THE REGENERATIVE AGRICULTURE FINANCING PROGRAM

Three-Year Summary of Soil Health and Nitrogen Stewardship Outcomes from the Operating Line Program

June 2026

FBN

Gradable

Environmental Defense Fund

THE REGENERATIVE AGRICULTURE FINANCING PROGRAM

Three-Year Summary of Soil Health and Nitrogen Stewardship Outcomes from the Operating Line Program

Authors

Environmental Defense Fund

With more than 3 million members, Environmental Defense Fund creates transformational solutions to the most serious environmental problems. To do so, EDF links science, economics, law, and innovative private-sector partnerships to turn solutions into action.

Farmers Business Network

Farmers Business Network, Inc. (FBN®) is a pioneering digital marketplace and farmer-to-farmer network dedicated to empowering family farmers globally while promoting sustainable agriculture. With over 117,000 members, FBN's Farmers First® promise unites growers and ranchers in their quest to maximize profitability and increase food production. FBN leverages data, AI and direct-to-farm delivery to simplify the agricultural supply chain, boosting convenience and transparency, reducing farm input costs, enhancing access to financing and services, and providing personalized farm insights. Its Gradable® joint-venture helps thousands of farmers adopt and earn rewards for regenerative practices while simplifying the access of regenerative products for the world's leading food companies and grain buyers.

Gradable

The Gradable technology platform was developed to provide a modern digital infrastructure to strengthen the relationship between grain buyers and farmers, as a new era emerges requiring efficient, transparent, and secure grain transactions for production agriculture. Gradable's digital infrastructure does this by connecting farmer and buyer experiences into a single, secure technology platform. Gradable also lays the groundwork for increased farmer participation in new sustainability demand by allowing them to seamlessly collect and calculate verifiable production data – including carbon scores – empowering them to monetize these downstream benefits in the market.

TABLE OF CONTENTS

EXECUTIVE SUMMARY

The Regenerative Agriculture Financing (RAF) Operating Line program was launched in January 2022 by Farmers Business Network (FBN) in collaboration with Environmental Defense Fund. Emerging from a desire to recognize the long-term value of regenerative farming in financing, the RAF program was designed to benefit farmers, agricultural finance providers and the environment. The RAF Operating Line provided interest rate rebates to farmers who achieved annual standards for soil health and nitrogen (N) management practices. In 2025, the RAF program expanded to include land loans.[1] This report summarizes results from the 2022-2024 RAF Operating Line program.

Key findings include:

- **Farmer interest and enrollment in the RAF program were strong,** with the program's 2022 launch representing Farmers Business Network's fastest-selling financial product to date.
- **Farmers who met the RAF environmental standards had lower nitrogen losses** to water and air than the national average.
- **Results showed improved nitrogen management** on farms that used winter cover crops and in-season fertilizer application.
- **Farmer participation in the program increased each year,** generating a unique, large-scale data set covering more than 80,000 acres.
- **External funding uncertainty led to delayed timelines for data collection,** contributing to reduced data submission and program completion in years two and three of the program.
- **Partnerships between agricultural lenders and impact investors, philanthropy, and food and agriculture companies present a key opportunity** to scale and replicate innovative financial products like the RAF program.

In 2025, FBN Finance discontinued the operating line business RAF operated under, a decision unrelated to the RAF program. This concluded the RAF Operating Line program, however, FBN has since launched a land loan version of RAF that is currently available to interested farmers. The analysis and lessons learned from the 2022-2024 RAF Operating Line can serve as a valuable resource for agricultural finance providers and their partners seeking to support resilient and profitable farmers.

PROGRAM STRUCTURE AND COLLABORATION

The RAF Operating Line program was one of the first U.S. agriculture financing programs to reward grain farmers who met specified environmental standards for regenerative agricultural practices.[2] The environmental standards were paired with farmers' operating line of credit, which is typically renewed annually and used for common expenses such as seed and fertilizer. Upon completing their loan repayment and demonstrating the implementation of soil health practices and efficient nitrogen (N) fertilizer use, farmers in the RAF Operating Line program were rewarded with an incentive equal to a 0.5% reduction in their operating loan interest rate.

