PIVOT BIO

Why Now

WE STAND FOR FUTURE-POSITIVE AGRICULTURE

2023 IMPACT REPORT

A catalyst for positive change, Pivot Bio brings partners together in pursuit of a sustainable future for agriculture.

Growing the crops to sustain billions more people and reducing our climate-changing emissions are among the grand challenges of our time. Key to both is nitrogen: Nitrogen fertilizers (such as anhydrous ammonia, urea and urea ammonium nitrate) are essential to generate the crop yields we can't live without; yet their over-application results in nitrous oxide (N_2O) emissions that have a climate warming potential orders of magnitude greater than that of CO_2.

Pivot Bio is a solution at this intersection. It's what future positive agriculture means to us: helping farmers grow the crops the world needs, reliably and sustainably, in the face of increasing volatility. We're on a journey to demonstrate the power of our microbes to strengthen growers and fundamentally reshape the relationship between nitrogen inputs and climate impacts.

In 2023, Pivot Bio customers avoided >706,000 tCO_2e[3,4,5,6] emissions by reducing synthetic nitrogen fertilizer on their farms. This is that story.

2023 IMPACT REPORT

The family business of feeding the world

Farming is about passing forward a legacy: stewarding operations and the land to hand things off better to the next generations. At Pivot Bio, we couldn't be more serious about our responsibility in this equation. **And we know the first word on the subject belongs to growers. This is how one family is thinking about the challenges and opportunities of growing the crops we all rely on.**

Q&A WITH MARTE AND DANE TITMAN, BOONE, IA

MARTE TITMAN

Third-generation grower

DANE TITMAN

Fourth-generation grower (+ seed and Pivot Bio salesman)

Marte and Dane working on their farm

DANE: How long has this operation been in our family and what does that mean to you?

MARTE: I graduated high school in 1980 and started farming that year with my dad. His dad started farming in Boone in 1936. A family operation is the best thing you could ever ask for. It's going to drop down into good hands and be taken care of. That's what it's all about: the next generation coming up.

DANE: What's something that'll be different for me when I take over the farm than it was for you?

MARTE: The modern technologies have changed so much. I'm not very good with the technology side of it, but you are — I already call you all the time.

DANE: I mean, you've been doing the same thing for 40 years. It's hard to change into something different. But the younger generation, I feel like, is more adaptive to trying new things. What do you think the future of agriculture will look like?

MARTE: 40 years ago, if you raised 120 bushels of corn, you were doing great. Nowadays, we're pushing 240 to 270. The seed industry has changed so much to produce that much out of a plant — and we have to feed the world, so we have to raise that many bushels. You have to put more product on your field to get that yield. Having Pivot Bio makes it better for us.

DANE: What made you implement Pivot Bio's product when you did?

MARTE: Well, you sell it. And they were very good to work with. Pivot Bio came in and helped put the system on our planter and everything. Their on-seed treatment is God's blessing — they put it on the seed right before we get ready to plant. Boom! Goes in the planter, done. It works out great for us.

DANE: Yeah, I work at a seed dealership; I want to say four years ago two or three customers came to us and wanted Pivot Bio. But we also put it on your farm and when we did trials, we saw that it was working. And so five turned to 10 and to 20 and ever since then, we're skyrocketing it up. If we can get away from anhydrous or liquid nitrogen, we can help the soil and the Earth and our farmland. That's the end goal.

MARTE: You've got to care about erosion and what's going to happen with your farm 10 years from now. Because guess what? They're not making any more dirt — that's all we got.

DANE: Right. It's more efficient,

(continued on next page)

The Titman family

but also just preserving what we have. We need to get away from what's harming the land and the water and get into a biological. And if we don't have nitrogen, we won't raise corn. I mean, it's plain and simple.

MARTE: And it still comes down to the bottom dollar in the end. Doing it right so we can make some money and live another year.

DANE: Definitely. How are you feeling about what's ahead? About me taking over?

MARTE: I could tell right away when you were younger that you were going to be a farmer. You've got your own ideas, and most of the time they're better than mine. The hope is the farm stays in the family and keeps dropping down from generation to generation. Your two daughters might be farmers; there are a lot of gals out there today who are very good farmers. How are you feeling about it?

DANE: I'll be the fourth-generation farmer eventually. We've owned this ground since the '30s and I want to preserve it and keep the generations going. The goal is to build the farm to be sustainable, to hand off to my nephews or my daughters in the future. To make it another generation, I think we need to be more efficient in every aspect. Seed, fertilizer, tile, marketing our grain. The margins are getting tighter. I've always said: No. 1 is the soil. And No. 2 is fertilizer, because you can't raise a crop without it.

As a mom, a farmer and a Pivot Bio team member, I believe that committing to always doing things a little bit better — not just for us, but for our environment and our community — is the only way to live. My husband, Ryan, and I farm in Marshall County, Iowa. We grow primarily corn, but we also raise hay, feeder cattle and our most important crop: our two kids.

Ryan and I both come from family farms. I'm the sixth generation of my family farming in Iowa and while my father passed away before I had the opportunity to farm with him, he taught me a lot about what it means to be a farmer. He passed on his conservation-stewardship mindset. He knew that for the next generation to do better, we have to leave our farm, our ground, our dirt in better shape than when we got it. So Ryan and I work hard every year to make sure that we're doing right by the soil and the environment.

Pivot Bio enables us to use environmentally friendly nitrogen that's there for the plant all season long — nitrogen that's better for the soil and the overall plant health. And in the end, it comes down to the results we've seen: Pivot Bio makes our corn perform better, grow better, look better. There's better root development, more foliage on the plant and higher yield.

As growers, we have to adapt, change and be flexible. Through trial and error, we can solve for great challenges. Ryan and I have two young boys whom we look at and wonder if they'll become farmers someday. That's their choice to make, not ours; we'll support them in whatever they do. But for us, it's important to know that there's an opportunity for them to come back someday to a sustainable, healthy farm. And that's what drives us to work as hard as we do.

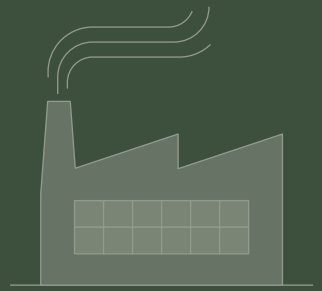
AMANDA DE JONG, HEAD OF GOVERNMENT AFFAIRS AND POLICY ENGAGEMENT AT PIVOT BIO AND CO-OWNER OF EDEN RIDGE FARMS IN IOWA


The De Jong family

Fifth-generation farm
Wells, MN

The Nitrogen Opportunity

The nitrogen we use is consequential for agriculture and the environment



Synthetic Nitrogen

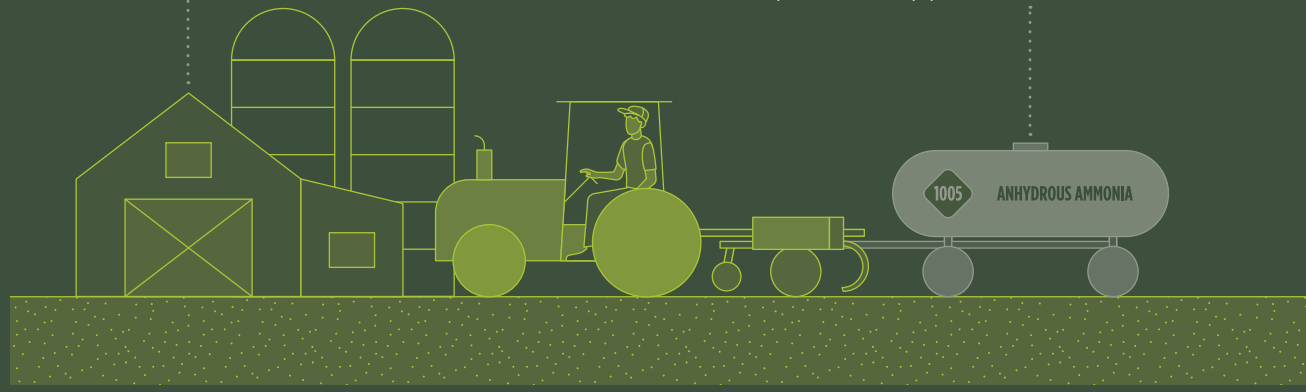
Synthetic nitrogen fertilizers are essential for today's agriculture. **Producing them is also resource- and emissions-intensive.** Manufacturing 1mt of ammonia generates roughly 2.6mt of CO_2e emissions[7] and uses about 7,600 gallons of water[8].

Pivot Bio Microbial Nitrogen

Pivot Bio changes everything. To deliver 1mt of on-field nitrogen, manufacturing Pivot Bio's microbes generates only 0.035mt CO_2e emissions and uses ~7 gallons of water[9] (learn more: pg 20).

Growing the yields we all rely on is no easy feat. Having the right nutrients in the right quantities at the right time is essential. When building their crop nutrition program, growers have to manage commodity and input pricing, land history and soil chemistry, safety and more.

