



FALL AGRONOMY

GUIDE 2018



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CONSERVATION AGRONOMY

BY LAND O'LAKES SUSTAIN™

LAND O'LAKES
SUSTAIN™

Farmers find a way.



HELP ENSURE YOUR FARM'S FUTURE TODAY.

Farmers are always exploring ways to ensure their land and farms are productive. Land O'Lakes SUSTAIN™ is a farmer-owned platform that helps farmers and their trusted advisors with identifying the most effective agronomic practices, products and technologies to help assure their operations are not only productive and profitable today, but for decades to come.

With the Conservation Agronomy by Land O'Lakes SUSTAIN platform, we can recognize the excellent stewardship already practiced by farmers while realizing additional ways to increase productivity potential and environmental performance.

GET CREDIT FOR ON-FARM SUSTAINABILITY EFFORTS.

Successful farmers have always taken care of soil and water resources. Many farmers in your area have installed conservation practices and use leading products to help improve their productivity and sustainability.

Land O'Lakes SUSTAIN is about driving on-farm improvements, protecting natural resources and helping to ensure the health and productivity of every acre, for every farmer, season after season. Join your local retailer and Land O'Lakes SUSTAIN to take advantage of this farmer-owned platform for driving, capturing and sharing practical and comprehensive sustainability practices.

CREATE A UNIQUE CONSERVATION AGRONOMY PLAN.

Based on current farming practices and business goals, a retail agronomy team will partner with farmers to identify additional approaches to increase productivity and profitability potential that could also improve the quality of each farm's soil, water and air resources.

A Conservation Agronomy plan incorporates current agronomic practices and helps schedule new precision technologies, agronomic practices and products that best suit the farm. Recommended practices are designed to match the seasonal cycle and provide options throughout the growing season to help increase each farm's sustainability.

When enrolling in a local retailer's Land O'Lakes SUSTAIN platform, the farmer and the retailer's agronomy team will work together to identify the right system of additional practices and products that are right for every farm. Over time, this platform will help farmers track progress and help quantify their savings for protecting and enhancing natural resources. Tracking sustainability efforts now will also help secure the farm's future in an ever-changing consumer marketplace.

WHAT IS CONSERVATION AGRONOMY?

HOW MANY TECHNOLOGIES, PRACTICES AND PRODUCTS ARE YOU USING ON YOUR FARM TODAY?

TECHNOLOGIES

PRE-SEASON PLANNING

- Nitrogen modeling and management tools
- Profit maximization tool
- R7 Tool®
- SoilVantage and Buffer Support tools

PLANTING

- Land O'Lakes SUSTAIN™ on-farm data collection tool
- Nitrogen modeling and management tools
- R7 Tool® by WinField United

IN-SEASON

- Land O'Lakes SUSTAIN on-farm data collection tool
- Nitrogen modeling and management tools
- Water efficiency solutions

HARVEST

- Land O'Lakes SUSTAIN on-farm data collection tool
- Nitrogen modeling and management tools
- R7 Tool®
- Yield monitors

PRACTICES

- Conservation tillage
- Crop rotation plans
- Cover crops

- In-furrow product application
- In-row cover crops
- Split application
- Soil sampling
- Variable-rate application for macronutrients

- Soil sampling
- Tissue testing
- Variable-rate application for macronutrients
- Variable-rate N

- Conservation tillage
- Soil sampling
- Variable-rate P & K

PRODUCTS

- Low-nitrogen corn hybrids
- Nitrogen stabilizer
- Soil amendments

- Biologicals
- Low-nitrogen corn hybrids
- Nitrogen stabilizer
- In-row cover crops
- Soil amendments

- Biologicals
- Drift control products
- Foliar slow-release nitrogen

- Nitrogen stabilizer
- Cover crops

RETURN THIS CHECKLIST TO BEGIN CREATING A CONSERVATION AGRONOMY PLAN.

ALREADY IMPLEMENTING SOME OF THE PRACTICES LISTED ABOVE?

Register your acres today through your Land O'Lakes SUSTAIN partner retailer.

INTERESTED IN IMPLEMENTING MORE CONSERVATION AGRONOMY PRACTICES?

Talk with a retailer today about how you to implement more Land O'Lakes SUSTAIN practices on every acre.

Why Stabilize your Nitrogen?

- More nitrogen available for plant uptake by slowing the conversion of nitrogen into forms that can be lost through *volatilization*, *leaching* and *denitrification*
- Ensures longer period of increased nitrogen availability for plant uptake
- Maintaining N improves potential for maximizing yield
- Stabilizing N protects the environment
 - Prevents leaching nitrate into surface and ground water
- Protects applied nitrogen all season long
- Provides flexibility in application schedules

OUR UREA IS 100% TREATED



Nitrogen Stabilizers

N-Serve Nitrogen Stabilizer for Anhydrous

What it does:

- Reduces Nitrogen loss
- Improves standability
- Provides healthier corn and consistently higher yields
- Reduces risk of stalk rot
- Enables quicker crop dry down
- Reduces leaching of nitrates and denitrification
- Keeps nitrogen available for corn crop and helps protect water quality

When to use it:

- Add with anhydrous ammonia in fall and spring
- Rates: Add 1 qt. per acre



With N-Serve

Without N-Serve

NutriSphere Nitrogen Stabilizer for Urea

- Add NutriSphere to urea to keep the nitrogen from leaching, volatilization and denitrification
- Topdress corn with urea + NutriSphere at V4 to V8 stages



NutriSphere-NH3™
specifically formulated
to protect anhydrous
ammonia applications



Providing long-lasting protection of anhydrous ammonia

NutriSphere-NH3™ is a new formulation specifically designed to protect nitrogen applied as anhydrous ammonia from being lost through nitrification.

