The Andersons®

2019 RESEARCH TRIALS

The Andersons works to ensure our products deliver a positive return on investment and provide value to growers. It is essential that our products provide excellent and consistent performance on the farm. To ensure this, we perform numerous field trials each year to evaluate differing factors including effectiveness, rates, timing, and more.

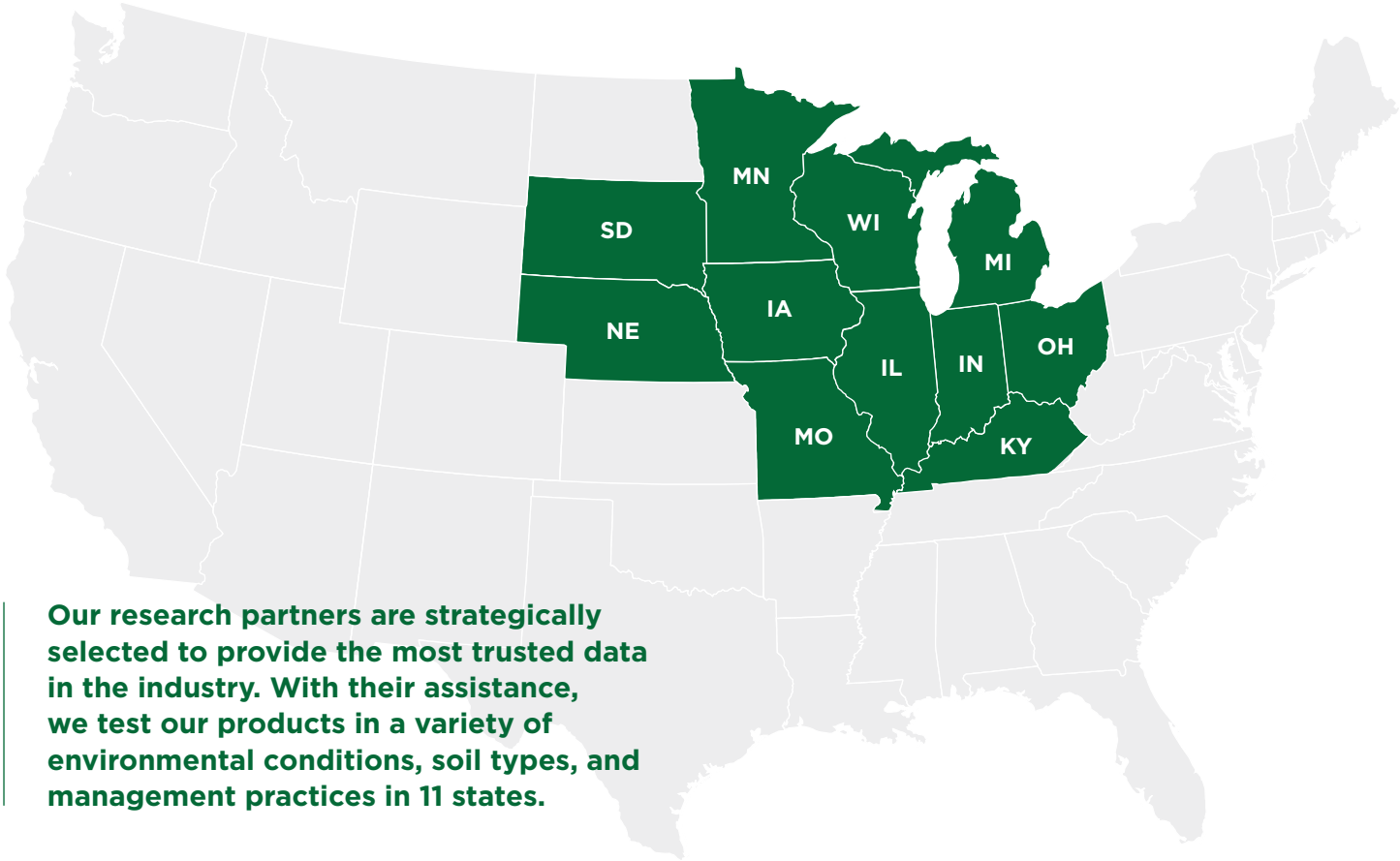
Our research trials are conducted in various geographies across the midwestern United States. Locations are selected to learn how product performance is impacted in diverse geographies, soil types, and growing conditions. Our goal is to replicate precisely how products will perform on the farm, so we replicate standard growing practices for the area.

We manage research trials through multiple channels. First, third-party research sites are carefully selected, trusted to provide unbiased and reliable results. Second, on-farm trials are conducted through our Retail Farm Center locations as well as independent dealers and distributors. Third, several of our products are submitted to Beck's each year to participate in their Practical Farm Research (PFR)® trials. From the trials, our products can earn the PFR Proven™ endorsement. "For a product or practice to become PFR Proven, it needs to have been tested for a minimum of three years and, over those three years, it must provide a positive yield gain each year and average a positive ROI over the three-year period" (Beck's PFR Book 2019).

Even in a year like 2019, where farmers faced unprecedented weather challenges, our trials provided valuable insight. This guide provides the highlights of our 2019 research trials. We hope this tool helps inform decisions on your farm for the upcoming growing season.

- The Andersons Agronomy Team

RESEARCH PARTNERS



Our research partners are strategically selected to provide the most trusted data in the industry. With their assistance, we test our products in a variety of environmental conditions, soil types, and management practices in 11 states.

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OUR PRODUCTS

PureGrade® Liquid Fertilizers

MicroSolutions® Micronutrients

Select Nutrients

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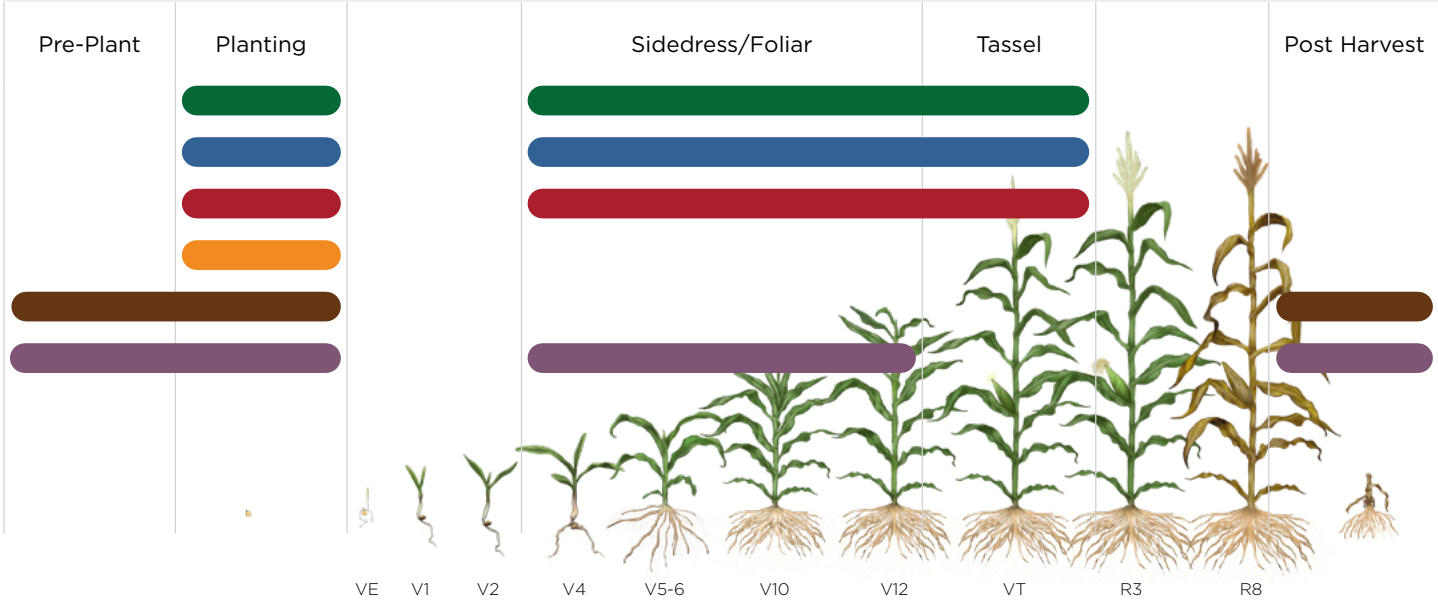
Soil Amendments

