



2019
PERFORMANCE
REPORT



2019 UNIVERSITY STUDIES

Pivot Bio PROVEN™ was evaluated in field trials at six land grant universities in 2019. At most locations, Pivot Bio PROVEN™ performance was assessed across a range of nitrogen rates. At other locations, the focus was to determine the effect of our microbe on above-ground nutrient uptake and eventual nutrient accumulation in the grain.

At most locations, yield benefits from Pivot Bio PROVEN™ occurred within multiple nitrogen rates. Testing revealed that yield increases occurred using nitrogen rates similar to, and slightly below, those used by most farmers. This is an indication that our microbe is still working despite the presence of nitrogen in the soil, unlike many nitrogen-fixing microbes that shut down in the presence of soil nitrogen.

These data also suggest that nitrogen rates could be reduced in some environments when Pivot Bio PROVEN™ is used in conjunction with farmer-applied nitrogen. There are also indications that our microbe is helping corn plants take up more nitrogen that eventually ends up in the grain.

Partnerships with land grant institutions will be expanded in 2020 as we continue to characterize Pivot Bio PROVEN™ and develop strategies to help farmers reduce their dependence on synthetic nitrogen.



“Having worked with nitrogen fertilizers my entire career, I can honestly say that Pivot Bio PROVEN™ is something that I get excited about. New technology in an age where increased efficiency is the name of the game. I don’t think we are to the point where it can entirely replace nitrogen fertilizer additions, but anything helps, especially in our low organic matter and low fertility soils.”

Dr. Trenton Roberts

Associate Professor of Soil Fertility/Soil Testing, University of Arkansas



“Our 2019 trials suggest Pivot Bio PROVEN™ may benefit soil nitrogen availability and root growth, contributing to greater yield. We’re very excited for an expanded round of trials in 2020 to learn more about Pivot Bio PROVEN™ and how we can optimize agronomic management.”

Dr. Michael Castellano, Ph.D.

Professor, Iowa State University, Department of Agronomy



“An adequate season-long supply of nitrogen is crucial for optimal corn productivity. Pivot Bio PROVEN™ is able to supply an additional source of nitrogen to actively growing crops, helping to ensure nitrogen is not limiting plant growth and yield. We are excited about our initial trial findings from 2019, and we look forward to continuing to explore the capabilities of Pivot Bio PROVEN™ in 2020.”