NEW WAY TO PROTECT N

NutriSphere-NH3 provides a number of performance benefits and advantages, including:

- Protects anhydrous ammonia applications against loss through nitrification; reducing nitrate leaching and denitrification
- Application rate of 32 Fl. Oz./A creates a fixed, cost-efficient investment per acre
- Easy to handle and use formulation with very little odor
- Unique dual-injection delivery system is specifically designed for optimum application and ease of use with anhydrous ammonia

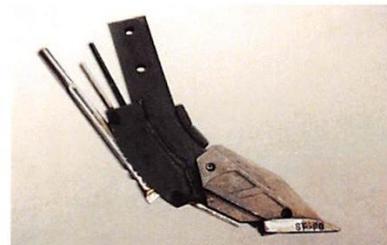
PROVEN NUTRISPHERE-N® PERFORMANCE

- NutriSphere-N® Nitrogen Fertilizer Manager is a proven technology that has been used on more than 34 million acres
- NutriSphere-N protects against loss to volatilization, leaching and denitrification by keeping more nitrogen in its stable ammonium form for a longer period of time
- Long lasting protection up to 10-12 months



APPLYING NUTRISPHERE-NH3 WITH DUAL INJECTION

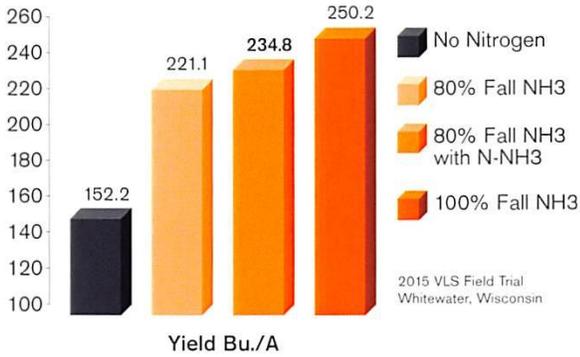
- Equipment Details:
 - The dual application system features special knives (shown below) and application tubes allowing for precise placement of NutriSphere-NH3 one-half inch above the anhydrous in the soil.
 - The SureFire Ag Systems' constant flow pump and electromagnetic flowmeter allow for precise amounts (98%+ accuracy) of material to be applied regardless of speed.



Dual application knife from Shield Ag Equipment.

RIGHT APPLICATIONS AT THE RIGHT TIME

Fall Applied NH₃ (November 11th, 2014)



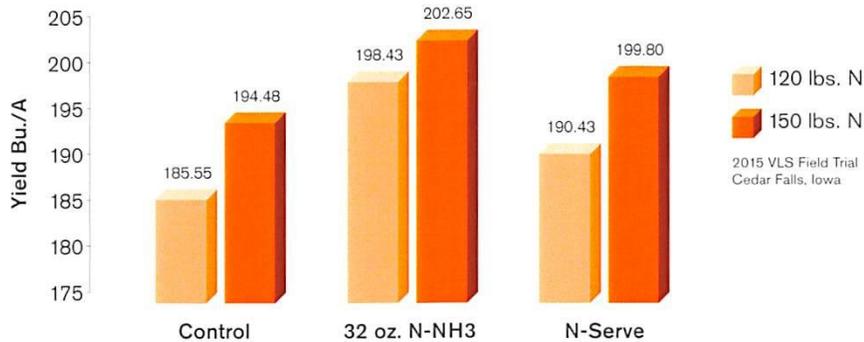
Spring Applied NH₃ (April 15th, 2015)



Timing is critical – Fall N loss was high, resulting in a high return for NutriSphere-NH₃.

SPRING APPLIED ANHYDROUS AMMONIA

NutriSphere-NH₃ – Spring Applied on April 15, 2015



N-Serve®

PROTECTS NITROGEN AT THE PLANT ROOT ZONE

NITROGEN STABILIZER

N-Serve® Nitrogen Stabilizer

- Active ingredient is nitrapyrin
- Oil based formulation that mixes well with anhydrous ammonia
- Optimizes yield potential of corn when used with anhydrous ammonia
- Proven and trusted technology for over 35 years

How Does N-Serve® Work?

N-Serve® inhibits the Nitrosomonas bacteria in the soil keeping Nitrogen in the stable ammonium form longer and protected from leaching and denitrification.



Application Rates

Fall applications

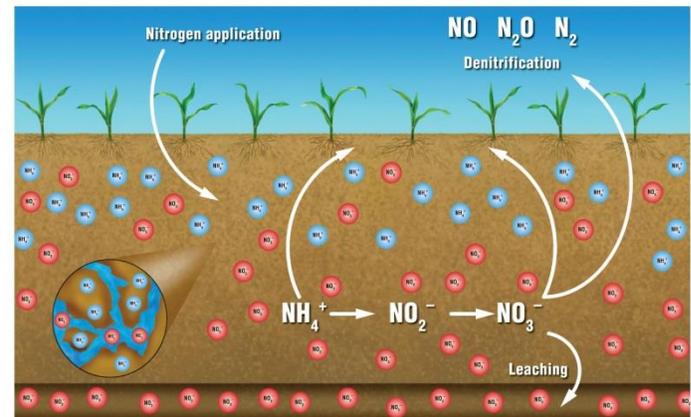
1 quart per acre

Spring applications

Pre-emerge: 1 quart per acre

Sidedress: 0.5 to 1 quart per acre

What Happens to Unstabilized Nitrogen?



When Do Nitrogen Losses Occur?

Most Nitrogen Losses occur during the Spring:

- Spring Rains and warm soil temperatures lead to heavy losses through both leaching and denitrification.
- Stabilizing with N-Serve® greatly reduces both leaching and denitrification protecting nitrogen in the root zone.

Stronger, Healthier Plants

- Increased yield
- Improved standability
- Reduced risk of stalk rot
- Increased grain protein
- Faster crop drydown

For more information about N-Serve® visit www.NitrogenStabilizers.com or contact your local Dow AgroSciences sales representative.

AVAIL[®] T5: improved performance on an already premium NUE[™] product

AVAIL T5 uses an all new patented polymer technology to make even more applied phosphorus (P) available for plant uptake, speeding early growth, making crops healthier and boosting yields – while continuing to reduce the amount of P lost to the environment. The improved formulation also means better handling, storage and ease-of-use.

Get more from your phosphorus investment.