Organic Nutrients

CORN

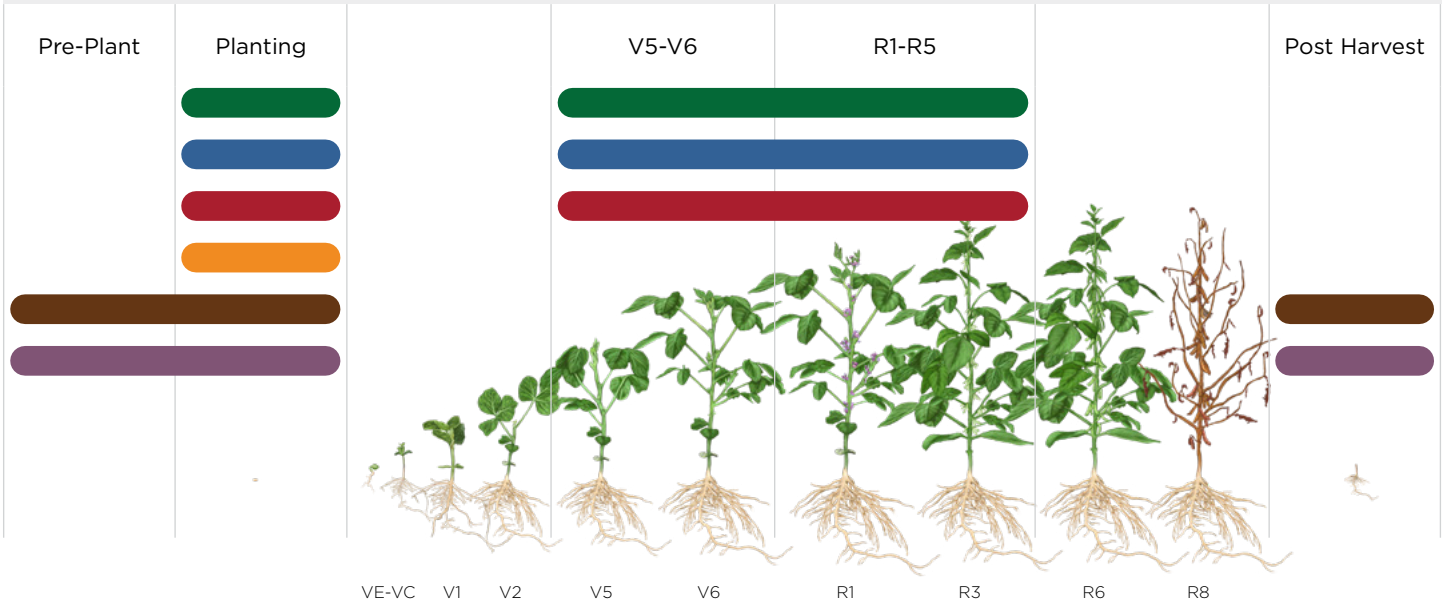


OUR PRODUCTS

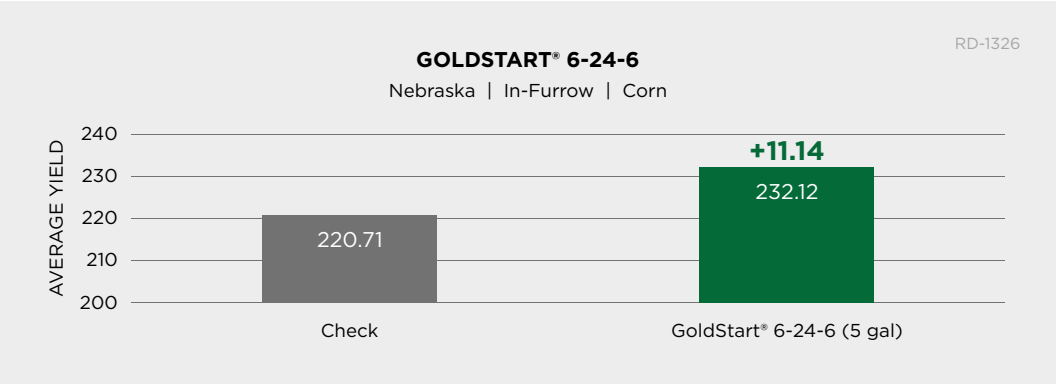
As the agronomy team, we look at what the crop needs during certain time periods throughout the growing season and select products to meet crop needs and maximize benefit. We use this information to provide recommendations backed by research.

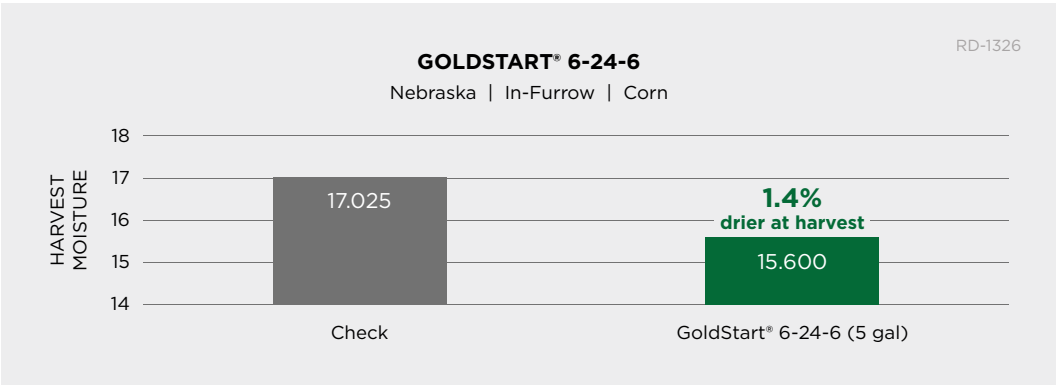
Visit **AndersonsPlantNutrient.com/Agriculture** for additional information on the products highlighted in this guide.

SOYBEANS



GOLDSTART® 6-24-6





PLOT INFORMATION

LOCATION
Blue Hill, Nebraska

DESCRIPTION OF TREATMENT
GoldStart® 6-24-6 (5 gal)

TREATMENT TIMING
At planting, in-furrow

PLANTING DATE
May 14, 2019

HYBRID
NK0821-3120

PLANT POPULATION
34,000

ROW SPACING
30 inches

HERBICIDES
SureStart®

INSECTICIDES
Counter®

BASE FERTILITY PROGRAM
250 lbs of nitrogen applied pre-plant

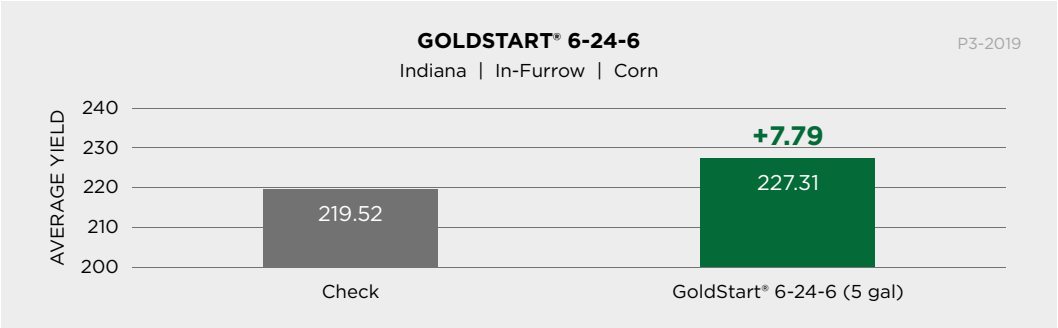
PREVIOUS CROP
Soybeans

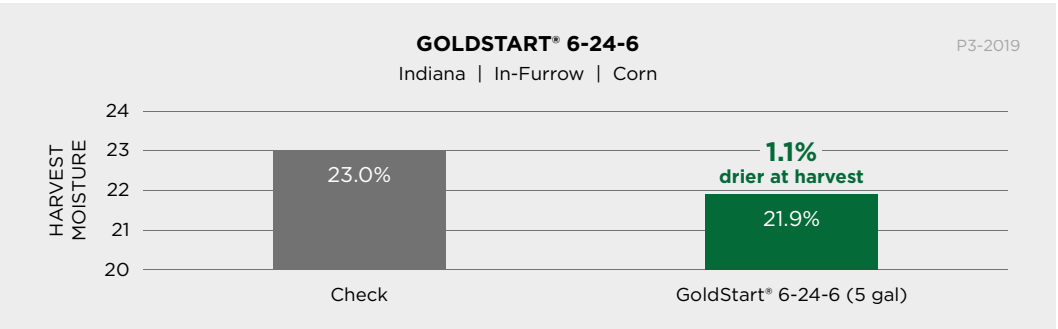
TILLAGE TYPE
Conventional

IRRIGATION
Pivot

GOLDSTART® 6-24-6

Applying a high quality, low-salt starter is crucial if high quality and high yields are your goals. Year after year we see crops that have starter applied during planting emerge faster, pollinate 7-10 days sooner, and finish 1-3 points drier in the fall.





PLOT INFORMATION

LOCATION
Walton, Indiana

DESCRIPTION OF TREATMENT
GoldStart® 6-24-6 (5 gal)

TREATMENT TIMING
At planting, in-furrow

PLANTING DATE
June 8, 2019

HYBRID
P1197

PLANT POPULATION
32,000

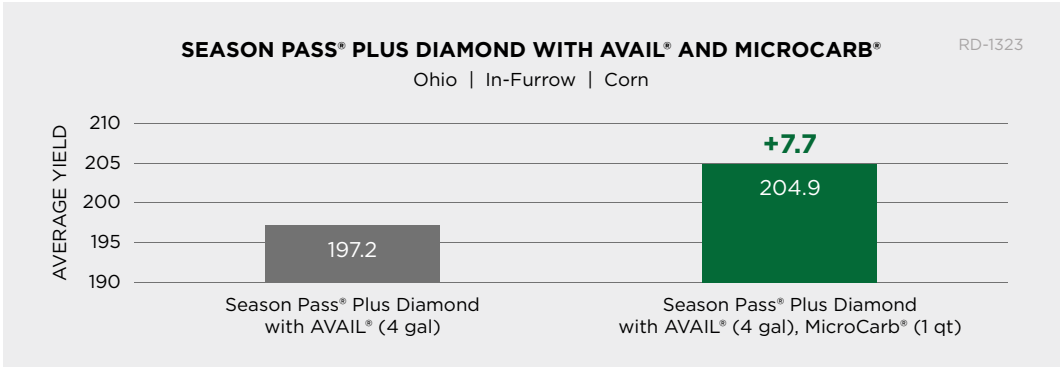
ROW SPACING
30 inches

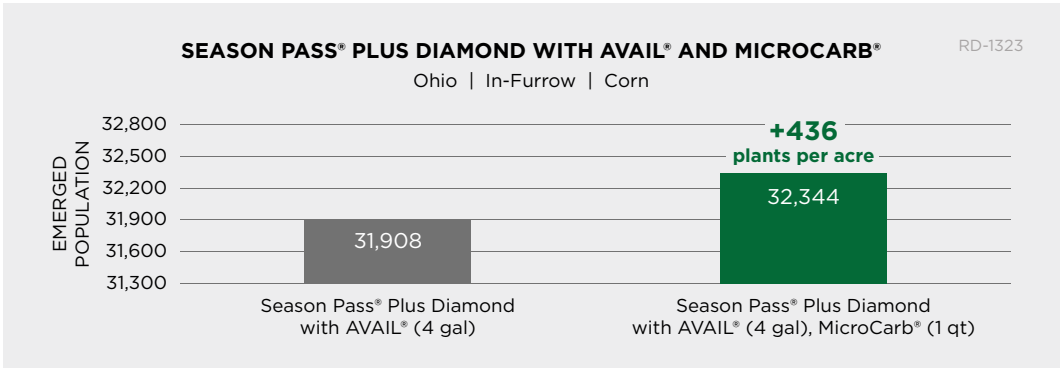
HERBICIDES
Acuron® (1 qt)
Atrazine (1 qt)

