WINTHROP ROCKEFELLER INSTITUTE

WATER

Water: Agriculture • Technology • Education • Research

The Winthrop Rockefeller Institute is a nonprofit conference and retreat center whose mission is to continue Winthrop Rockefeller's collaborative approach to creating transformational change.

We engage our resources and Winthrop Rockefeller's values to convene purposeful gatherings on his historic cattle farm. We do this work by employing the **Rockefeller Ethic**, which represents the belief that diversity of opinion, engaging in respectful dialogue, and practicing collaborative problem solving combine to create transformational change.

Our trained staff are available to assist groups with meeting design and facilitation, and we offer a variety of professional development workshops to provide unique learning and team building opportunities. The productive energy of our mountaintop location coupled with the highest levels of hospitality ensure all who come here are able to do their best work.

THE ROCKEFELLER ETHIC

COLLABORATIVE PROBLEM SOLVING

+

RESPECTFUL DIALOGUE

+

DIVERSITY OF OPINION

=

TRANSFORMATIONAL CHANGE

CONNECT WITH US

1 Rockefeller Drive
Morrilton, AR 72110

(501) 727-5435
info@rockefellerinstitute.org
rockefellerinstitute.org

rockefeller.institute
rockefellerinstitute
rockefeller
rockefellerinstitute

DEAR READER,

The inspiration for the Institute's **WATER** program began with the **2023 Winthrop Rockefeller Distinguished Lecture Series** and **Dr. Peter McCornick**, executive director of the Daugherty Global Water for Food Institute. Dr. McCornick is widely recognized for research on agricultural water use worldwide, with a focus on producing food while conserving water for all.

At our campus on Petit Jean, Dr. McCornick challenged us to consider how Arkansas can further cement its role as a national leader in agriculture while also being a responsible steward of our abundant natural resources.

As we traveled with Dr. McCornick to visit Arkansas farmers and researchers, we asked a simple question: how can Arkansas be both a leading agriculture producer and a state with plenty of water? Along the way, he offered several observations about our potential to do just that.

- ☑ **Most Arkansans are only one degree of separation from a farm—this closeness helps us remember that water is the lifeblood of farming, and farming is the lifeblood of Arkansas. We want to protect both.**
- ☑ **We have a timely opportunity to manage water sustainably so that, 30–40 years from now, we do not face the same challenges as states west of us that are already struggling with access to water.**
- ☑ **We also benefit from deep expertise in agricultural research and technology that can help producers innovate and adapt.**

Dr. McCornick also pointed to challenges we can expect as water scarcity becomes an increasing global concern, including increasing public awareness of conservation needs, ensuring fit-for-purpose conservation technology, and building capacity in a new generation of leaders.

These ideas guided our inquiry and our listening. What follows in this report is a summary of what we heard—and recommendations for the future.

We owe thanks to **Dr. Peter McCornick** and the **Winthrop Rockefeller Distinguished Lecture Series** for catalyzing this program, and to the **University of Arkansas Division of Agriculture**—its research scientists and extension professionals—who contributed their time and expertise, particularly **Dr. Chris Henry,** Professor and Water Management Engineer. We are also grateful to **The Nature Conservancy** and the **Natural Resources Conservation Service** for their support. We extend gratitude to the **50 participants** in our convenings who helped identify recommendations. Finally, we offer heartfelt thanks to **Arkansas farmers**, who stepped off the tractor and out of the field to share their stories and their commitment to keeping farming alive while stewarding our resources for future generations. We honor the work they do every day.

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WATER PROGRAM FINAL REPORT

The Winthrop Rockefeller Institute launched the WATER Program in 2023 to strengthen collaboration across the agriculture, technology, education, and research sectors to better manage Arkansas's groundwater resources. Our goal was to create space for meaningful dialogue among those most impacted, particularly farmers, and support long-term strategies that protect water resources while supporting farm profitability.

EXECUTIVE SUMMARY

In 2023 – 2025, the Winthrop Rockefeller Institute's WATER program engaged conservation partners, researchers, state agencies, and farmers across Arkansas to explore how to strengthen water stewardship in our state. The goal was to listen and learn, rather than prescribe solutions, with a focus on aligning conservation efforts with real-world farming conditions and economic viability.

