



CROP PERFORMANCE

OSC

OPHEIM | SEED & CHEMICAL

Shane Brockhoff
Michael Martin

12.4.25

It's tough out there...

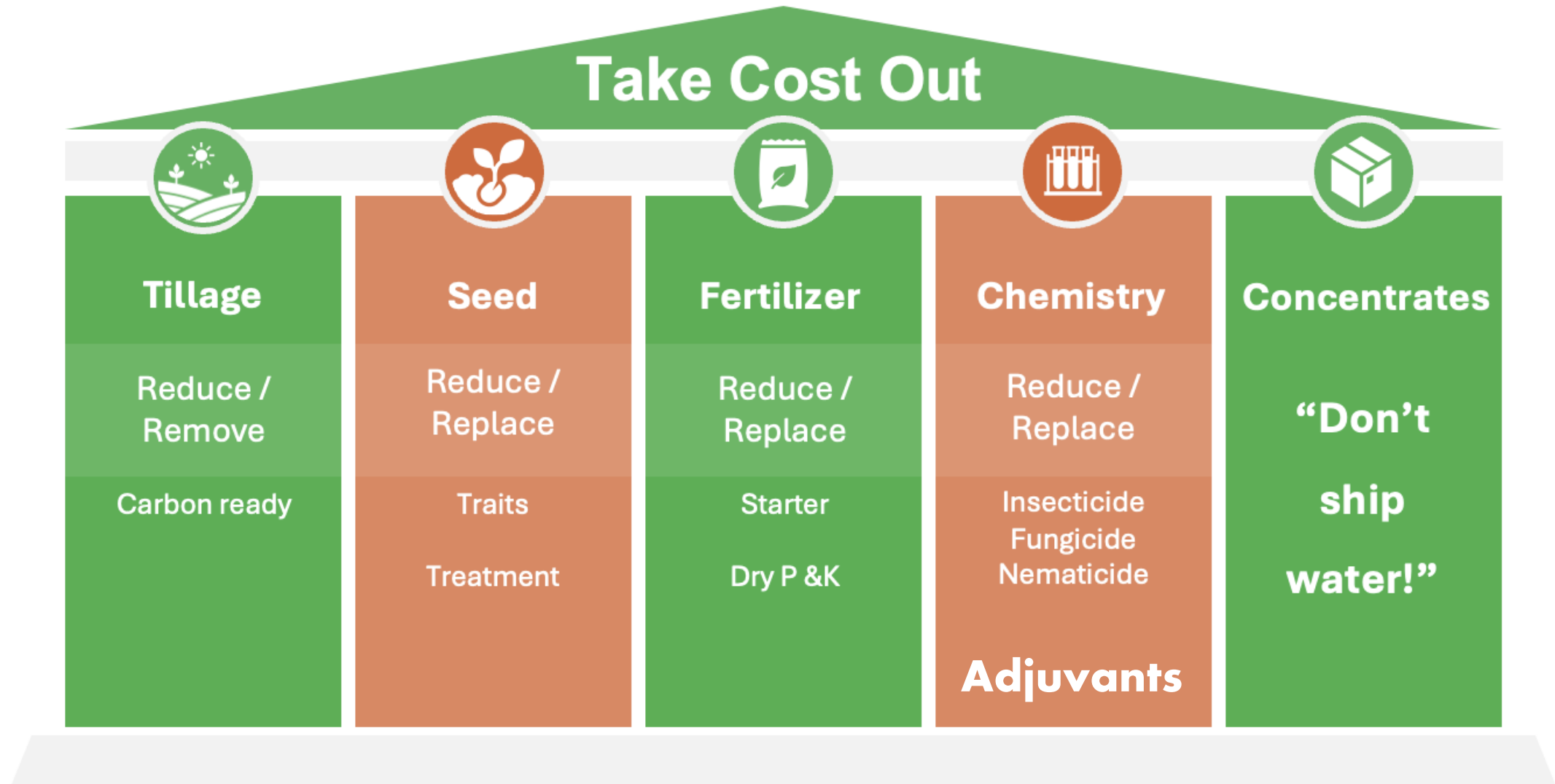


Why is Meristem here?

To take cost out of production.
Bring innovation to the market.

Meristem: Always More Bushels for Less

Cut Distribution Cost + Innovation through Patented Delivery Systems





What is the yield potential of Corn? Soy?

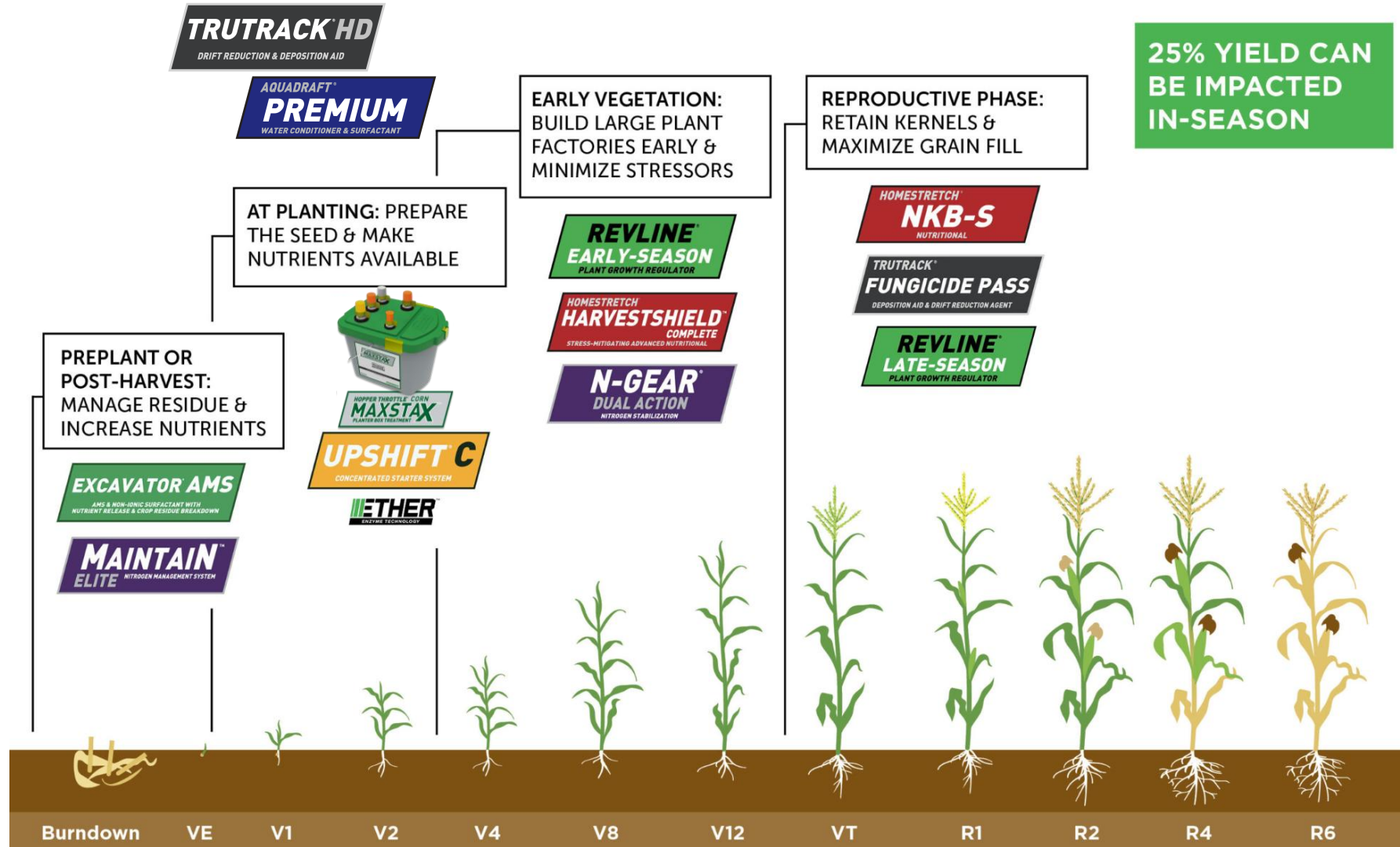
Corn:	907bu/ac	(Tolenaar 1985)	
	624bu/ac	Hula – 2023	(69%)
Soy:	315bu/ac	(de Wit 1967)	
	218bu/ac	Harrell - 2024	(69%)



HOW DO WE TAP INTO THIS?

Corn:	907bu/ac	(Tolenaar 1985)	
	624bu/ac	Hula – 2023	(69%)
Soy:	315bu/ac	(de Wit 1967)	
	218bu/ac	Harrell - 2024	(69%)

The Meristem System



The Meristem System

25% YIELD CAN
BE IMPACTED
IN-SEASON

TRUTRACK^{HD}

DRIFT REDUCTION & DEPOSITION AID

AQUADRAFT[®]

PREMIUM

WATER CONDITIONER & SURFACTANT

AT PLANTING: PREPARE
THE SEED & MAKE
NUTRIENTS AVAILABLE

PREPLANT OR
POST-HARVEST:
MANAGE RESIDUE &
INCREASE NUTRIENTS

EXCAVATOR AMS

AMS & NON-IONIC SURFACTANT WITH
NUTRIENT RELEASE & CROP RESIDUE BREAKDOWN



HOPPER THROTTLE SOYBEAN
MAXSTAX
PLANTER BOX TREATMENT

EARLY VEGETATION:
BUILD LARGE PLANT
FACTORIES EARLY &
MINIMIZE STRESSORS

REVLIN[®]
EARLY-SEASON
PLANT GROWTH REGULATOR

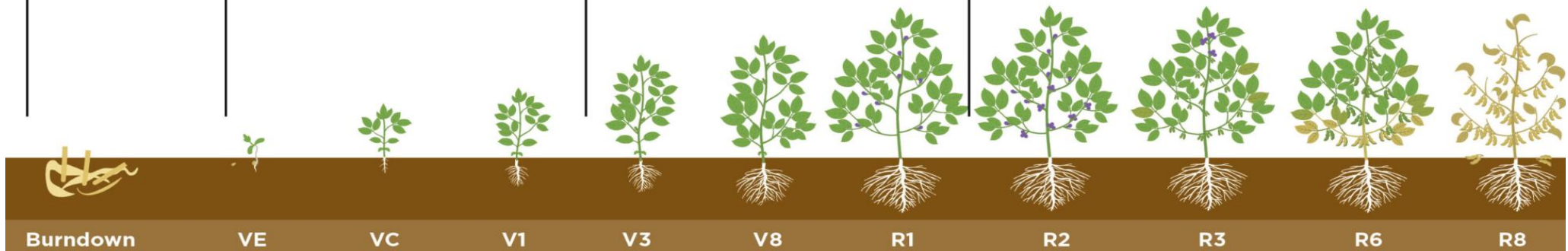
HOMESTRETCH[®]
HARVESTSHIELD[™]
COMPLETE
STRESS-MITIGATING ADVANCED NUTRITIONAL

REPRODUCTIVE PHASE:
RETAIN PODS &
MAXIMIZE GRAIN FILL

HOMESTRETCH[®]
NKB-S
NUTRITIONAL

TRUTRACK[®]
FUNGICIDE PASS
DEPOSITION AID & DRIFT REDUCTION AGENT

REVLIN[®]
LATE-SEASON
PLANT GROWTH REGULATOR



The System Approach – More Bu 4 Less



Meristem Spend per Acre (No Land/Equip/Insurance)

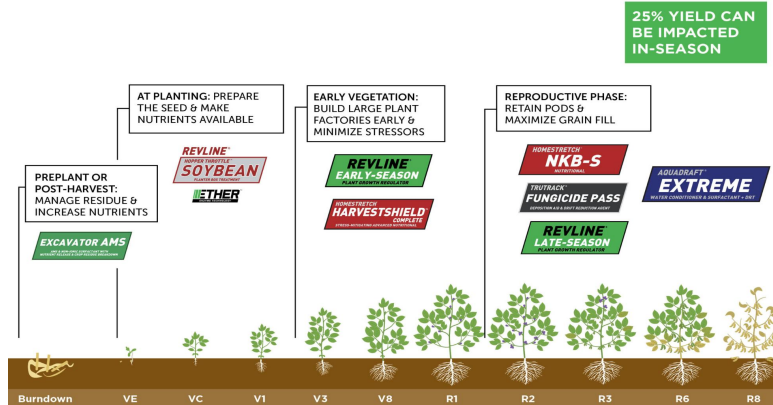
Seed	\$45
Max Seed Trtmt	\$30
Excavator AMS	\$15
Chemical/Adj	\$65
Fungicide	\$20
Foliar Protection	\$40
Total:	\$215

**\$80/ac Less
Protect Yield**

Standard Spend per Acre (No Land/Equip/Insurance)

Seed	\$45
Liq. Seed Trtmt	\$30
Dry Fert (80-80)	\$120
Chemical/Adj	\$70
Fungicide	\$30
Total:	\$295

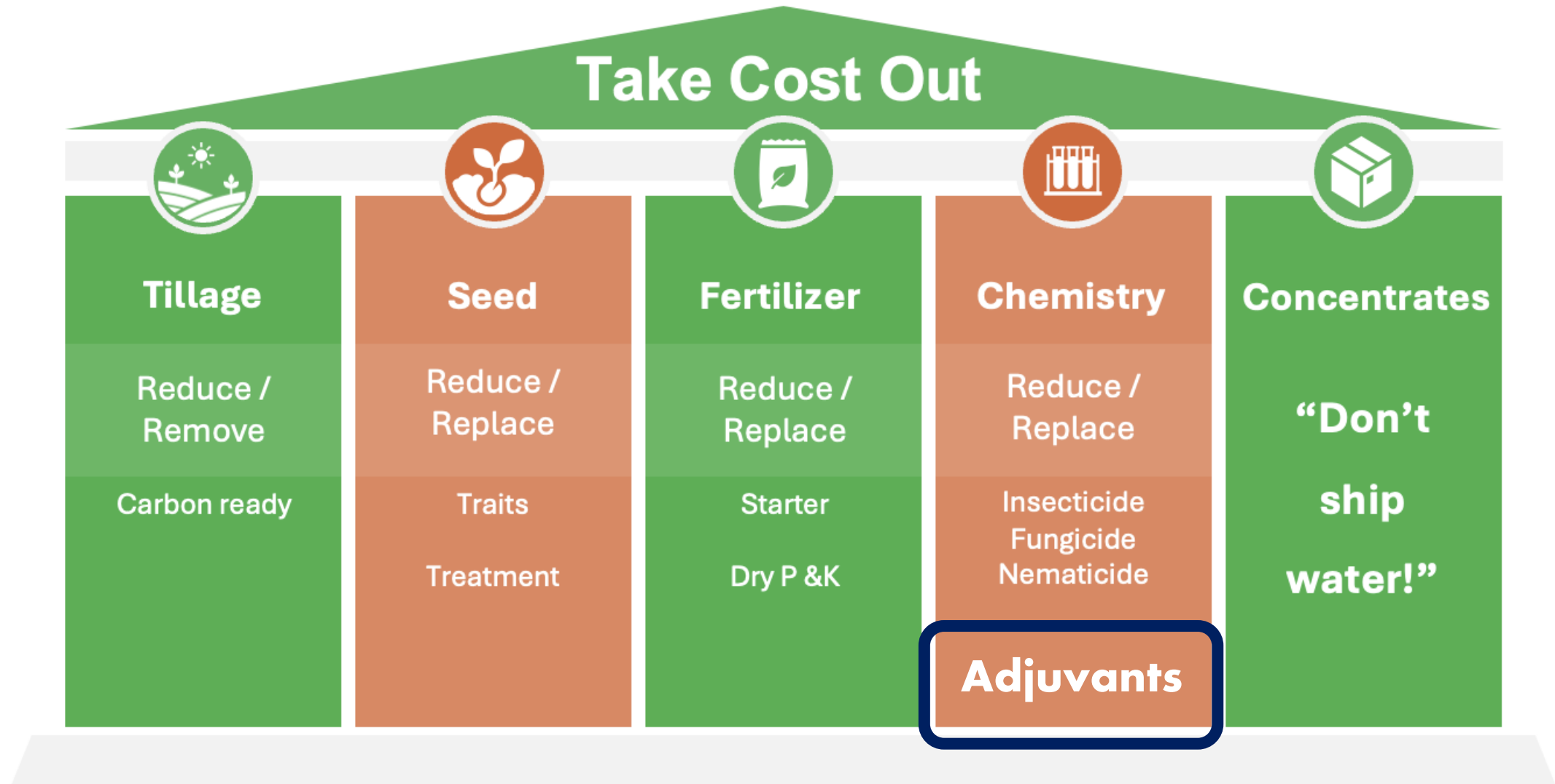
25% YIELD CAN
BE IMPACTED
IN-SEASON



Bray P1 > 20ppm

K > 200ppm

Cut Distribution Cost + Innovation through Patented Delivery Systems



Adjuvants

What are the #1 sold Adjuvants globally today?



MasterLock®

NONIONIC SURFACTANT

REDUCES SURFACE TENSION.



High surface tension =
Low dispersion and adhesion.



Low surface tension =
High dispersion and adhesion.

DRIFT REDUCTION TECHNOLOGY

REDUCES DRIFT AND EVAPORATION.



SR11008 (10 HZ PWM)
@ 40 PSI
Water
10 MPH Wind



SR11008 (10 HZ PWM)
@ 40 PSI
MasterLock - 6.4 oz./A
10 MPH Wind

DROPTIGHT® TECHNOLOGY

REDUCES BOUNCE.



Water

MasterLock

TRUTRACK®
FUNGICIDE PASS

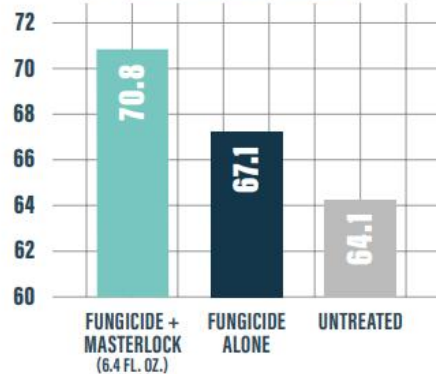
DEPOSITION AID & DRIFT REDUCTION AGENT

MASTERLOCK ADJUVANT HELPS IMPROVE COVERAGE DEEP INTO THE CANOPY

If you're only getting active ingredients to the top sections of the plant, you're only addressing part of the problem. For optimal control and fungicide efficacy, sufficient coverage from top to bottom is critical.

MASTERLOCK ADJUVANT HELPS IMPROVE
FUNGICIDE RESPONSE ON WHEAT

WHEAT YIELD BUSHELS/A

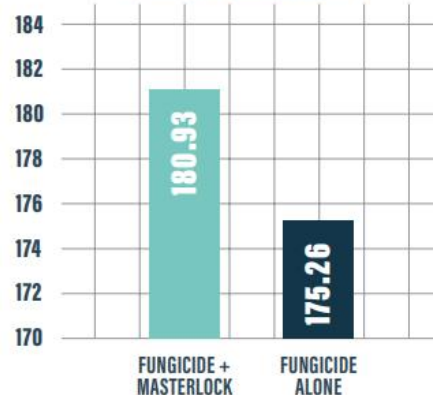


INCREASED
WHEAT YIELD BY
AN AVERAGE OF

3.7
BU/A

MASTERLOCK ADJUVANT HELPS IMPROVE
FUNGICIDE RESPONSE ON CORN

CORN YIELD BUSHELS/A



INCREASED
CORN YIELD BY
AN AVERAGE OF

5.7
BU/A



4oz/ac

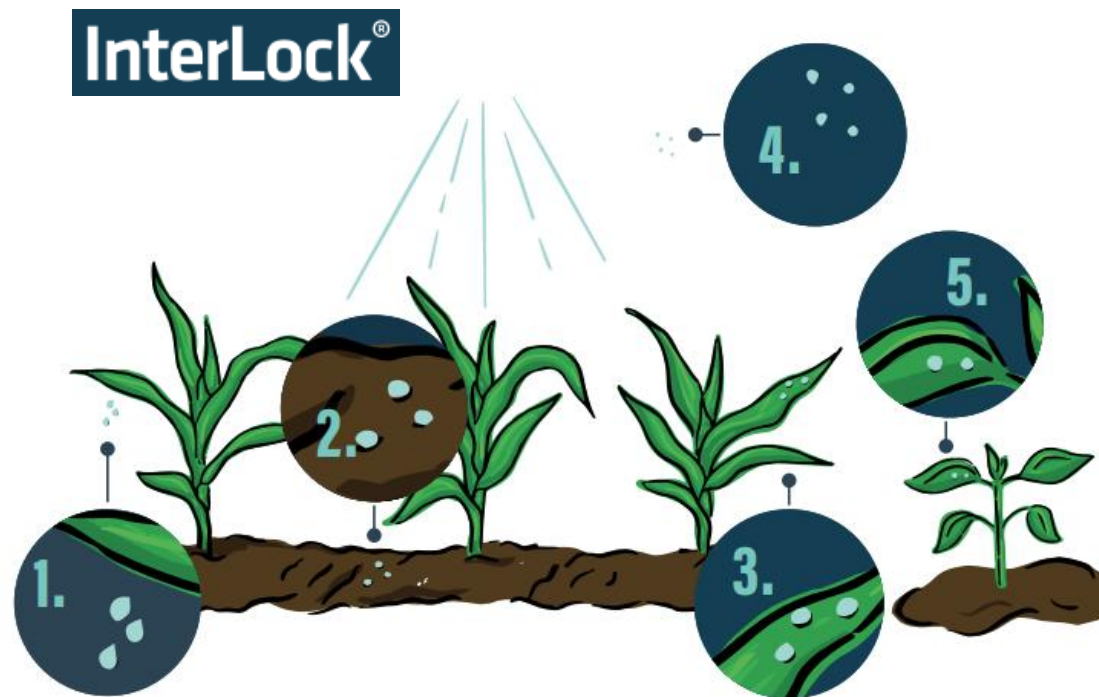
1.2 - 2oz/ac

Ground

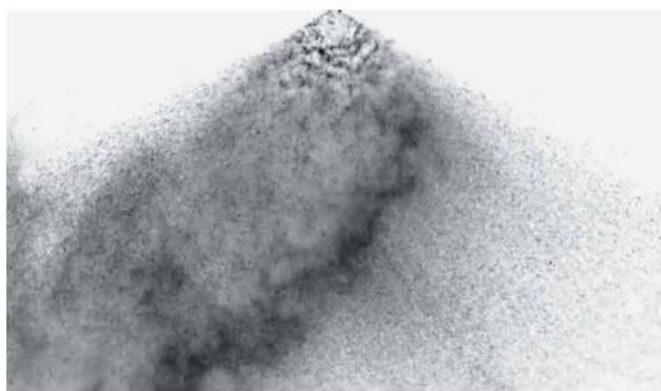
Aerial

FATE OF A DROPLET

1. VERY LARGE DROPLETS ($>600\text{ }\mu\text{M}$) CAN RUN OR BOUNCE OFF THE LEAF.
2. SOME SPRAY IS LOST TO THE SOIL SURFACE.
3. OPTIMAL DROPLETS ARE DELIVERED TO THE TARGET.
4. VERY SMALL DROPLETS ($<50\text{ }\mu\text{M}$) CAN EVAPORATE.
5. SMALL DROPLETS ($50\text{-}200\text{ }\mu\text{M}$) CAN DRIFT AWAY AND DEPOSIT OFF TARGET.



SPRAY COMPARISON WIND XR TEEJET[®] NOZZLE



HERBICIDE ALONE



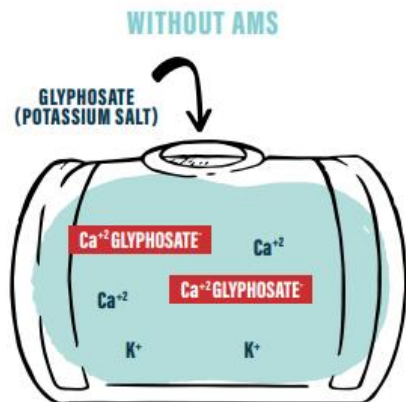
HERBICIDE + INTERLOCK

3-4 oz/ac Ground

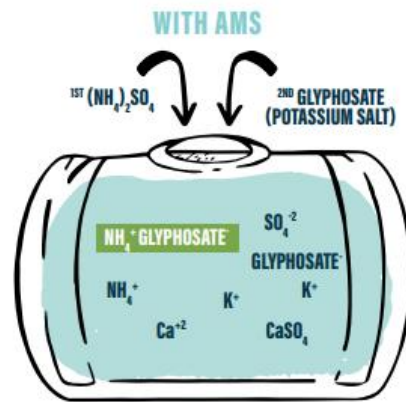
TANK

Conditions water to prevent cations from binding with negatively charged herbicides and reducing efficacy.

Class Act®



Glyphosate is bound by hard water cations, which are less likely to be absorbed into plant tissue.



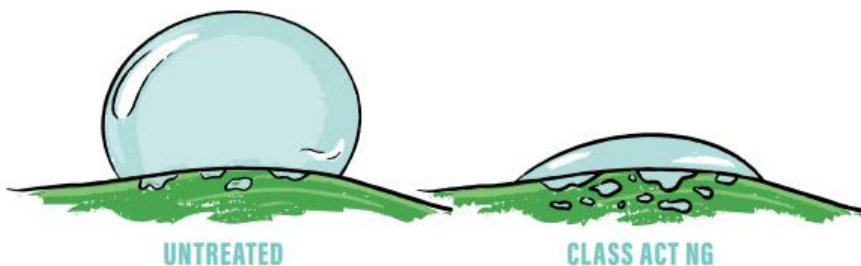
Ammonium glyphosate is readily absorbed into plant tissue.



Increases Active Ingredient Uptake 1.7x vs AMS alone

LEAF SURFACE

USE RATE 2.5 - 5.0% V/V (2.5-5.0 GAL./100 GAL.)

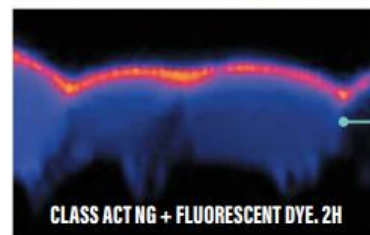


1. Reduces surface tension to increase droplet spread for improved absorbency.
2. Increases humectancy so droplets stay wet on the leaf longer, leading to more uptake before evaporation.
3. Increases active ingredient uptake by 1.7x on average compared to AMS¹ for faster herbicide efficacy.

CONFOCAL MICROSCOPY



LEAF SURFACE



CELLULAR STRUCTURES



1gal/100gal Enlist/RR
2gal/100gal Liberty

PRODUCT HALF LIFE BY pH

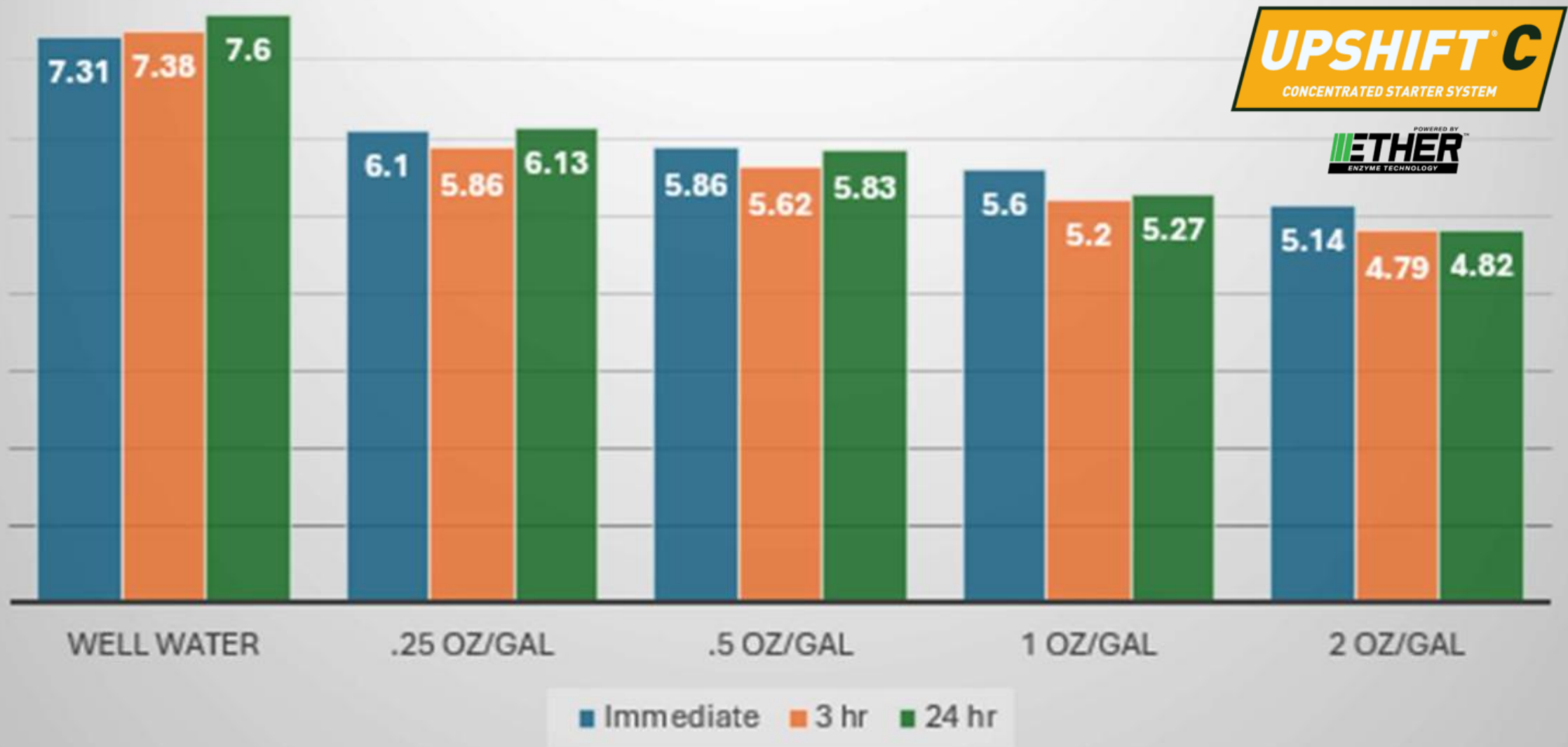


PRODUCT	pH 9	pH 7	pH 5
Herbicide	10 min	17 hr	16 days
Fungicide	2 min	3 hr	10 hr
Insecticide	24 hr	10 day	Stable