Your phosphorus investment is in the ground before the first shoots emerge. Using AVAIL T5, powered by new T5 polymer technology, helps you earn greater returns on that investment. Proven to keep applied phosphorus more available when the plant needs it. AVAIL T5 increases available phosphorus uptake, resulting in more robust root systems, boosting early season performance, plant stress tolerance, and crop quality and yield.



Wisconsin soybeans showed a significant difference when treated with AVAIL T5

Start strong to maximize yield. AVAIL T5 has been proven to make up to 45% more of your applied phosphorus available to plants. Greater phosphorus availability means a stronger early start. Building a better photosynthetic engine enables higher yields.



Corn treated with AVAIL T5 resulted in taller plants with stronger, more complex root structures.

Improve plant uptake to reduce phosphorus loss to the environment.

AVAIL T5 enhances your 4R Nutrient Stewardship, delivering sustainable performance returns in each year's crop while protecting the environment for generations to come. More efficient plant nutrient uptake means less phosphorus buildup in the soil and less lost to creeks, rivers, lakes and bays.

Verdesian Life Sciences makes farming more efficient, more sustainable, and more profitable. Verdesian Life Sciences develops nutrient use efficiency and management technologies to enhance crop uptake, reduce nutrient losses to the environment, and improve yields. As a 4R Nutrient Stewardship Partner, Verdesian is committed to researching and developing environmentally sustainable products.

 <p>REDUCES P FIXATION AND LOSS</p>	 <p>POWERED BY NEW T5 TECHNOLOGY</p>	 <p>MORE EFFECTIVE CHARGE AND MORE CONSISTENT PERFORMANCE</p>
 <p>SCIENTIFICALLY PROVEN MODE OF ACTION (MOA)</p>	 <p>DELIVERS 3-TO-1 RETURN ON YOUR INVESTMENT</p>	 <p>FLEXIBLE APPLICATION AND LESS BUILDUP</p>




MicroSync Pro™

MicroSync Pro™ Granular Micronutrient Fertilizer is formulated for use in broad acre crops and designed to be blended with NPK granular fertilizer programs. This combination micronutrient formulation is a free flowing, low dust, and uniform granular fertilizer, which contains a unique combination of Sulfates and Sucrates for enhanced microbial activity and bioavailability. MicroSync Pro boosts soil fertility programs by providing a superior balance of nutrients precisely formulated to prevent or correct micronutrient deficiencies.

WHY MICROSUNC PRO?

- **Verdesian Polymer Technology** and carboxylates synergize micronutrient and sulfur availability for plant uptake
- **Nutripaction® Technology** — Uniformly blended combinations of finely divided particles compacted together produces homogeneous granules consistent in particle size and analysis. In the soil, Nutripaction® granules are activated by soil moisture creating millions of particles within the root zone for conversion and uptake
- **Balanced nutrient formulations** designed with your crop in mind, delivering three critical micronutrients and sulfur
- **Ideal for blending** with NPK fertilizers with an ideal spread pattern at 10-40 lbs. per acre
- **Matches particle size and bulk density** of most dry fertilizers for a more uniform distribution of critical nutrients

DIRECTIONS FOR USE:

MicroSync Pro is intended for use in mixing or blending with other fertilizer materials. This product is recommended for correction of multiple deficiencies, as determined by tissue analysis and soil testing, on any agricultural or horticultural crop where a deficiency of Boron, Manganese and/or Zinc may exist. When deficiencies exist, use the following table or consult your local agricultural extension professional or your local professional consultant. This product is for soil application only.

Amount of MicroSync Pro per Acre will provide "x" lbs of nutrient per acre				
	10 Lbs/Acre	20 Lbs/Acre	30 Lbs/Acre	40 Lbs/Acre
Sulfur	0.95	1.90	2.85	3.80
Zinc	0.75	1.50	2.25	3.00
Manganese	0.50	1.00	1.50	2.00
Boron	0.12	0.25	0.37	0.50



GUARANTEED ANALYSIS:

- Calcium (Ca) 7.0%
- Sulfur (S) 9.5%
- Boron (B) 1.25%
- Manganese (Mn) 5.0%
- Zinc (Zn) 7.5%

Derived from: Ammonium Sulfate, Calcium Sulfate, Sodium Borate, Manganese Sucrate, Manganese Sulfate, Zinc Sucrate and Zinc Sulfate

APPLICATION RATES PER ACRE:

- MILD** deficiency 10-15 lbs.
- MODERATE** deficiency 15-25 lbs.
- SEVERE** deficiency 25-40 lbs.

The information and statements herein are believed to be reliable but are not to be construed as a warranty or representation for which we assume legal responsibility. Users should undertake sufficient verification and testing to determine the suitability for their own particular purpose of any information or products referred to herein.

NO WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE IS MADE.

Micro Products, Macro Results®

vlsci.com | 800.883.0010

Tomorrow's Science Delivering Today's Returns

WARNING! Excessive amounts of Boron may cause injury to crops. This product is intended for use in further blending with agricultural grade fertilizers and should be applied evenly. Application equipment should be calibrated to insure targeted rates of application. Information regarding the contents and levels of metals in this product is available on the internet at <http://www.aapfco.org/metals.htm>. MicroSync Pro is a trademark and Nutripaction is a registered trademark of Verdesian Life Sciences. Important: Always read and follow label use directions. © 2017 Verdesian Life Sciences. All rights reserved. VLS 170391





Take Off[®] LS

BUILD BIGGER PLANTS FROM THE INSIDE OUT



**Plant health is the key to higher yields.
Set your crop up for success with our revolutionary
new nutrient management technology that helps
build bigger, stronger plants from the inside out.**

ENERGIZE YOUR CROPS WITH TAKE OFF LS

It works inside the plant to increase nutrient uptake, resulting in:



**Faster germination
and emergence**



**Stronger,
healthier plants**



**More efficient
use of nutrients**



**Greater yield
potential**

Take Off[®] LS



HOW IT WORKS

By mimicking a naturally-occurring molecule that optimizes a plant's nitrogen acquisition, Take Off LS allows plants to more efficiently assimilate nitrogen and carbon to build a bigger, more vigorous plant. The end result is more overall nutrient uptake and nutrient use efficiency, leading to more bushels per acre produced per unit of nutrients applied to or present in the soil.

