes to High Yield Crop Management, today's progressive growers are looking for 'next level' yields as well as an ROI that means something to their bottom line.

STRESS MITIGATION/ HIGH YIELD CORN PROGRAM

TIMING	PRODUCT	RATE
Planting	Flotegic G	3 oz/Unit
Post Herbicide	NutriFuse DBX	1 qt/A
Post Herbicide	Periscope	4-6 oz/A
VT/R1	YieldON	1.5pt/A
VT/R1 Alternative	NutriFuse Super Dymax	1 qt/A 1 pt/A
Estimated Costs		< \$27/A
Break even at \$5.50/bu		4.9 bu/A

Start with good fertility, seed selection & placement, properly timed weed control and a planned fungicide.

Flotegic™ G

Replaces the need for graphite or talc, while giving a more robust and aggressive rooting system.

NutriFuse™

Blended foliar nutrition

Periscope

A plant growth stimulant that improves growth and development.

Dymax

Amino acid complex that aids in recovery/mitigation of growing season stress events.

YieldON™

Combination of foliar nutrition and biostimulants that helps improve transport of sugars and nutrients.

STRESS MITIGATION/ HIGH YIELD SOYBEAN PROGRAM

TIMING	PRODUCT	RATE
Planting	Flotegic Moly G	3 oz/Unit
Post Herbicide	NutriFuse DBX	1 qt/A
Post Herbicide	Dymax	1 qt/A
R3	YieldON	1.5pt/A
R3 Alternative	NutriFuse Super Dymax	1 qt/A 1 pt/A
Estimated Costs		< \$28/A
Break even point at \$13/bu		2.2 bu/A

Start with good fertility, seed selection & placement, properly timed weed control and a planned fungicide.

Flotegic™ Moly G

Replaces the need for graphite or talc, while giving a more robust root system and Mo helps push earlier nodulation.

NutriFuse™

Blended foliar nutrition

If applying with Dicamba or 2,4-D use NutriFuse™ DBX

Dymax

Amino acid complex that aids in recovery/mitigation of growing season stress events.

YieldON™

Combination of foliar nutrition and biostimulants that helps improve transport of sugars and nutrients.

GROWMARK and FS Member Companies have the tools and products to get there. High yield crop production is a system approach. Properly timed fertility and stress management through the season is the key to success.

Available to create on FSImpressions.com.
Contact your Crop Protection Territory Manager for additional information.

HIGH YIELD STRATEGY

Start with the Basics: High Yielding Genetics, Balance Fertility, Weed Control

AT PLANTING

Achieve planting population
 Improve Germination
 Increase Root Development
 Emergence (all same day)
 Improve Disease Resistance
 » No plant left behind
 Maximize number of large ears/acre

EARLY VEGETATIVE

Maximize Kernel Rows
 Build Biomass
 Stimulate Root Growth
 Mitigate Stress
Maintain Maximum Yield Potential

POLLINATION AND GRAIN FILL

Fungicide & Insecticide Tank Mix
 Micros & Biostimulants for:
 Improved Pollination & grain fill
 Stress Mitigation
Maximize Kernel Number & Kernel fill
Maximize Test Weight



V0	V2	V5	V8	V10	V12	V14	VT	R1	R2-R3	R3-R4	R5-R6
DAYS AFTER EMERGENCE											
0	7	21	32	38	44	49	56	63	70 77 84	91 98 105	112 119 160

AT PLANTING

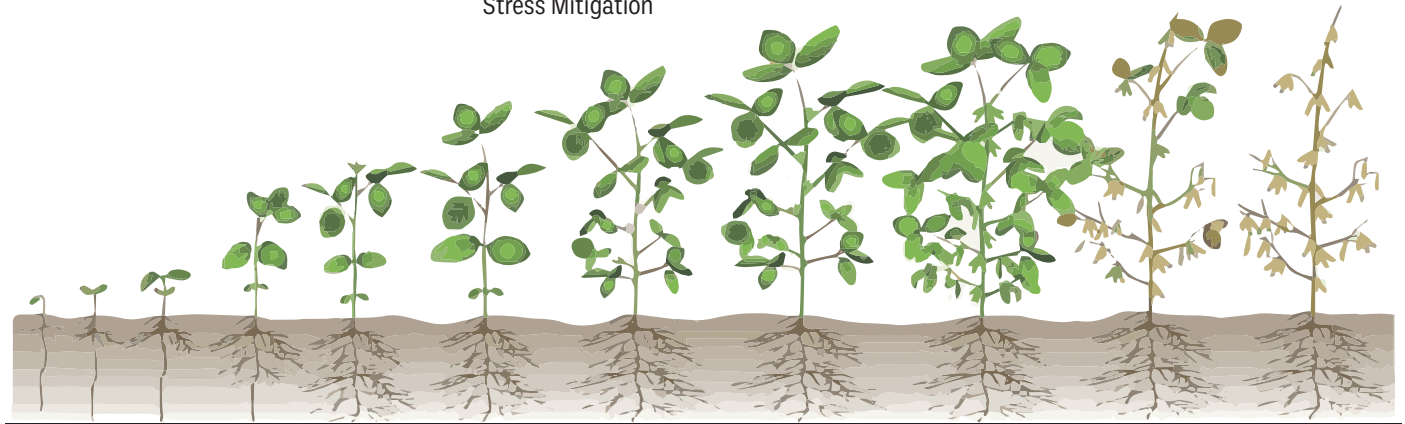
Achieve planting population
 Improve Germination
 Increase Root Development
 Fight Seedling Diseases

EARLY VEGETATIVE

Improve Root Growth & Nodulation
 Speed Up Canopy Closure
 Build Biomass
 Maximize Flowering & Bud Retention
 Stress Mitigation

FLOWERING AND POD FILL

Fungicide & Insecticide Tank Mix
 Stimulate Continued Flowering
 Improve Pod Retention
 Maximize Pod Fill and Seed Size



VE	VC	V1	V2	V3	R1	R3	R6	R7	R8
----	----	----	----	----	----	----	----	----	----

Source: University of Illinois, 1999



WOLFTRAX[®] MICRONUTRIENT

**BETTER NUTRITION.
BETTER CROPS. BETTER FARMING.**

Readily available when plants need them most, Wolftrax[®] Innovative Nutrients are research-tested and field-proven. They are specially formulated and designed to simplify nutrient management, boost crop performance, and maximize farmers' fertilizer investment.

