FIELD RESEARCH REPORT

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2022 NCSU CORN

TRIAL DETAILS

Research Facility- North Carolina State University
Collaborator- Dr Ron Heiniger
Locations: Plymouth, NC
Crop- Corn, Replicated 4 times
Fertilizer- Urea, Potash
Objective- To show Ionize treated fertilizer provides an economic benefit to farmers.

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
UREA 160LBS+ K + IONIZE	182.54	$3.84	+14.33 BPA
UREA 160 + IONIZE	173.86	$3.84	+12.1 BPA
UREA 160 +K	168.21		
UREA 160	161.76		
UREA 120 + IONIZE**	158.46	$2.88	

****Urea120+Ionize reduced fertilizer rate by 25%**

2021 NCSU CORN

TRIAL DETAILS

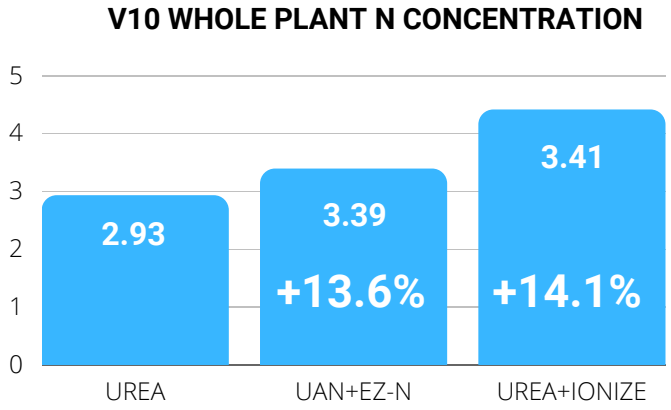
Research Facility- North Carolina State University
Collaborator- Dr Ron Heiniger
Locations: Plymouth, NC
Crop- Corn, Replicated 4 times
Fertilizer- Urea, UAN

Objective- To show EZ-N and Ionize treated nitrogen provides an economic benefit to farmers.

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
CONTROL	215.6		
EZ-N UAN 0.25% V/V	234.9	$5.21	+19.3 BPA
IONIZE (1LB/TON)	237.0	$3.52	+21.4 BPA

NITROGEN UPTAKE



2021 KANSAS WHEAT

TRIAL DETAILS

Research Facility- Performance Crop Research
Collaborator- Melissa Nelson
Locations: Great Bend, Kansas
Crop- Winter Wheat, Replicated four times
Fertilizer- MAP 30 lbs/acre
Objective- To show that Ionize treated phosphorus provides an economic benefit when applied to winter wheat. To demonstrate phosphorus use efficiency at reduced rates of phosphorus fertilizer.

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
CONTROL 30 LBS/A	59.8		
IONIZE 30 LBS/A	74.2	$2.53	+14.4 BPA
IONIZE 22.5 LBS/A	63.6	$2.53	+4.1 BPA

*** NOT INCLUDING FERTILIZER SAVINGS OF $7.20 PER ACRE (MAP $1000)**

AGRONOMIC PHOSPHORUS USE EFFICIENCY

TRIAL SITE SOIL PHOSPHORUS LEVEL LOW 23ppm
SOIL PH 7.4

Agronomic phosphorus use efficiency (APUE) was calculated based on the formula:
APUE = Wheat yield (bushel/acre)/Phosphorus fertilizer applied (lb/acre)

+27% **+46%**

IONIZE improved phosphorus use efficiency and yields in both treatments. A 25% reduction in phosphorus resulted in an increase in yield at a lower fertilizer cost and significantly increased phosphorus use efficiency.

NUTRICHARGE®

RICE INSTITUTE

TRIAL DETAILS

Crop- Rice
Fertilizer- Urea, 12-52-0
Replications-three
Plot size-1000 sq. ft.
Objective- To demonstrate the effect of agrotech nutrient use efficiency products on the growth of a rice crop.
Treatments- For all experiment variants, 90 lbs/acre of 12-52-0 was applied before sowing with 100 lb/acre of urea, and top dressing with airplane with urea 100 lb/acre was carried out in the tillering phase.

1. 12-52-0 90 lbs/acre + Urea 100 lbs/a broadcast
2. 12-52-0 90 lbs/acre+ **NutriCharge** (0.5 gal/ton) + Urea 100 lbs/acre + **NutriCharge** (0.25 gal/ton) broadcast
3. 12-52-0 90 lbs/acre+ Urea broadcast 100 lbs/acre + Urea top dress 100 lbs/acre
4. 12-52-0 90 lbs/acre + **NutriCharge** (0.5 gal/ton) + Urea broadcast 100 lbs/acre + Urea top dress 100 lbs/acre
5. 12-52-0 90 lbs/acre + **NutriCharge** (0.5 gal/ton)+ Urea broadcast 100 lbs/acre + **NutriCharge** (0.25 gal/ton) + Urea top dress + **NutriCharge** (0.25 gal/ton) 100 lbs/acre

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	SAVINGS/ACRE	PROFIT/ACRE
1	131.50		$50.00	-$69.50
2	139.2	$3.93	$50.00	$37.07
3	139.8			
4	147.3	$3.93		$109.6
5	151.33	$7.53		$165.42

RICE PRICE $15.00 PER BUSHEL UREA -$1000

NutriCharge applied to nitrogen and phosphorus fertilizers influenced the plant's supply of nitrogen and phosphorus nutrition, which affected the metabolic processes.

The removal of 100lbs per acre of nitrogen typically flown onto the crop at tillering phase in treatment two provided the same yield response as treatment three, the control. The increase in fertilizer efficiency saved the grower on fertilizer costs increasing profits.

The highest value (151.33 bushel/acre) was obtained using NutriCharge, together with growers' standard fertilizer practice. In this instance (treatment 5), the profitability was the highest for the farmer.

NUTRICHARGE

UNIVERSITY OF MARYLAND- CORN

TRIAL DETAILS

Research Facility- University of Maryland 2016/17
Collaborator- Ron Mulford
Locations: Hebron, MD
Crop- Corn
Fertilizer- 11-37-0 + 2% Zn 2x2
Objective- Evaluate NutriCharge with starter fertilizers

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
11-37-0 + 2% Zn 2x2 @ 20 LBS-4.7 GPA			
CONTROL	180.2		
NUTRICHARGE	191.3	$4.46	+11.1 BPA
11-37-0 + 2% Zn 2x2 @ 40 LBS- 9.5 GPA			
CONTROL	194.7		
NUTRICHARGE	203.2	$9.02	+8.5 BPA
CHECK			
CHECK	175		

NUTRICHARGE

2022 NCSU CORN PLACEMENT

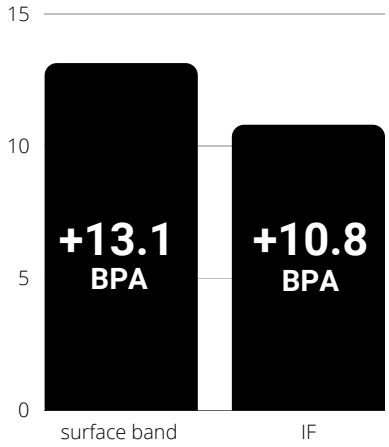
TRIAL DETAILS

Research Facility- North Carolina State University
Collaborator- Dr. Ron Heiniger
Locations: Plymouth, NC
Crop- Corn, Replicated 4 times
Fertilizer- 10-27-0, 6-24-6
Objective- Evaluate NutriCharge treated phosphorus fertilizer in different application methods.

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
20 GPA 10-27-0 Surface Band	225.19		
20 GPA 10-27-0 + Surface Band + NC	234.28	$9	+9 BPA
6-24-6 IF @ 5 GPA	221.15		
6-24-6 IF @ 3 GPA + NC	232.03	$2.85	+10.8 BPA
CHECK	215.94		

YIELD VS TRADITIONAL IN FURROW APPLICATION



Conclusion:
NutriCharge provided a positive yield response for the 6th consecutive year. NutriCharge provided a significant yield benefit to surface banded 10-27-0 fertilizer.

"The surface application worked surprisingly well. Shows what protecting nutrients can do." Dr. Ron Heiniger

NUTRICHARGE

2022 NORTH CAROLINA CORN

TRIAL DETAILS

Research Facility- XtremeAg.farm Kevin Matthews
Collaborator- Kevin Matthews
Locations: NW North Carolina
Plant Date: May 2021, temps low 50s to high 80s
Soil Type: Dan River Loam
Soil pH: 6.4-6.6
Crop- Corn
Fertilizer- 3-18-18 IF at planting, 3 GPA with 10oz Sweet Success
Objective- Evaluate NutriCharge with starter fertilizers.

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
3-18-18 @ 3 GPA			
CONTROL	163.9		
NUTRICHARGE	173.73	$2.85	+9.83 BPA
3-18-18 @ 3 GPA			
CONTROL	167.26		
NUTRICHARGE	172.74	$2.85	+5.48 BPA
3-18-18 @ 3 GPA			
CONTROL	175.04		
NUTRICHARGE (HV)	197.78	$2.85	+22.74 BPA

Grower Observations: "Our soils are naturally low on phosphorus it is my belief this why we are seeing these strong numbers."