FUNGICIDES
Trivapro (13.7 oz)

BASE FERTILITY PROGRAM
Variable rate technology (VRT) according to Tri-State recommendations

Season Pass® Plus WITH AVAIL® | MICROCARB®





PLOT INFORMATION

LOCATION
Troy, Ohio

DESCRIPTION OF TREATMENT
Season Pass® Plus Diamond with AVAIL® (4 gal)

MicroCarb® (1 qt)

TREATMENT TIMING
At planting, in-furrow

PLANTING DATE
June 3, 2019

HYBRID
XL® 5828AM™

PLANT POPULATION
32,000

ROW SPACING
30 inches

HERBICIDES
Acuron® (3 qt)
Atrazine (1 qt)
Glyphosate (32 fl oz)

BASE FERTILITY PROGRAM
28% UAN (25 gal) applied on June 7

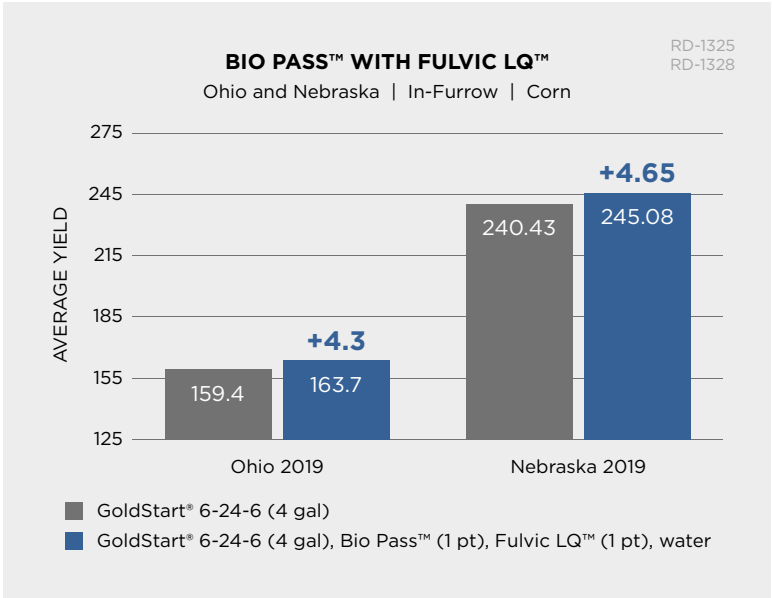
28% UAN (60 gal) with Nutrisphere-N®/ 0.5% v/v applied on June 25

SOIL TEST INFORMATION

pH	6.5
CEC	13.7
% OM	3.90
P ppm	58
K ppm	153
Mg ppm	345
Ca ppm	1850

BIO PASS™ | Fulvic LQ™

Pairing Bio Pass with a carbon source, such as Fulvic LQ, provides microorganisms with an immediate food source and provides an environment for success.



PLOT INFORMATION

LOCATION
Troy, Ohio

DESCRIPTION OF TREATMENT
GoldStart® 6-24-6 (4 gal)
Bio Pass™ (1 pt)
Fulvic LQ™ (1 pt)

TREATMENT TIMING
At planting, in-furrow

PLANTING DATE
June 4, 2019

HYBRID
XL® 5828AM™

PLANT POPULATION
32,000

ROW SPACING
30 inches

HERBICIDES
Acuron® (3 qt)
Atrazine (1 qt)
Glyphosate (32 fl oz)

BASE FERTILITY PROGRAM
28% UAN (25 gal) applied on June 7
28% UAN (60 gal) with Nutrisphere-N®/ 0.5% v/v applied on June 25

PLOT INFORMATION

LOCATION
Blue Hill, Nebraska

DESCRIPTION OF TREATMENT
GoldStart® 6-24-6 (4 gal)
Bio Pass™ (1 pt)
Fulvic LQ™ (1 pt)

TREATMENT TIMING
At planting, in-furrow

PLANTING DATE
May 14, 2019

HYBRID
NK0821-3120

PLANT POPULATION
34,000

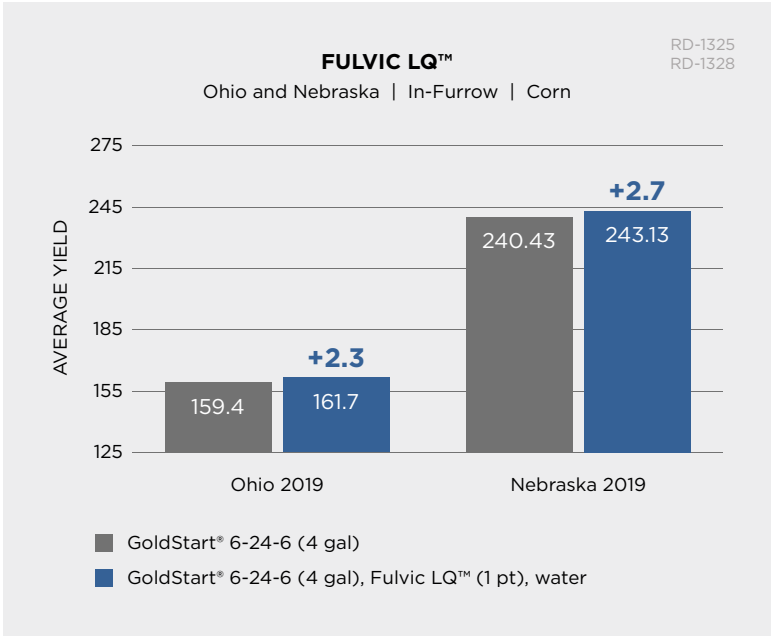
ROW SPACING
30 inches

HERBICIDES
SureStart®

BASE FERTILITY PROGRAM
250 lbs of nitrogen applied pre-plant

Fulvic LQ™

The high CEC of the carbon in Fulvic LQ maximizes nutrient delivery into the plant. In these two trials, Fulvic LQ aided in plant uptake of applied nutrients, resulting in an additional yield increase compared to applying starter alone.



PLOT INFORMATION

LOCATION
Troy, Ohio

DESCRIPTION OF TREATMENT
GoldStart® 6-24-6 (4 gal)
Fulvic LQ™ (1 pt)

TREATMENT TIMING
At planting, in-furrow

PLANTING DATE
June 4, 2019

HYBRID
XL® 5828AM™

PLANT POPULATION
32,000

ROW SPACING
30 inches

HERBICIDES
Acuron® (3 qt)
Atrazine (1 qt)
Glyphosate (32 fl oz)

BASE FERTILITY PROGRAM
28% UAN (25 gal) applied on June 7
28% UAN (60 gal) with Nutrisphere-N®/ 0.5% v/v applied on June 25

PLOT INFORMATION

LOCATION
Blue Hill, Nebraska

DESCRIPTION OF TREATMENT
GoldStart® 6-24-6 (4 gal)
Fulvic LQ™ (1 pt)

