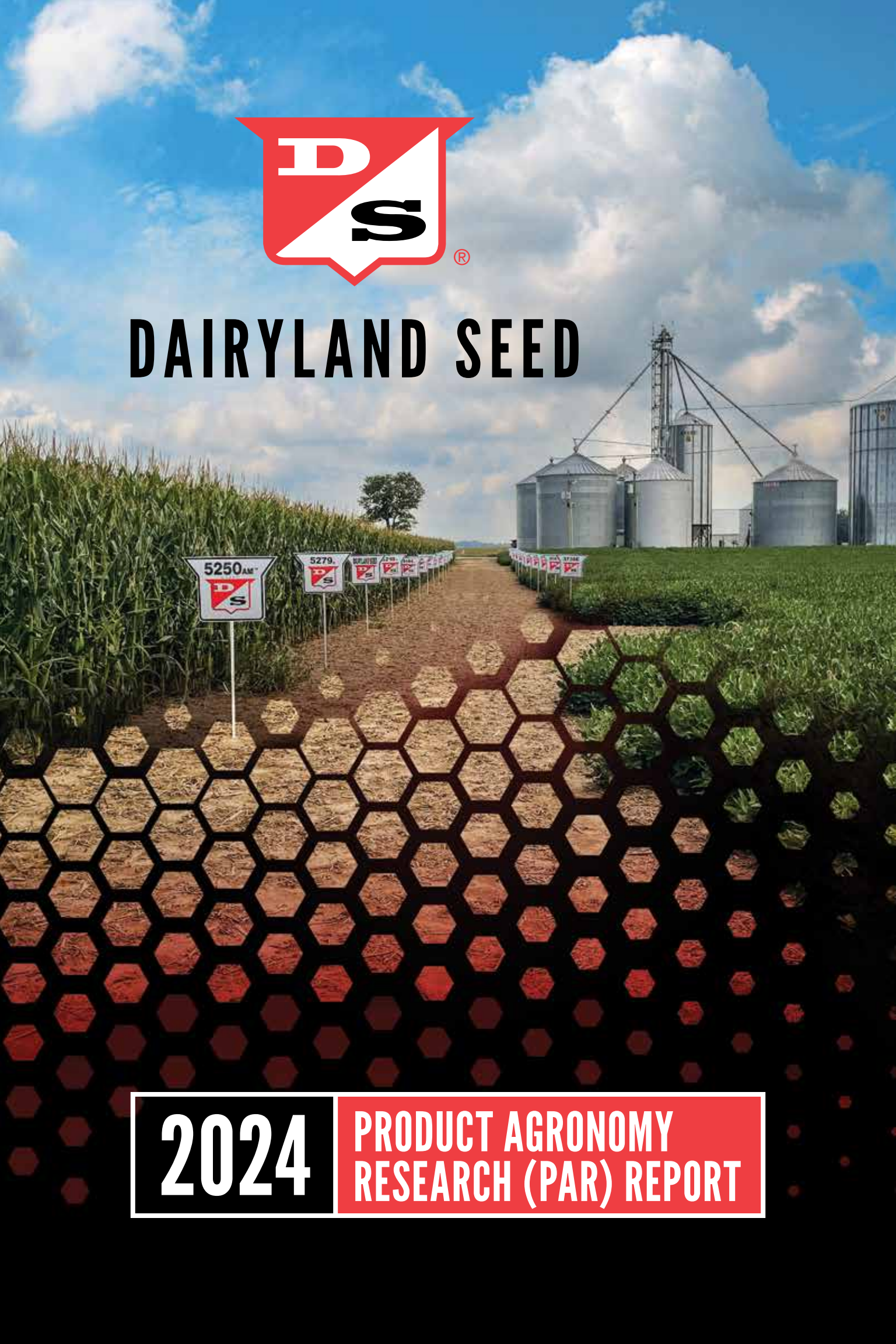

DAIRYLAND SEED
5250AM
5279
2024
PRODUCT AGRONOMY RESEARCH (PAR) REPORT

Hello Dairyland Seed Friends and Supporters,

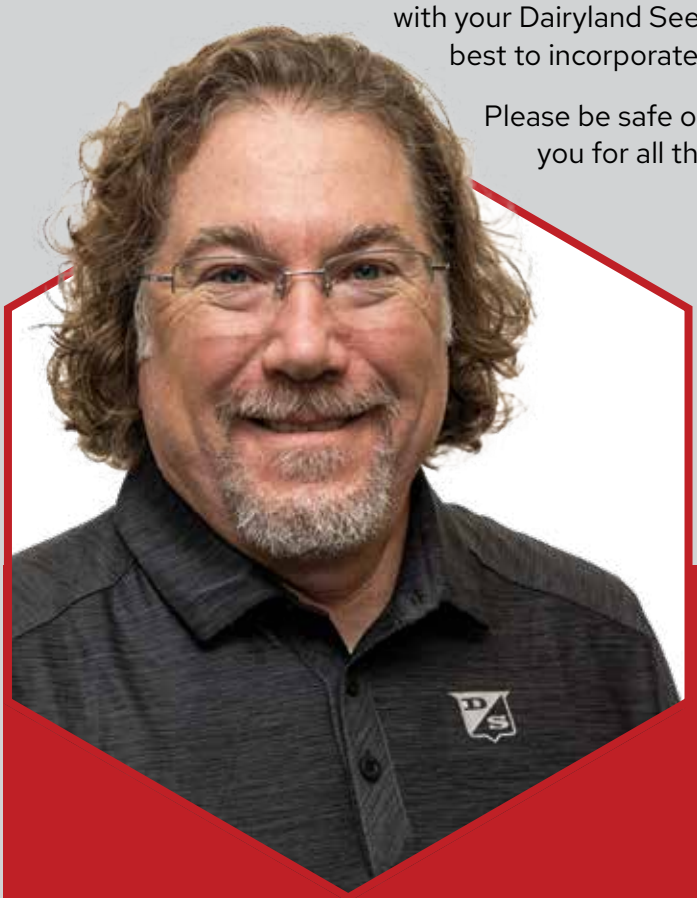
What a year!

Variability seemed to be a common theme with planting dates all over the calendar, some of our geographies were too wet, some were too dry, and others were too wet and too dry. You have never picked a better time to be tuned into a seed brand that works as hard to bridge the gap between our products and your farm as Dairyland Seed.

The Dairyland Seed Agronomy Team provides local expertise on how to maximize product performance, agronomy recommendations, and cultural practice insights. One of the tools that helps them accomplish this is our annual Product and Agronomy Research (PAR) program. This program is a vital source of information that helps drive the success of our customers. PAR consists of multiple product and agronomy trials at four dedicated sites across four states: Minnesota, Wisconsin, Michigan, and Indiana. We also enhance this program by including many on-farm trials from across our geography.

Enjoy this year's published data. I hope you are able to glean some valuable nuggets from our research that supports your operation. As always, if you have any questions, please let us know. Also, if you have any suggestions for future protocols, share them with your Dairyland Seed agronomist, and we will do our best to incorporate them into our future trials.

Please be safe out there and thank you for all that you do.



RYAN MUELLER

Portfolio and Agronomy Lead

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DAIRYLAND SEED

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GRAIN CORN STUDIES

SCAN THE QR CODE TO VIEW CORN PERFORMANCE IN YOUR AREA.

EFFECTIVENESS OF BORON APPLICATION IN CORN PRODUCTION

PLANTED:	5/23/24
HARVESTED:	10/11/24
AGRONOMIST:	Amanda Goffnett, Rod Moran

PURPOSE

In recent years, the role of micronutrients in crop production has garnered increasing attention, particularly in enhancing yield potential in corn. This Dairyland Seed Curiosity Corner study conducted at our Wabash, Indiana location investigates the effects of boron application during the critical growth stages from mid-vegetative to pre-tassel on corn yield. Boron is essential for various physiological processes, including cell wall formation and reproductive development, yet its deficiency can lead to significant yield reductions. Since boron is a leachable micronutrient, rainfall and soil type can also play a large role in this nutrient's contribution to overall yield or possible impact on grain quality (TW).

This research hopes to clarify the link between boron application and yield but also aims to provide practical recommendations for farmers seeking to maximize their corn production in nutrient-deficient soils.

MATERIALS

Planting population: 34,000 plants/A

Hybrid: DS-4969PCE™ brand

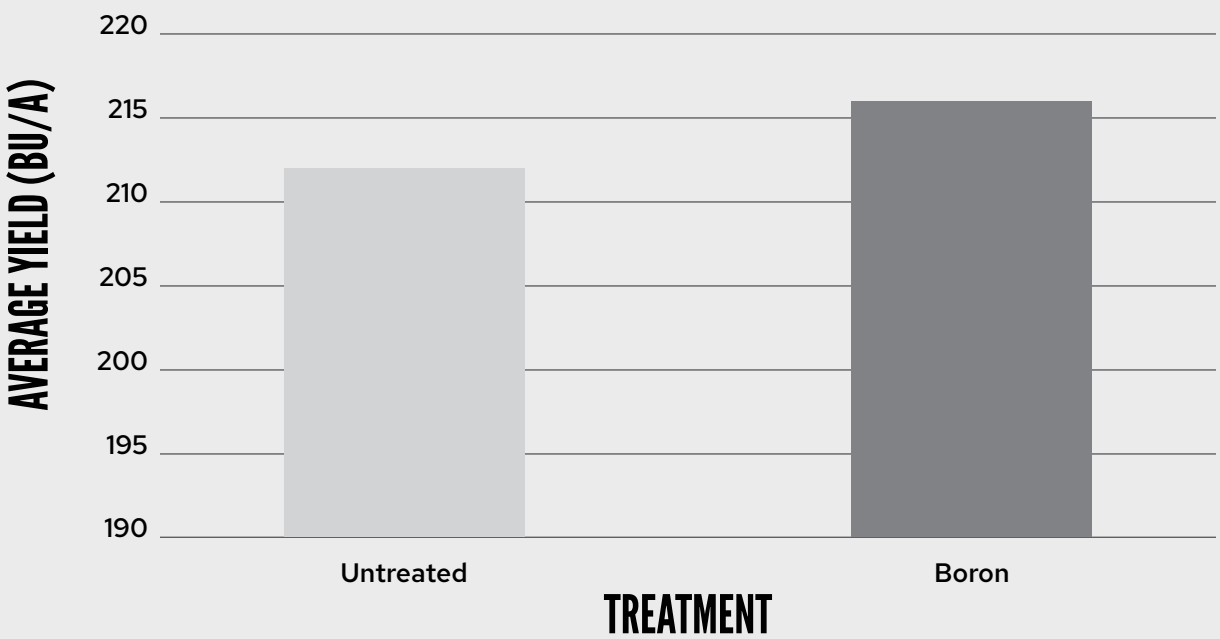
Product Application:
AgroLiquid® Boron (0-0-0-5B)

TREATMENTS

TIMING	PRODUCT	APPLICATION	RATE
V6	AgroLiquid® Boron	0-0-0-5B	0.125 gal/A

RESULTS

BORON APPLICATION RESULTS FOR WABASH, INDIANA 2024



CONCLUSION

The 2024 yield results from Wabash, Indiana showed no statistical difference between the untreated control and the boron application. There was also no significant difference in moisture or test weight between the boron treatment and the untreated.

This indicates that the most limiting factor this year was not boron. We know boron is a leachable micronutrient; therefore, areas with a more sandy or sandy loam soil texture might show a larger response to a boron application. Boron is still an important micronutrient that is needed for plant growth, reproductive function, sugar transport and water use efficiency, especially during tasseling and silking.

This study was only one year at one location, so more data would be needed to have a better understanding about the effectiveness of boron applications.

FUNGICIDE OPTIONS IN CORN PRODUCTION

PLANTED:	5/10/24 - 5/23/24
HARVESTED:	10/7/24 - 10/12/24
AGRONOMIST:	Mark Gibson

PURPOSE

With the onset of polycyclic diseases such as tar spot, fungicide application timing has become a topic of discussion. Structured fungicide applications have become common practice in management strategies. Common timings for foliar fungicides are soil applied fungicides, V5, VT (tassel), and R2 (brown silk).