- » Wolftrax[®], with EvenCoat[™] Technology, is a dry dispersible powder that evenly coats every granule in a dry fertilizer blend. This consistency is maintained through mixing, handling, and application
- » The PlantActiv[™] Formulation is designed to aid in crop establishment and early plant growth. DDP[®] fertilizer coating ensures that micronutrients are evenly distributed throughout the root zone
- » FlexUse[™] Application works with dry fertilizer when broadcasted or banded and with UAN liquid fertilizer when properly agitated

PRODUCT PROPERTIES

RATE/ACRE

- Refer to label

APPLICATION TIMING

- With fertilizer



YaraVita[®] ProCote[™]

YaraVita[®] ProCote[™] is a dealer applied proprietary micronutrient coating that leverages the granular fertilizer to evenly and efficiently distribute essential micronutrients to growing crops. With YaraVita[®] ProCote[™] a grower's dry fertilizer program becomes the platform to deliver complete nutrition without complexity. YaraVita[®] ProCote[™] is available in Boron, Manganese, Zinc, Copper, BMZ and BMZC blends.

- » Ensures even micronutrient supply with each fertilizer granule
- » Enhances micronutrient efficiency and crop performance
- » Reduces dust and losses compared to powder coatings, and provides high-efficiency micronutrients including Zn, Bm Mn, Cu, and their combinations
- » The oil based formulation reduces dust and losses compared to powder coatings and provides high-efficiency micronutrients including Zn, B Mn, Cu and their combinations

PRODUCT PROPERTIES

RATE/ACRE

- Download YaraVita App: ApplyIT

APPLICATION TIMING

- Impreg on dry fertilizer



ProAcqua®

WATER SOLUBLE PLANT NUTRITION

- » Quickly mixes and stays in solution for ease of use - easily absorbed by plants for maximum crop use
- » Use in combination with fertilizers, herbicides, insecticides and fungicides, flexible to use how and when other applications are applied
- » Proven to promote plant growth, yield and crop quality - a consistent return on investment you can count on
- » Options for Fertigation, Foliar and Chelates



NutriHealth ROI is a web-based tool that analyzes the return on investment opportunity of a fungicide or foliar application in corn or soybeans. Your FS Crop Specialist will integrate price, application rate, application cost, and anticipated yield impact to estimate the economic details per acre.

KEY BENEFITS

- ★ Compare a variety of yield enhancing scenarios and see what is right for your grower.
- ★ Calculate and evaluate results of different scenarios.
- ★ Help your growers discover and account for returns on product investments.
- ★ Quantify anticipated input results for your growers.
- ★ Project which investments will provide the highest outcome.

FS personnel may access the app from agronomyapps.growmark.com with their personal credentials.


 Pro-Emerge™

Pro-Emerge™

Early seed development is crucial for the health and success of a plant. Pro-Emerge line of seed treatments are a great option for helping to build a vigorous root system as well as a consistent and enhanced stand establishment.

- » Accelerates seedling development because nutrients are available from germination
- » Promotes healthy, vigorous root systems that ensure access to essential nutrients from the soil
- » Compatible with most chemical seed treatments
- » Nutritional treatments contain micro particles that ensure even coverage and effective plant uptake
- » Extremely safe for application to all seeds


 NUTRISEED™
SEED TREATMENT

NUTRISEED™

SEED TREATMENT

- » Accelerates seedling development because nutrients are available from germination
- » Promotes healthy, vigorous root systems which ensure access to essential nutrients from the soil
- » Extremely safe for application to all seeds due to nutrition form
- » Microfine particles ensure even coverage and effective plant uptake

SEED TREATMENT PRODUCTS

WEIGHT

- Nutriseed™ ZMC • 25.9% ZN, 9.8% MN, 3% CU
- Nutriseed™ ZnMo Plus • 3% ZN, 2% MO + Kelp

PRODUCT PROPERTIES

WEIGHT

- Nutriseed™ ZMC • 16.11 lb./gal.
- Nutriseed™ ZnMo Plus • 9.85 lb./gal.

RATE/ACRE

- 2-8 oz./acre

APPLICATION TIMING

- Seed treatment



GENMAX™

GENMAX™ Chitosan to promote seed and root development.

- » Boosts seed germination and vigor
- » Improve germination
- » Systemic Acquired Resistance (SAR) for healthy seedlings
- » Nematode suppression
Ultra low use rate: 0.1 oz./cwt



Flotegic G™

CORN: 2-12-0; 2% MN, 9% ZN

Flotegic Moly G™

**SOYBEAN: 1-5-0; 1.5% FE,
3% MM, 3% MO, 10.5% ZN**

A talc/graphite replacement providing early season nutrition tailored towards specific crops.

- » Creates a larger, more developed root system
- » Improves planter lubrication and seed flowability
- » Improves resistance to early season cold and water stress
- » Reduces skips and seed bridging
- » Easy scoop, pour, and equipment options simplify applications
- » Recommended for soils, especially those with locked up, unavailable phosphorus
- » Flotegic G™ provides the same nutritional analysis as original Flotegic™ with the addition of graphite, specifically designed for high speed planters

PRODUCT PROPERTIES

RATE

- 3 oz./unit of seed (50 lb.) 6 oz./100 lb. of seed

APPLICATION TIMING

- At planting (seed applied)



InVigoron™ PRIME

7-18-6

InVigoron™ PRIME liquid fertilizer is manufactured by utilizing quality raw materials including ammonium hydroxide, urea, phosphoric acid, potassium acetate, and potassium hydroxide to provide a very agronomically efficient source of N-P-K.