Nitrogen is commonly recognized as the nutrient with the greatest influence on yield — getting enough to the crop is critical. Growers apply nitrogen fertilizers, in the form of anhydrous ammonia, UAN, urea, manure and other combinations, to their fields at various times during the year to achieve their desired nutrient profile and crop performance.



Pivot Bio products are designed to work with growers' existing crop nutrition programs and technologies, making it simpler for growers to integrate Pivot Bio into their operations.

PIVOT BIO PROVEN®40 ON-SEED

PIVOT BIO PROVEN®40 LIQUID IN-FURROW

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Growers face numerous challenges to ensure the nitrogen fertilizer they apply makes it to their crops. Factors like temperature fluctuations, irrigation, rain and drought all contribute to synthetic nitrogen losses. On average, less than 50%[10,11] of applied fertilizer is absorbed by the plant; the remainder is lost to the environment.

In volatilization, surface-exposed nitrogen fertilizers convert and escape as ammonia (NH_3) gas.

In leaching and runoff, mobile nitrates (NO_3-) move into groundwater or surface water via rainfall and irrigation.

In denitrification, soil microbes convert nitrates to gas forms of nitrogen, including nitrous oxide (N_2O), that release into the atmosphere.

Growers spend significant energy to take care of the soil, the land and their crops every year. **Optimizing nitrogen fertilizer use is top of mind for growers** — applying too much costs growers and too little means the crops don't reach their full potential.

In the climate, N_2O is a greenhouse gas 273x more potent than CO_2 and can damage the ozone layer[12].

In the air, ammonia and nitrogen oxides contribute to PM2.5 air pollution[13], leading to heart and lung disease.

In ecosystems, excess nitrogen disrupts native plant growth and contributes to acidification, dead zones and wildfires.

In the water, lost nitrates and nitrites contaminate drinking water and contribute to algal blooms, posing a threat to wildlife, livestock and people.

Growers apply Pivot Bio microbial nitrogen **in-furrow or on-seed at planting.**

When the seed germinates, **Pivot Bio microbes colonize the crop's root structure** and exchange nitrogen for sugars produced by the plant.

Microbe-produced nitrogen **stays fixed with the plant roots,** going directly to the crop and avoiding volatilization, leaching, runoff and denitrification.

As the crop grows, the Pivot Bio microbial community grows with it — **increasing its nitrogen delivery as the plant requires more nitrogen.**

By delivering nearly 40 lbs of fixed nitrogen per acre, **Pivot Bio provides growers opportunities to design stronger crop nutrition programs** and focus synthetic nitrogen fertilizer on more optimal applications.

For the climate, microbial nitrogen reduces fossil fuel use and avoids nitrous oxide emissions.

For the air, microbial nitrogen decreases pollutants from ground-level nitrogen oxides and improves air quality.

For ecosystems, microbial nitrogen reduces nitrogen deposition that contributes to biodiversity loss.

For water, microbial nitrogen eliminates leaching and runoff, and reduces the likelihood of algal blooms.

A note on nitrogen use efficiency

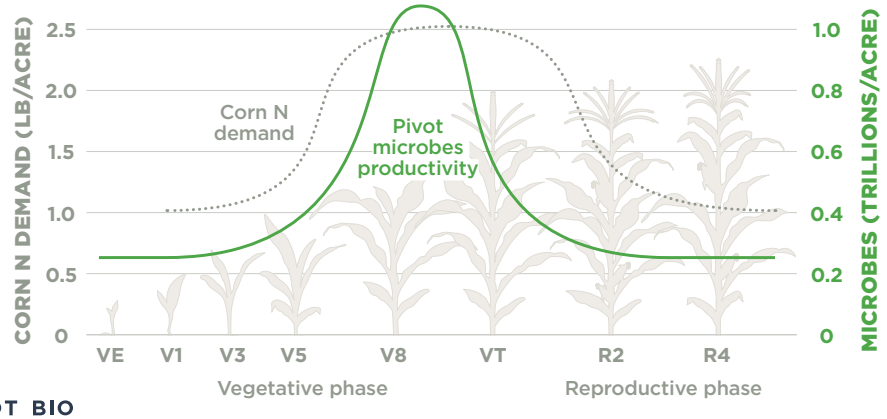
There's never more nitrogen in the soil than immediately after its application. Synthetic fertilizer is primarily applied before crops are growing, increasing its risk for loss and reducing its availability to crops. On average, less than half of applied fertilizer is typically recovered by the plant[14,15] and the rest is eventually lost to the environment.

Many factors can impact the recovery of the fertilizer by the plant from the soil, particularly the time of year the nitrogen is applied. Applying nitrogen fertilizers in the fall is known to result in lower recovery efficiency compared to spring or in-season applications. This is because the fall-applied nitrogen can't be absorbed by the plant until the spring, when the crop is growing; that means a grower who applies 200 lbs N/acre in the fall is less likely to see that nitrogen reach the plant than a grower who applies 200 lbs N/acre in the spring.

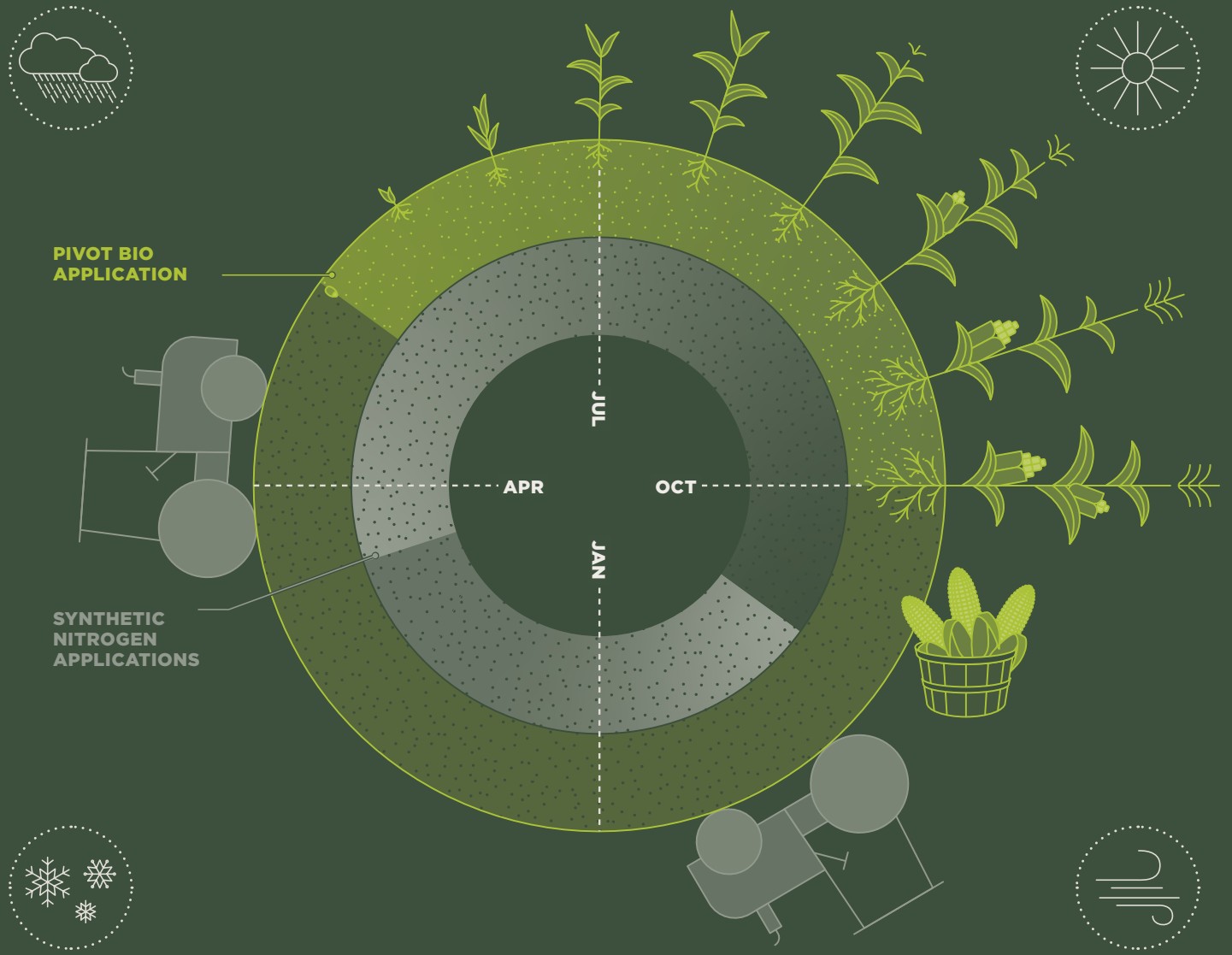
FIGURE 1.1

Pivot Bio microbial nitrogen meets crop demand

Pivot Bio microbes are applied at planting and produce nitrogen synchronized with crop demand. When growers use Pivot Bio microbial nitrogen to replace "leaky" synthetic applications, they can move to a more efficient source of N — a critical shift for reducing N_2O emissions and improving the performance of their operations.



