LEOPOLD CENTER
FOR SUSTAINABLE AGRICULTURE

ANNUAL REPORT | 2023

Young badgers in field of emerging corn.

Photo: Stephen Dinsmore

Friends of the Leopold Center,

It is my pleasure to share with you the 2023 annual report of activities of the Leopold Center for Sustainable Agriculture. We continue to support a range of activities and events related to sustainable agriculture.

This report highlights some of those, most pertaining to research, Extension and support for students studying sustainable agriculture. You can learn about some of this work, including a study on farmers' and landowners' understanding of edge-of-field conservation practices, new insights from the Iowa Farmland Ownership and Tenure Survey and more. We've also included a financial summary, which shows that the Center remains in good standing.

In 2023, the Center hosted another Shivvers Memorial Lecture with Iowa State alum and author Hannah Lewis, who discussed her book *Mini-Forest Revolution: Using the Miyawaki Method to Rapidly Rewild the World.* The event was a great success with more than 50 people attending!

We are excited to announce that we have selected bee-keeper and pollinator educator Jamie Beyer as the next recipient of the Spencer Award, which will be presented in September 2024. Read the news release on our website. The award honors Norman and Margaretha Spencer, long-time farmers in Woodbury County. We would love to hear your ideas for future Shivvers lecturers or people whose contributions should be considered for the Spencer Award.

I extend my sincerest thanks to everyone who has recently supported the activities of the Leopold Center for Sustainable Agriculture. Private support allows us to continue the Center's mission—to identify and develop new ways to farm profitably while conserving natural resources and reducing negative environmental and social impacts. We are also here to help—as a resource for technical information or as a possible funding partner (inquire directly with me if you have a request). If you think we can help, please don't hesitate to let us know.

Best wishes for the coming year!

Stephen Dinsmore, *Interim Director*

Mini-forest author presents 2023 Shivvers Lecture

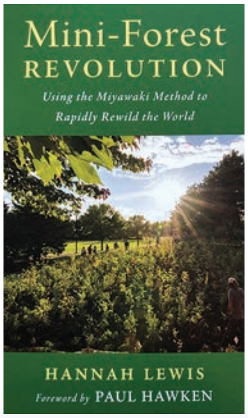
The 2023 Shivvers Memorial Lecture was presented April 6 at Iowa State University by Hannah Lewis, author of *Mini-Forest Revolution: Using the Miyawaki Method to Rapidly Rewild the World.*

Her 2022 book promotes an international movement to restore biodiversity by transforming empty lots, backyards and degraded land into "mini-forests." The event was hosted by the Leopold Center and the Iowa State Committee on Lectures (funded by Student Government).

Lewis lives in Minnesota, where she continues to create mini-forests and works for the nonprofit Renewing the Countryside. She has a master's degree in sustainable agriculture and sociology from Iowa State. She said she became interested in ag policy in college as she became aware of agriculture's huge impact on the environment, but her focus shifted toward climate change when she became a mother.

"I started thinking more about what I could do to try to pass down a livable world to our children. I learned about the Miyawaki Method, which seemed on target and doable," Lewis said.

She started researching the method, recruited allies and, after some setbacks, the group developed a mini-forest on a patch of grass used as a seasonal parking lot in Roscoff, France, where she was living at the time.



The Shivvers lectures focus on issues of sustainability, agriculture and the food system, in memory of John Shivvers, who farmed near Knoxville. Initiated in 1969, the events are held with support from the Shivvers Family.

Hannah Lewis presenting Shivvers Memorial Lecture, April 2023.

Photo: Stephen Dinsmore

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2023 FINANCIALS

ISU Foundation Accounts

2022 BALANCE CARRY FORWARD	**$180,831**
INCOME/ENDOWMENT EARNINGS	
Restricted*	$4,112
Unrestricted	$260,236
Subtotal Current Income	**$264,347**
EXPENSES	
Operations	$9,976
Restricted Expenses*	$2,931
Unrestricted Expenses	$8,542
Obligated Support—ISU	$14,432
Research Projects	$116,331
Organizational Support	$0
Subtotal Expenses	**$152,212**
2023 BALANCE	**$292,967**

** Restricted accounts are funded by the Shivvers and the Spencer Family Endowment funds.*

Stay informed about the Leopold Center and its current and recent activities at

https://www.leopold.iastate.edu

Impacts of modern corn breeding on sustainability

The Leopold Center provided matching funds for a large, multi-year regional project to measure the impacts of modern corn breeding on several key aspects of environmental sustainability, including productivity, nitrogen and water use efficiencies and carbon gains and losses. The research is based on more than 100 field experiment across the U.S. Corn Belt studying 80 corn hybrids released since the 1980s. A modeling component will develop future trajectories for the region. Sotirios Archontoulis, a professor in Iowa State's Department of Agronomy, is one of the project leaders.

With another year of analysis yet to finish, preliminary results suggest that crop improvement (breeding + agronomic management) has had positive impacts on sustainability by means of increasing efficiency of water and nitrogen use and adding more carbon into the soil over the last 40-years. The project's primary supporters are the Foundation for Food and Agricultural Research (FFAR) and Bayer Crop Science.