This trial will look at these single applications as well as combined timings. The environment and time of infection will determine the impact of fungicide applications, and notes on foliar disease pressure will be taken throughout the growing season.

MATERIALS

Wabash, Indiana: DS-4833AM™ brand

St. Johns, Michigan: DS-3601AM™ brand and DS-4510Q™ brand

Mt. Hope, Wisconsin: DS-4191V™ brand

Product Application: Aproach® Prima is a broad-spectrum fungicide for control of foliar plant diseases and has preventive, curative and systemic activity.

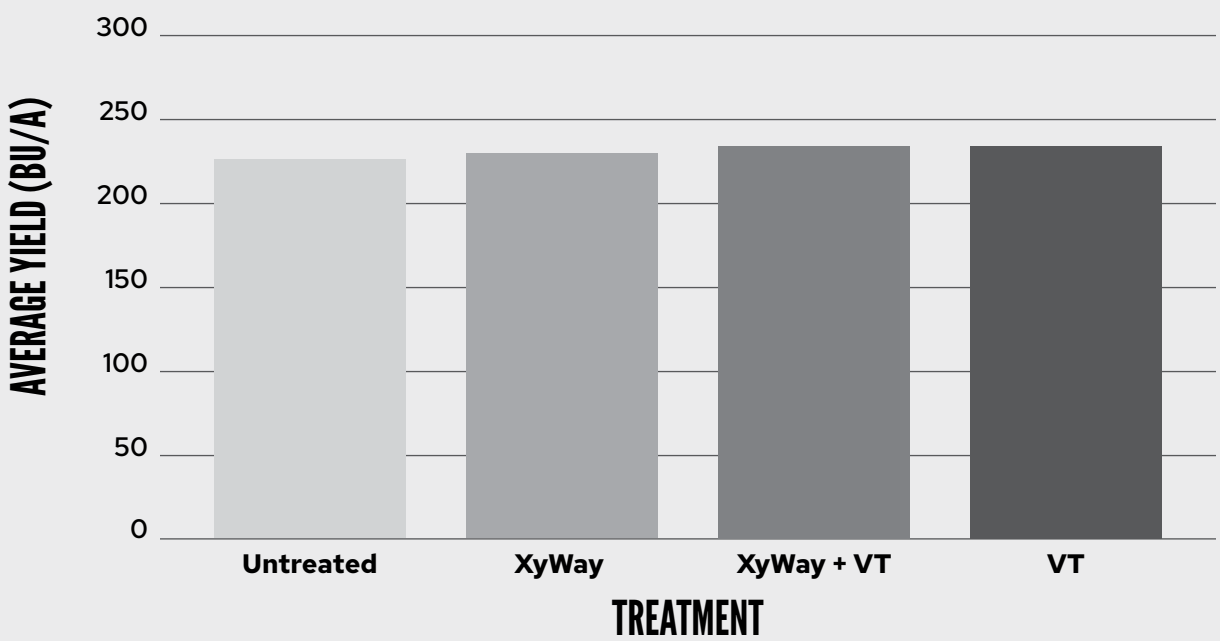
Product Application: XyWay® LFR® fungicide is a unique at-plant fungicide for season-long systemic foliar disease protection from the inside out, from root to tassel and stalk to leaf.

TREATMENTS

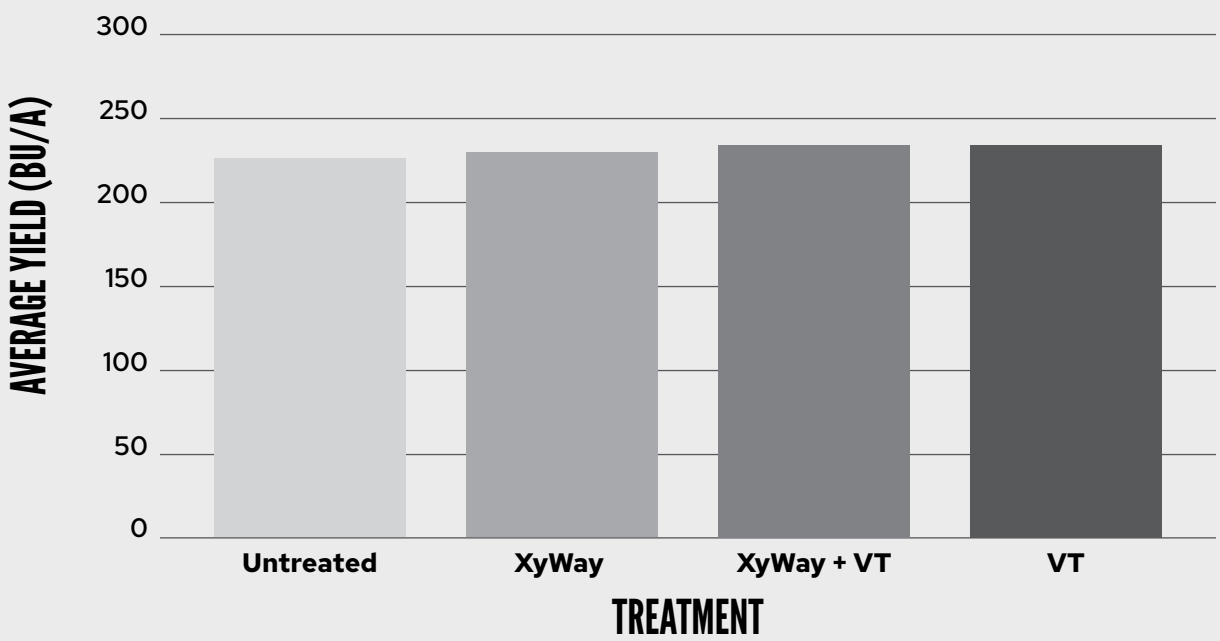
TIMING	PRODUCT	APPLICATION RATE
2x2	XyWay® LFR®	15.2 oz
2x2 and Foliar	XyWay® LFR® + Aproach® Prima	15.2 oz + 6.8 oz
Foliar V5	Aproach® Prima	6.8 oz
Foliar V5 and VT	Aproach® Prima	3.4 oz each
Foliar VT	Aproach® Prima	6.8 oz
Foliar VT and R2	Aproach® Prima	3.4 oz each
Foliar R2	Aproach® Prima	6.8 oz
Untreated Control		

2024 RESULTS

2024 ST. JOHNS, MICHIGAN – XyWay FUNGICIDE

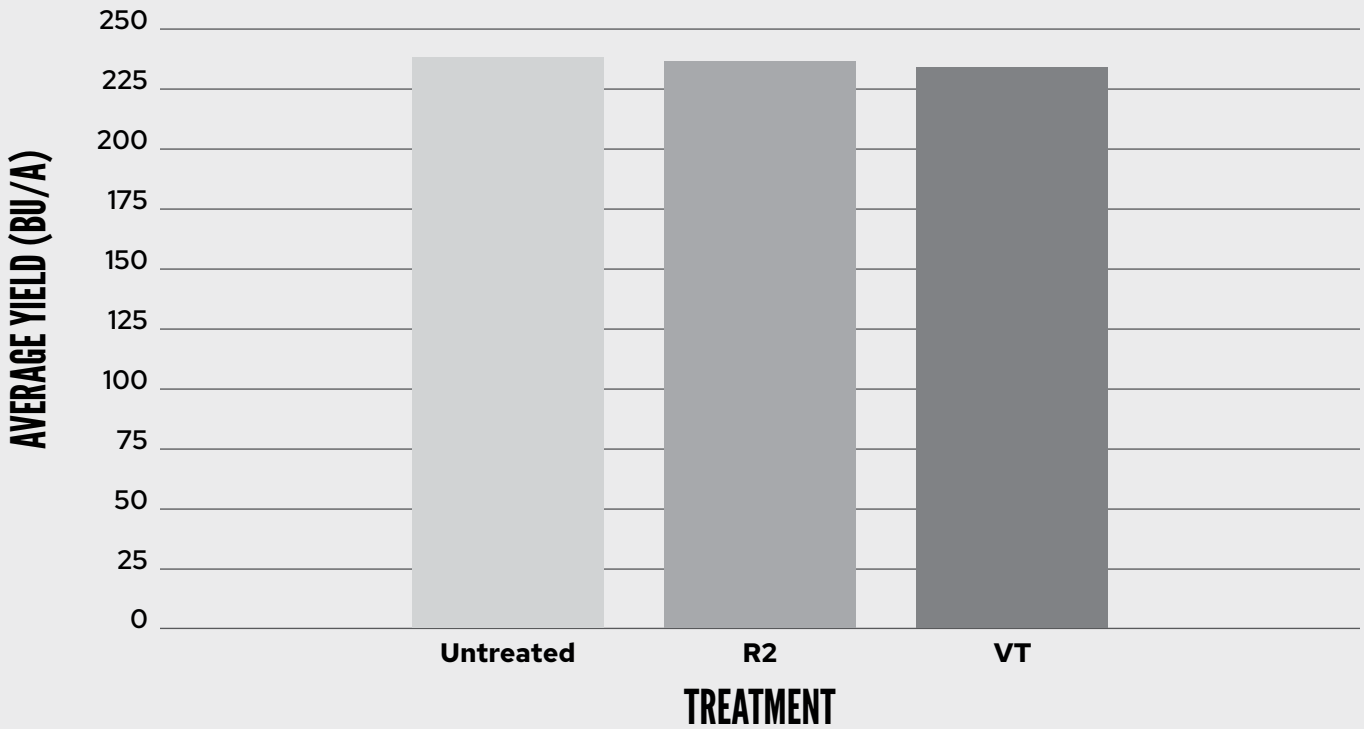


2024 WABASH, INDIANA – XyWay FUNGICIDE

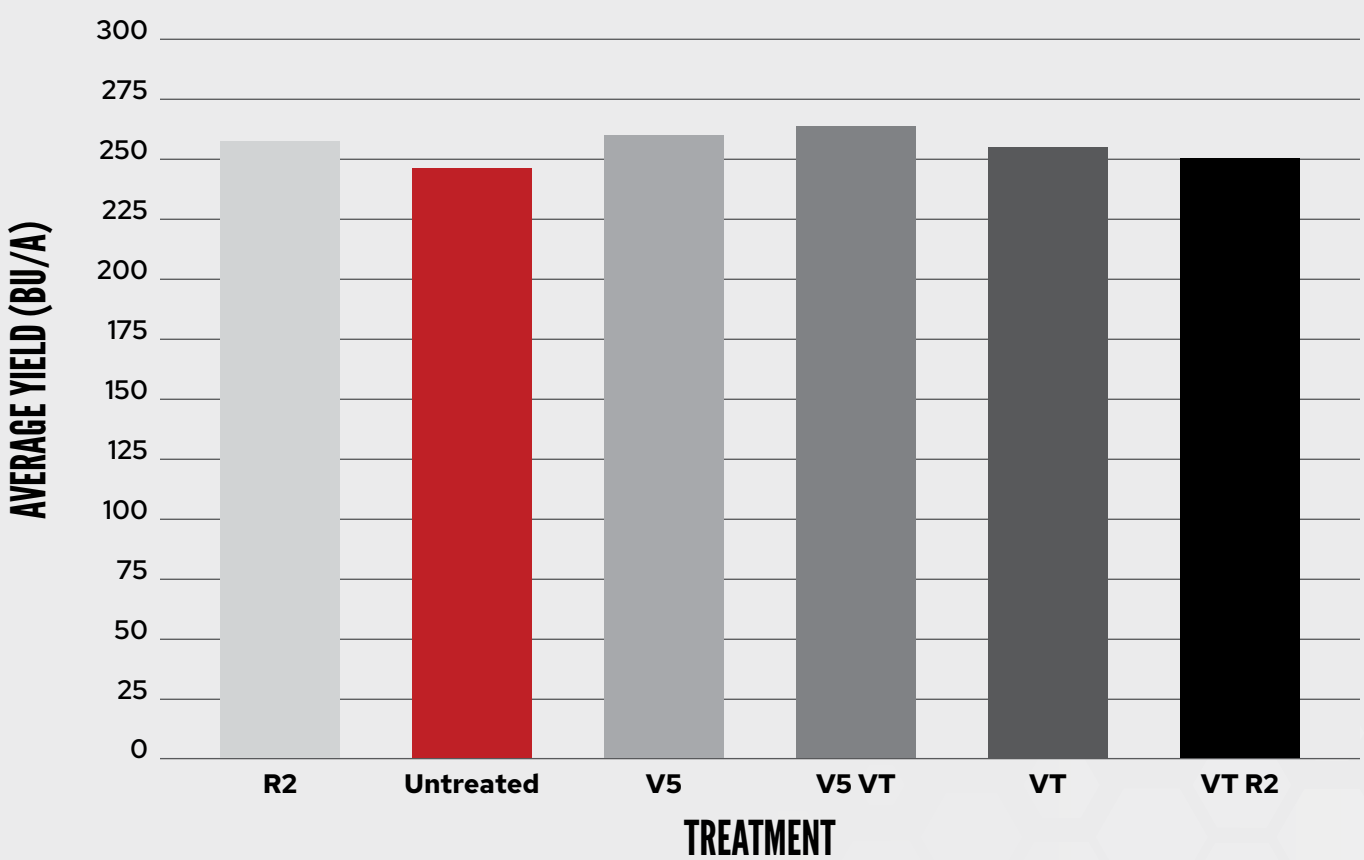


FUNGICIDE OPTIONS IN CORN PRODUCTION (Continued)

