Agricultural Water Use Needs Assessment Report

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Executive summary

Introduction and purpose

Michigan is the second most diverse agricultural state in the country with over 300 recognized commodities. Michigan has access to nearly 20% of the world's fresh water supply and is a critical resource for the state. However, in some parts of the state, water is in high demand with inadequate supply. Water quality also remains a key issue in certain localized areas within Michigan. To address this issue, a water use efficiency needs assessment was designed to capture the needs and perspectives of different groups of water users. The results will be used to direct our educational efforts to better serve all water users in Michigan and the surrounding regions.

Methodology

In 2024, the Agricultural Water Use Needs Assessment was developed and distributed in the form of a fourteen-question survey. Questions inquired about respondents' relationship to agriculture, quantity of land managed, form of water use, commodity being farmed, concerns and interests in different topics. This needs assessment was delivered to many different groups involved with water use, including agricultural producers, policy makers, and other stakeholders. The data was captured via paper copies of the survey and an electronic form that could be filled out remotely at the respondent's convenience (Appendix). Surveys were delivered by email, the water use and irrigation digest, and at more than 15 in-person meetings held by the MSU Extension Irrigation team. This captured responses from a wide range of stakeholders, both in Michigan and in its surrounding region. There were 104 completed needs assessments collected and analyzed.

a. Producers' findings

Survey results indicate that the irrigation landscape was defined by a primary reliance on center pivot systems, which were utilized by over half of the respondents, particularly within operations spanning 101 to 500 acres. While smaller operations under 100 acres utilized a broader diversity of methods, including trickle, drip, and big-gun systems. Results indicated a notable lag in the adoption of other technologies such as sub-surface drip and micro-sprinklers. Management practices remained largely traditional, with producers focusing on rainfall monitoring, annual inspections, and manual scheduling. However, survey data revealed a significant interest in modernizing these operations; producers expressed a strong desire

for adopting new technologies, including variable rate irrigation (VRI), sensing technologies, and automated scheduling.

Producers were predominantly concerned with issues related to profitability and nutrient management. While water use efficiency was a high-level priority for most respondents, climate variability was consistently ranked as a lower priority relative to immediate economic and resource challenges. Educational needs were concentrated on practical application and financial viability. Producers specifically requested guidance on "when and how much" water to apply, alongside detailed information regarding the return on investment for new technologies. Additionally, results indicated that there was substantial demand for technical training focused on system repairs and maintaining distribution uniformity to ensure high water use efficiency.

a. Partners' findings

Responses from our partners were characterized by a significant influence on acreage managed via center pivot systems, though the majority of individual respondents primarily impacted smaller tracts of less than 100 acres. Similar to producer trends, trickle and drip irrigation were most common in smaller-scale applications, while newer technologies like subsurface drip and micro-sprinklers remained limited in current use. Management practices centered on annual system maintenance and weather monitoring; however, partners demonstrated a robust interest in advancing water use efficiency through the adoption of soil moisture sensors, remote pivot controls, and uniformity testing. This suggested that while current practices remained grounded in traditional maintenance, there was a clear strategic move toward data-driven irrigation management.

Operational priorities for partners were led by concerns over profitability and long-term sustainability. Among water-specific issues, water quantity was ranked as the most critical concern, outweighing drainage, nutrient management, and water quality. Conversely, climate variability was consistently ranked as the least important issue. Educational needs identified by partners focused on the intersection of technology and economics; while there was a strong demand for increased automation and improved scheduling, partners identified high costs and limited technical knowledge as the primary barriers to adoption. Furthermore, partners emphasized the need for "economically friendly" educational programming and soil-land management training to help growers optimize water use through better soil health.

To support these goals, partners relied heavily on research-based information, with MSU Extension serving as the primary source for over half of the respondents. Information was gathered through a balanced mix of digital and traditional channels, including internet searches, trade shows, and industry conferences. Similar to the producer demographic, partners expressed a clear preference for live, real-time communication formats. Feedback regarding current outreach efforts was overwhelmingly positive, though partners cautioned that future programming must remain practical and realistic to be effective for the growers they advise.

Demographics

A total of 104 participants completed the needs assessment and were asked to indicate their county of residence. Of these, 69 (66%) participants reported living in Michigan. Due to joint meetings hosted across Michigan and Indiana, where data was collected, 24 (23%) of the responses were also received from Indiana. Southwestern Michigan and Northern Indiana have combined irrigated areas of 1.4 M, concentrated near the Michigan-Indiana line, predominantly in the St. Joseph River Basins. Figure 1 shows a county-level map of respondents' residence across both states. In Michigan, most responses were concentrated in the southwest region, particularly in St. Joseph, Van Buren, Branch, and Berrien counties. In Indiana, high response rates were observed in LaGrange, Elkhart, and Noble counties. Additional responses were received from other Great Lakes states, including Ohio (2), Wisconsin (2), and Illinois (1), as well as from Minnesota (1), Missouri (1), and Nebraska (1).

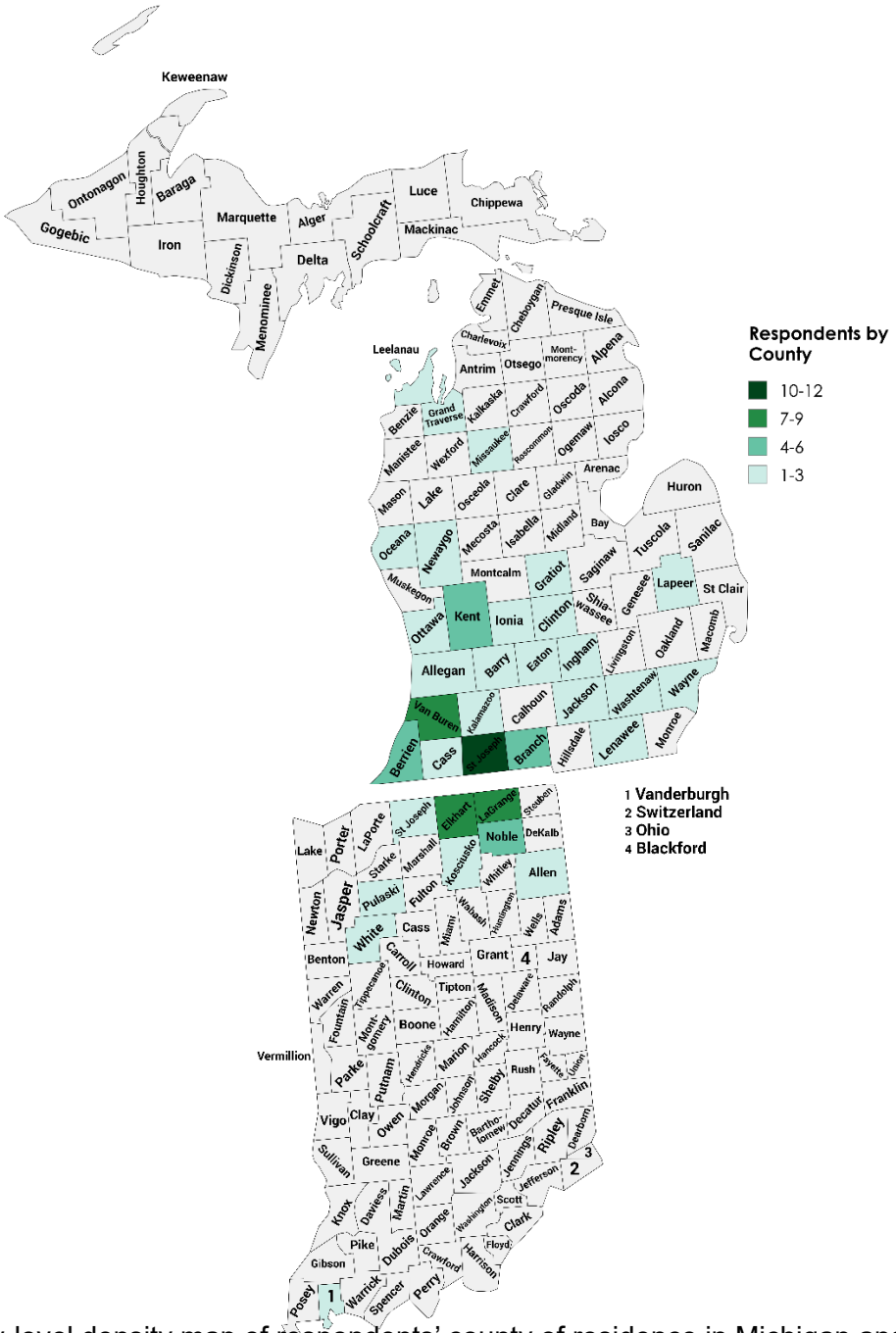

Figure 1. County-level density map of respondents' county of residence in Michigan and Indiana. Relationship with agriculture.