TREATMENT TIMING
At planting, in-furrow

PLANTING DATE
May 14, 2019

HYBRID
NK0821-3120

PLANT POPULATION
34,000

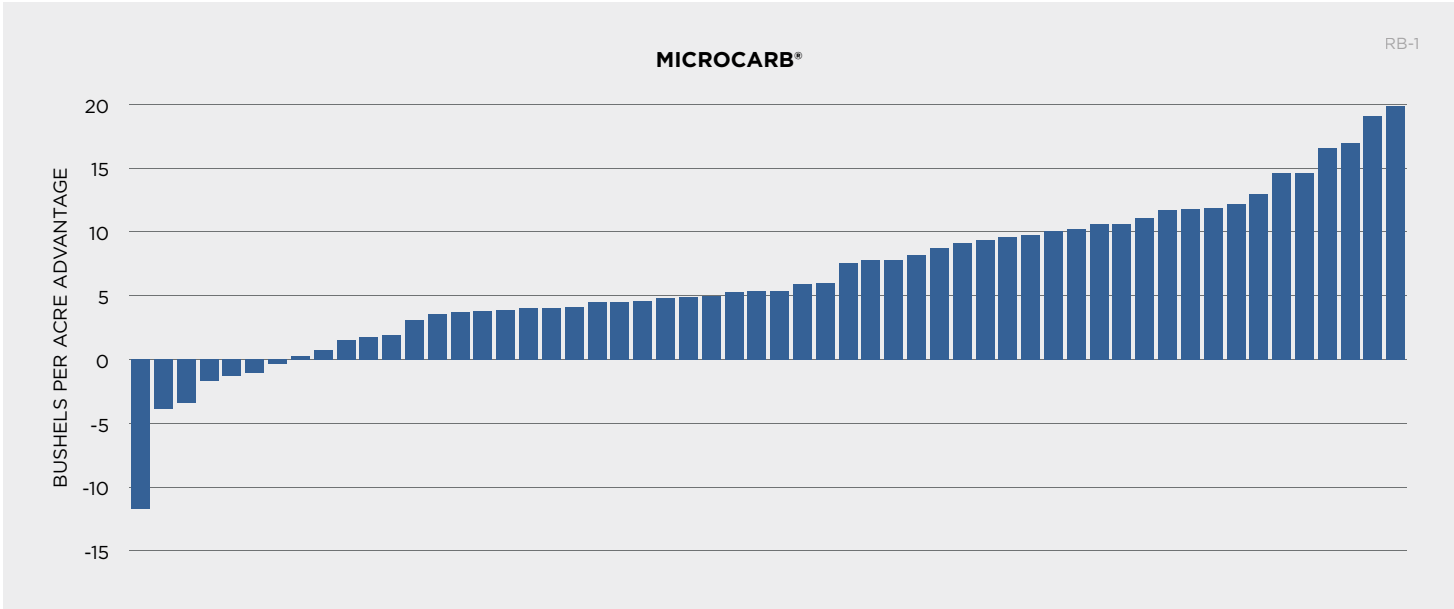
ROW SPACING
30 inches

HERBICIDES
SureStart®

BASE FERTILITY PROGRAM
250 lbs of nitrogen applied pre-plant

MICROCARB®

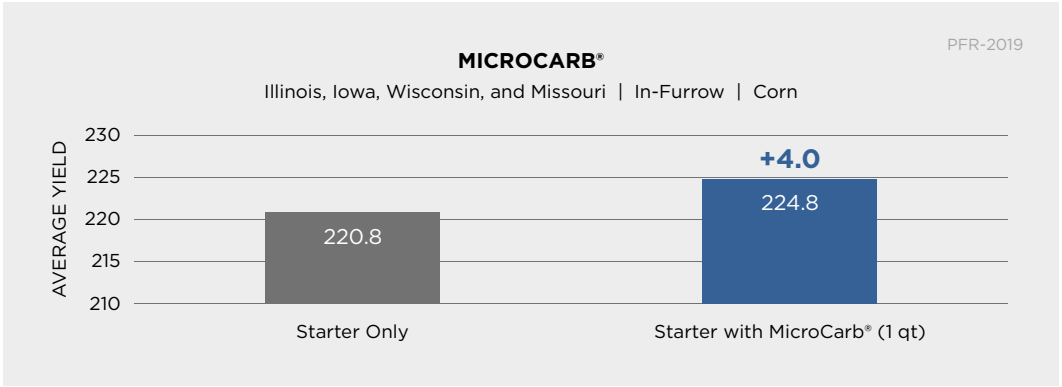
Over the course of 57 trials with MicroCarb in corn, a positive yield advantage was observed 88% of the time over the untreated control.

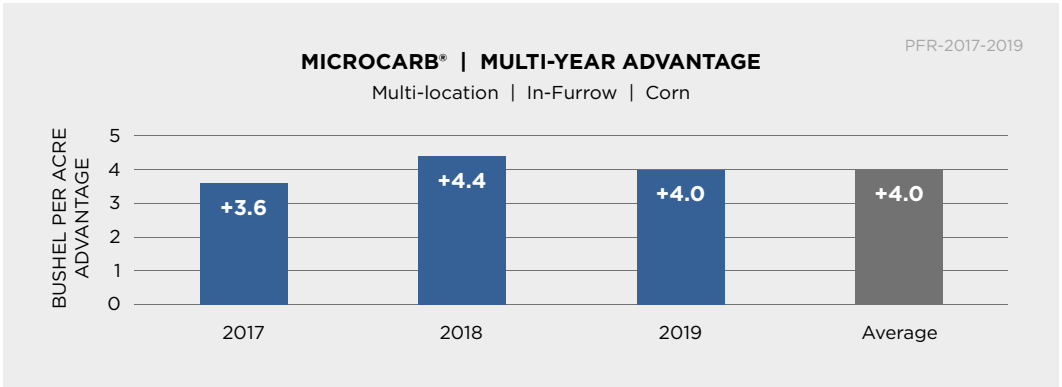


The above graph is a compilation of all corn trials, both starter and foliar, involving MicroCarb from years 2014-2019.

Test locations include: CO, IA, IL, MN, NE, OH and WI

MICROCARB®





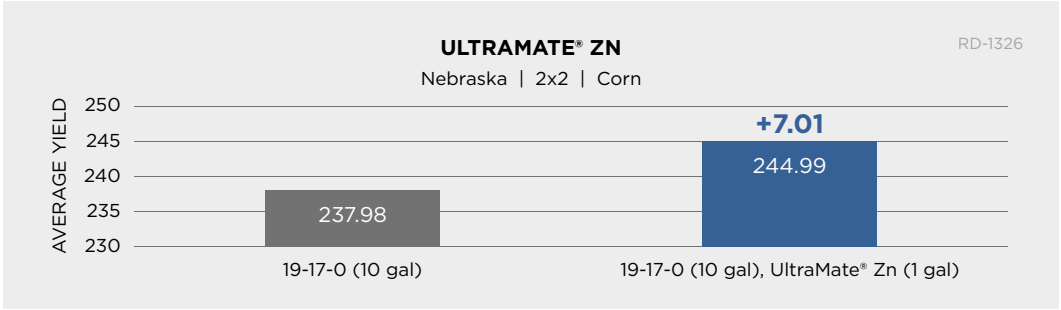
PFR PROVEN™

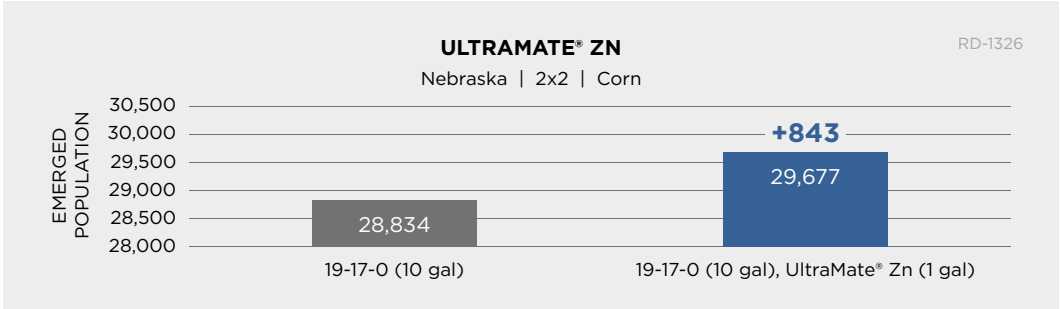
BECK'S

MicroCarb is one of the most researched products in our product portfolio, having 88% trials providing a positive yield benefit. This year is the third year MicroCarb was tested with the Beck's PFR trials, earning the PFR Proven™ endorsement.

UltraMate® Zn

UltraMate Zn is a premix of humic acid, fulvic acid, and Nulex 15% Zinc. Humic acid is great at protecting the nitrogen that is in the starter from leaving the root zone. The fulvic acid component helps efficiently move nutrients up and into the plant. Zinc is responsible for leaf sizing and nitrogen efficacy in the plant.





PLOT INFORMATION

LOCATION
Blue Hill, Nebraska

DESCRIPTION OF TREATMENT
19-17-0 (10 gal)
UltraMate® Zn (1 gal)

TREATMENT TIMING
At planting, 2x2

PLANTING DATE
May 14, 2019

HYBRID
NK0821-3120

PLANT POPULATION
34,000

ROW SPACING
30 inches

HERBICIDES
SureStart®

INSECTICIDES
Counter®

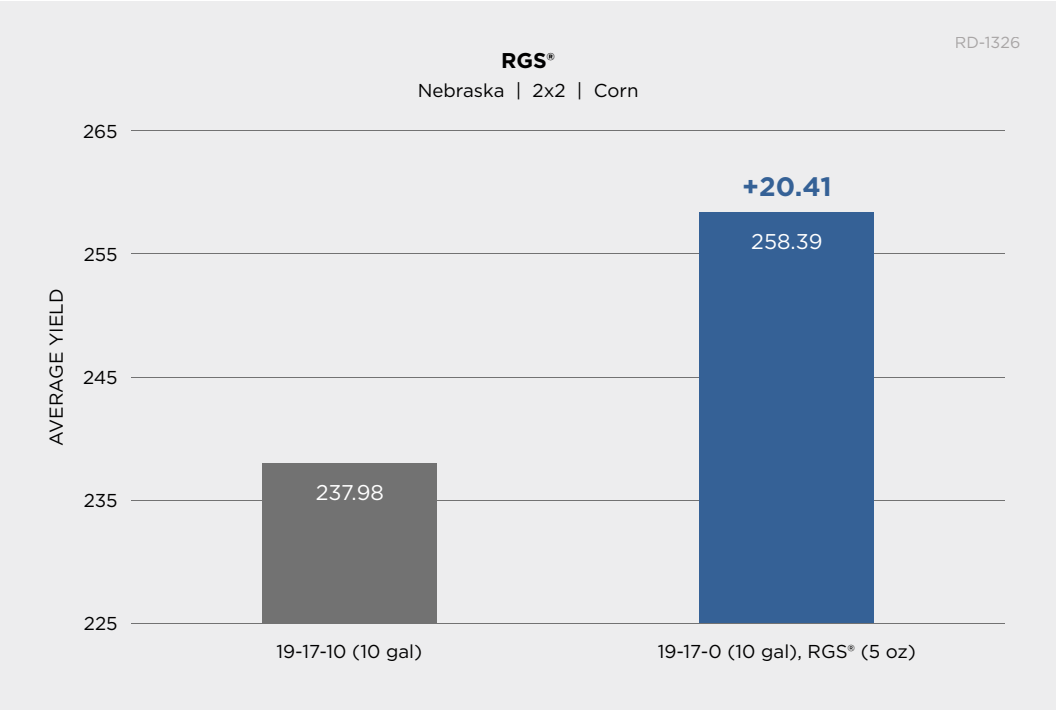
BASE FERTILITY PROGRAM
250 lbs of nitrogen applied pre-plant

PREVIOUS CROP
Soybeans

TILLAGE TYPE
Conventional

IRRIGATION
Pivot

RGS® (ROOT GROWTH STIMULATOR)



PLOT INFORMATION

LOCATION
Blue Hill, Nebraska

DESCRIPTION OF TREATMENT
19-17-0 (10 gal)
RGS® (5 oz)

