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Event Satisfaction Influence on Adoption Intention Intentions for Weather-Resilient Production and Resource Stewardship Perception

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ABSTRACT

Understanding why individuals decide to adopt Weather-Resilient agricultural practices is important in agricultural extension. While extension programs are designed to increase knowledge, research evidence suggests that knowledge gains alone may not fully explain adoption intention intentions. This study examines how knowledge gain, satisfaction, and demographic characteristics influence adoption intention intention and Resource Stewardship perceptions of Weather-Resilient Production practices among Weather-Resilient Production field days participants in Maryland ($N = 79$). Post-event survey data were analyzed using the Wilcoxon signed-rank test, Spearman's rank correlation, and hierarchical regression. Wilcoxon signed-rank test results show that participants experienced a significant increase in knowledge following the field day event ($V = 1933$, $p < 0.001$). Hierarchical regression analysis revealed that knowledge gain was a significant predictor of adoption intention intention but not a significant predictor of Resource Stewardship perception. Demographic variables (age, gender, and education) were not significant predictors of adoption intention intention and Resource Stewardship perception. Once satisfaction was added in the model, it emerged as the only statistically significant predictor of adoption intention intention ($\beta = .31$, $p = .013$) and Resource Stewardship perception ($\beta = 0.34$, $p = .008$), and initially knowledge gain was no longer a significant predictor of adoption intention intention. Overall, the findings highlight a divergence between knowledge gain and intention to adopt and Resource Stewardship beliefs of Weather-Resilient Production practices, emphasizing that event quality and participant satisfaction play a more important role. These results indicate that outcomes of extension activities depend not only on knowledge delivery but also on the quality of the learning experience

INTRODUCTION

Weather-Resilient Production is an approach for addressing environmental challenges in the context of extreme weather variability while maintaining agricultural productivity and food security (FAO, 2013; Akanda *et al.*, 2025). Weather-Resilient Production practices, including cover cropping, reduced chemical inputs, improved soil and nutrient management, and carbon sequestration strategies, have significant potential to enhance both environmental resilience and farm yields. Despite these documented benefits, use of Weather-Resilient Production practices is limited across farming populations, even where information, events, and technical assistance are easily available (Knowler & Bradshaw, 2007; Meuwissen *et al.*, 2019; Negera *et al.*, 2022). This persistent gap between awareness of these practices and actually using them suggests that factors beyond access to information influence adoption intention of Weather-Resilient practices (Toomey, 2023).

Agricultural extension helps support Weather-Resilient Production adoption intention by disseminating research-based knowledge to farmers. Traditionally, extension programs assume that if farmers acquire new knowledge, they will automatically change their behavior and adopt the practices (Rogers *et al.*, 2019). However, research in agricultural science and behavioral theory indicates that adoption intention relies on a wider range of factors such as farmers' attitudes, perceived benefits, self-confidence, risk perceptions, social norms, and their feelings during the learning experience (Ajzen, 1991). Modern perspectives on adult learning further emphasize that learning involves not only the acquisition of knowledge but also the learner's experience, motivation, engagement, and perception of relevance (Afzal & Crawford, 2022). Yet extension research has not yet fully shown how experience during the learning process is related to behavior independently of the farmer's knowledge gain. This study examines this gap by analyzing whether participant satisfaction from experience during the learning process promotes adoption intention independently of, or more strongly than, the knowledge gained during the events. From this standpoint, participant satisfaction is not just a program evaluation measure; it indicates how learners assess the value, practical use, and effectiveness of the event.

A study conducted by Roussy *et al.* (2017) suggests that farmers' adoption intention decisions are shaped not only by what they know but also by how they perceive and experience educational interventions. In this study, we measure satisfaction alongside participants' knowledge gain from field days. Our position is that participants' experiences during an event should be viewed as a primary predictor of adoption intention of new practices, supporting and broadening existing beliefs that relied on knowledge alone. Nevertheless, limited empirical studies have compared how much knowledge gains and event satisfaction separately contribute to farmers' intentions to adopt Weather-Resilient Production. Extension programs are mainly evaluated for knowledge improvement, with

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limited focus on participants' experiences and how such experiences influence their behavioral intentions (Rogers *et al.*, 2019). Agricultural extension events, such as on-farm demonstrations and field days, offer the best environment to investigate this question as they combine technical instruction with direct, place-based exposure to new practices (Sutherland & Marchand, 2021). However, knowledge change is the only measure for assessment of these events, leaving the role of the learning experience itself unexamined.