The results indicate that the majority of respondents (61%) are full-time farmers working with specialty crops, row crops, livestock, poultry, or dairy operations (Figure 2). Part-time farmers represent 13% of respondents, while greenhouse, nursery, or indoor producers account for 10%. Smaller segments of the respondents include agricultural supply businesses (7%), consultants (5%), and agencies (4%), with 1% selecting other roles. Examples of these include “MSU AgBioResearch” and “Home/School Gardener.”

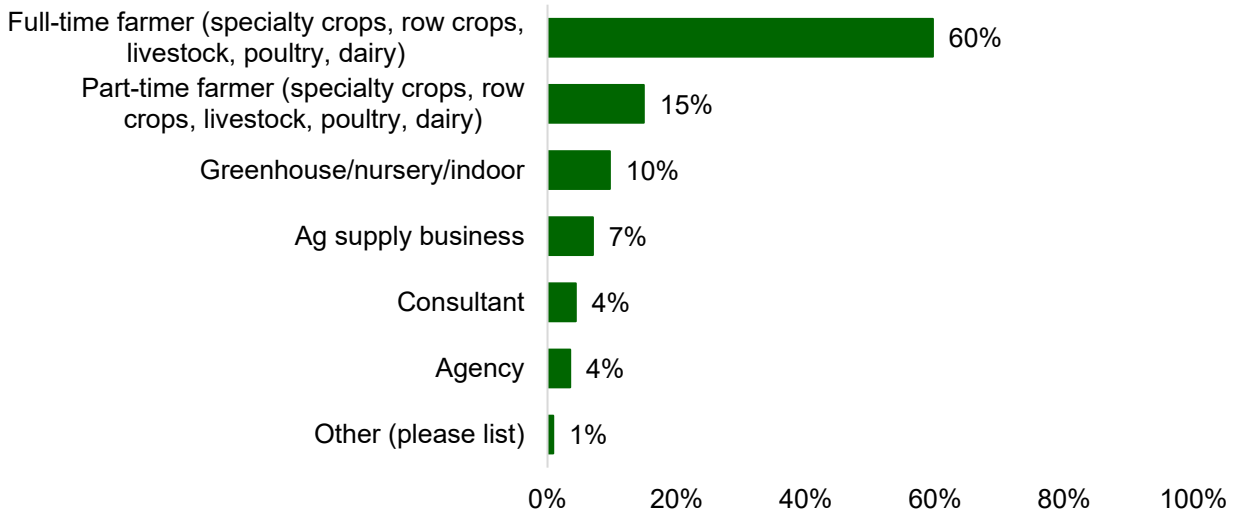

Figure 2. Respondents’ relationship to agriculture (survey question: “What is your relationship to agriculture?“). *Totals may exceed the number of respondents since multiple responses were allowed.

Respondents were asked to report the number of acres they currently irrigate or directly influence in terms of irrigation management (e.g., agency or industry partners). In total, respondents represented 103,074 irrigated acres, which accounts for approximately 12% of Michigan’s irrigated acreage (843,746 acres) as reported in the 2023 Irrigation and Water Management Survey (USDA NASS, 2023). Of the total acreage represented, 51% was owned land and 49% was leased (Figure 3).

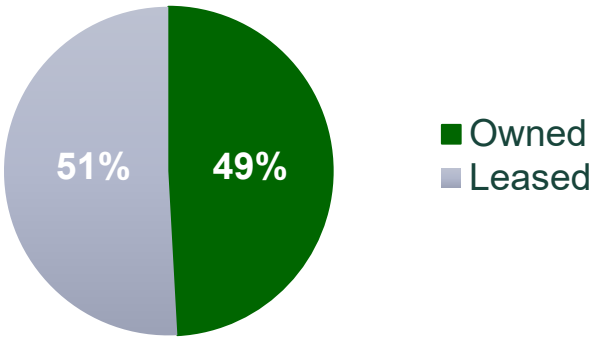

Figure 3. Percentage of total acres represented in this survey by land tenure type, comparing owned acres with leased or rented acres. N=103,074

Producer responses

The producer section of this report includes responses from participants who identified as full-time farmers, part-time farmers, or greenhouse/indoor producers. A total of 94 respondents fell into these categories. Responses were categorized by acreage class and irrigation system type and then summarized as counts within each category (Table 1).

Overall, center pivot systems were the most reported irrigation method, with 56 respondents indicating their use. The largest concentration of producers (27 respondents) fell within the 101–500 acre range using center pivot systems. In contrast, relatively few respondents reported very large operations, with only 3 producers managing more than 5,000 acres.

Across all acreage classes, other irrigation systems such as trickle/drip (28 respondents), big-gun systems (20 respondents), and solid set systems (11 respondents) were also represented, though at lower frequencies. These systems were predominantly used on less than 100 acres. Subsurface drip irrigation and micro-sprinklers were minimally reported, indicating more limited adoption among respondents.

Table 1. Distribution of producer responses by type of irrigation systems across different acreage categories (survey question: “What type of irrigation system do you currently use or directly impact and the number of acres for each?”).

Acres	Center pivot	Trickle or drip	Solid sets	Sub-surface drip irrigation	Big-gun	Micro-sprinklers
0-100	5	19	8	1	8	3
101-500	27	8	3		10	
501-1000	10	1			2	
1001-5000	11					
>5000	3					
Total respondents	56	28	11	1	20	3

*Totals may exceed the number of respondents since multiple responses were allowed.

Respondents were asked to identify which irrigation systems they are most interested in learning more about. Consistent with the high number of producers currently using center pivot systems, this option received the greatest interest, with approximately 42 respondents (Figure 4). Trickle or drip irrigation ranked second, with 30 responses.

Although micro-sprinklers and subsurface drip irrigation were among the least commonly used systems, there is notable interest in these technologies, with 19 and 16 respondents expressing interest, respectively. In contrast, big-gun and solid set systems received the lowest number of responses. The “Other” category included responses such as “pulse irrigation” and “I don’t know the difference between them, I’m starting an urban farm”.

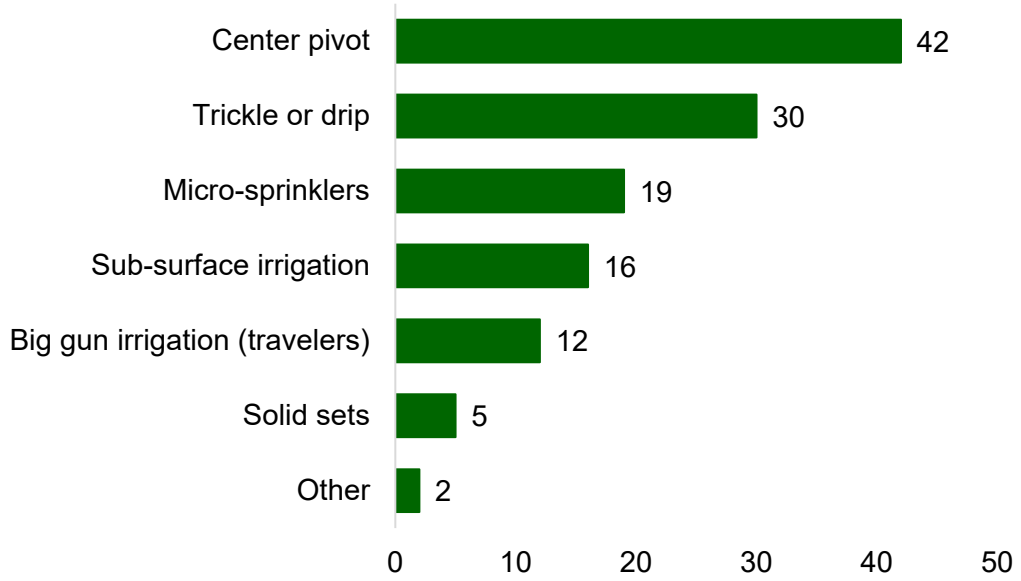

Figure 4. Future irrigation systems of interest for learning (survey question: “What future irrigation systems are you interested in learning about?”). *Totals may exceed the number of respondents since multiple responses were allowed.

To better understand current practices and future learning interests, producers were asked to select all practices they currently use and those they would like to learn more about to improve water use efficiency (Figure 5). Commonly reported practices currently in use include monitoring rainfall and weather conditions, conducting annual system inspections and repairs, and irrigation scheduling. On the other hand, the least commonly used practices were system interlocking, variable rate irrigation, and remote pivot control/monitoring. These practices are generally associated with newer technologies, suggesting relatively low adoption of advanced irrigation technologies among respondents.