NUTRICHARGE

2021 NCSU IN FURROW STUDY- CORN

TRIAL DETAILS

Research Facility- North Carolina State University
Collaborator- Dr. Ron Heiniger
Locations: Plymouth, NC
Crop- Corn, Replicated 4 times
Fertilizer- 17-17-0 in furrow
Objective- Evaluate NutriCharge with in furrow starter fertilizers.

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
17-17-0 IF @ 5 GPA			
CONTROL	224.9		
NUTRICHARGE	228.3	$4.75	+3.4 BPA
17-17-0 IF @ 3.5 GPA			
CONTROL	223.1		
NUTRICHARGE	232.5	$4.75	+9 BPA
CHECK			
CHECK	175		

NUTRICHARGE

2021 NCSU RATE STUDY- CORN

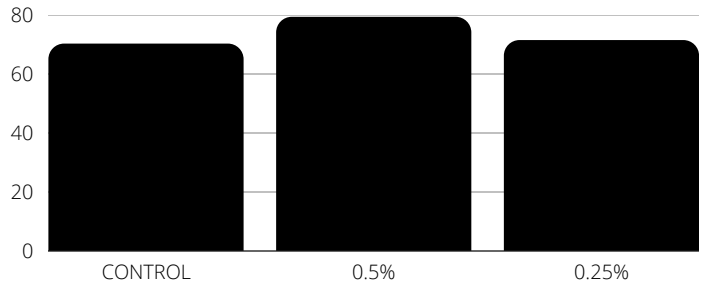
TRIAL DETAILS

Research Facility- North Carolina State University
Collaborator- Dr. Ron Heiniger
Locations: Plymouth NC
Crop- Corn, Replicated 4 times
Fertilizer- 10-27-0 2x2
Objective- Evaluate NutriCharge treated 10-27-0 2x2

YIELD RESULTS

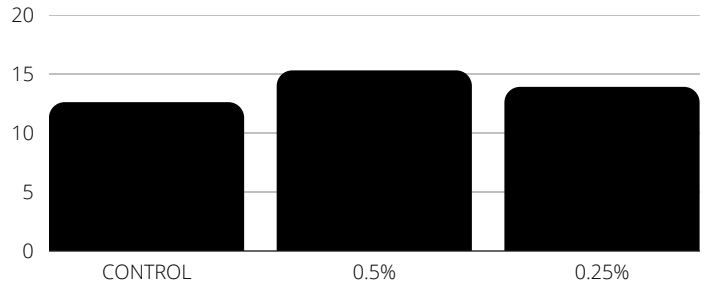
TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
20 GPA 10-27-0 2X2	223.3		
20 GPA 10-27-0 2X2 + NC 0.5%	240.1	$19.00	+16.8 BPA
20 GPA 10-27-0 2X2 + NC 0.25%	236.8	$9.50	+13.5 BPA

WHOLE PLANT BIOMASS & V1O g/plant



+12.9 +1.7%

PHOSPHORUS UPTAKE LBS/ACRE



+21.42% +10.3%

NUTRICHARGE

2021 NCSU SOYBEAN

TRIAL DETAILS

Research Facility- North Carolina State University
Collaborator- Dr. Ron Heiniger
Locations: Plymouth, NC
Crop- Soybean, Replicated 4 times
Fertilizer- 3-18-18 in furrow
Objective- Evaluate NutriCharge treated 3-18-18 at planting.

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
NO STARTER	42.4		
3-18-18 2.5 GPA	46.5		
3-18-18 2.5 GPA + NC	48.4	$2.25	+1.9 BPA
3-18-18 5 GPA	48.3		
3-18-18 5 GPA + NC	52.2	$4.75	+3.9 BPA

NUTRICHARGE

2019 NCSU CORN

TRIAL DETAILS

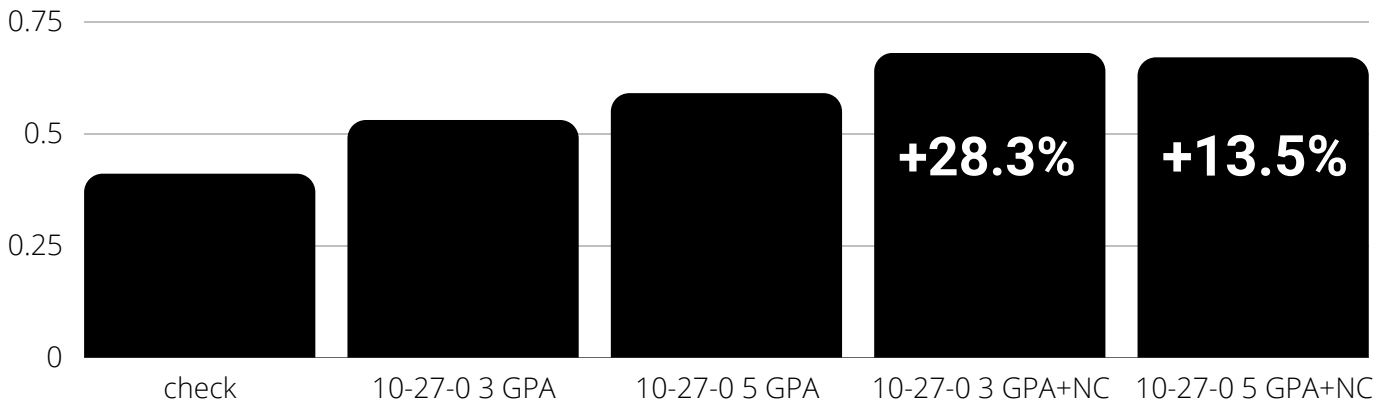
Research Facility- North Carolina State University
Collaborator- Dr. Ron Heiniger
Locations: Plymouth, NC
Crop- Corn, Replicated 4 times
Fertilizer- 10-27-0 2x2
Objective- Evaluate NutriCharge treated 10-27-0 at planting.

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
CHECK NO STARTER	121.4		
10-27-0 @ 3 GPA	124.4		
10-27-0 @ 5 GPA	127.4		
10-27-0 @ 3 GPA + NC	137.7	$2.85	+13.3 BPA
10-27-0 @ 5 GPA + NC	136.0	$4.75	+8.6 BPA

****CORN PRICE $6 PER BUSHEL**

PHOSPHORUS UPTAKE



NUTRICHARGE

2018 NCSU IN- FURROW CORN

TRIAL DETAILS

Research Facility- North Carolina State University
Collaborator- Dr. Ron Heiniger
Locations: Plymouth, NC
Crop- Corn, Replicated 4 times
Fertilizer- 17-17-0 in furrow
Objective- Evaluate NutriCharge with in furrow starter fertilizers.

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
6-24-6 + 2% Zn IF @ 5 GPA			
CONTROL	137.31		
NUTRICHARGE	157.40	$4.75	+20 BPA
17-17-0 IF @ 3.5 GPA			
CONTROL	132.70		
NUTRICHARGE	157.92	$3.32	+25.2 BPA

July 3 Soil Test Results

Treatment	P (lbs/a)	K (lbs/a)	Mg (lbs/a)	Ca (lbs/a)
6-24-6 @ 3GPA + Zn + NC	194.5	568	344.75	2018.25
6-24-6 @ 3GPA + Zn LO	131.25	479.5	339.5	1944
Increase	**48.2%**	**18.5%**	**1.5%**	**3.8%**
6-24-6 @ 5GPA + Zn + NC	177.5	495.5	376.5	2080.5
6-24-6 @ 5GPA + Zn	139.75	451.75	319.75	1876.75
Increase	**27.0%**	**9.7%**	**17.7%**	**10.9%**

NUTRICHARGE

2017 NCSU CORN

TRIAL DETAILS

Research Facility- North Carolina State University
Collaborator- Dr. Ron Heiniger
Locations: Columbia, North Carolina
Crop- Corn, Replicated 4 times
Fertilizer- 10-27-0 2x2
Objective- Evaluate NutriCharge treated 10-27-0 in furrow vs a 2x2 application of 10-27-0 untreated.

YIELD RESULTS-COLUMBIA			
TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
CHECK NO STARTER	136		
10-27-0 @ 20 GPA 2x2	156		
10-27-0 @ 6 GPA IF + NC	169.2	$5.70	+13.2 BPA

Stalk Nitrate After Harvest

	Columbia Stalk NO3-N - PPM
10-27-0 – IF @ 6 gal acre-1 + NutriCharge @ 0.5%	642.5 B
10-27-0 – 2 x 2 @ 20 gal acre-1	965.8 AB
Check – no starter	1707.5 A

NUTRICHARGE

2022 NORTH CAROLINA CORN

TRIAL DETAILS

Collaborator- Michael Patram
Locations: Wallace, North Carolina
Crop- Corn
Fertilizer- 20-10-0-4 2x2 and 7-14-17 IF
Objective- Evaluate NutriCharge treated 7-14-7 at planting.