The RAF program was developed by EDF, FBN and Gradable, organizations that share the goal of connecting the environmental and financial performance of farms, integrating financing with practices that reduce environmental impacts and build resilience, and maximizing farmers' profit potential with the help of technology and data transparency.

FBN is a technology company that helps farmers optimize profitability through technology and transparent data. Their finance division enables family farmers to finance their operation through loans, farmland capital, input financing and more. Gradable enables data collection at scale by providing growers with direct data support and an easy-to-use platform to upload agronomic data and validate the use of regenerative practices.

Through the RAF Operating Line program, these organizations brought their capabilities together to link farms' environmental performance — tracked through Gradable — with an operating line and rebate program administered by FBN Finance. EDF developed the environmental standards required for RAF eligibility, based on the best available science and years of collaboration with agricultural researchers, farmer networks and companies. EDF also advised Gradable on implementation of the standards, performed analysis of anonymized data and updated standards based on lessons learned over the course of the program.[3]

Environmental standards for the RAF program

1. **Eligible crops:** corn, wheat and soybeans.

2. **Nutrient efficiency, measured by N balance:** 80% of fields must achieve an N balance score between 25-75 lbs N/acre or meet other nitrogen efficiency criteria as defined by FBN and EDF.

   A three-year average could not be calculated in the first two years of the pilot, nor for the large number of new fields added by the third year. The nutrient efficiency standard was modified and simplified to require 80% of the farmed acres to achieve an N-balance score of less than 100 lbs N/acre in a given year.

   Note: With the typical variability seen on these farms, a 3-yr average score between 25 and 75 lbs N/acre would be comprised of single-year scores between 0 and 100 lbs N/acre.

3. **Soil health practices:** on at least 70% of farmed acres, farner utilizes one or more of the following practices:
   - Ground is minimally disturbed (e.g., reduced to tillage or no-till).
   - Crop rotation has live roots (e.g., cash crop, cover crop, or perennials) in the soil for at least 70% of the year.
   - Other regionally appropriate regenerative practices outlined by the NRCs (e.g., riparian buffers or windbreaks) and approved by the program.

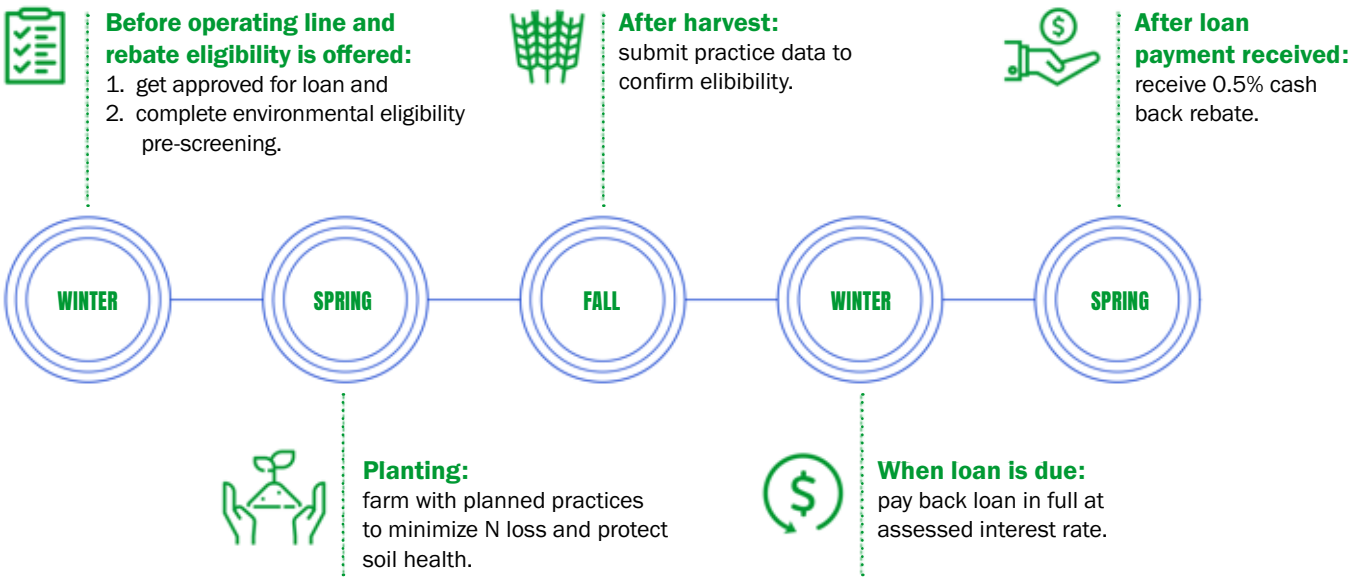
4. **Evidence of soil sampling:** show evidence of soil sampling per 10-acre density in at least 1 of the last 4 years and use soil sampling to inform fertilizer application rate.