2024 ST. JOHNS, MICHIGAN – FOLIAR FUNGICIDE



2024 WABASH, INDIANA – FOLIAR FUNGICIDE



2024 RESULTS

2024 APPROACH TIMING – MT. HOPE, WISCONSIN					
	VT (3.4 oz.)	VT (6.8 oz.)	V5 VT (6.8 oz.)	VT (6.8 oz.)	UNTREATED
Rep 1	274.49	261.07	259.05	272.02	263.03
Rep 2	255.37	251.23	242.42	261.77	257.60
Average Yield	**264.93**	**256.15**	**250.73**	**266.90**	**260.32**

CONCLUSION

2024 SUMMARY

We arrived at similar conclusions to what we have noted at the Wabash, Indiana location in 2022 and 2023, which is that the highest yielding treatments included a VT or tassel application of fungicide.

When the data from these studies were compiled and analyzed, there were no statistical differences in the yield between treatments. We could not prove that all were the same or that they were different. Low disease pressure in 2024 led to these findings. 2024 data from St. Johns, Michigan shows a slight decrease in yield with foliar fungicide applications. This is likely due to the absence of disease in the plot late, where the XyWay® applied in the same plot showed an increase which shows that early application was able to help the plant through environmental stress early.

We also implemented a similar fungicide trial at our Mt. Hope, WI site. At this site we did not not use XyWay® fungicide. There existed a fair amount of inter treatment variability at that site. However, an approximate 1.5-bushel advantage was observed with fungicide applications. Again a VT application seems to be the best option of the timings.

This is a good example of why the best management practices for fungicide applications follows the Integrated Pest Management (IPM) approach. The IPM approach involves monitoring environmental conditions that favor corn diseases, scouting for those diseases and making applications based on findings from one or both practices.

STUDY CONTINUED ON NEXT PAGE

FUNGICIDE OPTIONS IN CORN PRODUCTION (Continued)

THREE YEAR TOTALS
WABASH, IN AND ST. JOHNS, MI FOLIAR FUNGICIDE

TREATMENT	MEAN	GROUP
Untreated	242.0	a
V5	259.0	a
V5 VT	261.0	a
VT	243.0	a
VT R2	256.0	a
R2	239.0	a
V5 VT R2	266.0	a

THREE YEAR TOTALS
WABASH, IN AND ST. JOHNS, MI XyWay FUNGICIDE

TREATMENT	MEAN	GROUP
Untreated	240.0	a
XyWay	241.0	a
XyWay + VT	243.0	a
VT	241.0	a

CONCLUSION

THREE-YEAR SUMMARY

Three-year fungicide application data from Wabash, Indiana and St. Johns, Michigan shows consistent results in both the foliar fungicide as well as the soil applied fungicide (XyWay®) studies.

Like the 2024 data, the multi-year data did not show any statistical differences in treatments as seen in the multi-year summary tables. The 'a' noted in the group column shows that there is no statistical difference in treatments.

Multi-year data does show an increase in yield with multiple applications containing a VT or tassel application. VT timing is the manufacture recommended timing for fungicide applications, but in previous years the VT and R2 or brown silk application have shown the largest increase in yield.

The addition of tar spot to our buffet of corn foliar diseases has allowed for little consistency in fungicide application research as we can see in our data. Scouting fields, monitoring favorable disease environment, and making a single application based on these findings is the best management approach to foliar disease control in corn. Put simply, there is no easy button here.

The following are notes to help drive fungicide application decisions based on our evaluations of foliar disease progression since the onset of tar spot:

- Foliar disease can impact corn at any stage but pre tassel (V18) through R4 or dough stage when corn is most susceptible to the major foliar diseases, GLS, NCLB, common rust and tar spot.
- If no disease is present and the environment is not conducive to infection, delay application. Disease infection at R2 (brown silk) through R4 (dough) have shown to be detrimental to yield. A fungicide application at VT will likely not have residual activity to control disease if it infects corn at these later stages.
- Products containing both a group 3 (DMI Triazol) and group 11 (QoI Strobilurin) have shown the best control of foliar disease, especially tar spot.
- Monitor conditions that favor tar spot infection, specifically leaf wetness and moderate temperatures during the most susceptible infection time which is V18 (pre tassel) through R4 (dough) stages.

Specific product efficacy charts can be found on the Crop Protection Network website or by consulting your Dairyland Seed Regional Agronomist.

UTRISHA® P USE IN CORN PRODUCTION

PLANTED:	5/13/24 - 5/22/24
HARVESTED:	10/11/24 – 10/17/24
AGRONOMIST:	Dan Ritter

PURPOSE

For the second year now, the Dairyland Seed Agronomy team looked at the biological offering Utrisha® P from Corteva Agriscience in corn production. This year expands on our previous study by testing the efficacy of Utrisha® P on corn at multiple Product and Agronomy Research sites for additional geographic results.

The premise of this product is that it can help unlock below-ground phosphorus availability leading to improved soil exploration, plant vigor, and hopefully, improved yield potential. Utrisha® P is a plant growth promoting bacteria that colonizes the root zone at soil temps above 54° F during the growing season. These bacteria work to produce enzymes that can liberate phosphorous by capturing "available" and soil-bound phosphorus in the rhizosphere. This can lead to enhanced nutrient uptake and water availability to the plant for optimized potential in the bin.

MATERIALS

2023: Wabash, Indiana
DS-4833AM™ brand

2024: Wabash, Indiana
DS-4969PCE™ brand

2024: Mt. Hope, Wisconsin
DS-4191V™ brand

2024: St. Johns, Michigan
DS-4510Q™ brand

Corteva Agriscience: Utrisha® P

TREATMENTS

Treated with 14 oz. Utrisha® P in furrow and a starter (6-24-6 Wabash, Indiana; Starter pack St. Johns, Michigan)

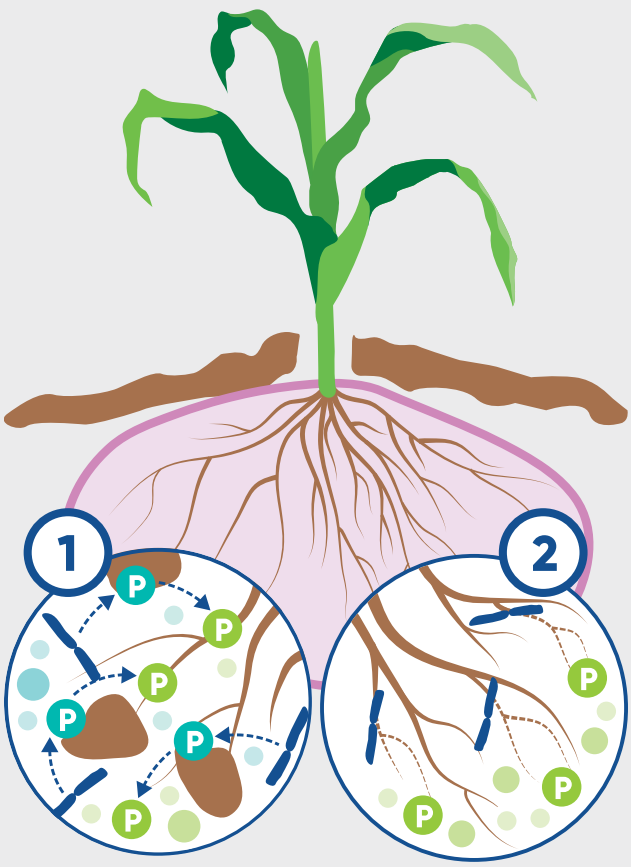
Treated with 14 oz. Utrisha® P in furrow

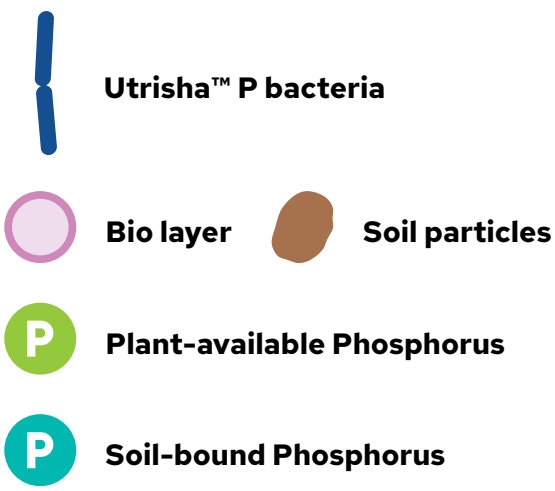
Untreated check

Utrisha® P

Improves below-ground phosphorus availability for invigorated plant growth and resiliency.

1. **Increases access to plant-available phosphorus** by releasing soil-bound phosphorus
2. **Stimulates root growth** which helps crops reach more phosphorus





Maximize	Plant Health	Flexible
Unlocks soil bound phosphorus to help crops reach their full potential	Increased root stimulation allows crops to reach more water and nutrients for overall improved crop vigor	Versatile formulation allows for a low use rate, tank-mix flexibility, and extended shelf life

UTRISHA P® USE IN CORN PRODUCTION (Continued)

RESULTS

This is the second year we conducted an evaluation of Utrisha® P use in corn. Our test in 2023 was only in one location. Fortunately, in 2024 we expanded to three testing sites. This allowed us to monitor performance across a broader scope of environments.

In 2023, the data demonstrated that additional available nutrients (i.e. 6-24-6) improved yield and test weight, while Utrisha® P had no yield benefit but was able to prop up test weight by 0.4 points when compared to the "no in furrow" standard.

This product will work best in growing environments with one or more of the following characteristics: high soil residues, high clay content, cool wet soil, extremely dry soil, or rotational crop with high phosphorus removal levels. Due to the fertility levels at the Wabash show site, we expected to see a limited response, since the data supported this in 2023.