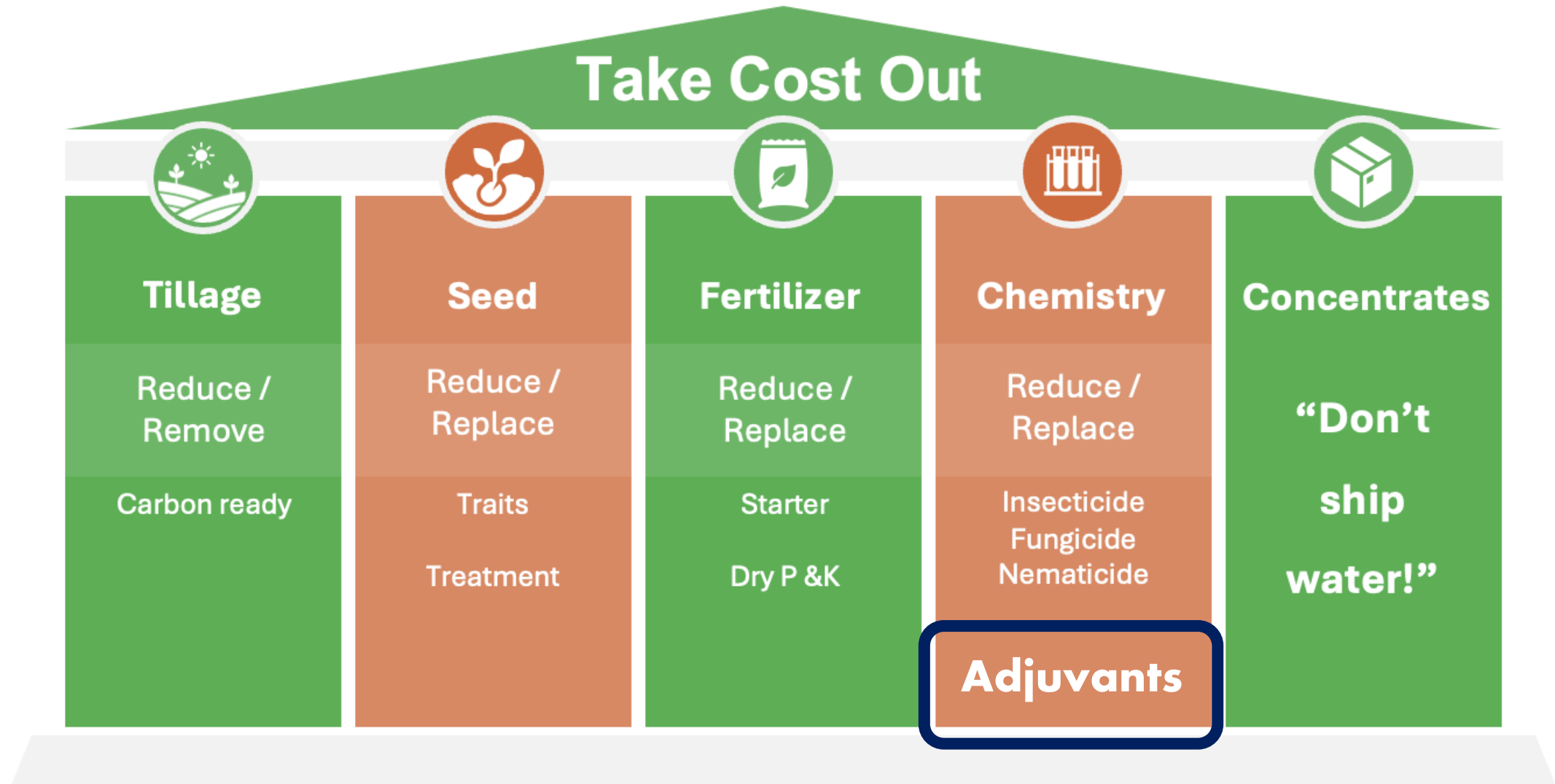


The Impact of Water Quality on Pesticide Performance Purdue Extension PPP-86

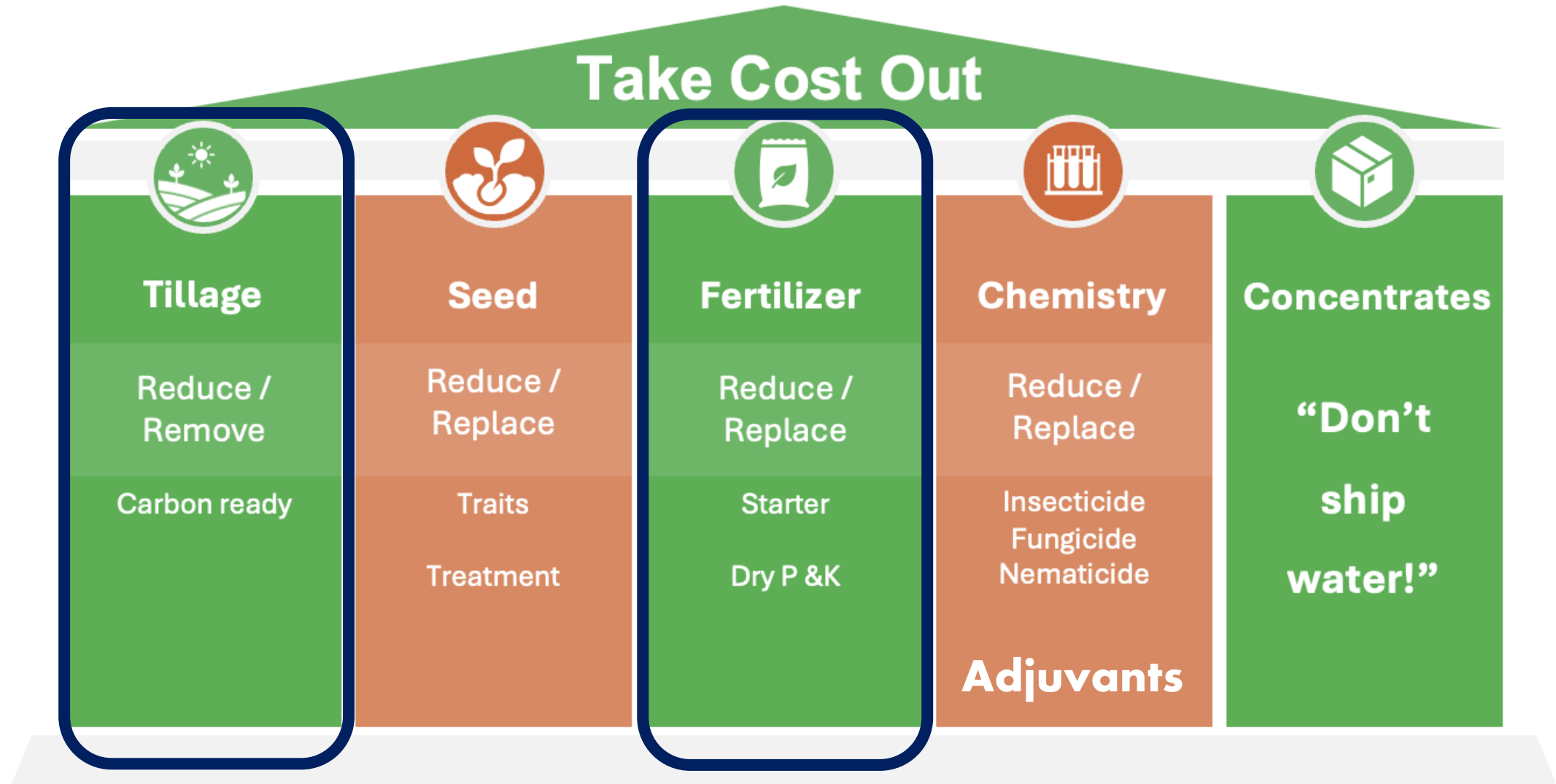
Upshift C pH Buffer



Cut Distribution Cost + Innovation through Patented Delivery Systems



Cut Distribution Cost + Innovation through Patented Delivery Systems



N-GEAR®

DUAL ACTION

NITROGEN STABILIZATION

NPBT + Synthetic net – hold N in rootzone

2 Quarts/Ton Urea

0.27oz / Treated Gallon UAN
(ie. 10gal UAN = 2.7oz)

13.5oz/ac Manure application

Biological Safe N Mgmt.

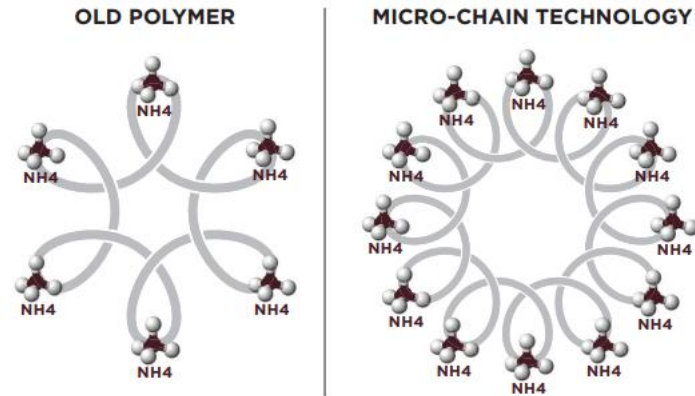
N-GEAR®

DUAL ACTION

NITROGEN STABILIZATION

N-GEAR® DUAL ACTION gives you flexibility of both above and below ground nitrogen protection. N-GEAR DUAL ACTION is specifically formulated for use in urea and UAN scenarios.

Micro-Chain Technology captures and maintains more nitrogen in the upper root zone, increasing nitrogen uptake and utilization. The NH₄ molecules are more densely packed, leading to more binding sites to limit nitrogen loss.



PRODUCT BENEFITS

- Dual-action protection
 - Up to three weeks of above-ground protection from volatilization
 - Reduces nitrogen loss below ground due to leaching
- Increases nitrogen efficiency, availability and uptake
- Formulated to help build soil biological activity
- Non-toxic with no detrimental effects on soil bacteria and non-corrosive to equipment
- Specifically formulated for urea and UAN, and can be used with multiple fertilizer sources

PREMIUM ABOVE AND BELOW GROUND, BIO-FRIENDLY NITROGEN MANAGEMENT SYSTEM

ACTIVE INGREDIENTS

NBPT (N-(n-butyl)-thiophosphoric triamide)
Solution (CAS No. 94317-64-3)20.0%

Inactive Ingredients

Propylene Glycol, 1-methyl-2-pyrrolidone and
Copolymer Surfactant80.0%
TOTAL.....100.0%

DIRECTIONS FOR USE

UREA BLENDING:

May be used to treat urea prior to application in the field, including pre-treatment. Under certain temperature and humidity conditions, urea blended with N-GEAR DUAL ACTION may stick together. Application of urea to the field is recommended soon after treatment for best results.

UAN SOLUTIONS:

May be mixed with liquid fertilizers such as aqua ammonia or other liquid ammoniacal or urea nitrogen fertilizers. Liquid fertilizers containing high levels of phosphate should not be used with N-GEAR DUAL ACTION. If pesticides are added to the tank mix in conjunction with liquid fertilizers, a compatibility jar test should be performed prior to large scale application to the field.

LIQUID MANURE:

May be mixed with liquid animal manures. N-GEAR DUAL ACTION may be applied to slurry pit or through an injection system as material is loaded into applicator.

RECOMMENDED USE RATES

Urea (46-0-0): 2-3 quarts per ton of urea

UAN Solutions (28-32%): 1.5 quarts per ton of total solution

Liquid Manure: 13.5-18 oz per acre



Calcium Nitrate – Increase NH_4 capture – retention

Synthetic CEC Net Polymer

Organic Acids – Carbon sources to enhance N Uptake

6 oz/50# Actual N applied

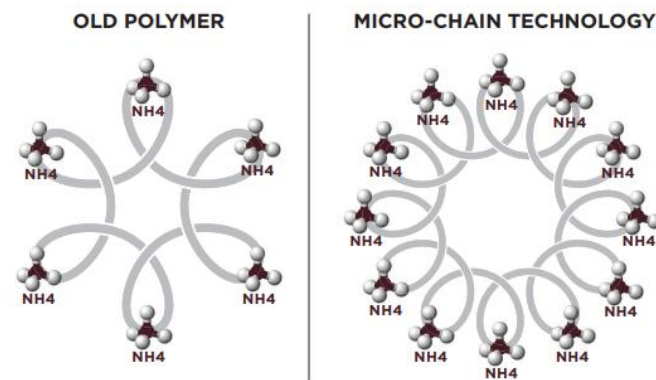
Bio Safe NH_3 Treatment



EXTEND NITROGEN AVAILABILITY
AND UPTAKE AND REDUCE
NITROGEN LOSS DUE TO LEACHING

Farmers that drive for consistent profits know that season-long availability of nitrogen is critical to maximizing corn yields. MAINTAIN™ ELITE utilizes an improved formulation to extend nitrogen availability and uptake and reduce nitrogen loss. MAINTAIN ELITE provides more calcium and enhanced polymer technology. It is intended for use as an additive to anhydrous ammonia and liquid fertilizer applied below ground.

Micro-Chain Technology captures and maintains more nitrogen in the upper root zone, increasing nitrogen uptake and utilization. The NH_4 molecules are more densely packed, leading to more binding sites to limit nitrogen loss.



PRODUCT BENEFITS

- Does not kill biologicals or beneficial bacteria
- Reduces leaching of nitrogen to groundwater
- Does not corrode equipment
- Manages nitrogen during key growth stages
- No planting restrictions

ACTIVE INGREDIENTS

Calcium	10.0%
Poloxethylene Glycol, Co-Polymer	28.0%
Other Proprietary Ingredients	62.0%
TOTAL	100.0%

ALSO CONTAINS NON-PLANT FOOD INGREDIENTS

Carboxylic and Organic Acids

DIRECTIONS FOR USE

ANHYDROUS AMMONIA:

Operator must follow all anhydrous safety precautions. Inject MAINTAIN ELITE through liquid ll valve. If pressure exceeds 150 psi, inject MAINTAIN ELITE through liquid withdraw valve. Proper maintenance is required. Flush valve thoroughly with anhydrous. Coat ll valve thoroughly with a petroleum or silicone based lubricant. Apply treated anhydrous using conventional anhydrous application equipment.

LIQUID FERTILIZER:

Liquid fertilizers containing high levels of phosphate should not be used with MAINTAIN ELITE. If pesticides are added to tank mix in conjunction with liquid fertilizers, a compatibility jar test should be performed prior to large scale application to field.

RECOMMENDED USE RATES

Anhydrous Ammonia: Use 6 oz. of per 50 units of Nitrogen, up to a maximum use rate of 24 oz. per acre.

UAN Solutions (28-32%): 2 quarts per ton of total solution

Liquid Manure: 24-32 oz per acre

PRODUCT AVAILABILITY

Available in 2x2.5 gallon jugs (36 cases per pallet), 250-gallon totes or bulk.

Density: 12.0 lb/gal

Specific Gravity: 1.44 at 68°F (20°C)

NUE?

BREAKTHROUGH TO EXCELLENCE



MERISTEM DEALER PARTNER EXCHANGE

Full Adjuvant Package + Residue Decomposition + Fertilizer Pass

EXCAVATOR[®] AMS

AMS & NON-IONIC SURFACTANT WITH
NUTRIENT RELEASE & CROP RESIDUE BREAKDOWN

CYCLESTRIKE[™] LR

MICROBIAL NUTRIENT ACCELERATOR
& RESIDUE BREAKDOWN

BioFlex[™]

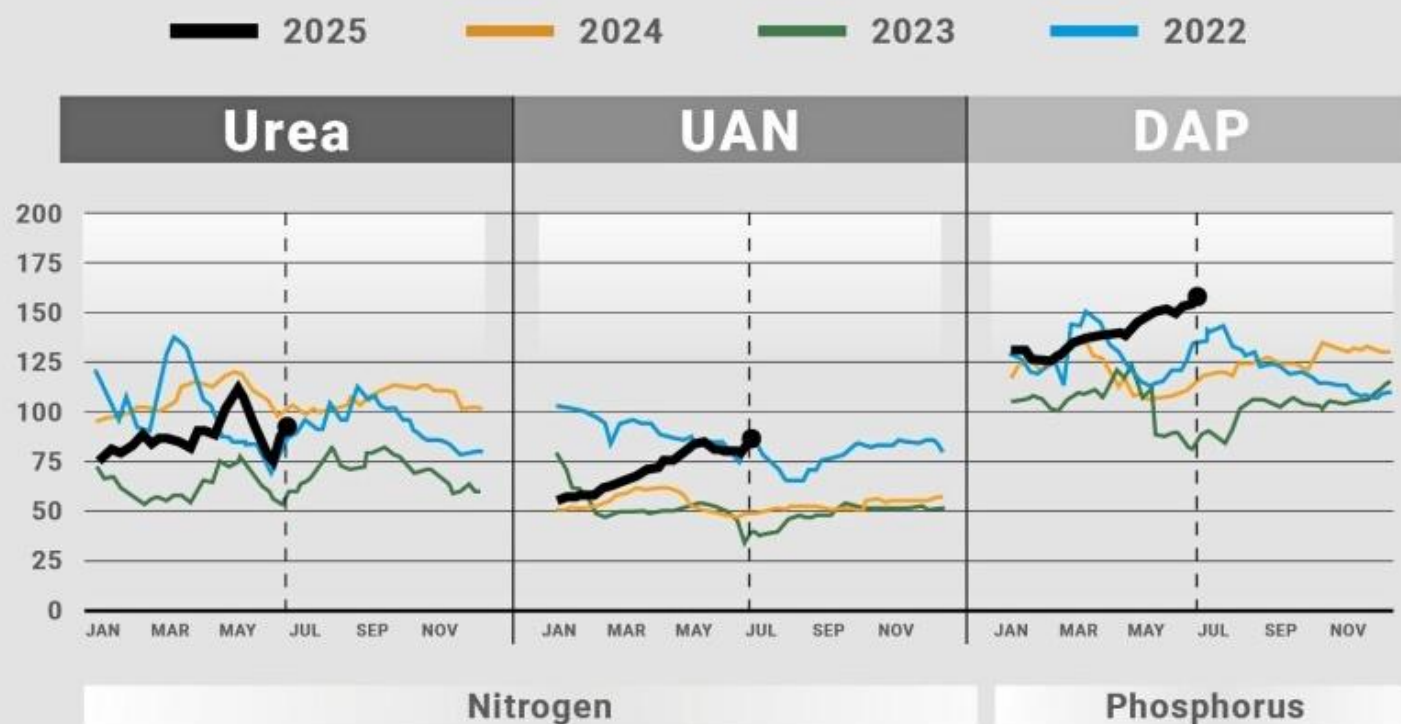
MERISTEM

CROP PERFORMANCE



Fertilizer Prices Vs Corn Prices Are Now Some of the Worst in History

Number of Bushels of Corn to Pay for 1 Ton of Fertilizer



SOURCE: STONEX

- Urea: 3rd worst in history
- UAN: 2nd worst in history
- Phosphate: **WORST** in history



<https://www.agweb.com/news/crops/crop-production/fertilizer-prices-vs-corn-prices-are-now-some-worst-history>



“The largest fertilizer shed in
America is **the farmer’s field.**”

- *Shaun Nelson*
Rush River
North Dakota

How many pounds of N does it take to produce a bushel of corn?

1.2lb N per Bushel....

Do you apply that much?

5,300

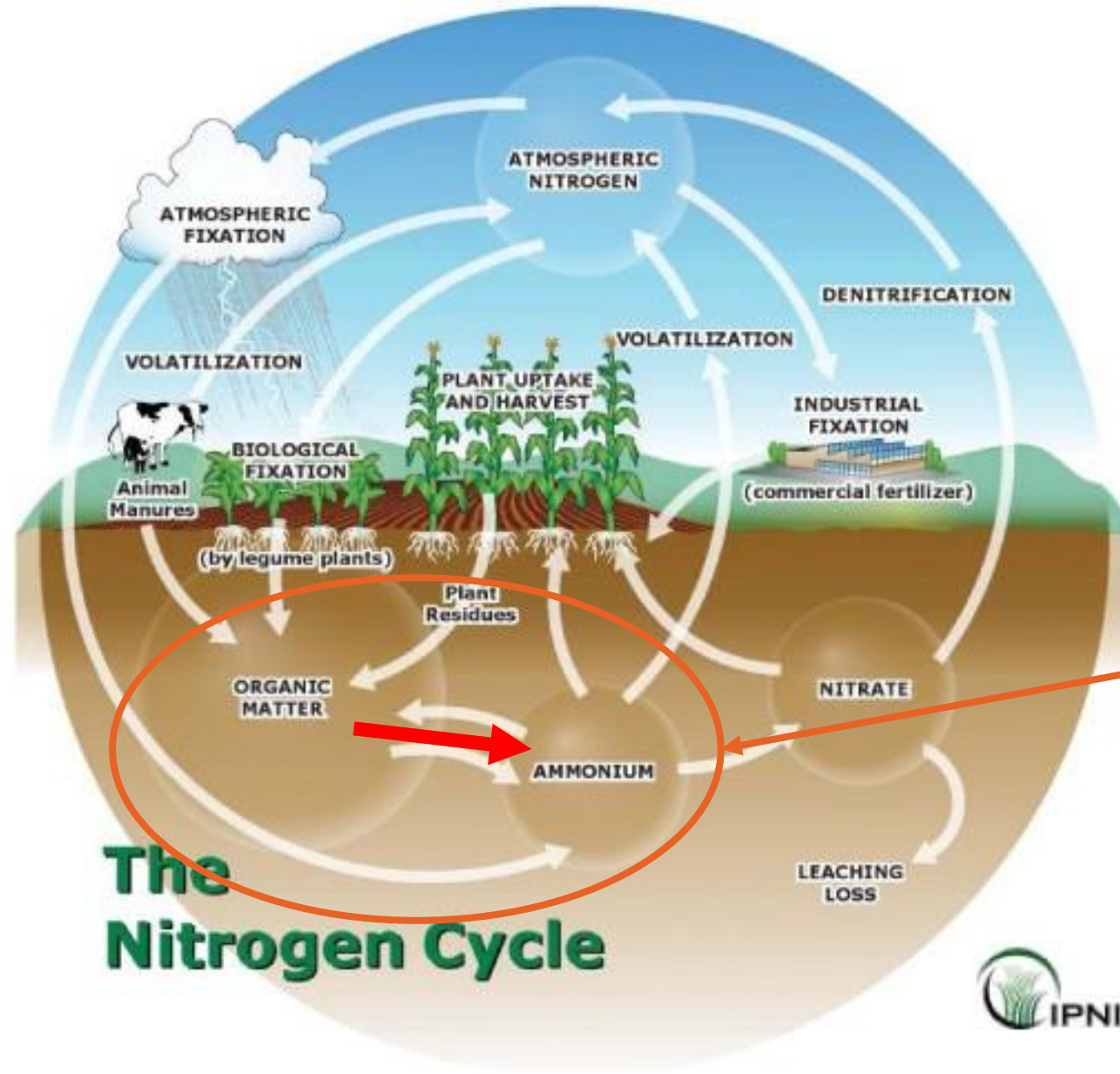
Pounds of Organic N – 4% OM – Top 8” Soil

Source: USDA - NRCS

1% O.M. = 20# N

Mineralized per 1% O.M. on **Avg Year**

Can we influence this?



Mineralization

Conversion of organic N to mineral NH_4^+

NUE

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NUTRIENT RELEASE & CROP RESIDUE BREAKDOWN

CYCLESTRIKE[®] LR

MICROBIAL NUTRIENT ACCELERATOR
& RESIDUE BREAKDOWN

BioFlex[™]

Source: Univ. of Delaware

MERISTEM
CROP PERFORMANCE

**BREAKTHROUGH
TO EXCELLENCE**
MERISTEM DEALER PARTNER EXCHANGE



Norman Borlaug

Founder of the Green Revolution

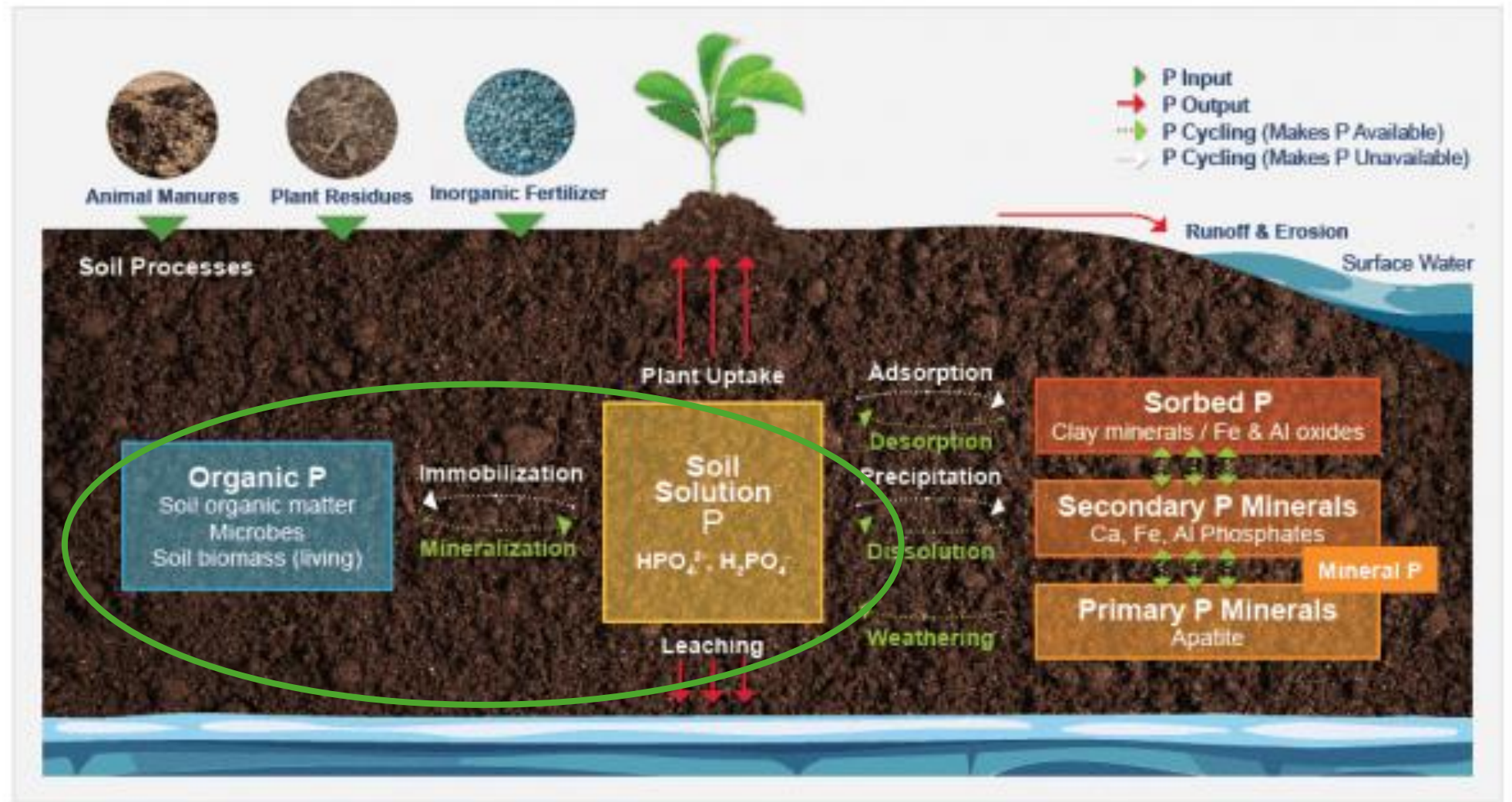
Nutrient	Total Pounds Top 6" Soil
Phosphorus	1,200
Potassium	50,000
Sulfur	800

Pounds of Nutrition – 3% OM – Top 6"
Silty Clay Loam Soil – CEC of 18

What does a soil test show you?

Source: Gardner et al., Physiology of Crop Plants, 1985, and Lipman Conybeare (1936)

Phosphorus Cycle



EXCAVATOR AMS

AMS & NON-IONIC SURFACTANT WITH
NUTRIENT RELEASE & CROP RESIDUE BREAKDOWN

CYCLESTRIKE LR

MICROBIAL NUTRIENT ACCELERATOR
& RESIDUE BREAKDOWN

BioFlex™

Increase soil
TESTS w/o
applying P

Source: Univ. of Alabama A&M + Auburn Ext.

MERISTEM
CROP PERFORMANCE

**BREAKTHROUGH
TO EXCELLENCE**
MERISTEM DEALER PARTNER EXCHANGE



Virginia Farmer Hits 623.84 BPA

David Hula Hit Another New Record Corn Yield with 623 BPA, Now Thinks 900 BPA is Possible.

“...proponent of minimal tillage practices, such as strip tillage, he's found success with some biologicals.

Hula likes to use products, **such as Excavator by Meristem**, that help break down residue while also **releasing much-needed nutrients** in the soil to help feed the crop...and **reduces the amount of fertilizer he needs to apply."**

The Nutritional Value of Corn Stalks

Nutrient	Yield (bushels/acre)		
	200	250	300
	pounds per acre		
N	90	114	136
P ₂ O ₅	18	23	27
K ₂ O	104	131	156

Corn Residue Amount Increases with Yield

Grain Yield (bushels per acre)	Stover/Residue Accumulation (tons/acre)
200	4.5
250	5.7
300	6.8

Assuming a harvest index of 52%

ALL Plant Essential Nutrients are Tied Up in Organic Matter

EXCAVATOR[®] AMS

*AMS & NON-IONIC SURFACTANT WITH
NUTRIENT RELEASE & CROP RESIDUE BREAKDOWN*

Leverage Excavator AMS to

- Unlock your Soil
- Time Fertilizer Markets
- **Control Your Bottom Line**

REPORT NUMBER
17-164-0122



PAGE 1/2

CARDINAL AG LLC
SHANE BROCKHOFF

SOIL ANALYSIS REPORT

LAB NUMBER	SAMPLE IDENTIFICATION	ORGANIC MATTER L.O.I. percent RATE	P ₁ PHOSPHORUS						POTASSIUM		MAGNESIUM		CALCIUM		SODIUM		pH		CATION EXCHANGE CAPACITY C.E.C. meq/100g	PERCENT BASE SATURATION (COMPUTED)				
			P ₁ WEAK (BRAY) 1:7 ppm RATE		P ₂ STRONG (BRAY) 1:7 ppm RATE		OLSEN BICARBONATE P ppm RATE		K ppm RATE		Mg ppm RATE		Ca ppm RATE		Na ppm RATE		SOIL pH 1:1	BUFFER INDEX		% K	% Mg	% Ca	% H	% Na
314																								
89446	IW1	3.2 M	42	VH	51	H			208	H	268	H	2011	L			4.9	6.2	22.9	2.3	9.8	43.9	44.0	
89447	IW2	3.6 H	45	VH	63	VH			220	H	311	VH	2259	M			5.3	6.4	21.0	2.7	12.3	53.8	31.2	
89448	IW3	3.2 M	32	VH	40	H			224	H	236	M	1969	L			4.8	6.2	23.4	2.5	8.4	42.1	47.0	
89449	IW4	3.3 M	32	VH	36	M			200	M	304	H	2183	L			4.9	6.2	25.0	2.1	10.1	43.7	44.1	
89450	IW5	3.3 M	54	VH	63	VH			295	VH	239	M	1897	L			4.8	6.0	23.0	3.3	8.7	41.2	46.8	
89451	IW6	3.7 H	52	VH	83	VH			391	VH	302	H	2305	L			5.0	6.3	25.5	3.9	9.9	45.2	41.0	
89452	IW7	3.6 H	65	VH	85	VH			327	VH	239	M	1940	L			4.6	6.1	27.2	3.1	7.3	35.7	53.9	
89453	IW8	3.3 M	29	H	49	H			198	M	325	H	2350	L			4.8	6.2	28.3	1.8	9.6	41.5	47.1	
89454	IW9	3.6 H	53	VH	62	VH			214	H	243	H	2201	M			5.1	6.3	21.9	2.5	9.2	50.3	38.0	
89455	IW10	3.1 M	48	VH	63	VH			152	L	342	H	2254	L			4.7	6.1	29.3	1.3	9.7	38.5	50.5	

LAB NUMBER	NITRATE-N (FIA)										SULFUR S ICAP ppm RATE	ZINC Zn D/TPA ppm RATE	MANGANESE Mn D/TPA ppm RATE	IRON Fe D/TPA ppm RATE	COPPER Cu D/TPA ppm RATE	BORON B SORB. D/TPA ppm RATE	EXCESS LIME RATE	SOLUBLE SALTS 1:1 mmhos/ cm RATE	
	SURFACE			SUBSOIL 1			SUBSOIL 2												
	ppm	lbs/A	depth (in)	ppm	lbs/A	depth (in)	ppm	lbs/A	depth (in)	Total lbs/A									
314																			
89446			0-6																
89447			0-6																
89448			0-6																
89449			0-6																
89450			0-6																
89451			0-6																
89452			0-6																
89453			0-6																
89454			0-6																
89455			0-6																

RFV 12/13

For the farmer who...

Bray P1 > 20 PPM

K PPM > 200 PPM

Your chances of ROI
near 0%...

at **NORMAL** fertilizer
price levels...

UNLOCK your BANK!

Iowa State University Fertilizer Recs

Table 3. Phosphorus and potassium recommendations for corn grain production.

CORN - P Phosphorus Dry or Field-Moist and Slurry Soil Tests (ppm)					
Soil Test Category	Very Low	Low	Optimum*	High	Very High
Bray P ₁ and Mehlich-3 P	0–8	9–15	16–20	21–30	31+
Olsen P	0–5	6–9	10–13	14–18	19+
Mehlich-3 ICP P	0–15	16–25	26–35	36–45	46+
★ P ₂ O ₅ to apply (lb/acre)					
	100	75	58	0	0
CORN - K Potassium Soil Tests (ppm)					
Soil Test Category	Very Low	Low	Optimum*	High	Very High
Ammonium Acetate and Mehlich-3 Extractable K					
Dry	0–120	121–160	161–200	201–240	240+
Field-moist and Slurry	0–50	51–85	86–120	121–155	156+
★ K ₂ O to apply (lb/acre)					
Fine Textured	130	90	40	0	0
Sandy Textured	110	70	40	0	0

Table 4. Phosphorus and potassium recommendations for soybean production.

