ONE FUTURE

Together, We Find a Way.

© Nick Sauvageau

GROWING SOLUTIONS

# Health and Resilience Through Regenerative Farming

Iowa's agricultural productivity—spanning about 30 million acres and leading the nation in corn, ethanol, hog, and egg production—helps feed and fuel the country[1]. While farmers and the state have taken meaningful steps to improve water quality, nutrient runoff and pesticide use remain challenges. By 2024, about 52% of Iowa's rivers and streams were classified as impaired[2]. These pressures are straining drinking water systems and raising concerns that longterm exposure to nitrates and pesticides through food, water, and air may be affecting human health, as Iowa continues to report one of the highest cancer rates in the nation.

Current science and on-the-ground experience, however, show that a portfolio of in-field and edge of field practices—implemented at scale and tailored to local conditions—can significantly reduce nitrate and pesticide exposure while strengthening farm resilience and community wellbeing.

The Nature Conservancy

1 U.S. Department of Agriculture, National Agricultural Statistics Service. *2024 State agriculture overview for Iowa.*

2 Iowa Department of Natural Resources. 2024. Impaired Waters List and Integrated Report.

Regenerative agriculture practices can help ensure safe water for all Iowans. ©iStock

## The Challenge: Pollution Pathways and Health Risks

The dominant corn-and-soybean farming model in Iowa relies on large amounts of fertilizers and pesticides[3]. Dense tile drainage networks move these nutrients and chemicals quickly from fields to waterways, bypassing natural filtration provided by soils and natural vegetation. Annual cropping practices leave fields bare for long stretches of time, increasing runoff[4]. The result: Iowa is among the top contributors of nitrogen and phosphorus to the Mississippi River Basin, with downstream consequences for water quality and public health[5].

Studies link pesticide exposure to hormone problems, leukemia, and certain cancers[6]. Nitrate in drinking water is tied to methemoglobinemia (baby blue syndrome), thyroid issues, and cancers—in some cases even at levels below the current U.S. Environmental Protection Agency threshold[7]. Private wells underscore the risk: nearly 12% of 55,000 Iowa wells tested between 2002–2017 exceeded the federal nitrate limit, and levels are rising[8]. In eastern Iowa, 32% of farm households tested in 2018–2019 had well water above the limit[9].

## The Opportunity: Multi-benefit Conservation at Scale

Iowa has set a water quality goal to reduce nitrogen loads to the Mississippi River Basin by 45% by 2035, with 41% of the reduction expected to come from agricultural best management practices[10]. Meeting these goals requires combinations of in-field practices (e.g., cover crops, nutrient management, reduced tillage) and edge of field practices (e.g., constructed wetlands, saturated buffers, bioreactors). When used together, these practices can deliver multiple benefits: cleaner water, reduced sediment and nutrient runoff, and improved wildlife habitat.

A native Iowan with farming roots, Sara McMillan, Ph.D., sees an opportunity to protect communities while supporting farmers in building resilience against environmental and economic stressors.

"One of the most exciting things we're learning from our research is that conservation practices can do a lot of work at once," says McMillan, an ecological engineer at Iowa State University. "When farmers invest in practices like wetlands, they're not just addressing a single issue—we're seeing strong evidence that these systems can deliver many of the same ecological benefits as restored or natural wetlands, while also playing a major role in capturing nutrients and improving downstream water quality."

Nutrient-removal wetlands, for instance, show 20–90% nitrate reduction depending on conditions, and saturated buffers—rerouting tile drainage through riparian soils—are low-cost, long-lived solutions. Cover crops and conservation tillage practices can also help reduce nitrogen levels when adopted widely[11].

3 Christianson L., Castellano M., and Helmers M. 2012. Final Soil Nutrient Balance Report. Iowa Department of Agriculture and Land Stewardship.

4 Danalatos, G. J. N., Wolter, C., Archontoulis, S. V., & Castellano, M. J. 2022. Nitrate Losses Across 29 Iowa Watersheds: Measuring Long-term Trends in the Context of Interannual Variability. Journal of Environmental Quality, 51(4), 708-718. doi:10.1002/jeq2.20349

5 Iowa State University. 2013. *Iowa Nutrient Reduction Strategy:* Executive Summary – Iowa Science Assessment of Nonpoint Source Practices to Reduce Nitrogen and Phosphorus Transport in the Mississippi River Basin.

6 Cattley, Russell C et al. 2025. Carcinogenicity of atrazine, alachlor, and vinclozolin. The Lancet. Oncology, S1470-2045(25)00702-8. doi:10.1016/S1470-2045(25)00702-8

7 Environmental Working Group and Iowa Environmental Council. 2019. Iowa's Private Wells Contaminated by Nitrate and Bacteria.

8 Schechinger, A., & Cox, C. 2019. *Iowa's private wells contaminated by nitrate and bacteria* [PDF]. Environmental Working Group & Iowa Environmental Council.