2023 CORN TOTALS – WABASH, IN

TREATMENT	AVG. TEST WEIGHT	AVG. YIELD
Starter (6-24-6)	57.1	286.1
Utrisha P only	57.3	282.5
No in furrow	56.9	282.5

TWO YEAR TOTALS – WABASH, IN

TREATMENT	MEAN	GROUP
Untreated	250.0	b
Utrisha P	255.0	ab
Starter	258.0	a

2024 TOTALS – ST. JOHNS, MI AND MT. HOPE, WI

TREATMENT	MEAN	GROUP
Untreated	256.0	a
Utrisha P	251.0	a
Starter	255.0	a
Utrisha P and Starter	253.0	a

		YIELD IN BU/A		
YEAR	LOCATION	USING UTRISHA P	UNTREATED	6-24-6/STARTER
2024	Wabash, IN	233.23	224.93	241.31
		228.05	220.17	222.20
		228.96	216.52	232.55
		228.96	211.94	220.45
	St. Johns, MI	255.20	242.20	250.6
		248.80	242.80	242.8
	Mt. Hope, WI	264.37	262.93	266.17
		237.50	277.22	251.3
2023	Wabash, IN	284.31	283.12	283.35
		282.54	283.02	285.37
		284.68	280.06	292.13
		278.41	283.88	283.60
Averages		**254.58**	**252.39**	**255.99**
Difference		**2.19**		**3.59**

CONCLUSION

An analysis of the data using linear models found no significant statistical difference between the two treatments.

As we compare the multi-site and multi-year figures, we found advantages to using some type of fertility amendment in furrow versus the non-treated check. Utrisha® P added yield of about two bushels per acre evaluating raw averages from those data points.

Looking at statistical analysis, the differences were significant at the Wabash site over two years, to the tune of about five bushels per acre. Combining the two northern sites data for 2024, there was no difference in yield with any treatment.

In summary, depending how one chooses to look at the data and what site, we realized a flat-to-five-bushel increase in corn production. Dairyland Seed hopes to continue looking at new biological and nutrient enhancer options as they become available to our growers.

If you would like to learn more, please consult your Dairyland Seed Agronomist, or visit Corteva.com.

UTRISHA® N USE IN CORN PRODUCTION

PLANTED:	5/9/24 - 5/23/24
HARVESTED:	10/6/24 – 10/12/24
AGRONOMIST:	Dan Ritter

PURPOSE

The use of biological products in crop production is becoming commonplace in many operations. Utrisha® N is a microbe that is applied foliar to the corn plant between V4 and V8. Utrisha® N colonizes the above-ground portion of the corn plant through the stomata and lives off byproducts of photosynthesis, in return Utrisha® N fixes nitrogen from the atmosphere and makes that available to the corn plant.

This study tests the impact of an application of Utrisha® N in conjunction with a standard nitrogen application.

MATERIALS

2023: Wabash, Indiana

- DS-5095AM™ brand
- 34,000 seeds/A
- All treatments planted with 40 lbs. of nitrogen
- Nitrogen rates adjusted to treatment totals at side dress
- Utrisha® N applied at V5 (5 oz/A)

2024: Wabash, Indiana

- DS-5128PCE™ brand
- 34,000 seeds/A
- 200 total pounds of nitrogen applied

2024: St. Johns, Michigan

- DS-3900AM™ brand
- 32,000 seeds/A
- Nitrogen rates adjusted to treatment totals at side dress
- All treatments received: 300 lbs/A Potash + 125 lbs/A MAP DBC (Fall); 5 gal/A Pro-Germinator + 4 gal/A Sure-K + 0.50 gal/A Micro 500 + 0.25 gal/A Mn + 0.25 gal/A eNhance (IF); 15 gal/A 28% (Conceal)

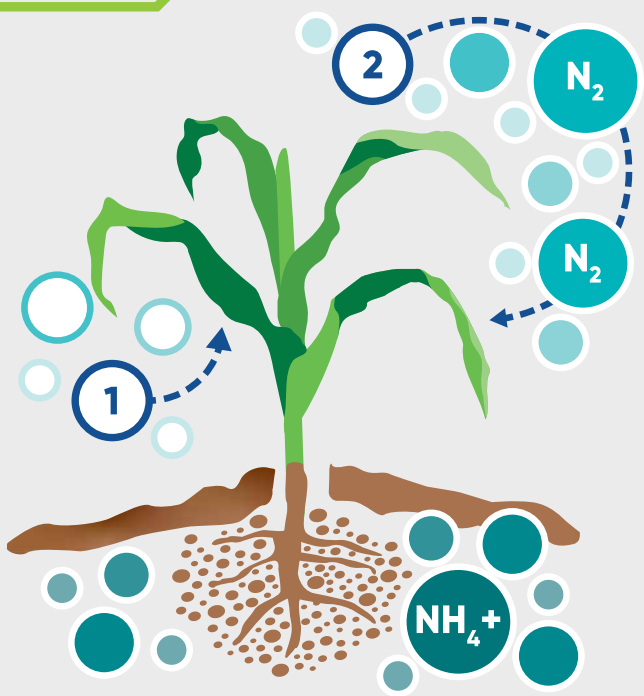
2024: Mt. Hope, Wisconsin

- DS-4191V™ brand
- 32,000 seeds/A
- 300 total pounds of nitrogen applied

Utrisha® N

Utrisha™ N nutrient efficiency optimizer
Fixes nitrogen from the air and converts it for the plant

1. **Enters the plant** through the stomata and gets into the leaf cells
2. **Converts N_2 from the air into ammonium** resulting in a constant supply of amino acids to the plant



TREATMENTS

2023: Wabash, Indiana

Utrisha N and varied N rates applied 80, 140, 170, 200, 230 lbs N per acre
Nitrogen application alone (Untreated Check, no Utrisha N)

2024: Wabash, Indiana

Utrisha N + Standard N rate applied
Nitrogen application alone (Untreated Check, no Utrisha N)

2024: St. Johns, Michigan

Utrisha N and varied N rates applied at 34, 90 and 128 lbs N per acre
Nitrogen application alone (Untreated Check, no Utrisha N)

2024: Mt. Hope, Wisconsin

Utrisha N + Standard N rate applied
Nitrogen application alone (Untreated Check, no Utrisha N)

In both years, and both locations, the Utrisha N was applied as a foliar application rate of 5 oz per acre between V4 and V8.

Nitrogen application methods and timing varied by location.

UTRISHA N® USE IN CORN PRODUCTION (Continued)

RESULTS

YEAR	LOCATION	TOTAL UNITS OF NITROGEN	YIELD WITHOUT UTRISHA N (BU/A)	YIELD WITH UTRISHA N (BU/A)	ADVANTAGE (BU/A)
2024	Wabash, IN	200	224.7	227.6	2.90
	Mt. Hope, WI	300	259.85	267.91	8.06
	St. Johns, MI	34	233.11	225.86	-7.24
		90	254.07	248.97	-5.11
		128	255.39	254.21	-1.18
		Average	**247.52**	**243.01**	**-4.51**
2023	St. Johns, MI	175	189.2	194.8	5.6
		135	192.8	195.5	2.7
		80	187.1	194.9	7.8
		Average	**189.7**	**195.1**	**5.4**
	Wabash, IN	230	254.4	248.6	-5.8
		200	255.1	244.3	-10.8
		170	254.7	248.6	-6.1
		140	246.5	244.8	-1.7
		80	224	240.6	16.6
		Average	**246.9**	**245.4**	**-1.6**
		Advantage All Years All Locations:			**2.05**

CONCLUSION

The Dairyland Seed Agronomy Team has now tested Utrisha® N for two years and at three different locations. In some cases, we varied the application rates of nitrogen (N) in addition to Utrisha® N. There was no significant difference in moisture or test weight for the sites tested in 2023. In 2024, we did not compare those traits. At both Wabash and St. Johns in 2023, the Utrisha® N applied with 80 total pounds of nitrogen resulted in the highest statistical advantage. Other Utrisha® N treatments across the years did not show an advantage statistically, which suggests that nitrogen was not the most limiting factor to yield. However, the trend over the five tests showed a slight yield advantage of approximately 2.05 bushels per acre.

Statistically, we do not see an advantage, but a simple average over years and sites exhibited a favorable response. This is similar to the advantage reported by Corteva Agriscience for similar yield environments. That data would suggest that as yield environments decline, the yield response will increase. For instance, by reducing the total pounds of nitrogen to 80 units, we forced nitrogen to become the limiting factor. This allowed the plant to capitalize on nitrogen being fixed by the bacteria in Utrisha® N. Another excellent example of this concept is observed in the St. Johns, Michigan data, which compared 2023 yield levels compared to 2024 levels. Yields correspond well to the performance levels of Utrisha® N.

The best use for Utrisha® N seems to be in nitrogen-limiting growing environments. Dairyland Seed research, with Corteva research, indicates similar results with an overall advantage of about 2-to-5 bushels across all environments. However, as seen in our trials, each year and location can have variable results. This is no huge surprise as especially with nitrogen research so much is contingent on the weather conditions and its effect on nitrogen availability.

BIOSTIMULANTS AND PGRS IN CORN

PLANTED:	5/12/24
HARVESTED:	10/17/24
AGRONOMIST:	Dan Ritter

PURPOSE

Biostimulants and plant growth regulators are products that encourage crop growth. Examples of biostimulants are beneficial micro-organisms, synthesized or natural plant hormones, and biological fertilizers. PGRs are plant hormones that work on promoting plant development. Products in this realm of inputs can help plants become more resilient to environmental stresses which helps to maintain the maximum yield potential of a crop. This study looks at a popular corn biostimulant/plant growth regulator package as compared to an untreated check.

MATERIALS

Biostimulant PGR product containing:

- Cytokinin
- Gibberellic acid
- Indole-3-butyric acid
- Indole acetic acid

Untreated Check

RESULTS

2024 MT. HOPE, WISCONSIN

TREATMENT	YIELD (BU/A)
FSYEP*	266.59
Untreated	261.92
Untreated	256.17
FSYEP*	255.15
Untreated	248.44
FSYEP*	246.75

* Fortified Stimulate Yield Enhancer® Plus

STATISTICAL ANALYSIS

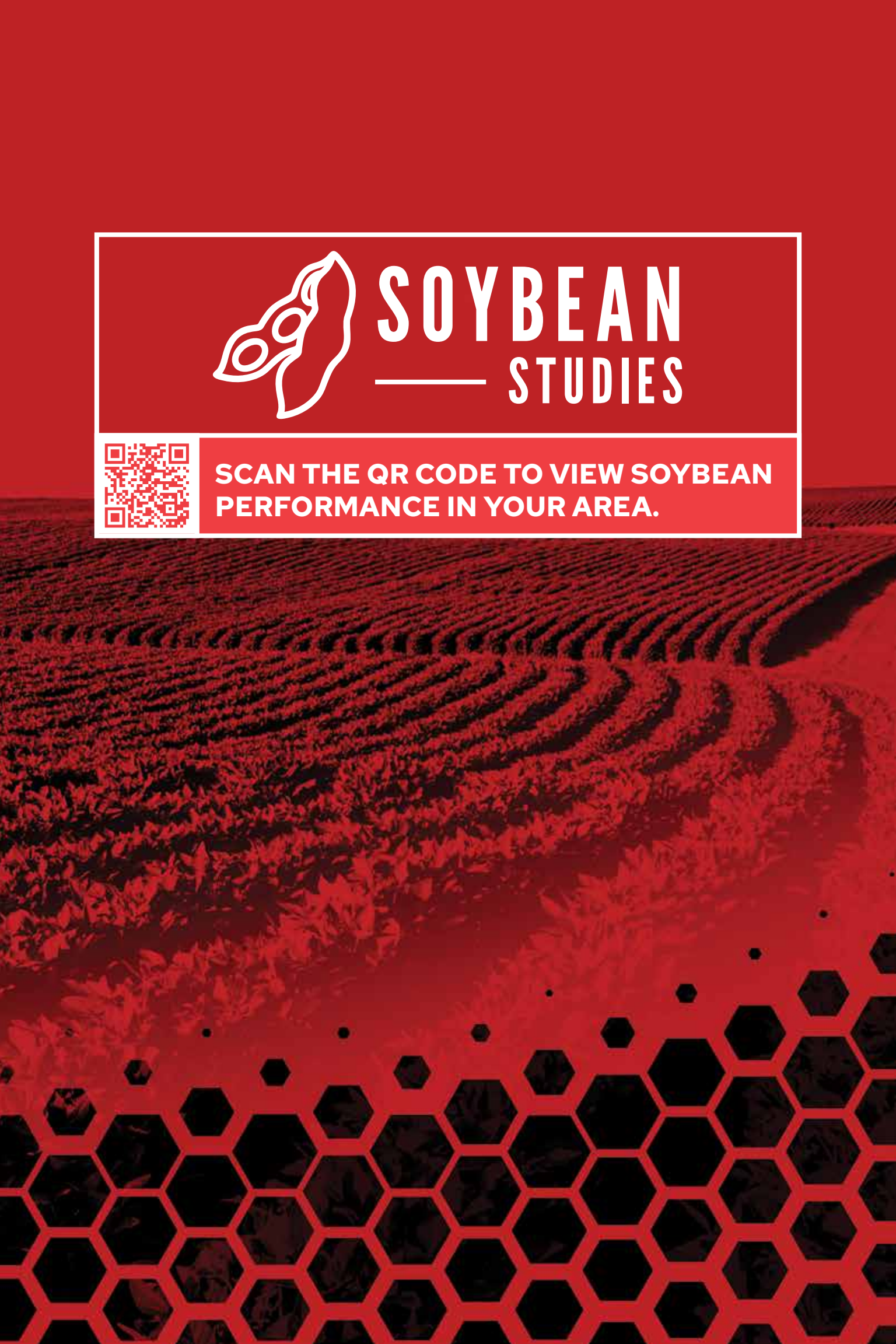
TREATMENT	MEAN
Untreated	256.0
Biostimulant	256.0