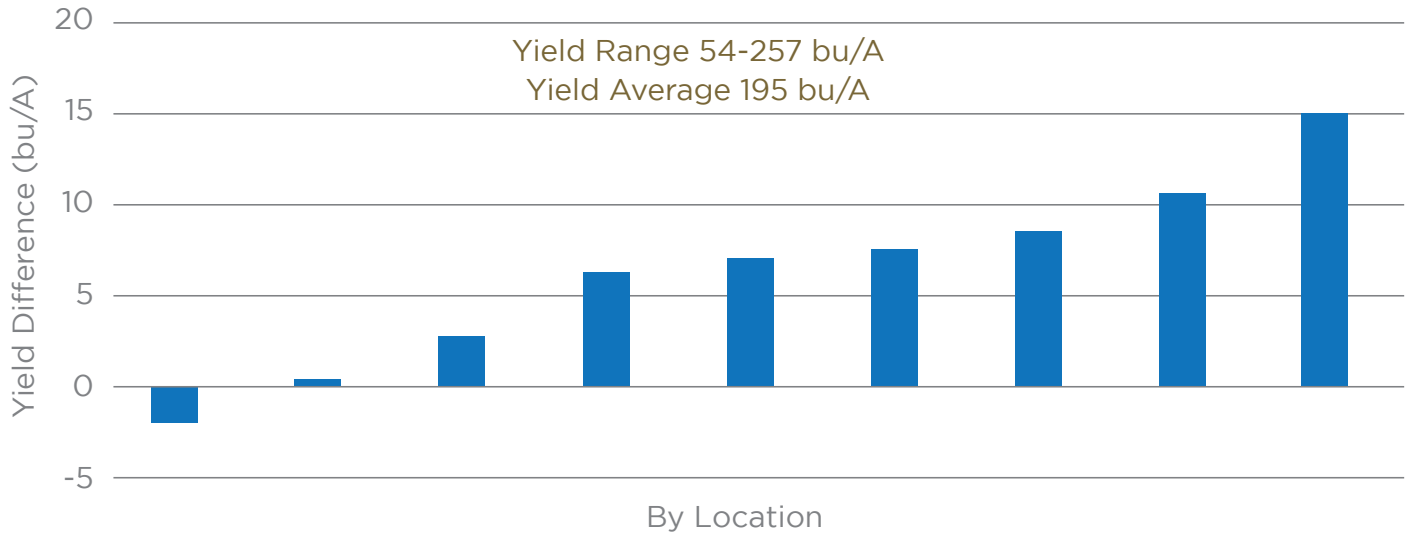
Dr. Fred Below

Professor of Plant Physiology, Department of Crop Sciences,
University of Illinois

The following universities conducted on-farm trials in 2019 using Pivot Bio PROVEN™:



89% Win Rate 6 bu/A Yield Advantage



* Data from small plot replicated university trials. Data collected at 9 different locations from 6 different institutions. Yield responses to Pivot Bio PROVEN™ displayed only represent results using nitrogen rates reflective of grower practices at each location. Some locations evaluated responses to Pivot Bio PROVEN™ using nitrogen rates lower and higher than those that would be typically used by farmers. Those responses are not displayed in this figure.

UNIVERSITY YIELD SUMMARY — RECOMMENDED N RATES ONLY

University	Location	Soil Type	OM	pH	CEC	Lbs. N	PROVEN™ YIELD	CONTROL YIELD	YIELD DIFF
UNL ¹	Sydney, NE	Keith Loam	2.3	7.7	15.3	115	57.2	50.2	7.0
UIUC	Ewing, IL	Cisne Silt Loam	1.5	7.0	11.5	180	140.0	132.0	8.5
UIUC	Champaign, IL	Flanagan Silt Loam	3.2	6.2	16.9	180	255.5	249.0	6.5
UIUC ¹	Champaign, IL	Flanagan Silt Loam	3.3	6.4	26.6	200	178.0	180.0	-2.0
UIUC	Yorkville, IL	Drummer Silty Clay Loam	5.7	6.8	29.2	180	258.1	255.3	2.8
UARK ¹	Colt, AR	Calhoun Silt Loam	1.8	7.5	12	220	245.1	234.4	10.7
UMN ¹	Rosemount, MN	Waukegan Silt Loam	4.7	5.2	9.5	150	236.7	236.3	0.5
KSU ¹	Manhattan, KS	Ivan-Kennebec Silt Loams	2.5	6.6	20.4	150	187.9	172.7	15.2
ISU ²	Ames, IA	Webster Clay Loam	5.0	—	—	140-200	178.7	174.6	4.1
AVG							195	189	6

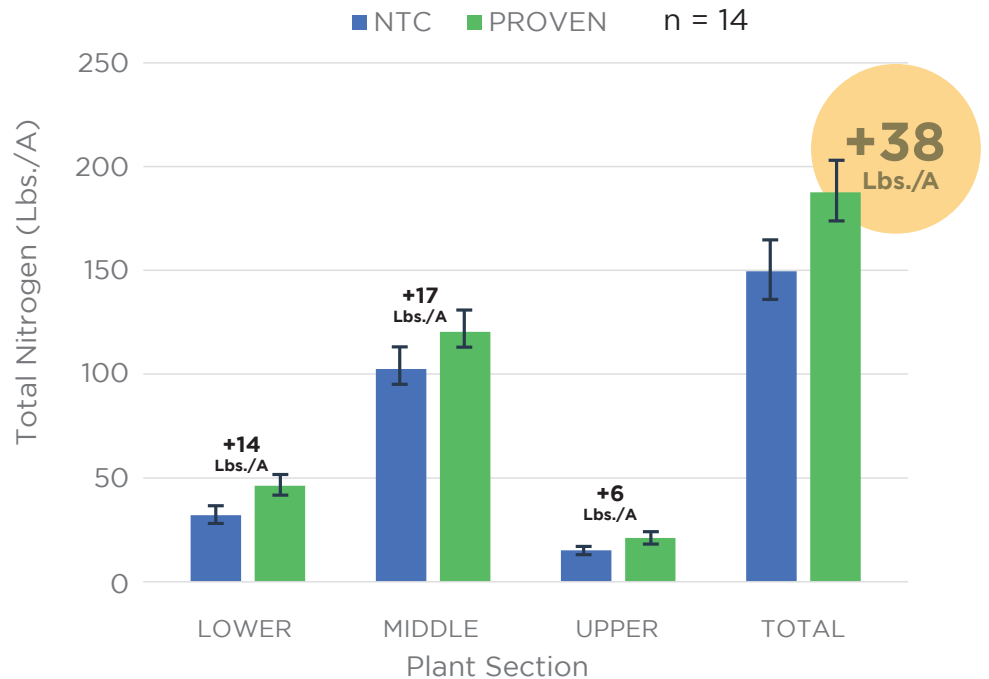
¹ Denotes experiment that had a Nitrogen rate component.