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
7-14-7 @ 5 GPA IF	216		
7-14-7 + NC @ 5GPA IF	224	$4.75	+7 BPA

PLANT TISSUE ANALYSIS (VT) WATERS AGRICULTURAL LAB

TISSUE TEST RESULTS

Treatment	N	P	K	Mg	Ca	S	B	Zn	Mn	Fe	Cu
7-14-7 @ 5 gal/acre	3.34	0.29	2.21	0.69	0.69	0.24	15	45	84	104	11
7-14-7 @ 5 gal/acre +NC	3.00	0.34	3.09	0.64	0.64	0.26	11	34	56	124	13
Difference	10.2%	-17.2%	-39%	7.2%	7.2%	-8.3%	26%	24%	33%	-19%	-18%

Check NUTRICHARGE

NUTRICHARGE

2016 NCSU CORN

TRIAL DETAILS

Research Facility- North Carolina State University
Collaborator- Dr. Ron Heiniger
Locations: Elizabeth City, North Carolina
Crop- Corn, Replicated 4 times
Fertilizer- 10-27-0 2x2
Objective- Evaluate NutriCharge treated 10-27-0 at planting.

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
CHECK NO STARTER	164		
10-27-0 @ 10 GPA	177.4		
10-27-0 @ 10 GPA + NC	188.6	$9.50	+11.2 BPA
10-27-0 @ 20 GPA	179.5		
10-27-0 @ 20 GPA + NC	201.8	$19.00	+22.3 BPA

TISSUE TEST RESULTS

Treatment	N	P	K	Mg	Ca	S	B	Zn	Mn	Fe	Cu
Check – no starter	4.50	0.28	2.91	0.225	0.41	0.29	5.75	22.75	41.75	124.8	13
10-27-0 @ 10 gal/acre	4.43	0.325	2.83	0.263	0.45	0.28	6.5	23.75	48	120.8	13.5
10-27-0 @ 10 gal/acre + NCharge	4.32	0.333	3.00	0.233	0.39	0.28	6.5	41.25	46.25	120.8	13.5
10-27-0 @ 20 gal/acre	4.42	0.315	2.78	0.23	0.42	0.28	5.75	21.25	42.25	120.3	13.5
10-27-0 @ 20 gal/acre + NCharge	4.64	0.353	2.49	0.23	0.45	0.27	6.25	25.75	47.5	126.0	13.5

NUTRICHARGE

NORTH DAKOTA CORN

TRIAL DETAILS

Research Facility- North Dakota
Collaborator- Kevin Misek
Locations: Finley, North Dakota
Crop- Corn, Replicated 3 times
Fertilizer- 6-24-6 IF

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
6-24-6 IF@ 4 GPA	130.1		
6-24-6 IF @ 4GPA + NC	151.8	$3.80	+21.7 BPA

NUTRICHARGE

NDSU SUGAR BEET

TRIAL DETAILS

Research Facility- North Dakota State University
Collaborator- Dr. Mohamed Khan
Locations: Prosper, ND
Crop- Sugar Beets, Replicated 4 times
Fertilizer- 10-34-0 IF

YIELD RESULTS

TREATMENT	YIELD T/A	SUCROSE %	SUCROSE LB/A
10-34-0 IF@ 3 GPA + Zn	35.25	16.40	10,487.5
10-34-0 IF@ 3 GPA + Zn + NC	36.13	16.58	10,973.8

NUTRICHARGE

NORTH DAKOTA SOYBEAN

TRIAL DETAILS

Research Facility- North Dakota
Collaborator- Kevin Misek
Locations: Finley, North Dakota
Crop- SoyBeans, Replicated 3 times
Fertilizer- 6-24-6 IF

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
6-24-6 IF@ 4 GPA	41.1		
6-24-6 IF @ 4GPA + NC	44.8	$3.80	+3.7 BPA

NUTRICHARGE

2022 NORTH CAROLINA CORN

TRIAL DETAILS

Collaborator- Everett Moore
Locations: Lumberton, North Carolina
Crop- Corn
Fertilizer- 15-15-0-2 2x2 @15 GPA
Objective- Evaluate NutriCharge treated 15-15-0-2 in a 2X2 placement at planting

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
15-15-0-2 @ 15 GPA 2x2	139		
15-15-0-2 + NC @ 15 GPA 2x2	157	$14.25	+18 BPA

PLANT TISSUE ANALYSIS (VT) WATERS AGRICULTURAL LAB

TISSUE TEST RESULTS

Treatment	N	P	K	Mg	Ca	S	B	Zn	Mn	Fe	Cu
15-15-0-2 @ 15 gal/acre	3.54	0.33	2.58	0.15	0.45	0.33	7	52	76	136	16
15-15-0-2 @ 15 gal/acre +NC	3.09	0.28	2.61	0.18	0.39	0.28	5	37	40	124	13
Difference	12.7%	15.2%	-2.8 %	-20%	14.9 %	15.2%	28%	28%	47%	8.8%	18.8%

NUTRICHARGE

2020 IRF COLORADO CORN

IRRIGATION RESEARCH FOUNDATION

Trial Location-Yuma Colorado
Crop: Corn
Variety: DKC 54-38
Population: 34K
Plating Date- 4/30/2020
Harvest Date- 10/6/2020

FERTILIZER ANALYSIS
STRIP TILL- 4-8-1-4.6 S @ 10GPA
2X2 High- 18-10-1.55-1.54S-0.5Zn (18GPA)
2x2 Low- 18-10-1.55-1.54S-0.5Zn (13GPA)
UAN- 32%@ 60GPA
MICROS- 3S-.18Fe- 2Mn-3.3Zn -0.2B

TREATMENTS AND RESUTS

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
STRIP TILL + 2X2 LOW + UAN	187.9		
STRIP TILL + NC + 2X2 LOW + UAN	198.4	$4.46	+10.5 BPA
STRIP TILL + 2X2 HIGH + UAN	191.6		
STRIP TILL + NC + 2X2 HIGH + UAN	207.5	$9.02	+15.5 BPA
STRIP TILL + 2X2 LOW + UAN + MICROS	205.2		
STRIP TILL + 2X2 LOW +NC + UAN + MICROS	220.7	$9.02	+15.5 BPA
STRIP TILL + 2X2 HIGH + UAN + MICROS	196.7		
STRIP TILL + 2X2 HIGH +NC + UAN + MICROS	219.2	$9.02	+22.5 BPA
STRIP TILL + 2X2 HIGH + UAN	188		
STRIP TILL + 2X2 HIGH +NC + UAN + EZ-N	226.5	$9.02	+38.3 BPA

NUTRICHARGE

KANSAS CORN

PERFORMANCE CROP RESEARCH GREAT BEND KANSAS

Trial Location- Great Bend Kansas
Crop: Corn
Variety: G13N18-3111 Liberty Link
Population: 30K
Plating Date- 5/03/2020
Harvest Date- 10/3/2020

FERTILIZER ANALYSIS
In Furrow- 10-34-0
SOIL TYPE
Silt Clay Loam
pH-7.1
P level- 36PPM

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
10-34-0 @ 5 gal/acre	223		
10-34-0 @ 3.75 gal/acre	219		
10-34-0 @ 3.75 gal/acre + Nutricharge	251	$3.56	+32 BPA

NUTRICHARGE

2022 MARYLAND CORN

NUTRICHARGE Y-DROP TRIAL

Trial Location- Queenstown Maryland
Grower- Temple Rhodes
Crop: Corn
Replicated: 3 times

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
Control	217		
NutriCharge in Furrow @ 3.2oz	239	$4.75	+22 BPA
NutriCharge In Furrow @ 3.2 oz + Y-drop @ 6.4 oz	254	$9.50	+37 BPA