CONCLUSION

Biological products are gaining popularity and acceptance throughout the industry. The challenge is that they are biological organisms. As such, environmental conditions may affect product performance and plant benefits. Management and timing can be crucial in obtaining the maximum benefit and performance of these products. Such things as water availability and temperature can obviously affect the ultimate of these type of crop inputs more so than other crop inputs. This year in the location we tested, no yield benefit was observed using a biostimulant/PGR combination. In other years and locations, we may see different results. Our recommendation would be to test these options on your operation to see if you observe a response. There may be a greater ROI on those more troubling crop production areas.

SOYBEAN STUDIES

SCAN THE QR CODE TO VIEW SOYBEAN PERFORMANCE IN YOUR AREA.



UTRISHA® P USE IN SOYBEAN PRODUCTION

PLANTED:	06/1/24
HARVESTED:	10/4/24
AGRONOMIST:	Dan Ritter

PURPOSE

The active ingredient in Utrisha® P is a plant growth-promoting bacterium, *Bacillus amyloliquefaciens*, that helps release soil-bound phosphorus for plant uptake. The bacteria in Utrisha P colonizes the plant's root zone throughout the growing season, producing enzymes that stimulate phosphorous mobilization. Ideally, this leads to better nutrient availability and use by the plant.

Our purpose with this study is to assist growers in the use and placement of Utrisha P for enhanced and sustained soybean yields. We tested the efficacy of Utrisha® P against a control group without it.

MATERIALS

2023: Wabash, Indiana
DSR-2562E™ brand
Utrisha® P at 14 oz in furrow at planting

2024: Mt. Hope, Wisconsin
DSR-1989E™ brand
Utrisha® P at 14 oz on a 2x2 band at planting

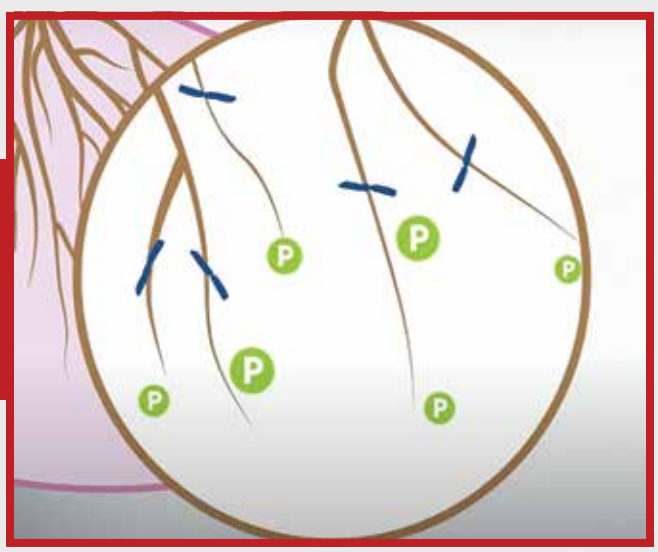
2024: Wabash, Indiana
DSR-3006E™ brand
Utrisha® P at 14 oz in furrow at planting

TREATMENTS

2023: Utrisha P at 14 oz in furrow at planting
No Utrisha P

2024: Utrisha P at 14 oz in 2x2 band
and in furrow at planting
No Utrisha P

Utrisha P bacteria stimulates root growth which helps reach more phosphorus



RESULTS

YEAR	LOCATION	YIELD IN BU/A	
		USING UTRISHA P	UNTREATED
2024	Wabash, IN	65.90	-
		66.08	67.10
		69.07	68.23
		67.00	69.29
		59.65	64.33
		61.56	62.26
	Mt.Hope, WI	77.9	78.82
		75.44	75.36
2023	Wabash, IN	81.56	81.68
		80.81	81.06
		80.22	80.88
		78.73	77.67
	Average	**71.99**	**73.33**

CONCLUSION

In the data set, our linear model analysis found no significant statistical difference between the two treatments.

As we evaluated the combined year analysis for 2023 and 2024, we experienced similar results to negative responses in 2024 as we did in 2023. Both testing sites for 2024 were planted later in the season, followed by dry conditions. The drought in the early part of the season may have had some bearing on the results for 2023, as the early vegetative stage moisture was very minimal. This could have been a limiting factor for the performance of Utrisha® P.

We need to keep in mind that both testing sites are not ideal for plant nutrient testing. Both sites have historically been managed for high yield and show plot scenarios.

Better testing results would most likely be seen in situations where phosphorous is a limiting factor. Label recommendations suggest better results if applied directly in furrow to obtain as much early root exposure as possible. We had one location where, due to equipment restrictions, we could only apply 2x2. Ample soil moisture is also critical to aid in the dispersal of the product through the root zone. This means that drier conditions could inhibit performance as well.

Corteva Agriscience continues to hone in on biological ag products and how best to manage them for maximum efficacy. We look forward to investigating this again in 2025.

WESTERN REGION SOYBEAN POPULATION

PLANTED:	Various
HARVESTED:	Various
AGRONOMIST:	Brian Weller

PURPOSE

Plant population, or final stand plant population, in soybeans has been a hot topic for the last few years. What the optimum plant population is for the highest yield expression will vary from field to field, as well as areas within a field. Varietal differences, such as plant height and canopy width, may have a bearing on the ability of a soybean product to yield in reducing or increasing plant populations.

Diseases such as sclerotinia white mold (SWM) favor reducing soybean plant population. Fewer plants increase airflow between plants, which may reduce the incidence and severity of SWM, while nutrient deficiencies such as iron deficiency chlorosis (IDC), favor increasing population.

By increasing the plant population, you have more plants taking in calcium carbonates as well as salts, which are the main influencers in the severity of IDC, reducing the total Salt and Calcium Carbonate load of individual plants and the impact of IDC. These factors influence the decision-making process on what is the correct plant population for a field or parts of fields. Other factors such as weed control, canopy type (bushy or narrow) and plant height will impact this decision as well.

The other aspect of looking at soybean plant populations is that whether it be as an agronomist or farmer, we have all had instances in which soybean plant populations have been reduced either by some calamity such as weather (hail, wind, sandblasting or frost) or animals (deer, turkeys and geese). We may need to make important decisions about whether to replant. This data is an attempt at providing a better understanding as to what level, the bottom for plant populations might be.

MATERIALS

Locations:
Winona, Minnesota
Stewartville, Minnesota
LaFayette, Minnesota

Products:
DSR-1450E™ brand
DSR-2111E™ brand
Dairyland Varietal Plot

RESULTS

Previous years' PAR soybean plant population studies provided inspiration to other producers to look at this project. We had three cooperators in the Western Region that assisted in doing this soybean plant population study in 2024. Changes or adjustments to fit a particular participant's equipment need or time schedule impacted the design and layout of a protocol. These changes precluded the obtained data from being combined in one table, and each individual soybean plant population PAR study will have its own table of data.

Our first soybean PAR plant population comparison was located in southeast Minnesota near Winona and is on high to very high fertile silt loam soil type. We have had soybean plant population studies at this location and with this producer before. Due to this field's higher fertility levels and the likelihood of SWM, this producer historically has had good success in reducing soybean plant populations and maintaining or increasing yield. The product used for this study was DSR-1450E™. The data listed below in Table 1 confirms that on this producer's fields reducing soybean plant populations to less than 140K with DSR-1450E™ is not yield limiting.

TABLE 1: UNRUH

PRODUCT	PLANT POPULATION	MOISTURE	YIELD
DS-1450E™ brand	90K	9.0	66.0
DS-1450E™ brand	75K	9.0	64.7
DS-1450E™ brand	120K	9.1	63.9
DS-1450E™ brand	135K	9.3	62.5
DS-1450E™ brand	60K	9.3	60.4
DS-1450E™ brand	105K	9.3	60.0
Average	**97.5K**	**9.2**	**62.9**

WESTERN REGION SOYBEAN POPULATION (Continued)

Our second PAR soybean plant population comparison was located again in southeast Minnesota near Stewartville. This study was included on a Dairyland Seed Soybean Varietal plot, where the plot was split into two populations. The southern portion of the plot is a highly fertile silt loam soil type planted at 139K, while the northern portion of the plot is a highly fertile clay loam soil type planted at 101K. The decision to reduce the plant populations in this manner was based upon this producer's previous experience in having more SWM issues on the northern portion of this field due to its lower elevation and higher water table.

As the saying goes "the best laid plans of mice and men often go awry." This was certainly true for this instance. This portion of southeast Minnesota had a very dry 2023 growing season, and the start of the 2024 growing season shaped up that way as well. After planting this plot, we started receiving frequent rain events, which left the northern portion of this study, with its clay loam soil, closer to soil saturation for a longer period than the southern and silt loam portion. This field is tiled; however, as is often the case in many soil types, it seems you can never have enough tile. It is our belief that, had we not received the frequent rain events, our 101K portion of the study would have yielded above the 139K portion. However, that was not the case in the 2024 season as Table 2 listed below shows.

TABLE 2: LAUMANN

AREA	PLANT POPULATION	MOISTURE	YIELD	SOIL TYPE
Dairyland Plot North	101K	8.7	49.73	Clay Loam
Dairyland Plot South	139K	8.7	54.24	Silt Loam
Average	**120K**	**8.7**	**51.99**	

Our third PAR soybean plant population comparison was located in south central Minnesota near LaFayette on a highly productive and fertile clay loam soil. Much like our previous study, this location had an elevation change and a higher water holding table on a portion of the field with higher SWM occurrences. The higher SWM probability was one of the driving factors for reducing plant population and was the reason the study was laid out as it was, with soybean plant populations being reduced as the elevation lowered. Populations varied in strips starting at 140k and dropping down to 120k for the first check. The second check started at 130K and dropped to 120k, with the third check starting at 130K and dropping to 110K. The findings are listed below in Table 3.

TABLE 3: LEGARE

PRODUCT	PLANT POPULATION RANGE	PLANT POPULATION AVERAGE	MOISTURE	YIELD
DSR-2111E™ brand	140 to 120	130	10.6	60.29
DSR-2111E™ brand	130 to 120	125	10.6	56.9
DSR-2111E™ brand	130 to 110	120	10.6	57.29
	Average	**125**	**10.6**	**58.16**

CONCLUSION

In conclusion, as our prior experience confirms, there are many variables that influence the decision to increase or decrease soybean plant populations.

Historically, as we experience higher fertility levels, we can successfully lower soybean plant populations. This is especially important in areas experiencing higher sclerotia white mold (SWM) instances. Conversely, if we have higher incidences of iron deficiency chlorosis (IDC), or as we lower soil pH and fertility, the need to raise soybean plant populations increases.