This study investigates how participants' experiences at extension events affect their behavioral intentions. Specifically, the study focused on the following research questions.

• To what extent does participation in Weather-Resilient Production-focused extension events lead to knowledge gains?

• How do knowledge gains and event satisfaction jointly and independently relate to adoption intention intention and Resource Stewardship perception?

• Do demographic characteristics influence adoption intention intentions or Resource Stewardship perceptions?

LITERATURE REVIEW

From Knowledge to Action in Agricultural Extension

For decades, agricultural extension worked under the assumption that farmers fail to adopt improved practices simply because they lack information. This information-deficit model assumes knowledge transfer as the primary mechanism of program success (Rogers *et al.*, 2019). While extension programs have proven effective at improving participants' technical knowledge (Birner *et al.*, 2009; Gurung *et al.*, 2026), a consistent and well-documented gap exists between what farmers know and what they do. Farmers often know improved practices but choose not to adopt them, mostly because of financial risk, labor demands, market uncertainty, and misalignment with their existing farming systems (Knowler & Bradshaw, 2007). Together, these findings reveal that adoption intention is not a direct outcome of information delivery, but a complex behavioral process influenced by economic, social, and contextual forces.

Effective extension should focus on helping farmers make decisions, build local skills, and actively participate in their farming rather than simply providing technical information (Liao, 2024). Farmer-centered approaches that use local knowledge, build ownership, and support collaborative problem-solving can lead to more meaningful and sustained behavioral change than top-down approaches (FAO, 2019).

What Shapes Farmers' Adoption intention Intentions

The Theory of Planned Behavior (TPB) explains why knowledge alone may not lead to adoption intention. This theory suggests that intention is the main driver of behavior and is influenced by attitudes, social pressure, and perceived ability to act (Ajzen, 1991). In agricultural extension, intention has been found to determine adoption intention decisions more than knowledge alone (Wauters *et al.*, 2010). This highlights the importance of how participants view the practical value and relevance of new practices, which is directly related to the quality and satisfaction of the learning environment. However, few studies have been conducted to determine how the quality and satisfaction of the learning environment affect farmers' adoption intention intention.

Recent research revealed that, apart from TPB factors, ease of use, compatibility, risk, and farm goals can also influence adoption intention decisions of certain technologies (Erekalo *et al.*, 2025). Peer influence and trust in extension providers can also strongly affect adoption intention decisions (Prokopy *et al.*, 2015; Gemtou *et al.*, 2024; Kallas *et al.*, 2010). Thus, extension programs should also focus on social influences, farmers' attitudes, risks, and practical needs, not only technical knowledge.

Learning Environment Quality and Farmer Adoption intention Intentions

Apart from knowledge transfer, how farmers experience the extension event affects their motivation to act (Antwi-Agyei & Stringer, 2021). According to adult learning theory, satisfaction reflects how useful, relevant, and well-delivered the learning process is for farmers (Palis & Quiros, 2014). Satisfaction can also influence confidence, motivation, and willingness to adopt new practices (Novak *et al.*, 2025). In agricultural extension, related content and capable, responsive facilitators lead to higher satisfaction and stronger adoption intention intentions (Joshi *et al.*, 2024). However, satisfaction is often treated only as an evaluation measure rather than a factor directly influencing adoption intention decisions.

Research shows that reliability, assurance, and easy access are key factors in farmer satisfaction (Truong, 2022; Kassem *et al.*, 2021). The Farmer Field School (FFS) model also shows the importance of a practical, participatory learning environment. Evidence suggests that well-managed FFS programs can increase farmer income by 20% and crop yields by 13% (Waddington *et al.*, 2014). Similarly, good learning resources and practical teaching can increase satisfaction, which leads to stronger behavioral intentions (Wang *et al.*, 2025).