TREATMENT TIMING
At planting, 2x2

PLANTING DATE
May 14, 2019

HYBRID
NK0821-3120

PLANT POPULATION
34,000

ROW SPACING
30 inches

HERBICIDES
SureStart®

INSECTICIDES
Counter®

BASE FERTILITY PROGRAM
250 lbs of nitrogen applied pre-plant

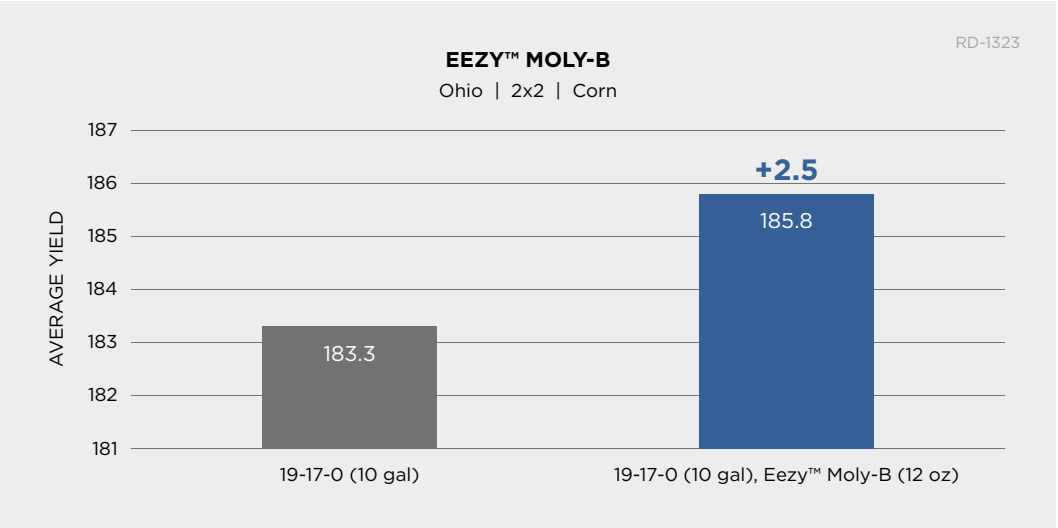
PREVIOUS CROP
Soybeans

TILLAGE TYPE
Conventional

IRRIGATION
Pivot

EEZY™ MOLY-B

Eezy Moly-B is an available source of molybdenum and boron. These two elements are often found deficient in soils, thereby limiting yield potential. Supplementing molybdenum and boron in small amounts results in increased overall yield potential. These elements need to be applied in small amounts to avoid being toxic to the plant. Molybdenum is an essential component in two enzymes that convert nitrate to ammonia. It is also needed by symbiotic nitrogen fixing bacteria in legumes to fix atmospheric nitrogen. Boron plays an import role in cell division in this early stage in the corn life cycle.



PLOT INFORMATION

LOCATION
Troy, Ohio

DESCRIPTION OF TREATMENT
19-17-0 (10 gal)
Eezy™ Moly-B (12 oz)

TREATMENT TIMING
At planting, 2x2

PLANTING DATE
June 3, 2019

HYBRID
XL® 5828AM™

PLANT POPULATION
32,000

ROW SPACING
30 inches

HERBICIDES
Acuron® (3 qt)
Atrazine (1 qt)
Glyphosate (32 fl oz)

BASE FERTILITY PROGRAM
28% UAN (25 gal) applied on June 7

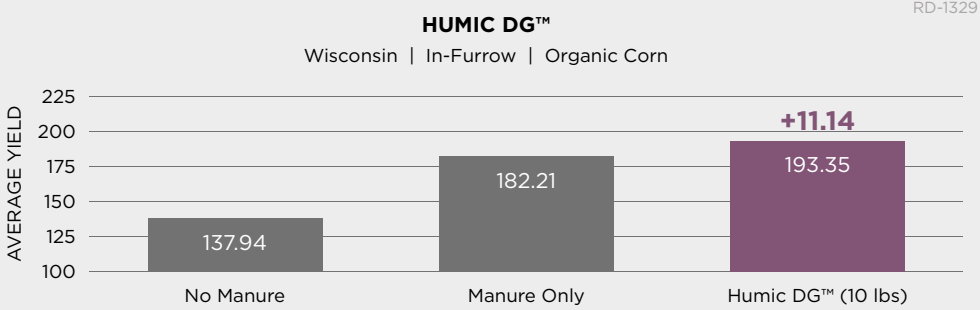
28% UAN (60 gal) with Nutrisphere-N®/ 0.5% v/v applied on June 25

SOIL TEST INFORMATION

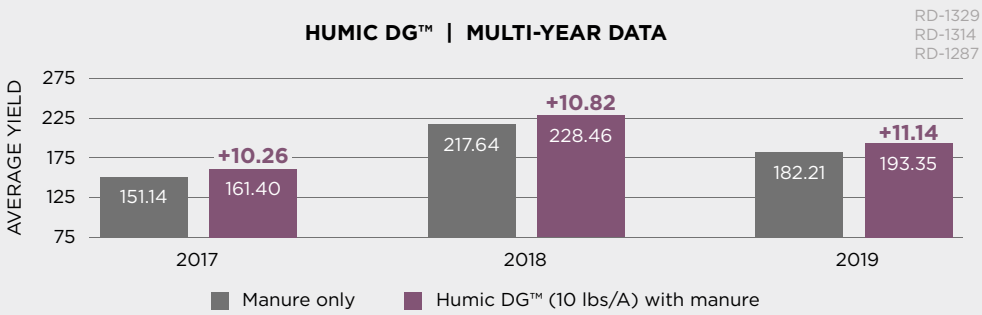
pH	6.5
CEC	13.7
% OM	3.90
P ppm	58
K ppm	153
Mg ppm	345
Ca ppm	1850

Humic DG™

RD-1329



RD-1329
RD-1314
RD-1287



PLOT INFORMATION

LOCATION
Whitewater, Wisconsin

DESCRIPTION OF TREATMENT
Humic DG™ (10 lbs)

TREATMENT TIMING
At planting, in-furrow

PLANTING DATE
May 17, 2019

HYBRID
Non-GMO Organic Corn
108RM

PLANT POPULATION
35,000

ROW SPACING
30 inches

BASE FERTILITY PROGRAM
160 units of N through manure

SOIL TEST INFORMATION

pH	6.8
CEC	16.2
% OM	2.2
P ppm	37
K ppm	144
S ppm	1.9
Zn ppm	3.2
Mg ppm	241
Ca ppm	1316

FULL SYSTEM MANAGEMENT PROGRAM

IN-FURROW

Season Pass® Plus Diamond with AVAIL® (5 gal)

Sweet 'N Eezy™ (2 qts)

MicroCarb® (1 qt)

FOLIAR AT V4

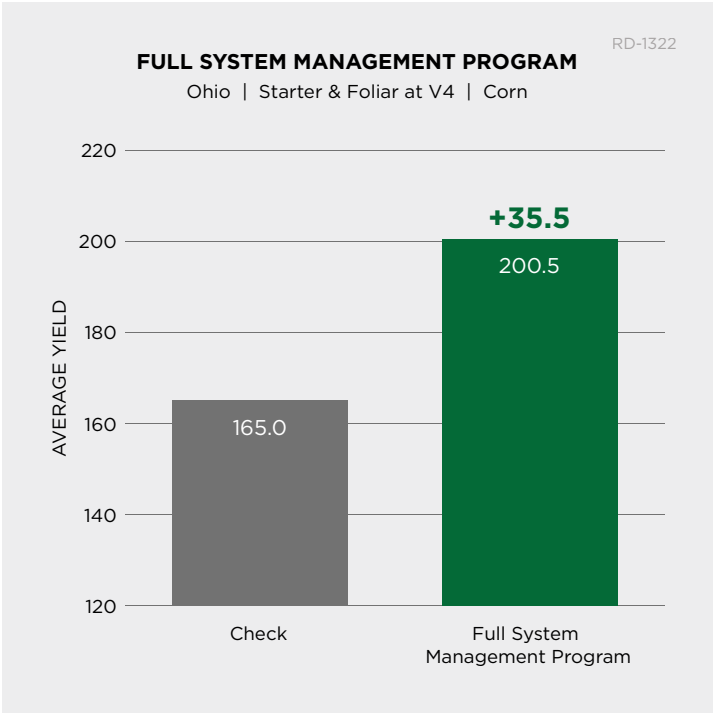
Korrect™ (2 gal)

Over Pass® CF (2 gal)

Phosfix® (1 pt)

MicroNourish® (1 qt)

Sweet 'N Eezy™ (1 pt)



PLOT INFORMATION

LOCATION
Troy, Ohio

PLANTING DATE
June 3, 2019

HYBRID
XL® 5828AM™

PLANT POPULATION
32,000

ROW SPACING
30 inches

HERBICIDES
Acuron® (3 qt)
Atrazine (1 qt)
Glyphosate (32 fl oz)