The RAF Operating Line program had several unique attributes. These included:

- The collaboration between FBN Finance and Gradable **generated a large-scale data set covering more than 80,000 acres, enabling analysis of environmental outcomes** and their connections to specific practices. Most agriculture finance providers lack access to detailed farm-level data on production and conservation practices.
- Farmer eligibility for the RAF program was based on meeting the environmental standards and **did not require the farmer to adopt new conservation practices (also known as additionality)**. Farmers who were already meeting the standards, as well as those who improved their practices to meet them, could equally participate in the RAF program. This differs from many existing conservation incentive programs that require new practice adoption for participation.
- Participating **farmers retained ownership of quantified environmental impacts** and therefore had the flexibility to combine the operating line with other financial incentive programs, as long as permitted by the other programs' requirements.

FIGURE 1:

Annual timeline for RAF program



PROGRAM RESULTS

The results of farm participation, data submission and rebate qualification for 2022-2024 are presented in Table 1.

Farmer interest in the program grew each year, with enrollment increasing from 48 participants in the pilot year to 133 in the third year. Participating farms represented a wide geographic range, with farms from Georgia to North Dakota enrolling. Farm size also varied significantly, ranging from 45 acres to more than 14,000 acres in year three. Total loan value increased from $25 million in the pilot year to $64 million in the third year, with an average loan size of $400,000 in year three.

The rate of data submission declined over the course of the program for several reasons, discussed in detail below. Among the farmers who completed data submission, the percentage that met the environmental standards and qualified for the interest rate rebate was relatively high, ranging between 83% and 92%.

TABLE 1

Summary of the RAF Operating Line program results, 2022-2024

	2022	2023	2024
Farms enrolled	48	81	133
Total loan value	$25M	$41M	$64M
Farms that completed data submission (%)	75%	48%	35%
Acres of data collected	48,163	63,090	81,079
Rebate qualification rate of farms that completed data submission (%)	83%	92%	83%

DISCUSSION

As a first-of-its-kind agricultural loan, the RAF Operating Line program aimed to understand several key questions. These included:

- **Are farmers interested in enrolling in a farm loan that connects environmental performance with financial benefits?**
- **How did the data collection process work, and how did it align with the lending timeline?**
- **Was the interest rate rebate sufficiently compelling to encourage farmer participation?**
- **Were farmers able to meet the environmental standards required to receive the rebate?**
- **What insights into farms' environmental performance can be gained from analysis of the program data?**
- **How might this type of financial product be scaled or replicated by other agricultural finance providers?**

The three-year program results provided rich insights into these questions, with lessons that can inform the future development of agricultural finance offerings that support sustainable farming practices.

Farmers had strong interest in a loan offering linked to environmental performance.

FBN tapped into their U.S. network of more than 60,000 farmer members, covering over 100 million acres, to promote the RAF Operating Line program. The marketing effort began by contacting farmers who had previously expressed interest in operating loans through FBN Finance. Loan originators were primarily responsible for promoting and enrolling growers in the program, with support from Gradable to explain the environmental criteria and data requirements as needed.

In its first year, RAF program recruitment was a resounding success, becoming the fastest-selling financial product launched by FBN. Available spots were filled quickly, and a waitlist was created for an expanded fund. In years two and three, interest continued to grow, with enrollment reaching 81 farmers in 2023 and 133 farmers in 2024. Farmers commended the program for being straightforward and accessible, and for including all farmers who met the environmental standards, regardless of when they began implementing the conservation practices.

Data collection was challenged by a mismatch with the lending and farmer decision-making cycle.