BENEFITS

A stronger, more uniform crop emergence and more rapid early growth, resulting in treated plants that have more biomass and that are one or more growth stages ahead of untreated plants by mid-season

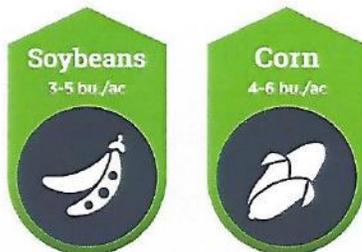
(IN-FURROW APPLICATION)

Greener, taller plants with more leaf area than untreated counterparts (FOLIAR APPLICATION)

Vigorous, darker green corn that reaches reproductive stage several days before untreated plants

(SIDEDRESS-APPLIED WITH UAN)

PROVEN RESULTS



Trials conducted in 2016 in IA, IL, TN and WI found that soybeans and corn treated with a foliar application of Take Off LS at post-emergence yielded significantly more bushels per acre than their untreated counterparts.

APPLICATION GUIDELINES

	In-furrow applications	Foliar	Side-dress/layby fertilizer
Corn	✓	✓	✓
Soybeans	✓	✓	
Wheat, rice, barley & other cereals		✓	
Cotton	✓	✓	
Alfalfa hay & forage crops		✓	
Canola		✓	

Take Off LS is a flexible nutrient use efficiency product that can be applied at multiple timings, either alone or in a tank mix with commonly-used fertilizers or crop protection products.

Our data shows that the most consistent yield performance and ROI has come from applications made at planting to mid-season, regardless of the crop.

While you don't need to apply more than once per season, field experience and trial data indicate that multiple applications throughout the year can provide additional benefits in plant health and yield.

RECOMMENDED APPLICATION RATES

	Single application	Multiple applications
Low rate: 1 pt/ac		✓
High rate: 2 pt/ac	✓	✓

FOR MORE INFORMATION

Call **800.868.6446** or visit **vlsci.com** to find your local specialist.



Reduce nitrogen loss and improve phosphorus availability from manure.

more than manure[®]

Nutrient Manager

More Than Manure[®] (MTM[®]) Nutrient Manager is the only product on the market proven to reduce phosphorus lock-up and nitrogen loss from volatilization, leaching and denitrification when applied to manure. By reducing valuable nutrient loss from your manure applications, it can help you see better overall crop performance and increased yield potential.

APPLICATION METHOD

LIQUID MANURE SYSTEMS:

- MTM can be added to pits or lagoons that are 25% full or a minimum of 14 days prior to agitation and pumping.
- If MTM cannot be added 14 days before pumping, add product to the load-out truck or honey wagon during fill.

DRY MANURE SYSTEMS:

- Apply directly over the top of dry manure already spread in the field along with at least 15 gallons of water or liquid fertilizer.

APPLICATION RATE

18 oz. per acre

RATE CALCULATION FOR LIQUID MANURE

$$\frac{\text{\# Gallons in pit, lagoon, load-out truck or honey wagon}}{\text{\# Gallons of manure applied per acre}} \times \frac{18 \text{ oz./acre rate}}{128 \text{ oz./gallon mix}} = \text{Gallons of MTM required for pit, lagoon, load-out truck or honey wagon}$$

CORN TRIALS (ALL MANURES)



- Reduces phosphorus lock-up in the soil
- Protects nitrogen from volatilization, leaching and denitrification
- Can reduce ammonia levels in confinement facilities
- Can reduce solids and crusting in pits or lagoons
- Non-toxic to livestock and soil bacteria
- Crop rotation flexibility

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Tomorrow's Science Delivering Today's Returns

*Data on file.
Important: Always read and follow label use directions.
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Wake up your crops.

Good morning sunshine. It's time to wake up your crops with Advantage Plus® a complete starter, with more vital nutrients than 10-34-0. Protect your yield, have more consistent emergence and start strong.



Advantage Plus TM



Fall Spraying Recommendations

Pasture

Remedy Ultra	1 pt/ac
Milestone	5 oz/ac
Pasturegard HL	1 ½ pt/ac
Grazon P+D	1 qt/ac
Tordon	1 pt/ac
Grazon Next HL	2 pt/ac
Chaparral	3 oz/ac

**All products should be mixed with
surfactant.**

Coming Soon

The Ottawa Co-op will soon have the capabilities of coating dry fertilizer with Grazon Next or Chaparral. This will allow one application of fertility and weed control in one shot. The rate of Grazon Next will be 2 pints/acre and the rate of Chaparral will be 3 ounces/acre on 200#'s of fertilizer. The Co-op will have designated spreader's and a designated blender for this application. Stop in and talk to your local Agronomist for more details.

Wheat Programs

Greenup

	<u>Rate/Acre</u>
Urea	80 lbs. N + NutriSphere + 1 pint TAKEOFF LS
Finesse	.3 oz/acre
Harmony Extra	.6 -.9 oz/acre

Wheat Hi-Yield Program

1st topdress 70 lbs. N + NutriSphere + 1 pint TAKEOFF LS

2nd trip: Fungicide + 1 pint TAKEOFF LS

At Flag Leaf

Trivapro	Fungicide	 Trivapro [™]
or		
Priaxor	Fungicide	Priaxor [®]

Wheat Fungicide Application Timing

<u>Fungicides</u>	<u>Apply at</u>	<u>Rate</u>
Headline	Feekes 4-6	6 fl oz/ac
Priaxor	Feekes 4-6	4 fl oz/ac
Caramba	Feekes 10.5	13.5 fl oz/ac
Trivapro	Feekes 8	13.7 oz/ac
Approach Prima	Feekes 9	6.8 oz/ac

Wheat Recommendations

Starter Recommendations

50-46-60-15-1 with AVAIL

18-46-60-15-1 with AVAIL

Burndown/Preplant

Finesse .3 oz/ac

Powermax 32-44 oz/ac

Quelex .75oz/ac

Fungicide

Trivapro 13.7 oz/ac

Priaxor 4 oz/ac

Prosaro 6.5-8.2 oz/ac

Stratego Yield 2-4 oz/ac

Approach Prima 6.8 oz/ac

All fungicide to be applied at flagleaf to full head emergence.