SOY - P Phosphorus Dry or Field-Moist and Slurry Soil Tests (ppm)					
Soil Test Category	Very Low	Low	Optimum*	High	Very High
Bray P ₁ and Mehlich-3 P	0–8	9–15	16–20	21–30	31+
Olsen P	0–5	6–9	10–13	14–18	19+
Mehlich-3 ICP P	0–15	16–25	26–35	36–45	46+
★ P ₂ O ₅ to apply (lb/acre)					
	80	60	40	0	0
SOY - K Potassium Soil Tests (ppm)					
Soil Test Category	Very Low	Low	Optimum*	High	Very High
Ammonium Acetate and Mehlich-3 Extractable K					
Dry	0–120	121–160	161–200	201–240	240+
Field-moist and Slurry	0–50	51–85	86–120	121–155	156+
★ K ₂ O to apply (lb/acre)					
Fine Textured	120	90	66	0	0
Sandy Textured	100	85	66	0	0

https://naturalresources.extension.iastate.edu/files/page/files/general_guide_for_nutrient_and_limestone_recommendations_in_iowa.pdf

EXCAVATOR[®] AMS

AMS & NON-IONIC SURFACTANT WITH
NUTRIENT RELEASE & CROP RESIDUE BREAKDOWN

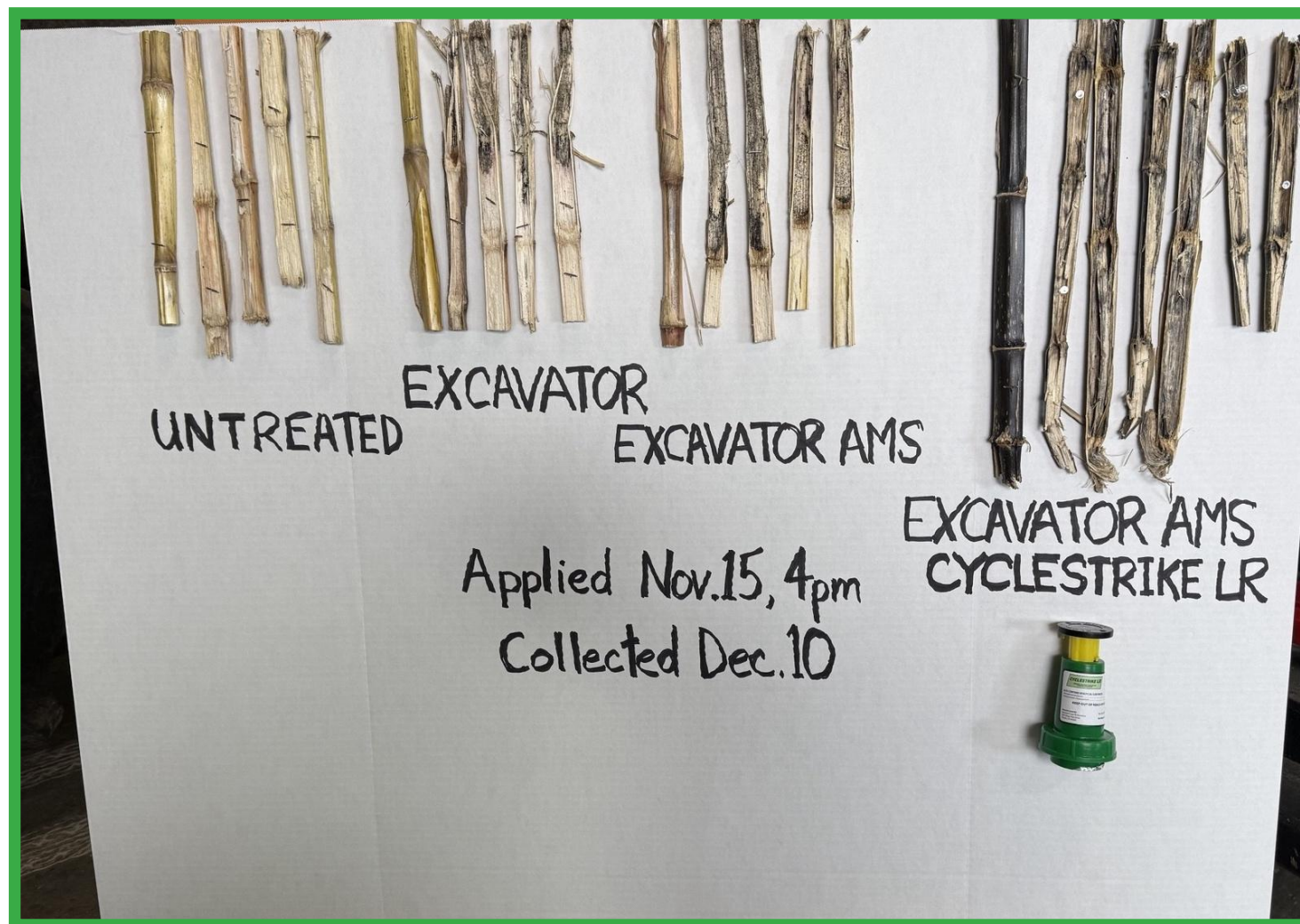
CYCLESTRIKE[®] LR

MICROBIAL NUTRIENT ACCELERATOR
& RESIDUE BREAKDOWN

BioFlex[™]



3 weeks after Treatment with EXCAVATOR[®] AMS plus CYCLESTRIKE LR



Results from the Field

EXCAVATOR[®] AMS

AMS & NON-IONIC SURFACTANT WITH
NUTRIENT RELEASE & CROP RESIDUE BREAKDOWN

CYCLESTRIKE[™] LR

MICROBIAL NUTRIENT ACCELERATOR
& RESIDUE BREAKDOWN

BioFlex[™]

**4 weeks after
Treatment**



Results from the Field

EXCAVATOR[®] AMS

AMS & NON-IONIC SURFACTANT WITH
NUTRIENT RELEASE & CROP RESIDUE BREAKDOWN

CYCLESTRIKE[™] LR

MICROBIAL NUTRIENT ACCELERATOR
& RESIDUE BREAKDOWN

BioFlex[™]

Double Crop
Wheat Burndown
COVER CROP TERMINATION

EXCAVATOR[®] AMS

AMS & NON-IONIC SURFACTANT WITH
NUTRIENT RELEASE & CROP RESIDUE BREAKDOWN

CYCLESTRIKE[™] LR

MICROBIAL NUTRIENT ACCELERATOR
& RESIDUE BREAKDOWN

Meristem treated on left vs untreated showing
much healthier plants on these double crops

HOPPER THROTTLE[™] SOYBEAN
MAXSTAX[™]
PLANTER BOX TREATMENT

MERISTEM[®]
CROP PERFORMANCE

**BREAKTHROUGH
TO EXCELLENCE**
MERISTEM DEALER PARTNER EXCHANGE

You Play to Win the GAME!

#1 GOAL – Turn a Profit

Previous stewards of the land want you to be **PROFITABLE**



Do not sacrifice your profitability for geopolitical B.S.



Time the fertilizer markets



Take a withdrawal from your bank – get **Back in Black**

EXCAVATOR[®] AMS

AMS & NON-IONIC SURFACTANT WITH
NUTRIENT RELEASE & CROP RESIDUE BREAKDOWN

CYCLESTRIKE[®] LR

MICROBIAL NUTRIENT ACCELERATOR
& RESIDUE BREAKDOWN

BioFlex[™]

EXTREME ROI if YOU LEVERAGE POWER



Reduce cost on fertilizer and adjuvant



Reduce time and cost spent on tillage



Reduce disease pressure; reduce salt loads

BREAKTHROUGH TO EXCELLENCE



MERISTEM DEALER PARTNER EXCHANGE

SPRING OR FALL

Full Adjuvant Package + Residue Decomposition + Fertilizer Pass

EXCAVATOR[®] AMS

AMS & NON-IONIC SURFACTANT WITH
NUTRIENT RELEASE & CROP RESIDUE BREAKDOWN

CYCLESTRIKE[™] LR

MICROBIAL NUTRIENT ACCELERATOR
& RESIDUE BREAKDOWN

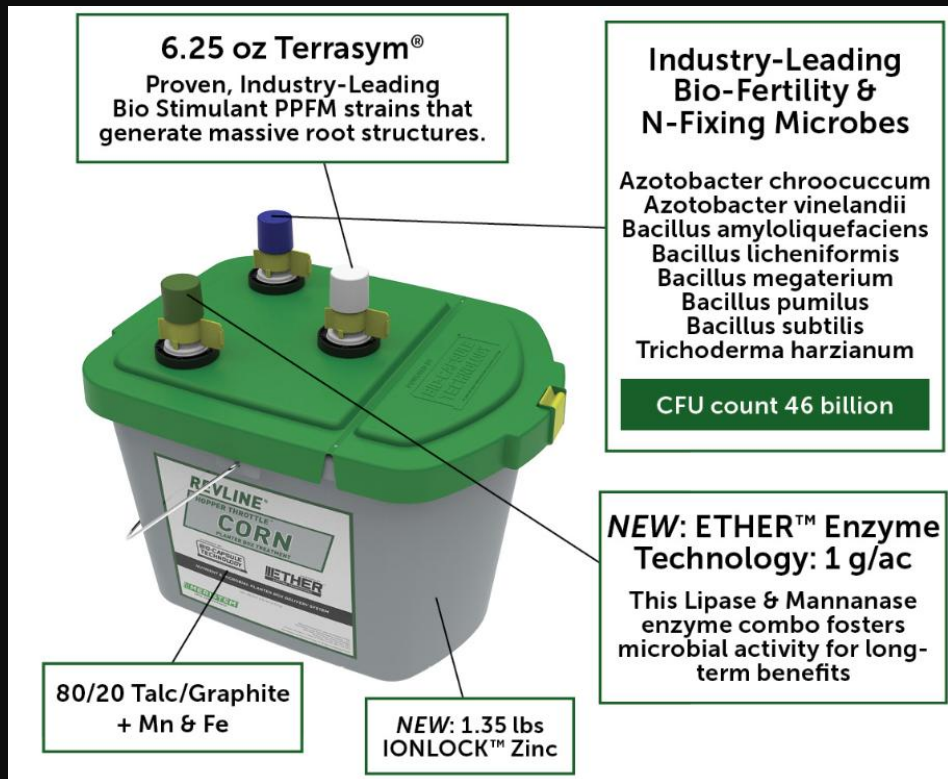
BioFlex[™]

MERISTEM

CROP PERFORMANCE



Revline Hopper Throttle Corn + Ether/Carbon



**UNLOCK YOUR SOIL
DRIVE YIELD**



Control Your Bottom Line



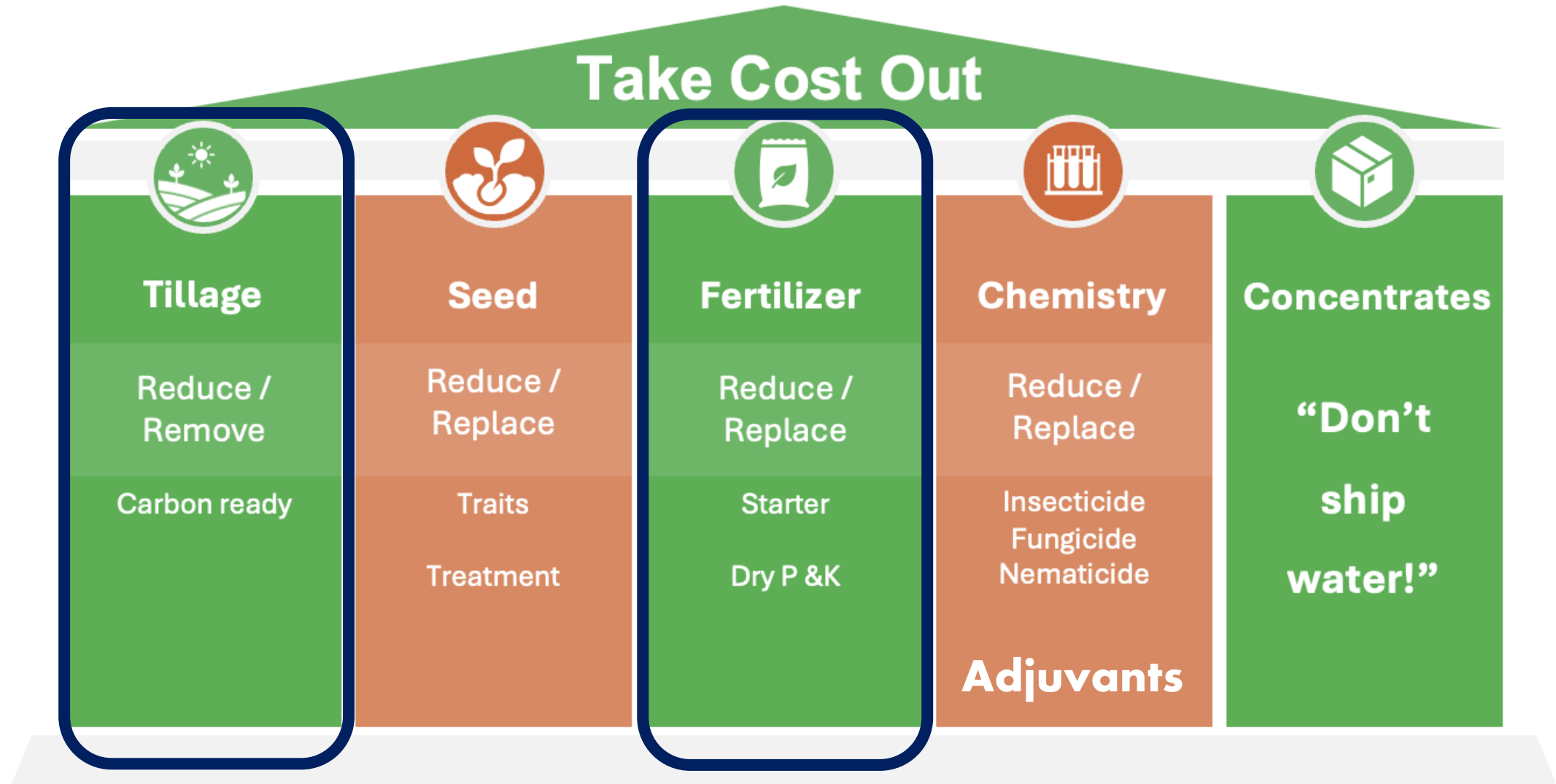
~~X-90-90 Dry Fertilizer + Tillage = \$140~~

Excavator AMS + RHT = \$30

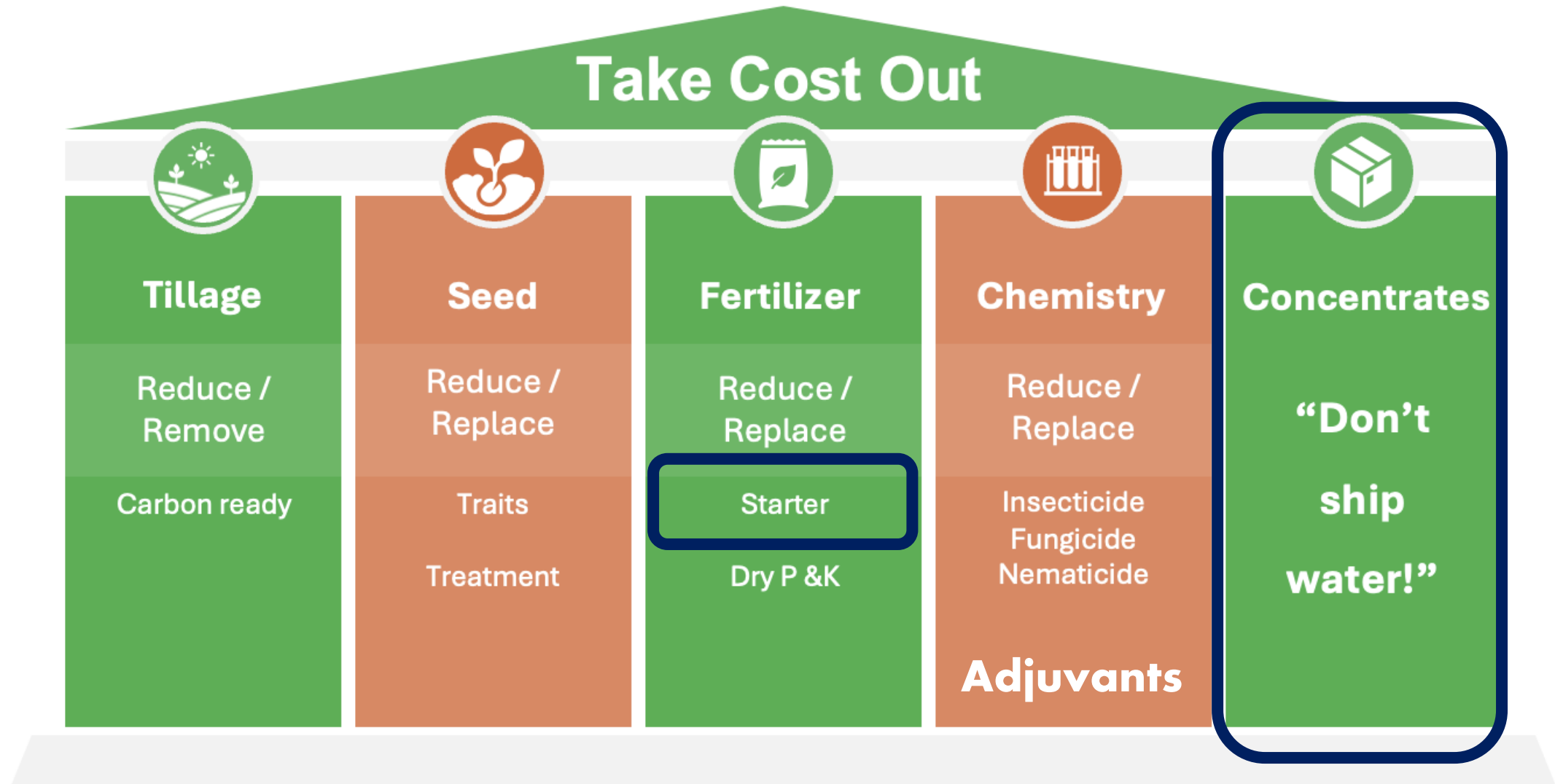
NET ROI per Acre = \$110



Cut Distribution Cost + Innovation through Patented Delivery Systems



Cut Distribution Cost + Innovation through Patented Delivery Systems



**BREAKTHROUGH
TO EXCELLENCE**



MERISTEM DEALER PARTNER EXCHANGE

UPSHIFT[®] C PLUS

CONCENTRATED STARTER SYSTEM



NEW Upshift-C Plus

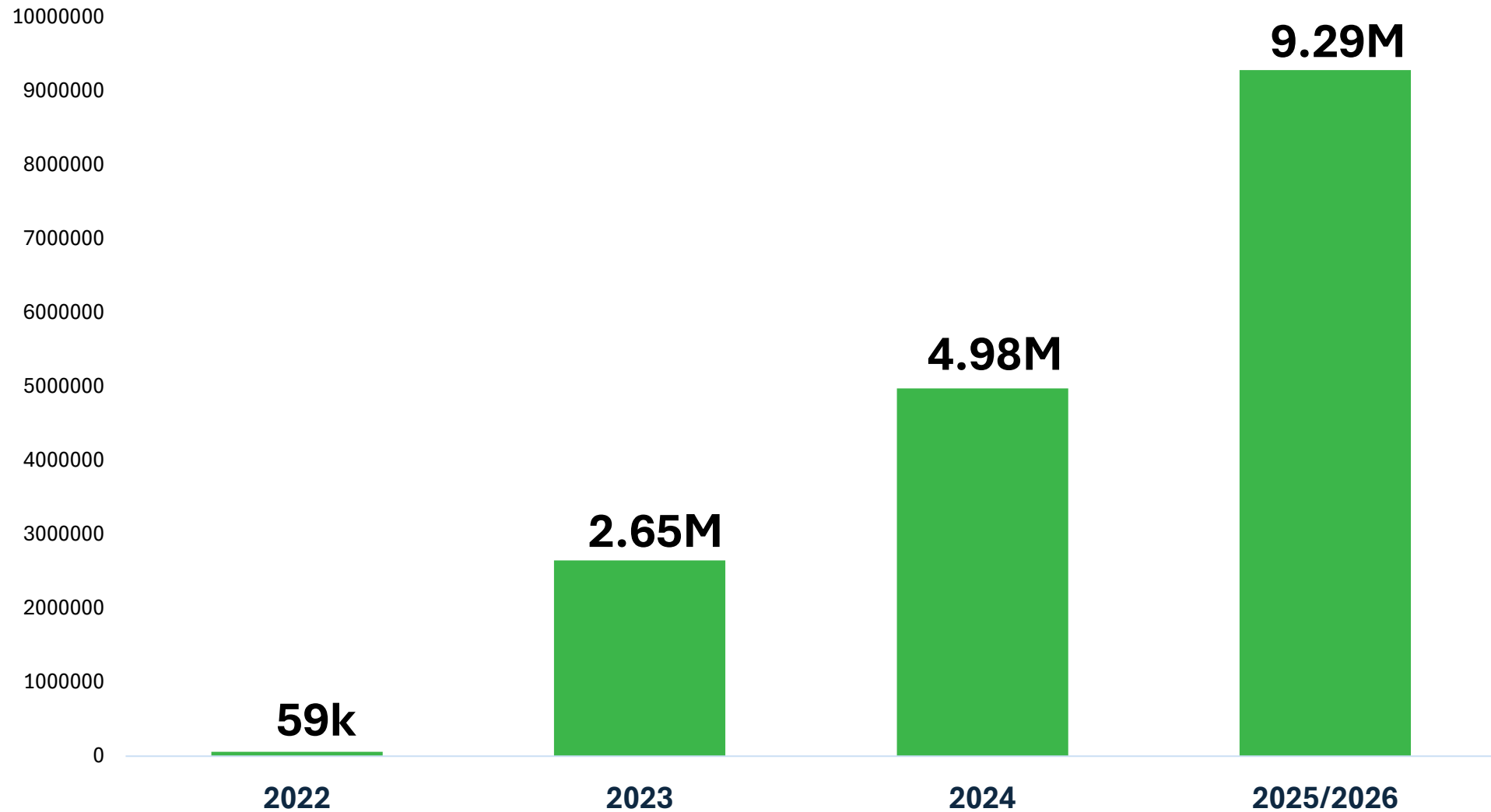
- **Unique in Market:**
100% Exclusive to Meristem Dealers
- **Product Innovation**
 - Zinc
 - Phenolic Acid:
 - Food Source
 - **STRESS MITIGATION**
 - **BLUE**
 - Enhanced Enzyme package
 - More agronomic benefits than all other offerings in the market.



Available for order now!



UpShift C Growth Trend (Pounds)



Upshift C + ETHER™ – Starter Fertilizer Opportunity for Row Crops

Upshift C + ETHER™ vs 10-34-0

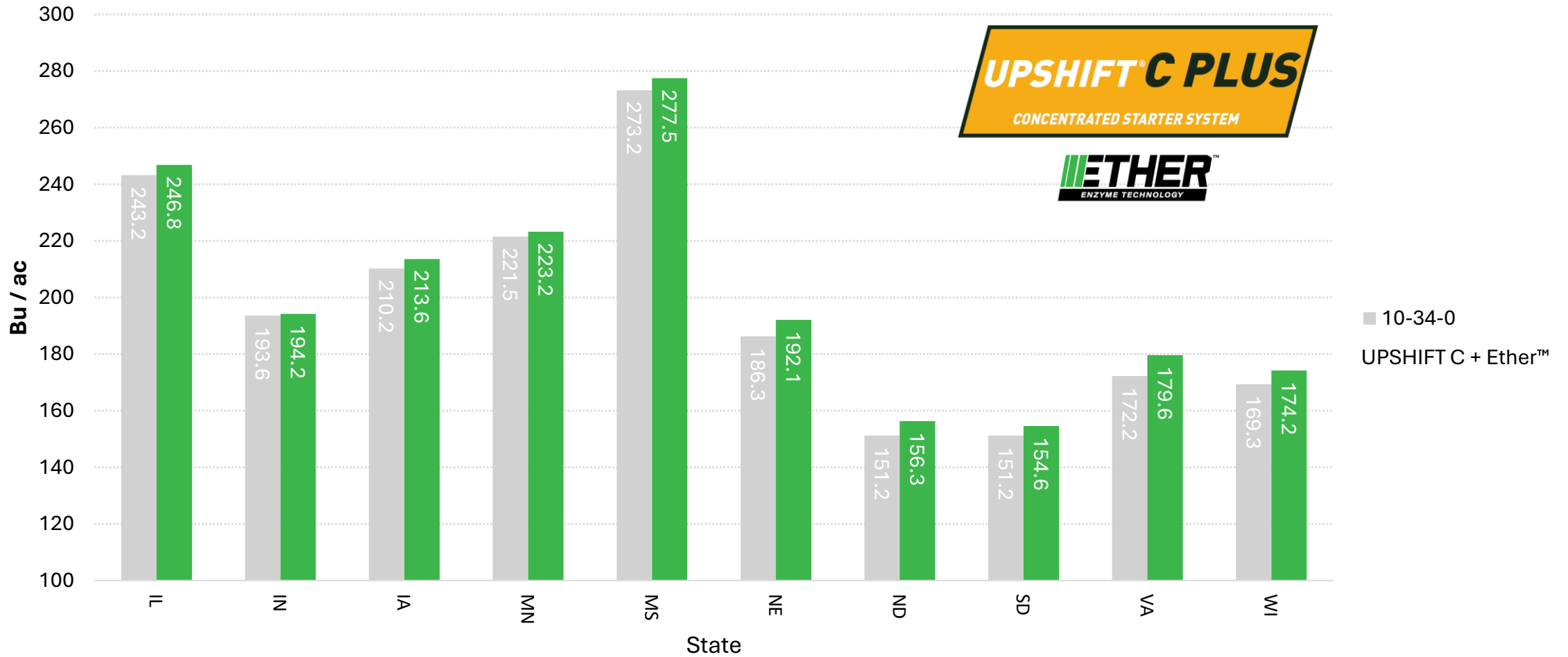
	Upshift C + ETHER™ (0.5 lb in 1 gal of water)	10-34-0 (1 gallon)
Phosphate Source	Ortho	Poly
Salt Index	4.1	48
Phosphatase Enzyme to Release Organic Phosphate	Yes	No
Organic Acids to Protect Phosphate from Tie Up	Yes	No

Starter Trial – V3 Tissue Sample

Starter Type	% P in Plant @ V3	Cost/Ac
Hi-Cost Clear @ 5 gal	0.4%	\$45/ac
10-34-0 type @ 5 gal	0.5%	\$22/ac
6-24-6 type @ 5 gal	0.5%	\$28/ac
Upshift C @ 5 gal	0.8%	\$17/ac

Friends do not let Friends....buy over-priced starter...leverage Ether

Corn 10-34-0 vs UPSHIFT C + ETHER™ at Plant



PRODUCT HALF LIFE BY pH

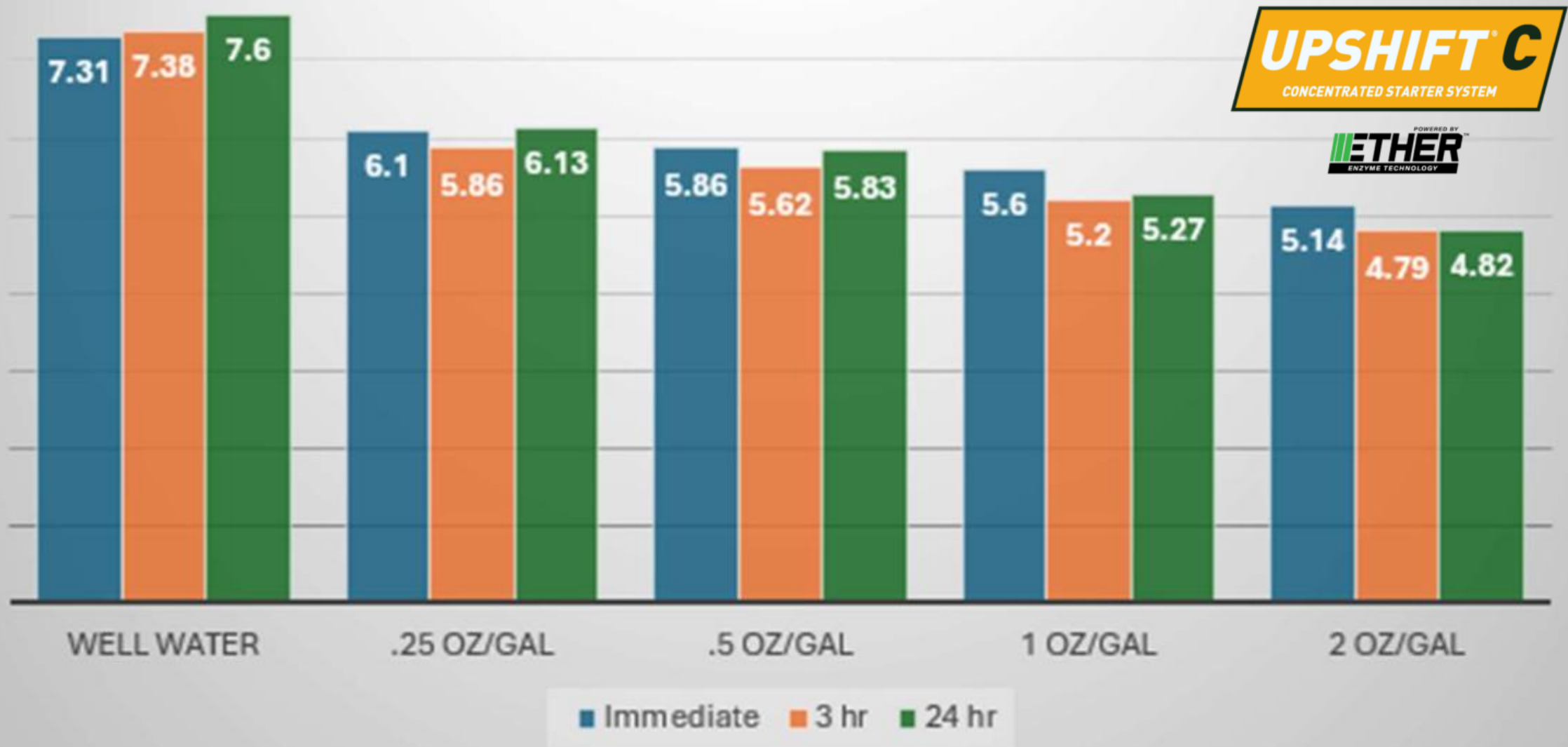


PRODUCT	pH 9	pH 7	pH 5
Herbicide	10 min	17 hr	16 days
Fungicide	2 min	3 hr	10 hr
Insecticide	24 hr	10 day	Stable