Other factors that influence soybean plant population would be planting date, row width and planter or drill type, soybean plant type and latitude. As we increase latitude and get farther away from the equator, the growing season gets shorter and, in some instances, increasing plant population may increase yield.

We believe that continued experimentation on soybean plant populations is warranted, especially as new products, traits or other technological advances are introduced.

If this PAR soybean plant population or other agronomic study is relevant to you, please contact your Dairyland Seed Regional Agronomist to discuss hosting your own PAR study.

SOYBEAN MICRONUTRIENT DISSECTION

PLANTED:	4/26/24 – 5/14/24
HARVESTED:	9/30/24 – 10/6/24
AGRONOMIST:	Amanda Goffnett, Mark Gibson

PURPOSE

Micronutrients are essential to crop growth. Micro refers to the amount of these elements needed in comparison to macronutrients which are nitrogen, phosphorus, and potassium. Although needed in lesser amounts, micronutrients are crucial to crop growth. If one of these elements is not available to the plant in the necessary amounts, then that can become a yield limiting factor.

This study looks to compare singular applications of micronutrients versus applications of products containing multiple micronutrients.

MATERIALS

DSR-2717E™ brand
Wabash, Indiana

DSR-2562E™ brand
St. Johns, Michigan

DSR-1989E™ brand
Mt. Hope, Wisconsin

Application timing: R2, full flower- all locations

- Tissue samples taken at R2 prior to application- Wabash, Indiana only
- Tissue samples taken following application- Wabash, Indiana only

WABASH, IN AND MT. HOPE, WI TREATMENTS

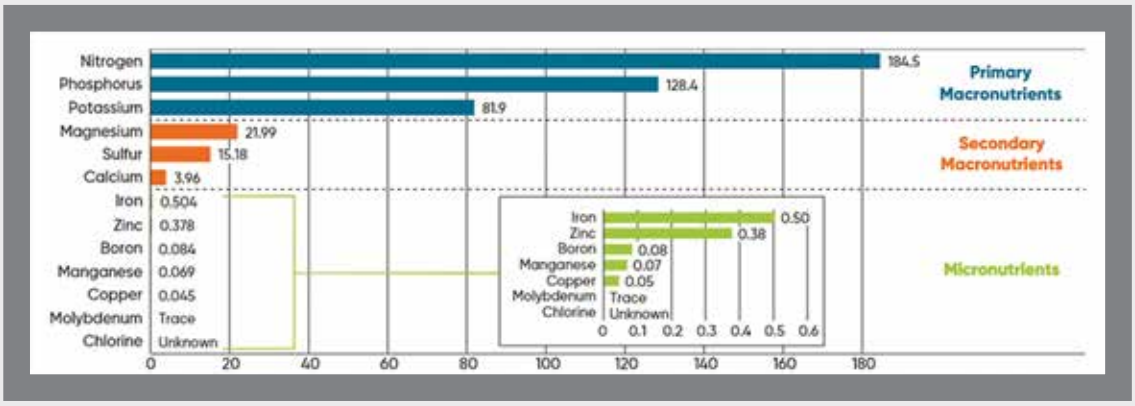
PRODUCT	RATE
Boron	16 oz/A
*Keylate® Iron	32 oz/A
*Keylate® Copper	32 oz/A
*Keylate® Manganese	32 oz/A
*Keylate® Zinc	16 oz/A
*Energy Power® (combination of Zn, Mn, Cu, Fe, and B)	32 oz/A
Untreated control - Wabash and St. Johns only	

ST. JOHNS, MI TREATMENTS

PRODUCT	RATE
Boron	32 oz/A
Manganese	32 oz/A
Iron	32 oz/A
Copper	32 oz/A
Micro 500	32 oz/A

*The above are biological products from Corteva. To learn more, visit corteva.us.

RESULTS



ELEMENT	SOIL CHARACTERISTICS
Boron	Sandy soils or highly weathered soils low in organic matter
Chlorine	Sandy soils with high rainfall, highly weathered soils low in organic matter
Copper	Acid peats or mucks with pH <5.3 and black sands
Iron	Soils with high soil pH, soluble salts and/or calcium carbonate levels
Molybdenum	Peats and mucks with pH >5.8, black sands and lakebed/low-lying soils with pH >6.2
Manganese	Acid prairie soils
Zinc	Peats, mucks and mineral soils with pH >6.5

SOYBEAN MICRONUTRIENT DISSECTION (Continued)

2024 WABASH, INDIANA

TREATMENT	AVERAGE YIELD (BU/A)
Boron	63.21
Manganese	63.17
Copper	63.13
Zinc	63.12
Iron	63.08
Energy Power	62.87
Untreated	62.25

2024 MT. HOPE, WISCONSIN

TREATMENT	AVERAGE YIELD (BU/A)
Energy Power	78.65
Zinc	76.22
Manganese	72.22
Boron	71.82
Copper	67.83
Iron	61.76
Untreated	0

2024 ST. JOHNS, MICHIGAN

TREATMENT	AVERAGE YIELD (BU/A)
Boron	76.13
Untreated	75.8
Copper	75.76
Iron	75.08
Manganese	74.81
Micro 500	73.40
Zinc	0

CONCLUSION

Our effort to tease out differences in yield through targeted applications of micronutrients found in micro packs like Energy Power® and Micro 500, allow us to better understand the impact on yield of these nutrients.

Our Wabash, Indiana location showed the least amount of difference within the trial. We cannot say with confidence that any treatments were different from one another. This means that the applied micronutrients were not a limiting factor to yield. This agrees with tissue sample results taken prior to application at R2, where there is one open flower at one of the two top nodes on the soybean plant. Tissue samples did not show any deficiencies in micronutrients at this stage. In 2023 at the Wabash location, we saw an increase in yield from boron in this study, which lines up with the hot and dry conditions experienced at R2 timing in 2024. We had plenty of soil moisture and moderate temperatures in 2024 at this location, which showed minimal response to micronutrients applied.

The St. Johns, Michigan location showed similar results to Wabash: no significant increase in yield across the treatments, and a 0.33 bushel per acre spread between the untreated check and the applied treatments. When we do not see a response in applications to foliar fertilizer products, we can rule out any of the micronutrients as limiting factors to yield. Favorable growing conditions can allow for the mineralization of available micronutrients from the soil, which can null any response from a foliar application of fertilizer. We believe that this explains the results we saw at our St. Johns, Michigan, and Wabash, Indiana research sites.

Our Mt. Hope, Wisconsin research data did show us a unique response in applications compared to the other two locations. We commonly assume that the more components that we add to a mix, the greater the response. At our Mt. Hope site, this was true. Unfortunately, we did not have an untreated check in this study. But we can see that the application of Energy Power®, which contains all the individual micronutrients, did show an increase in yield. This synergistic effect is common in areas where micronutrient mineralization does not occur. Factors that impact the availability of micronutrient availability can be soil texture and moisture. Soil moisture extremes generally have the largest impact on micronutrient response. Areas that experience overly saturated conditions and extended droughty conditions in the same season show the greatest response.

Foliar fertilizer applications are common in areas where growers are trying to achieve an increase in yield. With all the foliar fertilizer products on the market today, it can be difficult to determine which nutrient or combination of nutrients is right for a given scenario. Many growers have adopted the trial-and-error method for choosing products. This method works to eliminate products that may not fit geographies or management systems but can be costly and time consuming. If micronutrient deficiencies are a yield-limiting concern on an operation, the best method to determine which nutrients to apply can be achieved by establishing a base line through three to five years of tissue sampling. The accumulated data will help reveal which, if any, nutrients are limiting to yield. The limiting nutrients can then be applied to help protect maximum yield potential.

We are accumulating tissue samples as well as the presented yield data at our Wabash, Indiana site to help show this method as we continue this project in future years.

TREATMENT OPTIONS FOR SCLEROTINIA WHITE MOLD

PLANTED:	Various
HARVESTED:	Various
AGRONOMIST:	Rod Moran

PURPOSE

Sclerotinia sclerotiorum, the fungus responsible for Sclerotinia white mold (SWM), is a major threat to soybean production, causing significant yield losses and economic challenges for farmers. This disease can thrive in a variety of environmental conditions, making it a persistent issue. This year, the Dairyland Seed Agronomy Team conducted on-farm trials to better understand the behavior of white mold in soybeans and to evaluate new management strategies from Corteva Agriscience.

Our findings offer practical solutions for those looking to reduce its impact. By combining field observations with scientific analysis, this study aims to equip farmers with the knowledge to implement effective practices that protect soybean health and improve overall production.

MATERIALS

DSR-1989E™ brand
120,000 plants/A

Crop Protection:
Viatude™ fungicide
Lactofen herbicide

TREATMENTS (AT ALL THREE LOCATIONS)

Foliar spray of lactofen 24% at 6 oz/A rate at pre-R1

Foliar spray of Viatude™ at 16 oz/A rate at R1

RESULTS

ST. JOHNS, MICHIGAN

TREATMENT	YIELD (BU/A)
Untreated	73.0
Lactofen	69.2
Viatude	75.9
Viatude (2X)	71.1
Untreated	69.3
Lactofen	73.1
Viatude	73.4
Viatude (2X)	73.7
Average	**72.3**

MT. HOPE, WISCONSIN

TREATMENT	YIELD (BU/A)
Untreated Check	70.3
Lactofen	61.5
Viatude	69.4
Untreated Check	72.4
Lactofen	61.1
Viatude	69.9
Average	**67.4**

WABASH, INDIANA

TREATMENT	YIELD (BU/A)
Untreated	64.7
Viatude	62.8
Viatude (2X)	62.8
Lactofen	58.4
Lactofen	58.9
Untreated	63.1
Viatude	65.3
Viatude (2X)	65.2
Lactofen	62.1
Lactofen	61.6
Untreated	64.9
Viatude	64.4
Viatude (2X)	64.1
Lactofen	60.6
Lactofen	59.1
Untreated	59.8
Viatude	59.8
Viatude (2X)	60.6
Lactofen	62.6
Lactofen	61.3
Average	**62.1**

TREATMENT OPTIONS FOR SCLEROTINIA WHITE MOLD (Continued)

RESULTS

STATISTICAL ANALYSIS		
TREATMENT	MEAN	GROUP
Lactofen	62.5	a
Untreated	63.1	ab
Viatude (2x)	66.3	abc
Viatude	67.6	bc
Untreated	71.3	c

The raw data from each location demonstrates that, on average, the lactofen applications provided the least impressive results. However, the timing of lactofen applications in 2024 likely occurred during very warm periods in early to mid-July across all locations, and plant response to these applications was notable.

Several of our observations produced rather "toasty" appearing plants and may have set the plants back significantly. On average, all the single applications and 2x applications of Viatude™ matched or exceeded untreated strips, with the St. Johns location seeing the best response.

Evaluation of the 2024 data of the Mt. Hope location is noted as only receiving a single application of Viatude.