² For ISU location, there was no recommended N rate included in the nitrogen titration. Therefore, the average response to Pivot Bio PROVEN™ with 140 and 200 Lbs. N/A was used.

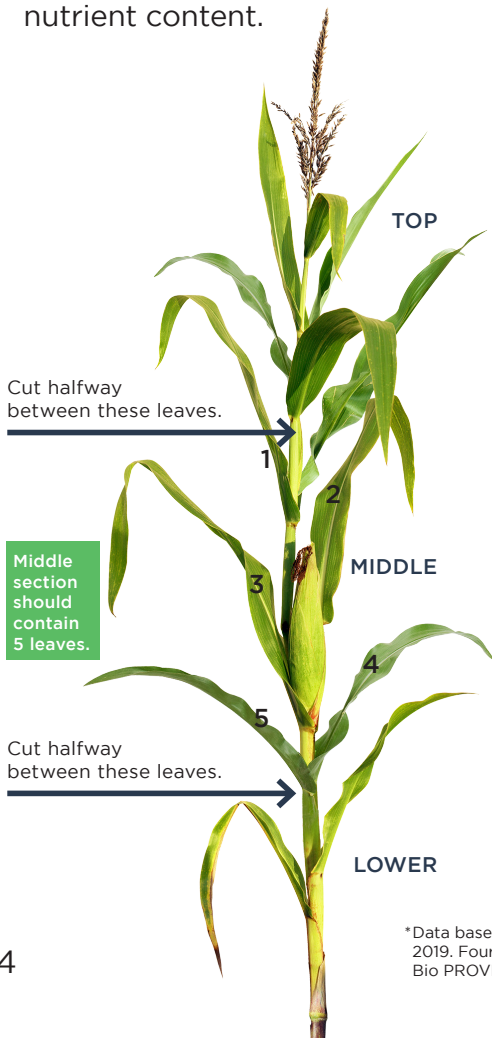
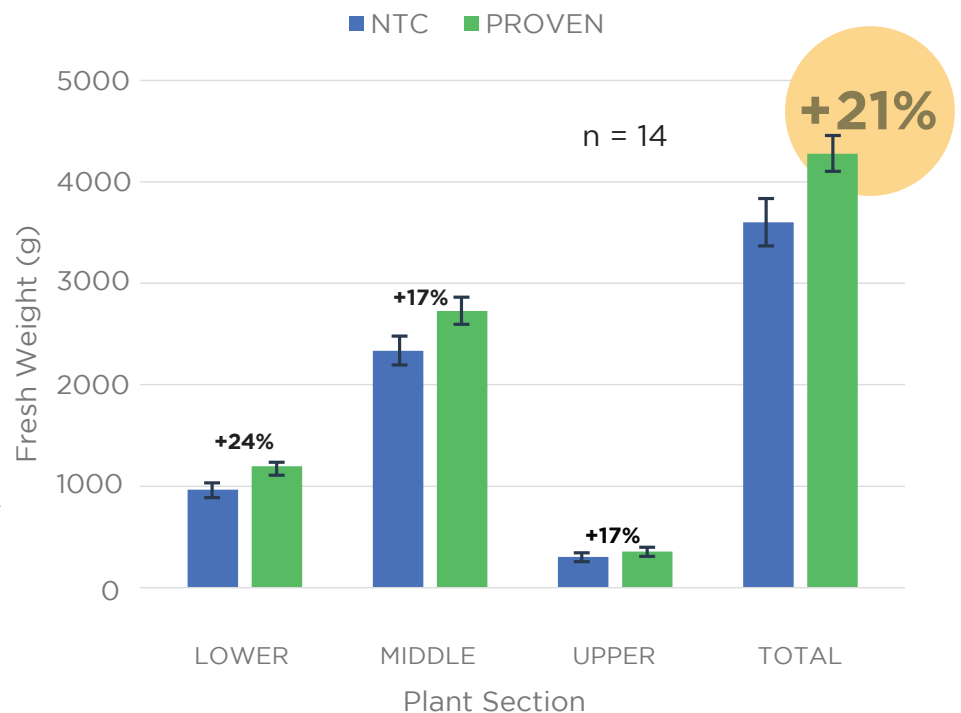
IN-PLANT NITROGEN

