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Connecting Agriculture, Science, and Society: Assessing Public Engagement and Perceived Learning Outcomes

Dr. Jibin Baby ✉[1], **Tim Reinbott**[2], **Dr. Dusty Walter**[3]

[1] *Scientist, Central Missouri Research, Extension and Education Center, University of Missouri, Columbia - MO, USA*

[2] *Director, MOAES Communications and Construction Services, Agricultural Experiment Station, Central Missouri Research, Extension and Education Center, University of Missouri, Columbia - MO, USA*

[3] *Director, Central Missouri Research, Extension and Education Center, University of Missouri, Columbia - MO, USA*

Corresponding Author: Dr. Jibin Baby**, E-mail:** jibinbaby@missouri.edu

ABSTRACT

Public agricultural research and outreach events provide valuable opportunities to bridge scientific research, Extension education, and community engagement. Understanding visitors' motivations, information-seeking behaviors, event experiences, perceived learning outcomes, and intentions for future engagement is essential for developing and evaluating effective public outreach initiatives. This study examined these dimensions among visitors attending a public agricultural research and outreach showcase. Data were collected through a structured visitor survey and analyzed using descriptive statistical methods. Findings revealed that family- and children-oriented activities were the most frequently reported motivations for attending, while social media served as the primary channel for obtaining event-related information. Overall, visitors reported positive event experiences, with most rating the showcase as good or excellent. Respondents also indicated increased awareness of agricultural research, educational programs, and available resources. Across six educational domains, responses reflected generally positive perceived contributions to visitors' understanding of agriculture, scientific research, food production, and the interconnected relationships among agriculture, the environment, and communities. These findings highlight the value of accessible, family-oriented programming as an effective complement to agricultural science communication and Extension education. By combining engaging activities with opportunities for informal learning, public agricultural showcases can help strengthen awareness of agricultural research, enhance public understanding of agricultural systems, and encourage broader community participation. The study offers practical implications for designing inclusive, engaging, and educational outreach initiatives that support sustained public interest in agricultural research and Extension programming.

KEYWORDS

Agricultural awareness; agricultural extension; community outreach; perceived learning outcomes; public engagement; science communication.

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1. Introduction

Agricultural research plays an important role in addressing challenges related to food production, environmental sustainability, natural resource management, and community well-being (Asma et al., 2023; Cakmakci et al., 2023). However, the broader societal value of agricultural research depends not only on the generation of scientific knowledge but also on effectively communicating research findings and connecting them with public interests and everyday experiences. Agricultural Extension and outreach initiatives contribute to this process by fostering connections among researchers, educators, producers, and communities (Kaur & Kaur, 2018; Madan & Maredia, 2021).

Public agricultural showcases, research demonstrations, and community-oriented educational events provide opportunities for individuals to engage with agricultural science beyond conventional educational settings (Baby & Joseph, 2024; Chen et al., 2025; Dreby et al., 2017). These activities often integrate research-based information with practical demonstrations, family-oriented activities, and interactive experiences. Such approaches may be particularly valuable for reaching audiences with varying levels of familiarity with agriculture, including individuals whose primary motivations for participation may be recreational or social rather

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than educational (Arisukwu, 2017; Baby & Kim, 2025; Chen et al., 2025; Dreby et al., 2017). Consequently, public engagement events can create opportunities to communicate agricultural research to individuals who might not otherwise seek agricultural information through formal educational channels.

Evaluating these initiatives requires consideration of multiple dimensions of public participation. Visitor motivations and communication channels provide insights into how outreach programs attract audiences, while visitor experiences and perceived educational outcomes help characterize their perceived value (Chen et al., 2025; Dreby et al., 2017; Kaur & Kaur, 2018). Similarly, visitors' intentions to revisit or recommend an event can serve as useful indicators of potential future engagement. Examining these dimensions collectively can provide a more comprehensive understanding of how agricultural outreach initiatives connect research, education, and public participation.

The objective of this study was to assess public engagement and perceived educational outcomes associated with an agricultural research and outreach event. Specifically, the study examined visitors' motivations for attending and the communication channels through which they learned about the event, their overall event experiences, perceived contributions to agricultural awareness and understanding, and intentions for future engagement. The findings are intended to inform the design and evaluation of agricultural research communication, Extension education, and public outreach initiatives.

2. Methods

This study employed a quantitative, descriptive survey design to examine visitor engagement and perceived educational outcomes associated with a public agricultural research and outreach event. Data were collected during the CAFNR Showcase at South Farm, organized by the University of Missouri's College of Agriculture, Food and Natural Resources (CAFNR) in September 2026. The event featured agricultural research demonstrations, educational activities, animal interactions, family-oriented programming, and opportunities for public engagement with agricultural research and Extension resources.

Visitor feedback was collected using a structured questionnaire designed to assess attendance history, sources of event information, motivations for participation, overall event experiences, awareness of agricultural research and educational resources, perceived learning outcomes, agricultural background, and intentions for future participation. The questionnaire included single-response and multiple-response items, as well as ordered response categories to assess visitor experiences and perceived educational contributions.

A total of 157 survey responses were collected, of which 23 were excluded due to incomplete information or failure to meet the screening criteria. The remaining 134 valid responses were included in the final analysis. Descriptive statistics, including frequencies and percentages, were used to summarize the responses. For multiple-response questions, percentages were calculated using the total number of respondents as the denominator; therefore, percentages across response categories were not expected to sum to 100%. The analysis focused on describing visitors' reported experiences and perceived educational outcomes.