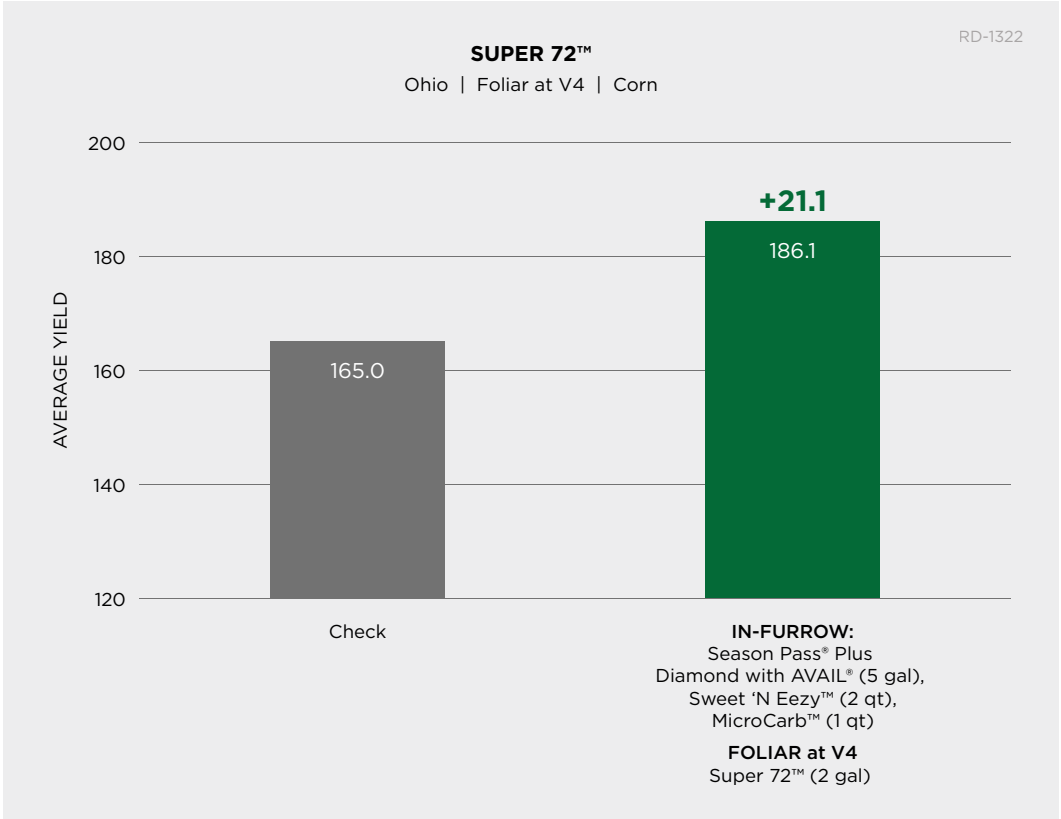
BASE FERTILITY PROGRAM
28% UAN (25 gal) applied on June 7

28% UAN (60 gal) with Nutrisphere-N®/ 0.5% v/v applied on June 25

SOIL TEST INFORMATION

pH	6.5
CEC	13.7
% OM	3.90
P ppm	58
K ppm	153
Mg ppm	345
Ca ppm	1850

SUPER 72™



PLOT INFORMATION

LOCATION
Troy, Ohio

PLANTING DATE
June 3, 2019

HYBRID
XL® 5828AM™

PLANT POPULATION
32,000

ROW SPACING
30 inches

HERBICIDES
Acuron® (3 qt)
Atrazine (1 qt)
Glyphosate (32 fl oz)

BASE FERTILITY PROGRAM
28% UAN (25 gal) applied on June 7

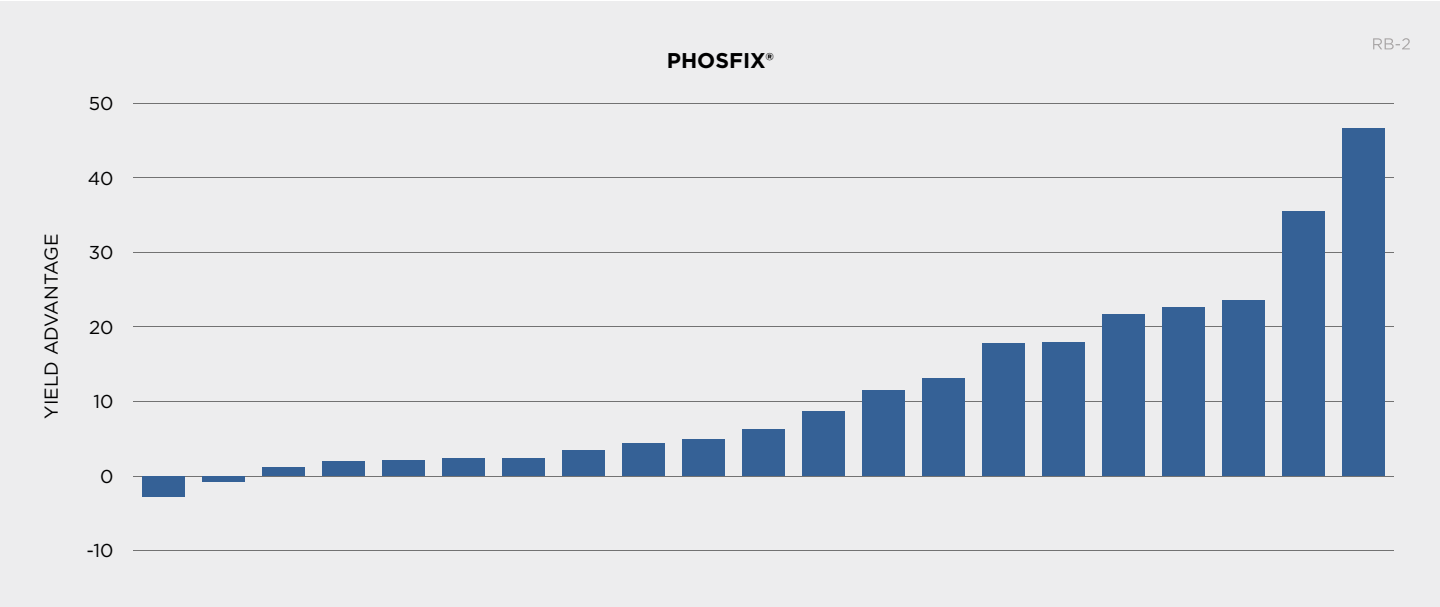
28% UAN (60 gal) with Nutrisphere-N®/ 0.5% v/v applied on June 25

SOIL TEST INFORMATION

pH	6.5
CEC	13.7
% OM	3.90
P ppm	58
K ppm	153
Mg ppm	345
Ca ppm	1850

PHOSFIX®

Over the course of 21 trials with Phosfix on corn, a positive yield advantage was observed 90% of the time over the untreated control.



The above graph is a compilation of all foliar corn trials involving Phosfix from years 2014-2019.

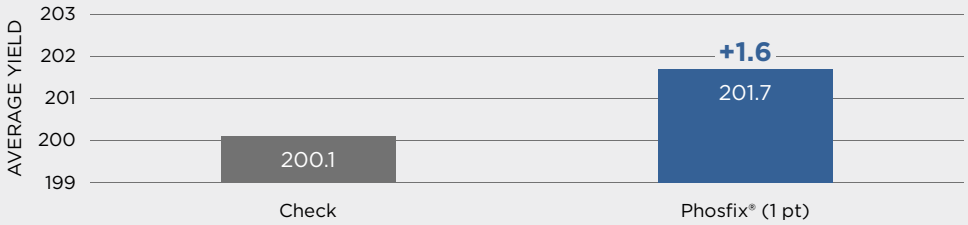
Test locations include: OH, IN, IL, CO and KY

PHOSFIX®

PFR-2019

PHOSFIX®

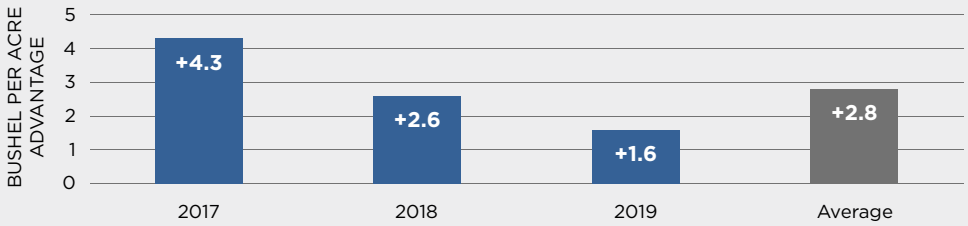
Kentucky, Ohio, and Iowa | Foliar at V4 | Corn



PFR-2017-2019

PHOSFIX® | MULTI-YEAR ADVANTAGE

Multi-location | Foliar at V4 | Corn

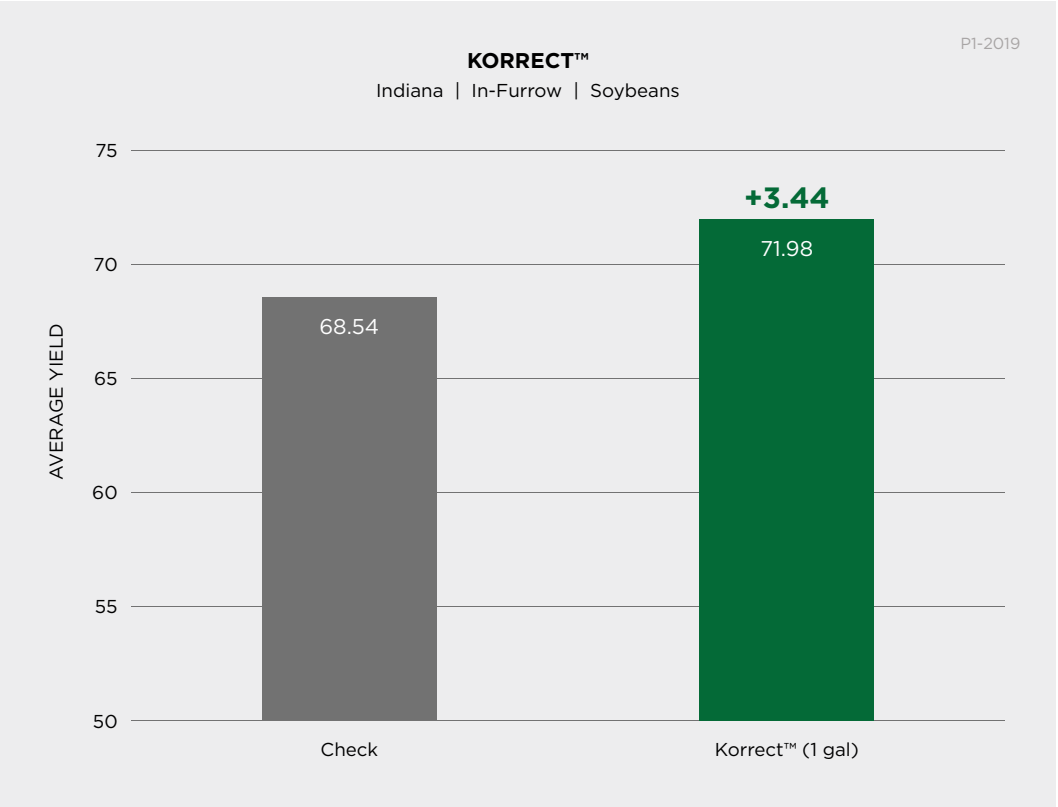


PFR PROVEN™

BECK'S

Phosfix is a dynamic product that helps relieve plant stress during critical periods of the growing season. During the V5 growth stage corn is determining the number of kernels around the ear, making this an essential time to minimize stress to maximize yield. Year over year this proves true, and the application of Phosfix results in increased yield. This year, Phosfix has earned the title of PFR Proven™ by providing a positive ROI in the Beck's PFR trials for three consecutive years.