Corn plant comparison
Ingham County, MI



Timing is everything

Pivot Bio Microbial Nitrogen

Pivot Bio is applied during planting. The microbes live on the crop's roots, delivering nitrogen when the crop needs it throughout the growing season.

Synthetic Nitrogen

In a typical nutrition program, most synthetic nitrogen fertilizer is applied to fields when there is no crop present. This happens for a variety of reasons, including:

- Fertilizer pricing
- Weather
- Soil moisture
- Equipment availability
- Time management

An example of a Midwest corn nitrogen program totaling 200 lbs N/acre is 150 lbs N/acre applied in the fall and 50 lbs N/acre applied in the spring before or at planting.

By building a program around Pivot Bio as the first nitrogen in a grower's plan and adjusting the remaining synthetic nitrogen to optimize for more efficient application periods, **growers can reduce losses and generate significant benefits.**

When nitrogen stays put, growers see the benefits

Studies show that by having microbes on the root, delivering reliable nitrogen to the crop throughout the season, Pivot Bio produces a range of positive outcomes:

» Yield that's higher by an average of 11 bushels per acre (University of Kentucky study)

» Greater N, P and K uptake and greater plant biomass (North Carolina State University study)

» Increased silage tonnage and improved silage nutrient profile (Pivot Bio silage testing)

Agronomic reviews demonstrate consistent increases in robust crop root structure when growers use Pivot Bio.

273x more potent than CO_2, N_2O is a massive opportunity

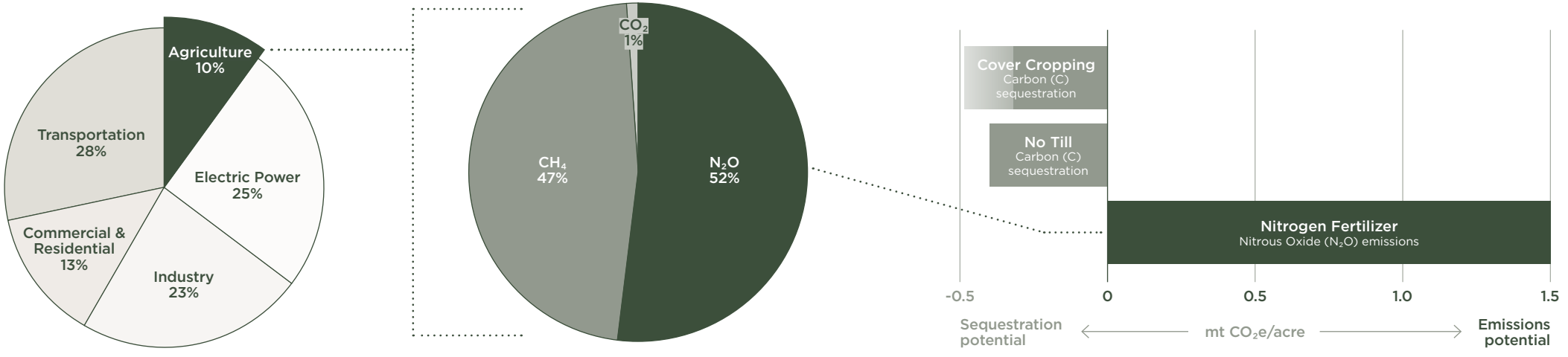
When it comes to greenhouse gasses (GHGs), much focus has been placed on reducing carbon dioxide (CO_2). But about 10% of greenhouse gas emissions come from agriculture and little of those emissions are from CO_2[16]. Rather, there are other greenhouse gasses at play. And at 273 times more atmospheric-warming potential than CO_2[17], nitrous oxide (N_2O) — which accounts for nearly half of the agriculture sector's emissions[18] — stands out among them.

N_2O presents a challenge, certainly — but also an immense opportunity. Because it persists in the atmosphere for more than 100 years and has ozone depletion capabilities, N_2O reductions are at the core of future-positive agriculture and represent a significant climate opportunity ahead. If we can reduce agriculture's N_2O emissions, we'll create an impactful pathway for a sustainable future in agriculture.

And we *can* reduce those emissions. Pivot Bio is a thoughtful partner in this challenge, responsibly engaging with researchers at more than 20 universities to improve our understanding of the N_2O knowledge gap. As a catalyst that brings people together to advance holistic solutions for growers, Pivot Bio's microbial nitrogen solutions will generate better outcomes for everyone: farmers, the climate, biodiversity and society as a whole.

FIGURE 1.2

The pathway to decarbonizing agriculture runs through methane (CH_4) and nitrous oxide (N_2O) and the path to reducing N_2O emissions must include nitrogen fertilizer.



Total U.S. Greenhouse Gas Emissions by Economic Sector (2022)[19]

U.S. Greenhouse Gas Emissions from Agriculture (2022)[20]

Sequestration vs. Emissions Potential per Acre of Farmland[21]

Pivot Bio believes in a brighter future — because we're building it

It's no secret that we face a complex challenge, brought about by complex systems influenced by an array of factors: extreme weather and drought, input price volatility, fragile global supply chains, thin margins and demographic shifts in the aging farming population and the exploding global population. There are more mouths to feed than ever before, but we have the same amount of land and a less hospitable climate. The higher yields delivered by synthetic nitrogen fertilizer support about half the world's population, but the synthetic nitrogen fertilizer industry also generates more emissions than either aviation or maritime shipping — creating a tension the world must resolve.

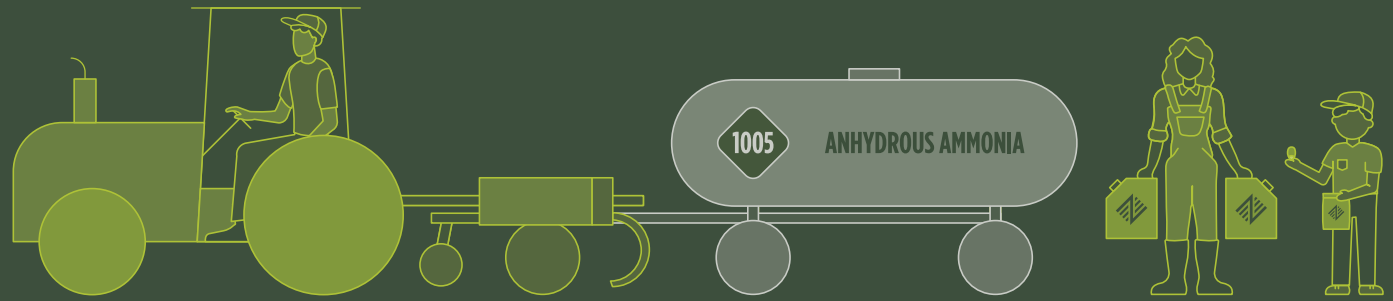
The great news is the technology to resolve this tension exists. Already, right now. Biological products are replacing chemistry for sustainable, affordable and reliable grower solutions. We're at a tipping point and we have an imperative to bring forward the most efficient solutions — environmentally, agronomically and financially.

Pivot Bio delivers a premium product at or below the cost of synthetic nitrogen fertilizer, without the sustainability drawbacks. We're focused on performance and cost, full stop. **And because we serve as a catalyst that brings people together across sectors to deliver creative solutions, we're able to set up growers and downstream partners, like CPG brands, for success.**

No single tool will solve this challenge on its own, but we know that with the right technology — and the right partners — we're bringing solutions at scale and building a bright future.

CHRIS ABBOTT, PIVOT BIO
CHIEF EXECUTIVE OFFICER

The scale of Pivot Bio's difference is astonishing. To deliver the same 40 lbs/acre of nitrogen as a single 1,000-gallon tank of anhydrous ammonia, growers only need ~2 units of **Pivot Bio PROVEN®40 liquid in-furrow** and <1 unit of **Pivot Bio PROVEN®40 on-seed.**



1,000-gallon tank of anhydrous ammonia ≈ 2 units of liquid in-furrow ≈ 1 unit of on-seed

Planting
Oskaloosa, IA

Serving Growers

How nitrogen behaves in the soil — and why that matters for growers

Synthetic nitrogen

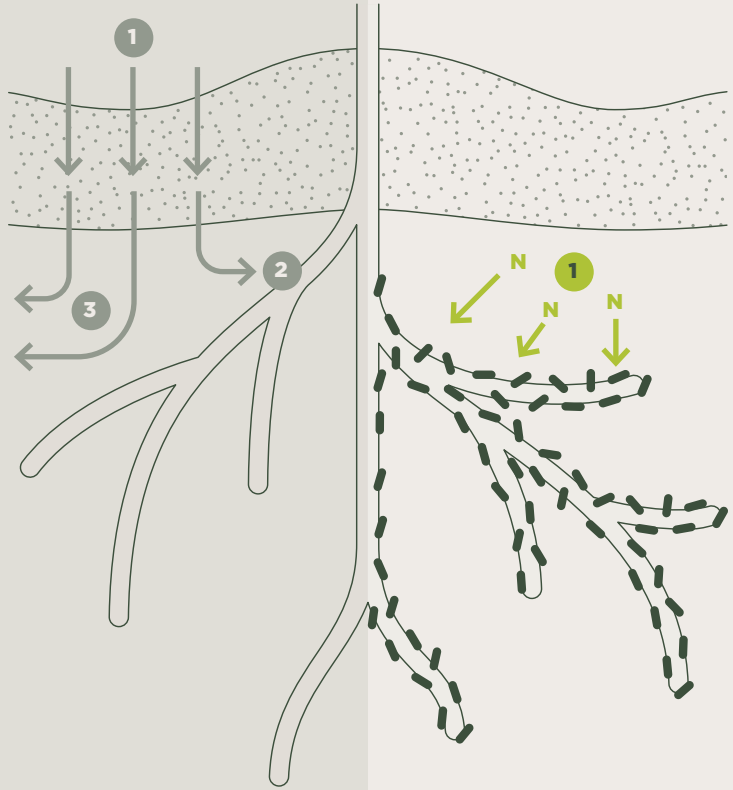
1. Fertilizer is applied to the field at specific times using specialized equipment.