- » 100% Orthophosphate Patented
- » Potassium Acetate Technology

PRODUCT PROPERTIES

WEIGHT	RATE/ACRE
• 10.6 lb./gal.	• 1-3 gal./acre
APPEARANCE	APPLICATION TIMING
• Clear, water white liquid	• In-furrow
SPECIFIC GRAVITY	
• 1.27 kg./L	
ODOR	
• No odor or mild ammonia	
pH	
• 6.0-7.0	
TOTAL NITROGEN (N)	
• 0.74	
AVAILABLE PHOSPHATE (P2O5)	
• 1.91	
SOLUBLE POTASH (K2O)	
• 0.64	
DERIVED FROM	
• Urea, ammonium hydroxide, phosphoric acid, potassium acetate, and potassium hydroxide	



InVigoron™ MAX

10-18-4

InVigoron™ MAX liquid fertilizer is manufactured by utilizing quality raw materials including ammonia, urea, phosphoric acid, and potassium hydroxide to provide a very agronomically efficient source of N-P-K.

- » 100% Orthophosphate Patented
- » Potassium Acetate Technology

PRODUCT PROPERTIES

WEIGHT	RATE/ACRE
• 10.5 lb./gal.	• 1-3 gal./acre
APPEARANCE	APPLICATION TIMING
• Clear, water white liquid	• In-furrow
SPECIFIC GRAVITY	
• 1.268 kg./L	
ODOR	
• No odor or mild ammonia	
pH	
• 7.0-7.6	
TOTAL NITROGEN (N)	
• 1.05	
AVAILABLE PHOSPHATE (P2O5)	
• 1.89	
SOLUBLE POTASH (K2O)	
• 0.42	
DERIVED FROM	
• Urea, ammonium hydroxide, phosphoric acid, potassium acetate, and potassium hydroxide	



InVigoron™ Supreme

4-13-17-1S

InVigoron™ Supreme liquid fertilizer is manufactured by utilizing quality raw materials including ammonium hydroxide, urea, phosphoric acid, potassium acetate, and potassium hydroxide to provide a very agronomically efficient source of N-P-K-S.

- » 100% Orthophosphate Patented
- » Potassium Acetate Technology

PRODUCT PROPERTIES

WEIGHT

- 11.25 lb./gal.

APPEARANCE

- Nearly colorless

SPECIFIC GRAVITY

- 1.33 kg./L

ODOR

- No odor or mild ammonia

pH

- 7.0- 7.6

TOTAL NITROGEN (N)

- 0.45

AVAILABLE PHOSPHATE (P2O5)

- 1.46

SOLUBLE POTASH (K2O)

- 1.91

DERIVED FROM

- Urea, ammonium hydroxide, ammonium thiosulfate, phosphoric acid, potassium hydroxide, and potassium acetate

RATE/ACRE

- 1-3 gal./acre

APPLICATION TIMING

- In-furrow



InVigoron™ Z-M²

**WITH 0.8% CU, 0.8% MG,
0.8% MN, 3.2% ZN**

InVigoron™ Z-M² is key to getting plants off to a strong start by speeding germination, setting stronger roots and establishing more even plant stands.

- » Ideal combination of key micronutrients applied at planting and/or early in the plant's lifecycle focused on vegetative development
- » Earlier germination and enhanced plant stand when applied at planting either in-furrow or 2x2
- » Ideal fully chelated micronutrient blend for producing vigorous root systems for access to essential nutrients
- » Labeled as a tank mix partner with other agricultural products such as Xtendimax™ and Engenia™ thus reducing sprayer passes

PRODUCT PROPERTIES

RATE/ACRE

- 1-3 gal./acre

APPLICATION TIMING

- Foliar



CropMax®

**2-0-2-.1B- 0.15CU-
0.3FE- 1.5MN- 0.00005MO- 4ZN**

NACHURS CropMax® liquid fertilizer is a premium blend of micronutrients designed for soil application at planting, seeding, or sidedress. NACHURS CropMax® contains 100% EDTA chelated nutrients which prevents tie up with the soil and with other nutrients and is designed to be used on a wide range of crops.

PRODUCT PROPERTIES

WEIGHT

- 10.22 lb./gal.

APPEARANCE

- Clear, brown liquid

SPECIFIC GRAVITY

- 1.23 kg./L

ODOR

- Slight amine

pH

- 6.8-7.5

RATE/ACRE

- 1-2 pt./acre

APPLICATION TIMING

- In-furrow

NutriCropRx



NutriCrop Rx is an application that allows FS Crop Specialists to capture in-field observations and plant tissue nutrient analysis. With its easy-to-use interface, you can capture geo-location, grower information, photos, and other in-field environmental information. After the in-field observations are captured, the information syncs to a soil testing laboratory to begin the nutrient analysis process. You can also view the status of prior submitted observations.

STEP 1: DOWNLOAD THE APP

- NutriCrop Rx is free and can easily be found in your App Store
- User log-in credentials are required, and are synched with your current member credentials

STEP 2: SAMPLE COLLECTION

- Select Enter New Sample from the Home menu
- Enter information in required fields to identify customer, crop, growth stage, take pictures for reference, etc.
- Generally use one sample per 40 acres
- Amount of leaf mass required would be approximately equal to the size of a softball
- Place sample in provided collection bag
- Scan bar code on bag, set location, send to lab

STEP 3: RESULTS

- Email and/or text notification is sent to Crop Specialist when report is ready
- Tap on a recommendation to view its report, to email to a recipient
- Sample data and reports remain on device for duration of season

STEP 4: RECOMMENDATION

- Tissue test results will describe individual nutrient levels as adequate, low, or deficient
- Results will provide appropriate NutriFuse™ products, or others to address nutrient deficiencies
- Apply recommended products with confidence to add value to your growers' production

KEY BENEFITS

Plant tissue testing allows us to respond to nutritional shortages in a timely manner with the right products to meet those needs.