Key Insights

- **Farmer awareness and concern:**
Most farmers recognize groundwater as essential to Arkansas agriculture and are concerned about sustaining it for future generations, even in areas without obvious decline.

- **Structural and social barriers:**
Short-term leases, absentee landowners, low awareness of support programs, complex application processes, and exclusion of minority or small farmers from formal networks limit conservation adoption.

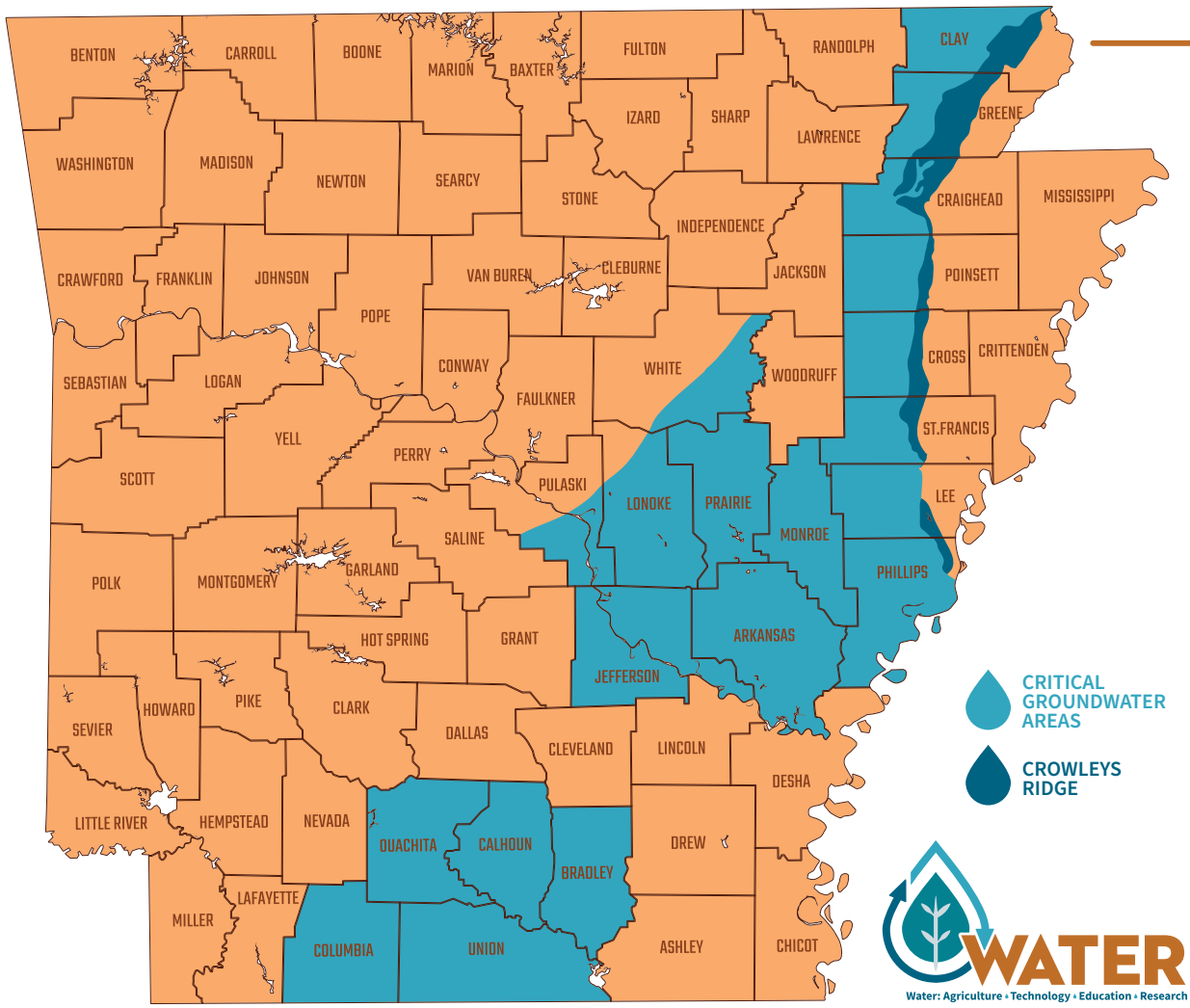
- **Trust and relationships matter:**
Farmers consistently indicated that they trust peers more than formal programs, and peer-to-peer learning is the most effective way to share best practices.