Farmers participating in the RAF program entered data into the Gradable platform. The information necessary to calculate N balance included crop type and field area, N fertilizer and manure inputs, and N removed (calculated through grain yield and stover removal, using book values for nutrient concentrations). Additional data collected included N fertilizer management practices, tillage type and timing, cover crop plans, pest management and field history. Farmers could enter data themselves or share details with FBN's team by phone. Data collection was automated whenever possible, with field boundaries uploaded via John Deere Link or other precision records. Gradable also used satellite imagery to validate reported cover crop usage and other practices. Gradable provided analytics to growers, helping them understand how their practices compared to peers and the potential agronomic and economic outcomes resulting from adoption of new practices.

Grain farmers are very busy during the spring planting and fall harvest seasons, so most data collection activities had to take place in the summer or winter. Because the environmental standards require crop yield to quantify N balance, and farmers had to repay their loans to qualify for the rebate, data collection happened after harvest during the winter months. This timing created challenges in providing timely information to inform farmers' decision-making for the next growing season. The lag in providing data back to farmers likely limited its usefulness and may have contributed to some enrolled farmers deciding not to submit their data, disqualifying them from receiving the rebate.

The 0.5% interest rate rebate on an operating line was not always sufficiently compelling for farmers.

To provide an example of how the interest rate rebate translates to a financial benefit, consider a 2,000-acre farm with a $500,000 operating loan and an interest rate of 4.08%, which was common during the initial years of the RAF Operating Line program. In this scenario, annual interest accumulated would be roughly $20,400. However, farmers typically only utilize 50% to 75% of their operating loan annually. At 50% utilization, the total interest would be $10,200. If the farmer had a 0.5% interest rate reduction to 3.58% through participation in the RAF program, interest costs would decrease to $8,950, resulting in a total rebate of roughly $1,250.

Relative to the typical farmer's operating costs per acre, this ultimately represented a modest financial benefit. This observation remained true at the higher interest rates more common in the latter two years of the program. Across all RAF loans in fiscal years 2023-2024, participants averaged interest rates of about 8.1% to 8.3% with realized interest costs of $20,000 to $40,000 and a total average rebate of roughly $1,700. In the case of the 2,000-acre farmer in the example described above, this equates to less than $1 per acre.

It is important to note that the interest rate rebate was not intended to compensate farmers for adopting new practices, but rather to integrate financial recognition of good farming practices into lending, regardless of when adoption occurred. While the 0.5% interest rate rebate was sufficient to attract farmers to enroll in the RAF Operating Line program, one potential reason that some farmers did not complete data submission is that they did not feel that the rebate amount was sufficient. In addition, the amount of the rebate was tied to the portion of the operating line utilized, so farmers who did not utilize as much of their loan received a smaller benefit and may have decided not to complete the data submission.

The value of an interest rate reduction is also tied to the type of loan involved. Farmers who qualify for RAF Land Loan program can receive interest rate reductions of 25 to 50 basis points (0.25-0.5%) each year over the seven-year RAF loan term. Assuming a total loan value of $1.5M and a standard fixed interest rate of 7.49%, this would yield savings up to $5,600 in interest payments per year, or $39,000 over the seven-year term. In addition, these savings are linked to the specific parcel with the loan, rather than the entire farm (as was the case with the operating loan). This also increases the value per acre. While actual savings will vary based on loan size and terms, this demonstrates how the same interest rate reduction can result in substantially different benefits to farmers depending on the type of loan.

Most farmers were able to meet the outcome-based environmental standards, but a practice-based standard may improve farmer confidence.

For farmers who completed all program requirements, including submitting the necessary data and repaying their loan, the vast majority successfully met the environmental standards and received the interest rate rebate (see Table 1). For farmers who met some requirements but did not meet the environmental standards, the most common problem was overapplication of nitrogen on corn.