The Impact of Water Quality on Pesticide Performance Purdue Extension PPP-86

Upshift C pH Buffer



**BREAKTHROUGH
TO EXCELLENCE**



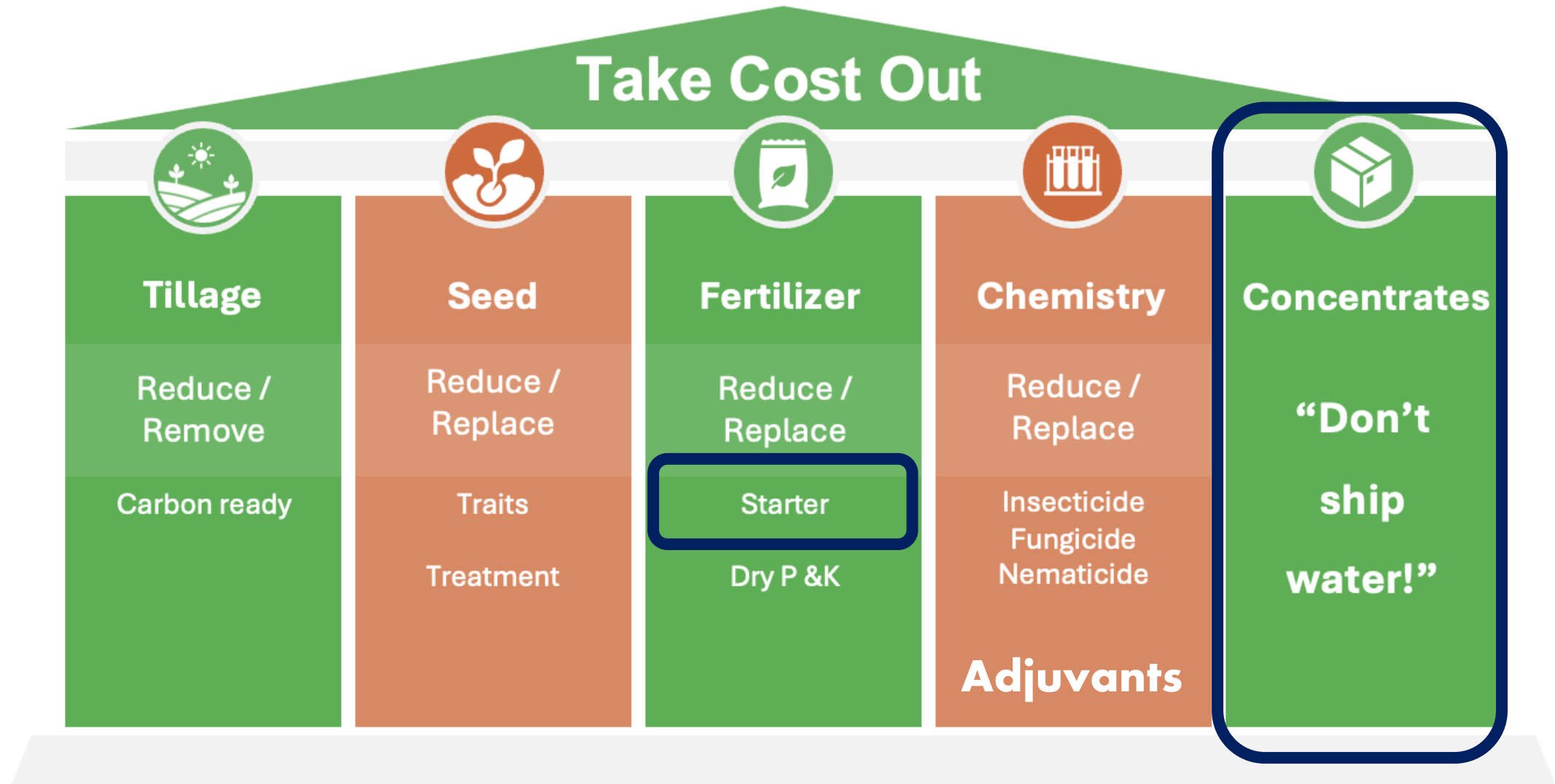
MERISTEM DEALER PARTNER EXCHANGE

UPSHIFT[®] C PLUS

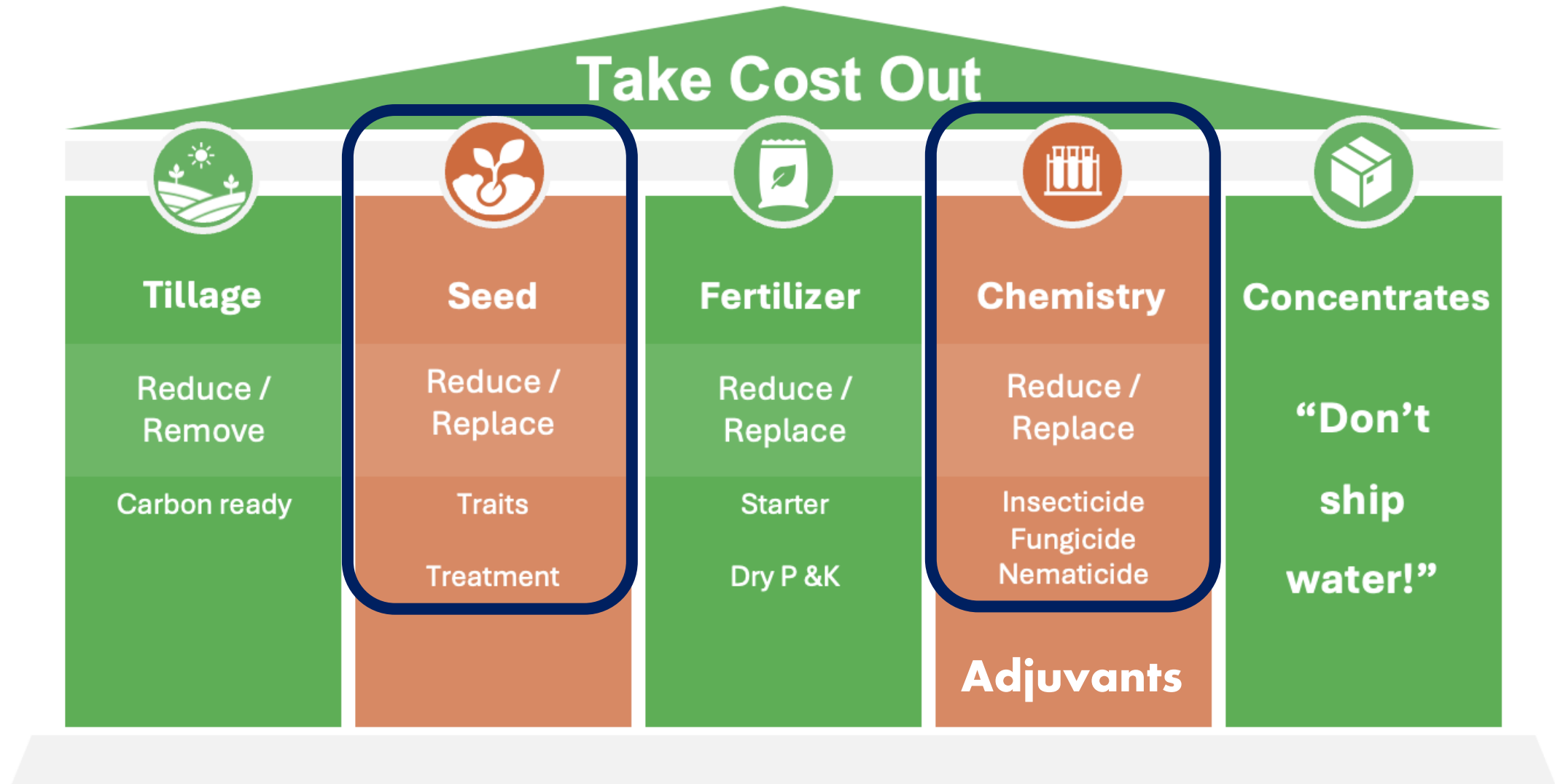
CONCENTRATED STARTER SYSTEM



Cut Distribution Cost + Innovation through Patented Delivery Systems













Cut Distribution Cost + Innovation through Patented Delivery Systems



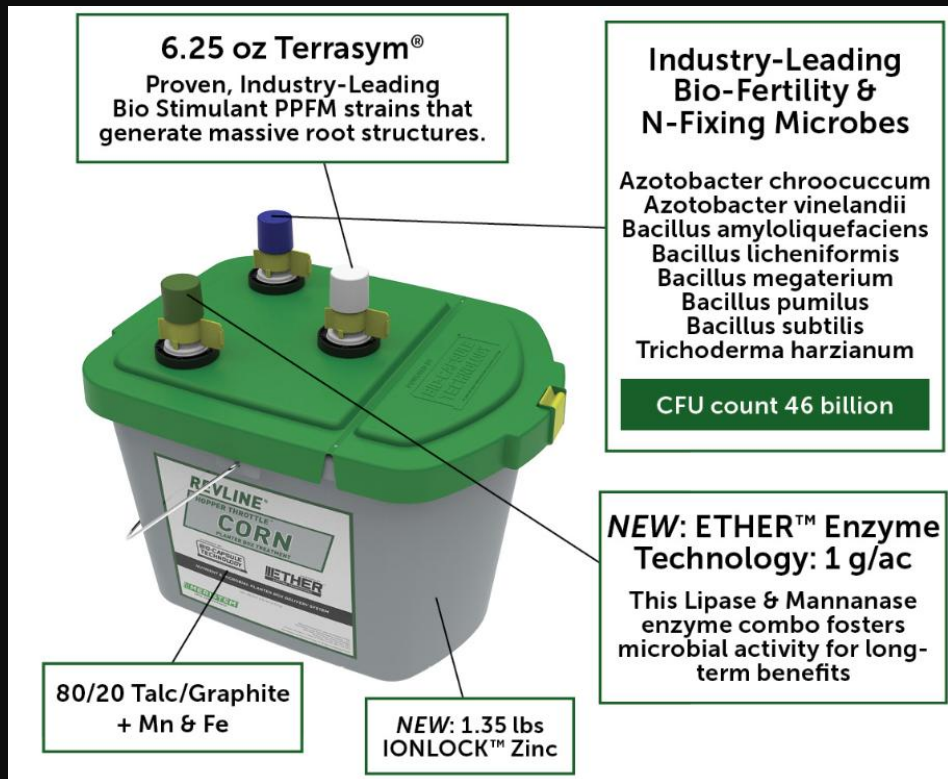
Biological Innovation = NEW TRAITS

FIGHT BACK. GO FAST. WIN MORE.
THE COMPLETE HOPPER THROTTLE™ PORTFOLIO



Corn Portfolio					
Revline Hopper Throttle Corn Ether	Revline Hopper Throttle Corn Ace Ether + Prephyte ST	Hopper Throttle Corn + Guard X + Prephyte ST	Revline Hopper Throttle Corn Ether + Guard X	Hopper Throttle Corn MaxD	Hopper Throttle Corn MaxStax
					
Soybean Portfolio					
Revline Hopper Throttle Soybean Ether	Hopper Throttle Soybean F+I + Protectis + Prephyte ST		Hopper Throttle Soybean MaxD	Hopper Throttle Soybean MaxStax	
					

Revline Hopper Throttle Corn + Ether/Carbon



**UNLOCK YOUR SOIL
DRIVE YIELD**

RESULTS FROM CONTRACTED 3RD PARTY TRIALS



2023

72%	5.1 BU/AC	175	115	11
POSTIVE RESPONSE	AVERAGE INCREASE	DATA POINTS	LOCATIONS	STATES



2024

76%	6.6 BU/AC	175	107	17
POSTIVE RESPONSE	AVERAGE INCREASE	DATA POINTS	LOCATIONS	STATES



**TWO YEAR
AVERAGE**

72%	5.9 BU/AC	350	222	19
POSTIVE RESPONSE	AVERAGE INCREASE	DATA POINTS	LOCATIONS	STATES

THE NUMBERS DON'T LIE

Treatments	Plant population per A (V3 stage)	Vigor	Phytotoxicity	SDS FDS R5 Stage	Yield (Bu/A)
Industry Seed Treatment Package	88862.4	5.25	0.5	5.56	60.26
Revline Hopper Throttle Soy	99752.4	6	0	3.33	70.92

MERISTEM
CROP PERFORMANCE

IOWA STATE
UNIVERSITY

+10.6 bu/ac advantage with



- 59% decrease in disease foliar index score on SDS
- Improved stand establishment
- Improved vigor score
- Eliminated phytotoxicity

Results from 2023 Iowa State University Field Test

**+10.6 bu/ac
Advantage!**

Multiple Players Rapidly Entering the Market





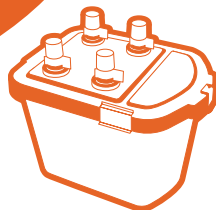
EPA approval
on proven actives

BIO-DEFENSE REVOLUTION

MERISTEM
CROP PERFORMANCE

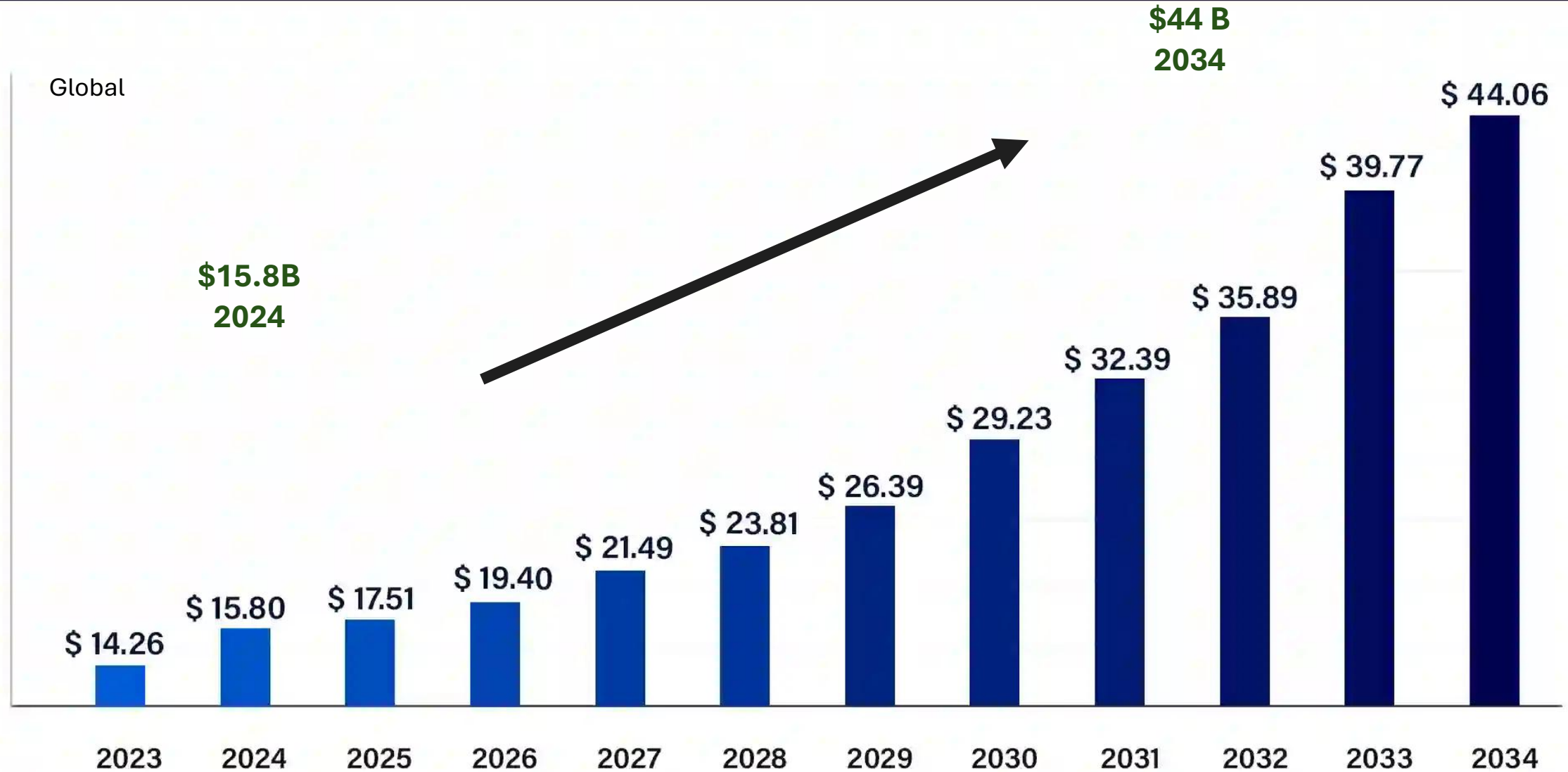


The Patented
BIO-CAPSULE™



IONLOCK Zinc™

Agricultural Biologicals Market Size 2023 to 2034 (USD Billion)



Biological Innovation = NEW TRAITS

		Seed Fluency & Micronutrients					Nutrient Availability & Plant Stimulants					Nematicide	Insecticides	Fungicides		
		Talc	Graphite	Zn, Fe & Mn	Zinc Load (lbs.)	Carbon	Biofertility Microbes	Revline Biostimulant	Ether Enzyme Technology	Protectis	Inoculant	Guard C	Guard X	Borne X	Metaxyl ST	Prephyte ST
Corn Portfolio	Hopper Throttle Corn MaxStax		X	X	2.7	X	X	X	X	X		X	X			X
	Hopper Throttle Corn MaxD		X	X	2.7					X		X	X			X
	Revline Hopper Throttle Corn Ether + Guard X	X	X	X	1.35	X	X	X	X				X			
	Hopper Throttle Corn + Guard X + Prephyte ST	X	X	X	1.35								X			X
	Revline Hopper Throttle Corn Ace Ether + Prephyte ST	X	X	X	1.35	X		X	X							X
	Revline Hopper Throttle Corn Ether	X	X	X	1.35	X	X	X	X							
Soybean Portfolio	Hopper Throttle Soybean MaxStax		X	X	0.94	X	X	X	X	X	X	X		X	X	X
	Hopper Throttle Soybean MaxD		X	X	0.94					X	X	X		X	X	X
	Hopper Throttle Soybean F+I + Protectis + Prephyte ST	X	X	X	0.38					X	X				X	X
	Revline Hopper Throttle Soybean Ether	X	X	X	0.38	X	X	X	X		X					
Specialty Portfolio	Revline Hopper Throttle Cotton	X	X	X	1.35	X	X	X								
	Revline Hopper Throttle Dry Bean	X	X	X	0.38		X	X			X					
	Revline Hopper Throttle Pea & Lentils	X	X	X	0.38		X	X			X					
	Revline Hopper Throttle Sugarbeet + Prephyte ST + Guard C	X	X	X	1.35		X	X				X				X

The Hopper Throttle™ MAX Family



HOPPER THROTTLE® SOYBEAN
MAXSTAX™
PLANTER BOX TREATMENT



HOPPER THROTTLE® CORN
MAXSTAX™
PLANTER BOX TREATMENT



HOPPER THROTTLE® SOYBEAN
MAXD™
PLANTER BOX TREATMENT



HOPPER THROTTLE® CORN
MAXD™
PLANTER BOX TREATMENT

EXCLUSIVE TO MERISTEM SYSTEM

EPA-APPROVED BIODEFENSE & SYNTHETIC ACTIVE INGREDIENTS

AVAILABLE IN MULTIPLE CROP OFFERINGS

GUARD**C**TM
NEMATODE PROTECTION

GUARD**X**TM
CRW MANAGEMENT + ROOT REGEN

PREPHYTETM
BROAD-SPECTRUM FUNGICIDE

GUARD**M**TM
INSECT PROTECTION

BORNEXTM
SDS PROTECTION

METALAXYLTM

Coverage Case Closed. Throttle is Dominant

Treatments

1.	Grower Standard F/I Seed Treatment + Saltro® or ILeVO®
2.	Untreated Seed
3.	Hopper Throttle MaxD Soybean
4.	Hopper Throttle MaxStax Soybean

Seed Sample Analysis

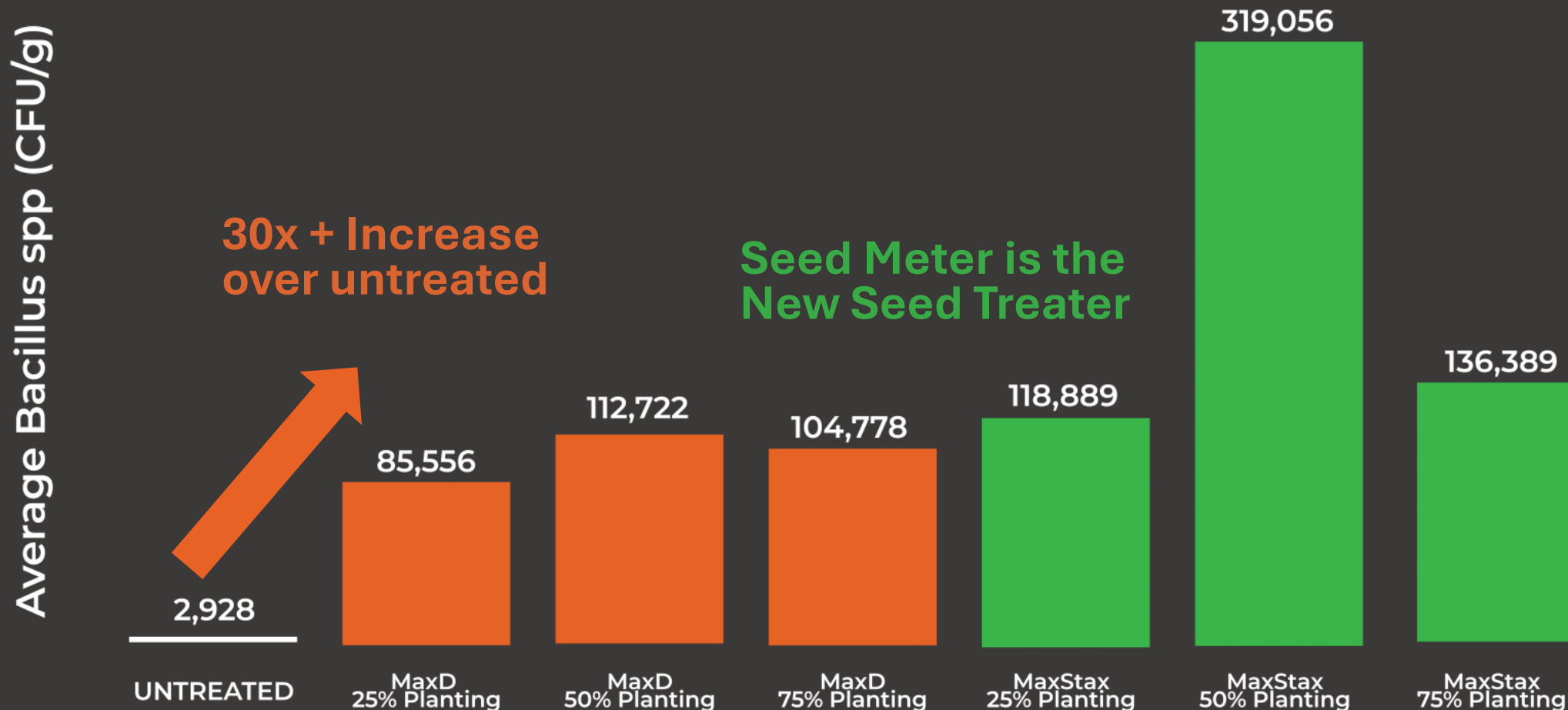
Three collection pts from seed tubes

@ 25%, 50% and 75%
of Field Planting



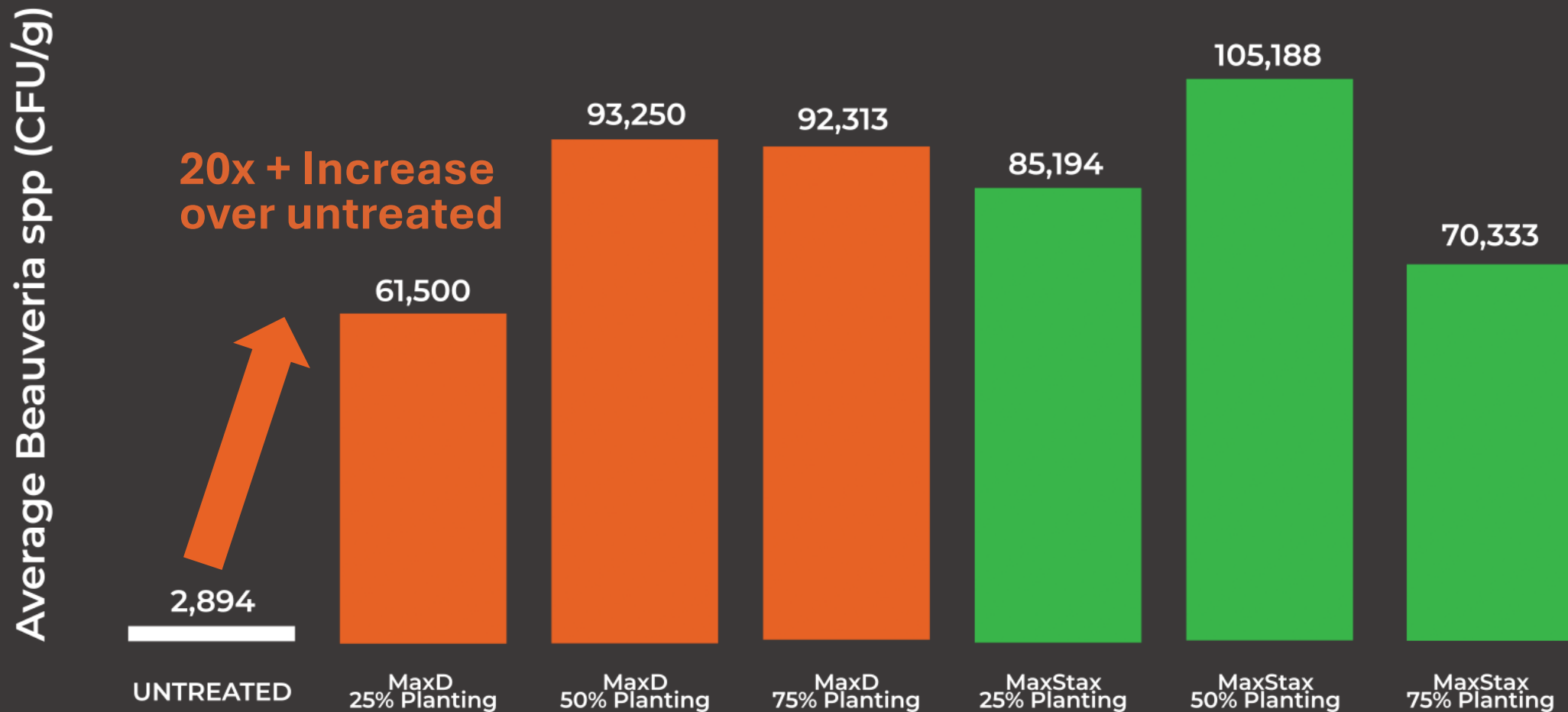
Documenting the Presence of *Bacillus* spp on the Hopper Throttle™ Soybean Treatments Through Planting

Key Takeaway: All 10 fields had an increase in *Bacillus* detected on both MaxD and MaxStax collected during planting timeframe compared to untreated control.



Documenting the Presence of Beauveria spp on the Hopper Throttle™ Soybean Treatments Through Planting

Key Takeaway: All 10 fields had an increase in Beauveria detected on both MaxD and MaxStax collected during planting timeframe compared to untreated control.



Detect the Presence of Metalaxyl on Hopper Throttle Soybean Seed Throughout Planting

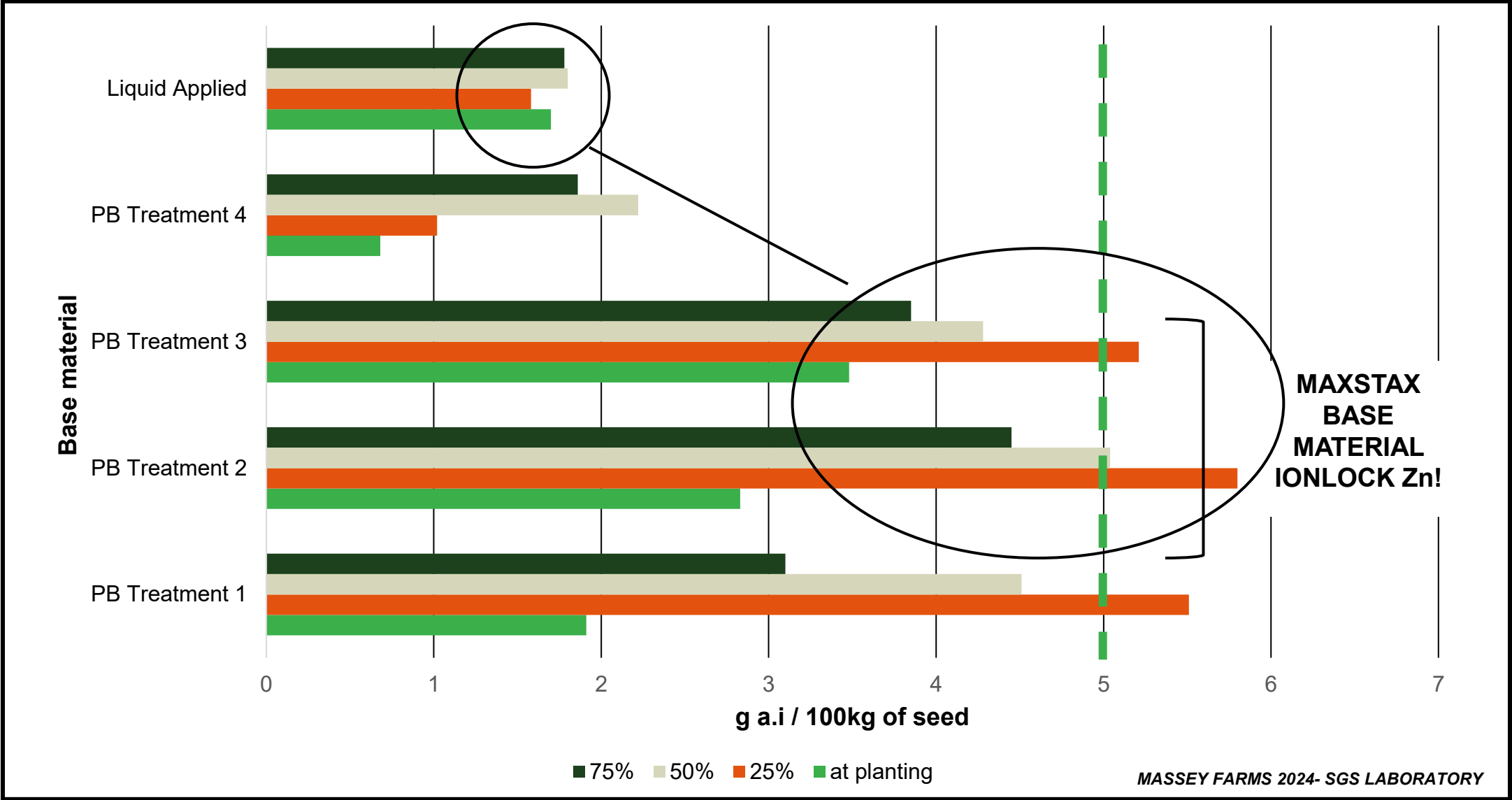
Timing of Sample Collection	Field 1	Field 2	Field 3	Field 4	Field 5	Field 6	Field 7	Field 8	Field 9	Field 10
25% of Planting	+	+	+	+	+	+	+	+	+	+
50% of Planting	+	+	+	+	+	+	+	+	+	+
75% of Planting	+	+	+	+	+	+	+	+	+	+

+ = Metalaxyl detected

Key Takeaway: Metalaxyl was detected in samples collected from all 10 fields at all 3 collections timepoints.