3. Results

3.1 Visitor Characteristics and Participation Motivations

The findings indicated participation among visitors with diverse attendance histories and agricultural backgrounds. Returning visitors accounted for 56.7% of respondents, while 43.3% attended the event for the first time. Regarding agricultural experience, 56% reported having some or little/no agricultural experience, 23.1% had grown up on or around a farm, and 20.9% indicated that agriculture was part of their work or education. Overall, respondents represented a range of backgrounds and levels of familiarity with agriculture.

Family- and children-oriented activities were the most frequently reported motivation for attending, selected by 87.3% of respondents. Other commonly reported motivations included learning about agriculture (42.5%), food and tastings (39.6%), animal interactions (38.8%), research and demonstrations (32.8%), and farm tours (30.6%). These responses reflect a combination of recreational, educational, and experiential interests, with family-oriented activities representing the predominant motivation for participation.

Social media was the most frequently reported source of event information (57.5%), followed by friends or family (38.8%), school or workplace connections (24.6%), university websites or email communications (19.4%), and signs or advertisements (15.7%). These results highlight the role of digital communication and interpersonal networks in informing potential visitors about the event.

3.2 Visitor Experiences and Agricultural Awareness

Respondents reported highly favorable experiences with the event. Overall, 85.8% rated their experience as excellent, while an additional 13.4% rated it as good. Collectively, 99.3% reported a good or excellent experience, indicating a high level of satisfaction among survey respondents. Favorable responses were also observed regarding increased awareness of agricultural research and educational resources. Approximately 70.1% of respondents indicated that the event increased their awareness of agricultural research, educational programs, and available resources to a great extent, while 28.4% reported an increase to some extent. Collectively, 98.5% indicated increased awareness to some or a great extent. These results demonstrate that respondents perceived the event as an opportunity to become more familiar with agricultural research, educational programs, and available resources.

3.3 Perceived Educational Outcomes

Across the six educational domains examined, respondents generally reported positive contributions to their agricultural knowledge and understanding. The proportion indicating that the event contributed to their understanding to some or a great extent ranged from 95.5% to 97.8%. The highest proportion was reported for increased knowledge of agriculture (97.8%), followed by improved understanding of the benefits of agricultural research (97.0%). Positive responses were also reported for understanding the connections among agriculture, the environment, and communities (96.3%), understanding the role of science in agriculture (96.3%), understanding food production (95.5%), and understanding information provided by university agricultural experts (95.5%).

Collectively, these responses indicate that visitors perceived educational value across multiple dimensions of agricultural science. These included not only general agricultural knowledge but also the benefits of research, food production systems, environmental relationships, and scientific information. However, these findings represent self-reported perceptions of learning rather than independently measured gains in knowledge.

3.4 Future Engagement Intentions

Respondents also expressed strong intentions for continued engagement with the event. Approximately 98.5% indicated that they were likely or very likely to attend the event again, while 97.0% reported being likely or very likely to recommend it to others. These responses reflect favorable intentions toward future participation and a strong willingness among respondents to recommend the event to others.

4. Discussion

The findings provide insights into how public agricultural research and outreach events can connect community interests with agricultural science and educational opportunities. Family- and children-oriented activities emerged as the predominant motivation for attendance, suggesting that visitors may engage with agricultural outreach through interests extending beyond an explicit desire to learn about agriculture. From an Extension perspective, integrating recreational and family-oriented programming with research demonstrations and educational activities may help attract audiences with diverse interests and levels of agricultural familiarity. Social media was the leading source of event information, followed by friends and family, highlighting the importance of combining digital communication with interpersonal networks to promote public outreach initiatives.

Respondents reported highly favorable event experiences and perceived educational contributions across all six learning domains examined. Reported contributions included increased agricultural awareness and understanding of research benefits, food production, scientific applications, and connections among agriculture, the environment, and communities. These findings highlight the potential of public agricultural showcases to communicate research-based information through accessible demonstrations, interactive exhibits, and opportunities to engage with agricultural experts. The strong intentions to revisit and recommend the event further reflect favorable visitor perceptions and potential opportunities for continued community engagement. Considering visitor motivations, experiences, perceived learning outcomes, and future engagement intentions collectively may provide a more comprehensive assessment of outreach initiatives than relying exclusively on general satisfaction measures.

The findings offer practical considerations for agricultural research centers, Extension programs, and educational organizations seeking to strengthen public engagement. Integrating family-oriented activities with research demonstrations, accessible educational experiences, and diverse communication strategies may help attract visitors and communicate the relevance of agricultural science to everyday concerns. The findings should be interpreted within the context of a single agricultural outreach event and its survey respondents, as the descriptive design limits generalizability to other events and populations. Additionally, the reliance on self-reported educational outcomes and aggregated responses limited the assessment of actual knowledge changes and relationships among individual visitor characteristics, motivations, and perceived learning. Future research could examine multiple outreach events, incorporate individual-level analyses and objective measures of learning, and use longitudinal follow-up to better understand the relationship between participation, agricultural awareness, and sustained public engagement. Overall, the findings emphasize the value of combining accessible programming, agricultural research communication, and informal educational experiences to strengthen connections between agricultural science, Extension education, and the broader community.

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