   Growers take safety precautions to protect themselves from the dangers of chemical exposure.

2. The applied fertilizer (e.g., ammonia) replenishes nitrogen in the soil, making it available to be taken up by crop roots.

3. On average, less than 50% of applied fertilizer is absorbed by the plant[22, 23]. The remainder is lost to the environment via leaching, denitrification and volatilization.

   That means half or more of growers' investments in their nitrogen programs are lost and do not benefit their yields.



Pivot Bio's microbial nitrogen

Pivot Bio microbes are delivered in-furrow as a liquid solution, or seeds are planted with Pivot Bio's on-seed microbes already encapsulating them. No additional application steps are required.

1. As seeds germinate, microbes on their roots capture nitrogen gas from the air, convert it to ammonia and feed it directly to the plant.

Microbes adhere to the roots, providing small amounts of ammonia to the crop daily. Field trials with university partners indicate no significant conversion to and release of nitrous oxide or nitrate.

Microbes do not wash away during weather events; they stay fixed through the entire growing season.

Every dollar that growers spend on their nitrogen program with Pivot Bio goes directly where it's intended: to the crop.

Growers who replace synthetic nitrogen with Pivot Bio's microbial nitrogen as part of Pivot Bio's N-OVATOR™ program create a new asset in addition to their crop: nitrogen credits. These nitrogen credits are purchased by companies seeking to meet sustainability goals, creating an additional revenue stream for growers.

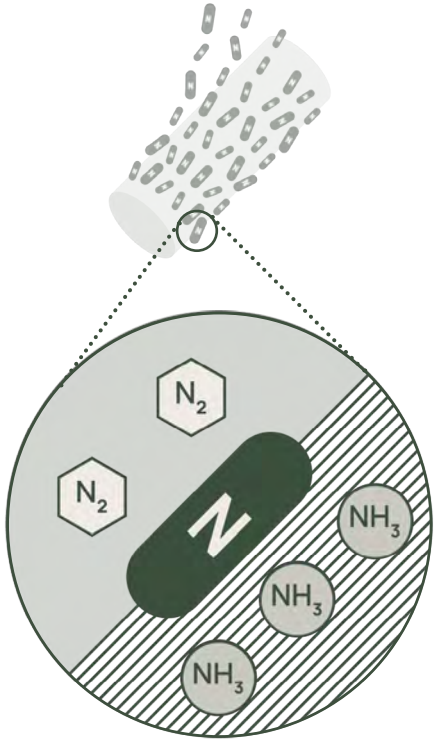
A closer look at our microbes

Of the millions of microorganisms in the soil, only certain microbes are capable of converting atmospheric nitrogen (N_2) to plant-available nitrogen (NH_3). Pivot Bio's team of advanced scientists identified nitrogen-fixing microbes naturally present in the soil, enhanced their strengths and rigorously tested their efficacy before delivering the first commercially available gene-edited nitrogen-fixing microbes for on-field use.

We scan millions of genomes in the soil to identify the rare microbes with the **innate ability to produce nitrogen.**

We use microbial strains, including Kosakonia sacchari 6-5687 [Ks6-5687] and Klebsiella variicola 137-1036 [Kv137-1036], that are **safe, naturally occurring and have an existing symbiotic relationship with corn.**

Through gene editing, Pivot Bio scientists enable our microbes to **continuously convert nitrogen** from the atmosphere and produce ammonia.



Our purpose-built microbes outperform the wild type and ensure increased plant availability of nitrogen so crops have the **nutrition they need** throughout their growth cycle.

Once applied, our microbes live on the roots and supply fixed atmospheric nitrogen to the plant, **improving the NUE of the grower's entire nitrogen management system.**

When roots stop putting root exudate into the soil, our microbes die; **they do not persist in the soil.**

Our microbes are gene edited to amplify fixation capability, making production more predictable for farmers, generating a better ROI and making nutrient management easier.

Ensuring grower success with our microbes

Growers using in-furrow Pivot Bio microbes are invited to send a sample of their liquid tank mixes to our St. Louis compatibility lab. Here, we test the samples to make sure our microbes will perform alongside any other insecticides, micronutrients, or additional components they've added to their mixes.

In the same lab, we also test:

- Compatibility of products growers may wish to apply on top of our on-seed microbes.
- Soil assays that determine how microbes will behave in growers' unique soil types.
- Planter equipment to ensure its compatibility with our microbes.

In 2023, we tested more than 5,000 grower samples. In 2024, we're gearing up to test more than 10,000.

On-seed product
Ames, IA

Growers asked, we listened

Our in-furrow microbial nitrogen is a liquid applied with specialized equipment. But we're always innovating to meet growers' needs; that's why we simplified the application process by **introducing PROVEN®40 On-Seed.** The on-seed microbial coating makes microbial nitrogen broadly accessible — even to growers without dedicated equipment. With PROVEN®40 OS, growers can treat 120 acres with one pouch of freeze-dried microbes and we eliminate the need to transport liquid product to the farm.

For the first time, farmers can plant their seeds with up to 25% of the crop's nitrogen needs already in place, marking one of the most significant turning points in the history of agriculture.

This groundbreaking innovation has been recognized by:

TIME BEST INVENTIONS 2023

FAST COMPANY World Changing Ideas 2024

PIVOT BIO

Serving growers on-seed and in-furrow

PIVOT BIO PROVEN 40

A BETTER NITROGEN FOR CORN

Available in on-seed or in-furrow applications, Pivot Bio PROVEN®40 microbes form a mutualistic relationship with corn plants, taking nitrogen from the air and creating ammonia that the plants need to grow and thrive. Pivot Bio PROVEN®40 supplies ammonia throughout the most critical growth stages by adhering directly to the corn plant's roots — preventing runoff and providing predictable, reliable, consistent results for growers.

PIVOT BIO RETURN

A BETTER NITROGEN FOR SMALL GRAIN CROPS

Available for spring wheat, sorghum, barley, millet, oats and sunflower, Pivot Bio RETURN®'s on-seed or in-furrow microbes adhere to plants' roots to continually feed nitrogen during the entire growth cycle. This weather-resistant solution significantly reduces loss to leaching, denitrification and volatilization — which can lead to bigger plants and increased plant dry weight.

PIVOT BIO N-OVATOR™

EARN CREDIT FOR YOUR IMPACT

Through N-OVATOR™, we turn synthetic nitrogen replacement into reliable revenue and validated assets by rigorously tracking and verifying the reduction of synthetic nitrogen fertilizer and use of Pivot Bio's microbial nitrogen as a replacement. Repeatable by design and flexible by nature, N-OVATOR™ connects growers to the marketplace of environmental claims, making it simple for them to participate and generate a new revenue stream. By rewarding farmers for using a nitrogen that's safer, saves time and is more reliable, N-OVATOR™ aids them in the responsible stewardship of their land. The program also meets societal needs for downstream partners, reduces waste and generates annual emissions reductions on millions of row crop acres.

Environment + Energy LEADER TOP PROJECT 2024 Environmental Impact

Our industry-leading investments in grower success

Setting the standard for research-backed microbial biotechnology

In 2023, Pivot Bio collaborated with 20+ universities on 400+ university-led and on-farm trial locations — one of the most significant research endeavors focused on microbial nitrogen. We're the leaders in researching this type of technology because we know that supporting growers means investing in understanding how — and proving that — our products work in their fields.

UNIVERSITY OF KENTUCKY

» Focus area: **Yield**

» University of Kentucky study resulted in corn yield that was 11 bushels higher with Pivot Bio microbial nitrogen.

"Despite limited rainfall during critical growing stages, the in-furrow application of PROVEN®40 stood out as a game-changer on my farm this year. Like all farmers, I care about protecting and preserving our natural resources for generations to come ... PROVEN®40 has helped me lower my environmental impact and increase yield — two key factors for meeting my sustainability goals."