Periscope™
CONCENTRATE

Periscope™ is a plant biostimulant that can improve the germination of seeds, plant emergence, root growth, seedling development and plant growth development throughout the growing season.

- » Plant growth stimulant for use on field crops, vegetable crops, small fruits, vines, tree fruits, sod, turf, shrubs, non-bearing ornamental trees, flowering plants, and ornamentals
- » Demonstrated growth stimulant to corn both as an in-furrow application as well as applied foliar
- » Soluble in water but can also be mixed directly into many liquid fertilizers for in-furrow at planting and can also be applied in tank mixes as foliar sprays

PRODUCT PROPERTIES

RATE/ACRE

- 2-8 oz./acre

APPLICATION TIMING

- Foliar/In-furrow/Seed



TROVEC™
FERTILIZER ADDITIVE

- » Improves fertilizer efficiency by increasing plant uptake
- » Will not discolor fertilizer solution- allows use of Redball™ meters
- » Increases early season root development
- » Enhances tank-mix compatibility
- » For use with in-furrow, 2x2 liquid starter fertilizers, foliar applied nutrients
- » Compatible with all pH range polyphosphates and orthophosphates

PRODUCT PROPERTIES

WEIGHT

- 8.57 lb./gal.

RATE/ACRE

- 6-8 oz./acre

APPLICATION TIMING

- Pre or post

ADJUVANT RECOMMENDATION

- Use with liquid fertilizers



TAKE YOUR STARTER SYSTEM TO THE **NEXT LEVEL**

High quality row starters are an effective way to feed early crop growth and set crops up for maximum potential. Utilizing Plant Growth Regulators (PGR's) such as Periscope can help plants get a jump on emergence and early season growth. High quality organic acids such as Trovec can increase the efficiency of your applied fertilizer by stimulating root growth and reducing nutrient immobilization. These products can help LEVEL UP the performance of row starters and maximize ROI.



MONTY'S® LIQUID CARBON

HUMIC ACIDS

THE KEY TO MAXIMIZING YOUR SOIL

A soil conditioner designed to reduce soil compaction and improve overall soil health, it can be easily applied all year round, especially during pre-chemical application or burn down. Liquid Carbon enhances micronutrient uptake and breakdown of plant residue. Improve the health and vitality of your soil and maximize your yields with Monty's® Liquid Carbon.

- » Reduces soil compaction
- » Improves overall soil health
- » Easy application during burndown and side-dress
- » Enhances micronutrient uptake
- » Enhances breakdown of plant residue
- » Tank-mix flexibility for year-round use
- » Not registered in all states

PRODUCT PROPERTIES

WEIGHT

- 8.5 lb./gal.

RATE/ACRE

- 2 qt./acre when soil applied, 1 qt./acre when foliar applied



Nachurs K-fuse®

6-0-12-12S

NACHURS K-fuse® is designed to be blended with various other fertilizers to provide important nutrients needed to grow high-yielding crops. Primarily, NACHURS K-fuse® should be blended with UAN solutions for sidedress and/or fertigation application to provide two very critical elements - Potassium and Sulfur. It can also be mixed with APP (i.e. 10-34-0) and UAN for 2x2 and/or strip-till application to provide a more balanced nutrient program. NACHURS K-fuse® contains a proprietary additive which allows for more narrow mixing ratios with UAN solutions than other potassium products currently on the market. Always follow mixing recommendations to limit risk potential of forming low solubility potassium nitrate compounds. NACHURS K-fuse® should not come in close proximity to the seed under any circumstances (i.e. in-furrow placement).

PRODUCT PROPERTIES

WEIGHT

- 10.8 lb./gal.

APPEARANCE

- Clear, nearly colorless

SPECIFIC GRAVITY

- 1.30 kg./L

ODOR

- Ammonia

pH

- 7.4-7.9

DERIVED FROM

- Potassium acetate, urea, ammonium thiosulfate

RATE/ACRE

- 1-4 gal./acre

APPLICATION TIMING

- Foliar/In-furrow



Nachurs K-flex®

0-0-19-6S

NACHURS K-flex® fertilizer is designed to be blended with various other fertilizers to provide important nutrients needed to grow high-yielding crops. It can be mixed with APP (i.e. 10-34-0), UAN solutions, and liquid urea solutions to provide two very critical elements - Potassium and Sulfur; typically missing from these base fertilizer products. NACHURS K-flex® fertilizer added to APP creates a starter blend that can be used as a foundation for planting in cold soils, especially in minimum or no-till environments. It can be blended with UAN solutions to create a strip-till/sidedress fertilizer that provides extra potassium and sulfur at a time when uptake of these nutrients is rapidly increasing. NACHURS K-flex® fertilizer can also be blended with liquid urea to make an effective foliar fertilizer for forage crops and small grains.

PRODUCT PROPERTIES

WEIGHT

- 10.55 lb./gal.

APPEARANCE

- Clear, nearly colorless

SPECIFIC GRAVITY

- 1.27 kg./L

ODOR

- Ammonia

pH

- 8.1-9.1

DERIVED FROM

- Potassium acetate, potassium thiosulfate

RATE/ACRE

- 1-4 gal./acre

APPLICATION TIMING

- Foliar/In-furrow



Nachurs K-fuel®

0-0-24

NACHURS K-fuel® liquid fertilizer is a unique form of foliar potassium having superior foliar absorption over traditional forms of potassium. Unlike other liquid forms of potassium such as nitrates, hydroxides, thiosulfates, or carbonates, NACHURS K-fuel® liquid fertilizer is not caustic or corrosive, resulting in safer foliar applications and less plant stress. NACHURS K-fuel® liquid fertilizer small molecular size coupled with the plant's natural affinity for organic acids allows for a much higher degree of potassium absorption. For best results, apply NACHURS K-fuel® liquid fertilizer according to recommendations based on plant tissue or soil analysis.

PRODUCT PROPERTIES

WEIGHT

- 10.65 lb./gal.