The nitrogen efficiency portion of the environmental standards used N balance as a metric, calculated as N inputs (i.e., fertilizer and manure) minus N outputs (i.e., grain). N application exceeding crop needs leads to a high N balance, which is directly related to the environmental risks associated with N loss. N balance is a useful metric because it can provide farmers with feedback on fertilizer use efficiency and, with sufficient data, can be used to quantify both nitrate losses to water and nitrous oxide losses to air.[4]

As an outcome-based metric, N balance captures the results of both farm management choices and crop yield outcomes. While this has the benefit of closely tying the rebate to environmental outcomes, if an outcome-based metric does not feel clearly actionable for growers, it may add a level of uncertainty that discourages active participation. With the RAF operating line, determining rebate qualification by calculating N balance required

FIGURE 2:
The N balance calculation.

waiting until after crop yield was known. The primary driver of high N balances were N application rates that exceeded the amount of N needed to produce the harvested crop, even for ambitious yield goals. Even so, the unknown effects of weather and other factors meant that final N balance outcomes were not entirely within farmers' control.

After evaluating RAF program functioning and the three-year data analysis, EDF and Gradable concluded that the scientific evidence and program experience could support a shift to a practice-based standard for programs with limited data collection support or those aiming to provide farmers with more certainty regarding program qualification. A practice-based standard could include nutrient stewardship practices such as the 4Rs — the right fertilizer source at the right rate, at the right time and in the right place.[5]

Safe N balances can be achieved through application rates developed in line with each individual field's yield history, and with other efficiency-improving practices such as in-season applications based on local conditions. These factors are within farmers' control, and program data collection could occur during the summer rather than waiting until the following winter or spring. Farmers' rebate decisions could then be conditionally approved much earlier, pending loan repayment.

Yield data, along with fertilizer and manure application data, should still be collected to enable quantification of N balance and environmental outcomes, but rebate decisions would not necessarily need to depend on N balance results. The scientific basis for this conclusion is explained in more depth in the following section.

Farmers who met the environmental standards had lower fertilizer losses to water and air. Program data also showed that regenerative practices were highly correlated with efficient N fertilizer outcomes.

The RAF Operating Line program generated farm-level data on conservation practice implementation, nutrient use and management, and crop type and yield across tens of thousands of acres — 48,000 acres in 2022, 63,000 acres in 2023, and 81,000 acres in 2024. This is a unique and valuable data set as most analyses, up until this point, on the relationship between N balance, nutrient stewardship and conservation practices have relied on data from research plots rather than large-scale commercial farm data. This data set enables understanding of practices and management strategies that farmers are using on working farms, and assessment of how those practices relate to N losses to the environment. Combining this on-farm information with experimental research findings will enable the translation of science into the real world, and identification of the types of management changes that can provide the greatest benefits to both farmers and the environment.

The RAF Operating Line program data produced several valuable findings. First, farmers who met the RAF environmental standards during 2022-2024 had lower average N balance scores than the national average. This translates to lower nitrate and nitrous oxide losses and means that the standard was correlated with improved environmental outcomes. Second, implementation of certain regenerative and 4R fertilizer management practices were associated with improved N balance scores and reduced environmental losses. This increases confidence that these practices — as adopted by real farmers — can deliver positive environmental outcomes.

Thus, while a practice-based standard may not be able to quantify impact as well as an outcome-based standard, knowing the direction of impact means programs can have greater confidence that their investment will achieve the desired benefits. Detailed findings and results of the RAF Operating Line program will be shared in a forthcoming scientific publication.