NUTRICHARGE

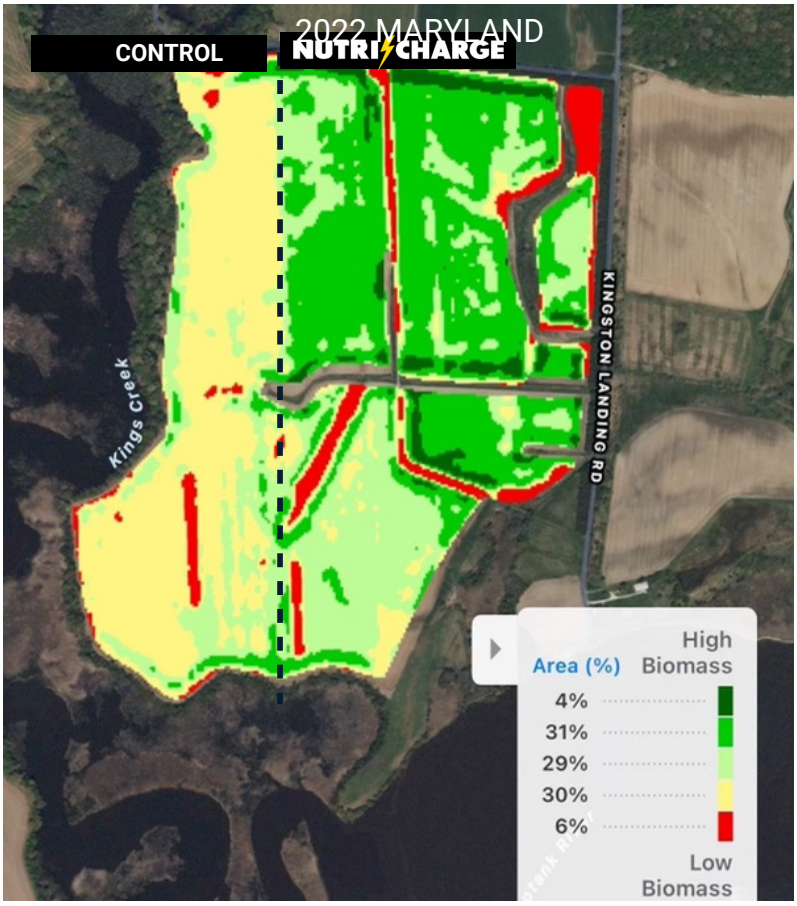
2022 MARYLAND WHEAT

NUTRICHARGE WHEAT TOPDRESS

Trial Location- Queenstown Maryland
Grower- Temple Rhodes
Crop: Winter Wheat
Application method: 28-0-0-5 Topdress @ 15GPA

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
Control	107		
NutriCharge @ 6.4oz/acre	128	$9.50	+21 BPA



RELEASE
NUTRICHARGE

2023 MARYLAND CORN

NUTRICHARGE RELEASE

Trial Location- Queenstown Maryland
Grower- Temple Rhodes
Crop: Corn
Trial Goal- Evaluate the addition on Release to current NutriCharge program

- **Standard IF & 2x2- 3.2 oz/a NutriCharge in each application**
- **2x2 No Phosphorus- Standard IF 3.2 oz/a NC + Release 1 lb per acre in replacement of 2x2 P**
- **Standard IF 3.2 oz/a NC +0.5 lbs per acre Release in Y-drop application**

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
Standard IF & 2X2	280		
2x2 - No Phosphorus	299	$29.50	+19 BPA
Standard IF & 2X2 + Y-DROP	301	$14.75	+21 BPA

NUTRICHARGE

2023 ILLINOIS SOYBEAN

Trial Location- Western Illinois
Grower- Matt Swanson
Crop: SoyBean
Application method: In-furrow with Fulvic Acid, PGR, 3% Calcium, 9% Zinc

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
Control	58		
NutriCharge @ 3.2 oz/acre	61	$4.75	+3 BPA

NUTRICHARGE

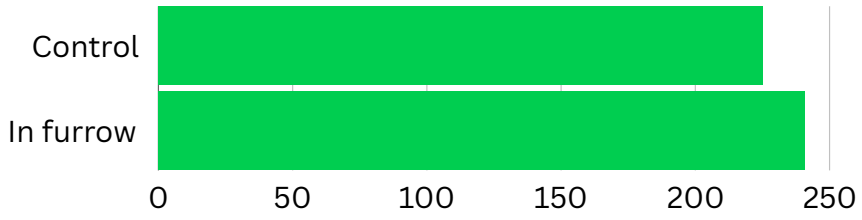
IOWA CORN/BEAN

NUTRICHARGE IN FURROW TRIAL

Trial Location- Dow City , Iowa
Grower- Kelly Garrett
Replicated: 3 Times
Crop: Corn
Application: In Furrow @ 3.2oz/acre

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
Control	225.04		
NutriCharge in Furrow @ 3.2oz	241.68	$4.75	+16.64 BPA



Trial Location- Dow City , Iowa
Grower- Kelly Garrett
Crop: Soybean
Application: In Furrow @ 3.2 oz/acre

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
Control	56.13		
NutriCharge in Furrow @ 3.2oz	59.56	$4.75	+ 3.43 BPA

NUTRICHARGE

NEW YORK CORN/ SOYBEAN

CORN

Trial Location-Mount Morris , New York
Replicated: 2 Times
Crop: Corn
Application: In Furrow @ 3.2oz/acre,2x2 @ 3.2 oz/acre

YIELD RESULTS			
TREATMENT	**YIELD BPA**	**COST/ACRE**	**RETURN/ACRE**
Control	219.7		
NutriCharge in Furrow & 2x2	227.1	$9.50	+7.4 BPA

SOYBEAN

Trial Location-Mount Morris , New York
Replicated: 2 Times
Crop: Soybean
Application: 2x2 @ 3.2oz/acre with 11-28-0

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
Control	51.4		
NutriCharge in Furrow @ 3.2oz	61.2	$9.50	+9 BPA

NUTRICHARGE

CANADA CORN

NUTRICHARGE CONTROLLED IN-FURROW TRIAL

Trial Location- Quebec, Canada
Grower- Samuel Coutu
Crop: Corn , 20 acre controlled plot;
Application: In Furrow @ 3.2oz/acre + 5 GPA 7-24-3+ Micros

YIELD RESULTS			
TREATMENT	**YIELD BPA**	**COST/ACRE**	**RETURN/ACRE**
Control	183		
NutriCharge in Furrow	196	$4.75	+13 BPA

NUTRICHARGE

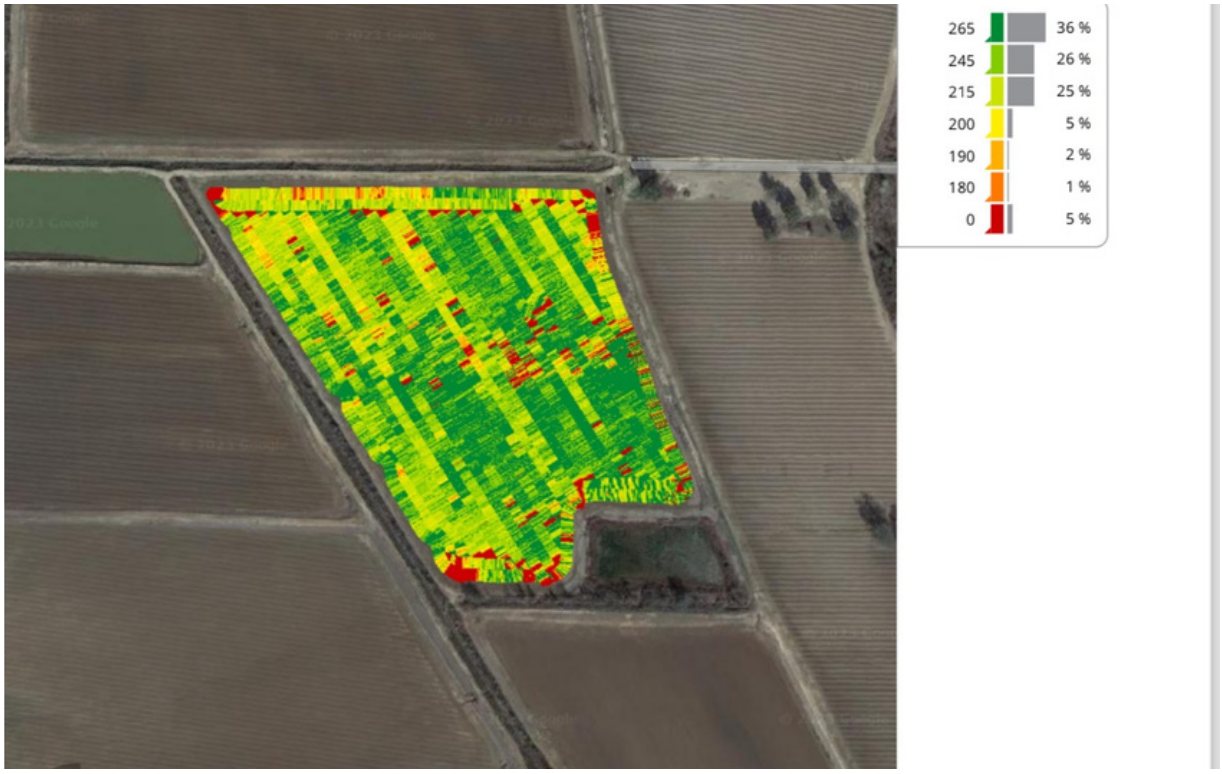
2022 RICE BROADCAST

NUTRICHARGE RICE BROADCAST

Trial Location- Southeast Arkansas
Grower- Miles Farms
Crop: Row Rice- Replicated 2X
Application method: Command broadcast application

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
Control	245		
Command @ 9.6 oz/acre	263	$14.25	+18 BPA



NUTRICHARGE

ARKANSAS CORN IN-FURROW

NUTRICHARGE CORN IN FURROW 2023

Trial Location- McGehee Arkansas
Grower- Miles Farms
Crop: Corn
Application method: Nachurs First Down @ 1 GPA
Replications: 9
Planting Date: 4/1/2023
Harvest Date: 8/21/2023
Soil Type: Silt Loam
Soil pH: 6.3