APPEARANCE

- Clear, colorless to pale yellow

SPECIFIC GRAVITY

- 1.28 kg./L

ODOR

- Slight sweet odor

pH

- 9.5-10.5

DERIVED FROM

- Potassium acetate

RATE/ACRE

- 0.5-4 gal./acre

APPLICATION TIMING

- Foliar/In-furrow



DYMAX™

FOLIAR BIONUTRIENT

- » Fast and visible impact on plant health
- » Improved resistance and stress resilience
- » Increases early season root development
- » 100% L-isomer amino acids-
Over 50% glutamic acids
- » Provides additional nutrient support during the plant's critical development stages
- » Scientifically designed, Amino Acid based product utilizing 100% vegetable sources
- » Can be tank mixed with other inputs, like herbicides, pesticides, fungicides, and foliar nutrition products

PRODUCT PROPERTIES

WEIGHT

- 10.18 lb./gal.

NUTRITIONAL PROPERTIES

- 5-0-0

DERIVED FROM

- Protein hydrolysate and urea

RATE/ACRE

- 16-24 oz./acre

APPLICATION TIMING

- Foliar



Nachurs 10% B[®]

10% BORON

NACHURS 10% Boron micronutrients are intended for use in a complete crop nutritional program where a soil and/ or plant tissue analysis has indicated a boron deficiency.

PRODUCT PROPERTIES

WEIGHT

- 11.2 lb./gal

APPEARANCE

- Clear to slight yellow

ODOR

- Mild odor

pH

- 7.6-8.4

DERIVED FROM

- Boric acid

RATE/ACRE

- 1-2 pt./acre



FlexN[™]

25-0-0-0.5B

6.2% SLOW-RELEASE NITROGEN

A clear liquid deriving its slow-release properties from methylene ureas.

- » Easy to use and cost effective
- » Flexible rates to fit your fertility program
- » High quality, controlled release source of nitrogen
Minimal crystallization and volatilization
- » Excellent carrier for most crop protection products
- » Provides excellent translocation within the plant and has low wash off potential
- » Excellent nitrogen management tool when used in a planned fertilization program
- » Can be used on multiple crops, including small grains, corn, and soybeans
- » May be used safely as a foliar spray and has low burn potential
- » Low salt index compared to other nitrogen forms

PRODUCT PROPERTIES

WEIGHT

- 10.0 lb./gal.

DERIVED FROM

- Methylene ureas

TOTAL NITROGEN (N)

- 25

RATE/ACRE

- 1-3 gal./acre

AVAILABLE PHOSPHATE (P2O5)

- 0

APPLICATION TIMING

- Foliar

SOLUBLE POTASH (K2O)

- 0



FlexN™ 28-0-0

20.2% SLOW-RELEASE NITROGEN

A clear liquid deriving its slow-release properties from Triazone nitrogen.

- » High quality, controlled release source of nitrogen
- » Is well suited for formulating fertilizer blends and is compatible with many phosphorous, potassium, and micronutrient sources
- » Excellent carrier for most crop protection products
- » Resists drying out, increasing plant safety
- » Provides exceptional translocation within the plant and has low wash off potential
- » Easy to use and cost effective
- » Flexible rates to fit your fertility program and timing
- » Low salt index compared to other nitrogen forms

PRODUCT PROPERTIES

WEIGHT

- 10.6 lb./gal.

RATE/ACRE

- 1-3 gal./acre

TOTAL NITROGEN (N)

- 28

APPLICATION TIMING

- Foliar

AVAILABLE PHOSPHATE (P2O5)

- 0

SOLUBLE POTASH (K2O)

- 0

DERIVED FROM

- Triazone nitrogen



Envita

NITROGEN FIXING BIOLOGICAL

A N-fixing bacteria that works from within the plant, applied in furrow, OR foliar, and across crops to supplement nitrogen where and when it's needed.

- » Allows crops to fix their own nitrogen
- » Multi-crop use
- » Colonizes the entire plant from the roots through the top of the vegetation
- » Flexible Application: In-furrow Foliar

PRODUCT PROPERTIES

WEIGHT

- 8.33 lb./gal

ODOR

- Strong - Mask or respirator suggested

RATE/ACRE

- 3.2 oz./acre

APPLICATION TIMING

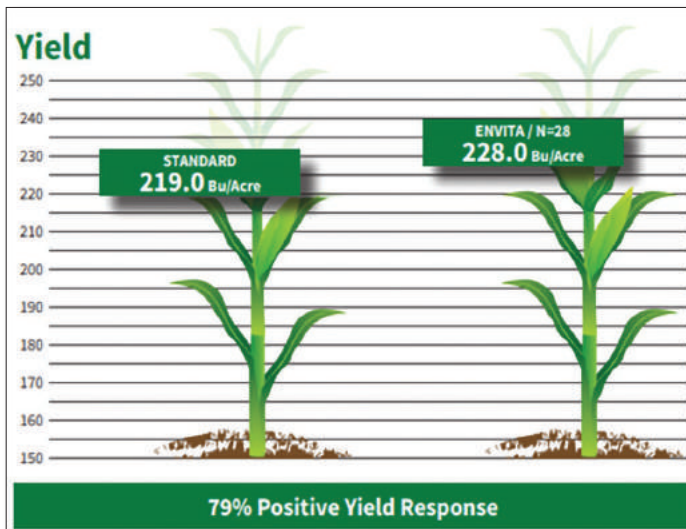
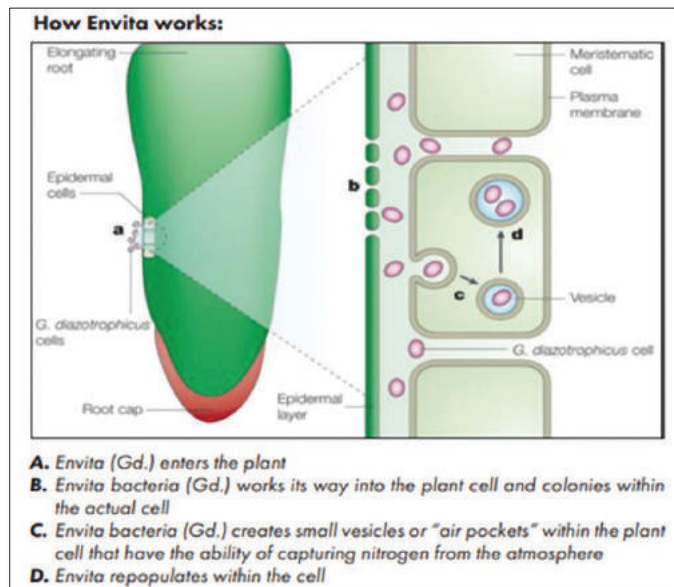
- Foliar/In-furrow