Resource Stewardship Perceptions and Agricultural Adoption intention

Farmers' views of Resource Stewardship depend on the environmental and economic effects of farming, such as soil health, greenhouse gas emissions, productivity, and input use (Lipper *et al.*, 2014). These views determine how farmers perceive the long-term benefits of new practices. Such views can be difficult to change because they are influenced by long-term experience, personal values, and cultural beliefs (Prokopy *et al.*, 2015). Extension programs can change such views through repeated, practical interaction. Demonstrations help farmers observe how new practices work in conditions resembling their own, making it easier to change existing views about soil health, yields, and costs (Waddington *et al.*, 2014). Long-term relationships with extension agents can further enhance environmental awareness (Truong, 2022). However, extension programs often play a larger role in adoption intention intention than broader views on Resource Stewardship (Prokopy *et al.*, 2015; Erekalo *et al.*, 2025). Thus, both adoption intention intentions and Resource Stewardship perceptions should be taken into account when examining long-term impact.

Knowledge Gain and Satisfaction as predictor of Adoption intention Intention

In this study, we compare a cognitive pathway (Knowledge Gain) and an experiential pathway (Satisfaction) of adoption intention intention. We tested the distinct contribution of each variable using hierarchical regression to isolate whether event satisfaction explains adoption intention intention beyond knowledge gain alone.

MATERIALS AND METHODS

This study looks at how participants' knowledge gain and overall experience of field day events influence their intention to adopt its environmental stewardship practices and their views on Resource Stewardship using hierarchical regression. We measure knowledge gain as a pre-to-post increase in self-reported understanding of Weather-Resilient Production practices. We measured participants' overall event experience through satisfaction, perceived relevance, usefulness, practical applicability, and engagement. Demographic variables (age, gender, education) were included in the regression to control their influence. We used hierarchical regression to examine whether satisfaction explains adoption intention intention beyond knowledge gain and demographic factors (Figure 1).

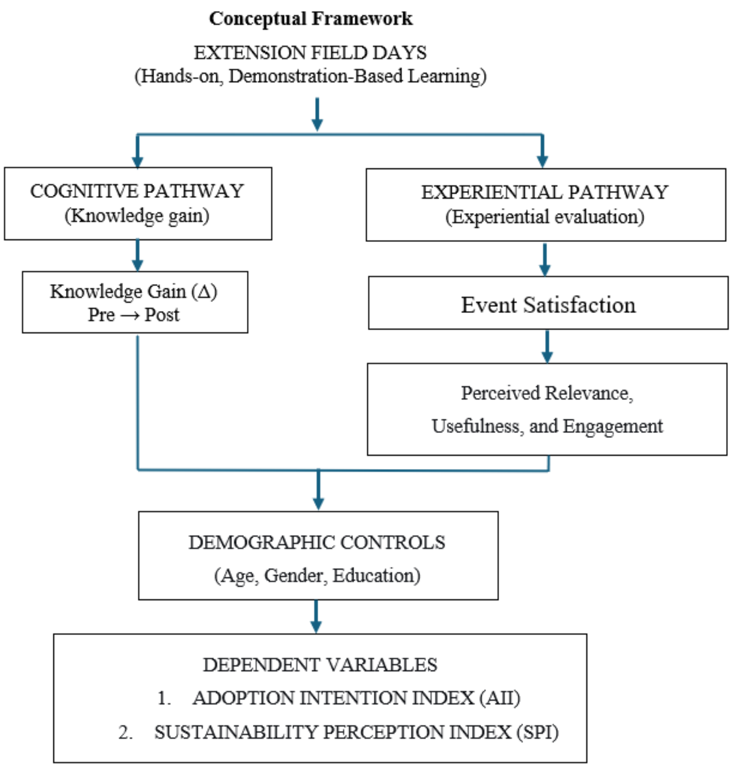

Figure 1: Dual-pathway conceptual framework

Study Context and Data Source

This study used survey data from participants in the UMES Extension-hosted Climate-Resilient Alley Cropping (CRAC) field days at demonstration sites in 4 counties: Somerset, Wicomico, Caroline, and Baltimore in Maryland (Table 1). The multi-site design improves the study by capturing variation across learning environments, enhancing the generalizability of the findings. At those

Table 1: Study Sites (On-Farm and Community-Based Demonstration Locations)

Site	Type	Location	County
Fowling Creek Farm	On farm	Federalsburg	Caroline
North of Eden Farm	On farm	Eden	Wicomico
Westover Farm	On farm	Westover	Somerset

Doug Swift Community Garden	Community	Crisfield	Somerset
Washington High School Garden	Community	Princess Anne	Somerset
Nepali American Cultural Center	Community	Glen Arm	Baltimore

field days, we used hands-on, demonstration-based learning to introduce participants to climate-resilient agricultural practices for fruits and vegetables. We tested participants' psychological and behavioral responses to the learning experience using survey. This study specifically examined what is significantly associated with participants' intentions to adopt Weather-Resilient Production-alley cropping practices. Participation was voluntary and anonymous, and we collected a total of 79 surveys; only 74 were included in the main correlation and regression analysis due to missing data.