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
Control- Starter @ 1GPA	245		
Starter @ 1GPA + NutriCharge @ 3.2 oz/acre	263	$4.75	+5 BPA

NUTRICHARGE CORN IN FURROW 2022

Trial Location- McGehee Arkansas
Grower- Miles Farms
Crop: Corn
Application method: Nachurs First Down @ 1 GPA
Replications: 3
Planting Date: 4/8/2022
Harvest Date: 8/20/2022
Soil Type: Silt Loam
Soil pH: 6.3

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
Control- Starter @ 1GPA	236		
Starter @ 1GPA + NutriCharge @ 3.2 oz/acre	240	$4.75	+4 BPA

NUTRICHARGE

TENNESSEE CORN / SOYBEAN

NUTRICHARGE CORN IN-FURROW 2023

Trial Location- Jackson, Tennessee
Grower- Verell Farms
Crop: Corn
Application method: PGR, Sugar, Humic, Zinc @ 5 GPA

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
Control- Starter @ 5GPA	263.2		
Starter @ 5 GPA + NutriCharge @ 3.2 oz/acr	267.7	$4.75	+4.5 BPA

NUTRICHARGE SOYBEAN IN-FURROW 2023

Trial Location- Jackson, Tennessee
Grower- Verell Farms
Crop: Soybeans
Application method: 3.2 oz/acre NutriCharge with 5 GPA water

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
Control	61.1		
5 GPA Water + NutriCharge @ 3.2 oz/acre	61.7	$4.75	+0.7 BPA

NUTRICHARGE

ALABAMA CORN TRIAL

NUTRICHARGE CORN IN FURROW 2023

Trial Location- Alabama
Grower- Chad Henderson
Crop: Corn
Application method: Nachurs Impulse @ 2 GPA + Nutricharge @ 3.2 oz/acre
Trial Size: 20 Acres
Harvest Date: 10/10/2023

YIELD RESULTS			
TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
Control- Starter @ 2 GPA	186		
Starter @ 2 GPA + NC @ 3.2 oz/acre	194	$4.75	+8 BPA

NUTRICHARGE CORN IN-FURROW + SIDEDRESS 2023

Trial Location- Alabama
Grower- Chad Henderson
Crop: Corn
Application method: Nachurs Impulse @ 2 GPA + Nutricharge @ 3.2 oz/acre + 30GPA 28-0-0-5 + NC @ 4.8oz/a
Trial Size: 20 Acres
Harvest Date: 10/10/2023

YIELD RESULTS			
TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
Control- Starter @ 2 GPA	187		
Starter @ 2 GPA + NC @ 3.2 oz/acre + 30GPA 28-0-0-5 + NC @ 4.8 oz/acre	198	11.80	+11 BPA

NUTRICHARGE

OKLAHOMA CORN STUDY

NUTRICHARGE CORN 2023

Trial Location-Guymon Oklahoma
Crop: Corn
Application method: Strip till applied 10-34-0 & 28-0-0-5 applied through center pivot

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
17 GPA 10-34-0 + 10 GPA 28-0-0-5	249		
17 GPA 10-34-0 + NC + 10 GPA 28-0-0-5 + NC	264.28		+15.2 BPA
17 GPA 10-34-0 + 10 GPA 28-0-0-5 + NC	256.44		+7.44 BPA
14 GPA 10-34-0 + NC + 10 GPA 28-0-0-5 + NC	272.5		+23.5 BPA

NUTRICHARGE

ARKANSAS RICE STUDY

NUTRICHARGE RICE 2022

Trial Location- Southeast Arkansas
Crop:Rice
Application method: 200lbs/acre pre-flood
Replications: 5

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
Control- 200lbs/acre urea + NBPT	207.8		
200 Lbs/Acre Urea + NutriCharge	211.5	$9.50	+3.7 BPA

NUTRICHARGE RICE 2023

Trial Location- Southeast Arkansas
Crop:Rice
Application method: 200lbs/acre pre-flood urea
Replications: 5

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
Control- 200lbs/acre urea	184.6		
200 Lbs/Acre Urea + NutriCharge	193.0	$9.50	+8.4 BPA

NUTRICHARGE RICE 2023

Trial Location- Southeast Arkansas
Crop:Rice
Application method: 200lbs/acre pre-flood + 100 lbs/a MESZ @ 2 Leaf
Replications: 5

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
Control	202.6		
Nutricharge	210.3	$14.26	+7.7 BPA

NUTRICHARGE

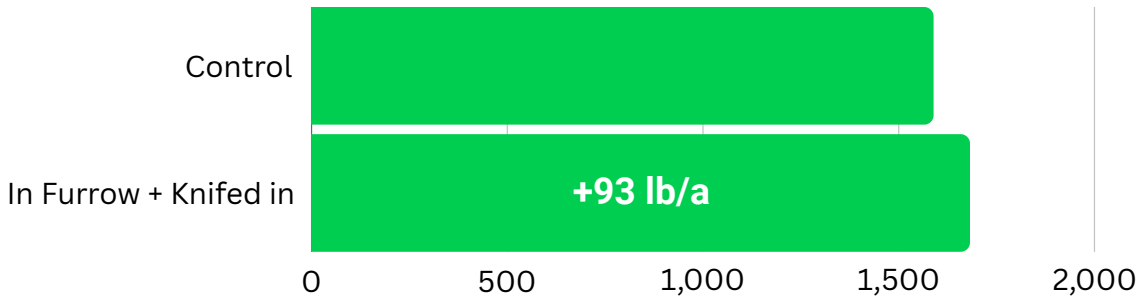
2024 ARKANSAS COTTON

NUTRICHARGE COTTON TRIAL

Trial Location- Southeast Arkansas
Crop: Cotton
Replicated: 2 times, 60 Acres
Fertilizer Used: Starter 20-20, Micropak, Carbon RX

YIELD RESULTS

TREATMENT	YIELD LB/ACRE	COST/ACRE	RETURN/ACRE
Control-Starter Program	1589		
NutriCharge In Furrow @ 3.2 oz + Y-drop @ 9.6 oz knifed in	1682	$19	+93 lb/acre



NUTRICHARGE

GEORGIA SWEET CORN

TRIAL DETAILS

Collaborator- Hamilton Growers
Locations: Elenton, GA
Plant Date: May 3, 23
Harvest Date: July 18th, 23
Soil Type: Sandy
Soil pH: 6.2-6.8
Crop- Sweet Corn
Fertilizer- Growers starter fertilizer mixture @ 20 GPA applied

YIELD RESULTS			
TREATMENT	PICK 1	PICK 2	TOTAL YEILD
Control	105	320	425
Starter + NC @ 3.2 oz/acre	140 +35	340 +20	480 +65
Control	140	300	440
Starter + NC @ 6.4 oz/acre	155 +15	338 +38	493 +53

Collaborator- Hamilton Growers
Locations: Elenton, GA
Plant Date: August 2, 23
Harvest Date: October 5, 23
Soil Type: Sandy
Soil pH: 6.2-6.8
Crop- Sweet Corn
Fertilizer- Growers starter fertilizer mixture @ 20 GPA applied

YIELD RESULTS		
TREATMENT	PICK 1	TOTAL YEILD
Control	520	520
Starter + NC @ 3.2 oz/acre	596 +66	596 +66
Control	527	527
Starter + NC @ 6.4 oz/acre	437 -90**	437-90

- The 6.4 oz plot did not undergo a second picking.
- It also had 12 fewer growing days, resulting in a large proportion of 2 ear corn that did not have sufficient time to size out.

NUTRICHARGE

NEBRASKA CORN

TRIAL DETAILS

Research Facility- Real Farm Research, Replicated 4x
Collaborator- Josh Nachital
Locations: Aurora Nebraska
Plant Date: 4/13/2017
Soil Type: Silt Loam
Soil pH: 5
Crop- Corn, Previous Soybean
Fertilizer- 11-37-0 @ Planting
Objective- Evaluate NutriCharge with starter fertilizers

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
Check	251.21		
11-37-0- 2x2 @ 20 gal/acre	277.1		
11-37-0- 2x2 @ 20 gal/acre + NC	285.65	$9.50	+8.55 BPA

Research Facility- Real Farm Research, Replicated 4x
Collaborator- Josh Nachital
Locations: Aurora Nebraska
Plant Date: 4/21/2015
Soil Type: Silt Loam
Soil pH: 5.5
Crop- Corn, Previous Soybean
Fertilizer- 9-24-3 @ Planting
Objective- Evaluate NutriCharge with starter fertilizers

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
Control	267.36		
9-24-3 @ 5 gal/acre	271.79	$4.75	+4.41 BPA

NUTRICHARGE

NEBRASKA CORN

TRIAL DETAILS

Research Facility- CVA Innovation Sites
Repetitions- Three
Locations: Nebraska
Objective- Evaluate NutriCharge performance against starter fertilizer additives

YIELD RESULTS

TREATMENT	AVERAGE INCREASE	RETURN/ACRE	ROI
Avail T5	7	$19.24	397.5
Exp Biological	5.3	$7.10	63.1
Exp Humid	9	$29.66	
NutriCharge	10.7	$31.85	658.1
CVA Elite PHP	4	$11.73	577.8
CVA Elite PHP + Ascend Pro	6	$8.34	67.9
CVA Elite PHP + Endo Prime	6.3	$10.46	92.3
CVA Elite PHP + Exp Fulvic	5	$11.45	199.1
CVA Elite PHP + Exp Humid	5.8	$16.45	494.0
CVA Elite PHP + TakeOff LS	2.5	$1.84	27.2
Zypro	2	$1.19	20.9

This trial was designed to further investigate stacking of in-furrow additives. It was intentionally placed on a tougher piece of ground to push the products to perform. We had three reps in this trial that allowed us to evaluate some products we did not have room for in our Innovation sites. The Avail and Nutri-charge both performed well. Also, some experimental products demonstrated their value. When we stacked products with the CVA Elite PHP, we were able to capture additional yield. Continuing trials like these will allow CVA to find more products in the future.