envita

MULTI CROP USE



Envita is a new mode of action to most agricultural crops for nitrogen fixation containing a single natural bacteria (Gd). It colonizes within the plant cells and forms vesicles or small air pockets for nitrogen fixation. Envita is unique because it develops that relationship with cells throughout the entire plant, rather than just in the roots like rhizobia do. Envita will live in the plant throughout the entire season to supplement nitrogen requirements.



“In 2021 AgValdity Applied Research testing, corn response to Envita yielded +9 bushel/acre when compared to growers’ standard practices. Yield impacts varied from -6 to +36 bushel/acre, demonstrating the benefit of using a biological source of nitrogen in addition to conventional nitrogen sources. The 2021 Envita trials were located across the FS system and equated to an average +\$34.70/acre impact to grower profitability.”

~2021 GROWMARK MiField Trial Book

NutriFuse™

Less Stress. Higher Yields.

- ✓ Going to 'Plan B" (from Dicamba) leaves few options.
- ✓ Reducing crop stress can significantly increase yields.
- ✓ Foliar Feeding while using PPO products can reduce leaf burn (phyto).
- ✓ Shortening crop recovery time from PPO applications may increase yields.



**UNTREATED
ULTRA BLAZER**



**TREATED UB PLUS
NUTRIFUSE™ FOCUS 3**



NutriFuse™ DBX

**4-0-0; 1.5% S, 2% B,
0.1% MO, 3% MN, 2% ZN**

NutriFuse™ DBX is a high concentration micronutrient solution with 4% Nitrogen for added plant growth. It is the ideal choice for maximizing crop yields and ideal tank mix partner when applying herbicide and fungicide applications.

- » Provides the key micronutrients for the critical vegetative growth stages in the plant's lifecycle
- » Creates healthy root systems for optimal nutrient access
- » Labeled as a tank mix partner with the other agricultural products such as Xtendimax™, Engenia™, and Enlist® thus reducing sprayer passes
- » Fully EDTA chelated with a higher load of the essential nutrients plants need

PRODUCT PROPERTIES

WEIGHT

- 10.6 lb./gal.

pH

- 8.8

TOTAL NITROGEN (N)

- 4

RATE/ACRE

- 1-3 qt./acre

APPLICATION TIMING

- Foliar



NutriFuse™ DX 400

**4-0-0; 2% S, 0.5% B, 0.5%
FE, 2% MN, 2% ZN**

NutriFuse™ DX 400 is a specially formulated, proprietary liquid foliar fertilizer that combines the benefits of nitrogen with vital micronutrients. This product delivers these macro and micronutrients in an effective, readily available form to increase plant health, growth, and yields when nutrient demands are at their highest.

- » Labeled as a tank mix partner with the other agricultural products such as Xtendimax™, Engenia™, and Enlist One® thus reducing sprayer passes
- » Compatible with most foliar pesticides
- » Foliar nutrients for defense against environmental stress

PRODUCT PROPERTIES

WEIGHT

- 10.35 lb./gal.

pH

- 7.5

TOTAL NITROGEN (N)

- 4

RATE/ACRE

- 1-2 qt./acre

APPLICATION TIMING

- Foliar



NutriFuse™ FOCUS K 5-8-12

5-8-12; 0.02% B, 0.05% CU, 0.1% FE,
0.05% MN, 0.001% MO, 0.05% ZN

The liquid fertilizer with a high macronutrient and a complete micronutrient content for crops with special potassium requirements and for crops grown at locations with potassium fixation in the soil.

NutriFuse™ Focus K provides a package that high macronutrient and well-balanced micronutrients permits both preventative and curative applications to control specific deficiencies in agricultural and horticultural crops formulated to be compatible with many common pesticides NutriFuse™ Focus K is an ideal tank mix partner to deliver plant nutrition during a pre-planned pesticide application.

- » Nutrient ratio designed for potassium demanding crops
- » Fully chelated cationic micronutrients
- » Easy to use liquid formulation
- » Nutrients readily available to plants

PRODUCT PROPERTIES

WEIGHT

- 10.56 lb./gal.

pH

- 6.5

DERIVED FROM

- Phosphoric acid, potassium nitrate, potassium hydroxide solution, urea, ammonium borate, copper edta, iron edta, manganese edta, sodium molybdate, zinc edta

RATE/ACRE

- 1-2 qt./acre

APPLICATION TIMING

- Foliar



NutriFuse™ SUPER 8-8-6

8-8-6; 0.02% B, 0.05% CU, 0.1% FE,
0.05% MN, 0.001% MO, 0.05% ZN

The well-balanced NPK liquid foliar fertilizer for supplemental nutrition to a wide range of intensive and specialty crops.

NutriFuse™ Super is a liquid foliar fertilizer with a full compliment of macro and micronutrients Formulated to be an ideal tank mix partner with most common pesticides, NutriFuse™ Super provides supplemental plant nutrition to take full advantage of planned applications of crop inputs, enhancing plant health and productivity.