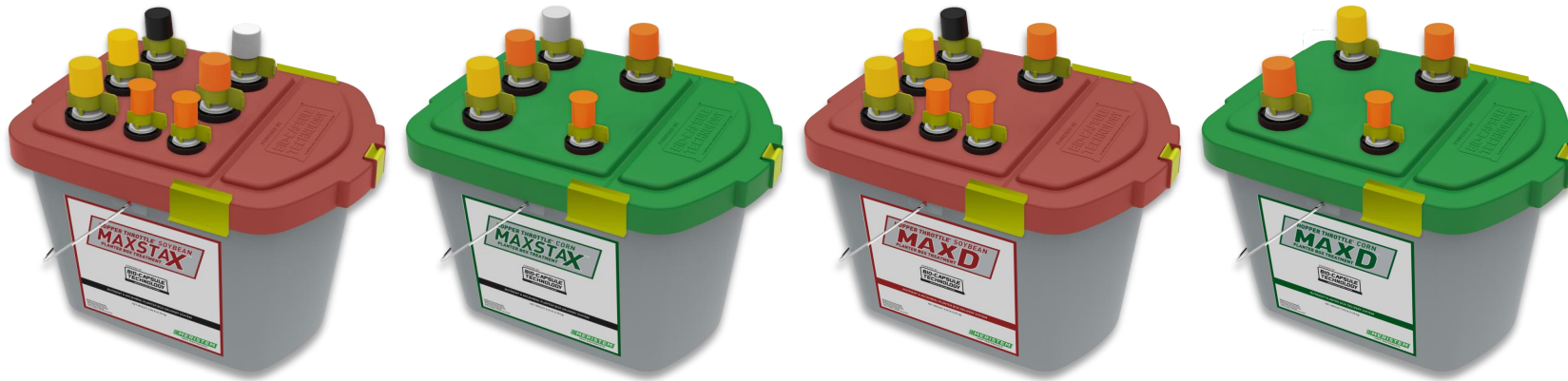
SEED METER IS NEW SEED TREATER – DOMINANT

Metalaxyl Coverage

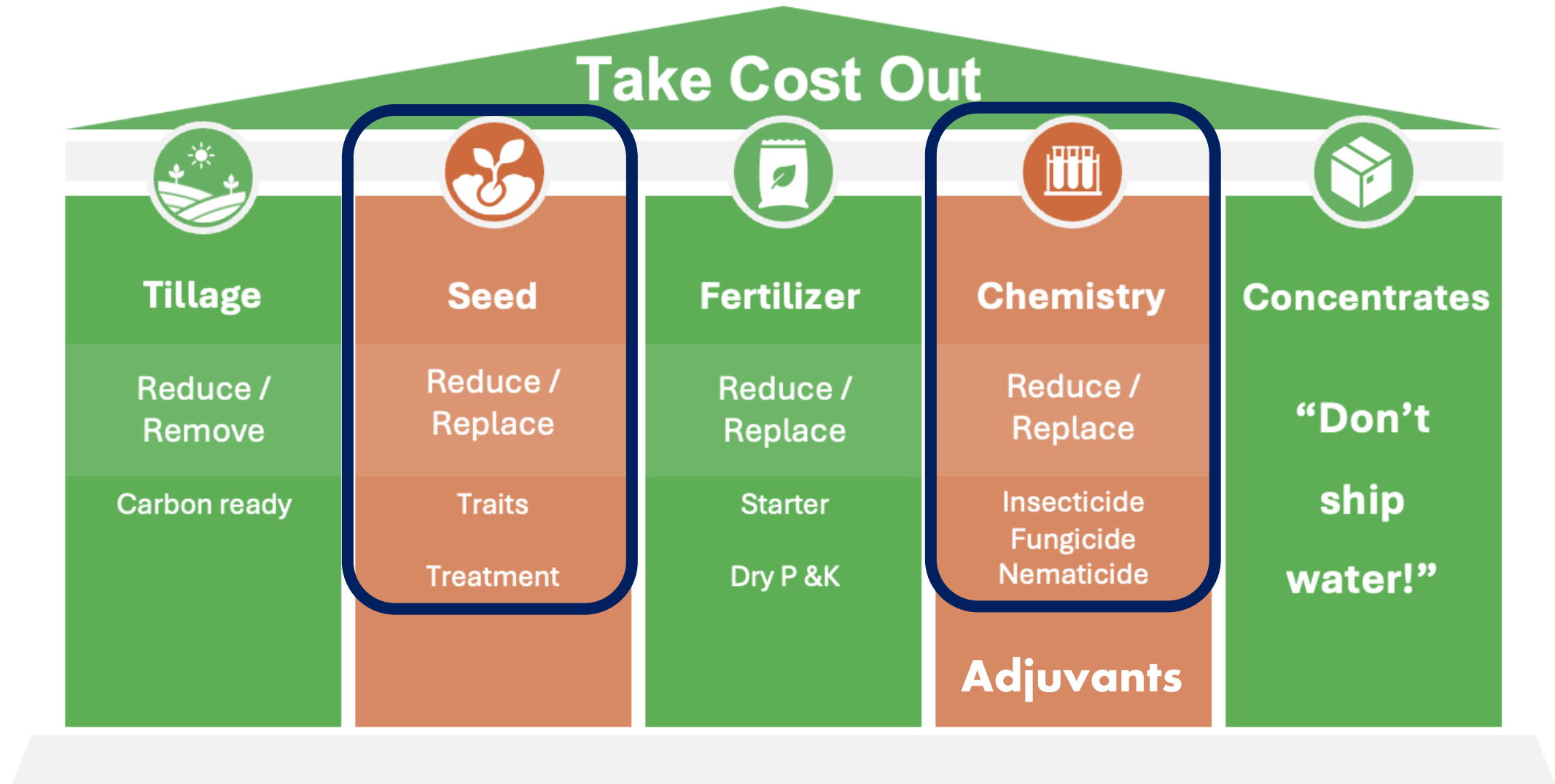


Coverage / Performance not an IF....

ION LOCK Zn + BioDefense is BEST Solution on the Market



Cut Distribution Cost + Innovation through Patented Delivery Systems

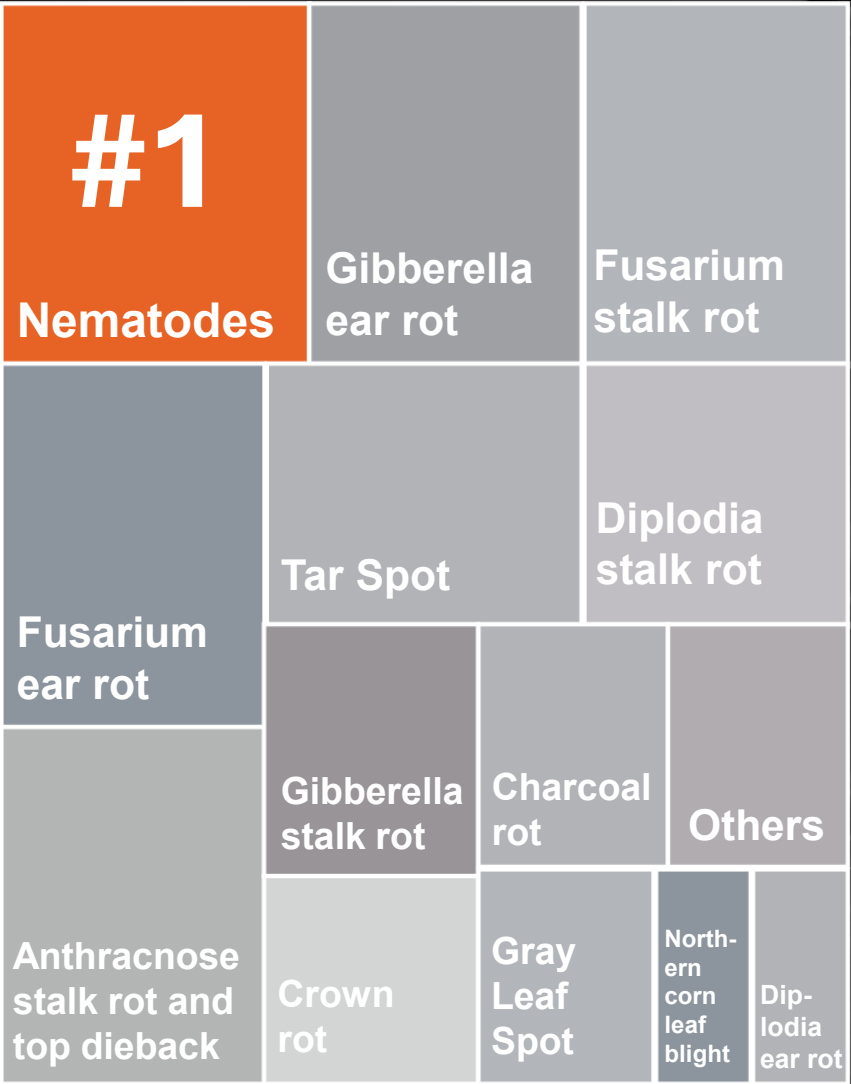


GUARD CIIITM

NEMATODE PROTECTION

+ BIOSTIMULANT

CORN Yield Loss Due to ‘Disease’



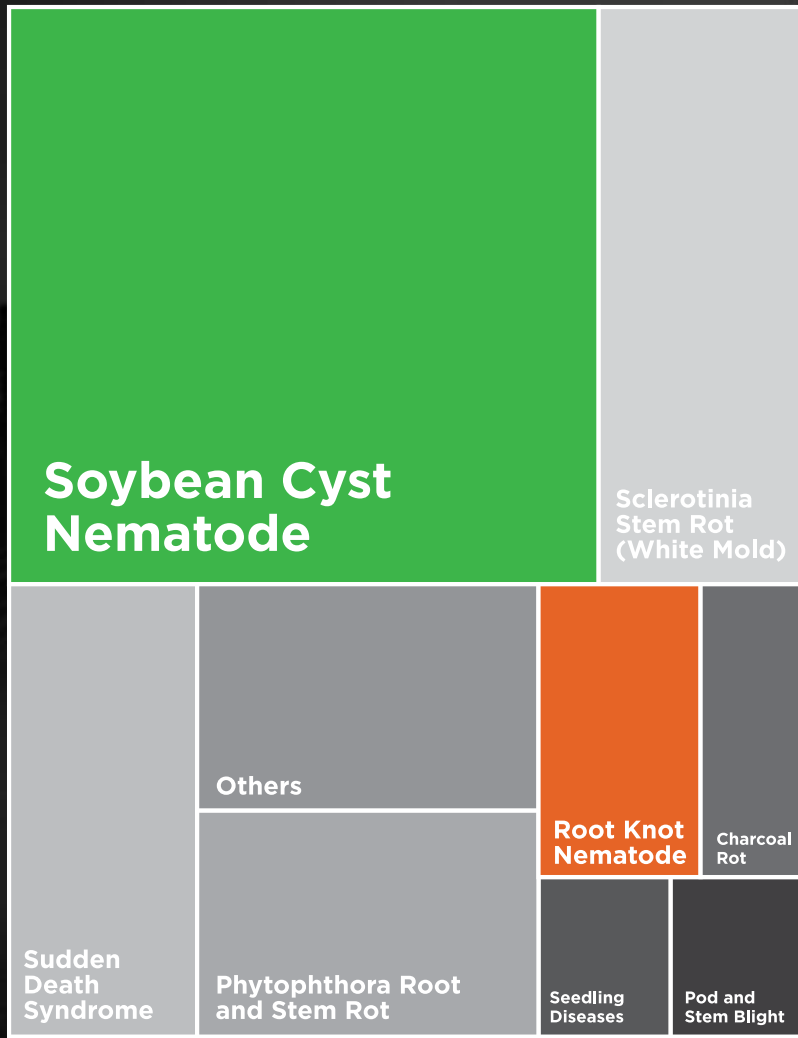
Corn Nematodes:
56.4 Million Bushels
Destroyed Annually

Proportion of 2023 corn yield lost for the most problematic diseases across the 29 U.S. This figure represents the loss of approximately 465.1 million bushels of corn. The “Others” category includes all diseases in this survey not represented individually



**CROP PROTECTION
NETWORK**
A Product of Land Grant Universities

Soybean Yield Loss Due to 'Disease'



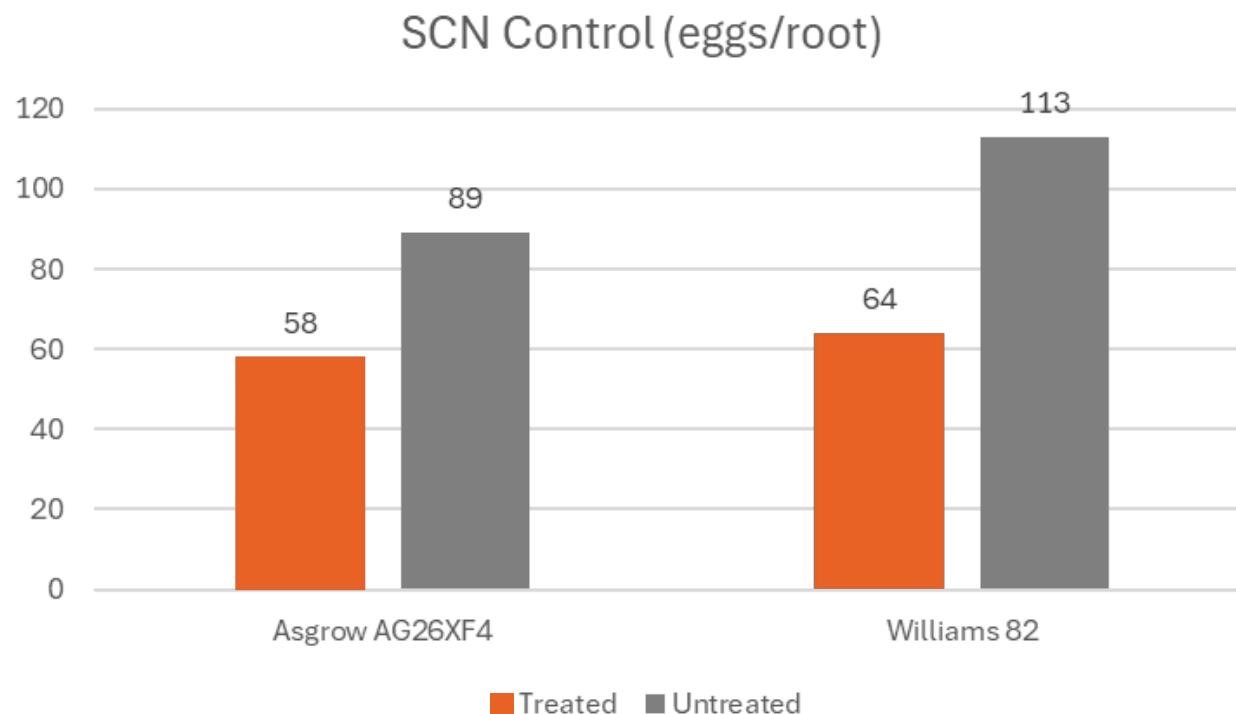
SCN + Root Knot Nematode:
100.9 Million Bushels Destroyed Annually

Proportion of soybean bushels estimated lost for the most problematic diseases. This figure represents 221.1 million bushels of soybean yield reduction. The "Other" category includes all diseases in this survey not represented individually.



**CROP PROTECTION
NETWORK**
A Product of Land Grant Universities

Guard C Nematode Suppression



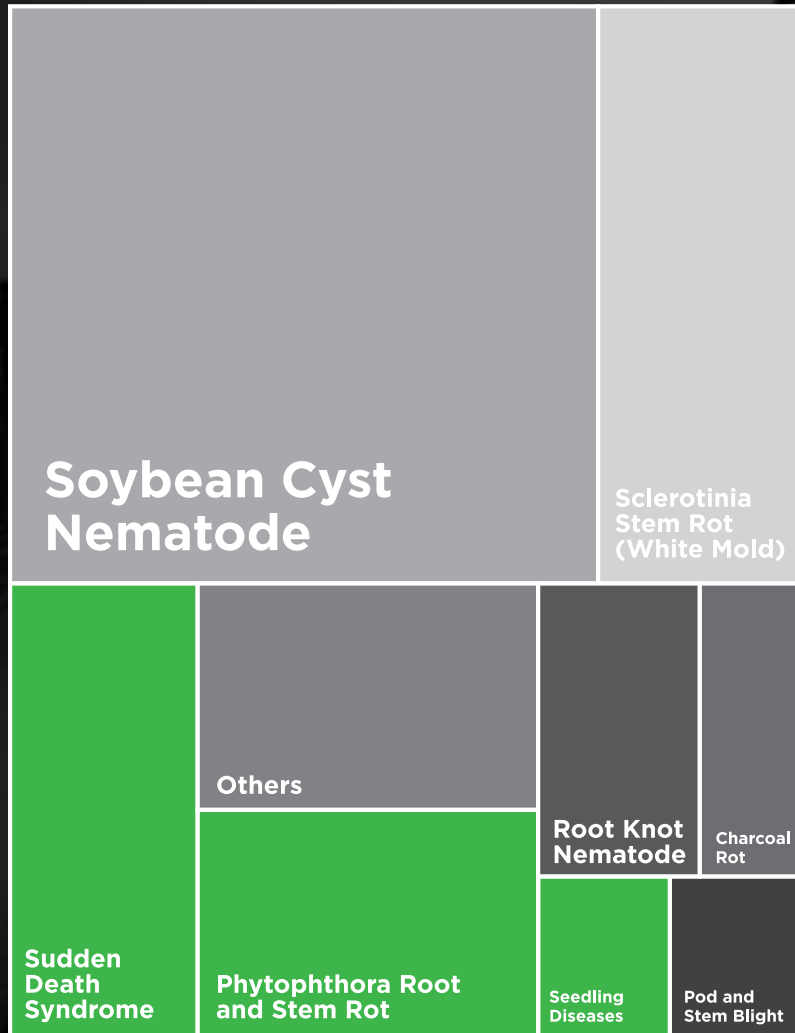
- PrePhyte ST plus Guard C provide protection equivalent to industry leading Ilevo for SCN, without the “Halo Effect”
- 40-50% Reduction in Cysts

A John Deere combine harvester is shown in a field, harvesting crops. The harvester is dark-colored with "JOHN DEERE" and "CCS Seed Delivery" visible on its side. The background is a blurred field of crops.

PREPHYTE™

BROAD-SPECTRUM FUNGICIDE

Soybean Yield Loss Due to 'Disease'



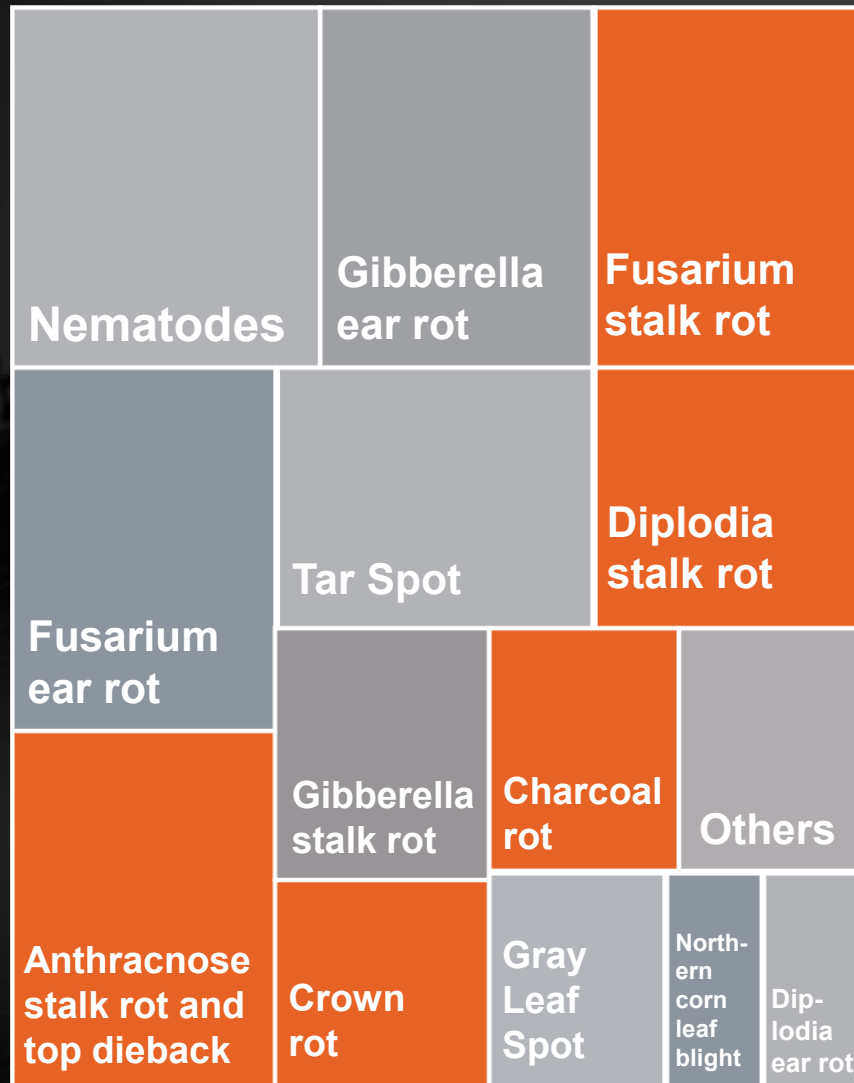
**SDS + PRR +
Seedling Disease:**
**44.7 Million Bushels
Destroyed Annually**

Proportion of soybean bushels estimated lost for the most problematic diseases. This figure represents 221.1 million bushels of soybean yield reduction. The "Other" category includes all diseases in this survey not represented individually.



**CROP PROTECTION
NETWORK**
A Product of Land Grant Universities

CORN Yield Loss Due to ‘Disease’



Root and Lower Stalk Rots:
204.9 Million Bushels
Destroyed Annually

Proportion of 2023 corn yield lost for the most problematic diseases across the 29 U.S. This figure represents the loss of approximately 465.1 million bushels of corn. The “Others” category includes all diseases in this survey not represented individually



**CROP PROTECTION
NETWORK**
A Product of Land Grant Universities

FOR THE FARMER WHO

Battles Crown Rots...potentially investing in @ plant fungicide...



Cost?

\$25/acre +



90+ diseases
controlled/suppressed
on label



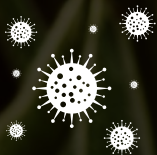
**BROAD SPECTRUM
PROTECTION ON SOIL-
BORNE DISEASES &
LESION NEMATODES**



**BROADLY COMPATIBLE
WITH LOW USE RATE**



**BIO-CAPSULE DELIVERY
SYSTEM MAXIMIZES
ACTIVITY**



**STIMULATES
NATURAL PLANT
DEFENSES**



**PROMOTES PLANT
GROWTH & YIELD**

PREPHYTETM IIIST



**Treated w/
Prephyte**



Crown Rot Infection Progression



Yield Monitor vs Weighed

Weighed Checks >80% Positive ROI



Weighed +16.5 bu/ac



Yld Monitor +9.0 bu/ac



State: Illinois
County: Douglas
Crop: Corn
Prev Crop: Soybeans
Plant Date: 5/11/2025
Harvest Date: 10/10/2025



Rank	Brand	Hybrid	Treatment	RM	Yield	Moisture	Advantage
2	Dekalb	DKC68-35		118	269.4	14.6	
1	Dekalb	DKC68-35	RHTC Ace	118	285.9	14.7	16.5 Bu.

ROI: \$47

1.6
ACRES

14.7%
MOISTURE

280
YIELD (BU/AC)

BY SOIL

Ace Pail

AVG YIELD

ACRES

Flanagan silt loam, 0 to 2 percent slopes

>

281

0.7

Drummer Millard silty clay loams, 0 to 2 percent slopes

>

278

0.9

BY ELEVATION

AVG YIELD

ACRES

CREATE PDF

SAVE FIELD REGION

1.7
ACRES

14.7%
MOISTURE

271
YIELD (BU/AC)

BY SOIL

Untreated

AVG YIELD

ACRES

Flanagan silt loam, 0 to 2 percent slopes

>

271

0.9

Drummer Millard silty clay loams, 0 to 2 percent slopes

>

271

0.8

BY ELEVATION

AVG YIELD

ACRES

DELETE REGION

CREATE PDF

VIEW REGION DETAILS

Yield Monitor vs Weighed

Weighed Checks >80% Positive ROI



Weighed +10.9 bu/ac

➡

Yld Monitor +1.0 bu/ac

➡



State: Illinois
County: Piatt
Crop: Corn
Prev Crop: Corn

Plant Date: 5/10/2025
Harvest Date: 10/2/2025



Brand	Hybrid	Treatment	RM	Yield	Moisture	Advantage
Dekalb	DKC114-99RIB		114	276.7	15.8	
Dekalb	DKC114-99RIB	RHTC Ace	114	287.6	16.9	10.9 Bu

ROI: \$24

0.7	16.9%	278	0.7	15.8%	277
ACRES	MOISTURE	YIELD (BU/AC)	ACRES	MOISTURE	YIELD (BU/AC)

BY HYBRID		AVG YIELD	ACRES	BY HYBRID		AVG YIELD	ACRES
DKC114-99 G2 PRE	>	278	0.6	DKC114-99 G2	>	277	0.7
BY SOIL		AVG YIELD	ACRES	BY SOIL		AVG YIELD	ACRES
Flanagan silt loam, 0 to 2 percent slopes	>	281	0.4	Flanagan silt loam, 0 to 2 percent slopes	>	280	0.5
Drummer-Milford silty clay loams, 0 to 2 percent slopes	>	274	0.3	Drummer-Milford silty clay loams, 0 to 2 percent slopes	>	269	0.2

Yield Monitor vs Weighed

Weighed Checks >80% Positive ROI



Weighed +10.1 bu/ac



Yld Monitor +7.0 bu/ac



CROP PERFORMANCE

State: Illinois
County: Piatt
Crop: Corn
Prev Crop: Soybeans

Plant Date: 5/10/2025
Harvest Date: 10/2/2025



Rank	Brand	Hybrid	Treatment	RM	Yield	Moisture	Advantage
2	Dekalb	DKC65-92		115	255.9	16.9	
1	Dekalb	DKC65-92	RHTC Ace	115	266	17.5	10.1 Bu

ROI: \$21

Field Region Oct 20, 2025			10/20/25		
1	17.4%	261	1	16.9%	268
ACRES	MOISTURE	YIELD (BU/AC)	ACRES	MOISTURE	YIELD (BU/AC)
BY HYBRID			AVG YIELD		
● DKC65-92			> 269 0.9		
BY SOIL			AVG YIELD		
Sunbury silt loam, 0 to 2 percent slopes			> 297 0.1		
Drummer-Milford silty clay loams, 0 to 2 percent slopes			> 266 0.5		
Sunbury silt loam, 0 to 2 percent slopes			> 262 0.4		
Drummer-Milford silty clay loams, 0 to 2 percent slopes			> 255 0.5		



Guard C + BORNE X + PREPHYTE+
Metalaxyl on the left (two row plots) and
Untreated Control (Two rows) on right.

SYNERGISTIC EFFECT



- Efficacy against a **broad range of fungal diseases, especially SDS**
- **Top seed safety profile** for germination and stand protection
- No **phytotoxic seedling effect** (Halo Effect)
- Compatible with other seed treatments & inoculants



BROAD SPECTRUM
PROTECTION ON SOIL-
BORNE DISEASES &
LESION NEMATODES



BROADLY COMPATIBLE
WITH LOW USE RATE



BIO-CAPSULE DELIVERY
SYSTEM MAXIMIZES
ACTIVITY



STIMULATES
NATURAL PLANT
DEFENSES



PROMOTES PLANT
GROWTH & YIELD

PREPHYTETM IIIST



EPA reg no. 94485-5

A proprietary OMRI listed, BioFungicide Seed Treatment that provides three modes of action to protect against **Soil-Borne Diseases, Free-Living Nematodes** and **Abiotic Stress**.

FEATURES

- EPA Registered Active Ingredient – **Broad Spectrum** strain
- **Low use rate** that is **compatible** with multiple technologies
 - Best in class strain selected for its fungicidal properties
- **OMRI Listed** and is suitable for both organic and conventional production.
 - BioControl & BioStimulant in one formulation
- **Three Modes of Action** providing more control and less pesticidal resistance

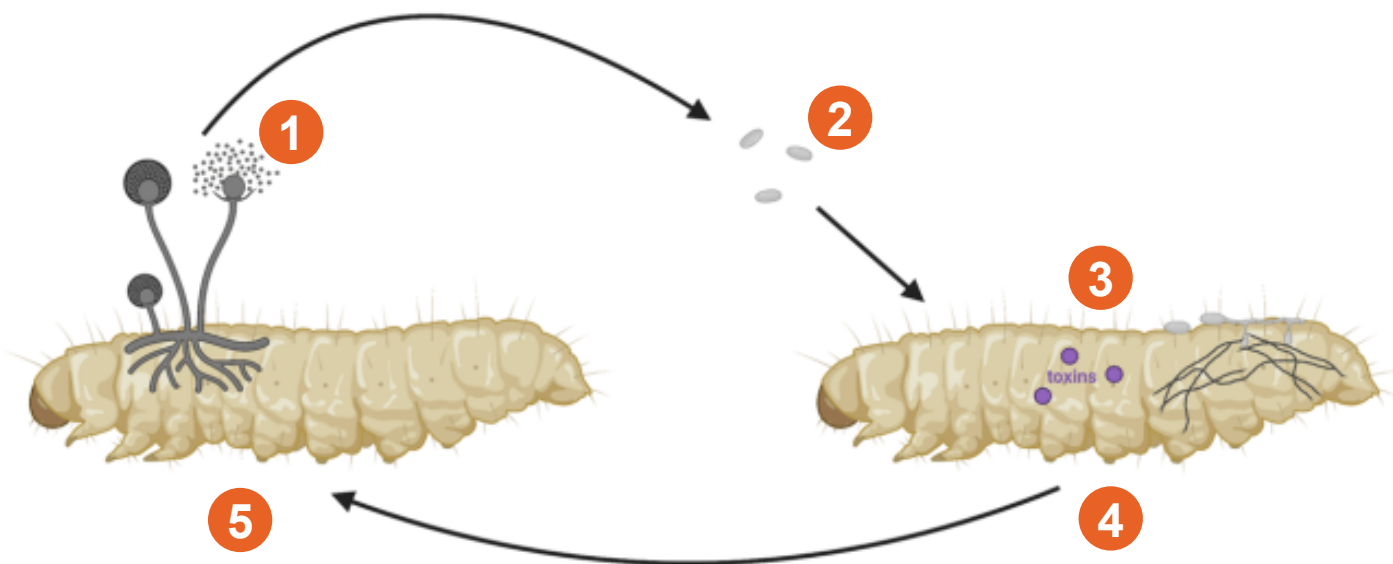
MERISTEM[®]
CROP PERFORMANCE

A John Deere agricultural machine, possibly a sprayer or planter, is shown in a field. The machine has a large tank and various mechanical components. The background is a dark, grainy image of the field and the machine's rear. The text 'GUARD M III' is prominently displayed in the center, with 'GUARD' in white, 'M' in orange, and 'III' in white. Below it, 'INSECT PROTECTION' is written in white. A 'TM' trademark symbol is visible above the 'III'.

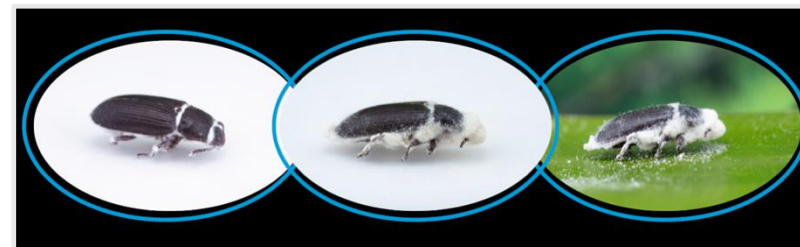
GUARD M IIITM

INSECT PROTECTION

Naturally-occurring, fungal biocontrol agent proven effective on a wide range of insects - **contact mycoinsecticide** which infects insects by producing spores on the surface of insects, ultimately killing them.



- 1 Guard M spores applied to insect
- 2 Spores spread by rain, wind & insect movement
- 3 Spores germinate & penetrate insect
- 4 Toxins produced & explode nutrients within host
- 5 Fungus grows out of insect & produces more spores



METALAXYL III

METALAXYL ST is a systemic fungicide that contains the chemical metalaxyl, which interferes with fungal RNA synthesis.

METALAXYL ST is intended for use as a planter box treatment in combination of broad-spectrum fungicide.

METALAXYL ST can be used as a planter box application through Meristem's patented **BIO-CAPSULE™ Technology**.

**For use in soybean systems only.*



GUARDXTM

CRW MANAGEMENT + ROOT REGEN

CORN Yield Loss Due to 'Insects'

#1

Corn Rootworm

Corn Rootworm: 519.5 Million Bushels Destroyed Annually

Western
bean
cutworm

Corn
earworm

Two-
spotted
spider
mite

Others

Banks
grass
mite

Grasshoppers

Common name and relative proportion of estimated yield losses for invertebrate pests of corn in 2023. Others includes all species listed with the exception of the six highlighted here



**CROP PROTECTION
NETWORK**
A Product of Land Grant Universities

GUARD XTM

CRW MANAGEMENT + ROOT REGEN

Guard XTM is an EPA-registered bioinsecticide that repels corn rootworm (CRW) at the root. **Guard X** also activates the plant's immune system, and sets the plants up to more efficiently withstand abiotic stresses.