Data Collection Procedure

We collected data using a semi-structured questionnaire distributed at the end of each field day, allowing us to understand participants link between the learning experience and reported intentions. The survey included five sections: demographics, self-reported pre- and post-knowledge, perceptions of alley cropping benefits, adoption intention intentions, and Resource Stewardship perceptions.

Measures

Knowledge Gain

We assessed participants' pre- and post-event knowledge of Weather-Resilient Production practices using a single self-evaluation item rated on a 5-point Likert scale (1 = very low, 2 = low, 3 =medium, 4 = high, 5 = very high). Knowledge gain was measured as the arithmetic difference between post-event and pre-event scores. This approach is consistent with standard practice in applied extension program evaluation research (Joshi *et al.*, 2024).

Adoption intention Intention Index (AII)

Adoption intention intention was assessed using a four-item composite index capturing participants' likelihood of adopting and disseminating Weather-Resilient Production practices learned during the field days. This approach follows Kirungi *et al.* (2023), who assessed behavioral intention through multiple intention statements, such as "I intend to practice Weather-Resilient Production in part of my coffee farm within the next year" and "I may practice Weather-Resilient Production in part of my coffee farm within the next year". Internal consistency was satisfactory (Cronbach's α = 0.74), confirming that the index assesses a single intended concept (Taber, 2018). Using a multi item index also reduces measurement error and improves the reliability of measurement (Diamantopoulos *et al.*, 2012). The index was computed as the mean of all four items:

AII = (X1 + X2 + X3 + X4) / 4…………(1)

where:

X1= Willingness to apply alley cropping practices

X2= Willingness to share knowledge gained

X3= Willingness to adopt alley cropping independently

X4= Willingness to educate others about alley cropping

Note: All items were rated on a 5-point Likert scale (1 = Strongly unwilling, 2 = Unwilling, 3 = Neutral, 4 = Willing, 5 = Strongly willing) by respondents.

Resource Stewardship Perception Index (SPI)

We assessed Resource Stewardship perceptions by creating an index using six Likert-scale items covering perceived social, environmental, and economic benefits of Weather-Resilient Production practice. This index measures stable Resource Stewardship beliefs about Weather-Resilient Production. This approach of using related Likert-scale items to measure multidimensional concepts is common in extension research (Quarshie *et al.*, 2023). Cronbach's α was high (α = 0.91), indicating excellent internal consistency and reliable measurement (Taber, 2018). The index was computed as the mean of all six items:

Resource Stewardship Perception Index (SPI) = (Y1 + Y2 + Y3 + Y4 + Y5 + Y6) / 6…………..(2)

Where:

Y1 = Perceived improvement in soil health

Y2 = Perceived increase in productivity

Y3 = Perceived reduction in fertilizer and pesticide use

Y4 = Perceived reduction in greenhouse gas emissions

Y5 = Perceived increase in carbon sequestration

Y6 = Perceived socio-economic benefits

Note: All items were rated on a 5-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree) by respondents.

Events Satisfaction

We measured participants' satisfaction with the overall field day experience by using a single item rated on a 5-point Likert scale (1 = not at all satisfied, 2 = not satisfied, 3 = neutral, 4 = satisfied, 5 = highly satisfied). Single-item satisfaction measures are commonly used and acceptable for assessing satisfaction in applied research settings (Diamantopoulos *et al.*, 2012).

Demographic Variables

Participants' age was assessed in six ordered categories (< 25, 25–35, 35–45, 45–55, 55–65, > 65 years), gender in two categories (male/female), and education level in eight ordered categories ranging from no formal education to a doctoral degree. These variables were included as controls in regression models when estimating the independent effects of knowledge gain and event satisfaction on adoption intention intention and Resource Stewardship perception.