However, interest in learning more about these technologies was notably higher. Practices such as variable rate irrigation, sensing technologies (e.g., soil moisture and plant-based sensors), irrigation scheduling, and system interlocking were among the most frequently selected areas of interest. This indicates a strong demand for education and support around emerging irrigation technologies. Uniformity testing showed a more balanced response, with similar levels of current use and interest, suggesting it is both a familiar and valued practice among producers.

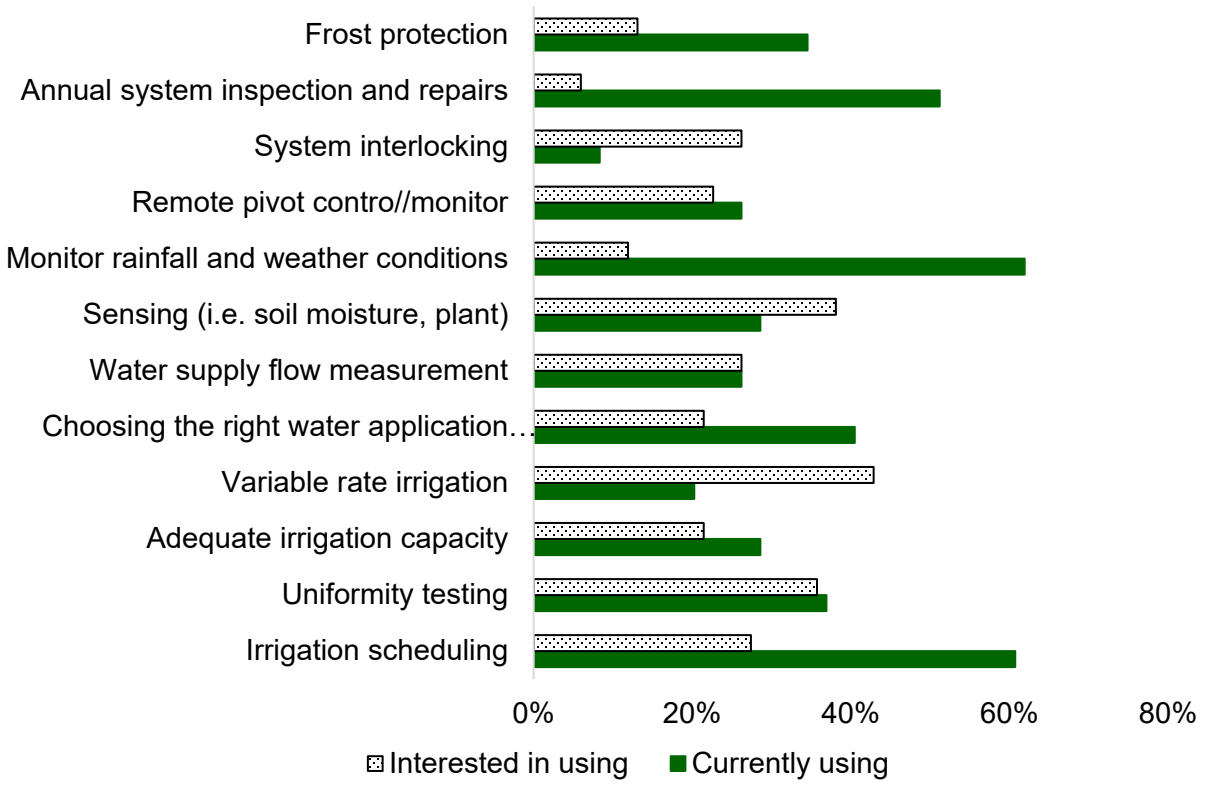

Figure 5. Current and desired practices to improve water use efficiency (survey question: “What practices do you currently use or would you like to learn more about to increase water efficiency?”). *Totals may exceed the number of respondents since multiple responses were allowed.

To assess the relative importance of water-related issues, respondents were asked to rank several topics from most important (1) to least important (5). For Figure 6, a composite score was calculated for each issue by summing the rankings and comparing them to the maximum possible score, allowing results to be displayed in ascending order of importance.

Overall, nutrient management was ranked as the most important water-related issue among respondents. Water drainage was considered of moderate importance, while climate variability ranked as the least important issue.

To further explore how responses were distributed, the total number of responses for each ranking category was summarized by issue (Figure 7). Consistent with the overall ranking, climate variability had the highest number of responses in the “least important” category, although some respondents still identified it as the most important issue. Water quantity received the highest number of “most important” rankings among respondents, indicating it was the top priority for a portion of participants. However, nutrient management received stronger overall importance across all rankings, with responses more consistently concentrated in the higher-importance categories.

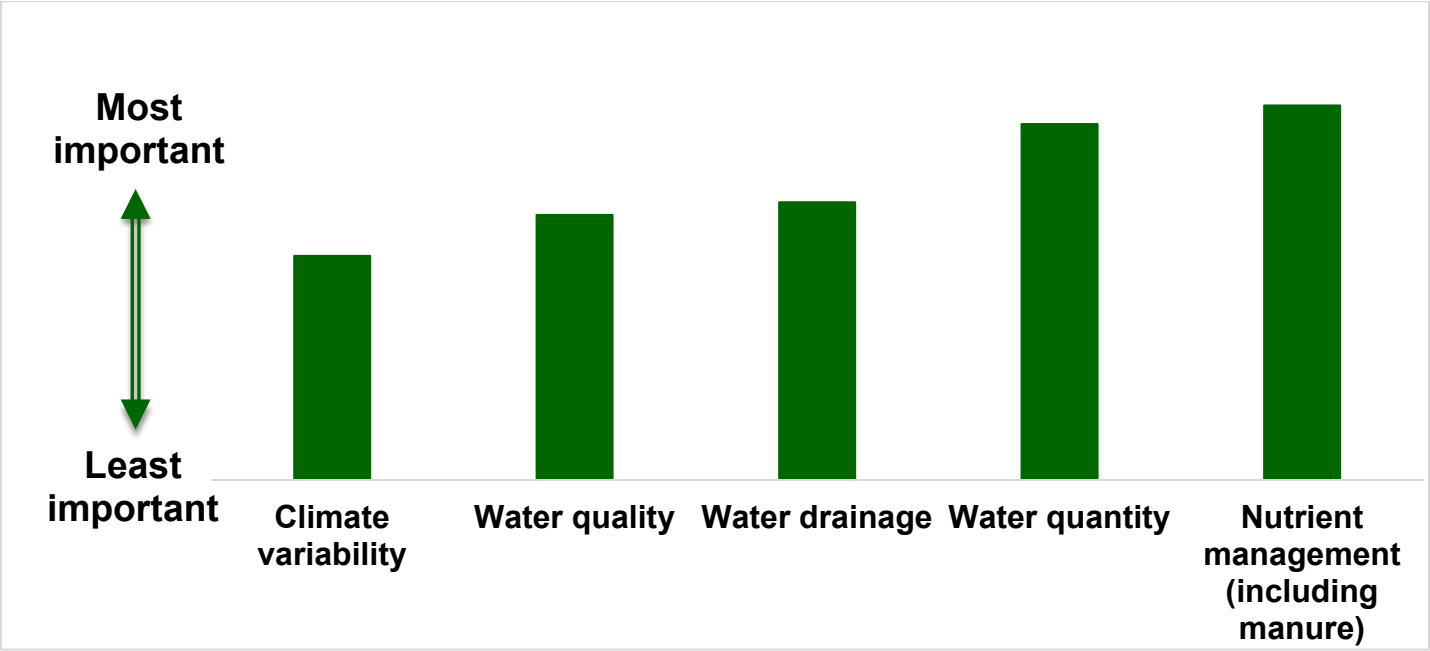

Figure 6. Summed rankings of water-use related issues (survey question: "For the following issues related to water usage, please rank these according to your most important to least important.