- **Practical, flexible support is essential:**
Programs and incentives that reflect the realities of farm management are critical for meaningful adoption of water-saving practices.

Engagement Highlights

- **Topic Dinner (Dec 2024):**
Stakeholders emphasized conservation through incentives, flexibility, and local leadership, as well as the need for clear, usable data.

- **Farmer Interviews (Mar-Sept 2024):**
Interviews with 29 farmers in 13 counties within Arkansas's Critical Groundwater Areas



Critical Groundwater Areas in Arkansas

The Arkansas Department of Agriculture designates Critical Groundwater Areas in regions where data indicate significant groundwater depletion or declining water quality. While this designation is non-regulatory, it helps target attention, resources, and conservation efforts to areas most in need.

to understand what producers need to adopt irrigation water management (IWM) strategies in ways that maintain farm profitability.

- ☑ **Farmer Roundtable (Mar 2025):**

Producers prioritized shared goals, peer-to-peer learning, and landowner engagement to overcome barriers to IWM adoption.

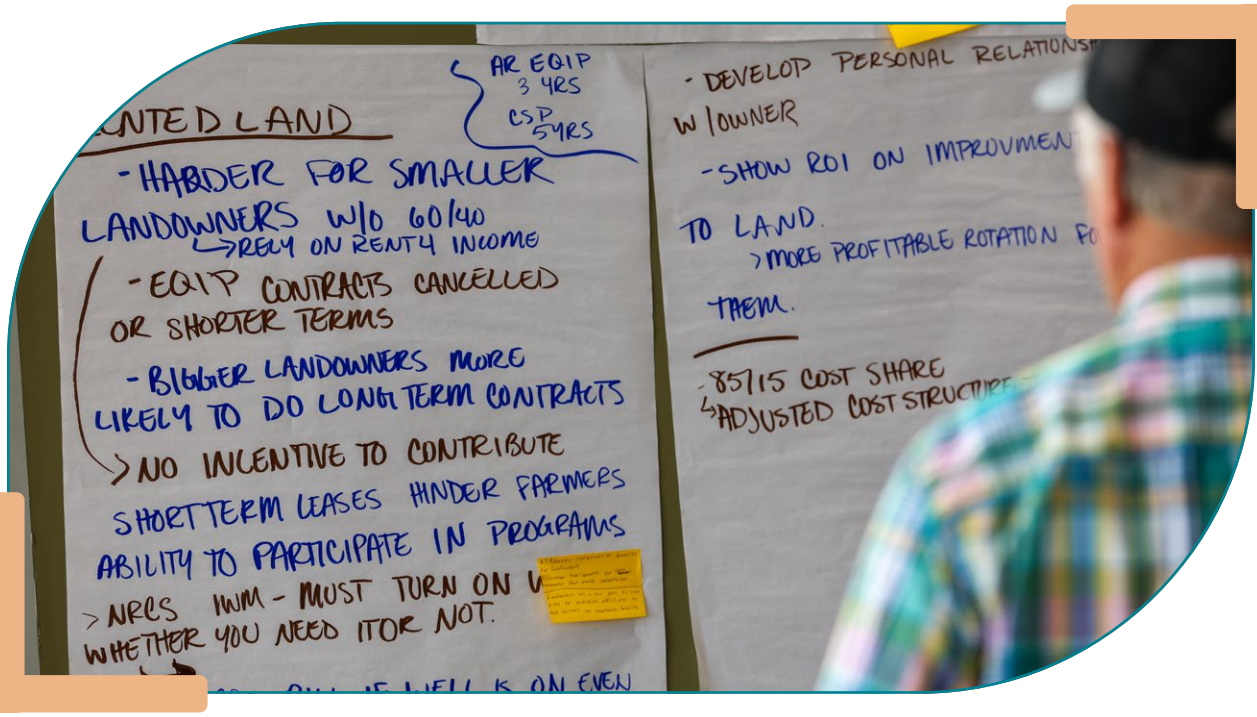
- ☑ **National Master Irrigator Summit (Sept 2025):**

Exposure to established Master Irrigator programs highlights models for peer learning, practical instruction, and collaborative program design that could be adapted to Arkansas.