9 Skalaban TG, Thompson DA, Madrigal JM, Blount BC, Espinosa MM, Kolpin DW, Deziel NC, Jones RR, Beane Freeman L, Hofmann JN, Ward MH. 2024. Nitrate exposure from drinking water and dietary sources among Iowa farmers using private wells. Sci Total Environ. doi: 10.1016/j.scitotenv.2024.170922.

10 Iowa Department of Agriculture and Land Stewardship, Iowa Department of Natural Resources, Iowa State University CALS. 2012. Iowa Nutrient Reduction Strategy - A science and technology based framework to assess and reduce nutrients for Iowa waters and the Gulf of Mexico.

11 Iowa State University. 2013. Iowa Science Assessment of Nonpoint Source Practices to Reduce Nitrogen and Phosphorus Transport in the Mississippi River Basin.

> "There's no better place to be doing this work than Iowa. Success here, with strong collaborators and partners, creates a clear pathway to scale these solutions elsewhere.
>
> SARA MCMILLAN, PH.D.
> ECOLOGICAL ENGINEER
> IOWA STATE UNIVERSITY

Saturated buffer on Iowa farmland © Lynn Betts (NRCS/SWCS)

## Scaling Adoption: Models That Work

Scaling these solutions requires delivery models that simplify adoption and build trust. Two approaches proving effective are:

**Batch-and-Build** streamlines the design, permitting, and installation of regenerative agriculture practices for multiple landowners at once—primarily edge of field practices, with flexibility for cover crops. By bundling projects, the model reduces costs, accelerates timelines, and builds shared commitment. In the Middle Cedar watershed, Heartland Coop led a batch-and-build project with saturated buffers at no cost to farmers and provided per-outlet payments, making adoption easier and more attractive[12].

**Peer-to-Peer Networks** turn early adopters into local champions. Practical workshops and informal exchanges help producers overcome first-year hurdles and persist beyond initial cost-share periods.

Together, these models create a pathway from individual fields to watershed-scale impact—combining cost efficiency with community trust.

## Balancing Profit and Conservation

Brian Bourgeois, an Iowa farmer and trustee for The Nature Conservancy in Iowa, combines decades of banking experience with a deep commitment to conservation. He and his wife Linda, a retired nurse, farm in Cedar and Johnson counties, where their land includes tributaries to the Cedar and Iowa rivers—two watersheds with significant water quality challenges.

"Our goal is to operate in an environment that fosters continuous improvement, enhances profitability, mitigates risk, and strengthens environmental resiliency," Bourgeois explains. "We want to be part of the clean water solution, not the problem—and farmer profitability is the heartbeat of small-town Iowa."

12 Clean Water Iowa. 2025. Secretary Naig Announces Start of Construction on Middle Cedar Watershed 'Batch and Build' Project.

> "Our goal is to operate in an environment that fosters continuous improvement, enhances profitability, mitigates risk, and strengthens environmental resiliency.
>
> BRIAN BOURGEOIS
> IOWA FARMER

Brian Bourgeois and his dog, Mabel © Bourgeois Family

Lower Cedar River © Dale Maxson

Bourgeois' 568-acre operation reflects this philosophy. About 425 acres are farmable, with 107 acres enrolled in the USDA's Conservation Reserve Program (CRP)—roughly 19% of his total land holdings. Additional acres include riparian buffers, designated wetlands, pasture, and timber. "CRP, CSP [USDA's Conservation Stewardship Program], and other conservation practices are critical to our operation when it comes to lowering the risk profile and generating high-quality earnings," he says. "Top-line revenue is not what's important—solid risk-adjusted net earnings after all expenses is what we value most."

One of Bourgeois' most compelling examples: converting an 8-acre wet, sandy corner from corn to a quail habitat through CRP. "We were losing money farming that ground," he says. "Now it's guaranteed income." He likens this approach to investment portfolio management: "CRP contracts act like bonds—stable and predictable—driving down earnings volatility in the farming operation."

For Bourgeois, conservation and good business complement each other. "I approach this as a farmer—I can demonstrate analytically almost every decision we made has enhanced economics and/or driven down our risk profile."

## Investing in Iowa's Future

Meeting Iowa's water quality and health goals requires policy support and public investment alongside farmer leadership. Two critical opportunities stand out:

- Support the **Iowa Water and Land Legacy (IWill)** initiative to secure dedicated, long-term funding for conservation practices that protect drinking water, reduce flood risk, and enhance wildlife habitat.
- Advance a strong **Farm Bill** that expands cost-share programs, technical assistance, and other incentives for regenerative practices. Aligning state and federal resources with proven strategies can accelerate adoption of conservation practices, safeguard public health, and strengthen farm resilience for generations to come.

By aligning state and federal resources with proven strategies, Iowa can accelerate adoption of conservation practices, safeguard public health, and strengthen farm resilience for generations to come.

**Learn more about our regenerative agriculture work: nature.org/workinglands.**

For more information, contact:

**Paige Frautschy**
Iowa Agriculture Program Director
paige.frautschy@tnc.org

**Amber Markham**
Director of External Affairs, Iowa
amber.markham@tnc.org