Decoding Iowa farmers' understanding of edge-of-field conservation practices: Evidence from two surveys in 2022 and 2023

Widespread adoption of edge-of-field (EOF) practices—such as saturated buffers, bioreactors, and water quality enhancement wetlands—is vital to achieving the goal of 45% nutrient reduction outlined in the Iowa Nutrient Reduction Strategy. However, few farmers in the state have embraced EOF practices on their land. A research project, Decoding Iowa Farmers' Understanding of Edge-of-Field Conservation Practices, conducted by the Conservation Learning Group with support from the Leopold Center for Sustainable Agriculture, Iowa Nutrient Research Center and State Soil and Water Quality Committee, investigated reasons for low participation in EOF practices in Iowa.

Over 1,000 farmers and landowners across five different HUC-8 watersheds in the Des Moines Lobe shared their perceptions and concerns about EOF practices in two rounds of surveys. Main findings from the surveys included:

- Many of the surveyed farmers and landowners indicated unfamiliarity with EOF practices. These gaps highlight the continuing necessity for increased awareness and education to bridge understanding and application of edge-of-field conservation and water quality practices.
- A significant number of farmers expressed uncertainty regarding the environmental benefits of EOF practices.
- Concerns regarding governmental regulations or administrative complexities of implementing EOF practices were prominent—over one-third of farmers are apprehensive about the bureaucratic procedures involved. This suggests a need to streamline processes and provide additional support to encourage broader farmer engagement in conservation programs.
- Preference for educational materials among those surveyed leaned toward graphical fact sheets (i.e., infographics) rather than narrative videos, suggesting farmers value clear, visual and succinct resources.
- Educational programs or information treatments were found to be most effective with farmers not already enrolled in government conservation programs.

The study's authors were Xiaolan Wan, a doctoral student in the Department of Economics, Iowa State University; Jacqueline Comito, adjunct faculty, Conservation Learning Group; and Wendong Zhang, assistant professor, Dyson School of Applied Economics and Business at Cornell University, formerly with Iowa State University. Find the complete report with supporting materials at: *https://www.iowalearningfarms.org/eof-project*

Trumpeter swans on Conservation Reserve Enhancement Program wetland in Story County.

Photo: Evangelin Von Boeckman

Latest Iowa Farmland Ownership & Tenure Survey offers insights on ag land conservation

The Leopold Center has helped support a number of updates to the 40-year Iowa Farmland Ownership and Tenure Survey series (1982–present), including the survey taken in July 2022 and reported in August 2023, which added questions on the use of working land and edge-of-field conservation practices on Iowa farmland.

The survey, which carries out an Iowa legislative mandate, represents a nationally unique study that has been conducted every five years since the 1980s to better understand agricultural land ownership, tenure and transfer. The surveys generally provide data on many aspects of land ownership, tenure, acquisition, succession and characteristics of landowners, including non-operator landowners, farmland rental agreements and the financing of farmland, topics that are of perennial interest to policymakers, landowners, producers and researchers.

Section 7 of the 2023 report covers farmers responses to questions about conservation, conservation practices and easement programs, including interest in carbon programs. Among the relevant fundings summarized by the authors:

- Government conservation programs remain popular among landowners, with the Conservation Reserve Program (CRP) still the most extensively used program.
- Land held in joint tenancy, trusts, or LLCs and land owned by landowners 65 years old or above, was more likely to be enrolled in government conservation programs.
- No-till and cover crops were used on 30 percent and 7 percent, respectively, on Iowa farmland in 2022, an increase from 27 percent and 4 percent in 2017.
- Grassed waterways and reduced tillage are popular for landowners to adopt in Iowa, accounting for 51 percent of owners and 41 percent of acres, respectively.
- Buffer strips were utilized by 3 percent of landowners across 2017 to 2022.
- Saturated buffer, bioreactors and nutrient removal wetlands had less than one percent adoption in 2022.
- Overall, landowners show a strong belief in the effectiveness of no-till and cover crops in reducing water pollution.
- A sizable portion of Iowa landowners do not view cost-share payments as the main driver for conservation adoption.
- Wind easements are the most common type of easement granted in Iowa.
- Few owners have already enrolled in or are considering participating in carbon credit programs, and most are either not interested or have never heard of them.

Overall in 2022, researchers found that about 66 percent of Iowa farmland was owned by people over 65. This was 6 percent higher than in 2017, and more than twice the level in 1982. About 84 percent of the land was reported to be held without debt, and the trend towards cash rental arrangements continues to increase.

The 2022-2023 study was conducted by Wendong Zhang, assistant professor, Dyson School of Applied Economics and Business at Cornell University, formerly with Iowa State University, and Jingyi Tong, a graduate student, Iowa State Department of Economics and the Center for Agricultural and Rural Development (CARD).