Recommendations:

- ☑ **Establish credible, shared benchmarks for water use:**

Build practical benchmarks for irrigation to measure progress and communicate impact.



- **Prioritize measurement approaches that minimize burden and build trust:**

Leverage practical, low-intrusion methods like remote sensing or automation.

- **Focus education and incentives on management, not just technology:**

Combine hands-on instruction, peer learning, and decision-making tools to support IWM adoption.

- **Create pathways to incentivize and monetize water stewardship:**

Explore financial mechanisms grounded in clear data and practical benchmarks.

- **Invest in farmer-to-farmer learning:**

Develop structured programs, such as a statewide master irrigator model, to facilitate peer exchange and the adoption of best practices.

- **Develop tools to engage landowners on rented land:**

Provide clear materials demonstrating the financial and operational benefits of water stewardship to encourage collaboration with tenants.

Conclusion:

The insights gathered through this process do not point to a single solution, but they do highlight consistent themes. Based on what we heard from farmers, researchers, and conservation partners, we recommend strengthening water stewardship efforts by centering farmers' lived experiences, aligning conservation with economic realities, and investing in practical, peer-driven learning models. Arkansas has strong institutional knowledge and engaged producers; building on that foundation through clearer benchmarks, flexible incentives, and collaborative approaches will create meaningful progress toward long-term groundwater sustainability.

FRAMING THE CONVERSATION

In December 2023, the Institute hosted a Topic Dinner that brought together conservation partners, researchers, and policy leaders to reflect on the future of water in Arkansas. The goal of the gathering was not to settle on solutions, but to listen, creating space for participants to share what they see and experience in their daily work and what change they hope to see in their communities and across the state.

The dialogue reflected a strong preference for approaches that support conservation through incentives, flexibility, and local leadership rather than state regulation. Participants emphasized the importance of taking a long-term view, recognizing that many water-saving practices are already being adopted and that meaningful results often take time. There was also a shared understanding that Arkansas's water resources are central to both its agricultural success and its economic future, and that stewardship must balance responsibility with opportunity.

Participants also spoke about the need for clearer, more useful information to support decision-making. While Arkansas has a wealth of data and expertise, many expressed a desire for insights that are easier to apply in real-world settings and that reflect the diversity of conditions across the agricultural landscape. Alongside this, the dialogue highlighted the importance of adaptability—remaining open to learning, innovation, and new ideas as conditions, markets, and climate continue to change.

Finally, the discussion acknowledged both the challenges and the promise of working together. Barriers such as siloed efforts, limited trust, and funding constraints were named openly, along with a shared commitment to building on existing work rather than duplicating it. Across the conversation, participants expressed optimism that through listening, storytelling, and collaboration, Arkansas can continue to strengthen its approach to water stewardship and prepare for the future.

From the Topic Dinner, one message emerged clearly: **any effort to strengthen water stewardship in Arkansas must be grounded in farmers' lived experiences.** Participants repeatedly emphasized the importance of listening to those making day-to-day decisions about water use, understanding the realities they face, and ensuring that conservation efforts align with farm viability. These reflections underscored the need to move beyond high-level dialogue and hear directly from producers working in areas where groundwater challenges are most pressing.

LISTENING TO FARMERS

Between March and September 2024, we conducted in-depth interviews with 29 farmers across 13 of Arkansas's 20 counties in Critical Groundwater Areas. These interviews aimed to understand what farmers need to adopt conservation practices, not just from an environmental standpoint, but also in a way that maintains farm profitability.

KEY INTERVIEW THEMES

Groundwater awareness

Most farmers view groundwater as essential to agriculture in Arkansas's future, even in areas where decline is not immediately visible. Many also expressed long-term concern for sustaining this resource for future generations.