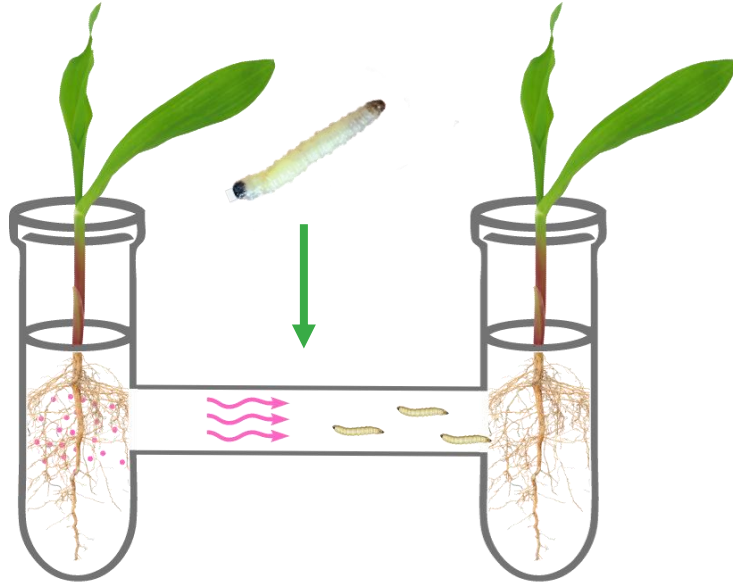
Guard X can be used as a planter box application through Meristem's patented **BIO-CAPSULETM** Technology.



Guard X EPA No. 95699-2-95552

Guard X Repels Larval Feeding

When given a choice between Guard X-treated and untreated roots, most larvae chose untreated.

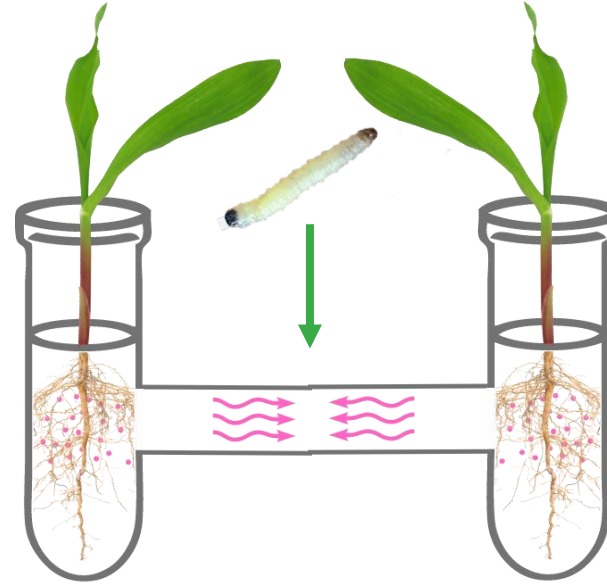


GUARDX
CRW MANAGEMENT + ROOT REGEN

UTC

4%	26%	70%
of larvae chose Guard X-treated roots	of larvae stayed in the center	of larvae chose the untreated roots

When given a choice between Guard X-treated and Guard X-treated roots, most larvae chose neither.



GUARDX
CRW MANAGEMENT + ROOT REGEN

GUARDX
CRW MANAGEMENT + ROOT REGEN

80%
of larvae remained undecided
and stayed in the center

GuardX Acres Growth



*Forecast

Guard X Repels Larval Feeding

The “force field” effect is due to Guard X treated plants releasing over 1,000 times more methyl anthranilate into the rhizosphere compared to untreated plants

Methyl anthranilate disrupts the larval response to feeding cues, like carbon dioxide, that it uses to find roots in the soil

© 2025 NewLeaf Symbiotics, Inc. 2024 study with University of Missouri; Head space was sampled from treated and untreated roots and subjected to GC-MS analysis to identify volatile organic compounds (VOCs); manuscript currently under review and pre-prints available: <https://www.biorxiv.org/content/10.1101/2025.05.22.655610v1>

Guard X Enhances Root Regrowth After Larval Damage

Control

Regrowth above the site of damage



Larval tunneling damage

4th node dissected root showing larval tunneling feeding damage

Guard X

Larval tunneling damage



Aggressive regrowth above the site of damage

4th node dissected root showing larval tunnelling feeding damage

For damaged roots; Guard X showed an overall increase in number of root tips (+10.4%) and total root length (+6.2%) with the strongest effect observed in nodes 1-3; number of root tips (+24.0 %) and total root length (+15.1%)

© 2025 NewLeaf Symbiotics, Inc. 2024 study with university collaborators, CRW larval feeding pressure in the UTC = 0.26 on the 0-3 NIS scale. 100 roots sampled from a RCBD small plot trial roughly 3 weeks after NIS ratings taken to evaluate rooting and regrowth with Rhizovision Explorer. Roots with larval tunneling or larval pruning imaged separately to determine regrowth after damage.

GUARDXTM

CRW MANAGEMENT + ROOT REGEN

Root Regen

The real deal....

Not just CRW



GUARDXII™
CRW MANAGEMENT + ROOT REGEN

+

Terrasym®

Corn Bioinsecticide –
CRW Protection

+8.8 Bu/Ac²

Win Performance Advantage¹

Corn Biostimulant

+7.7 Bu/Ac²

Win Performance Advantage¹

65 trials³
across 9 states 2023-present⁴

144 trials³
across 12 states over 2020-2023

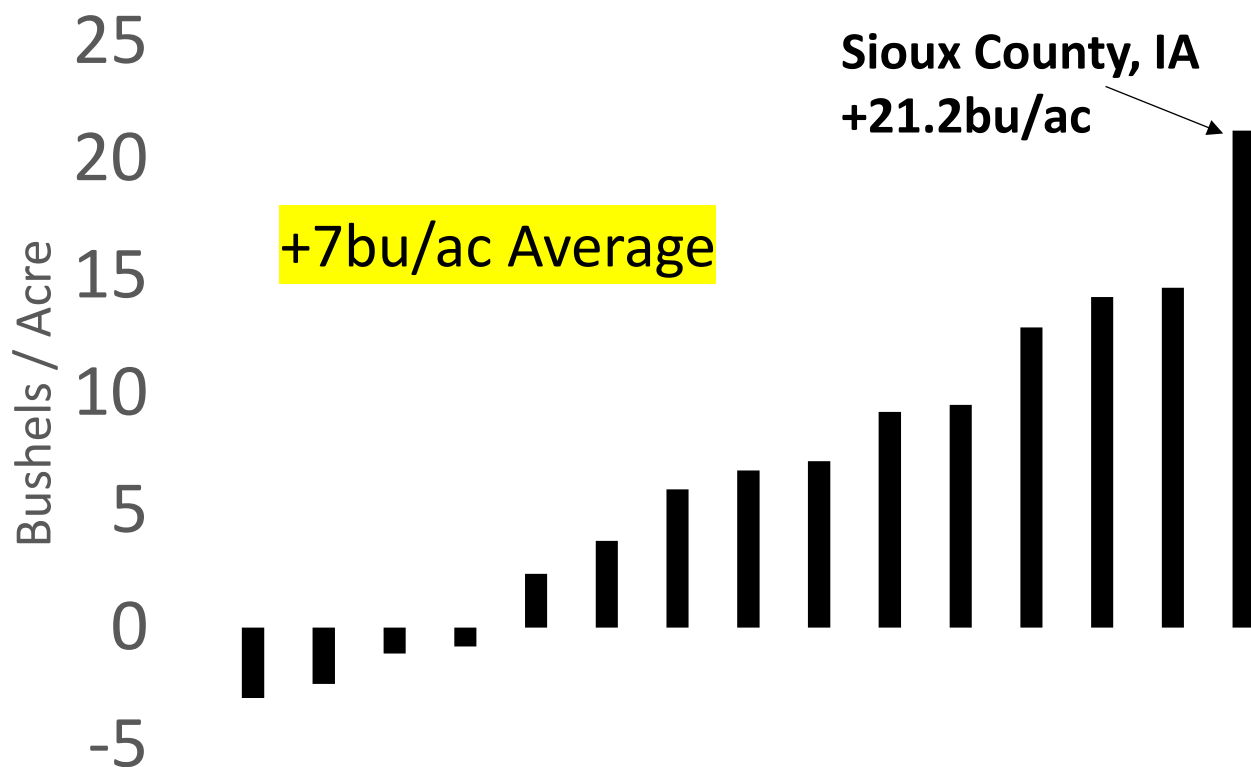
MERISTEM
CROP PERFORMANCE



<https://newleafsym.com/>



RHTC+Ether/Carbon+GuardX vs Check



Coming Soon: Expanded Label for Guard X

Guard X protects crops from insect damage by stimulating the plant's own defenses and is an effective tool in the integrated pest management toolbox – **NOT JUST CRW** suppression

Expanded Commercial Label for the 2026 crop season will be available – pending EPA approval.

Positive proof of concept:

Fall Armyworm

Stinkbug

Root Knot Nematodes



For updates: www.newleafsym.com



Guard X is Game Changer in Insect Management

FOR THE FARMER WHO
uses traits in low or no CRW pressure environments (insurance)...

SmartStax[®] PRO
With **RNAi** TECHNOLOGY

SmartStax[®]
TECHNOLOGY



NEXTA[™] >> ?

Cost?

\$25-60/ac +

GUARDX^{III}
CRW MANAGEMENT + ROOT REGEN


PREPHYTE^{III} ST
BROAD-SPECTRUM FUNGICIDE

Guard X
A multiple-mode-of-action indirect bioinsecticide to mitigate corn rootworm damage

Prephyte ST
Broad-spectrum, EPA-registered fungicide for prevention, control or suppression of many soil-borne diseases

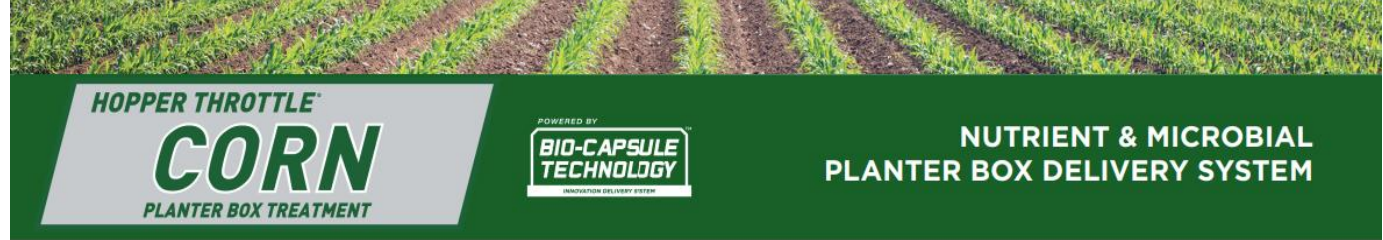
Base Pail & Seed Fluency:

- 80/20 Talc/Graphite
- Mn & Fe
- 1.35 lbs IonLock Zinc equiv. to 1.35 qts 9% Zn EDTA



\$19/ac
TCO

In-Furrow Insecticide +Fungicide



GUARDX^{III}
CRW MANAGEMENT • ROOT REGEN

PREPHYTE^{III} ST
BROAD-SPECTRUM FUNGICIDE

**Co-packed with EPA-registered
Guard XTM and PrephyteTM ST***

Hopper Throttle[®] Corn with Guard X and Prephyte ST is an advanced planter box system that combines seed fluency, micronutrients and live biology in a convenient delivery system that can replace any seed fluency agent.

The patented Bio-Capsule[™] Technology delivery system allows for the addition of multiple biological solutions safely packaged for convenient, live deployment at planting.

PRODUCT BENEFITS

- **IonLock[™] Zinc** increases singulation & adheres microbes to seed coats while providing valuable early emergence nutrition
- **Increases early-season iron, manganese and zinc uptake**
- **Puts corn plants in the position to manage season-long stressors and optimize genetic potential**
- **Guard X:** repels corn rootworm (CRW) at the root & activates the plant's immune system to efficiently withstand abiotic stresses
- **Prephyte ST:** protection against many soil-borne diseases, free-living nematodes and abiotic stresses

GUARANTEED ANALYSIS

BASE INGREDIENTS

Iron (Fe).....	0.70%
Manganese (Mn)	0.90%
Zinc (Zn).....	4.00%
4.00% Water Soluble Zinc	
Derived from Iron Oxide, Manganese Oxide and Zinc Sulfate.	

BIO-CAPSULE INGREDIENTS:

GUARD X BIO-CAPSULE (CO-PACK)

EPA Reg. No.: 95699-2-95552

ACTIVE INGREDIENT: <i>Methylorubrum extorquens</i> strain NLS0042*	2.0%
OTHER INGREDIENTS:.....	98.0%
TOTAL:.....	100.0%

*Contains not less than 10^9 CFU/g of product.

PREPHYTE ST BIO-CAPSULE (CO-PACK)

EPA Reg. No.: 94485-5

ACTIVE INGREDIENT: <i>Bacillus amyloliquefaciens</i> strain ENV503*	0.149%
OTHER INGREDIENTS:.....	99.851%
TOTAL:.....	100.000%

*Not less than 5.9×10^9 Colony Forming Units (CFU) per gram of product.

DIRECTIONS FOR USE & RECOMMENDED USE RATE

DO NOT ACTIVATE BIO-CAPSULE UNTIL READY FOR USE. Read and follow all label directions for use on package. Once ready to plant, remove the safety clips from the Bio-Capsules. Push down on the buttons atop the pail to release the biologicals into the base. Seal the pail and shake aggressively to blend the contents. Before each application, aggressively shake contents to ensure the correct volume is applied.

The combined products (1 pail) treat 50 units of corn at 80k seeds per unit.

For single-row unit planters, use the enclosed scoop to measure out blended contents. One scoop treats 1 unit (80k seeds) corn.

PRODUCT AVAILABILITY

Sold in 2-pail cases to treat 100 units of corn. Each pail is capable of treating 50 units of corn



\$60/ac? +

GUARDX^{III}
CRW MANAGEMENT • ROOT REGEN

PREPHYTE^{III} ST
BROAD-SPECTRUM FUNGICIDE

Guard X
A multiple-mode-of-action indirect bioinsecticide to mitigate corn rootworm damage

Prephyte ST
Broad-spectrum, EPA-registered fungicide for prevention, control or suppression of many soil-borne diseases

Base Pail & Seed Fluency:
• 80/20 Talc/Graphite
• Mn & Fe
• 1.35 lbs IonLock Zinc equiv. to 1.35 qts 9% Zn EDTA



\$19/ac TCO

Guard X
A multiple-mode-of-action indirect bioinsecticide to mitigate corn rootworm damage

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Base Pail & Seed Fluency:
• 80/20 Talc/Graphite
• Mn & Fe
• 1.35 lbs IonLock Zinc equiv. to 1.35 qts 9% Zn EDTA



Actual product packaging may be different than this visual

MERIST
CROP PERFORMANCE

THE NEW NORMAL: SEED + MAX BIOPOWER

MERISTEM
CROP PERFORMANCE

POWERED BY
**BIO-CAPSULE
TECHNOLOGY**
INNOVATION DELIVERY SYSTEM



3. PREPHYTE™

Broad-spectrum, EPA-registered fungicide for prevention, control or suppression of many soil-borne diseases, including crown rot complex.



4. Guard X™

Multiple-mode-of-action bioinsecticide to alleviate corn rootworm feeding.

5. Guard M™

EPA-registered insecticide for soybeans that targets seedcorn maggots and other secondary pests.

6. Guard C™

Bionematicide containing Fungal chitosan to suppress nematodes while stimulating root and plant growth.

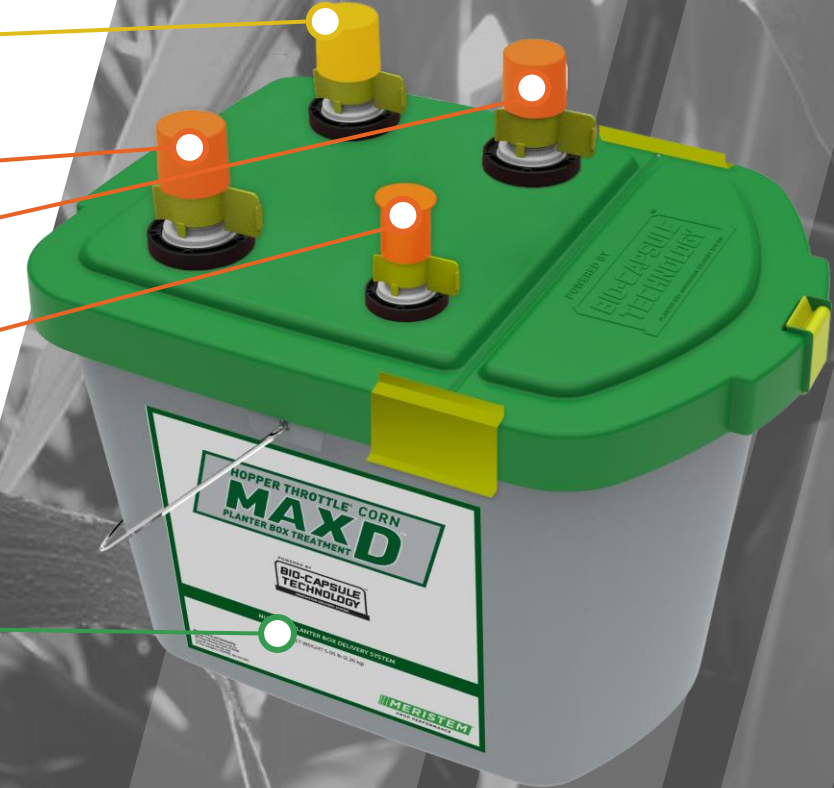
BASE PAIL - Seed Fluency blend

7. Seed Fluency

8. IONLOCK™ Manganese (Mn)

9. IONLOCK™ Iron (Fe)

10. IONLOCK™ Zinc (Zn) - (equivalent to 1.5 qt Zinc 9% EDTA)



HOPPER THROTTLE® CORN
MAXD
PLANTER BOX TREATMENT

THE NEW NORMAL: SEED + MAXSTAX BIOPOWER

MERISTEM
CROP PERFORMANCE

POWERED BY
**BIO-CAPSULE
TECHNOLOGY**
INNOVATION DELIVERY SYSTEM



1. REVLINE®

Proven, industry-leading Terrasym® biostimulant PPFM strain that generates massive root structures and healthier plants.

2. Nitrogen-Fixing Microbes



3. PREPHYTE™

Broad-spectrum, EPA-registered fungicide for prevention, control or suppression of many soil-borne diseases, including crown rot complex.



4. Guard X™

Multiple-mode-of-action bioinsecticide to alleviate corn rootworm feeding.

5. Guard M™

EPA-registered insecticide for soybeans that targets seedcorn maggots and other secondary pests.

6. Guard C™

Bionematicide containing Fungal chitosan to suppress nematodes while stimulating root and plant growth.



BASE PAIL - Seed Fluency blend

7. Seed Fluency

8. IONLOCK™ Manganese (Mn)

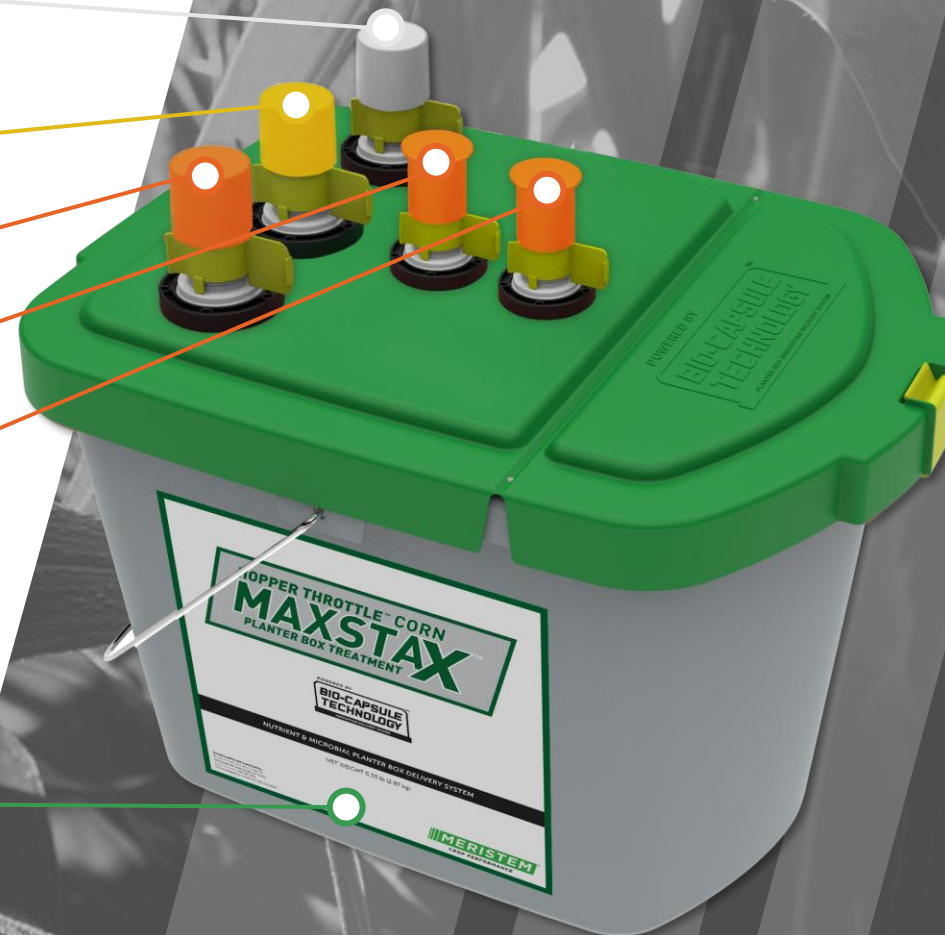
9. IONLOCK™ Iron (Fe)

10. IONLOCK™ Zinc (Zn) - (equivalent to 1.5 qt Zinc 9% EDTA)

11. Active Carbon

12-13. ETHER™ Enzyme Technology

Lipase & Mannanase enzymes that increase biological activity & activate nutrient availability.



HOPPER THROTTLE™ CORN
MAXSTAX™
PLANTER BOX TREATMENT

THE NEW NORMAL: SEED + MAXSTAX BIOPOWER

MERISTEM
CROP PERFORMANCE

POWERED BY
**BIO-CAPSULE
TECHNOLOGY**
INNOVATION DELIVERY SYSTEM

\$40/ac Replant Coverage

1. Industry-Leading Bradyrhizobia Inoculant

Aggressive multi-strains of Bradyrhizobium for accelerated early season nodulation.

2. METALAXYL

Industry-standard systemic fungicide for control of phytophthora and pythium.

3. PREPHYTE™

Broad-spectrum, EPA-registered fungicide for prevention, control or suppression of many soil-borne diseases.

4. REVLIN®

Proven, industry-leading Terrasym® biostimulant PPFM strain that generates massive root structures and healthier plants.

5. Nitrogen-Fixing Microbes

6. Trichoderma

7. BORNE X™

EPA-registered fungicide to prevent soil-borne fungal diseases such as Fusarium (causal agent for SDS) and Rhizoctonia.

8. Guard M™

EPA-registered insecticide for soybeans that targets seedcorn maggots and other secondary pests.

9. Guard C™

Bionematicide containing Fungal chitosan to suppress nematodes while stimulating root and plant growth.

BASE PAIL - Seed Fluency blend

10. Seed Fluency

11. IONLOCK™ Manganese (Mn)

12. IONLOCK™ Iron (Fe)

13. IONLOCK™ Zinc (Zn) - (replaces 1.5 qt Zinc 9% EDTA)

14. Active Carbon

15-16. ETHER™ Enzyme Technology

Lipase & Mannanase enzymes that increase biological activity & activate nutrient availability.



HOPPER THROTTLE™ SOYBEAN
MAXSTAX
PLANTER BOX TREATMENT

Early Planting Date Grain Yield & Yield Components

Residue	Seed Trt.	V4 Foliar	Grain Yield	Seed Number	Seed Weight
			bushels per acre	seeds per m ²	mg per seed
None	None	None	63.3	3112	119
None	None	Harvest Shield @1pt/a	64.1 +0.8	3101	120
None	Commercial	None	63.5 +0.2	3115	119
None	MaxStax	None	64.9 +1.6	3178	119

MaxStax **+1.4bu/ac** vs Commercial Seed Treatment + Fluopyram

leVO®

Grain yields adjusted to 13% moisture; Seed weight presented at 0% moisture;
* Indicates a significant difference between at treatment and the untreated control at the 0.1 threshold.

Late Planting Date Grain Yield & Yield Components

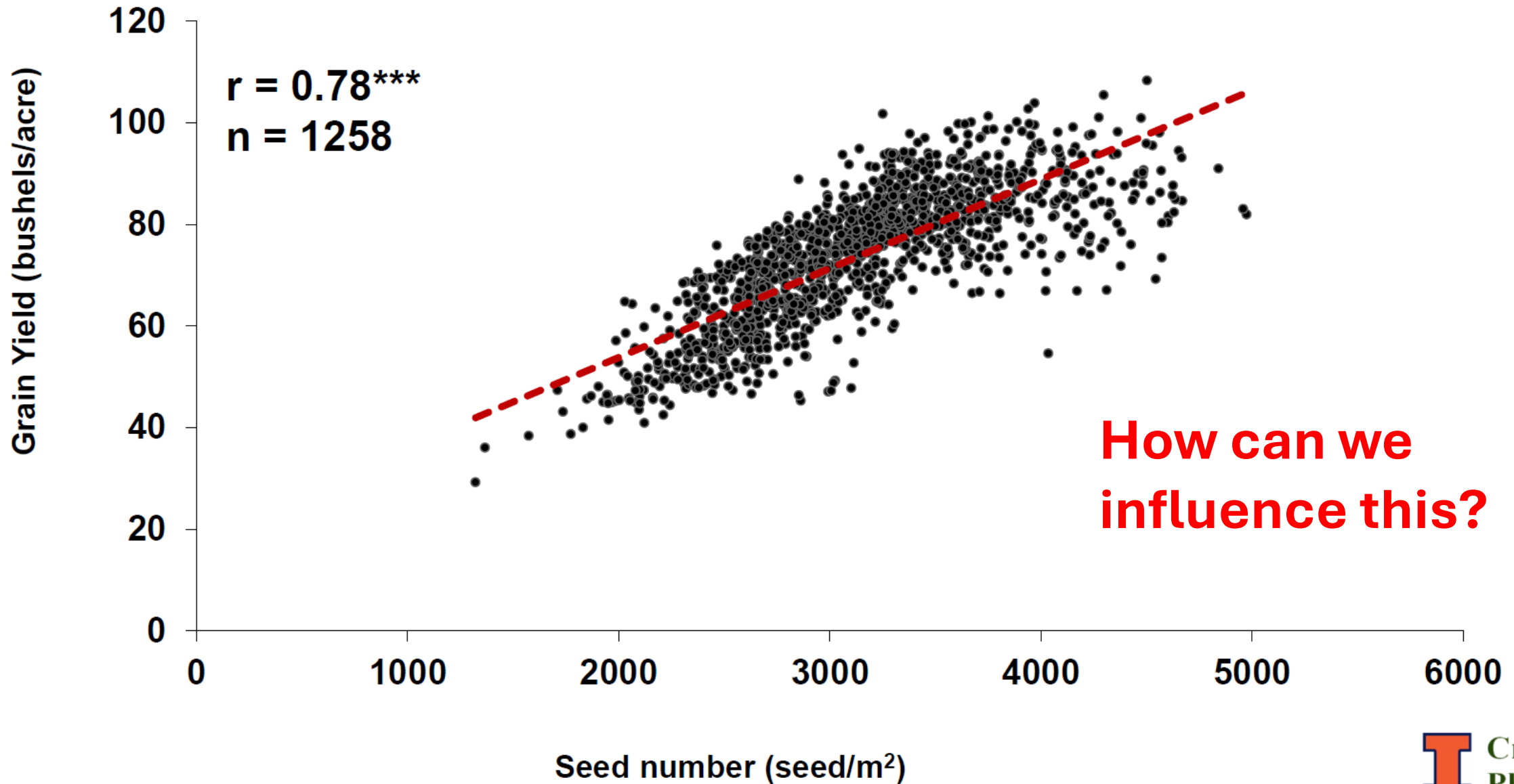
Residue	Seed Trt.	V4 Foliar	Grain Yield		Seed Number	Seed Weight
			bushels per acre		seeds per m ²	mg per seed
None	None	None	54.4		2599	122
Excavator	None	None	56.2 +1.8		2614	126
Excavator	Commercial	None	54.8 +0.4		2616	123
Excavator	Commercial	Harvest Shield @1pt/a	57.4* +3.0		2728	123
Excavator	MaxStax	None	59.0* +4.6		2771	124

+2.6 bu/ac
HarvestShield

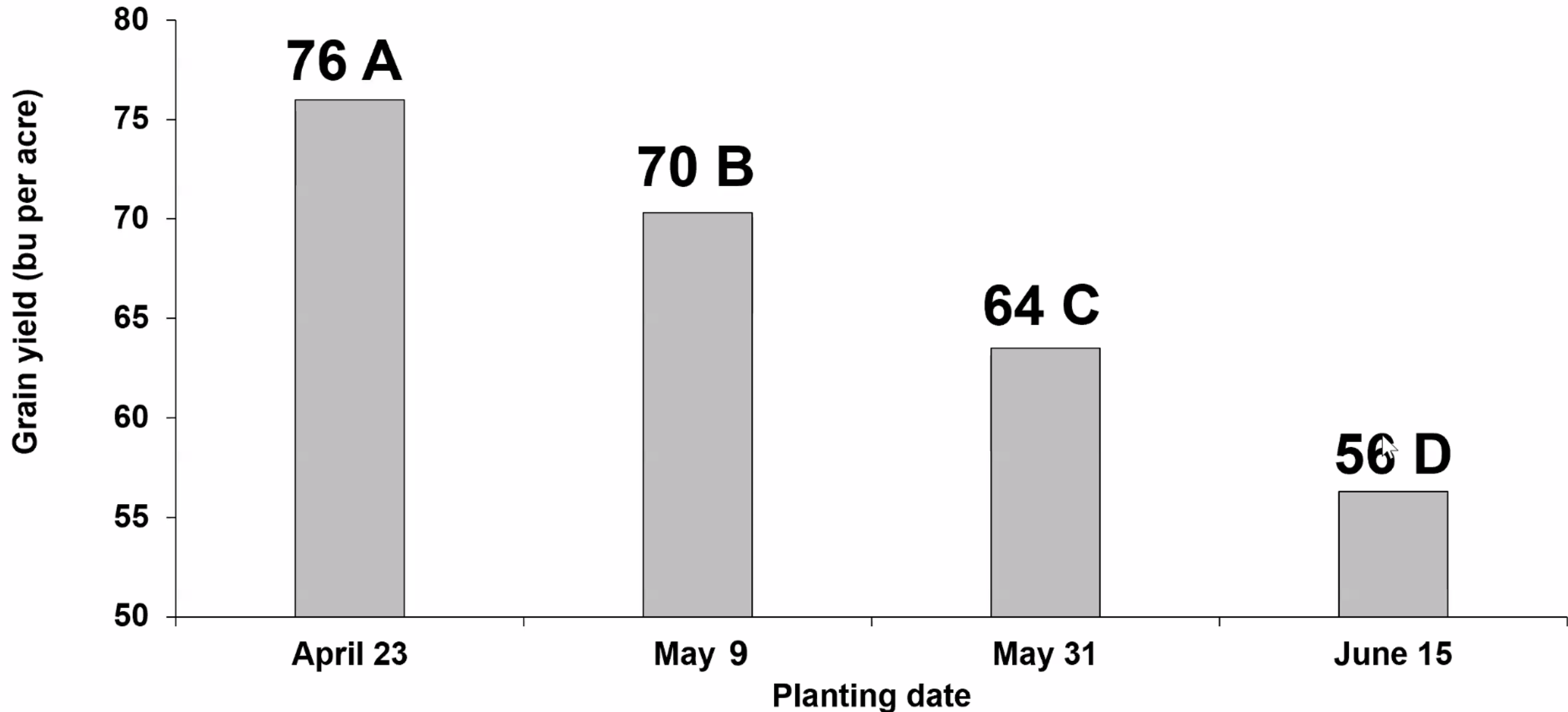
MaxStax +4.2bu/ac vs Commercial Seed Treatment + Fluopyram



Soybean Seed Number x Grain Yield



2022 Soybean Grain Yield x Planting Date



Averaged across 16 varieties, eight management treatments and four replications.