Analytical Methodology

We conducted all statistical analyses in RStudio (version

4.5). Missing data were addressed using listwise deletion, resulting in a consistent sample of N = 74 across both models. Descriptive statistics of survey responses were assessed to describe the sample and summarize key outcome variables. To measure the changes in knowledge from pre- to post-event, we applied the Wilcoxon signed-rank test (N = 74). Effect size was calculated as $r = Z / \sqrt{N}$ to evaluate practical significance alongside statistical significance. We used Spearman rank-order correlations to examine relationships among knowledge gain, program satisfaction, adoption intention intention, and Resource Stewardship perception.

We also used hierarchical multiple regression to examine determinant with predictor of adoption intention intention and Resource Stewardship perception. As composite indices were created by averaging multiple Likert-scale items, they can be treated as approximately continuous variables for Ordinary Least Squares (OLS) regression (Cohen *et al.*, 2003; Field, 2018). Independent variables were entered in three stages: knowledge gain, demographics (age, gender, and education), and event satisfaction. This allowed us to test whether satisfaction provided additional explanatory power in adoption intention intention and Resource Stewardship perception while controlling for knowledge gain and demographic factors (Cohen *et al.*, 2003; Field, 2018). We ran two separate hierarchical regression models, with adoption intention intention and Resource Stewardship perception as separate dependent variables. For both, we built the model in three stages:

Model 1: $Y = \beta_0 + \beta_1(\text{Knowledge Gain}) + \varepsilon$…………(3)

Model 2: $Y = \beta_0 + \beta_1(\text{Knowledge Gain}) + \beta_2(\text{Age}) + \beta_3(\text{Gender}) + \beta_4(\text{Education}) + \varepsilon$……………..(4)

Model 3: $Y = \beta_0 + \beta_1(\text{Knowledge Gain}) + \beta_2(\text{Age}) + \beta_3(\text{Gender}) + \beta_4(\text{Education}) + \beta_5(\text{Satisfaction}) + \varepsilon$….(5)

Where:

Y = Adoption intention Intention Index (AII)/ Resource Stewardship Perception Index (SPI)

β_0 = Intercept (constant term)

β_1 = Effect of Knowledge Gain (Difference between post- and pre-events knowledge)

β_2 = Effect of Age (categorical variable with <25 as reference group)

β_3 = Effect of Gender (1 = male [reference], 2 = female)

β_4 = Effect of Education level (categorical, reference = no formal education)

β_5 = Effect of Satisfaction (post-event satisfaction score)

ε = Error term

Adopted from Bentley *et al.* (2026)

Both standardized (β) and unstandardized (B) coefficients were reported along with standard errors, t-statistics, model R^2, and changes in explained variance for each stepwise model. These measures provide a clear way for comparing cognitive and experiential factors affecting adoption intention intention and Resource Stewardship perception.

Table 2: Demographic characteristics of Participants (N = 79)

Category	Sub-Category	Percentage (%)
Age	< 25 years	6.41
	25–35 years	23.08
	35–45 years	16.67
	45–55 years	21.79
	55–65 years	24.36
	> 65 years	7.69
Gender	Female	52.80
	Male	47.20
Education	No Formal Education	1.28
	Elementary School	2.56
	Middle School	1.28
	High School	15.38
	Associate degree	7.69
	Bachelor's Degree	19.23
	Doctoral Degree	33.33
	Vocational School	19.23

RESULTS AND DISCUSSION

Participant Profile

Table 3: Field Day Outcomes: Knowledge Change, Adoption intention Intention, Resource Stewardship Perception, and Satisfaction(N=74)

Variable	Mean	SD	Scale	Interpretation
Pre-Events Knowledge	2.65	1.27	1–5	Low–moderate baseline
Post-Events Knowledge	4.08	0.92	1–5	High perceived understanding

Knowledge Gain	1.43	1.68	0-4	Substantial improvement
Adoption intention Intention Index	4.26	0.62	1–5	High willingness to adopt Weather-Resilient Production
Resource Stewardship Perception Index	4.39	0.56	1–5	Positive Resource Stewardship views
Events Satisfaction	4.44	0.69	1–5	High event satisfaction

Table 4: Spearman Rank-Order Correlations among Key Study Variables (N = 74)

Variable	**Knowledge Gain**	**Satisfaction**	Adoption intention **Intention**	Resource Stewardship **Perception**
Knowledge Gain	1.00	0.29*	0.30**	0.19
Satisfaction		1.00	0.35***	0.29*
Adoption intention Intention			1.00	0.56***
Resource Stewardship Perception				1.00

*Note: Values are Spearman's rho (ϱ). *p < .05; **p < .01; ***p < .001.*

Participants included farmers, educators, students, and agricultural professionals across Maryland's Eastern Shore. Demographic characteristics are summarized in Table 2.