> *"We knew we had to do something, being in the CGW area. It's very important to be mindful, and to lower our input numbers and cost. I'm a fifth-generation rice farmer with three boys, and if they choose to farm, I need to think about what I can do now to give them the best possible chance to continue this legacy. It's a big, conservation-minded effort. It has opened my eyes to all that is possible."*

Barriers to conservation

Farmers described several structural barriers that make long-term conservation investments difficult:

- ☑ **Short-term leases limit farmers' ability to invest in some irrigation water management (IWM) practices.**
- ☑ **Lack of landowner engagement discourages improvements on rented ground.**
- ☑ **Low awareness of available support programs, along with frustration with complex application processes, reduces participation in cost-share programs.**
- ☑ **Cost and practical concerns about on-farm application of IWM tools and techniques.**

Preferred support

Farmers consistently expressed interest in peer-based learning, accessible technology, and cost-sharing/incentive programs that align with real-world farming conditions.

Social and structural challenges

- **Some farmers identified opportunities for greater continuity and collaboration, suggesting that strengthening cooperation among producers and enhancing consistent support from local University of Arkansas Division of Agriculture Research and Extension Service (UA Extension) offices could encourage broader participation.**
- **Minority and small farmers noted exclusion from formal agricultural groups and meetings.**

> *"I would like to see all big and small farms, and all races of farmers. Other farmers have everything they need to do the job. We need access to resources via equipment and knowledge, as well as a willingness to share those with others. If I'm getting money from different programs, I'm going to tell other farmers about it.*

Farmer Roundtable – March 2025

In March 2025, we convened a group of farmers for a full-day in-person meeting at the Rice Research and Extension Center in Stuttgart. This group included seven producers from Arkansas, White, Jefferson, Lonoke, Greene, and Clay Counties, as well as a representative from The Nature Conservancy. This gathering marked a shift from listening to exploring what collaboration could look like in practice. The purpose of the meeting was to:

- **Reflect on the deeper causes behind the barriers identified during interviews.**
- **Prioritize and identify shared goals.**
- **Discuss how to make progress on relieving these barriers.**

Key takeaways:

- **There is strong support for expanding farmer-to-farmer learning models, such as a Master Irrigator Program.**
- **Programs and funding mechanisms need to better reflect the realities of short-term leases and profit-sharing agreements.**
- **Landowner education and incentive alignment are critical for scaling conservation on rented land.**
- **Farmers trust peers more than formal programs, suggesting that meaningful change is more likely to occur through relationships than through mandates.**

Taken together, the farmer interviews and roundtable discussions reinforced the importance of designing water conservation efforts around realities farmers face every day. Farmers demonstrated a strong awareness of groundwater challenges and a willingness to engage in solutions, but emphasized that progress depends on trust, practicality, and alignment with economic and structural conditions.

NATIONAL MASTER IRRIGATOR SUMMIT

In response to farmers' feedback highlighting the need for more peer-to-peer learning opportunities and their interest in the Master Irrigator (MI) programs operating in neighboring states such as Mississippi, Oklahoma, and Texas, the Institute engaged with the University of Arkansas Division of Agriculture Research and Extension Service to explore what it might look like to build a similar program in Arkansas.

Modeled after the Master Gardener program, Master Irrigator is a training course offering at least 24 hours of instruction focused on precision irrigation management to support profitability and water conservation. Programs are guided by local, producer-led advisory committees that tailor content and structure to regional needs and draw on expertise in hydrology, agronomy, engineering, technology, and business planning. At its core, the MI model emphasizes peer-to-peer learning, hands-on instruction, interactive discussions, and practical strategies that reduce costs, inputs, and labor while improving water-use efficiency.

To further explore the potential of this approach, the Institute, in partnership with UA Extension and the Irrigation Innovation Consortium (IIC), brought together program coordinators, partners, and farmers from established and emerging MI programs across the country. Participants attended both in person and virtually, representing 12 states and a wide range of crop and irrigation systems. The Summit created a space to share lessons learned, explore common challenges, and consider how collaborative models like Master Irrigator can support viable irrigation practices in agriculturally dependent regions facing water constraints.