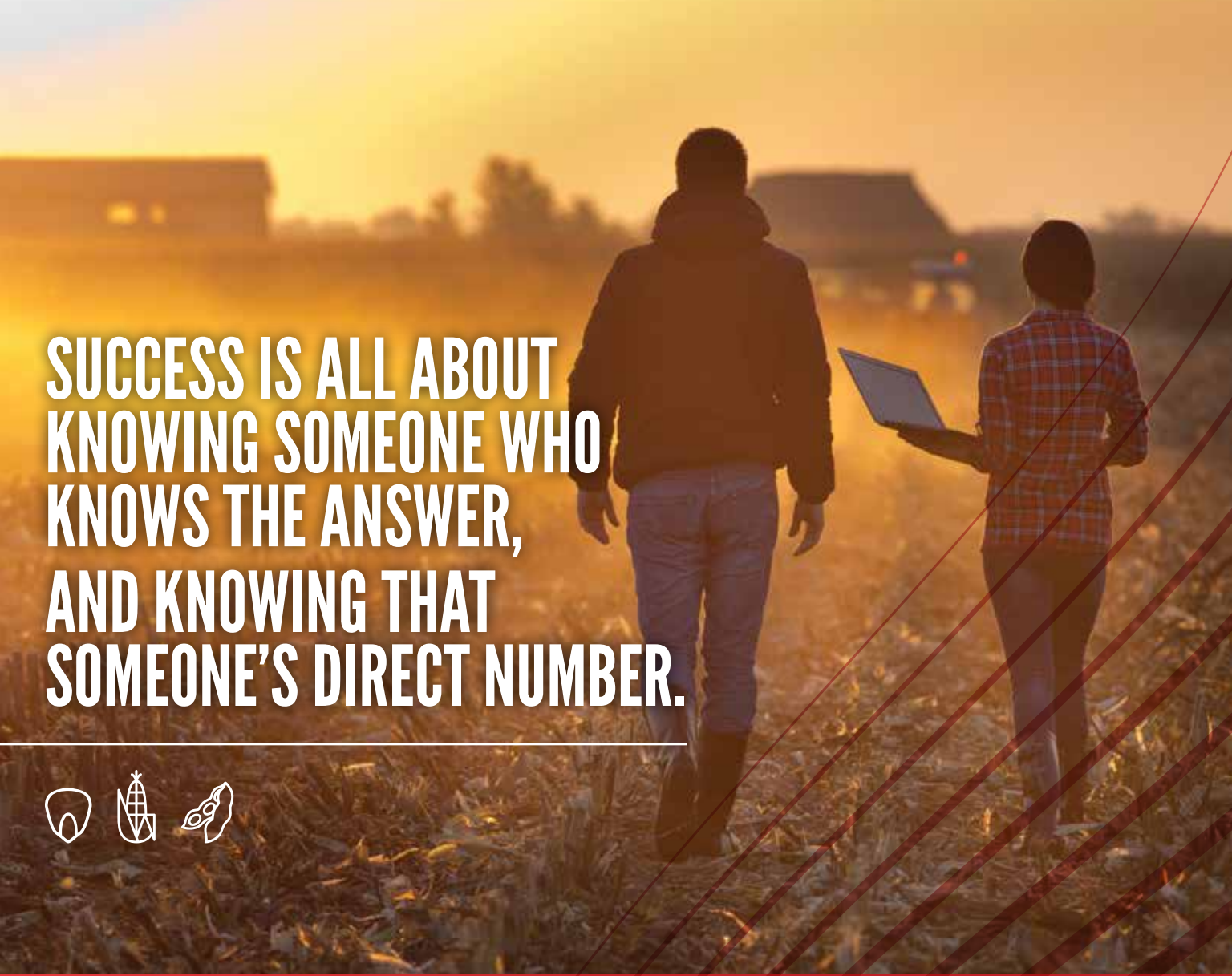
CONCLUSION

Investigating crop issues in any given year is a challenge. When investigating a particularly hit-and-miss high-yield pathogen like Sclerotinia white mold (SWM) in a less than favorable year to acquire infection and achieve clear unambiguous results, it is even more challenging.

The warm weather and lack of wet conditions seemed to lessen pathogen expression significantly. The St. Johns, Michigan area had some notable SWM pressure but very minimal amounts were noted in the plot. Although there was some SWM infection present, it arrived later in the season and had minimal impact on yield overall.

The extremely dry Wabash, Indiana location was hard-pressed to find much of any infection in the general area. The same applies to the Mt. Hope, Wisconsin location except for some elevation-challenged (low) areas demonstrating some infection.

The Mt. Hope location is on top of the bluffs of the Mississippi River in southwest Wisconsin. While this year's data did not provide clear and convincing results from a yield perspective, there were some plant health positives in strips where Viatude™ was applied even though no clear yield gain was achieved.



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EFFECTS OF BIOSTIMULANTS AND MICRONUTRIENTS ON SOYBEAN PRODUCTION

PLANTED:	5/5/24 - 5/31/24
HARVESTED:	9/30/24 - 10/6/24
AGRONOMIST:	Dan Ritter

PURPOSE

This is a continuation of a 2023 study. We are testing the impact of foliar feeding packages for soybean production. These foliar packages often contain several components including micronutrients, sugars, and growth regulators.

In 2023, we looked at this strategy in a breakdown "add-on" fashion: start with the application of a micronutrient pack, then add sugar, and then add a growth regulator. The micronutrient pack is added to correct any micronutrients that may be lacking. Sugar is applied to super load the plant with energy, and the growth regulator contains synthesized plant hormones that trigger cell division and elongation.

For 2024 we tweaked the protocol a bit and used Bio-Forge® Advanced, X-Cyte®, and Sugar Mover® Premier offered through Corteva Biologicals. Biostimulants are products that encourage crop growth. Examples of biostimulants are beneficial microorganisms, synthesized or natural plant hormones, and biological fertilizers. Products in this realm of inputs can help plans become more resilient to environmental stresses which help to maintain the maximum yield potential of a crop.

This study looks at the full soybean bio-stimulant package from Corteva Agriscience's Stoller® line as compared to an untreated check.

MATERIALS

2023:
- 120,000 seeds/A
- Wabash, Indiana: DSR-2562E™ brand
- Mt. Hope, Wisconsin: DSR-2562E™ brand

2024:
- Wabash, Indiana: DSR-2562E™ brand
- Mt. Hope, Wisconsin: DSR-1989E™ brand

Some people may not be familiar with a few of the Corteva Stoller® biological products, so we will offer a brief description of each.

Bio-Forge® Advanced has four nutrient components: nitrogen, soluble potash, cobalt and molybdenum. Cobalt and molybdenum work in tandem to make field-applied nitrogen accessible to the plant, while facilitating efficient uptake and fixing of nitrogen through the plant's root system. It is also reported to improve abiotic stress tolerance.

X-Cyte® provides cytokinin, which is critical for vegetative growth, reproductive development, and abiotic stress mitigation. X-Cyte is an EPA-registered plant growth regulator and yield stimulant.

Triad® combines the power of Cytokinin (Kinetin), Gibberellic Acid (GA) and Indole-3-Butyric Acid (IBA) at the right ratio and right concentration to enhance the overall health and growth of the plant.

Sugar Mover® Premier increases the rate of sugar transport from leaves to flowers, ears, seeds, pods, and root storage tissue to increase available sugar and seed size for higher yield.

TREATMENTS

Product application: In-Furrow - Bio-Forge® Advanced - 8 oz/A

Product application: Foliar V2 (Two full trifoliate leaves - Herbicide timing)- Bio-Forge® Advanced - 8 oz/A

Product application: Foliar R2 (Full flower- Herbicide timing) - Sugar Mover® Premier + X-Cyte® - 32 oz/A + 8 oz/A

Product application: Foliar R3.5 (Normal fungicide application timing) - Bio-Forge® Advanced + X-Cyte® - 8 oz/A + 8 oz/A

Untreated control

Treatments: applied at the R2-R3 growth stage.

2023: Wabash, Indiana and St. Johns, Michigan

1. Untreated Check
2. Micro 500 (1 qt/A)
3. Micro 500 (1 qt/A) + Growth Regulator (Triad® 8 oz/A) – St. Johns only
4. Micro 500 (1 qt/A) + Sugar (BW Sweet 2 pt/A)
5. Micro 500 (1 qt/A) + Sugar (BW Sweet 2 pt/A) + Growth Regulator (Triad 8 oz/A)

2024: Wabash, Indiana and Mt. Hope, Wisconsin

1. Untreated Check
2. Bio Forge Advanced 8 fl. oz. (IF) and Bio Forge Advanced 8 fl. oz./X-Cyte® 8 fl. oz. (V) Sugar Mover® Premier 32 fl. oz. X-Cyte® 8 fl. oz.

EFFECTS OF BIOSTIMULANTS AND MICRONUTRIENTS ON SOYBEAN PRODUCTION (Continued)

RESULTS

2023 SOYBEAN FOLIAR ADD-ON RESULTS

TREATMENT	ST. JOHNS, MICHIGAN YIELD (BU/A)	ADVANTAGE (BU/A)	WABASH, INDIANA YIELD (BU/A)	ADVANTAGE (BU/A)
Untreated	70.1	-	75.6	-
Micro 500	73.4	3.4	76.5	0.9
Micro 500 + Sugar	70.1	0	74.2	-1.4
Micro 500 + Growth Regulator (St. Johns only)	72.9	2.8	-	-
Micro 500 + Sugar + Growth Regulator	72.5	2.4	74.2	-1.4
Average	**71.5**	**2.2**	**75.1**	**-0.6**

2023 WABASH, INDIANA

STATISTICAL ANALYSIS

TREATMENT	YIELD (BU/A)	GROUP
Micro 500 & Sugar & Triad	74.2	b
Micro 500 & Sugar	74.2	b
Untreated	75.6	ab
Micro 500	76.5	a

2024 RESULTS

2024 WABASH, INDIANA	BFA, XC, SMP TREATMENT YIELD BU/A	UNTREATED YIELD (BU/A)
Replication 1	51.96	59.04
Replication 2	58.55	59.50
Replication 3	58.09	52.07
Replication 4	54.98	52.02
Replication 5	50.44	-
Averages	**54.80**	**55.66**
2024 MT. HOPE, WISCONSIN	**BFA, XC, SMP TREATMENT YIELD BU/A**	**UNTREATED YIELD (BU/A)**
Replication 1	74.39	66.37
Replication 2	70.81	70.57
Averages	**69.83**	**66.37**
Overall Averages @ Both Sites	**62.32**	**61.01**

BFA = Bio-Forge Advanced; XC = Xcyte; SMP = Sugar Mover Premier

2024 WABASH, INDIANA AND MT. HOPE, WISCONSIN

STATISTICAL ANALYSIS

TREATMENT	YIELD (BU/A)	GROUP
Check	60.8	a
*Full Package	61.1	a

* Full Package Bio-Forge Advance, Xcyte and Suger Mover Premier

CONCLUSION

As we evaluate 2023 results for both locations, the data showed the greatest advantage with the Micro 500 treatment compared with the untreated check. The Wabash, Indiana location did not show an advantage to adding sugar to the Micro 500, or sugar and a growth regulator to the Micro 500. The St. Johns, Michigan location also did not show an advantage to adding sugar with the Micro 500. However, the growth regulator added with the Micro 500 showed an advantage, and the combination of Micro 500, sugar, and growth regulator also showed an advantage.

Both locations experienced some stress early, but gained good growing conditions as the plants entered the reproductive stages. This likely contributed to higher untreated yields, which could mask some treatment advantages.

Moving to combined data for 2024. We found a slight advantage toward adding the various biostimulants. An analysis of the averages from the raw data showed an advantage of around 1.31 bushels per acre. A statistical analysis would show little difference between the tests. Remember that the Micro 500 was a combination of micronutrients: zinc, manganese, iron, copper, and boron. It is important to remind ourselves of that as we look at the 2023 data versus the 2024 data. The 2024 regime had nitrogen, soluble potash, cobalt, and molybdenum. As such, there existed a stark difference in the nutrient component.

Overall, it appears micronutrients may have a larger benefit than the PGRs and biostimulants for increasing yield. There is promise for using these products, but in our testing environments we saw limited advantage.

UTRISHA® N BIOLOGICAL ON SOYBEANS

PLANTED:	5/14/24 - 6/9/24
HARVESTED:	10/3/24 - 10/6/24
AGRONOMIST:	Dan Ritter

PURPOSE

Utrisha® N is a wettable powder formulation of a biological inoculant that contains the exclusive strain of *Methylobacterium symbioticum* SB23, and it is suitable for agricultural and precision systems.

The active ingredient in Utrisha® N is a nitrogen-fixing bacterium that supplies needed nitrogen to crops throughout the growing season. Though soybeans fix nitrogen, certain growing environments may benefit from a second source. This could increase yield potential, and industry field trials show that farmers who use Utrisha® N grow more bushels per acre.

This study, which began in 2023, examines if Utrisha® N improves yield in soybean production.