KORRECT™



PLOT INFORMATION

LOCATION
Walton, Indiana

DESCRIPTION OF TREATMENT
Korrect™ (1 gal)

TREATMENT TIMING
At planting, in-furrow

PLANTING DATE
June 14, 2019

HYBRID
P31A22X

PLANT POPULATION
140,000

ROW SPACING
30 inches

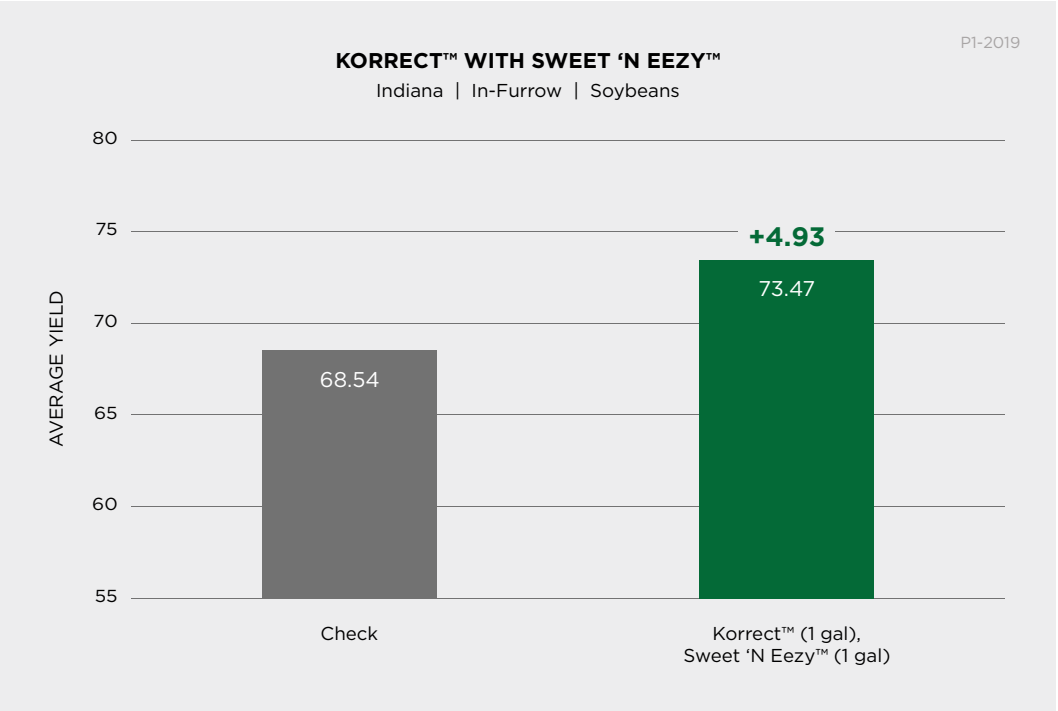
HERBICIDES
Durango® (24 oz) applied pre-emergence

Durango® (24 oz) applied post-emergence

FUNGICIDES
Trivapro™ (13.7 oz)

BASE FERTILITY PROGRAM
Variable rate technology (VRT) according to Tri-State recommendations

KORRECT™ & SWEET 'N EEZY™



PLOT INFORMATION

LOCATION
Walton, Indiana

DESCRIPTION OF TREATMENT
Korrect™ (1 gal)
Sweet 'N Eezy™ (1 gal)

TREATMENT TIMING
At planting, in-furrow

PLANTING DATE
June 14, 2019

HYBRID
P31A22X

PLANT POPULATION
140,000

ROW SPACING
30 inches

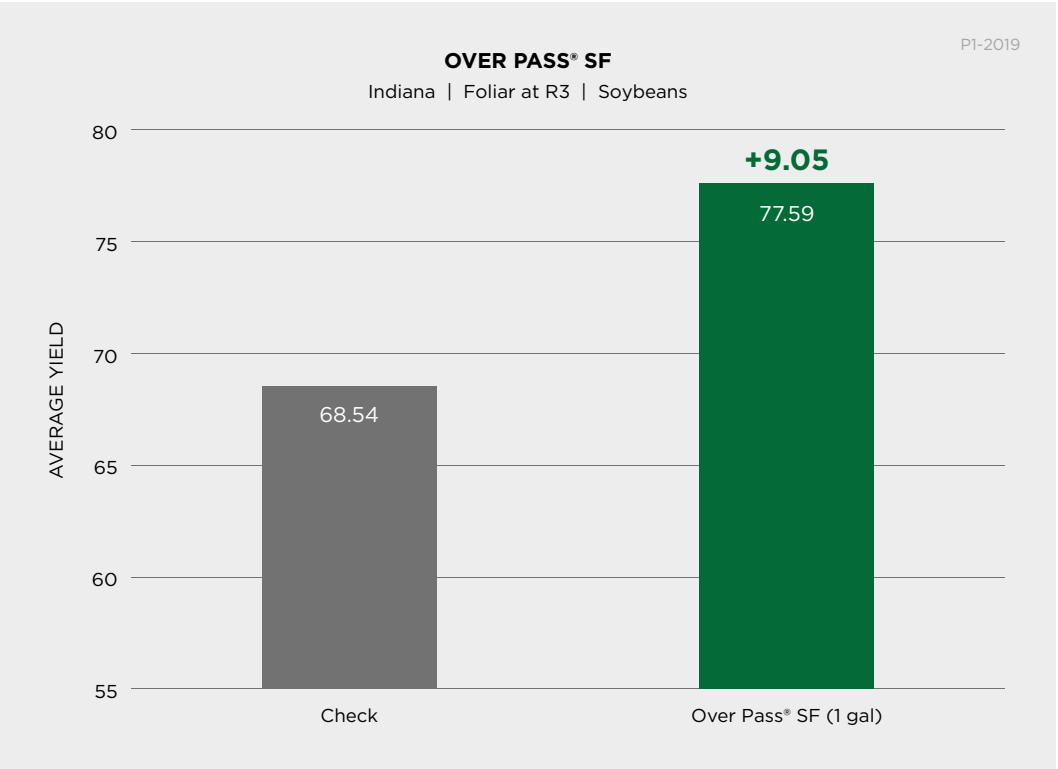
HERBICIDES
Durango® (24 oz) applied pre-emergence

Durango® (24 oz) applied post-emergence

FUNGICIDES
Trivapro™ (13.7 oz)

BASE FERTILITY PROGRAM
Variable rate technology (VRT) according to Tri-State recommendations

OVER PASS® SF



PLOT INFORMATION

LOCATION
Walton, Indiana

DESCRIPTION OF TREATMENT
Over Pass® SF (1 gal)

TREATMENT TIMING
Foliar at R3

PLANTING DATE
June 14, 2019

HYBRID
P31A22X

PLANT POPULATION
140,000

ROW SPACING
30 inches

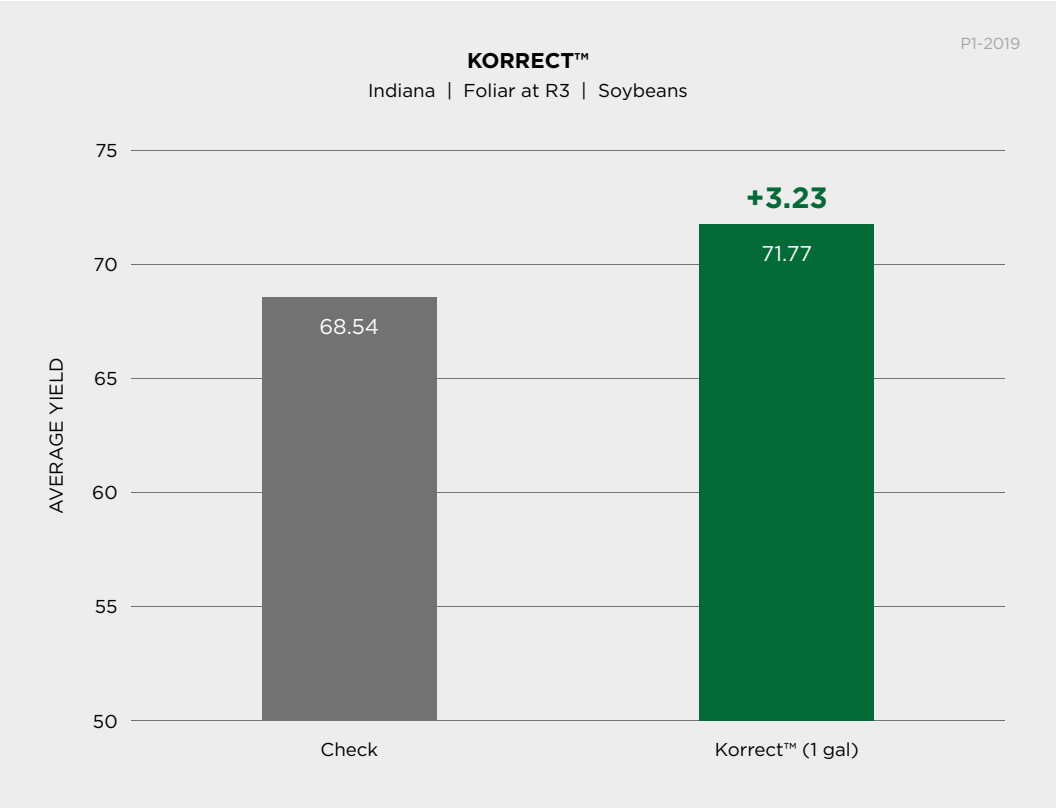
HERBICIDES
Durango® (24 oz) applied pre-emergence