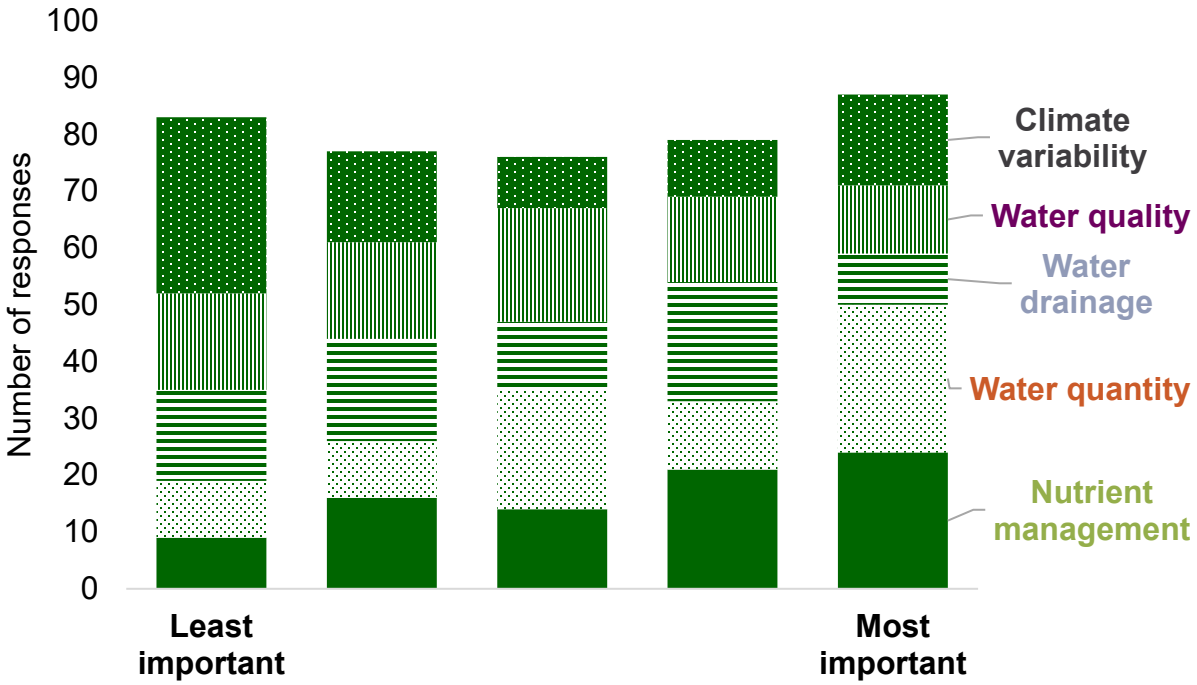

Figure 7. Water-use issues ranked by number of respondents (survey question: "For the following issues related to water usage, please rank these according to your most important to least important.

The level of concern at the farm business level was evaluated by asking respondents to rate various issues from low to high concern (Figure 8). Overall, increasing water use efficiency was the top concern among respondents, followed by interest in expanding irrigation where feasible. In contrast, regulatory compliance issues and future uncertainty, and sustainable water usage were identified as lower priority concerns.

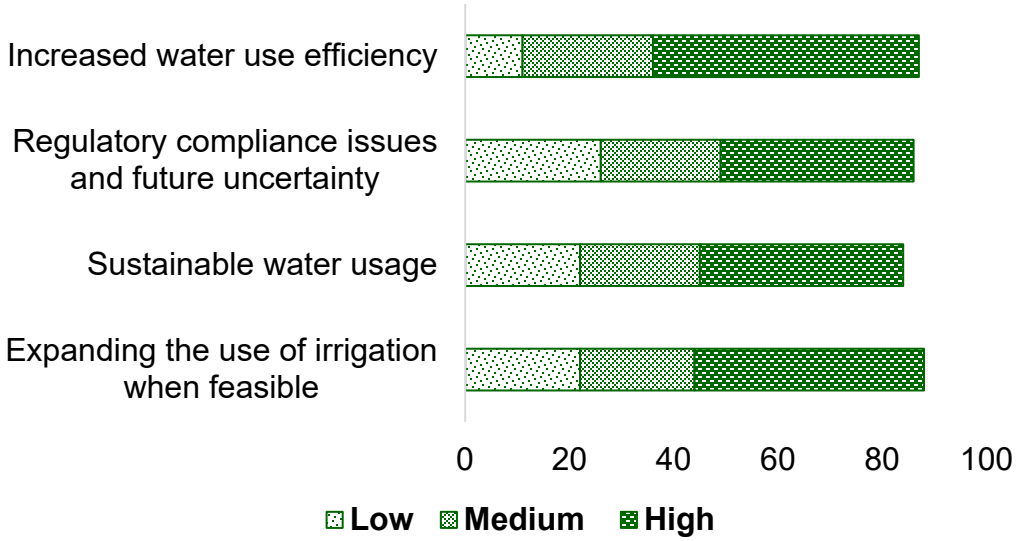

Figure 8. Producers' levels of concern for selected farm issues (survey question: “Please rank each of the following farm issues with your level of concern”).

Respondents were asked an open-ended question to identify their biggest educational need, with a total of 51 responses received. These responses were grouped into 11 categories based on frequency, from most to least commonly mentioned (Table 2), and representative examples are included for each category.

The most frequently identified need was irrigation scheduling, often described as “when and how much to apply.” Cost and profitability were also commonly mentioned, with producers expressing interest in understanding establishment costs and accessing information on available grants and financial support.

Table 2. Producers reported educational needs related to agricultural water use (survey question: “What is your biggest educational need for agricultural water use?”).

Educational need	Examples
Irrigation scheduling	“When and how much to apply” “Timing water use and application” “Scheduling for non-row crops”
Cost and profitability	“Grant information to assist in cost to establish” “Determining what will be most economical yet efficient for small scale operations” “Profitability per acre”
Water use efficiency	“Better efficiency” “Not wasting water”
Trickle/Drip irrigation	“Drip system design and pump selection” “Proper trickle irrigation system setup” “Above-ground sub-surface trickle irrigation in corn and soybeans”
Irrigation system repair	“Repairing systems” “Technology training and detailed service training for farmers to be more independent”
Water quality	“Water quality assessments” “Minimum water quality"
Fertigation and chemigation	“Run times with fertigation”
Regulatory compliance	“Water reporting” “The future & regulatory compliance to share with growers”
Remote monitoring and control	“Use of new technology in monitors & controlling Irr. Systems” “Finding a way to better monitor and manage”
Specialty crop irrigation	“How to build irrigation in an apple orchard”
Water supply	“Supply” “Sharing water with neighbors”

Different farm and business issues were identified in advance, and respondents were asked to rank them based on their level of concern (high, medium, and low). Figure 9 indicates that profitability was the highest concern overall, followed by sustainable practices. Labor issues and water quality were ranked as the lowest priority concerns.

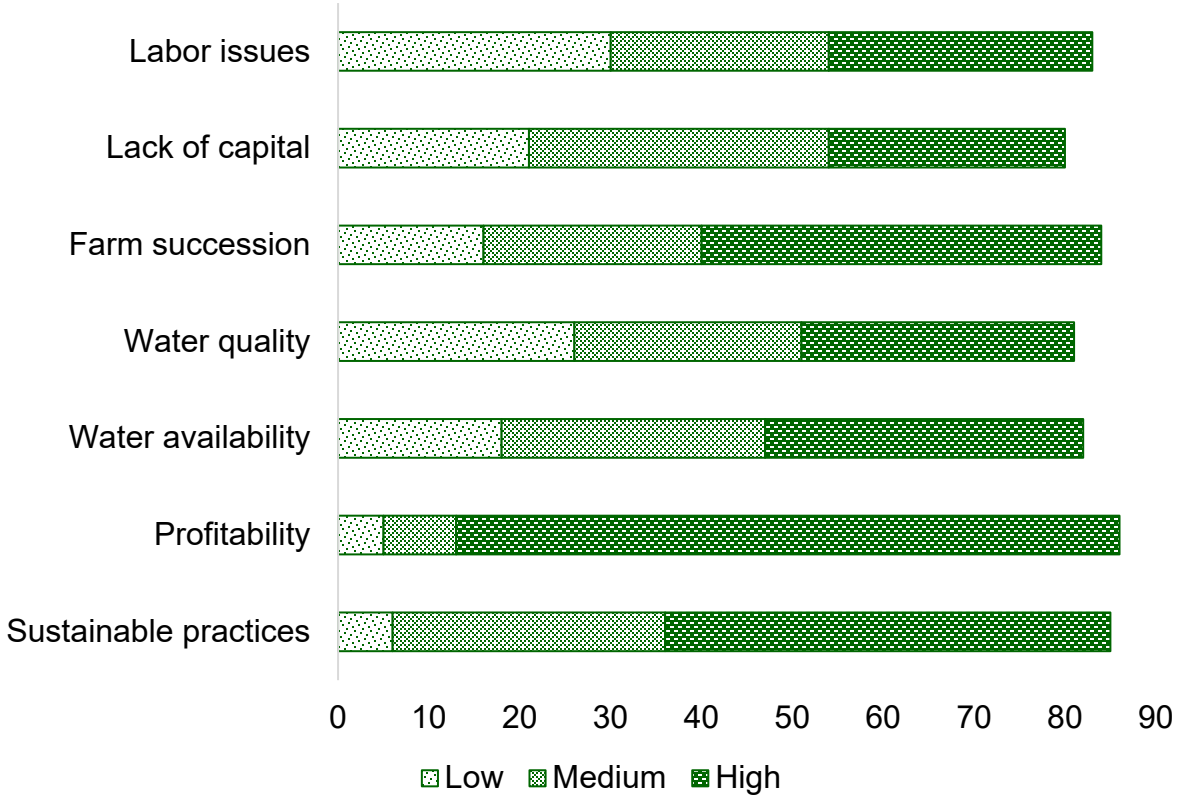

Figure 9. Producer-reported levels of concern across operational and resource issues (survey question: “Please indicate the level of concern for your farm or business?”).