Different letters indicate significant differences between treatments at $p = 0.10$. Champaign, IL (2022)

Total nodes/acre at 140k plants/acre



April 23rd

May 9th

May 31st

June 15th

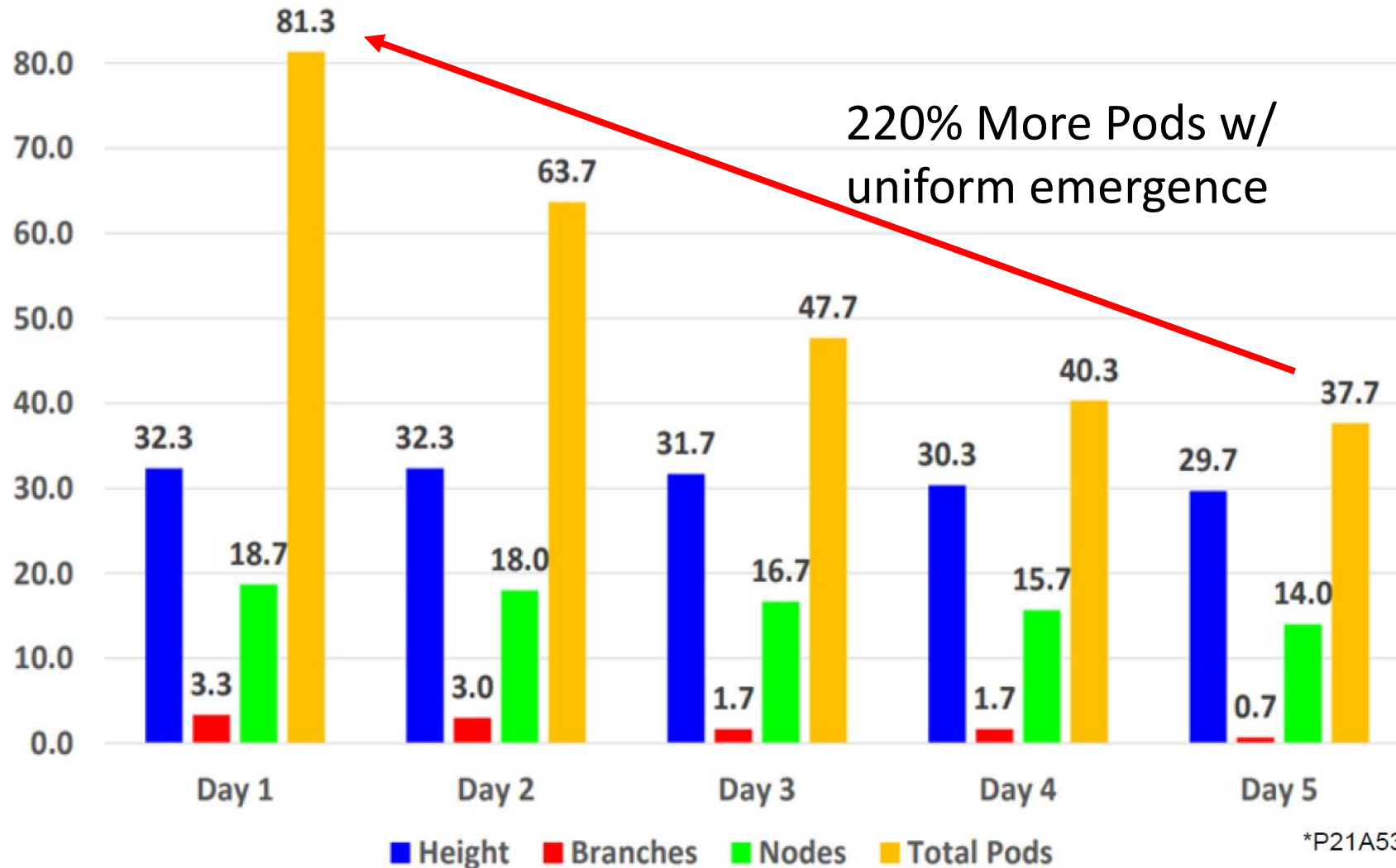
2.94 million nodes

2.80 million nodes

2.38 million nodes

1.68 million nodes

Is Emergence Synchrony Important in Soybeans?



How many of
you place
starter on your
soybean
fields?
Corn?

*P21A53A – William Long's data 2023

REVLINE[®]

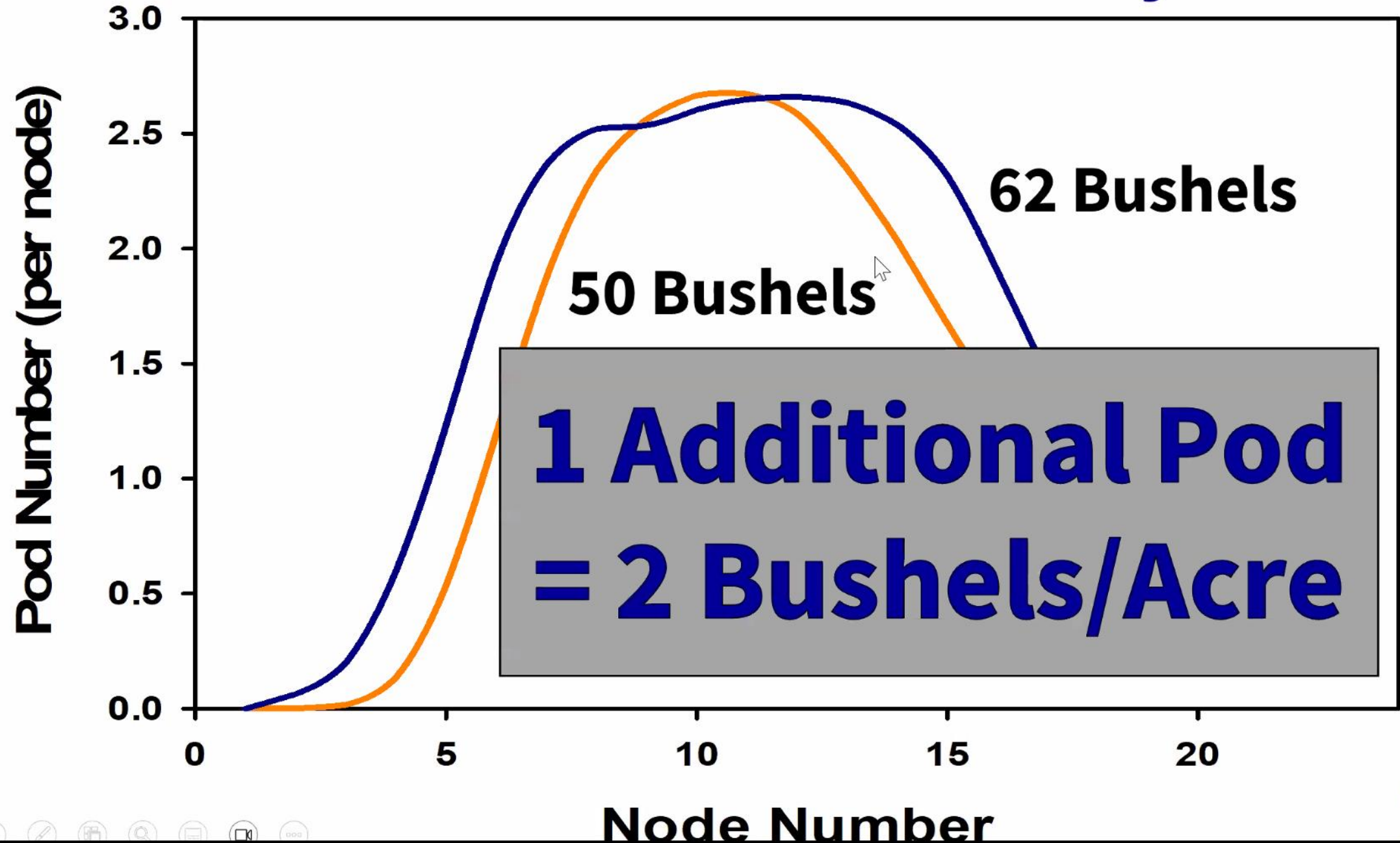
EARLY-SEASON

PLANT GROWTH REGULATOR

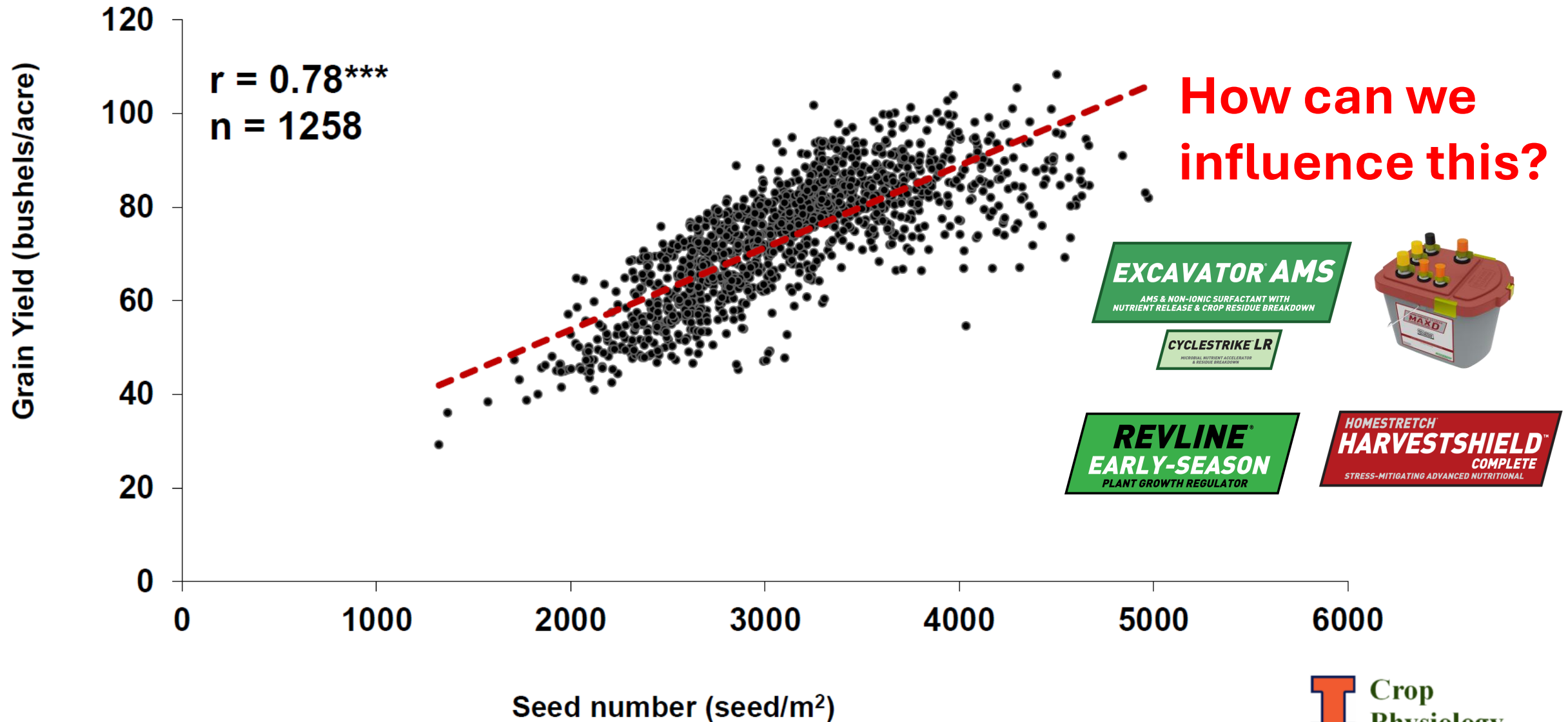
2-4oz/ac with Post
Herbicide is Money



How Does Pod Number Effect Soybean Yield



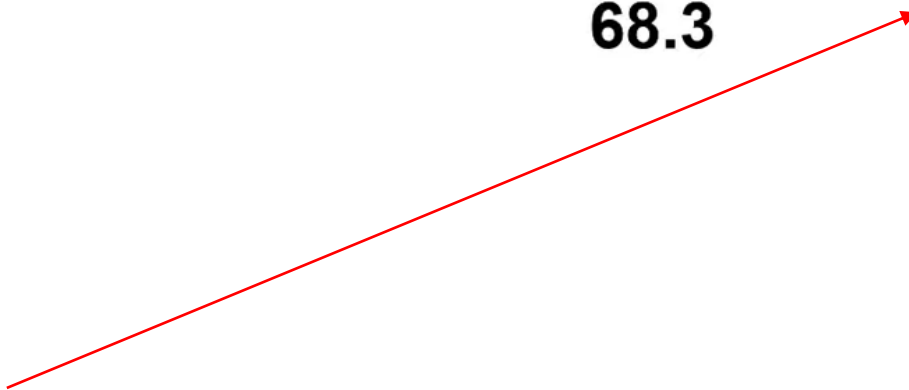
Soybean Seed Number x Grain Yield



Main Effects on Grain Yield & Yield Components

Factor		Level	Grain Yield	Seed Number	Seed Weight
			bushels per acre	seeds per m ²	mg per seed
Seed Treatment	Commercial		66.0	3207 ^B	119
	MaxStax		68.3	3325 ^A	120

MaxStax **+2.3bu/ac** vs Commercial Seed Treatment + Fluopyram



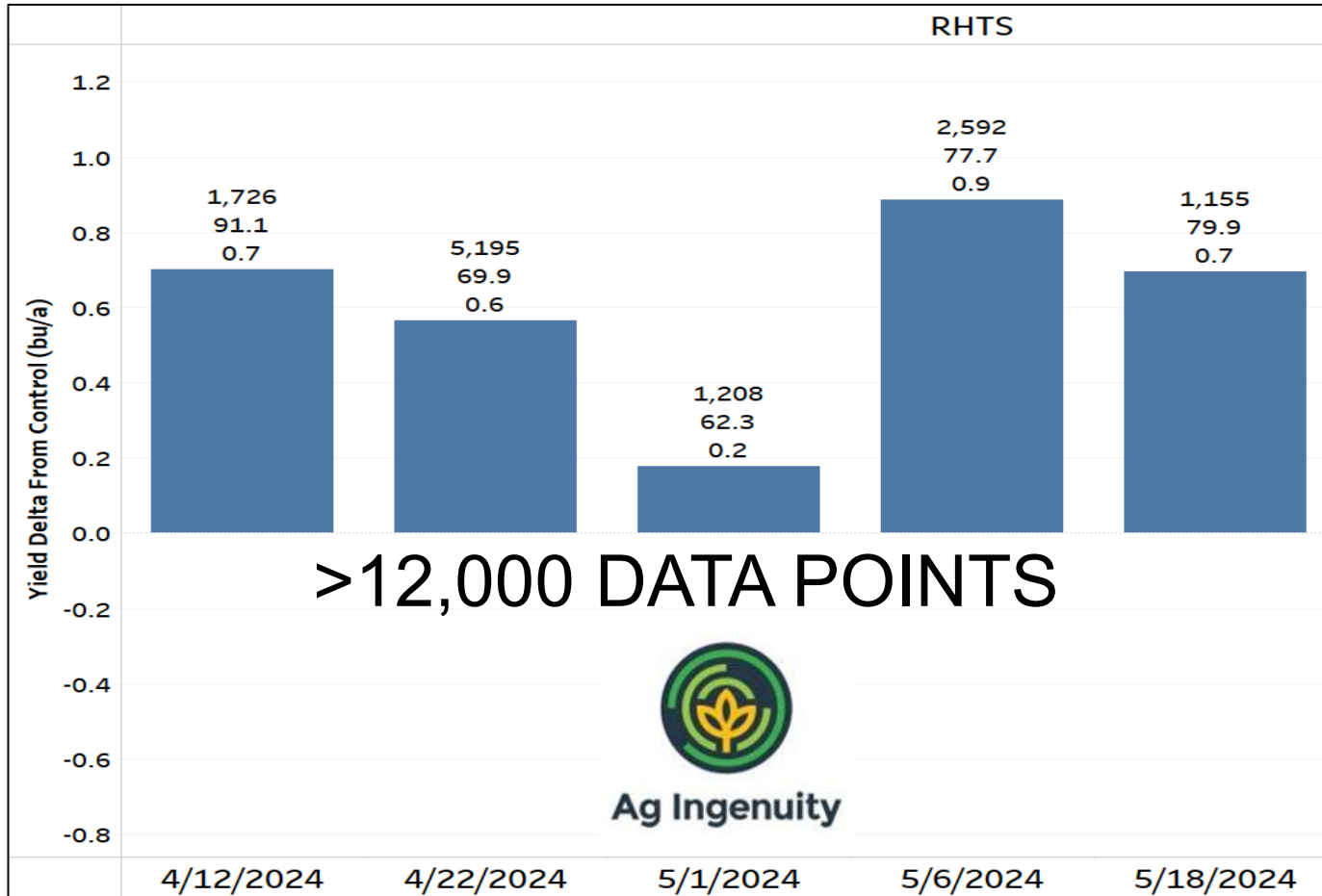
ILeVO

Grain yields adjusted to 13% moisture; Seed weight presented at 0% moisture;
Letters indicate significant differences between levels of a given factor at the 0.1 threshold, while no letters indicate no significant difference

Adapted from complete data set 2025

Standard Seed Trtmt vs RHTS + E + P/M

Ag Ingenuity Partners - 2024



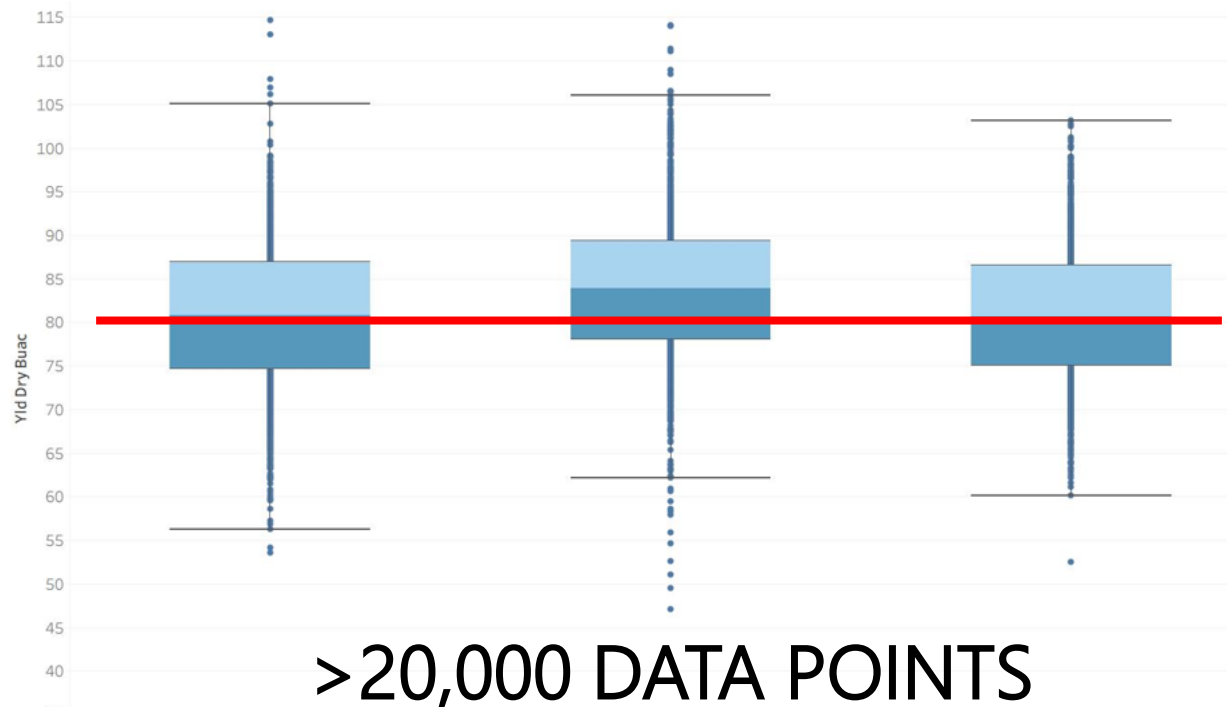
Consistently win vs Industry
Standard Liquid Seed
Treatment

Numbers over bars: # of yield points, average yield (bu/a), yield delta from control

Product Performance Ag Ingenuity

Just as good....
if not better!!

Only the
beginning...



2025



Ag Ingenuity

Grower Standard

3 MOA Fungicide
Insecticide
IleVo and/or Saltro



MaxStax Soy (naked) vs Full Liquid Trt + Saltro +6 bu/ac:



Summary	Equipment	Weather	S
Wet weight 4,694.6 lb/ac	Weight 730,066.5 lb		
Moisture 13.4%	Throughput 1,125.3 bu/hr		
Variety	Yield		
---	81.6 bu/ac		
GH2813E3S SALTRO	81.1 bu/ac		
GH2814E3S MAXSTAX	82.3 bu/ac		
GH2814E3S SALTRO HTE	76.2 bu/ac		

THE NEW NORMAL: SEED + MAX BIOPOWER

MERISTEM
CROP PERFORMANCE

POWERED BY
**BIO-CAPSULE
TECHNOLOGY**
INNOVATION DELIVERY SYSTEM

\$20/ac Replant Coverage



1. Industry-Leading Bradyrhizobia Inoculant

Aggressive multi-strains of Bradyrhizobium for accelerated early season nodulation.



2. METALAXYL

Industry-standard systemic fungicide for control of phytophthora and pythium.

3. PREPHYTE™

Broad-spectrum, EPA-registered fungicide for prevention, control or suppression of many soil-borne diseases.



7. BORNE X™

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8. Guard M™

EPA-registered insecticide for soybeans that targets seedcorn maggots and other secondary pests.

9. Guard C™

Bionematicide containing Fungal chitosan to suppress nematodes while stimulating root and plant growth.

BASE PAIL - Seed Fluency blend

10. Seed Fluency

11. IONLOCK™ Manganese (Mn)

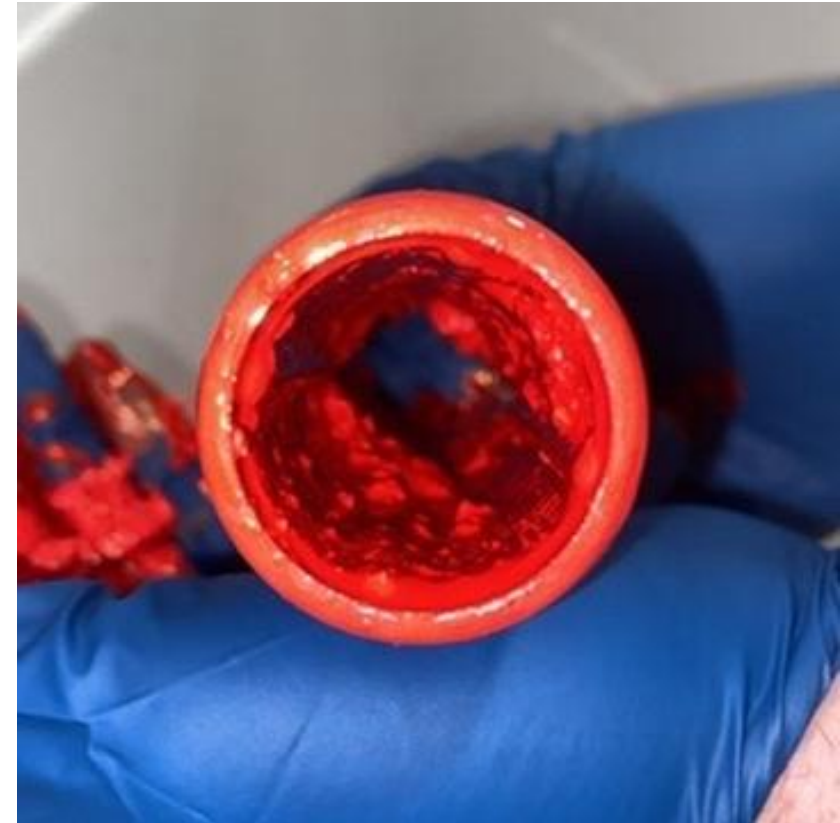
12. IONLOCK™ Iron (Fe)

13. IONLOCK™ Zinc (Zn) - (replaces 1.5 qt Zinc 9% EDTA)



**HOPPER THROTTLE® SOYBEAN
MAXD™
PLANTER BOX TREATMENT**

NEVER AGAIN.



Where do traditional active ingredients end up?



Confidence in Coverage.

Confidence Active Ingredients Remain at the Roots.

Picture Source Top Left: Iowa State University Extension

YOU ARE THE REVOLUTION—
And a part of the **BIGGEST GAME CHANGER** since the launch
of biotech traits.

HOPPER THROTTLE™ CORN
MAXSTAX™
PLANTER BOX TREATMENT

HOPPER THROTTLE™ SOYBEAN
MAXSTAX™
PLANTER BOX TREATMENT

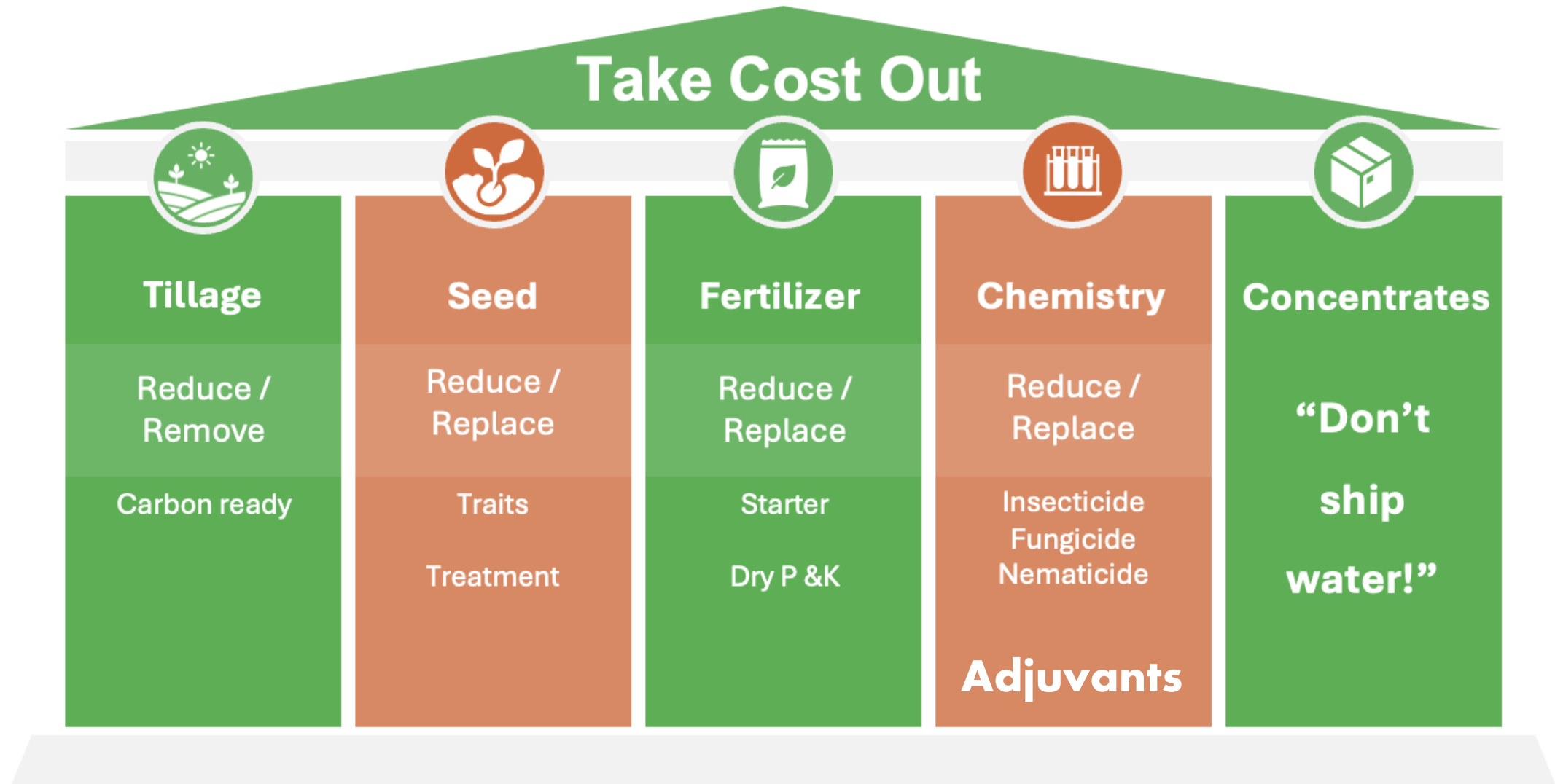
Biological Innovation = NEW TRAITS

FIGHT BACK. GO FAST. WIN MORE.
THE COMPLETE HOPPER THROTTLE™ PORTFOLIO



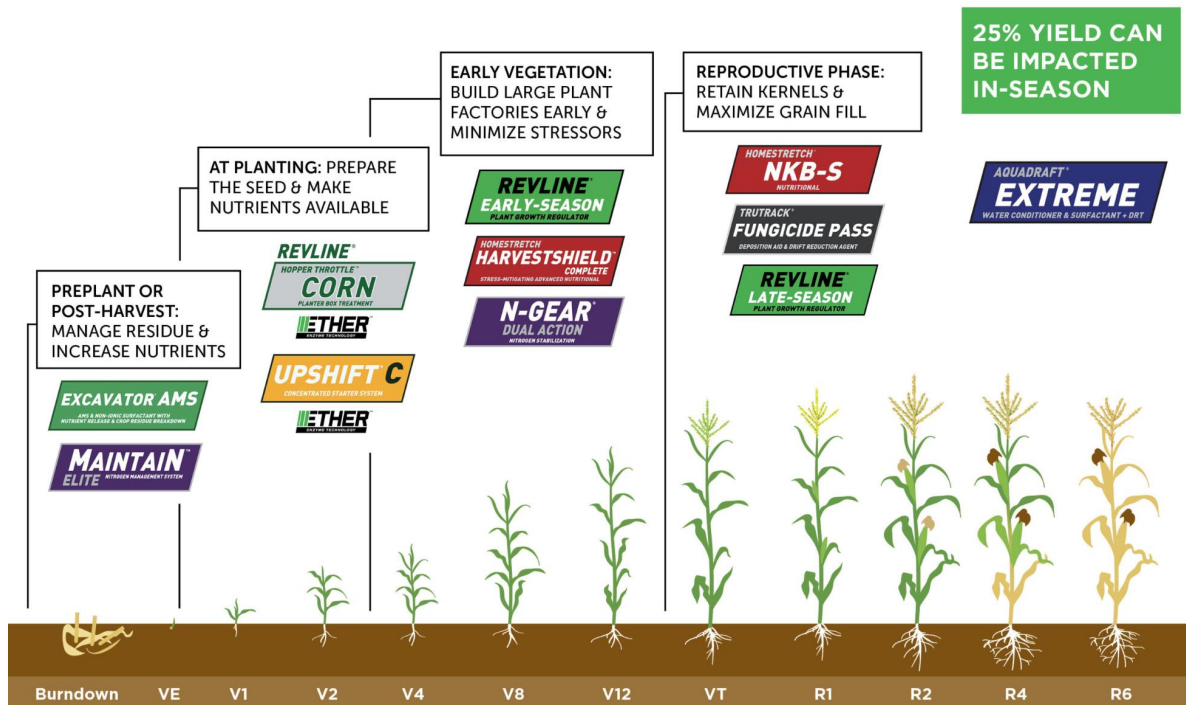
Corn Portfolio					
Revline Hopper Throttle Corn Ether	Revline Hopper Throttle Corn Ace Ether + Prephyte ST	Hopper Throttle Corn + Guard X + Prephyte ST	Revline Hopper Throttle Corn Ether + Guard X	Hopper Throttle Corn MaxD	Hopper Throttle Corn MaxStax
Soybean Portfolio					
Revline Hopper Throttle Soybean Ether	Hopper Throttle Soybean F+I + Protectis + Prephyte ST		Hopper Throttle Soybean MaxD	Hopper Throttle Soybean MaxStax	