A study was conducted to determine the impact of Pivot Bio PROVEN™ on above-ground plant nitrogen. Plants were tested from the treated and nontreated areas of fields with visual differences. The plants were then cut into top, middle and bottom sections. The plant population was documented and composite sections were weighed before being sent for nutrient analysis. The pounds of nitrogen per acre were calculated on biomass, population and nutrient content.

Lbs. of Nitrogen by Plant Section*

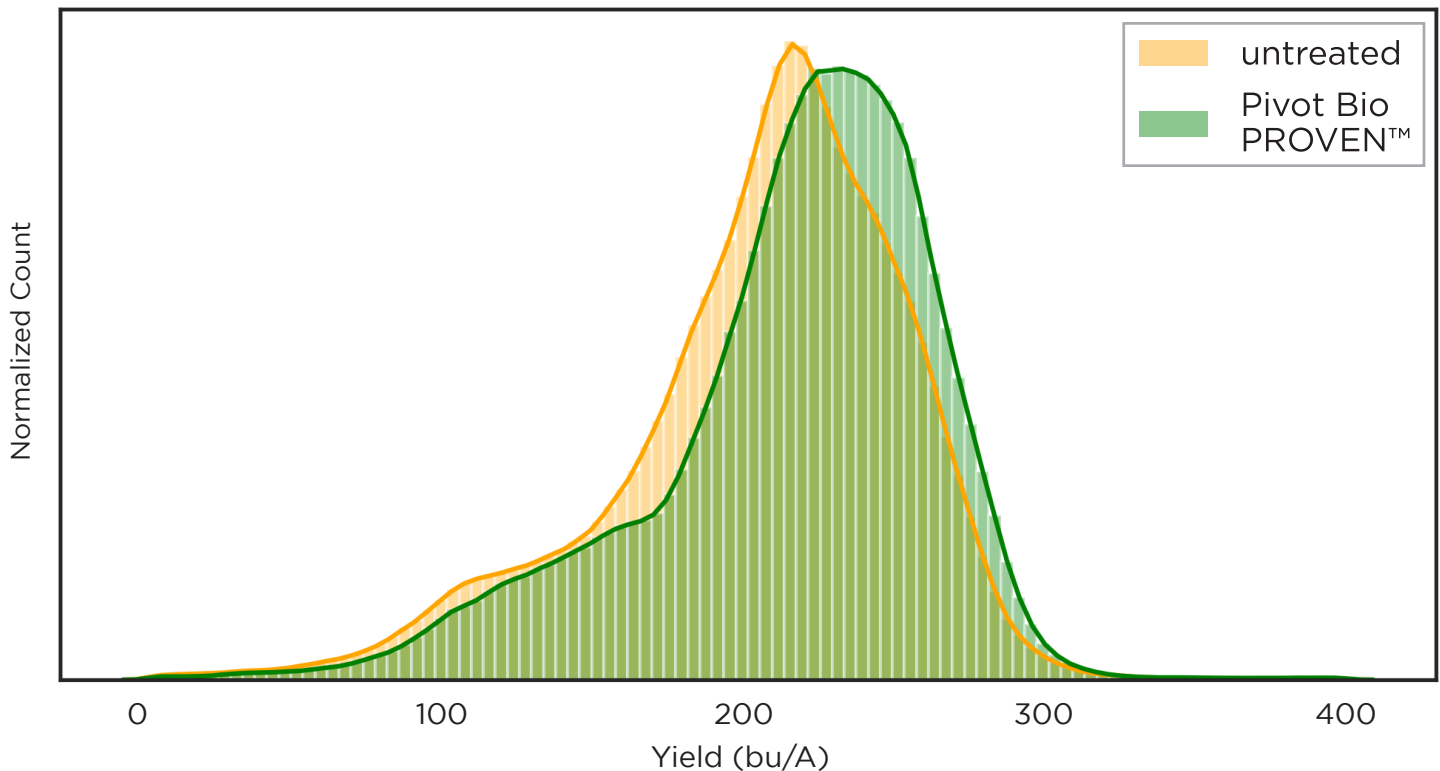


Plant Fresh Weight by Plant Section*



*Data based on plants collected from 10 farmer fields that exhibited visual growth differences with Pivot Bio PROVEN™ in 2019. Four locations had multiple sampling locations. Data likely reflects best case plant growth performance with Pivot Bio PROVEN™ in 2019. May not be reproduced without permission from Pivot Bio ©2020 PIVOT BIO

All Trials: 4.6 Million Data Points