Understanding how producers’ access and source their information is important for guiding outreach efforts. Respondents were asked to indicate where they obtain irrigation information for management decisions (Table 3), as well as how they source the information (Table 4), with the option to select multiple responses.

Overall, irrigation suppliers were the most frequently selected source, with more than 50% of respondents indicating they rely on them, suggesting a strong dependence on industry-based information. Producers also reported obtaining information from MSU Extension, highlighting the importance of trusted, research-based sources. Fewer respondents indicated relying on other producers for decision-making. Among those who selected “Other,” responses included “own experience,” “the internet,” and “ChatGPT/AI.”

In terms of source of information, most producers reported relying on internet and web searches as their primary approach. In-person field days were also highly selected, indicating continued interest in hands-on, in-person learning opportunities. Additional responses under “Other” included “on-farm trials,” “own experience,” and “crop observations,” reinforcing the value producers place on practical, experience-based learning.

Table 3. Distribution of irrigation information sources used by producers (survey question: “Please indicate where you get your irrigation information to make your management decisions”).

	Total responses	Percent of total respondents
Agribusiness suppliers	41	45
Company representatives (contractor agronomists)	22	24
Conservation districts	28	30
Crop consultants	28	30
Irrigation suppliers	50	54
MSU Extension	48	52
Other producers	20	22
Other (please list)	8	9
Total respondents	92	

*Totals may exceed the number of respondents since multiple responses were allowed.

Table 4. Information channels used by producers to access irrigation-related information (survey question: “Please indicate how you source your information”).

	Total responses	Percent of total respondents
Commodity groups	22	24
Industry conferences	37	40
Internet (social media (e.g., Facebook, TikTok, X, YouTube, podcasts, etc.)	46	50
Magazine and industry publications	39	42
MSU Website (e.g., News articles, podcasts, publications, videos)	35	38
In-person field days	42	46
Trade shows (e.g. Open house, Agro Expo, etc.)	40	43
Other	5	5
Total respondents	92	

*Totals may exceed the number of respondents since multiple responses were allowed.

Figure 10 shows respondents' preferences for receiving water use information, categorized by level of preference (high, medium, and low). Live meetings and print media were the most preferred methods. In-person visits also showed strong but more mixed levels of interest, while online meetings were less preferred overall. Alternative methods were mentioned as "Other", with examples including blog posts and YouTube, indicating that most respondents favor traditional, in-person communication formats.

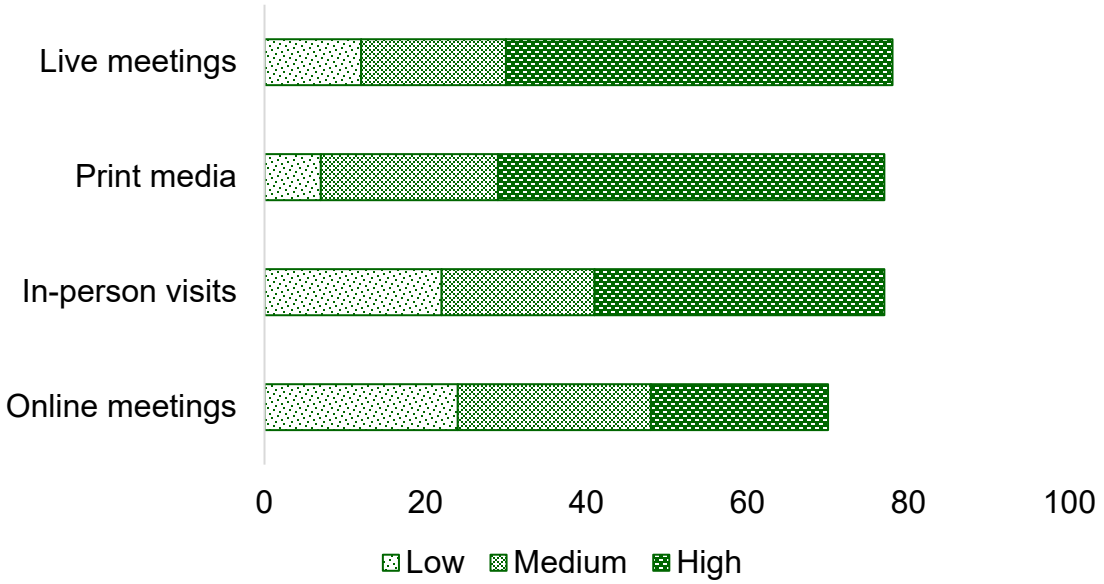

Figure 10. Producers' preferences for receiving water use information (survey question: "Please indicate your preference to receive water use information").

Open-ended responses highlighted several key areas of interest and need for MSU Extension irrigation programming in response to the question "Please provide any comments or suggestions you would like to share with the MSU Extension Irrigation Team". Participants expressed strong interest in maintaining irrigation scheduling services and expanding them through mobile applications suitable for multi-generational farms. Additional comments included concerns about irrigation system performance, particularly distribution uniformity and reliability as systems age, as well as interest in applied research on soil and plant sensing technologies. Respondents also requested more educational programming, including fertigation training and field days tailored specifically to small-scale growers. Overall feedback was positive, with some respondents expressing appreciation for MSU Extension irrigation outreach efforts.

Responses:

- "Scheduling was wonderful in past - would like it to be an option moving forward"
- "Distribution uniformity is very critical especially as systems age. Reliability of the systems is also a big challenge"
- "Could you have a small farm irrigation field day? Something catered to small growers, not necessarily home gardeners"
- "Sensing soil/plant research needed"
- "I am interested in seeing aps on scheduling as it can be used by a 3-generation farm"
- "Fertigation education would be appreciated"
- "I appreciate what you do. Please keep it up"

Partners responses

Participants who identified as “Ag supply business,” “Agency,” “Consultant,” or selected “Other” (e.g., MSU AgBio Research, researchers, school garden teachers) were grouped as partners. A total of 18 respondents fell into these categories.

These partners reported influencing a combined total of 34,173 acres. Responses were categorized by acreage class and irrigation system type and summarized in Table 5.

Most of the acreage influenced by partners is associated with center pivot irrigation systems. However, the majority of respondents reported impacting fewer than 100 acres, with only three respondents indicating influence over more than 1,000 acres. Trickle or drip irrigation systems were also primarily represented within the less-than-100-acre category. Other irrigation systems were reported less frequently and across smaller acreages.

Table 5. Distribution of irrigation system types across different acreage categories (survey question: What type of irrigation system do you currently use or directly impact and the number of acres for each?”).

Acres	Center pivot	Trickle or drip	Solid sets	Sub-surface drip irrigation	Big-gun	Micro-sprinklers	Other: Linear
0-100	3	4	1	1	1		
101-500					1		1
501-1000							
1001-5000	1						
>5000	2						

*Totals may exceed the number of respondents since multiple responses were allowed.

Among partners, center pivot irrigation was identified as the primary system of interest, followed by trickle or drip irrigation (Figure 11). Other systems, such as subsurface irrigation and micro-sprinklers, are gaining attention, although current adoption remains limited.