Field Days Outcomes: Knowledge, Adoption intention Intention, and Resource Stewardship Perceptions

Participants' Mean increase in knowledge was 1.43 points, and the large effect size (r = 0.67) indicates a strong and meaningful improvement in their understanding of climate-resilient alley cropping practices. A Wilcoxon signed-rank test confirmed that the increase in knowledge following the field days was statistically significant (V = 1933, $p < 0.001$). Post-event adoption intention intention and Resource Stewardship perception index scores were also positive. Participants reported high adoption intention intention and strong Resource Stewardship perceptions, alongside high overall satisfaction with the field day's experience. Descriptive statistics for all key variables are presented in Table 3.

These findings indicate that the field days successfully achieved their educational objective and established a necessary condition for testing whether experiential quality or knowledge gain predicts adoption intention intention and improves Resource Stewardship perception.

Table 5: Hierarchical Regression Predicting Adoption intention Intention (N = 74)

Predictor	**B**	**SE B**	**β**	**t**	**p**	**R² / ΔR²**
Model 1: Knowledge Gain Only						$R^2 = .09$
Knowledge Gain	0.11	0.04	.30	2.69	.009**	
Model 2: + Demographics						$\Delta R^2 = .01$
Knowledge Gain	0.11	0.04	.28	2.44	.017*	
Age	−0.01	0.05	−.03	−0.24	.813	
Gender	−0.02	0.15	−.02	−0.17	.866	
Education	0.02	0.05	.05	0.52	.606	
Model 3: + Satisfaction						$\Delta R^2 = .07$
Knowledge Gain	0.06	0.05	.16	1.35	.181	
Satisfaction	0.24	0.09	.31	2.55	.013*	
Age	−0.01	0.05	−.02	−0.21	.834	
Gender	−0.07	0.14	−.06	−0.51	.613	
Education	0.02	0.04	.05	0.53	.596	

Note: B = unstandardized coefficient; SE B = standard error; β = standardized coefficient.
Dependent variable = Adoption intention *Intention Index. *p < .05; **p < .01.*

Correlation Analysis Result

As presented in Table 4, knowledge gain was found to be positively associated with adoption intention intention (ϱ = 0.30**). In contrast, knowledge gain was not significantly related to Resource Stewardship perception (ϱ = 0.19). Event satisfaction was positively related to both adoption intention intention (ϱ = 0.35***) and Resource Stewardship perception (ϱ = 0.29*). Satisfaction found to be more strongly related to adoption intention intention than knowledge gain, suggesting that participants' experience of the event may influence their motivation to act more than the content they learn.

Adoption intention intention was found to be strongly related to Resource Stewardship perception (ϱ = 0.56***), indicating that participants who have a strong Resource Stewardship perception of Weather-Resilient practices were considerably more inclined to adopt those practices. This strong relationship suggests that Resource Stewardship perception may influence adoption intention intentions more than learning gains and overall event satisfaction. Taken together, these results highlight the importance of not only increasing participant knowledge and overall satisfaction but also strengthening awareness of Resource Stewardship-related benefits of Weather-Resilient Production practices.

Hierarchical Regression Analyses Results

Adoption intention Intention as an Outcome Variable

As presented in Table 5, in Model 1, knowledge gain was a significant predictor of adoption intention intention (B = 0.11, β=.30, p= .009), explaining approximately 9% of the variation in participants' willingness to adopt climate-resilient alley cropping practices. This finding suggests that participants who learned more during the event were generally more willing to adopt these practices. However, when we add demographic variables in Model 2, the model's explanatory power barely increased (ΔR^2 = .01), and none of the demographic characteristics were statistically significant. This indicates that adoption intention readiness was more influenced by event related factors than by background characteristics of respondents.