— Richard Preston, Kentucky farmer and study participant

NORTH CAROLINA STATE UNIVERSITY

» Focus area: **Nutrient efficiency**

» Studies at North Carolina State University found that replacing 40 pounds of synthetic nitrogen with PROVEN®40 resulted in increased nitrogen and potassium uptake, resulting in greater biomass.

"These studies demonstrate that PROVEN®40 generally increases plant biomass and nutrient uptake, setting the stage for higher productivity at harvest. By providing a robust microbial nitrogen source, it improves overall crop performance, proving its value as an innovative nitrogen management tool and an essential part of a comprehensive nitrogen strategy."

— Clayton Nevins, PhD, Senior Agronomic Scientist, Pivot Bio

UNIVERSITY OF NEBRASKA-LINCOLN

» Focus area: **Nutrient efficiency**

» Studies at the University of Nebraska-Lincoln found that nitrogen use efficiency was improved when Pivot Bio was applied to corn crops.

"Integrating PROVEN®40 into our nitrogen management plan allowed us to significantly lower our synthetic nitrogen use while cultivating healthier, high-yielding corn plants. **This not only benefits my farm's success but also contributes to environmental conservation."**

— Don Batie, Nebraska farmer and trial participant

Customer Success Center is located at the Iowa State University Research park in Ames, IA

Building a first-in-class Customer Success Center

In February 2024, we doubled down on our commitment to supporting growers with the opening of Pivot Bio's Customer Success Center: a 36,000-square-foot facility at the Iowa State University Research park in Ames, Iowa.

This $14 million investment serves as a commercial hub for our products and an education and collaboration nexus for farmers, researchers and industry experts. It's a convening space, designed to foster partnerships and unite diverse stakeholders committed to addressing the most pressing challenges in crop nutrition and agricultural technology. It also features a 15,000-square-foot open high bay intended for hands-on training and calibration for seed treatment equipment.

Ultimately, the facility's primary purpose is education and training for Pivot Bio's network of farmers — to support their operations and partner with them as stewards of their land.

The grand opening ribbon-cutting with Chris Abbott (center)

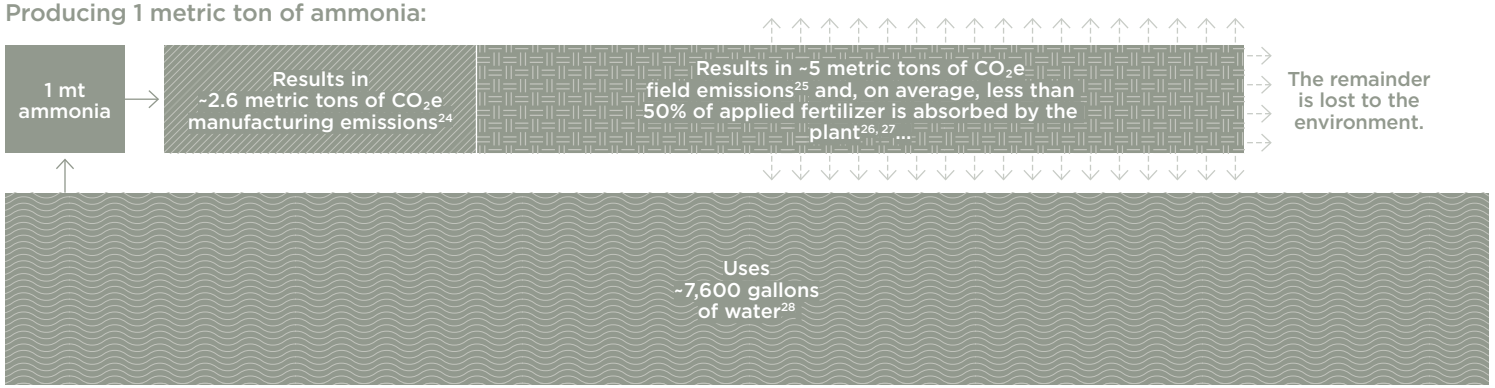
Pivot Bio distribution center
Chicago, IL

Our Impact

A brighter future for agriculture and the environment

FIGURE 3.1

Producing 1 metric ton of ammonia:



By contrast, producing 1 metric ton of Pivot Bio microbial nitrogen:

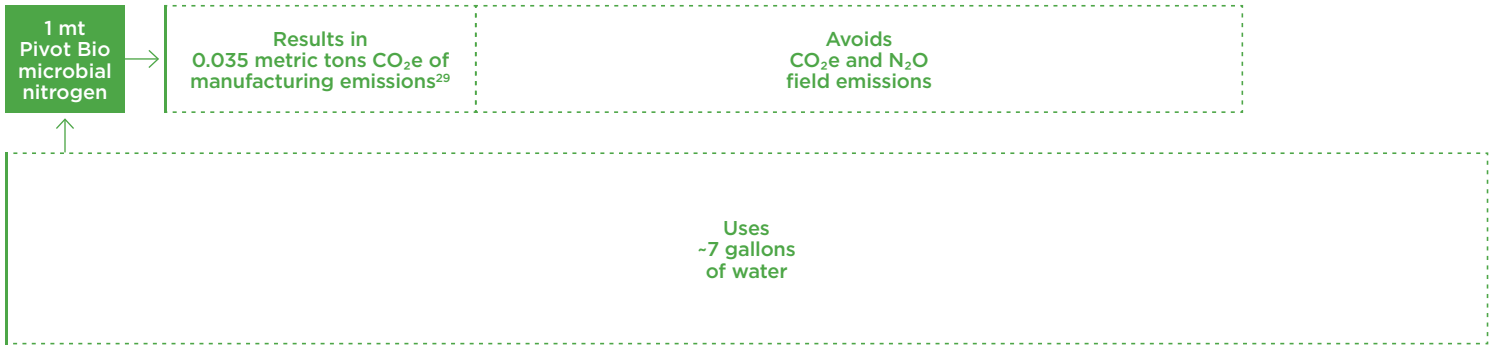


FIGURE 3.2

The comparative impact of synthetic fertilizers

In our 2022 report, we took the most conservative approach to modeling our data and assumed all growers replacing with our microbes were replacing anhydrous fertilizer — the least impactful of the top-three synthetic fertilizers. This year, it was critical to collect data on which fertilizers growers replaced with Pivot Bio. Because each type of synthetic nitrogen has a different environmental impact, knowing exactly which types were replaced is a key factor in calculating the impact of our microbes.

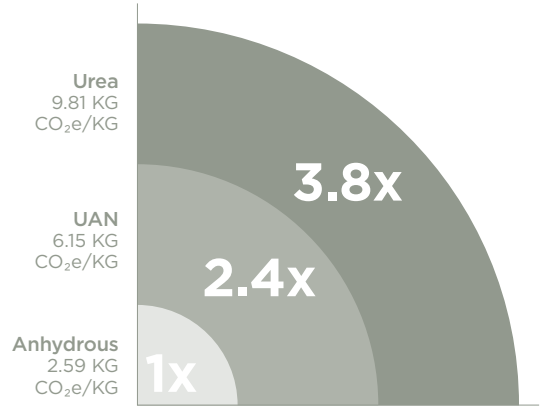


FIGURE 3.3

Type of fertilizer growers replaced with Pivot Bio

This year, we found that many growers are actually replacing urea ammonium nitrate (UAN) and urea, increasing our impact 3.5x above our generic all-ammonia baseline assumption last year.

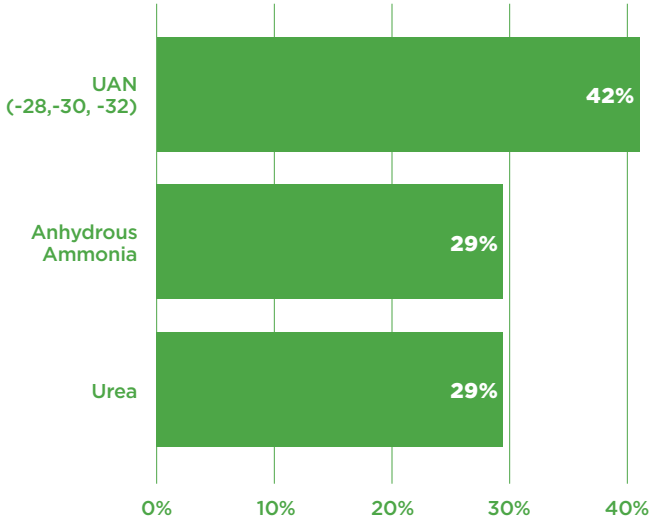


FIGURE 3.4

Quantity of fertilizer growers replaced with Pivot Bio

By measuring exactly what types and quantities of fertilizer growers are replacing with Pivot Bio's microbial nitrogen, we're able to calculate a complete picture of our impact — a number 3x higher per acre than last year's calculation without a 3x growth in acreage.