Corn Recommendations

Starter for Grain

80 bushel removal	12-30-24-6-3 with AVAIL
90 bushel removal	13-34-27-6-3 with AVAIL
100 bushel removal	15-38-30-7-3 with AVAIL
120 bushel removal	18-46-36-8-3 with AVAIL
140 bushel removal	21-53-42-10-3 with AVAIL
160 bushel removal	24-61-48-11-3 with AVAIL
180 bushel removal	26-68-54-13-3 with AVAIL
200 bushel removal	30-76-60-14-3 with AVAIL

Starter for Silage

10 ton/ac	10-27-65-9-3 with AVAIL
20 ton/ac	21-54-130-18-3 with AVAIL
30 ton/ac	31-80-195-27-3 with AVAIL

Fall Spraying

Atrazine 4L	1 qt/ac
Atrazine 90 DF	1.1 lbs/ac
Hornet	4 oz/acre
Autumn Super	.5 oz/ac
Valor SX	2 oz/ac
Basis blend	.825 oz/ac

All products to be applied with 1 pt/ac of dicamba or 1 qt/ac 24D LV6.

A soil sample is highly recommended to achieve the appropriate fertilizer recommendation.

Soybean Recommendations

Starter

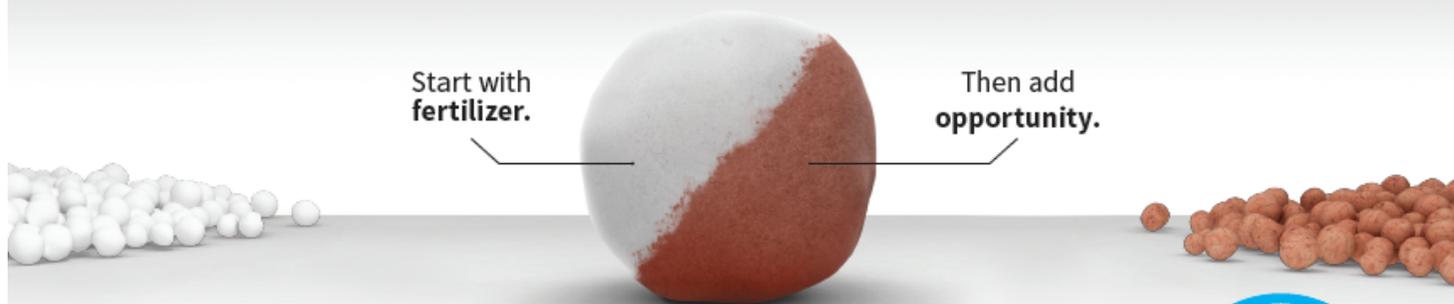
30 bushel removal	9-24-42-7 with AVAIL
40 bushel removal	12-32-56-9 with AVAIL
50 bushel removal	15-40-70-11 with AVAIL
60 bushel removal	19-48-84-13 with AVAIL

Fall Spraying

Sonic	5-6 oz/ac
Valor XLT	3 oz/ac
Metribuzin	16 oz/ac
Blanket 4F	4-6 oz/ac
Autumn Super	.5 oz/ac

All products to be applied with 1 pint/acre Dicamba or 1 quart/acre 24D LV6.

A soil sample is highly recommended to achieve the appropriate fertilizer recommendation.

INNOVATIVE NUTRIENTS


ZINC DDP[®]


PRODUCT DESCRIPTION

Wolf Trax™ Zinc DDP combines two forms of Zinc into a Dry Dispersible Powder, or DDP, with a proprietary adjuvant package to achieve synergy with a carrier for improved plant uptake. Wolf Trax Zinc is delivered along with every granule and prill, providing more feeding sites in closer proximity to plant roots for earlier uptake.

Guaranteed Analysis	
Zinc (Zn) 11.00% Water Soluble	62.00%

Derived from: Zinc Oxide and Zinc Sulfate

Product Specifications		
Appearance	Color	Carrier Load (w/w)
Powder	White	0.80%

Typical Carriers: 15-15-15, DAP, MAP, MKP, MOP, SOP, Urea and others

Carrier Amount	Wolf Trax Zinc DDP (max)	Elemental Zn
1 Ton (2,000 lbs.)	16 lbs.	9.92 lbs.

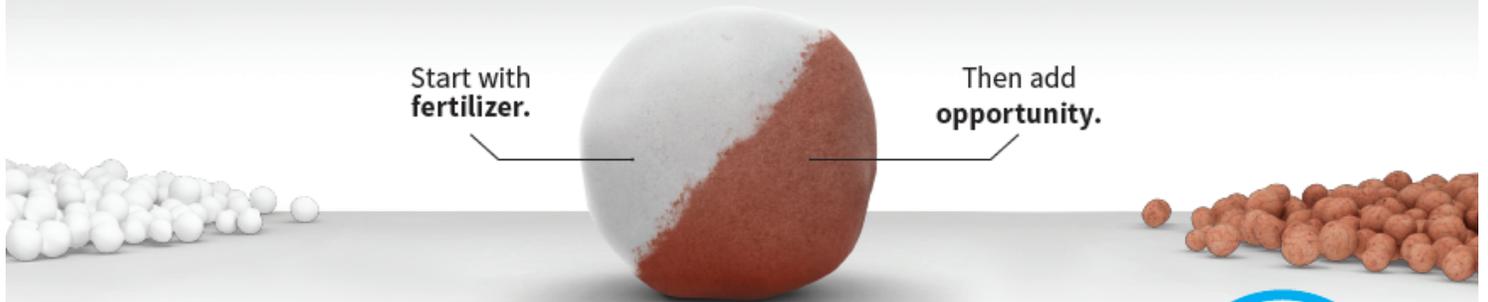
KEY BENEFITS

- Adheres to carriers with EvenCoat® Technology, through the combination of electrostatic interaction and the aid of a proprietary adjuvant blend
- Extends window of availability by combining two sources of Zinc
- Increases root absorption of non-soluble Zinc by milling which multiplies the reactive surface area
- Extends the zone of Zinc availability through the combination of soluble and non-soluble forms
- Increases the number of interception points for roots to access bioavailable Zinc early in the growing season
- Provides flexibility in storage, transport and blending

NOTES



INNOVATIVE NUTRIENTS



BORON DDP[®]



PRODUCT DESCRIPTION

Wolf Trax™ Boron DDP combines three forms of Boron into a Dry Dispersible Powder, or DDP, with a proprietary adjuvant package to achieve synergy with a carrier such as fertilizers for improved plant uptake. Wolf Trax Boron is delivered along with every granule or prill, providing more feeding sites in closer proximity to plant roots for earlier uptake.