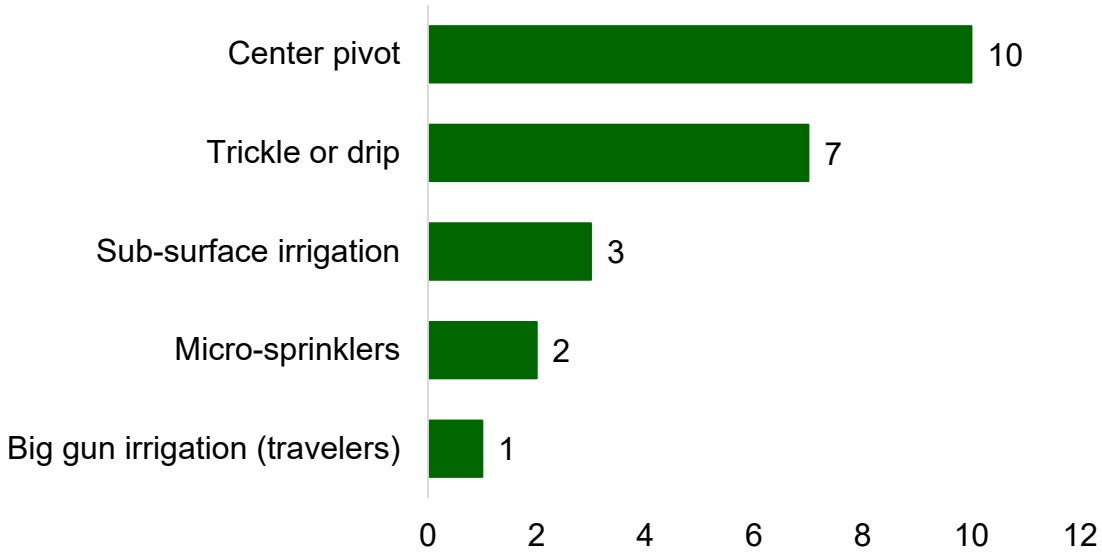

Figure 11. Future irrigation systems of interest for learning partners (survey question: “What future irrigation systems are you interested in learning about?”). *Totals may exceed the number of respondents since multiple responses were allowed.

Common practices currently implemented include annual system inspections and repairs, as well as monitoring rainfall and weather conditions (Figure 12). There is strong interest in soil moisture sensors, with nearly half of respondents indicating interest in adoption. Additional areas of interest include remote pivot control and monitoring, as well as irrigation uniformity testing. Irrigation scheduling showed a balanced response, with participants indicating both current use and interest in increasing their adoption in this area.

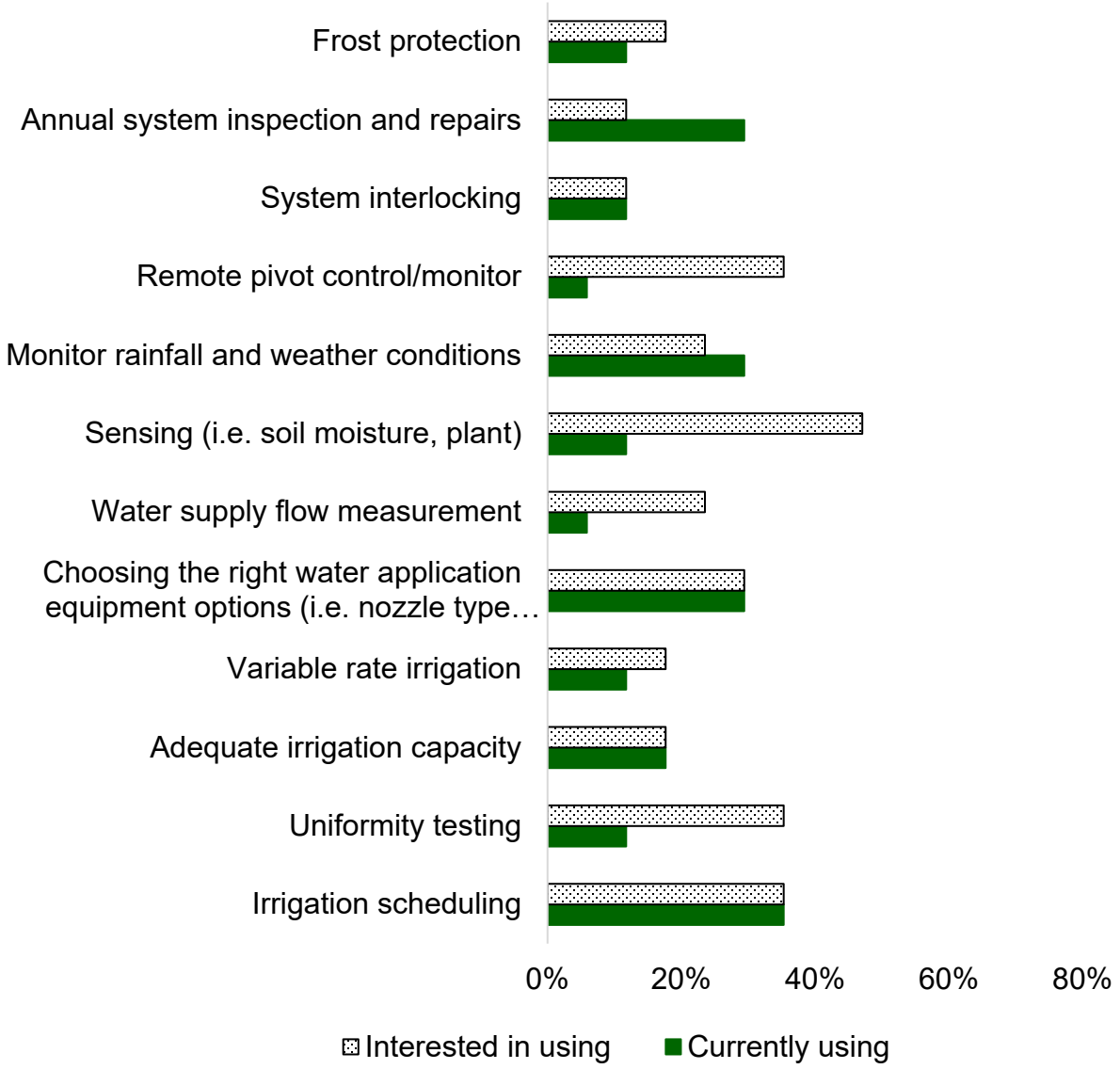

Figure 12. Partners current and desired practices to improve water use efficiency (survey question: “What practices do you currently use or would you like to learn more about to increase water efficiency?”). *Totals may exceed the number of respondents since multiple responses were allowed.

Results indicate that water quantity is the highest-ranked issue, receiving the strongest level of importance among partners (Figure 13). Other issues, including water drainage, nutrient management, and water quality, were rated as having moderate importance, while climate variability ranked lowest. Overall, respondents demonstrated the greatest priority on ensuring adequate water availability compared to other water-related concerns.

Consistent with these findings, partner responses on farm and business concerns further emphasize the importance of water management (Figure 13). Increasing water use efficiency was identified as the top water-related concern, followed by sustainable water use.

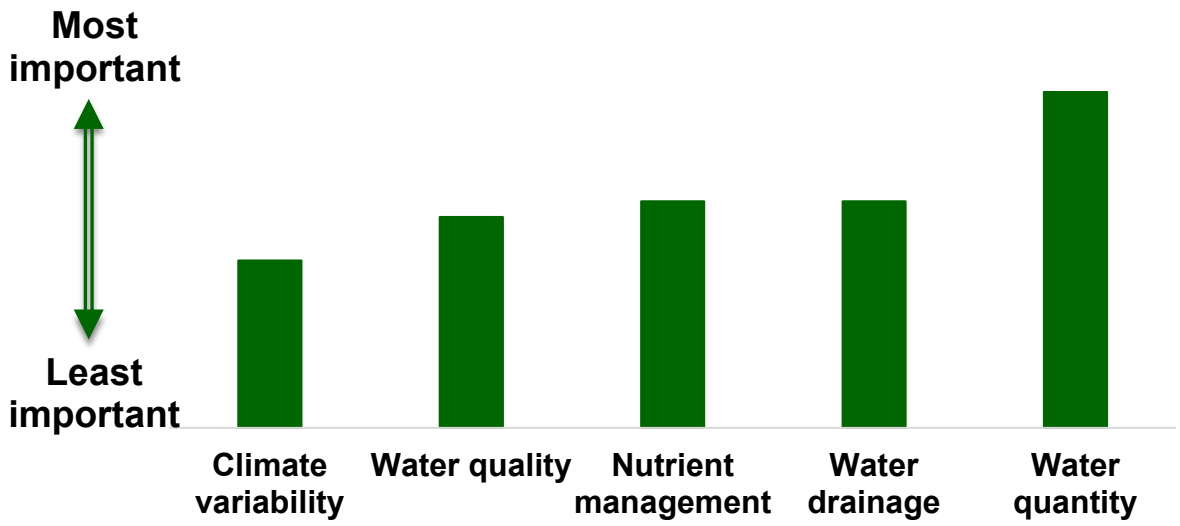

Figure 13. Summed rankings of water-use related issues (survey question: “For the following issues related to water usage, please rank these according to your most important to least important.