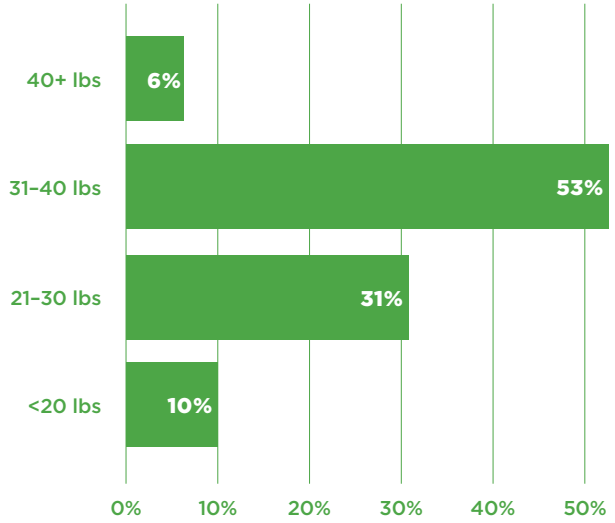


FIGURE 3.5

Avoided manufacturing water use

Producing ammonia is water intensive: It requires approximately 7,600 gallons of water to produce 1mt of ammonia[30]. Producing microbial nitrogen uses a fraction of the water quantity. **In 2023, we estimate growers using Pivot Bio helped avoid the manufacturing use of over**

334,000,000

GALLONS OF WATER[31].

FIGURE 3.6

Avoided nitrate leaching

When water moves through soil, water-soluble compounds like nitrate can be carried away in the process called leaching. While leaching is highly variable, using the IPCC average loss factor of 24%[32], **in 2023 we estimate growers using Pivot Bio helped avoid over**

51,000 mt

OF NITRATE LOSS[33].

In 2023, growers reduced CO_2e emissions by **>706,000 metric tons**[34,35,36,37]

This is about the same as ...

3,880 rail cars[38]

That's a train more than 36 miles long[39]

(from Ames to Des Moines, IA)

139,000 homes[40]

That's more than the housing stock of Madison, WI[41]

824,000 acres[42]

That's nearly 3x the size of Shawnee National Forest[43]

FIGURE 3.7

Total acres using Pivot Bio

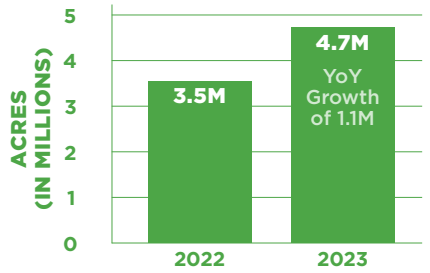


FIGURE 3.8

Cumulative net reduction of synthetic nitrogen (metric tons)

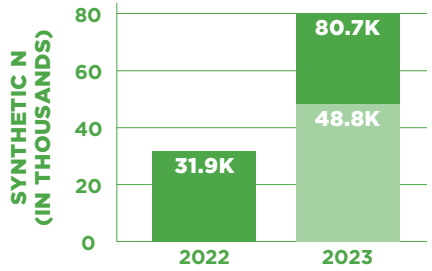
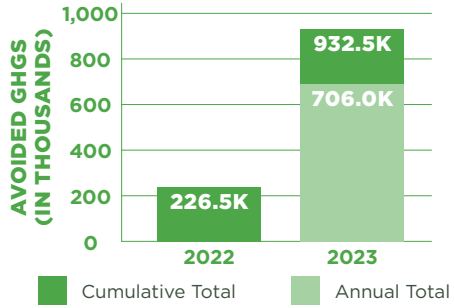


FIGURE 3.9

Cumulative greenhouse gasses avoided (metric tons CO_2e)



Since 2022, growers have reduced CO_2e emissions by over **932,500 metric tons** by replacing synthetic nitrogen fertilizer with Pivot Bio

This is about the same as ...

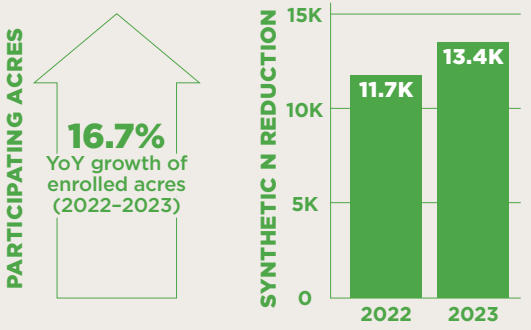
2.5 gas-fired power plants[44]

Our corporate partners

In 2023, we matched nearly **400k grower acres** with downstream CPG partners, enabling nearly **140k metric tons** of permanent, non-reversible Scope 3 emissions reductions.

ADM · BARTLETT A SAVAGE COMPANY · Ingredion · Nestlé · SUNTORY GLOBAL SPIRITS

N-OVATOR™ program growth



With powerful partners, we create powerful change

PIVOT BIO N-OVATOR™

The next generation. Ask farmers what motivates them and you're likely to hear some version of that — taking care of the farm so their kids or family members can take over. That means taking care of the land and taking care of the business. It's hard work that goes on for a lifetime, but it's work worth doing.

Making that work just a bit easier for growers is what motivates us at Pivot Bio and what led to the creation of the N-OVATOR™ program.

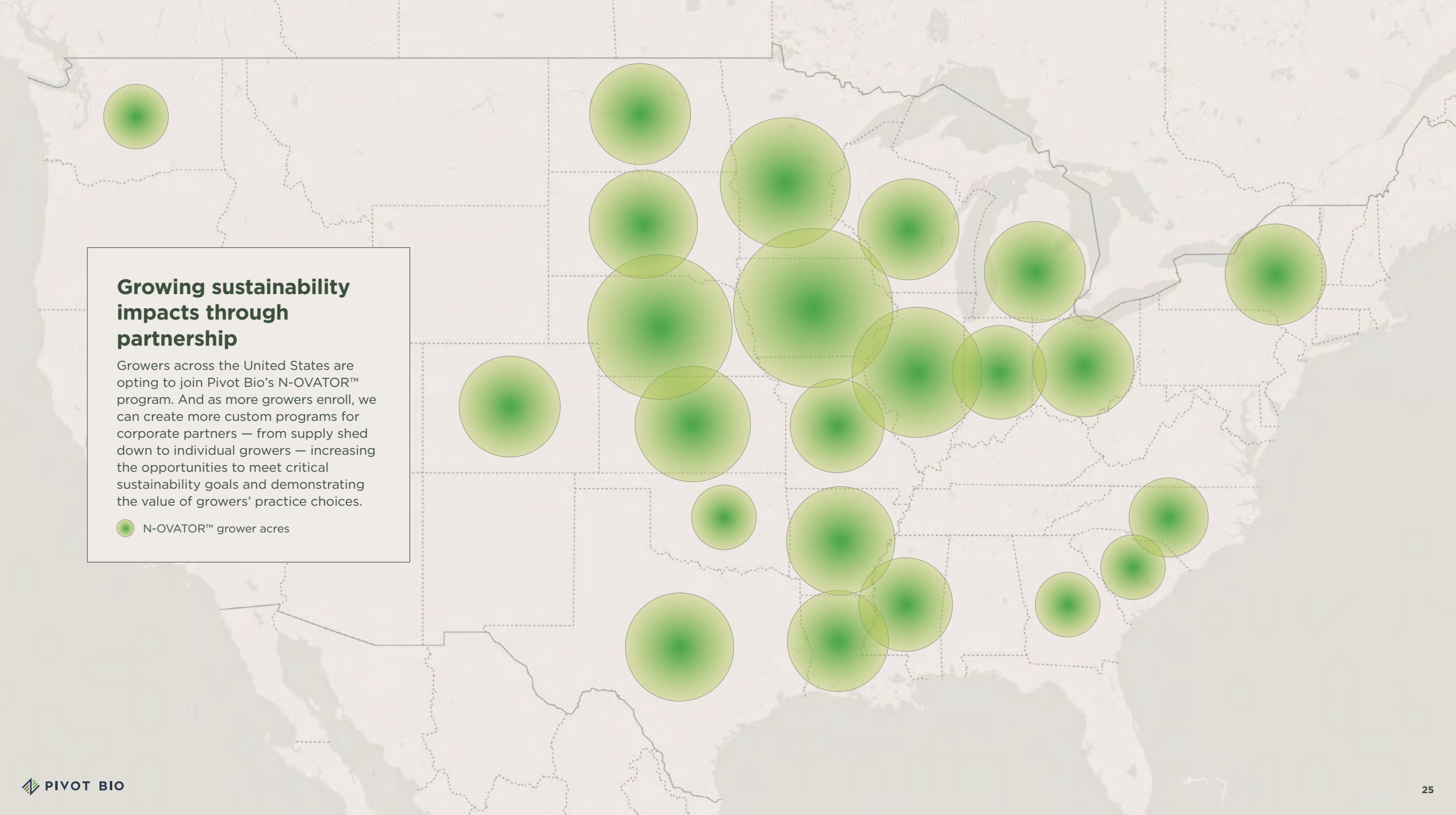
By replacing synthetic fertilizers, our microbial nitrogen provides growers with more choice and a new opportunity to capture additional revenue through the sustainability markets. Over the first two years of the program, Pivot Bio paid more than $6 million to growers who were willing to try Pivot Bio products and document their results. In addition, these growers reduced their carbon footprints by keeping more than 315,000 metric tons of carbon dioxide equivalent (CO_2e) out of the atmosphere. That's roughly the same as taking more than 75,000 cars off the road for a year.