This Summit featured interactive sessions, focused on:

Program Impact and Evaluation

Program participants shared tools and data used to assess program effectiveness and on-the-ground impact, with discussion centered

on improving evaluation methods and aligning messaging across local, regional, and national contexts.

Program Development

Leaders from established programs discussed the essential components of launching and sustaining a Master Irrigator program, including curriculum design and staffing, funding, and partnerships, offering guidance to states, like Arkansas, exploring new efforts.

Driving Momentum

Breakout sessions examined reach, core impacts, and opportunities for increased collaboration with the United States Department of Agriculture's (USDA) Natural Resources Conservation Services (NRCS), conservation districts, and industry partners.

Fireside Chat:

Janet Harris, the Institute's Executive Director/CEO, moderated a one-on-one conversation with Amanda Mathis, Arkansas State Conservationist for USDA NRCS, on water concerns in the state and on examples of successful partnerships, such as MI programs, that support producers and local communities.

The conversations from the National Master Irrigator Summit reinforced themes that surfaced throughout the program: farmers value learning from one another, trust grows through relationships, and effective water stewardship depends on practical tools that align with real-world conditions. Insights from the Summit, combined with what was heard during the Topic Dinner and farmer interviews, helped clarify where existing efforts can be strengthened and where targeted investment and coordination could have the greatest impact.

PROGRAM OUTCOMES

Through statewide farmer interviews, stakeholder engagement, and a final convening of agricultural partners, the WATER program produced several outcomes that help clarify the path forward for groundwater conservation in Arkansas agriculture.

First, the program developed a **clearer understanding of how farmers view groundwater management and the conditions that shape their decisions**. Conversations across the state highlighted the practical realities producers navigate when considering new irrigation technologies or conservation practices, including financial pressures, land tenure arrangements, and the need for reliable technical support. This insight provides an important foundation for designing conservation strategies that align with farm conditions.

Second, the engagement process **identified shared themes across farmers, agencies, and agricultural organizations**. Participants consistently emphasized that farmers place strong trust in peer experiences, often valuing direct conversations with other producers more than

formal presentations or program materials. There was also broad agreement that conservation programs and efforts are more effective when they offer flexibility, practical incentives, and clear benchmarks that enable farmers to measure progress without burdening their operations.

Third, the program **supported momentum toward establishing a statewide Master Irrigator Program** in Arkansas. Stakeholders recognized that peer-to-peer education models have proven effective in other states and could provide a structured platform for producers to share knowledge and improve irrigation practices. Discussions during the final meeting highlighted existing organizational interest and the need for dedicated coordination to move this effort forward.

Finally, the program **produced a set of stakeholder-informed recommendations for continued progress in groundwater conservation for agricultural use**. These recommendations focus on strengthening peer learning opportunities, improving alignment between conservation programs and farm operations, and developing tools that support communication between farmers and landowners about conservation investments.

WATER RECOMMENDATIONS

Establish credible, shared benchmarks for water use

Across multiple engagements, stakeholders consistently emphasized the need for clear, agreed-upon benchmarks for agricultural water use at the field and crop level. Farmers, researchers, ag businesses, and conservation partners alike noted that without a shared understanding of what "average," "efficient," or "sustainable" water use looks like, it is difficult to measure progress, compare practices, or communicate impact.

There is a strong interest in building on existing published research and long-term datasets to develop practical irrigation application benchmarks that reflect real-world, commercial farming conditions. Stakeholders also stressed the importance of retaining contextual information, such as crop type, irrigation method, and regional conditions, so comparisons are accurate and meaningful.

Prioritize approaches that measure water use without increasing burden or distrust

Farmers and ag partners repeatedly raised concerns about data collection approaches that feel intrusive, overly technical, or disconnected from day-to-day management. At the same time, there is broad recognition that better water data is essential for long-term planning and conservation.

Stakeholders expressed strong interest in measurement approaches that minimize added burden, avoid perceptions of surveillance, and align with existing management systems. Methods that leverage

indirect measurement, automation, remote sensing, or power-use correlations were cited as promising because they reduce friction while still improving understanding of agricultural water use. Data collection efforts must be practical, farmer-centered, and clearly tied to value, whether through management insights, cost-savings, or future market opportunities.