Table 6: Hierarchical Regression Predicting Resource Stewardship Perception (N = 74)

Predictor	B	SE B	β	t	p	R^2 / ΔR^2
Model 1: Knowledge Gain Only						R^2 = .03
Knowledge Gain	0.06	0.04	.19	1.61	.112	
Model 2: + Demographics						ΔR^2 = .02
Knowledge Gain	0.06	0.04	.16	1.44	.156	
Age	−0.04	0.05	−.10	−0.90	.371	
Gender	−0.07	0.13	−.10	−0.50	.621	
Education	0.02	0.04	.05	0.47	.642	
Model 3: + Satisfaction						ΔR^2 = .09
Knowledge Gain	0.01	0.04	.02	0.33	.744	
Satisfaction	0.24	0.09	.34	2.73	.008**	
Age	−0.04	0.04	−.10	−0.90	.369	
Gender	−0.11	0.13	−.10	−0.87	.386	
Education	0.02	0.04	.06	0.48	.631	

Note: B = unstandardized coefficient; SE B = standard error; β = standardized coefficient.
Dependent variable = Resource Stewardship *Perception Index. *p < .05; **p < .01*

In Model 3, adding Satisfaction increased the variance explained (ΔR^2 = .07). Satisfaction emerged as the strongest, and only significant, determinant in the full model (B = 0.24, β=.31, p=.013), and the effect of Knowledge Gain dropped to a non-significant level {from (B = 0.11, β=.30, p= .09) to B = 0.06, β=.05, p=.181)}. This pattern suggests that satisfaction may partially account for the association between knowledge gain and adoption intention intention. In other words, it is not only the acquisition of knowledge, but the positive view of overall field day events, including perceived relevance, usefulness, engagement, and practical value, that appears to translate what participants learned into willingness to adopt.

The final full model (Model 3) explained 17% of the total variance in adoption intention intention (R^2 = .17). In practical terms, while the model makes a statistically valid prediction, it leaves 83% of the variance in adoption intention intention unexplained. This suggests that while participant satisfaction and knowledge are important factors, other factors also play a role in the adoption intention decision. Overall, our findings suggest that participant satisfaction plays a more important role for adoption intention intention than knowledge gain. The modest overall R^2 also indicates that future research should consider additional contextual and behavioral variables to better explain adoption intention intention.

Resource Stewardship Perception as an Outcome Variable

As presented in Table 6, knowledge gain alone did not significantly predict Resource Stewardship perception in Model 1 (B = 0.06, β= .19, p= .112). This suggests that knowledge gain alone did not substantially change participants' view of the environmental and socio-economic benefits of climate-resilient alley cropping. Demographic variables added little explanatory power in Model 2 (ΔR^2 = .02) and were not significant predictors, suggesting that Resource Stewardship perceptions were not strongly related to demographics. In Model

3, satisfaction with the field day's events was the only significant factor predicting Resource Stewardship perception (B = 0.24, $\beta = .34$, $p = .008$), accounting for an additional 9% of variance ($\Delta R^2 = .09$). This finding indicates that participants who are satisfied with the event also tend to hold stronger beliefs about the environmental benefits of climate-resilient alley cropping. Knowledge gain was non-significant in the full model (B=0.01, $\beta = .02$, $p = .744$), suggesting that it had little influence on Resource Stewardship perceptions. This finding suggests that short-term extension events may increase knowledge and adoption intention intention but have less effect on Resource Stewardship perception.

The final full model (Model 3) explained 14% of the variance in Resource Stewardship perception ($R^2 = .14$), leaving 86% unexplained by the variables in the model, suggesting that apart from satisfaction, other factors also influence Resource Stewardship perception. Overall, participant satisfaction was found to be more strongly related to Resource Stewardship perception than knowledge gain. The modest overall R^2 indicates that future research should consider additional contextual and behavioral variables to better explain Resource Stewardship perception.

Summary of Regression Findings

Across both outcome variables, we found that satisfaction with the event is a stronger predictor than knowledge gain. Knowledge gain was moderately associated with adoption intention intention but had limited influence on Resource Stewardship perception. Demographic variables contributed minimally to both outcomes. Field days event satisfaction was the strongest predictor of both adoption intention intention and Resource Stewardship perception, and the only significant predictor in the full models. These results emphasize that participant experience during the events, rather than knowledge gain alone, is associated with meaningful outcomes in Weather-Resilient Production extension programs.