- » Balanced nutrient supply
- » Chelated cationic micronutrients
- » pH-regulation of spray solution
- » Improves plant health and growth

PRODUCT PROPERTIES

WEIGHT

- 9.82 lb./gal.

pH

- 5.3

DERIVED FROM

- Ammonia, urea, phosphoric acid, potassium hydroxide, boric acid, copper edta, ferric edta, manganese edta, sodium molybdate, and zinc edta

RATE/ACRE

- 1-2 qt./acre

APPLICATION TIMING

- Foliar



NutriFuse™ ZMn

0.5% B, 2% MN, 0.25% MO, 3% ZN

NutriFuse™ ZMn is the ideal micronutrient package for finishing the crop. Applied during the reproductive stage, this multi-action nutritional aids in pollen and grain fill while also ensuring proper root development for handling stress.

- » Sets the crop up for maximum grain fill leading to maximum yield potential
- » Ideal tank mix partner with fungicides during the early reproductive stage
- » Labeled as a tank mix partner with the other agricultural products such as Xtendimax™, Engenia™, and Enlist One® thus reducing sprayer passes
- » Helps maintain vigorous roots to ensure access to essential nutrients from the soil
- » Fully EDTA Chelated to ensure maximum plant availability

PRODUCT PROPERTIES

WEIGHT

- 10.5 lb./gal.

RATE/ACRE

- 1-3 qt./acre

APPLICATION TIMING

- Foliar



NutriBlast™ Fe

5% CHELATED IRON

NutriBlast™ Fe is a soil and foliar-applied Iron and Manganese product built with a proprietary blend of organic complexing agents, Opti-Plex, that together deliver performance beyond just nutrients alone. Independent testing with leading researchers and universities has confirmed the benefits of the Opti-Plex advantage to help nutrients by-pass tie-ups by promoting the rapid uptake, absorption and translocation of nutrients within the plant.

- » Opti-Plex Complex (Organic Acid Complex) for optimum nutrient adsorption – both soil and foliar applied
- » Technology provides nutrient mobility within plant system
- » Easy to use liquid formulation
- » Iron, Manganese, and Sulfur nutrients are readily available to plants

PRODUCT PROPERTIES

WEIGHT

- 9.8 lb./gal.

DERIVED FROM

- Ferrous sulfate heptahydrate, manganese sulfate

RATE/ACRE

- 1-4 qt./acre

APPLICATION TIMING

- Foliar/In-furrow



NutriBlast™ Mn

5% CHELATED MANGANESE

NutriBlast™ Mn is a soil and foliar-applied Manganese product built with a proprietary blend of organic complexing agents, that together deliver performance beyond just nutrients alone. Independent testing with leading researchers and universities has confirmed the benefits of the Opti-Plex advantage to help nutrients by-pass tie-ups by promoting the rapid uptake, absorption and translocation of nutrients within the plant.

- » Opti-Plex Complex (Organic Acid Complex) for optimum nutrient absorption – both soil and foliar applied
- » Technology provides nutrient mobility within plant system
- » Easy to use liquid formulation
- » Manganese and Sulfur nutrients are readily available to plants

PRODUCT PROPERTIES

WEIGHT

- 9.5 lb./gal.

DERIVED FROM

- Manganese sulfate

RATE/ACRE

- 1-4 pt./acre

APPLICATION TIMING

- Foliar/In-furrow



NutriBlast™ Zn

6% CHELATED ZINC

NutriBlast™ Zn is formulated with our proprietary soil and foliar technology for rapid uptake, absorption, and translocation of Zinc (Zn) and Manganese (Mn) to resolve nutrient deficiencies. NutriBlast™ Zn enhances the mobility of Zinc and Manganese in the plant. Zinc is an essential constituent of several important plant enzyme systems. Zinc deficiency results in chlorosis, and abnormal cell elongation, which leads to short internodes, smaller leaves and reduced crop yield. Manganese is an activator for enzymes in plant growth processes. It assists Zinc and Iron (Fe) in many plant functions and is perhaps the single most important micronutrient in the plant's natural defense against disease.

- » Opti-Plex Complex (Organic Acid Complex) for optimum nutrient absorption – both soil and foliar applied
- » Technology provides nutrient mobility within plant system
- » Easy to use liquid formulation
- » Zinc, Manganese, and Sulfur nutrients are readily available to plants

PRODUCT PROPERTIES

WEIGHT

- 9.9 lb./gal.

DERIVED FROM

- Manganese sulfate, ferrous sulfate heptahydrate

RATE/ACRE

- 1-6 pt./acre

APPLICATION TIMING

- Foliar/In-furrow



NutriBlast™ B

10% CHELATED BORON

NutriBlast™ B is formulated with our proprietary soil and foliar technology for rapid uptake, absorption, and translocation of Zinc (Zn) and Manganese (Mn) to resolve nutrient deficiencies. NutriBlast™ Zn enhances the mobility of Zinc and Manganese in the plant. Zinc is an essential constituent of several important plant enzyme systems. Zinc deficiency results in chlorosis, and abnormal cell elongation, which leads to short internodes, smaller leaves and reduced crop yield. Manganese is an activator for enzymes in plant growth processes. It assists Zinc and Iron (Fe) in many plant functions and is perhaps the single most important micronutrient in the plant's natural defense against disease.

- » Opti-Plex Complex (Organic Acid Complex) chelation for optimum nutrient adsorption – both soil & foliar applied
- » Technology provides nutrient mobility within plant system
- » Easy to use liquid formulation

PRODUCT PROPERTIES

WEIGHT

- 11.16 lb./gal

DERIVED FROM

- Boric Acid

RATE/ACRE

- 1 to 2 qt./acre

APPLICATION TIMING

- Foliar



Breakdown™

LIQUID HUMICS FOR CROP RESIDUE MANAGEMENT

Breakdown™ is a unique blend of specific microbes to digest crop stubble and releases nutrients for next year's crop. Breakdown targets cellulose, lignin, and keratin to stimulate natural soil biology and further decomposition. Increased microbial activity supports soil health and moisture retention. Breakdown's flexible application timing fits both spring and fall operational schedules.