Find more information, including a video of a press conference about the 2023 Iowa Farmland Ownership and Tenure Survey results, at: *https://www.card.iastate.edu/farmland/ownership/*

View of prairie strip growing between corn fields to protect soil, water and pollinators, on a farm in Polk County, Iowa.

Photo: Ann Y. Robinson

Wind erosion of topsoil in Hamilton County, Iowa, in February, highlights the need for conservation practices.

Photo: Stephen Dinsmore

Leopold Center for Sustainable Agriculture Records Available in ISU Digital Repository

Leopold Center records, including reports from completed grants, are on file at the Iowa State University Library Digital Repository. Also archived are Leopold Center annual reports, conference proceedings, publications and papers, Extension and Outreach publications and past Leopold Letter quarterly newsletters. Topics covered range from livestock and nutrient management, microenterprise establishment, local food systems, entomology, agroforestry and horticulture.

Find the records at *https://go.iastate.edu/0SYDHT*

Leopold Center supports Wallace Chairs for Sustainable Agriculture

The Leopold Center for Sustainable Agriculture continues its tradition of providing support for Iowa State University's Henry A. Wallace Chair for Sustainable Agriculture position and related activities. For the first time, in 2023, the College of Agriculture and Life Sciences made the chair a joint appointment, naming J. Arbuckle, professor in sociology and criminal justice, and Matthew O'Neal, professor in plant pathology, entomology and microbiology.

In the last year, Wallace Chair funding primarily helped support the Graduate Program for Sustainable Agriculture (GPSA). Funds also supported faculty's leadership in an innovative agrivoltaics research and demonstration collaboration between Iowa State University and Alliant Energy.

GPSA

Over the last year, LCSA provided $28,000 to GPSA, which helped support three student scholarships, student participation in state and regional sustainability conferences, and activities and expenses for the annual GPSA Research Symposium, which in 2023 featured keynoter Matt Liebman, Iowa State Wallace Chair emeritus.

Graduate theses from GPSA students in 2023 represented research on:

- Plant and Insect Community Responses to Manure Application in Prairies. (Melanie Bogert, MS);
- Challenges and Opportunities for Consumers and Producers in Central Iowa Local Food Systems (Erin Huckins, MS):
- Identifying, Prioritizing and Evaluating Costs for Restored Floodplain Easements Using Geospatial Data and Tools (Kelsey Karnish, MS):
- Resilient Community Food Systems: Intersectional Analysis Across Impacts, Values and Organizational Capacity (Courtney Long, PhD).

More information at *https://www.susag.iastate.edu/*.

Agrivoltaics

Developing a knowledge base about integrating agricultural production and solar energy is the goal of the 10-acre Alliant Energy Solar Farm, established on 10 acres near campus in 2023. Several types of solar panels at different heights will help provide answers along with enough megawatt energy to power 200 homes. O'Neal and other collaborators, including Ajay Nair, in horticulture, led planning efforts to establish research plots for vegetable and fruit crops and pollinator habitat. The team, along with students, are looking at the costs and benefits of growing crops under solar panels, the impact on energy production and public attitudes toward an integrated approach to solar installations. Stay tuned for findings over the next few years. *https://agrivoltaics.research.iastate.edu/*

Graduate Program for Sustainable Agriculture student Elizabeth Oritz discusses her project at the annual GPSA Research Symposium.
Photo: Ann Y. Robinson

Leopold Center continues to support Iowa Learning Farms programs to build a "Culture of Conservation"

The Leopold Center continued to provide support for Iowa Learning Farms and its affiliated Water Rocks! Youth education programs in 2023. Through its unique blend of in-person and online activities, Iowa Learning Farms vigorously continues to pursue its mission of building a Culture of Conservation in Iowa and making science- and research-based best practices in agriculture, land management and environmental science available to all.

In 2023, Iowa Learning Farms hosted 23 in-person field days, 7 Conservation On Tap events, 3 virtual field days and 51 webinars, reaching 11,147 total participants. Iowa Learning Farms reached an additional 6,178 people through 68 Conservation Station trailer appearances at such events as county fairs and community festivals, and 899 people through 25 supplemental outreach events ranging from guest presentations to listening sessions.

Iowa Learning Farms' diverse offerings of events have proven to successfully connect with participants. The success of the virtual programs compliments the need for in-person engagement, offering a tremendous opportunity to expand the Culture of Conservation reach to a wider group of farmers, landowners and conservation influencers across Iowa and beyond.

As in the comments in the conclusions of ILF's 2023 Evaluation Report: Building a Culture of Conservation:

> *Influencing human behavior in relationship to environmental issues such as conservation and clean water is one of the most difficult challenges faced by our state. It is important to understand how much farmers are exposed to conservation and water quality messaging and how often the status quo is reinforced by what they read and hear. The challenge isn't the farmers who are coming to our field days. The challenge is the vast number of farmers who are staying home and having their beliefs reinforced that high yields trump conservation.*

Read ILF's complete 2023 report, available at *https://www.iowalearningfarms.org*, under the tab Reports/*2023 Evaluation Report*.