NUTRICHARGE

IONIZE

SOUTH DAKOTA CORN

TRIAL DETAILS

Research Facility- Bath, South Dakota
Locations: South Dakota
Objective- Evaluate NutriCharge and Ionize performance against starter fertilizer additives
Fertilizer- 50 lb/a Potash 150lb/a MAP, Liquid 2 gal/a KTS, 10-34-0 13 gal/a

YIELD RESULTS

TREATMENT	MOISTURE %	YIELD	INCREASE
Potash 50 lb/a + MAP 150 lb/a	15.2	221.92	
Ionize (K 50 lb/a + MAP 150 lb/a)	15.4	237.08	+ 15.16

TREATMENT	MOISTURE %	YIELD	INCREASE
KTS + 10-34-0	15.1	222.18	
NutriCharge (KTS + 10-34-0)	15.4	229.81	+ 7.63

NUTRICHARGE

BARABOO, WI
CORN/SOYBEAN

TRIAL DETAILS

Research Facility- Baraboo, Wisconsin (USDA)
Crops- Corn, Soybean
Fertilizer- 6-24-6 Starter, 6-24-24 Starter

Objective:
To demonstrate yield benefits from NutriCharge treated phosphorus fertilizer applications applied to a popup fertilizer at planting on soybean and corn over successive years and crops.

Phosphorus is critical to early season growth, and it is common practice to use a popup fertilizer in-furrow. Cool soil temperatures and soil fixation impact phosphorus availability limiting starter fertilizer response.

YIELD RESULTS

TREATMENT	YIELD BPA	COST/ACRE	RETURN/ACRE
2020 SOYBEAN 6-24-6 @ 5 GPA STARTER			
CONTROL	51		
NUTRICHARGE	60.7	$4.75	+9.7 BPA
2021 CORN 6-24-24 @ 5 GPA STARTER			
CONTROL	210		
NUTRICHARGE	219	$4.75	+9 BPA

Conclusion:
NutriCharge provided a significant yield response over successive years and different crops at Baraboo, Wisconsin.

NUTRICHARGE

CSU POTATO

TRIAL DETAILS

Year- 2019

Research Facility- Colorado State University, San Luis Valley Research Center

Crops- Russet Potato

Collaborator: Samuel YC Essah

Fertilizer- 11-37-0

Soil phosphorus level- Residual soil extractable phosphorus (P) was 120 ppm (240 lbs. P/acre).

Objective:

The objective of this study was to evaluate the effect of Nutricharge with phosphorus (P) fertilizer application on the performance of Russet potato. The trial is randomized and replicated four times

YIELD RESULTS

TREATMENT	YIELD CWT	> 4 oz	> 6oz
CONTROL	357	310	204
100% GSP	391	318	209
100 % GSP + NC	415 +6%	365 +15%	249 +19%
75 % GSP + NC	415 +6%	349 +10%	232 +11%

AGRONOMIC PHOSPHORUS USE EFFICIENCY

	TOTAL YIELD	4 oz
100 % GSP	6.5	5.3
100 % GSP + NC	9.2	7.8
75 % GSP + NC	6.9	6.1

(APUE)- Tuber yield (cwt/acre)/Phosphorus fertilizer applied (lb/acre)

Results:

Application of 100% grower standard phosphorus fertilizer with Nutricharge added increased total tuber yield, marketable size (> 4 oz.) tuber yield, and large marketable size (> 6 oz.) tuber yield, by 6%, 15%, and 19%

Application of 75% grower standard P fertilizer with Nutricharge added increased total yield, marketable size tuber yield, and large marketable size tuber yield by 6%, 10%, and 11%,

Phosphorus fertilizer use efficiency was higher for the production of total tuber yield and marketable size (> 4 oz.) tuber yield when Nutricharge was added to P fertilizer applied P use efficiency was increased by **42%** and **47%**, for total tuber yield and marketable size tuber yield, respectively, when 75% grower standard P fertilizer was applied with Nutricharge

NUTRICHARGE

POTATO

TRIAL DETAILS

Year- 2018

Research Facility- Rostov University

Crops- Potato, Red Market Variety, Rossanna By Germicopa

Replications: Three

Fertilizer- 10-26-26

Objective: To study the impact of NutriCharge® on fertilizer efficiency. The study was conducted with no other fertilizer inputs to isolate the effect of NutriCharge® on added N, P, and K in the fertilizer 10-26-26. The hypothesis was that NutriCharge® impact on Phosphorus availability maintains yields with lower effective rates.

YIELD RESULTS

TREATMENT	TON/ACRE	INCREASE
10-26-26 340 LB/ACRE	10	
10-26-26 340 LB/ACRE + NC	13.9	+3.9
10-26-26 250 LB/ACRE	9.24	
10-26-26 250 LB/ACRE + NC	12.96	+3.72
10-26-26 170 LB/ACRE	8.61	
10-26-26 170 LB/ACRE + NC	9.84	+1.23

RESULTS

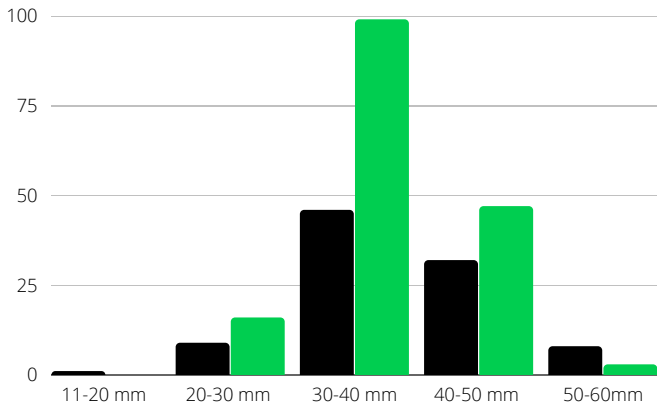
TREATMENT	TUBER PER PLANT	TUBER WEIGHT	TUBER MASS
10-26-26 340 LB/ACRE	6	2.92	17.6
10-26-26 340 LB/ACRE + NC	7.2	3.42	24.5
10-26-26 250 LB/ACRE	5.1	3.17	16.2
10-26-26 250 LB/ACRE + NC	6.8	3.35	22.28
10-26-26 170 LB/ACRE	5.2	2.92	15.16
10-26-26 170 LB/ACRE + NC	5.6	3.10	17.31

There we no statistical differences in the Starch, Vitamin C, and the MPC for nitrates between the treated and the control.

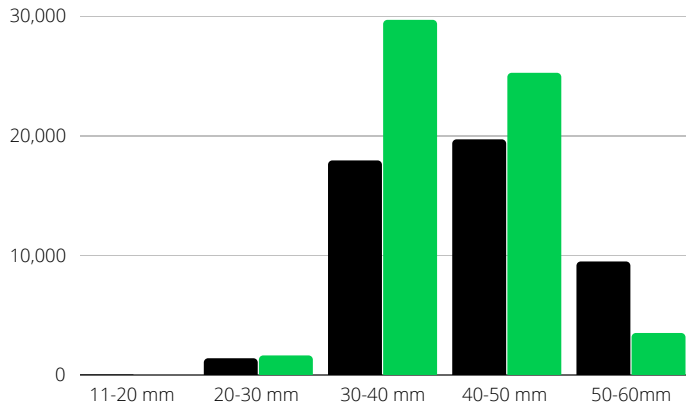
NUTRICHARGE

CARROTS

SUMMARY: This study aimed to evaluate the effect of Nutricharge on phosphorus fertilizer application and their performance on carrots. The results indicated that adding Nutricharge to phosphorus fertilizer enhanced all measurable parameters of carrot production. Phosphorus use efficiency was significantly increased when Nutricharge was added to the phosphorus fertilizer applied.