- » Postharvest applications provide best results
- » Use in conjunction with FlexN™ for optimal results
- » Available for use with burndown and preplant herbicides
- » Not labeled in all states

PRODUCT PROPERTIES

RATE/ACRE

- 3-4 qt./acre

APPLICATION TIMING

- Post harvest/Pre-plant

SOIL AMENDING ACTIVE INGREDIENTS

- Activated Liquid Humics *Bacillus amyloliquefaciens*
- 1 *Bacillus subtilis* - 3 *Bacillus subtilis* - 4



YieldON

**3-0-3 WITH 0.5% MN,
0.5% ZN, 0.2% MO**

YieldON is a unique biostimulant and nutritional able to increase row crop's productivity, modulating cell metabolism, division, and expansion, while also improving transport of sugars and nutrients. This results in an increase in the number of nodes and pods in soybeans and the number of kernels per ear in corn. The application timing is identical to most fungicides.

- » Better transport of sugars and nutrients
- » Promotion of cell division which produces more, larger kernels
- » Improved fatty acid biosynthesis and transport in soybeans

PRODUCT PROPERTIES

WEIGHT

- 10.0 lb./gal.

TOTAL NITROGEN (N)

- 3

RATE/ACRE

- 1.5 pt./acre

APPLICATION TIMING

- Post



SP-1™

LIQUID BIOFERTILIZER

- » SP-1™ is a stable, liquid biofertilizer product It is a biologically diverse group of live micro-organisms, which, when successfully inoculated into the rhizosphere of growing plants, improves the availability and delivery of essential nutrients Improvements to plant mineral nutrition leads to many benefits
- » Contains a blend of crop promoting Bacillus Bacteria
- » Extracted humus and a proprietary herbal blend with increased potency
- » Better mineral nutrition for the plants

PRODUCT PROPERTIES

WEIGHT

- 8.3 lb./gal.

RATE/ACRE

- 1-3 gal./acre

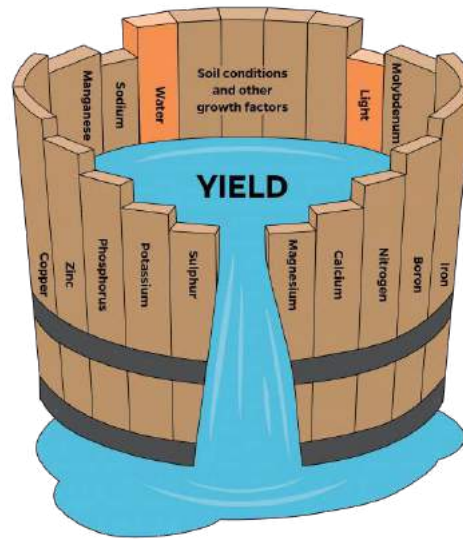
APPLICATION TIMING

- Pre-Plant/Planting/Early Post



Liebig's Law of the Minimum

You can only be as good as your least limiting factor! The goal is to never be limiting. The Law of the minimum states that crop yields will only grow to the most limiting factor, and when the factor is supplemented, another factor will become the limiting factor to hold back yield. Represented by the barrel below, the limiting factor is the lowest stave, and the barrel can be with anymore water, until that stave is raised. The barrel is as full as it can get. By regular soil and tissue test, like NutriCropRx, growers can potentially identify their limiting factor and provide a solution to increase yield.



Macronutrient Functions	
Nutrient	Function
Sulfur	Amino acids and coenzyme A
Phosphorus	ATP, nucleic acids, phospholipids
Magnesium	Chlorophyll molecule
Calcium	Cell walls, cofactors, cellular membrane
Potassium	Osmosis and ionic balance, stomatal activity
Nitrogen	Amino acids, proteins, nucleotides, nucleic acids, chlorophylls
Oxygen, Carbon & Hydrogen	Almost all chemical molecules, 96% of the plant

Secondary Macronutrients		
Nutrient	Influence/Function	Deficiency Symptom
Calcium	Maintains strength of cell walls; promotes early root growth	Short, much branched roots; young leaves at growing points die back
Magnesium	Essential for chlorophyll and photosynthesis; activator for many plant enzymes; aids nutrient uptake	Loss of green leaf color starting with bottom leaves
Sulfur	Stimulates root growth; needed for protein formation; gives green color	Young leaves light green with veins being lighter

ALWAYS READ AND CAREFULLY FOLLOW LABEL DIRECTIONS.

DISCLAIMER OF WARRANTIES. THE SELLER MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OTHERWISE, AND, TO THE FULL EXTENT PERMITTED BY LAW, SPECIFICALLY DISCLAIMS ALL SUCH EXPRESS AND IMPLIED WARRANTIES. CONSULT ALL PRODUCT LABELS FOR ADDITIONAL WARRANTY DISCLOSURES.

LIMITATION OF DAMAGES. IN NO EVENT SHALL THE SELLER BE LIABLE FOR ANY INCIDENTAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, INCLUDING LOSS OF PROFITS.

THE INFORMATION CONTAINED IN THIS HANDBOOK IS PROVIDED AS A GENERAL GUIDE ONLY. SPECIFIC PRODUCT INFORMATION AND DIRECTIONS FOR USE SHOULD BE OBTAINED BY CAREFUL STUDY OF THE COMPLETE MANUFACTURER'S LABEL.

It is impossible to eliminate all risks inherently associated with use of the products contained in this brochure. Crop or personal injury, ineffectiveness or other unintended consequences may occur due to factors such as weather conditions, presence of other materials or use of application of the product contrary to label instructions, all of which are beyond the control of GROWMARK, Inc.

Copyright. All copyrighted content available in this product guide is either property of GROWMARK® or used with permission of its owner. You should assume that all content is copyrighted (regardless of whether or not a copyright notice appears on such materials) and that, it may not be used without prior written consent or the written consent of the owner thereof. **Trademarks.** All Trademarks displayed in this product guide, whether registered or unregistered (and regardless of whether a trademark notice is present), are either GROWMARK® property or their respective owners, and may not be copied, downloaded, uploaded, modified, reproduced or otherwise used or exploited without written permission of GROWMARK® or the written consent of the owner thereof.