Guaranteed Analysis	
Boron (B) 100% Water Soluble	18.50%

Derived from: Boric acid, Sodium Tetraborate and Potassium Tetraborate

Product Specifications		
Appearance	Color	Carrier Load (w/w)
Powder	Pink	0.40%

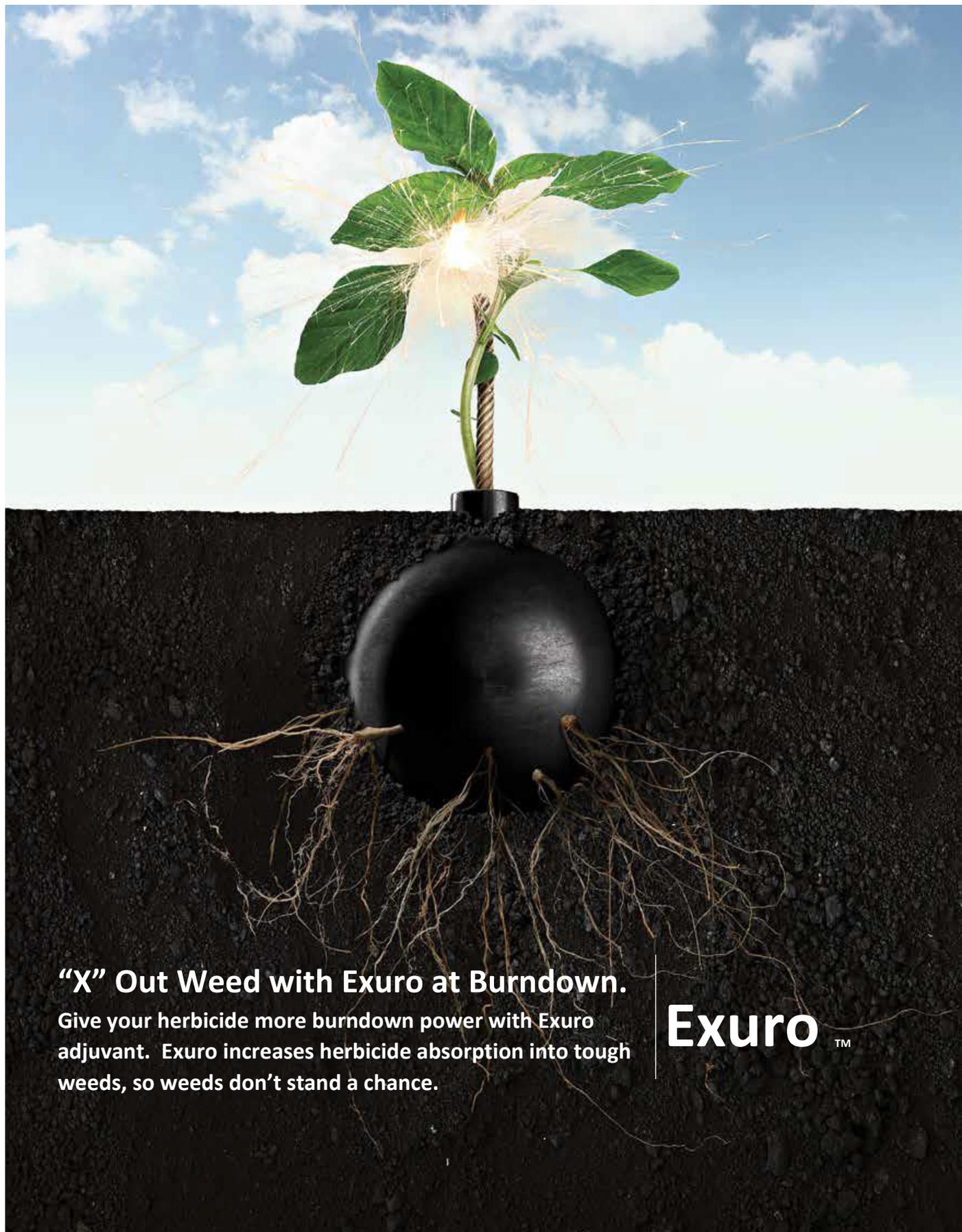
Typical Carriers: 15-15-15, DAP, MAP, MKP, MOP, SOP, UREA and others

Fertilizer Amount	Wolf Trax Boron DDP (max)	Elemental B
1 Ton (2,000 lbs.)	8 lbs.	1.48 lbs.

KEY BENEFITS

- Adheres to carriers with EvenCoat® Technology, through the combination of electrostatic interaction and the aid of a proprietary adjuvant blend
- Extends window of availability by combining three sources of Boron
- Increases root absorption of Boron by milling which multiplies the reactive surface area
- Increases the number of interception points for roots to access bioavailable Boron early in the growing season
- Even distribution in the field and around the carrier reduces the potential for Boron hotspots that can cause toxicity
- Provides flexibility in storage, transport and blending

NOTES



“X” Out Weed with Exuro at Burndown.