Durango® (24 oz) applied post-emergence

FUNGICIDES
Trivapro™ (13.7 oz)

BASE FERTILITY PROGRAM
Variable rate technology (VRT) according to Tri-State recommendations

KORRECT™



PLOT INFORMATION

LOCATION
Walton, Indiana

DESCRIPTION OF TREATMENT
Korrect™ (1 gal)

TREATMENT TIMING
Foliar at R3

PLANTING DATE
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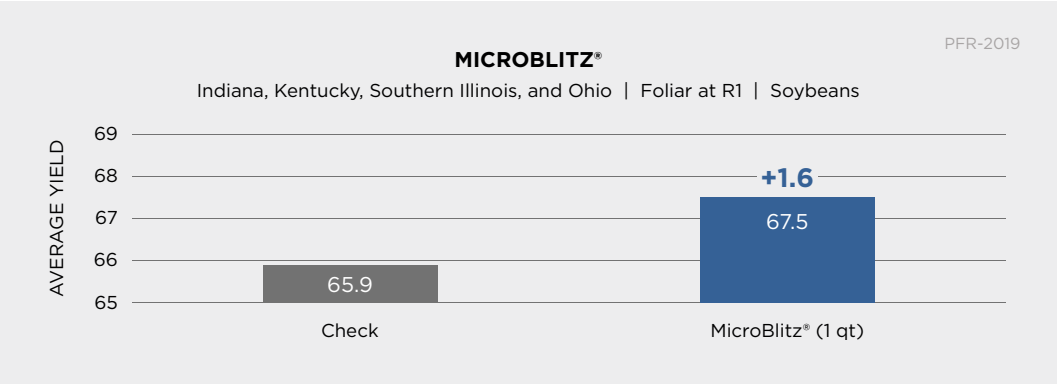
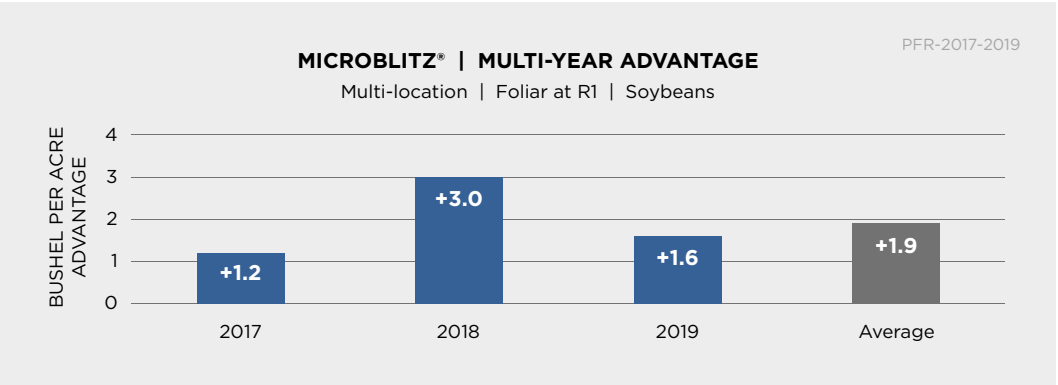
BASE FERTILITY PROGRAM
Variable rate technology (VRT) according to Tri-State recommendations

MICROBLITZ®



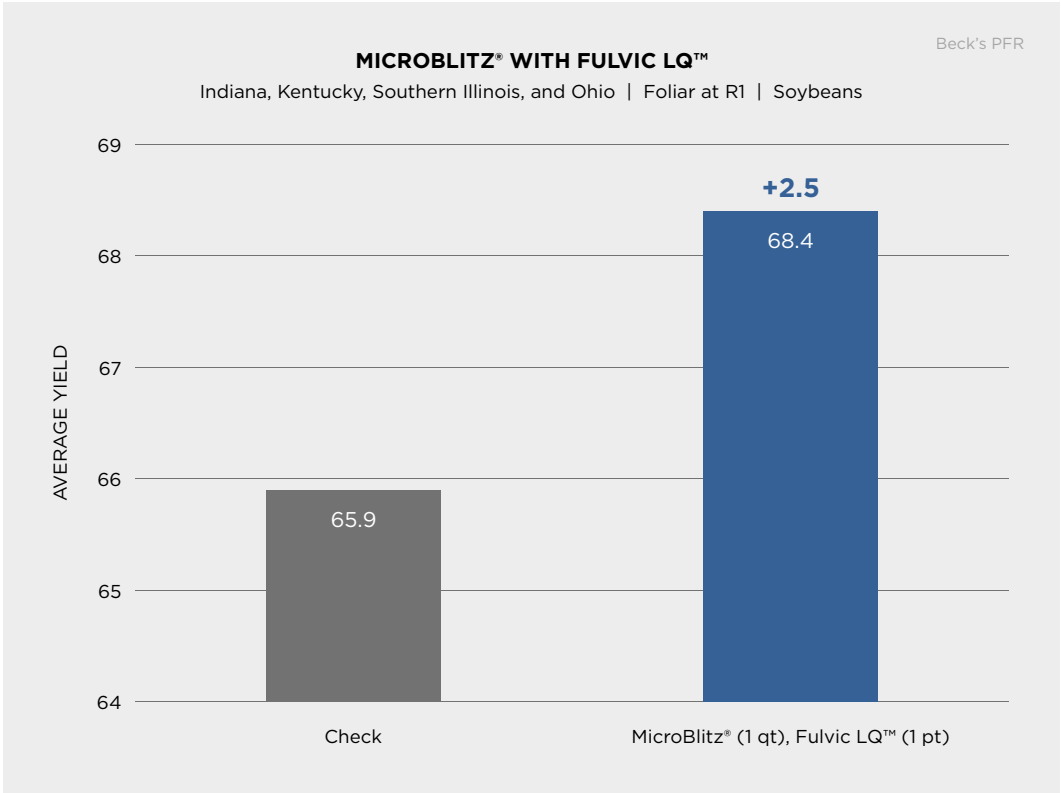


PFR PROVEN™

BECK'S

2019 was the third year Beck's PFR tested a foliar application of MicroBlitz at the R3 growth stage on soybeans. These trials resulted in a positive yield increase for three consecutive years, earning MicroBlitz the PFR Proven™ endorsement.

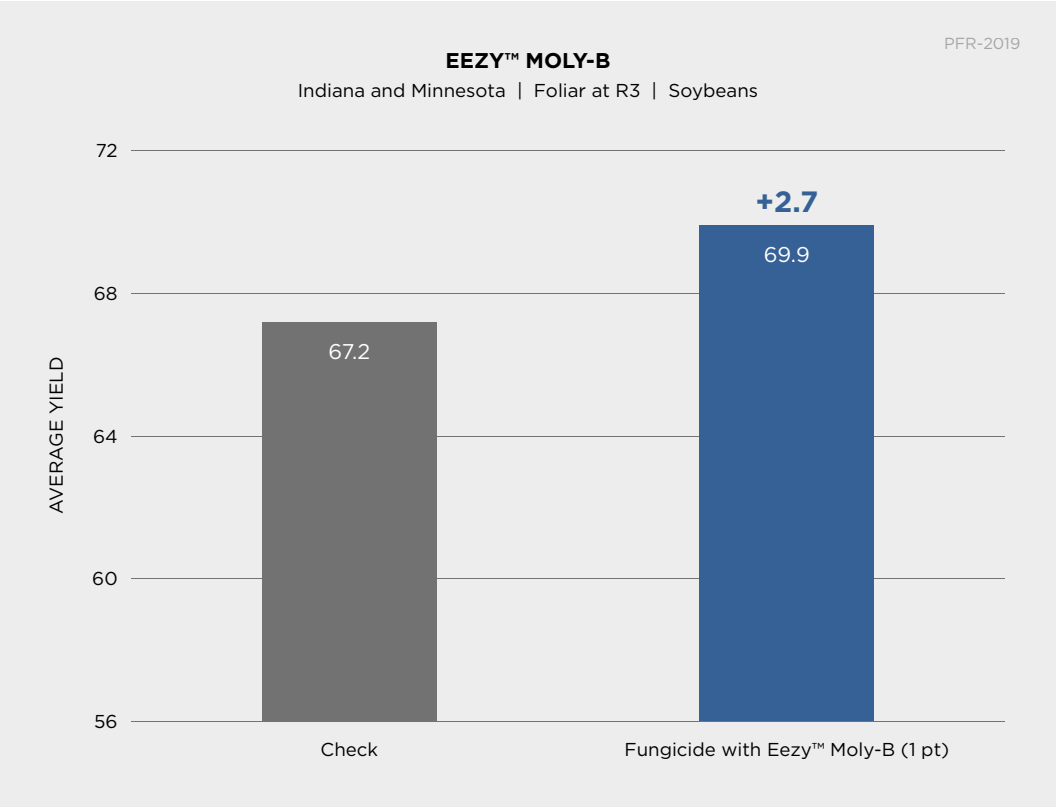
MICROBLITZ® | Fulvic LQ™



"Foliar micronutrient packages are intended to bridge the gap during rapid growth and uptake, which sometimes coincides with dry mid-season conditions. In 2019, we experienced wet planting conditions and reduced root systems, which were paired with dry weather during the rapid growth stage. It was a great year to demonstrate the value of foliar feeding."

– Beck's PFR Book 2019, page 125

EEZY™ MOLY-B



"The two locations that conducted this study experienced very different weather patterns. Indiana was dry late and the site has lower organic matter soils. Responses were much larger at the Indiana site compared to Minnesota with its high O.M. soils and ample rainfall in 2019."

– Beck's PFR Book 2019, page 123

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