During the 2023 N-OVATOR™ program, about 20% of Pivot Bio's customers collectively documented the replacement of more than 13,000 tons of synthetic nitrogen fertilizer across over 800,000 acres with PROVEN®40. **Pivot Bio partnered with over a half-dozen companies to develop programs that returned dollars to growers, many of whom received payments that resulted in up to 35% of their product cost back as a cash payment. This made Pivot Bio their most economical form of nitrogen in 2023 and 75% less expensive than the cost of their synthetic nitrogen in 2021 and 2022.**

N-OVATOR™ presents a significant opportunity — to increase the use of Pivot Bio products, of course, but more importantly, to help growers in the hard, long-term work of taking care of their land, improving sustainability and growing their bottom lines.

"As we accelerate the transition to regenerative agriculture in our supply chains, Nestlé needs partners who are working directly with farmers to help reduce emissions. Our goal is to help reward growers who are making the practice changes. The Pivot Bio N-OVATOR™ program encourages growers in our supply sheds to replace their synthetic fertilizer with microbial nitrogen, which can help reduce the amount of nitrogen needed, decrease waste and reduce emissions."

EMILY JOHANNES, DIRECTOR OF SUSTAINABLE SOURCING, NESTLÉ



Growing sustainability impacts through partnership

Growers across the United States are opting to join Pivot Bio's N-OVATOR™ program. And as more growers enroll, we can create more custom programs for corporate partners — from supply shed down to individual growers — increasing the opportunities to meet critical sustainability goals and demonstrating the value of growers' practice choices.

N-OVATOR™ grower acres


R&D scientists at work
Berkeley, CA

Inside Pivot Bio


Compatibility lab scientist
St. Louis, MO


In-field testing
Indiana

Pivot Bio's mission is made possible by our talented team members

Their courageous innovation unlocks a brighter, more sustainable future for agriculture and has earned recognition by:

CNBC DISRUPTOR 50 2023

FAST COMPANY Most Innovative Companies 2024


In-field trials
San Angelo, TX


In-field testing
Chazy, NY


R&D scientists
Berkeley, CA

We're laser-focused on our mission

Our 2023 focus: Renewed dedication to powerhouse products

We doubled down on efforts that generate Pivot Bio's revenue by pouring internal energy and resources into PROVEN®40 and RETURN®, demonstrating that we're fully invested in our commitment to creating a better nitrogen for growers and the planet.

This refocus wasn't just a *what* — it was a *how*. The way we approach our work bears equal weight to the work itself. In 2023, we made a concerted effort to break down silos and build internal systems that support leadership and cross-team collaboration. By adding rigor, we're committing to creating a culture that not only produces remarkable work, but creates a remarkable workplace for our people.

Pivot Bio's engine is its culture of innovation

BY KIRSTEN BENJAMIN, VP, R&D PRODUCT INNOVATION

Courageous innovation makes everything we do at Pivot Bio possible. People are drawn to this work because of our mission to deliver farmers a way to grow the food the world needs reliably and sustainably. To achieve that mission, we have to do what no one's done before — to forge into uncharted territory with creativity and fearlessness. It's incredible what we can achieve — what new knowledge we can create — through this process of discovery science.

Innovation requires certain ingredients and we cultivate them at Pivot Bio. We have a company-wide curiosity to learn, teams that question assumptions and push boundaries, an openness to good ideas regardless of where they come from.

Pivot Bio operates as an ecosystem of different groups with clearly defined roles. This accelerates innovation by empowering our people to be free and creative within their scopes. But our strength also lies in cross-fertilization between these teams that is, the way we operate in lockstep and with feedback loops that ensure success in pursuit of our shared mission.

We thrive when we collaborate and innovation comes from the open exchange of knowledge among experts. Pivot Bio's success — our ability to build a sustainable future for growers and the planet — is a direct result of an internal culture that fuels the engine of innovation.

We're committed to a transparent, inclusive culture centered on belonging and access

Pivot Bio is committed to fearlessly tackling the challenges facing modern agriculture, and we believe diverse teams can strengthen our efforts to become more innovative in solving complex problems. That's why we are dedicated to finding new ways of cultivating an inclusive culture where people from all backgrounds can bring their unique selves to work, feel valued and have access to the resources they need to thrive. By sharing our unique experiences and perspectives, we can unite to pursue our passions and make a positive difference in our company and the world.

Diverse teams make better decisions and are more innovative. Pivot Bio is built for innovation and execution. To discover and become the best in class in agriculture, science and technology, we must give a voice to every idea. Our differences spark stronger creativity, and we can solve more quickly with an inclusive workforce where our people collectively thrive, excel and bring their authentic selves to work.

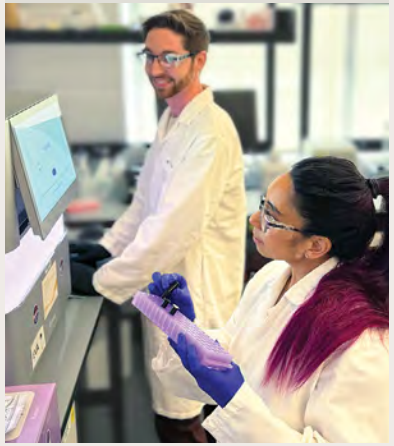
In-field plant testing
Illinois

Our core values and benefits

We strive to solve real problems and in turn, challenge our team members to be innovative and creative, to take risks and to bring the outside in. To do those things well, our people have to be at home here. It's our imperative to create an environment where our team members can be their best selves — where they feel supported so they can support our mission.

SOLVE CREATIVELY

We are here to solve big problems and make a meaningful and lasting impact. We pursue questions that challenge everything we know and we believe we can find the answers and create new solutions. Data drives our curiosity and our decisions, and it underpins our innovations.



Connection strengthens our work. We champion shadow visits across departments and locations, for example, our facilities and supply chain teams.

MODEL OPENNESS

We welcome dialogue, debate and discussion with our colleagues and with individuals outside of our organization, especially those with opinions that differ from our own. We hold ourselves and the integrity of our work to the highest ethical standards and scientific rigor. Our candor with one another reflects our openness and mutual respect, fostering a culture of professionalism and collaboration.

ACT FEARLESSLY

We aren't afraid to dream big. We encourage one another to be bold and to challenge convention. We choose to act fearlessly because we believe risk-taking and failure can be pathways to learning and success.

To give back to our communities during the holidays, Pivot Bio donated to six local food banks and food pantries in communities where our team members live and work.

INSPIRE EACH OTHER

We observe immense need in our world, among our fellow humans and throughout the environment. We continually strive to solve the challenges of the people who inspire our work. We care for each other and our broader community as we cultivate an environment of trust, safety and enjoyment.

LEARNING IS THE VEHICLE WE LEVERAGE TO DO GREAT WORK

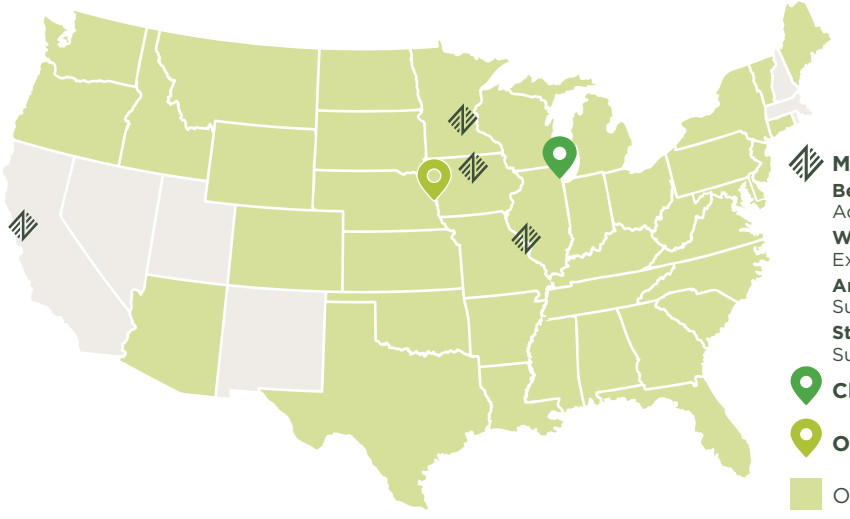
Through our Leadership Foundations program, we create opportunities for leaders to learn and network across disciplines; and employees can access more than 100 on-demand learning courses. In addition, Pivot Bio team members can invest in their learning and wellness with annual $1,300 professional/$300 personal development funds.