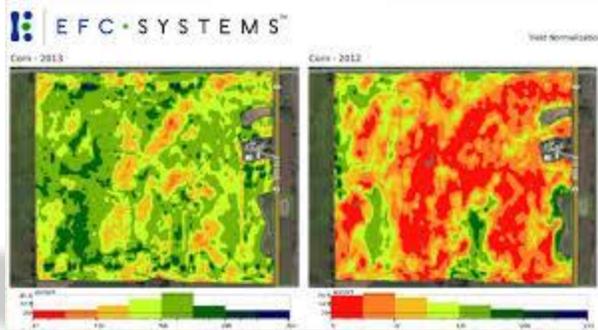
Give your herbicide more burndown power with Exuro adjuvant. Exuro increases herbicide absorption into tough weeds, so weeds don't stand a chance.

Exuro TM



Field Advantage

OTTAWA COOP

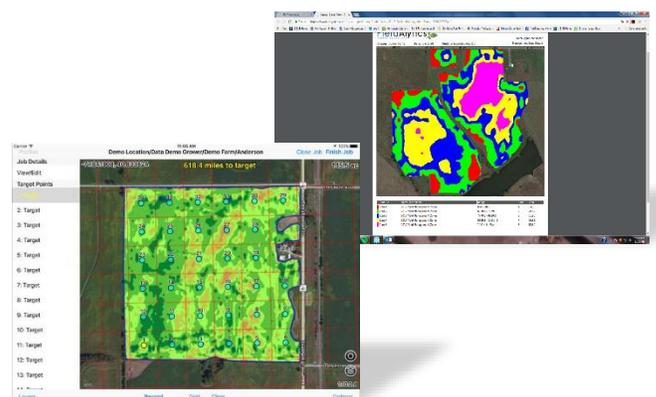


Why Precision Farming?

- Take inventory of fertility on each field.
- Stop throwing fertilizer \$ where it is not needed.
- Variable rate application technologies allow you to place the products only where needed to maximize crop productivity.
- Utilize Yield data and make it useful in fertility, seed, and production.
- Know the right placement of seed hybrids for maximum profitability.
- To be an overall better manager of all farming practices.

Solutions for Better Decision making

- Maximize economic yields by utilizing information based on sound decision making.
- Utilized multi years of information trends for decision making.
- Make hybrid/variety decisions based on your operations performance.
- Utilize multi-layers of information in analysis process.





Field Advantage
OTTAWA COOP

- Monitor fields from preplant burn down applications to dry down for harvest.
- Find problems at a minimal stage before it reaches the Economic Injury Level (EIL)
- Full team of agronomists develops the best treatments/recommendations.
- Best chance to maximize yield by catching problems early.



What's Included?

Weekly field checks

- Weeds, diseases, insects
- Deficiencies
- Growth stages, Population counts, Yield estimates
- Tissue/Soil Sampling for nutrient monitoring
- General crop health monitoring

Call the **Ottawa Coop Production Office** for further information if interested. (785) 242-1032

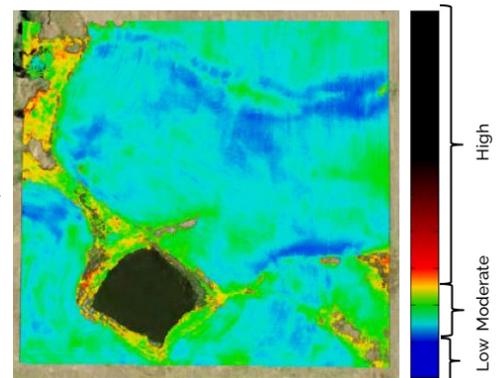
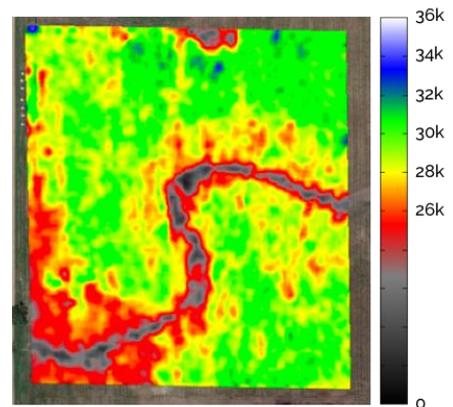


Field Advantage

OTTAWA COOP

UAS Imagery

- Utilizing SlantRange's new 3P field sensor your field imagery data is easier to collect than ever before. Setup, flight, and data analysis for a 160-acre field can be completed in as little as 30 minutes!
- Multiple map layers for different levels of analysis:
 - Post-Emergence
 - Plant Population: Advanced algorithms detect each individual plant providing a true stand count
 - Weed Density: Detects early season weeds by distinguishing between a true row crop and invasive species.
 - Full Season Health Survey's
 - Plant Stress: Uses multiple spectral bands across the near infrared and visible to crop stress (nutrient deficiencies, pest impacts, dehydration areas).
 - Vegetation Fraction: Layer used to determine "canopy closure" across the entire field.
 - Yield Potential: Utilizes multiple layers of imagery to give the grower a high-resolution map for future yield potential. Use this to determine high and low spots in fields for product trials.
 - NDVI: Traditional maps for help in determining problematic areas in the field.



Were yields not as great as you were thinking? Is something hidden to the human eye robbing from your top end yield?

Contact the Field Advantage department with the Ottawa Coop in creating a custom-tailored plan for your acres!

Corn Seed Treatment Options

Any amount of corn can be treated with the following components, all treated corn is non-returnable and must be picked up in a black box.

Rapidity

- Blend of growth additives and micronutrients.
- Enhances crop establishment, uniformity of stand, and germination
- Offsets early nutrient deficiencies
- Optimal combination of nutrients for stimulating germination

Triad

- Formulated with optimal ratio and concentration of plant hormones
- Reduces negative effects caused by stress
- Boosts plant growth and development for higher yield potential

Rapidity: \$15/unit

Tripidity (Rapidity & Triad): \$20/unit

Prepay discount for ordering Tripidity before 12/30/18 of \$2/unit

Corn Seed Treatment

RAPIDITYTM ST BIOSTIMULANT

RAPIDITY ST BIOSTIMULANT IS A UNIQUELY DESIGNED SEED TREATMENT THAT PROVIDES ESSENTIAL NUTRIENTS AND BIOSTIMULANT ADDITIVES WHICH CAN MAXIMIZE EARLY SEEDLING VIGOR AND CROP DEVELOPMENT, FOR MAXIMIZING YIELD POTENTIAL.