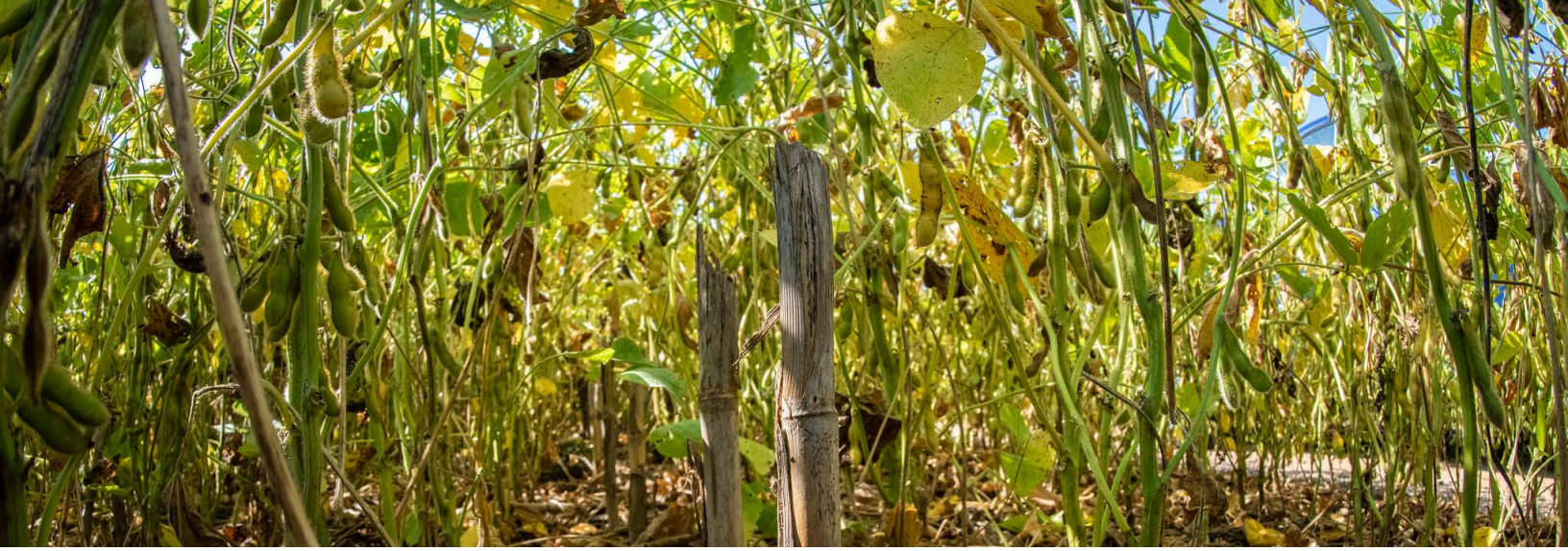
Shifts in funding timelines created challenges for data collection and program expansion.

When FBN began the RAF Operating Line program, they sought to be market leaders by offering their farmer customers an innovative financing option that rewards environmental stewardship. For that reason, they self-funded the interest rate rebate payments for the pilot year of the program. They sought other capital partners to expand the program, with the goal of scaling in the long-term with a structure such as a green bond. The RAF program was included in a successful grant from the U.S. Department of Agriculture focused on innovative finance, which would have also connected the RAF program to food company sustainability incentives. However, there were delays in deployment of the grant, introducing significant uncertainty to the funding timeline. This, in turn, disrupted the timeline and implementation of the RAF program, as FBN was reluctant to enroll farmers and Gradable to collect data when they did not have a source of funding lined up for expanded rebate payments. This disruption added to the lag in data collection from farmers and was likely the largest driver of farmer dropouts from the program post-enrollment.

Catalytic capital partnerships can enable agricultural lenders to scale or replicate loans such as the RAF Operating Loan program.

Partnerships with impact investors, philanthropy, and food and agriculture companies provide a key opportunity to scale and replicate innovative financial products like the RAF program. This approach has been successfully employed with the RAF Land Loan program. The land loan program will provide approximately 20 farmers with discounted interest rates, ranging from 0.25% to 0.5%, on newly financed land for seven years. The rate discounts will be accessible for farmers who implement sustainable soil and water health practices and meet environmental criteria developed by Gradable and EDF. The RAF land loan is supported by a $750,000 program-related-investment loan and grant from the Walton Family Foundation. Through this innovative program, farmers who successfully adopt conservation practices that benefit soil health, water quality and climate resilience will have access to discounted land loans. The Walton Family Foundation supports lasting water solutions to make sure there is enough healthy, available water for people and nature to thrive together.[6]

This model, in which agricultural loans are paired with lower-cost, more flexible “catalytic capital”, is an important strategy to enable more agricultural lenders to offer innovative financial products to farmer customers that meet their financial needs. Additional applications of this partnership model could include transition finance, equipment finance and more. Such partnerships are appealing to investors and food and agriculture companies because a relatively small amount of investment can leverage a much larger amount of agricultural finance towards joint regenerative agriculture objectives. Farmers are the ultimate beneficiaries, as they receive financial tools that meet their needs in implementing regenerative agriculture and staying abreast of market trends.



RECOMMENDATIONS

Future regenerative agriculture finance offerings can learn from the RAF Operating Line program to meet farmer demand and connect to agricultural market trends.