Cut Distribution Cost + Innovation through Patented Delivery Systems



The System Approach – Take Costs Out

@ Planter Applications: NONE



Standard Spend per Acre
(No Land/Equip/Insurance)

Seed	\$130
Dry Fert (80-80)	\$120
Nitrogen	\$115
Chemical/Adj	\$70
Fungicide	\$25

Total: \$460

Meristem Spend per Acre
(No Land/Equip/Insurance)

Seed	\$130
Excavator AMS	\$15
Hopper Throttle	\$20
Nitrogen	\$100
N Stabilizer	\$10
Chemical/Adj	\$65
Fungicide	\$25
Foliar Protection	\$40

Total: \$420

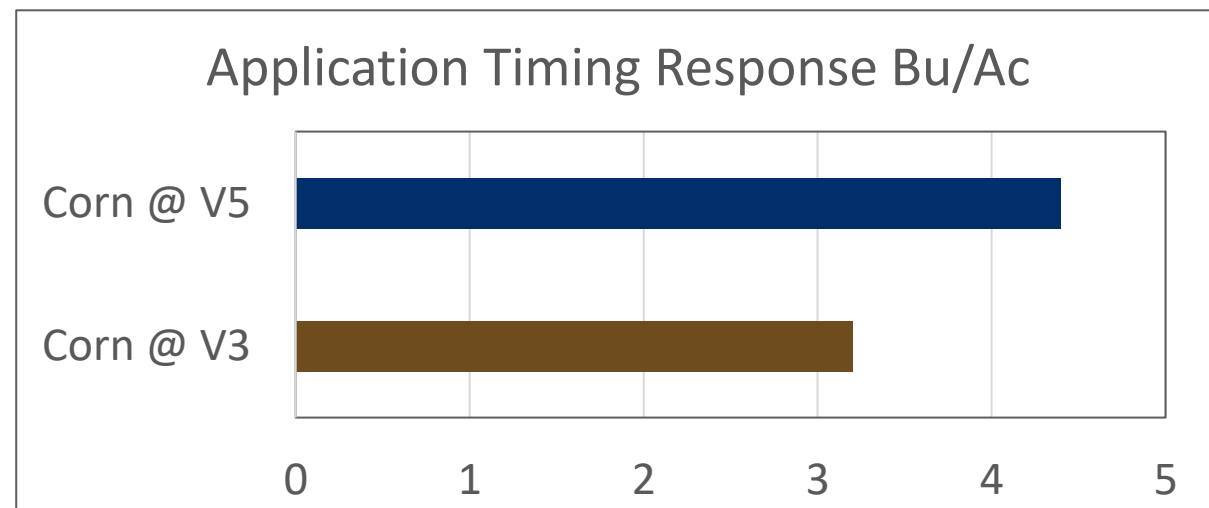
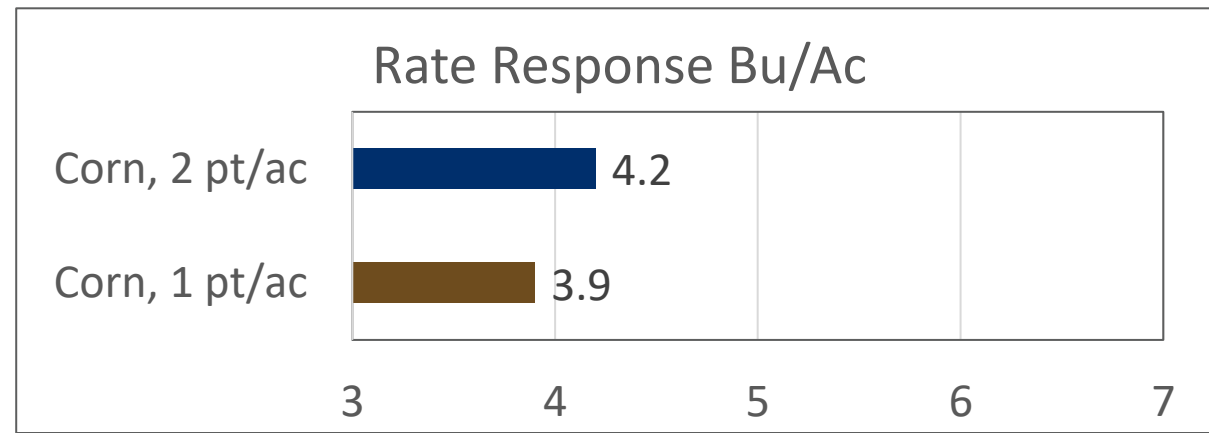
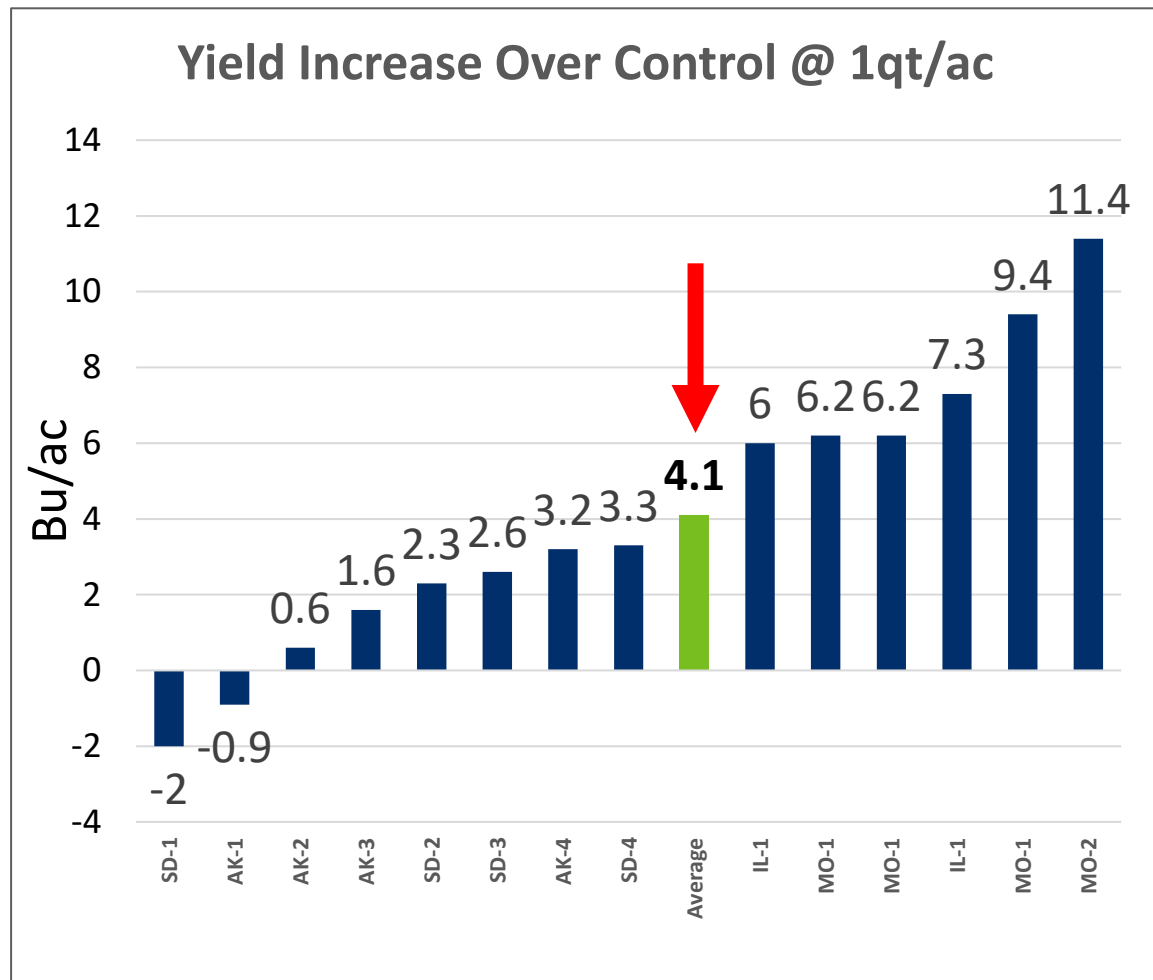
**\$55/ac Less
More Yield**



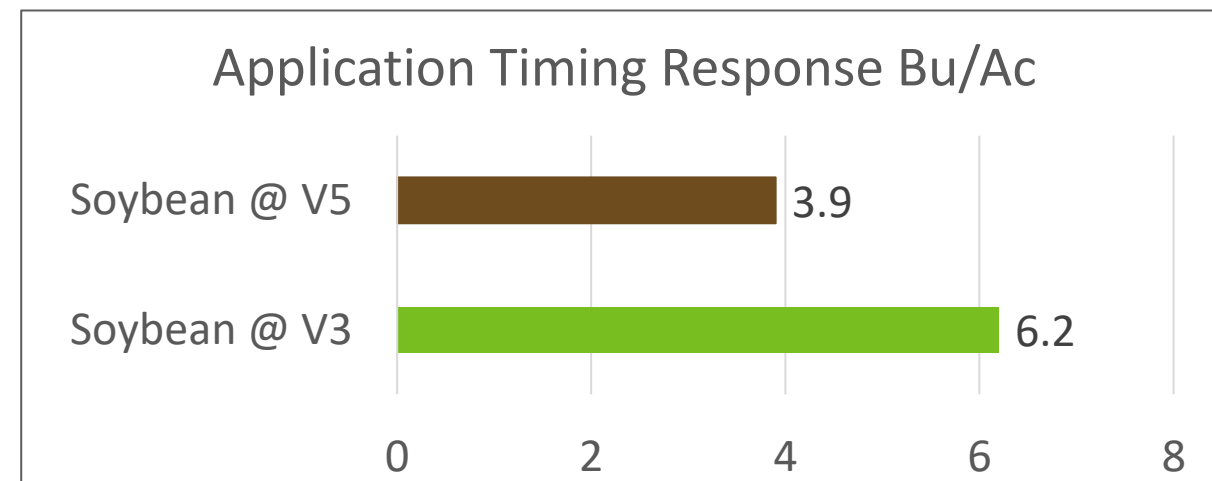
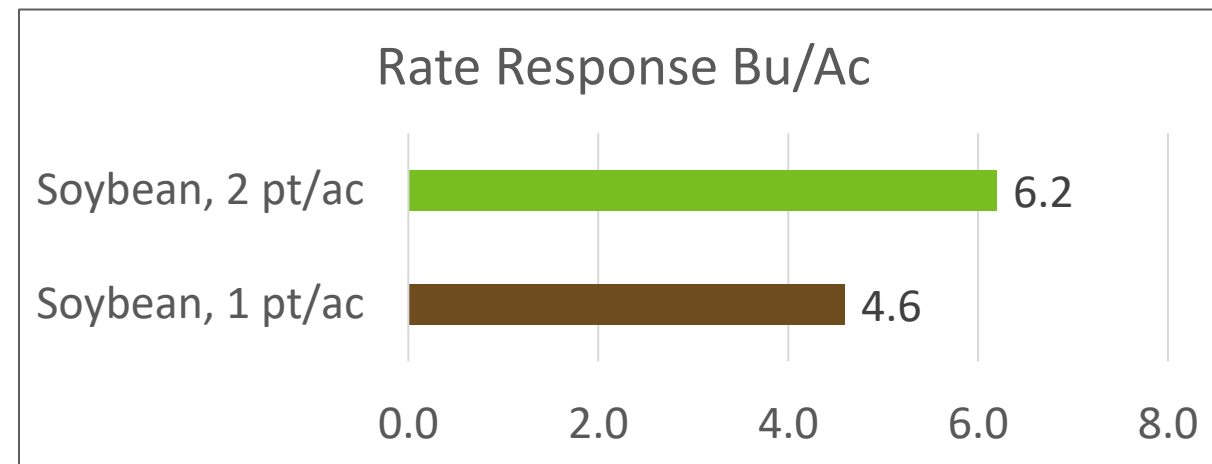
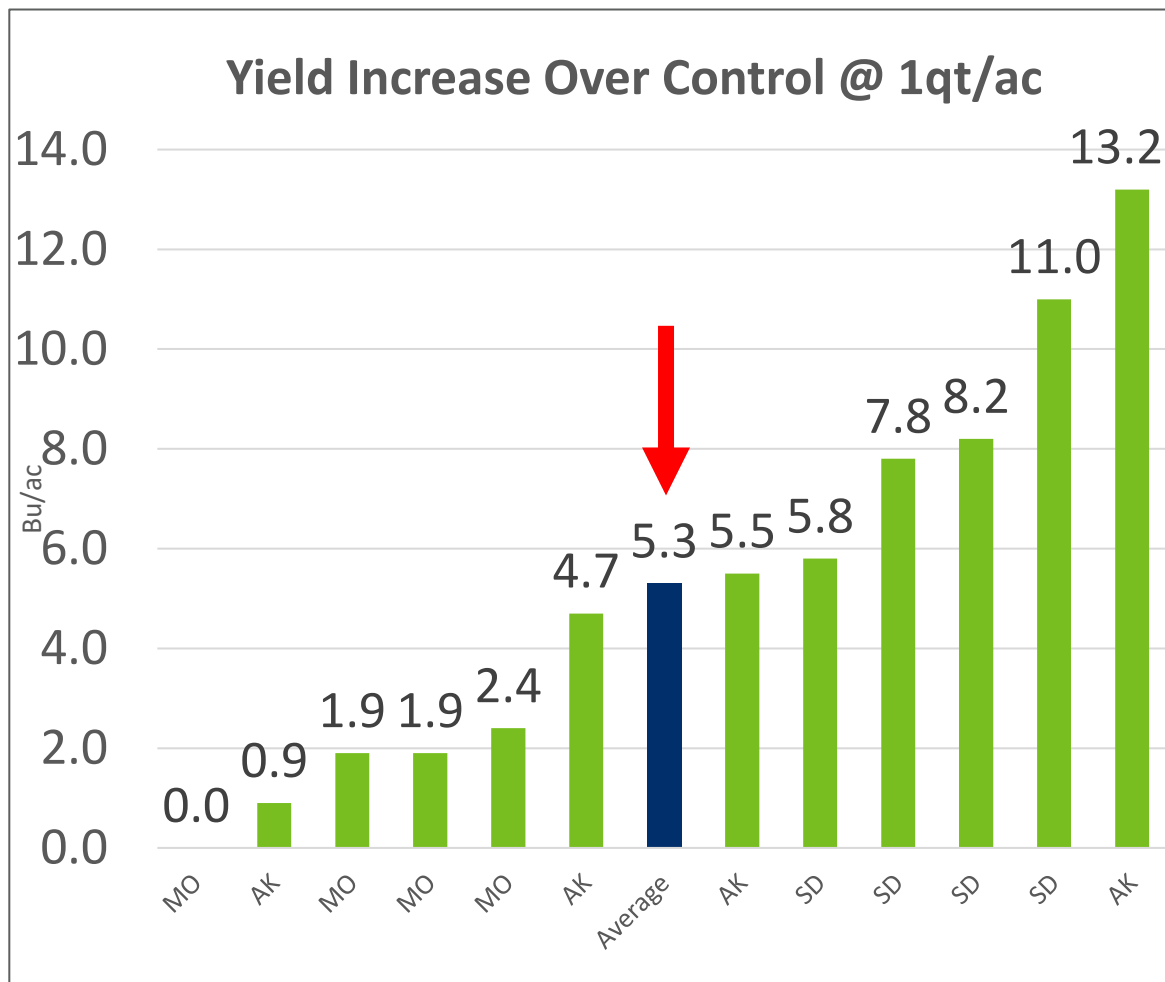
Bray P1 > 20ppm

K > 200ppm

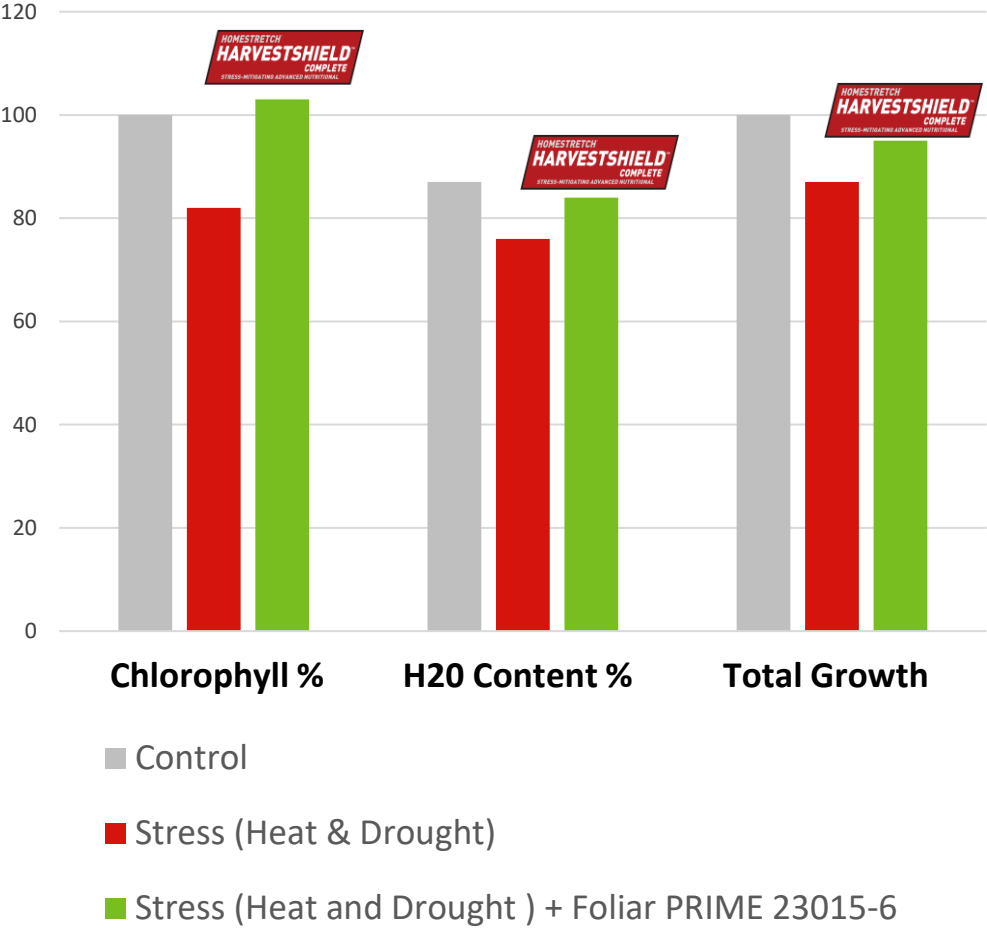
HarvestShield Complete Data Corn



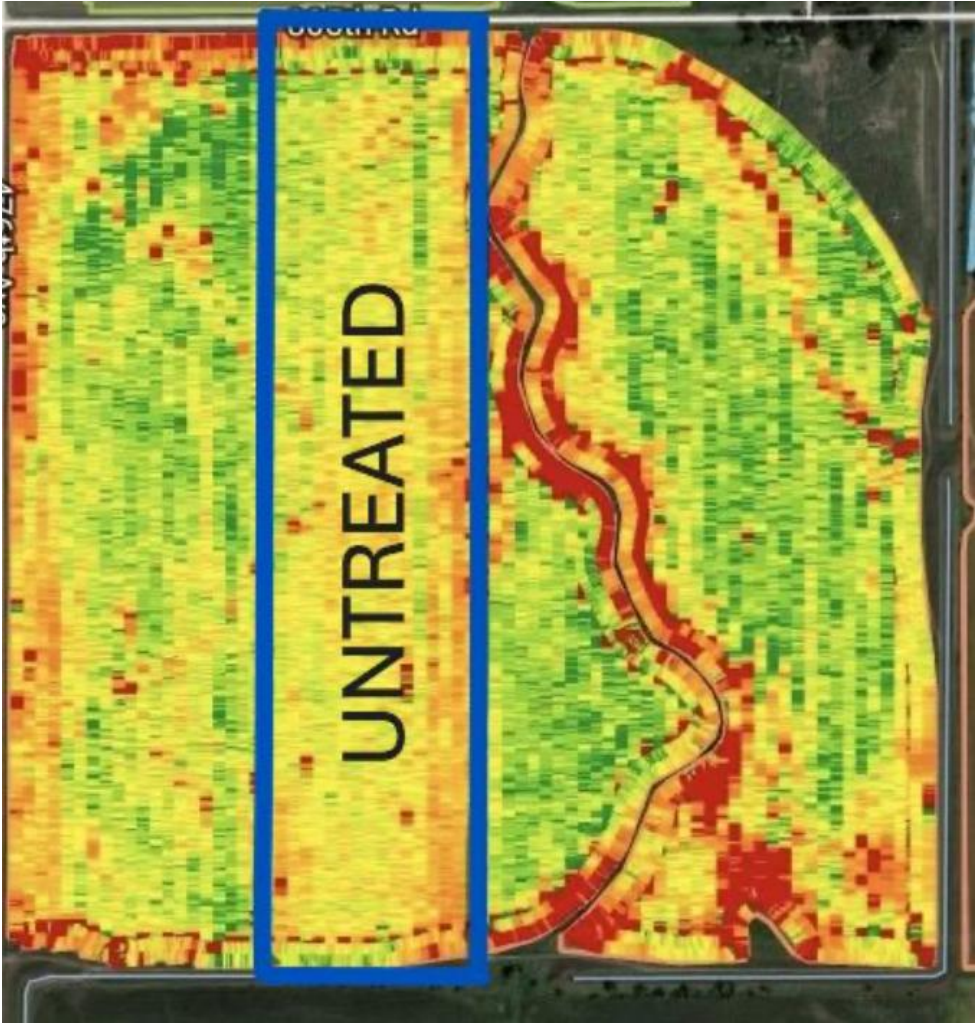
HarvestShield Complete Data Soybeans



HarvestShield Complete Data Soybeans



+6.1
bu/a
SOY



The System Approach – Take Costs Out

@ Planter Applications: In Furrow Starter + Zn + Insecticide



Standard Spend per Acre
(No Land/Equip/Insurance)

Meristem Spend per Acre
(No Land/Equip/Insurance)

Seed	\$130
Dry Fert (80-80)	\$120
Nitrogen	\$115
Chemical/Adj	\$70
Starter + Zn	\$30
Planter Insecticide	\$20
Fungicide	\$25

Seed	\$130
Excavator AMS	\$15
HT GX + Preph	\$20
UpShift C Plus	\$20
Nitrogen	\$100
N Stabilizer	\$10
Chemical/Adj	\$65
Fungicide	\$40
Foliar Protection	\$40

Total: \$510

Total: \$440

**\$70/ac Less
More Yield**

25% YIELD CAN
BE IMPACTED
IN-SEASON

AQUADRAFT[™]
EXTREME
WATER CONDITIONER & SURFACTANT + DIRT

REPRODUCTIVE PHASE:
RETAIN KERNELS &
MAXIMIZE GRAIN FILL

HOMESTRETCH[™]
NKB-S
NUTRITIONAL

TRUTRACK[™]
FUNGICIDE PASS
DISPERSION AID & DRIFT REDUCTION AGENT

REVLINE[™]
LATE-SEASON
PLANT GROWTH REGULATOR

EARLY VEGETATION:
BUILD LARGE PLANT
FACTORIES EARLY &
MINIMIZE STRESSORS

REVLINE[™]
EARLY-SEASON
PLANT GROWTH REGULATOR

HOMESTRETCH[™]
HARVESTSHIELD[™] COMPLETE
STRESS MITIGATING ADVANCED NUTRITIONAL

N-GEAR[™]
DUAL ACTION
NITROGEN STABILIZER

REVLINE[™]
HOPPER THROTTLE[™]
PLANTER BOX TREATMENT

ETHER[™]

UPSHIFT[™] C
CONCENTRATED STARTER SYSTEM

ETHER[™]

AT PLANTING: PREPARE
THE SEED & MAKE
NUTRIENTS AVAILABLE

PREPLANT OR
POST-HARVEST:
MANAGE RESIDUE &
INCREASE NUTRIENTS

EXCAVATOR AMS[™]
AMS & NON-AMS BROADCASTERS WITH
INSTANT RELEASE & CORPUSCULE BREAKDOWN

MAINTAIN[™] ELITE
NUTRIENT MANAGEMENT SYSTEM

Burndown VE V1 V2 V4 V8 V12 VT R1 R2 R4 R6



Bray P1 > 20ppm

K > 200ppm

The System Approach – Take Costs Out



25% YIELD CAN
BE IMPACTED
IN-SEASON

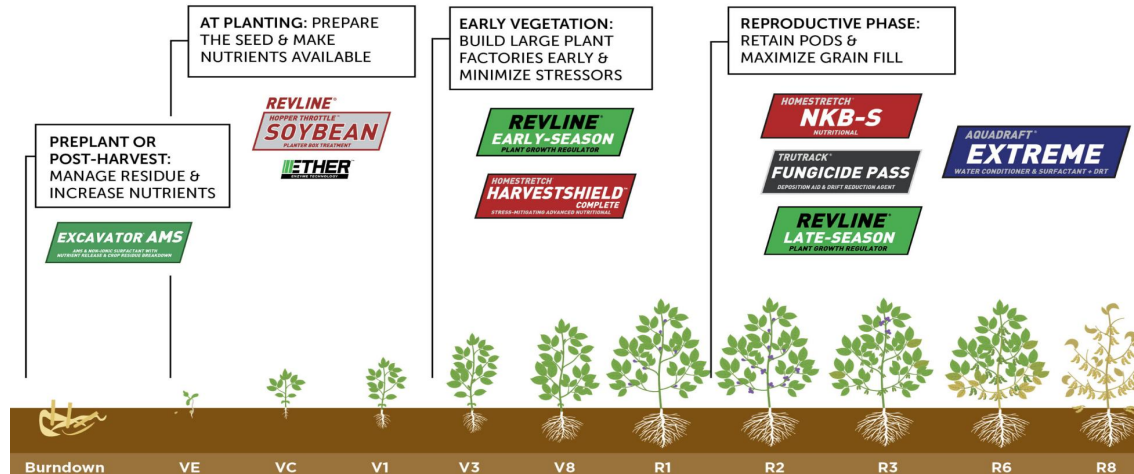
Standard Spend per Acre
(No Land/Equip/Insurance)

Meristem Spend per Acre
(No Land/Equip/Insurance)

Seed	\$45
Liq. Seed Trtmt	\$30
Dry Fert (80-80)	\$120
Chemical/Adj	\$70
Fungicide	\$30
Total:	\$295

Seed	\$45
Max Seed Trtmt	\$30
Excavator AMS	\$15
Chemical/Adj	\$65
Fungicide	\$20
Foliar Protection	\$40
Total:	\$215

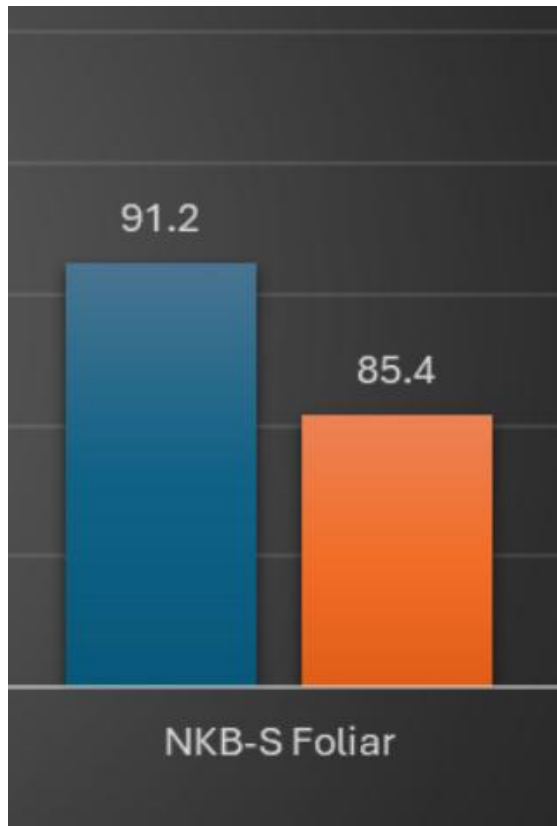
**\$80/ac Less
More Yield**



Bray P1 > 20ppm

K > 200ppm

NKBS vs Check + 6 bu/ac

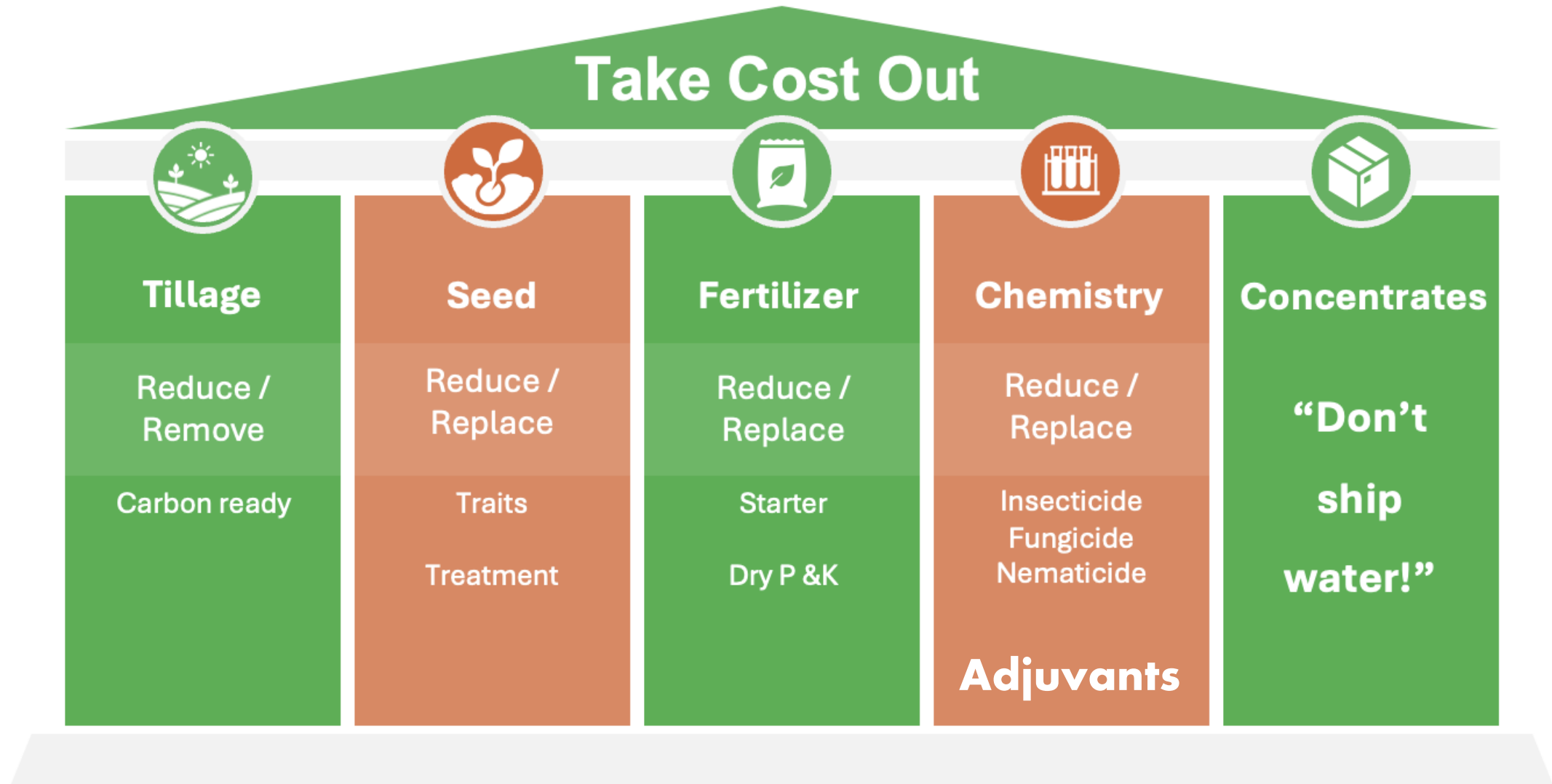


Harvested NKB-S soybean trial from plot.
91.2
Check 85.4

KE



Cut Distribution Cost + Innovation through Patented Delivery Systems





CROP PERFORMANCE



Thank you!!

Shane Brockhoff
Michael Martin

12.4.25