Product Features

Why is This Important?

Germination

- Optimal combination of nutrients to help stimulate germination and offset early growth reducing nutrient deficiencies.
- Germinating seedlings can only draw from the energy within the seed until the start of photosynthesis. Rapidity ST provides the building blocks for cell walls, membranes and the components of key growth processes before the plant can create its own.

Early Seedling Development

- A blend of proprietary growth additive and micronutrients to support enhanced crop establishment and vigor.
- Rapidity ST provides the nutrients, intermediates, and activates the necessary enzymes so the seedling spends more energy on growth, as opposed to sourcing and processing.
- Rapidity ST proprietary growth additives provide the plant with amino acids which are the building blocks of proteins (including enzymes). Photosynthesis and respiration cannot occur without many different types of enzymes.

Application Flexibility

- Flexible formulation designed for use with various production practices.
- Rapidity ST can be mixed with fungicide and insecticide seed treatments. Also compatible with rhizobia/inoculant seed treatments when applied simultaneously and may be applied as an over-treatment.



Corn Seed Treatment



TRIPIDITY™ ST

Tripidity ST biostimulant is a uniquely designed seed treatment that provides essential nutrients and biostimulant additives which can maximize early seedling vigor and crop development, for maximizing yield potential.

- Tripidity ST is a unique blend combining essential macro and micro nutrients and a proprietary blend of plant extracts to stimulate seed germination and to maximize early seedling growth and vigor. Tripidity ST also includes a balanced ratio of three hormones designed to work together to enhance seed germination and seedling establishment, provide stress reduction in cold soils, enhance cell elongation, and increase nutrient uptake for higher yield potentials.
- Multiple factors start affecting yield the moment the seed is planted. Treating seeds with an industry leading fungicide and insecticide, coupled with effective biostimulants will drive and increase yield.
- Germinating seedlings can only draw from the energy within the seed until the start of photosynthesis. Tripidity ST provides the building blocks for cell walls, membranes, and the components of key growth processes before the plant can create its own.

Balanced Ratio of Hormones

Cytokinin (Kinetin)

Stimulates cell division, involved in shoot growth, delays leaf senescence and activates dormant buds.

Gibberellic Acid (GA)

Stimulates seed germination, shoot elongation, flowering, and regulates production of hydrolytic enzymes in grains.

Indole-3-Butyric Acid (IBA)

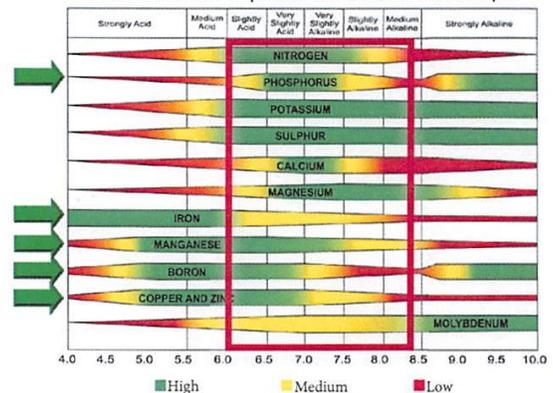
IBA is an auxin that enhances root growth; involved in apical dominance, stimulates cell elongation, enhances fruit and seed development.

GUARANTEED ANALYSIS 0-0.70-0

Available Phosphate (P ₂ O ₅)	0.70%
Manganese (Mn)	0.05%
0.05% EDTA Chelated Manganese	
Boron (B)	0.50%
Iron (Fe)	0.10%
0.10% EDDHA Chelated Iron	
Zinc (Zn)	0.50%
0.50% EDTA Chelated Zinc	

Derived from: Diammonium phosphate, Manganese EDTA, Boron ethanolamine, Ortho-Ortho Iron EDDHA & Zinc EDTA.
EDTA is ethylenediaminetetraacetic acid.

Plant Nutrient Uptake in Relation to Soil pH



Biostimulants can increase yield by allowing the crop to perform at an optimum level, even under stress.



Soybean Seed Treatment Options

Rancona XT Plus (Fungicide)

- Protects seed from both seed-borne and soil-borne pathogens.
- Better chance of good stand
- Protection up to 3 weeks after planting



Rancona Complete (Fungicide/Insecticide)

- Contains all benefits of Fungicide treatment
- Added broad spectrum insect protection
- Up to 60 days of protection after planting, systemic so the product is absorbed into plant while growing.



Preside CL (Inoculant)

- High count live rhizobia bacteria with up to 90 days on seed out of ground survival
- Increased emergence and nodulation
- Takeoff technology included for increased nitrogen utilization



Calvin Wenger
Seed Manager
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620-504-2135

SEED



Mycogen[®]
SEEDS



ROUNDUP READY 2
X TEND
SOYBEANS

Offering Liberty Link, Roundup Ready 2 Xtend, and new this year in limited supply GT27 Liberty Link soybeans that offer tolerance to both Glyphosate and Glufosinate as well as HPPD Class 27 Herbicides. Ask about our aggressive early order pricing opportunities.

Cover Crops

Cereal Rye: \$17.50 per 50 lb. bag

Turnips/Radish: \$75 per 50 lb. bag

Annual Rye: \$45 per 50 lb. bag

Cover Crop II Blend: \$27.50 per 50 lb. bag

Contains 43lbs of Cereal Rye

Contains 5lbs of Radish

Contains 2lbs of Turnips

Plant one bag per acre

All can be ordered in 2000lb bags. Some blending and bagging fees may apply, call to inquire.

Calvin Wenger
Seed Manager
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620-504-2135

A dirt path winds through a lush green cornfield. The corn plants are tall and healthy, with some tassels visible. The path is a reddish-brown color, and the shadows of the corn plants are cast onto it. In the distance, a single tree stands against the horizon. The sky is a vibrant blue with scattered white clouds.

Clean fields mean higher yields
and more money in your pocket.
Let us help you get there with our
selection of industry-leading
herbicide solutions that are tough
on weeds.