Focus education and incentives on management, not just technology

Across conversations with farmers, Extension agents, ag businesses, and conservation groups, we heard that management decisions matter as much as, if not more than, the adoption of specific technologies or practices.

Stakeholders noted that adoption and performance of irrigation practices vary widely based on experience, technical assistance, and confidence in implementation. Education models that combine peer learning, hands-on training, and practical decision-making tools were identified as more effective.

Create pathways to incentivize and monetize water stewardship

Across conversations with stakeholders, a common question kept coming up: **how can good water stewardship be recognized and supported in practical ways?** Many people expressed interest in incentives that reward thoughtful water management, while also acknowledging that clear markets for water-related outcomes are still taking shape.

Tools like tax credits already exist, but they do not always work well for farmers, especially in years when operations do not turn a profit. This has led to growing interest in whether new or expanded markets could allow those credits to be shared or transferred in ways that better reflect the investments farmers are making.

At the same time, stakeholders emphasize the importance of moving carefully. There is broad agreement that any future incentive or market system should be built on clear, trustworthy data and benchmarks, without creating unnecessary burdens or pressure on producers.

Develop Tools for Landowner Engagement

Rented land was identified as a challenge to the adoption of conservation practices by some producers. Farmers noted that short-term leases, absentee landowners, and rigid cost-sharing arrangements can make long-term conservation investments difficult to justify. If landowners are unwilling to share in upfront costs, it can leave little room to recover the expense of irrigation upgrades.

Developing clear, practical materials that demonstrate the financial return of IWM to landowners may help address this gap. Tools outlining shared benefits, cost-recovery timelines, and examples of workable lease arrangements could support more productive conversations between landowners and tenants. Providing both parties with straightforward information about how IWM investments can protect land value, reduce long-term risk, and improve operational efficiency can help create conditions in which water stewardship is financially viable on rented ground.

Invest in Farmer-Farmer Learning

Farmers consistently emphasize that they are most likely to consider new tools or technologies after hearing directly from other producers who have tried them. Peer experience, what works, what does not, what it costs, and how it fits into day-to-day operations often carries more weight than abstract data or formal presentations.

Investing in peer-based programs and elevating the voices of trusted farmers may be among the most effective ways to support broader adoption of sustainable irrigation

water management. Farmer-led education models, such as a statewide Master Irrigator Program, create a structured space for producers to learn from one another.

Within these conversations, there were also examples of multi-generational farm families navigating transitions in irrigation management. Younger generations often helped introduce or evaluate more efficient and innovative water management strategies, particularly those who had pursued agricultural degrees or gained experience off the farm before returning to the operation. These stories highlight that periods of generational transition can create natural opportunities to revisit long-standing practices and explore new approaches.

Creating opportunities for producers to hear directly from these families about how they evaluated risk, phased in technology, and made decisions over time may help build trust and clarify this pathway for others considering similar changes.

Institute recommendation

WATER CONCLUSION

This process began with a simple commitment: to listen. What emerged across the Topic Dinner, farmer interviews, roundtable discussions, and the National Master Irrigator Summit is a clear picture of both challenge and opportunity. Arkansas farmers are not disengaged from groundwater concerns; they are thoughtful, pragmatic, and deeply aware of the responsibility they carry. At the same time, meaningful progress depends on systems that reflect their realities: trust-based relationships, practical benchmarks and incentives, and shared learning grounded in experience. Strengthening water stewardship in Arkansas will not hinge on a single program or policy, but on continued collaboration that builds on existing expertise, aligns conservation with farm viability, and centers the voices of those making daily water management decisions.

Scan the QR code with your smartphone's camera to learn more.

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CONNECT WITH US

Petit Jean Mountain
1 Rockefeller Drive
Morrilton, AR 72110

(501) 727-5435
info@rockefellerinstitute.org
rockefellerinstitute.org

rockefeller.institute
rockefellerinstitute
rockefeller
rockefellerinstitute