Pivot Bio PROVEN™ treated areas produced consistently higher yields (illustrated in figure above — green data points between 210 and 300 bu/A) compared to synthetic nitrogen only areas that had lower yields and greater variability (illustrated by the yellow data points below 200 bu/A). Therefore Pivot Bio PROVEN™ appears to be increasing the yield of lower-yielding areas and providing improved yield consistency across entire fields.

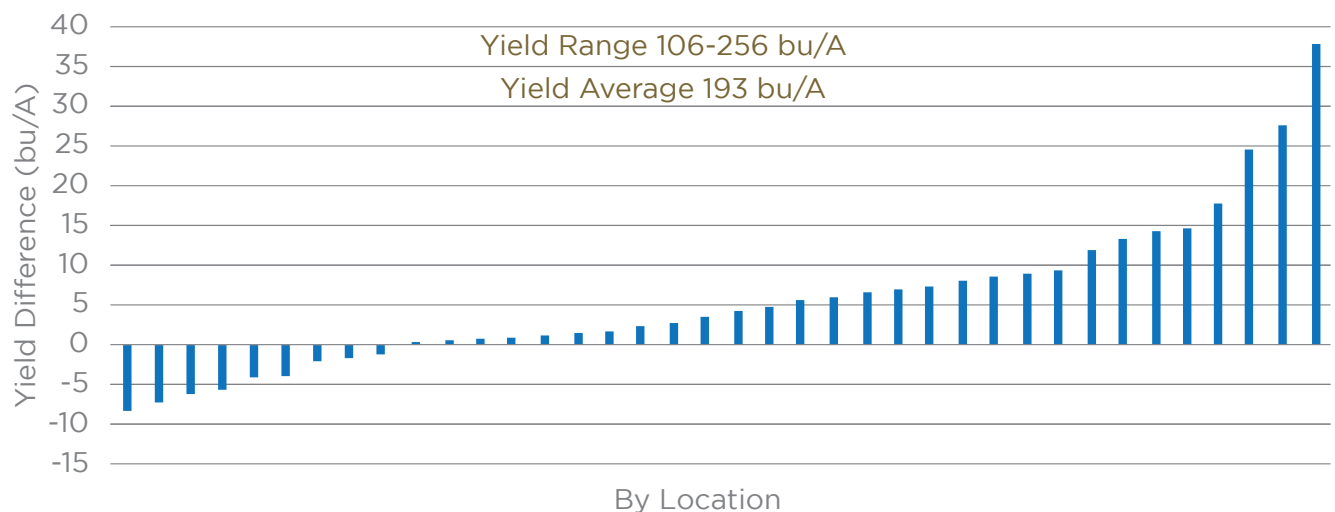
Due to different soil types and uneven ground, it is typical for growers to see yield variances. Pivot Bio PROVEN™ stays on the root of the corn plant, applies nitrogen to the plant daily, and doesn't wash away or volatilize into the air. As part of its extensive 2019 studies, Pivot Bio also analyzed the impact of Pivot Bio PROVEN™ on yield stability. Pivot Bio found that this consistent source of nitrogen helps the entire field, regardless of topographic differences, produce a more consistent yield.