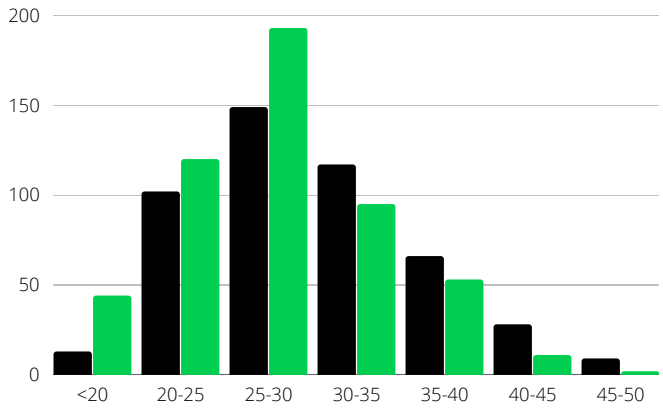
Numbers per 10 Sq.Ft



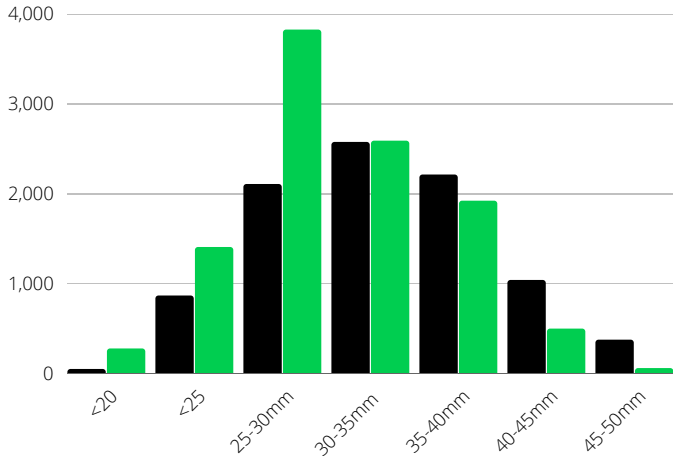
LBS PER ACRE

TOTAL	NUTRICHARGE	CONTROL	INCREASE
YIELD T/ACRE	35.85	35.27	580 LBS/ACRE
MARKETABLE	22.46	14.4	8.06 TON/ACRE
NUMBERS 10 SQ/FT	71.3	58.1	22.7% MORE

Numbers per 10 Sq.Ft



WEIGHTS PER 10 Sq.Ft



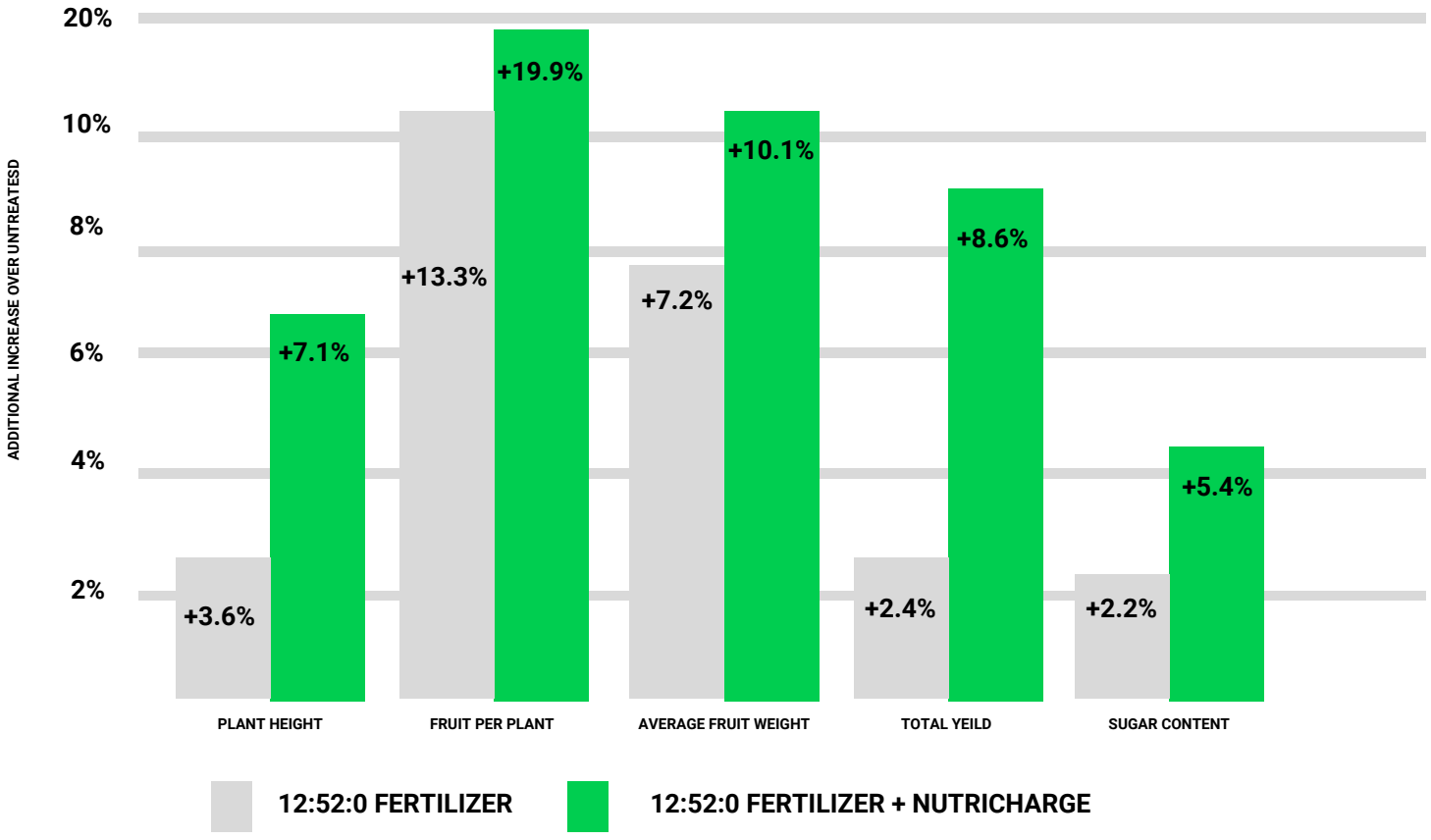
TOTAL	NUTRICHARGE	CONTROL	INCREASE
YIELD T/ACRE	47.06	41.03	6.03 TON/ACRE
NUMBERS 10 SQ/FT	86.2	80.5	6.7% MORE

NUTRICHARGE

TOMATO FIELD

INDEPENDANT TRIAL-SGS

SUMMARY: The purpose of this study was to evaluate the effect of Nutricharge on phosphorus fertilizer application and their performance on field-grown tomatoes. The results indicated that the addition of Nutricharge to phosphorus fertilizer enhanced all measurable parameters of tomato production. Phosphorus use efficiency was significantly increased when Nutricharge was added to phosphorus fertilizer applied.



NUTRICHARGE

CORN

TRIAL DETAILS

Year- 2018
Research Facility- Rostov University
Crops- Corn
Replications: Three
Fertilizer- 10-26-26
Objective: To study the impact of NutriCharge® on fertilizer efficiency. The study was conducted with no other fertilizer inputs to isolate the effect of NutriCharge® on added N,P,K in the fertilizer 10-26-26. The hypothesis was that NutriCharge® impact on Phosphorus availability maintains yields with lower effective rates.

YIELD RESULTS

TREATMENT	YIELD BPA	INCREASE
10-26-26 120 LB/ACRE	87.96	
10-26-26 120 LB/ACRE + NC	91.0	+3.14
10-26-26 76 LB/ACRE	84.5	
10-26-26 76 LB/ACRE + NC	93.5	+9

RESULTS

TREATMENT	VT HEIGHT IN	VT MASSOZ	R3 HEIGHT IN	R3 MASS OZ
10-26-26 120 LB/ACRE	46.8	11	70.8	17.1
10-26-26 120 LB/ACRE + NC	48	11.53	78.8	18.8
10-26-26 76 LB/ACRE	43.3	10.76	66.9	15.8
10-26-26 76 LB/ACRE + NC	49.2	11.11	68.8	18.8

NUTRICHARGE

BYU IDAHO

LIQUID PHOSPHORUS FERTILIZER AVAILABILITY TRIAL

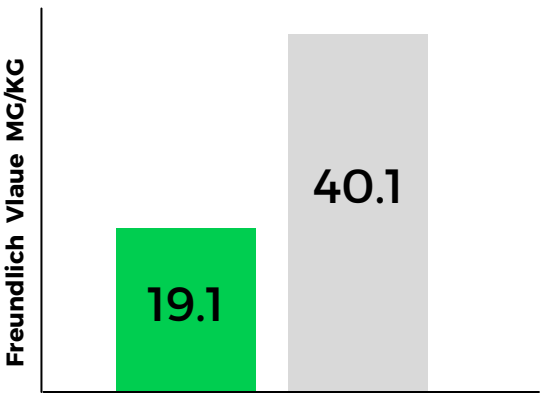
DETERMINING PLANT AVAILABLE PHOSPHORUS FROM APP WITH NUTRICHARGE USING ADSORPTION ISOTHERMS