The RAF Operating Line program offers multiple lessons that can be instructive to agricultural finance providers and their partners who are interested in supporting regenerative agriculture:

- **There is strong farmer demand for innovative financial products linked to regenerative practices.** To meet this demand, more agricultural lenders should pilot innovative financing products and assess their impacts on farmer decision-making as well as environmental and economic outcomes. While there is still much to learn about how to optimally design these products, the RAF program results provide valuable guidance for agriculture finance providers developing similar initiatives.

- **Agriculture finance providers should consider designing financial products and services to be additive to existing, successful programs that include technical assistance and measurement, reporting and verification (MRV) services.** FBN benefits from its relationship with the Gradable data platform, which enabled data collection from the RAF Operating Line program — a benefit available to virtually no other agriculture finance providers. To address this, lenders interested in developing new financing programs should consider collaborating with existing, successful regenerative agriculture programs that offer MRV services. In addition, the RAF program did not require new practice adoption and therefore included minimal technical assistance. For new programs that plan to incentivize practice change, we recommend providing farmer support in the form of technical assistance. Many existing regenerative agriculture programs include both technical assistance and MRV services.

- **A practice-based standard may be sufficient for farmer participation in innovative financing programs, but outcomes should continue to be quantified.** The scientific evidence and program experience with the RAF Operating Line support the use of practice-based standards for agricultural finance programs

involving grain farmers. This could include nutrient stewardship practices such as the 4Rs — the right fertilizer source at the right rate, at the right time and in the right place — and soil health practices such as reduced tillage, cover crops and extended crop rotations. A practice-based standard may reduce uncertainty, may be easier for farmers to comply with and could enable more timely data collection. However, it is still valuable and important to collect crop yield data which enables quantification of N balance and associated environmental outcomes.

Catalytic capital partners, including impact investors, philanthropy and food and agriculture companies, should collaborate with agricultural lenders to advance innovative finance for regenerative agriculture. Agriculture finance providers are some of farmers' closest and most trusted partners. While lenders have always financed farmers who implement regenerative practices, until recently few had sustainability strategies or staff focused on this topic. This is changing, as major agricultural lenders are increasingly moving from awareness to action on the resilience benefits and market opportunities associated with regenerative agriculture. In a 2025 survey, nearly 60% of U.S. ag lenders stated that they plan to develop new sustainability-focused products or services within the next three years.[7]

To develop innovative financing products, services and programs, agricultural lenders often need partners who can provide lower-cost, more flexible "catalytic capital" that enables lenders to offer innovative financial products to farmer customers that meet their financial needs. Partners can also support innovative finance initiatives through the provision of technical assistance and measurement, reporting and verification services. Through such partnerships, agriculture finance providers can test new financing models and identify successes to be replicated and scaled, and showcase the potential for these collaborations to drive positive environmental outcomes in agriculture.

In summary, the broader agricultural finance sector and potential partners should build upon the RAF Operating Line program's clearly demonstrated farmer demand, environmental success and program implementation lessons to develop additional financing options for farmers interested in regenerative agriculture.

REFERENCES

1 https://www.fbn.com/community/blog/fbn-launches-regenerative-agriculture-financing-land-loan

2 Regenerative Agriculture Financing Program — Results of the 2022 pilot. https://www.edf.org/sites/default/files/2023-07/EDF_FBN_RAF_report.pdf

3 For a detailed explanation of the RAF environmental standards, including an overview of EDF's N Balance framework, see the Results of the 2022 Pilot report: https://library.edf.org/AssetLink/r32e5s5vs3b8vd700ax807100e8w5cp7.pdf

4 For more information about using N balance to quantify environmental outcomes, see the Results of the 2022 Pilot report: https://library.edf.org/AssetLink/r32e5s5vs3b8vd700ax807100e8w5cp7.pdf

5 https://www.tfi.org/insights/nutrient-stewardship/what-are-the-4rs/

6 https://www.fbn.com/community/blog/fbn-launches-regenerative-agriculture-financing-land-loan

7 Environmental Defense Fund. November 2025. "Climate and Sustainability in Ag Lending: A survey of global agricultural finance institutions." Accessed from: https://business.edf.org/insights/agricultural-finance-institutions-are-building-resilience-through-climate-and-sustainability-action/

EDF.org
A vital Earth. For everyone.