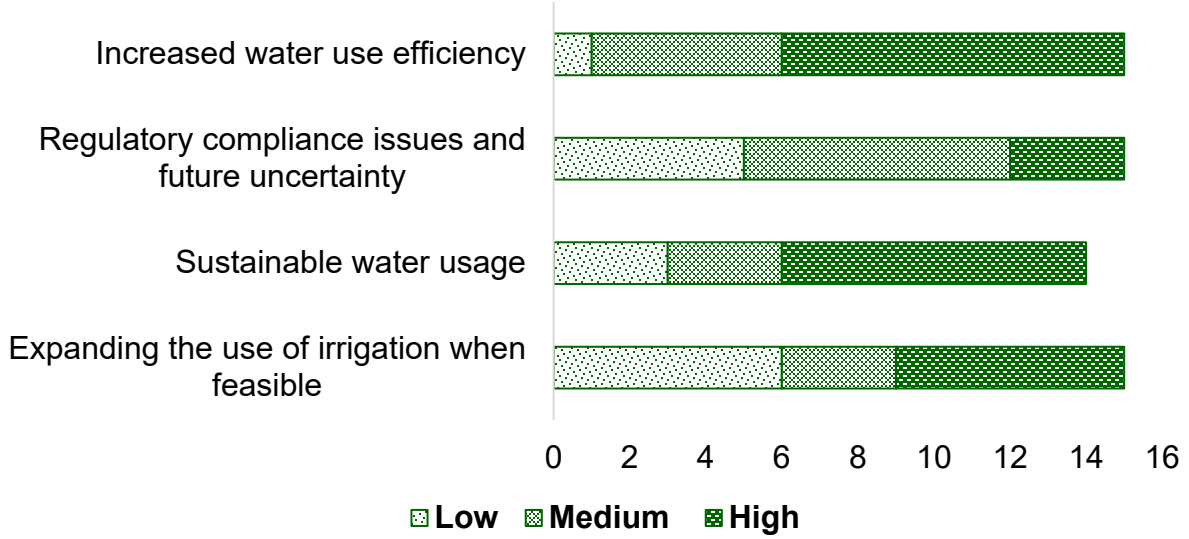

Figure 14. Partners levels of concern for selected farm issues (survey question: “Please rank each of the following farm issues with your level of concern”).

Table 6 highlights key educational needs from partners, including irrigation scheduling and increased automation. However, cost and limited knowledge were identified as primary barriers to adoption. Improving water use efficiency also emerged as a critical need, consistent with producer priorities. Overall, respondents indicated a preference for educational programs that are cost-effective and accessible.

Table 6. Educational needs identified by agricultural water use partners (survey question: “What is your biggest educational need for agricultural water use?”).

Educational need	Examples
Irrigation scheduling	“Educating growers on proper in-season water needs. Many growers would greatly benefit from increased automation but cost / knowledge likely limits adoption”
Water use efficiency	“Best process to apply water efficiently, uniformly and effectively”
Cost-effective learning	“Access to educational programs that are economically friendly”
Soil-land management	“We see a lot of growers abuse their soil. Treat soil properly - use less water”

Partner responses indicate that profitability and sustainable practices are the most significant concerns for business operations, with the majority of respondents rating these issues as high concern (Figure 15). Water-related issues, including water availability and water quality, were generally rated as moderate concerns. Labor, capital access, and farm succession have more mixed levels of concern. Results suggest that while water remains an important resource issue, partners are currently more focused on financial issues and long-term sustainability.

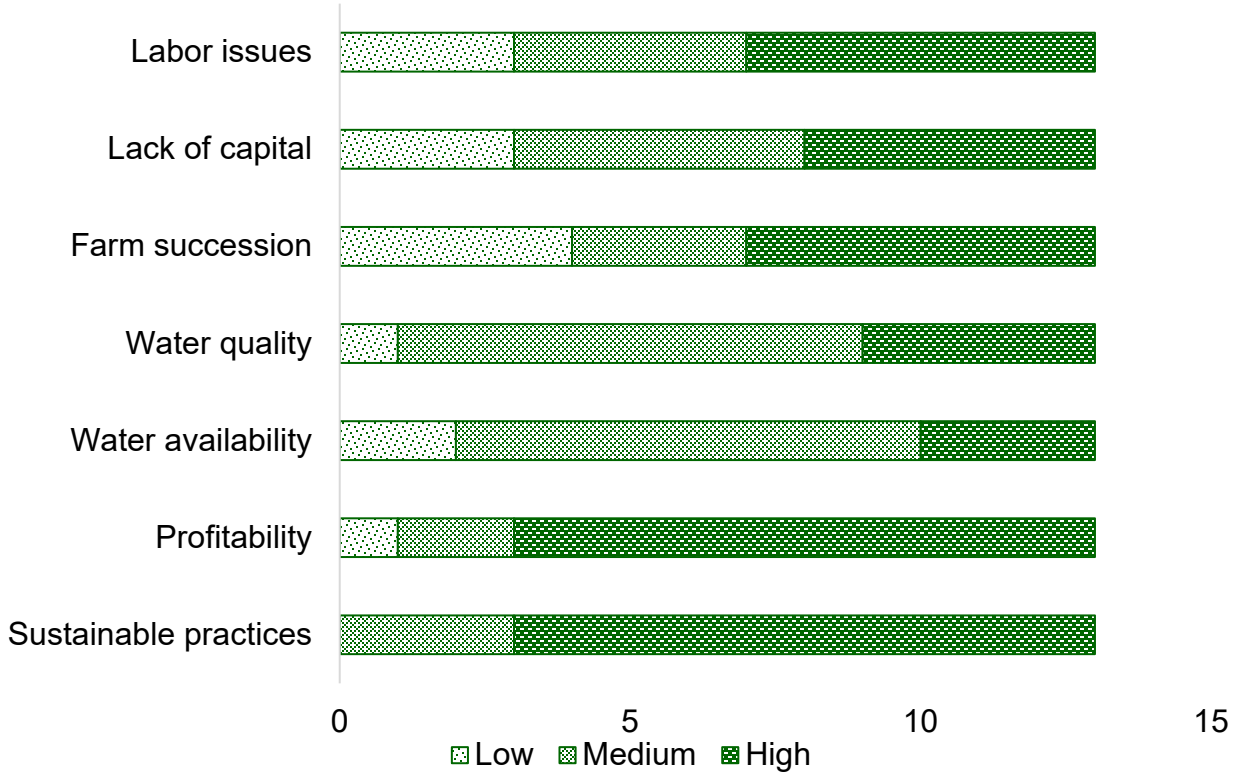

Figure 15. Partner-reported levels of concern across operational and resource issues (survey question: “Please indicate the level of concern for your farm or business?”).

Respondents reported using a variety of sources to gather irrigation information for management decisions (Table 7). MSU Extension was the most commonly used source, with more than half of respondents selecting it. This was followed by agribusiness suppliers, company representatives/contract agronomists, and irrigation suppliers. Fewer respondents indicated relying on crop consultants and other producers, suggesting that Extension and industry professionals are their primary source of information. Some respondents also mentioned personal experience as an additional source.

Partners reported using a mix of digital and in-person channels to access irrigation-related information (Table 8). Internet-based sources, such as social media and web searches, along with trade shows, were among the most used. In-person field days and industry conferences were also selected, showing the continued value of in-person learning opportunities. Additional responses included resources from USDA NRCS Resources.

When asked about their preferred methods for receiving information, partners indicated a strong preference for live meetings, which received the highest level of interest (Figure 16). Online and in-person meetings showed moderate interest, suggesting that partners value real-time communication formats.

Table 7. Distribution of irrigation information sources used by partners (survey question: “Please indicate where you get your irrigation information to make your management decisions”).

	Total responses	Percent of total respondents
Agribusiness suppliers	7	41
Company representatives (contractor agronomists)	6	35
Conservation districts	4	24
Crop consultants	3	18
Irrigation suppliers	6	35
MSU Extension	9	53
Other producers	2	12
Other (please list)	1	6

*Totals may exceed the number of respondents since multiple responses were allowed.

Table 8. Information channels used by partners to access irrigation-related information (survey question: “Please indicate how you source your information”).

	Total responses	Percent of total respondents
Commodity groups	4	24
Industry conferences	9	53
Internet (social media (e.g., Facebook, TikTok, X, YouTube, podcasts, etc.)	10	59
Magazine and industry publications	8	47
MSU Website (e.g., News articles, podcasts, publications, videos)	8	47
In-person field days	9	53
Trade shows (e.g. Open house, Agro Expo, etc.)	10	59
Other	1	6

*Totals may exceed the number of respondents since multiple responses were allowed.