"Every field has spots that lose nitrogen to leaching, runoff, or denitrification. Pivot Bio PROVEN™ may be especially effective in these less productive areas of fields because it provides a constant source of nitrogen directly to the plant roots," said Dan Poston, Director of Agronomy for Pivot Bio. "In fact, our digital data suggests that Pivot Bio PROVEN™ is reducing the number of low yield points in fields while increasing the number of higher-yielding points."

2019 INTENT TO PIVOT TRIALS

For the 2019 season, 35 farmers, across 4 states, measured the performance of Pivot Bio PROVEN™ in states pending commercial approval. In the states where Pivot Bio PROVEN™ was commercially available, IN10T supported more than 75 growers to collect on-farm, real-world harvest data to validate product performance and listen to farmers feedback.

76% Win Rate
5.8 bu/A Yield Advantage



* Data from on-farm block IN10T farmer trials.

Data collected from 30 different locations that produced a total of 38 observations.

OBSERVATIONS FROM THE FIELD



WHAT GROWERS ARE SAYING



**“HAVING PEACE OF MIND
KNOWING WE CONTINUE
TO HAVE A HEALTHY CROP
EVEN IF THE WEATHER
DOESN'T ALLOW US TO
GET OUT THERE.”**

Garrett R.
Missouri



**“IF WE CAN SPEND A
DOLLAR AND MAKE TWO
DOLLARS, THAT'S A BIG WIN
FOR US. LAST YEAR WITH
PIVOT BIO, IT WAS GREATER
THAN A 5-TO-1 RETURN.”**

Kevin P.
Minnesota



**“NOT ONLY IS THAT MORE
MONEY IN MY POCKET, BUT
IT'S LESS MONEY I HAD TO
SPEND ON FERTILIZER AND
WEAR AND TEAR ON MY
SIDE-DRESSING SPRAYER.”**

Zach R.
Oklahoma



FARMERS WHO USED PIVOT BIO PROVEN™ IN 2019
RATED THEIR **OVERALL EXPERIENCE AN 8 OUT OF 10.**



As I reflect on this past year, I am filled with gratitude for all those who worked with Pivot Bio. Thank you for allowing us to continue our mission to displace synthetic nitrogen fertilizer with microbes that adhere to the root systems of crops and produce nitrogen each day. On behalf of the Pivot Bio team, we are humbled and inspired by the widespread interest you have shown in our inaugural product, Pivot Bio PROVEN™.

Throughout the year, we worked alongside our farmer customers to ensure they were successful with our product. Their success is our success, and we did not do it alone. We worked with some of the foremost university experts to test our product, and we continued our work with IN10T to collect millions of data points from an expansive on-farm program. Results from university studies and our on-farm testing are detailed in this report.

Year-after-year, our strong results continue to validate our core belief that Pivot Bio is on a path to help farmers use a new source of nitrogen and achieve better outcomes. This is only the beginning. I look forward to what the future holds.

Here's to a great 2020!



Sincerely,

Karsten Temme
CEO and Co-Founder
Pivot Bio

Thank you to all who contributed to 2019's success:

- The farmers across the U.S. who applied Pivot Bio PROVEN™ to their corn crops in 2019
- Pivot Bio employees and its independent sales representatives
- IN10T, an independent agronomic field research partner
- Iowa State University, College of Agriculture
- University of Arkansas, College of Agriculture
- University of Nebraska, (Lincoln) College of Agriculture
- University of Illinois, (Urbana-Champaign) College of Agriculture
- Kansas State University, College of Agriculture
- University of Minnesota, College of Agriculture