MATERIALS

2023: Mt. Hope, Wisconsin
DSR-1919E™ brand

2024: Wabash, Indiana
DSR-2562E™ brand

2024: Mt. Hope, Wisconsin
DSR-1989E™ brand

Corteva Agriscience: Utrisha® N

TREATMENTS

Application:

- Utrisha N at 5 oz. per acre applied at V3-V4
- No treatment

RESULTS

YEAR	LOCATION	YIELD IN BU/A	
		USING UTRISHA N	UNTREATED
2024	Wabash, IN	49.87	48.08
		50.08	49.14
		49.98	48.35
		50.18	49.83
		49.77	49.45
		54.12	51.03
		51.50	51.15
		51.72	53.55
		51.88	54.44
	Mt. Hope, WI	69.40	64.65
		69.95	69.06
2023	Mt. Hope, WI	68.70	75.44*
Average all years and sites		**55.60**	**53.52**

* Omitted from averages because of being potential outlier

CONCLUSION

Utrisha® N is a flexible product that can be used with a variety of crops including soybeans – and applied during wide application windows. Additionally, Utrisha® N fits easily into current farming practices because it is foliar applied using a typical sprayer, meaning farmers do not need special additional equipment.

Data from Corteva Agriscience shows that soybean farmers can see an average increase of 2.5 bushels per acre. Dairyland Seed research supported the findings of a slight yield increase using Utrisha® N to the tune of approximately 2 bushels per acre.

Statistical analysis of the multi-site and multi-year data reported a significant advantage of a Utrisha® N application. Biologicals and biostimulants offer an exciting new era in agriculture. There is a lot to learn about this concept in crop production, especially, in which type of growing conditions they work at an optimum level. Dairyland Seed and Corteva Agriscience data seem to show Utrisha® N has merit in enhancing soybean production.

Professionals who would like to learn more should speak with their Dairyland Seed Agronomist or visit Corteva.com.

CORN SILAGE STUDIES

SCAN THE QR CODE TO VIEW SILAGE PERFORMANCE IN YOUR AREA.

SILAGE COMPONENT STUDY

PLANTED:	5/12/24
HARVESTED:	9/24/24
AGRONOMIST:	Chad Staudinger

PURPOSE

Silage, a crucial component of livestock feed, plays a significant role in enhancing the productivity of beef and dairy cattle. The quality and yield of corn silage are influenced by various agronomic factors, including the specific contributions of different plant parts—such as leaves, stems, and ears. Understanding how each component contributes to the overall silage yield and its nutritional quality is essential for optimizing harvest strategies and improving feed formulations.

This study looked to quantify the contributions of these corn plant parts to silage yield and quality, drawing on Dairyland Seed's field studies. We aim to provide valuable insights for farmers seeking to enhance silage production efficiency and nutritional value for livestock.

This study was not intended to compare the products, but rather, to explore the contribution of silage components to the whole product. However, we wanted to use two widely used HiDF products to gather this data.

MATERIALS

HiDF-4808V™ brand

HiDF-5033V™ brand

RESULTS

This study utilized a silage strip trial in eastern Wisconsin. The silage plot was planted on May 12th at 34,000 plants/acre in 30-inch rows. The strips were 8-rows wide by 380-feet long. At harvest, three random samples of 1/1000th of an acre were hand harvested from each hybrid at a cutting height of 10 inches. Each sample was weighed using a crane scale. Then, all leaves and ears were stripped from the plants, and all three components were weighed separately. After weights were recorded, each component was processed individually for sampling using a woodchipper. Five additional whole plants from each hybrid were also processed to get whole plant values. From the processed material, forage samples were collected separately for each sample and each component.

Leaves, stalks, ears, and whole plant samples were taken three times per hybrid for a total of 24 samples. The samples were submitted to Rock River Laboratory for quality analysis. Once received, the quality and weight data were summarized and interpreted. Rock River Laboratory assisted with the interpretation of the data.

COMPONENT WEIGHT CONTRIBUTION (%)		AS FED BASIS (WET)		DRY MATTER BASIS	
PRODUCT	COMPONENT	WEIGHT	1/1000 ACRE % CONTRIBUTION	WEIGHT	1/1000 ACRE % CONTRIBUTION
HiDF-4808V™ brand	Ears	28.28	45%	13.34	59%
	Leaves	12.61	20%	3.52	16%
	Stalks	22.65	36%	5.62	25%
	Whole Plant	**63.54**	**100%**	**22.49**	**100%**
HiDF-5033V™ brand	Ears	26.19	45%	12.38	60%
	Leaves	11.40	20%	3.29	16%
	Stalks	20.15	35%	5.24	25%
	Whole Plant	**57.75**	**100%**	**20.77**	**100%**

WEIGHT CONTRIBUTION/ACRE		AS FED BASIS (WET)		DRY MATTER BASIS	
PRODUCT	COMPONENT	LBS/ACRE HARVESTED	TONS/ACRE HARVESTED	LBS/ACRE HARVESTED	TONS/ACRE HARVESTED
HiDF-4808V™ brand	Ears	28279	14.14	13339	6.67
	Leaves	12610	6.31	3523	1.76
	Stalks	22648	11.32	5619	2.81
	Whole Plant	**63537**	**31.77**	**22494**	**11.25**
HiDF-5033V™ brand	Ears	26191	13.10	12379	6.19
	Leaves	11405	5.70	3291	1.65
	Stalks	20150	10.08	5244	2.62
	Whole Plant	**57746**	**28.87**	**20765**	**10.38**

SILAGE COMPONENT STUDY (Continued)

WEIGHT CONTRIBUTION/TON		AS FED BASIS (WET)	DRY MATTER BASIS
PRODUCT	COMPONENT	PER TON	PER TON
HiDF-4808V™ brand	Ears	890	420
	Leaves	397	111
	Stalks	713	177
	H20	0	1292
	Total	**2000**	**2000**
HiDF-5033V™ brand	Ears	907	429
	Leaves	395	114
	Stalks	698	182
	H20	0	1281
	Total	**2000**	**2000**

DRY MATTER CONTENT		LAB VALUE	LAB VALUE
PRODUCT	COMPONENT	DRY MATTER %	MOISTURE %
HiDF-4808V™ brand	Ears	47.2%	52.8%
	Leaves	27.9%	72.1%
	Stalks	24.8%	75.2%
	Total	**35.4%**	**64.6%**
HiDF-5033V™ brand	Ears	47.3%	52.7%
	Leaves	28.9%	71.1%
	Stalks	26.0%	74.0%
	Total	**36.0%**	**64.0%**

Modified Total Digestible Nutrients = Nutrients Usable by Livestock

COMPONENT QUALITY CONTRIBUTION (%) DRY MATTER BASIS (1/1000 ACRE)					
PRODUCT	COMPONENT	WEIGHT	MODIFIED TDN (LAB VALUE)	MODIFIED TDN (LBS)	MODIFIED TDN CONTRIBUTION
HiDF-4808V™ brand	Ears	13.34	75.20%	10.03	69%
	Leaves	3.52	60.22%	2.12	15%
	Stalks	5.62	38.49%	2.16	15%
	Whole Plant	**22.49**	**65.02%**	**14.62**	**100%**
HiDF-5033V™ brand	Ears	12.38	76.05%	9.41	68%
	Leaves	3.29	62.39%	2.05	15%
	Stalks	5.24	51.24%	2.69	19%
	Whole Plant	**20.77**	**66.38%**	**13.78**	**100%**

USABLE NUTRIENTS HARVESTED/ACRE			
PRODUCT	COMPONENT	MODIFIED TDN/ACRE (LBS)	MODIFIED TDN/ACRE (TONS)
HiDF-4808V™ brand	Ears	10031	5.02
	Leaves	2122	1.06
	Stalks	2163	1.08
	Whole Plant	**14625**	**7.31**
HiDF-5033V™ brand	Ears	9414	4.71
	Leaves	2053	1.03
	Stalks	2687	1.34
	Whole Plant	**13785**	**6.89**

CONCLUSION

Although it was not the intention to compare hybrids, the similarity in the data between the two is worth noting. In future years, we may choose to use more diverse hybrids to see if we can create some separation in hybrid style (i.e. BMR vs HiDF vs standard grain corn).

Below is a list of some major points confirmed or discovered from this trial that are good topics of discussion:

- For every ton of silage hauled off the field, almost 1,300 lbs. is water, and 425 lbs. is from the ear (at 64% moisture).
- About 65% of the whole plant can be utilized by livestock.
- 60% of the weight of corn silage is contributed from the ear (Dry Matter Basis).
- 75% of the ear material can be utilized by livestock.
- The ear accounts for 68% of the total of utilizable material in silage by weight.
- The stalks and leaves both have 20% higher moisture content than the ear.
- The stalk accounts for 25% of the weight of silage but only contributes 15% of the utilizable material by weight.
- 60% of the leaf material can be utilized by livestock, but there is not much weight contribution.

TRACKING RAINFALL AND GROWING DEGREE DAYS

PLANTED:	N/A
HARVESTED:	N/A
AGRONOMIST:	Beau Shultz (Intern)

PURPOSE

The Dairyland Seed Difference includes making sure the next generation of business professionals, scientists and farmers are supported and promoted throughout their lifetime.

This year, the Dairyland Seed Agronomy team was happy to welcome Beau Shultz, high school junior at Heartland Career Academy in Wabash, Indiana, as the 2024 agronomy intern. Beau helped extensively with gathering and recording the information you read in this year's Product and Agronomy Research report. Her final project related to recording rainfall data and growing degree days (GDD), and is represented in the data table. The goal was to help her recognize patterns and weather trends and become more comfortable conducting her own research. Dairyland Seed supporters and farmers can also use this data to see 2024 weather trends.

Please join us in thanking Beau for her contributions this year.

RAINFALL IN WABASH, IN

DATE	INCHES	DATE	INCHES
6/9/2024	0.3	7/9/2024	0.1
6/12/2024	0.2	7/10/2024	2.0
6/20/2024	0.1	7/14/2024	1.0
6/23/2024	0.9	7/15/2024	0.2
6/27/2024	0.3	7/16/2024	0.3
6/28/2024	0.5	8/2/2024	0.9
6/29/2024	0.3	8/4/2024	0.1
7/5/2024	0.1		
		Total Rainfall	7.3

GROWING DEGREE DAYS

DATE	GDD	DATE	GDD
6/1/2024	15.5	7/3/2024	28.5
6/2/2024	16.5	7/4/2024	20.5
6/3/2024	19.5	7/5/2024	22
6/4/2024	24	7/6/2024	21
6/5/2024	20.5	7/7/2024	22.5
6/6/2024	20	7/8/2024	26
6/7/2024	17	7/9/2024	22
6/8/2024	16	7/10/2024	20.5
6/9/2024	16	7/11/2024	20
6/10/2024	6	7/12/2024	24
6/11/2024	9	7/13/2024	26.5
6/12/2024	22	7/14/2024	25.5
6/13/2024	28.5	7/15/2024	27.5
6/14/2024	24.5	7/16/2024	27
6/15/2024	22	7/17/2024	20.5
6/16/2024	26	7/18/2024	15.5
6/17/2024	34	7/19/2024	15
6/18/2024	31	7/20/2024	17.5
6/19/2024	32	7/21/2024	19.5
6/20/2024	32	7/22/2024	21.5
6/21/2024	31.5	7/23/2024	22
6/22/2024	30.5	7/24/2024	20
6/23/2024	22	7/25/2024	18.5
6/24/2024	22	7/26/2024	17
6/25/2024	26.5	7/27/2024	19
6/26/2024	19	7/28/2024	21.5
6/27/2024	18.5	7/29/2024	26.5
6/28/2024	22.5	7/30/2024	29.5
6/29/2024	27.5	8/1/2024	28
6/30/2024	13	8/2/2024	20.5
7/1/2024	12.5	8/3/2024	27
7/2/2024	18.5	8/4/2024	26
		Total GDD	1414.5

NOTES

WESTERN CUSTOMER SERVICE CENTER

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(608) 988-4266

HEADQUARTERS

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