PIVOT BIO TEAM MEMBERS ALSO RECEIVE:

- **Paid holidays + one-week shutdown** between Christmas and New Year's
- **401(k) with company match**
- **Competitive salaries**
- **The opportunity to be owners** through option grants
- **100% employer-paid health benefits** for individuals/heavily subsidized for families

Pivot Bio by the numbers

Where to find us



Main Hubs

Berkeley, CA: Lab and Administration

Wayzata, MN: Executive Hub

Ames, IA: Customer Success Center

St. Louis, MO: Product Success Center

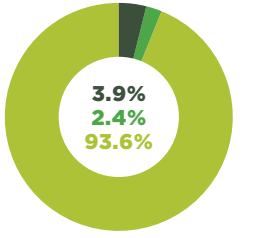
Chicago: Shipping

Omaha: Shipping

On-field product

Our absolute emissions[45]

While revenue acres increased by 40%, our 2023 emissions were nearly flat year over year.



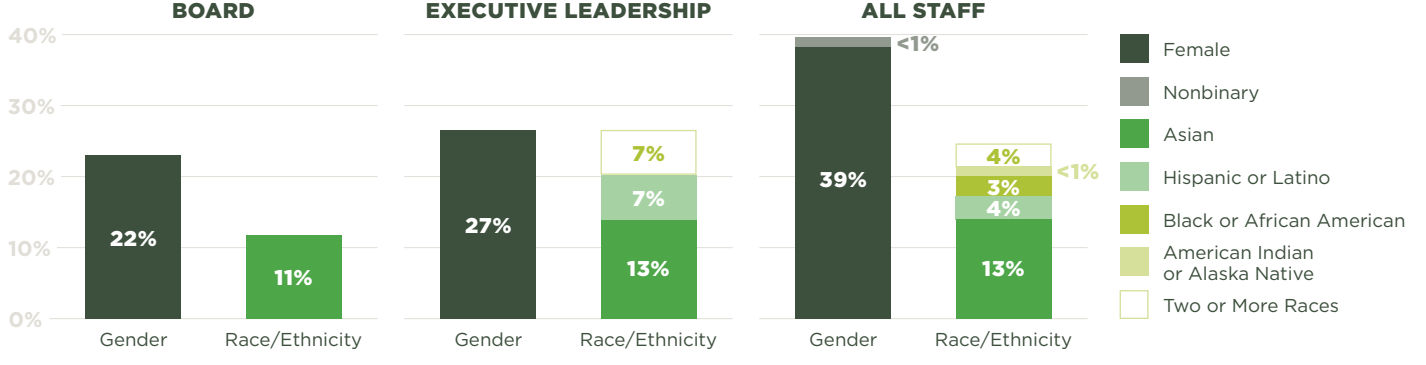
Scope 1: 1,031 tCO_2e

Scope 2: 631 tCO_2e

Scope 3: 24,490 tCO_2e

Energy Use (GWh)	5.4
Energy Use from Renewables (%)	82%
Waste Generated (metric tonnes)	5,637
Waste Recycled (%)	91%
Water Use (cubic meters)	16,683

Our team



Lab plastics recycling program

Spearheaded by Senior Facilities Manager Jenner Davis, our R&D lab in Berkeley is championing a lab plastics recycling program in partnership with Polycarbin.

- **2,266 kilograms** of rigid plastics recycled
- **11,272 kilograms** of CO_2e eq. reduced through closed-loop recycling
- **20,282 cubic** meters of water conserved through closed-loop recycling

Family Farm
Wells, MN

What the Future Holds

We're on a mission to serve growers — in the United States and beyond

The global nitrogen opportunity

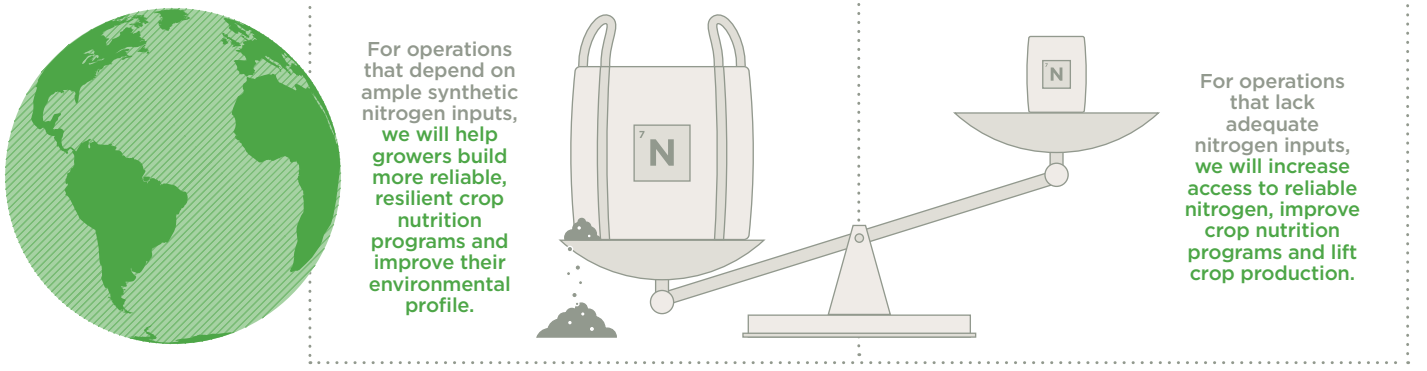
Nitrogen isn't a problem; rather, it's a critical building block of life and agriculture. The problem we face is nitrogen waste. In the United States, this takes the form of nitrogen surplus — synthetic fertilizer that's applied to farmland and winds up in the environment instead of being taken up by crops. In other parts of the world, we face nitrogen scarcity. It's our goal at Pivot Bio to meet this spectrum of needs — solving different challenges in different places to achieve nitrogen equilibrium.

In Brazil, Pivot Bio can help growers address the challenges of environmental protections, increased synthetic fertilizer loss (due to lighter soil and warmer temperatures) and transporting the requisite volume of nitrogen out to remote farms. In Canada, we will support wheat farmers who need nitrogen that can withstand the cold. And in Kenya, we will address the lack of nitrogen access that contributes to food insecurity.

From a smallhold farm in Africa to the largest farm in the American Midwest, our technology has the potential to create an equitable nitrogen landscape for growers everywhere.

FIGURE 5.1

We're working to build more sustainable and more productive agriculture around the world



Building food security in Kenya

Africa's smallholder farmers present a unique opportunity for Pivot Bio. Lack of access to information about the benefits of fertilizer, coupled with off-season income constraints to purchase fertilizer before harvest, limits their ability to invest in tools to maximize yield. As a result, nitrogen is under-applied. This leads to lower yields, which in turn leads to food insecurity and decreased income.

Where synthetic nitrogen fertilizer is prohibitively expensive — and inaccessible — for many of these growers, Pivot Bio's microbial nitrogen presents a cycle-breaking solution. Unlike synthetic fertilizer, microbial nitrogen can be manufactured domestically within any country. Its 1,000x weight reduction compared to synthetic fertilizer is also a game-changer for supply chains.

Pivot Bio is poised to provide some of the most vulnerable farmers in the world a more affordable, more accessible, more reliable nitrogen.

Transforming agriculture is a team sport

In this report, you've read a lot about what Pivot Bio is doing to shape the future of agriculture. About how biological tools can manage this system differently — can safeguard growers against variability and volatility while feeding the planet and making its ecological systems healthier. **The fact that Pivot Bio's solution exists and is ready to scale is exciting. But it's only the beginning.**

No single solution can solve the question of sustainable agriculture on its own. Right now, we stand at the inflection point to make the positive future we imagine a reality — and it's a mission we need to take up as a collective. By leading the fertilizer conversation, Pivot Bio is determined to not just address nitrous oxide emissions, but to bring people together across sectors — from seed distribution partners to novel agriculture companies to CPG brands and synthetic fertilizer companies — in pursuit of a brighter future for all of us.

Transforming agriculture isn't a zero-sum game. If we can find a way to work together, it'll mutually benefit us all. **Technology is cost deflationary and Pivot Bio is poised to improve cost for growers and to improve margins for partners — including fertilizer companies.** In this equation, everybody wins if we work together. From upstream partners to complementary technologies to commodity brands to the fuels market, there's opportunity at every step and in every sector to realize sustainable impacts and economic advantages.

None of us can meet agriculture's complexities alone; rather, each of us holds the keys to one segment of a multifaceted system. Only together can we do the important work of feeding the world in a way that protects the planet.

Growers have been good stewards of the land and the foundation of our global economy for millennia and the only reason Pivot Bio can do any of this work — can make any impact at all — is because of their trust and partnership. But there is more that all of us in the agriculture sector can and must do to help them.

Meeting this moment requires an all-of-industry approach. Our vision for the future requires partnership: greater collaboration and focus on crop nutrition across the food system. We're taking the long-term view and we hope you'll join us. Together, we can redefine the future of agriculture.

Chris

CHRIS ABBOTT, PIVOT BIO CHIEF EXECUTIVE OFFICER

Chris (right) on-site with partners in Brazil

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