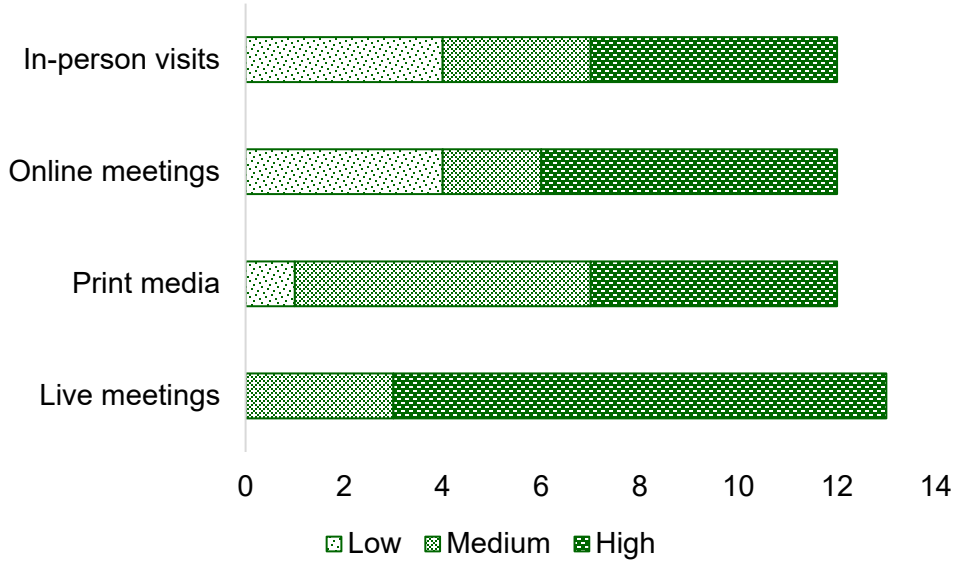

Figure 16. Agricultural water use partners' preferences for receiving water use information (survey question: “Please indicate your preference to receive water use information”).

Open-ended responses to the question, “Please provide any comments or suggestions you would like to share with the MSU Extension Irrigation Team,” were overall very positive. Partners highlighted the importance of keeping programming practical. They also expressed appreciation for the program, describing it as informative and recognizing the quality and support of the staff.

- “Great to be concerned with irrigation management, land use, conservation and water management. Please stay practical and be realistic in your goals”
- “Great program, very informative, great staff”

Summary

The 2024 Agricultural Water Use needs assessment captured critical insights from 104 stakeholders across Michigan and the Great Lakes region, representing over **103,000 irrigated acres**. Stakeholders expressed interest in advanced, data-driven management. While producers currently rely on weather monitoring and observation of crop and soil conditions, the data indicated a demand for modernizing operations through variable rate irrigation (VRI) and automated scheduling. This suggests that the agricultural community is prepared for a technological transition, provided the barriers of cost and technical complexity are addressed through targeted support.

Stakeholders indicated that they were primarily concerned with issues related to profitability and nutrient management. While water use efficiency was a stated high-level priority for most respondents, climate variability was consistently ranked as a lower concern compared to immediate economic and resource challenges. This indicates that for future sustainability initiatives to gain traction, they must be framed through the lens of financial viability and resource optimization. Producers and partners both identified the primary obstacles to modernizing irrigation practices as high initial costs, limited technical knowledge regarding system repairs, and a lack of clear data regarding the return on investment (ROI) for new equipment.

To best address these findings, future efforts must be directed toward bridging the gap between emerging technology and farm-level economics. Programming should prioritize the development of "economically friendly" educational tools that provide specific guidance on the ROI of sensing technologies and support producers with upgrading and maintaining their irrigation systems. Furthermore, there was a clear demand for practical, hands-on training regarding irrigation scheduling, specifically "when and how much" to apply, alongside uniformity testing to ensure peak efficiency in aging systems. Addressing these technical gaps will be essential to moving the industry toward more precise water management.

References

U.S. Department of Agriculture, National Agricultural Statistics Service. (2024). *2023 Irrigation and Water Management Survey (Vol. 3, Part 1)*. Washington, D.C.: USDA NASS. https://www.nass.usda.gov/Publications/AgCensus/2022/Online_Resources/Farm_and_Ranch_Irrigation_Survey/index.php

Appendix

Agricultural Water Users Needs Assessment

As part of Michigan State University Extension's ongoing efforts to improve water use efficiency in irrigation for crop production, we highly value your feedback and invite you to voluntarily participate in this survey. Your insights are crucial in helping us enhance our resources and better support your needs. Your answers will be kept confidential.

1. In which County and State is your residence located?

County: _____ Michigan ___ Indiana ___ Ohio ___

2. What is your relationship to agriculture? (check all that apply)

a. _____ Full-time farmer (specialty crops, row crops, livestock, poultry, dairy)

b. _____ Part-time farmer (specialty crops, row crops, livestock, poultry, dairy)

c. _____ Greenhouse/nursery/indoor

d. _____ Consultant

e. _____ Ag supply business

f. _____ Agency

g. _____ Other (please list) _____

3. How many total acres do you currently irrigate or directly impact for irrigation?

Leased: _____ Owned: _____

4. What type of irrigation system do you currently use or directly impact (e.g., agribusiness/consultant) and the number of acres for each? (check all that apply)

a. Center pivot Acres _____ Crop rotation: _____

b. Trickle or drip Acres _____ Crops: _____

c. Solid sets Acres _____ Crops: _____

d. Sub-surface drip irrigation Acres _____ Crops: _____

e. Big gun irrigation (travelers) Acres _____ Crops: _____

f. Micro-sprinklers Acres _____ Crops: _____

g. Other Acres _____ Crops: _____

5. What future irrigation systems are you interested in learning about? (check all that apply)

a. _____Center pivot

b. _____Trickle or drip

c. _____Solid sets

d. _____Sub-surface irrigation

e. _____Big gun irrigation (travelers)

f. _____Micro-sprinklers

g. Other (please list) _____

6. What practices do you currently use or would like to learn more about to increase water efficiency? (check all that apply)

a. Irrigation scheduling

b. Uniformity testing

c. Adequate irrigation capacity

d. Variable rate irrigation

e. Choosing the right water application equipment options (i.e. nozzle type & placement, pressure)

f. Water supply flow measurement

g. Sensing (i.e. soil moisture, plant)

h. Monitor rainfall and weather conditions

i. Remote pivot control/monitor

j. System interlocking

k. Annual system inspection and repairs

l. Frost protection

m. Other (please list)

7. For the following issues related to water usage, please rank these according to YOUR most important to least important. (1 = most important, 5 = least important)

_____ Climate variability

_____ Nutrient management (including manure)

_____ Water drainage

_____ Water quality

_____ Water quantity

8. Please rank each of the following farm issues with your level of concern. (1 = High; 2 = Medium; 3 = Low)

a. _____ Expanding the use of irrigation when feasible

b. _____ Sustainable water usage

c. _____ Regulatory compliance issues and future uncertainty

d. _____ Increased water use efficiency

9. What is your biggest educational need for agricultural water use?

_____

10. Please indicate the level of concern for your farm or business? (1 = High; 2 = Medium; 3 = Low)

a. _____ Sustainable practices

b. _____ Profitability

c. _____ Water availability

d. _____ Water quality

e. _____ Farm succession

f. _____ Lack of capital

g. _____ Labor issues

h. _____ Other (please list) _____

11. Please indicate where you get your irrigation information to make management decisions. (check all that apply)

a. _____ Agribusiness suppliers

b. _____ Company representatives (contractor agronomists)

c. _____ Conservation Districts

d. _____ Crop consultants

e. _____ Irrigation suppliers

f. _____ MSU Extension

g. _____ Other producers

h. Other (please list) _____

12. Please indicate how you source your information? (please check all that apply)

a. _____ Commodity groups

b. _____ Industry conferences

c. _____ Internet (social media (e.g., Facebook, Tik-tok, X, YouTube, podcasts, etc.)

d. _____ Magazine and industry publications

e. _____ MSU Website (e.g., News articles, podcasts, publications, videos)

f. _____ In-person field days

g. _____ Trade shows (e.g., Open house, Agro Expo, etc.)

h. _____ Other (please list) _____

13. Please indicate your preference to receive water use information. (1 = High; 2 = Medium; 3 = Low)

a. _____ Live meetings

b. _____ Print media

c. _____ Online meetings

d. _____ In-person visits

e. _____ Other (please list) _____

14. Please provide any comments or suggestions you would like to share with the MSU Extension Irrigation Team.

_____

_____