Trial Location- BYU-Idaho
Investigators: Dr. Jared D. Williams Ph.D.
Student Investigators: Lino Macamo, Dino Matobo, Chance Connelly, Riley Burgeous
Dept. of Applied Plant Science, Brigham Young University-Idaho

Trial Design

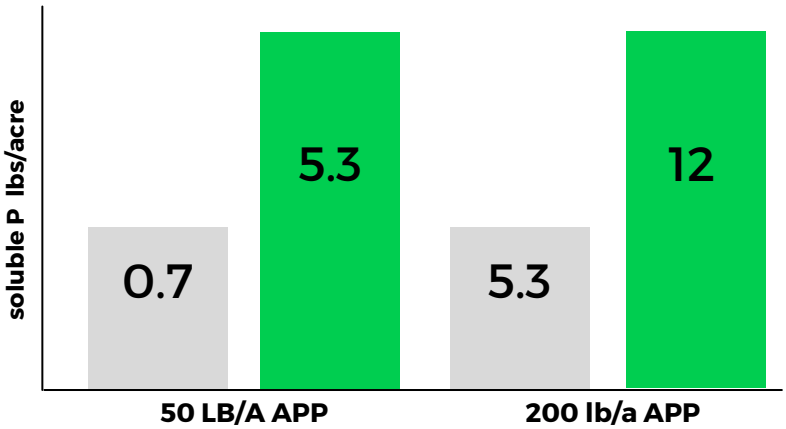
Various rates of Ammonium Polyphosphate (APP) fertilizer with and without NutriCharge were added to high P fixing Idaho calcareous soil with a pH of 8.2. These soils were then added to phosphorus adsorption isotherms. They measure the amount of P adsorbed to soil particle surfaces by adding a known amount of soluble-P to the soil and measuring the amount of P remaining in solution following an incubation period. Phosphorus adsorption isotherms are then used to determine the ability of enhanced efficiency P fertilizer amendments to prevent adsorption or fixation of applied P.

The Freundlich values indicate soil adsorption strength and capacity with higher values indicating higher adsorption of P in the soil



Data shows that the APP with NutriCharge is reducing the amount of fertilizer-P being adsorbed to the soil

The APP with NutriCharge treatment had the highest amount of soluble-P for the 50 and 200 lbs/ac fertilizer rates using the Freundlich model.



Data shows that NutriCharge increased soluble-P and decreased adsorbed-P, which is the result of the NutriCharge polymer interacting with antagonistic P fixing cations.

CONCLUSION

The APP with NutriCharge treatment demonstrated an ability to decrease P-adsorption and increase soluble-P from applied fertilizer-P in this study as compared to untreated APP fertilizers. The data in this study suggests that the NutriCharge amendment is reducing adsorbed-P by reducing the activity of P fixing cations such as calcium in the soil.

NUTRICHARGE

FRACTIONAL SOIL P STUDY

Investigators: Agriculture analysis center of Gyrazi
Dept. of Applied Plant and Soil Science

Trial Design

In a laboratory setting, wheat was germinated and grown under phosphorus fertilizer. The application of DAP fertilizer was applied to according to the recommendation for 120 bushels and 150 bushels per acre yield. The soil selected was a Chernozem high organic soil with the following test levels (pH 8.09, P205 15.1 ppm, K20 94 ppm, N 167 ppm, OM 6,42%). The crop was grown, and the soil was studied to determine the NutriCharge effect on the phosphorus in the soil two weeks post application to the soil.

Treatment	Total P205 mg/100 of soil	Cal-P	Call-P	AL-P	Fe-P	Sum
Initial Soil	131.5	0.17	2.60	2.57	5.69	11.02
Control	128.2	0.30	3.96	5.66	5.53	15.2
10-26-26- 0.1g	136.5	0.19	4.79	5.25	5.51	15.7
10-26-26- 0.1g + NC	139.0	0.17	3.31	4.75	4.75	12.9
10-26-26- 0.5g	139.0	0.24	5.32	5.44	5.08	16.1
10-26-26- 0.5g + NC	144.0	0.23	4.33	4.60	4.48	13.6

Conclusion: NutriCharge was able to increase total P205 while reducing fractional bound phosphorus in the soil profile.

NUTRICHARGE

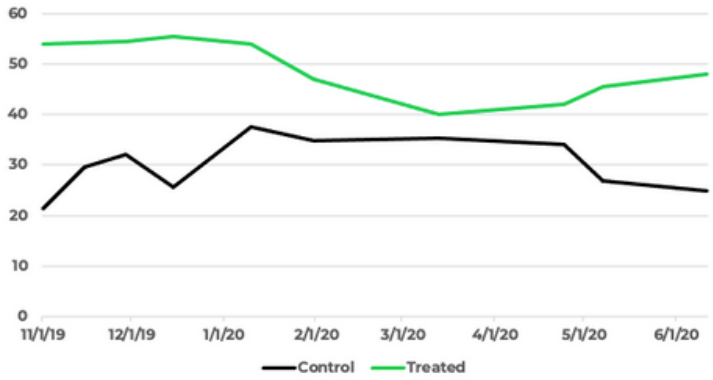
LONG TERM P STUDY

DETERMINING THE EFFECT OF NUTRICHGARGE ON PHOSPHORUS DYNAMICS IN THS SOIL

Trial Location-Center for Plant Science, Rostov University
Investigator: Director of Institute O.G Nazarenko

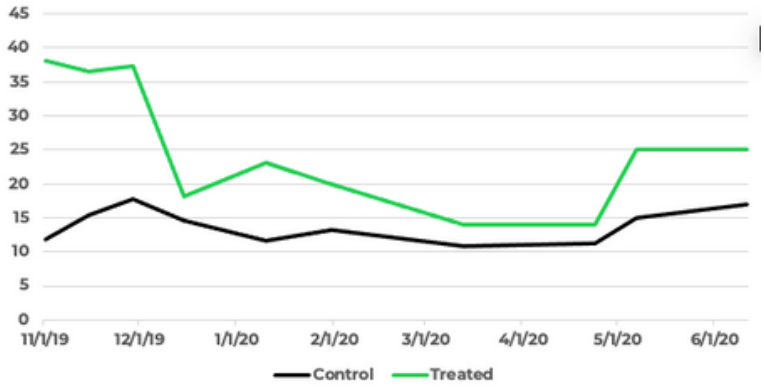
Trial Design- Replicated field study using GPS sample locations. 15-15-15, both treated by NutriCharge and untreated, applied at 125 lb per acre. Sampling was conducted throughout the season at two depths, 0-8 in and 8-16 in. In addition to soil phosphorus levels, leaf analysis was conducted, and biological yield was measured.

AVAILABLE PHOSPHORUS 0-20 CM



On average 1.65 X the available phosphorus during the 6 months

AVAILABLE PHOSPHORUS 20-40CM



On average 1.8 X the available phosphorus during the 6 months

PHOSPHORUS REMOVAL RATES

A study of the mass removal of phosphorus was conducted in the experiment. An initial application rate applied 29.9-32.3 ppm of phosphorus from the granules. At the end of the growing season, 11.7 ppm to 14.2 ppm was used. This is the difference between the extraction of P from treated fertilizer at the beginning and last sampling. Therefore, for the P treated with NutriCharge, the plant took up 39%-49% of the phosphorus.

After harvest, the P content in the soil was 38.6 ppm and 25.5 ppm; the difference of 13.1 ppm in the 0-8 range is the remainder of the phosphorus from the application. Therefore for the P treated with NutriCharge from 16.7-19.2 ppm or 56%-59% of the total fertilizer was used.

It can be concluded from the experiment that the dissolution and the mobilization of soil P occur later than the control. Therefore, the winter wheat plants were more constantly supplied with nutrients during the late stages of development. This is evident in the higher biological and morphometric parameters of the crop.

NUTRICHARGE

YIELD RESULTS

CONTROL

# PLANTS	# TILLER M2	GRAIN IN EAR	WEIGHT PER GRAIN	YIELD
22.2	50.3	35	31 GRAMS	96.28 BUSHEL

NUTRICHARGE TREATED FERTILIZER

# PLANTS	# TILLER M2	GRAIN IN EAR	WEIGHT PER GRAIN	YIELD
23.9	56.8	37	33 GRAMS	113.07 BUSHEL

GRAIN QUALITY CONTROL

GLUTEN	IDK	PROTEIN	N	P	K
16.7	78.3	9.23	1.62	0.38	0.45

GRAIN QUALITY NUTRICHARGE

GLUTEN	IDK	PROTEIN	N	P	K
21	81.7	10.87	1.91	0.41	0.45

YIELD RESULTS SUMMARY

The yield in the NutriCharge treatment was 11.6 bushel/acre higher than in control.
It was achieved due to an increase in plant characteristics because the number of tillers per square ft. was 6.5 more, and due to the difference in the number of grains in the ear, on the plots of the experiment, there were two more grains in the ear. A particular influence on the quality indicators of winter wheat grain was also revealed; the content of gluten, protein, and phosphorus increased.