Discussion

Knowledge Gain as a Necessary but Insufficient Condition for Adoption intention

As expected, participants showed significant knowledge gains following the field days ($p < .001$). The mean increase was 1.43 points on a five-point scale, combined with a large effect size ($r = 0.67$), suggesting that the event shifted perceptions by helping participants move from limited familiarity toward a more integrated understanding of alley cropping concepts and practices. This finding aligns with research showing that experiential learning can effectively enhance knowledge in applied settings (Coleman *et al.*, 2024). However, the knowledge participants gained alone was not sufficient to explain adoption intention intentions. Although knowledge gain was a significant predictor in the initial model, its effect became non-significant after event satisfaction was included. These findings align with findings by Knowler & Bradshaw (2007), who reported that learning environments can shape decisions independently of knowledge gains, highlighting the need to treat experience as an important part of extension effectiveness.

How experience is associated with adoption intention intention

Once satisfaction entered the model, event satisfaction emerged as the strongest predictor of adoption intention intention, while knowledge gain became non-significant. This suggests satisfaction may mediate the relationship between knowledge and intention: learning leads to action when participants find the experience useful, engaging, and relevant. This aligns with Ajzen's (1991) Theory of Planned Behavior, where attitudes and confidence in their ability shape intentions. Participants who valued the event were more likely to adopt practices. Knowledge may influence adoption intention indirectly through satisfaction rather than directly. This supports Meijer *et al.* (2015), who found that willingness to adopt depends on perceived usefulness. Program designers should prioritize hands-on, interactive learning that creates meaningful experiences, not just information delivery.

Minimal Influence of Demographic Characteristics

Age, gender, and education were not significant predictors of adoption intention intention or Resource Stewardship perception as they added little explanatory power. This contradicts the theory of innovation diffusion expectations (Rogers *et al.*, 2019; Feder *et al.*, 1985). The sample's shared agricultural interest and high educational attainment may have reduced variability. Within voluntary extension settings, perceived value and program experience matter more than participant backgrounds. Well-designed events may help reduce the impact of demographic differences (Meijer *et al.*, 2015).

Resource Stewardship Perceptions: Shaped by Satisfaction, Not Knowledge Gain

Despite participants improving their factual understanding, knowledge gain did not predict Resource Stewardship perception ($\beta = .02$, $p = .744$). Resource Stewardship perceptions appear rooted in prior values, experiences, and cultural narratives (Gifford, 2014; Wiek *et al.*, 2011). However, event satisfaction strongly influenced these perceptions ($\beta = .34$, $p = .008$). This distinction is important: satisfaction with the learning experience influences how participants see long-term environmental and economic benefits.

Theoretical Implications: Extending Adoption intention Theory

Knowledge-focused models assume information leads to behavior. Our findings show satisfaction with the learning experience is related to intention independently of what participants learn. This extends the Theory of Planned Behavior by treating event satisfaction as a context-specific predictor of attitude, which captures relevance, credibility, and practical usefulness. Future adoption intention models should integrate experiential quality with social, cognitive, and structural determinant with predictor of adoption intention and resource stewardship perception.

CONCLUSION

This study examined whether cognitive (knowledge gain), experiential (event satisfaction), or demographic factors better explain field-day participants' intentions to adopt Weather-Resilient Production practices through extension programs. Our findings challenge the assumption that knowledge alone determines adoption intention: satisfaction was a stronger predictor of adoption intention intention. Participants who found events useful, relevant, and engaging were more likely to intend to adopt Weather-Resilient Production practices and to see greater environmental and agricultural benefits. Demographic characteristics (age, gender, education) had little influence on either outcome, suggesting that what happens during the event matters more than participants' personal characteristics. While increasing knowledge remains a core Extension objective, strengthening engagement and relevance, which leads to satisfaction, may be equally important in encouraging adoption intention. Extension programs should therefore treat experiential quality, relevance, engagement, and practical applicability as a core part of technical instruction.

Limitations

Several limitations should be considered. First, the study used a small convenience sample from UMES Extension field days in Maryland, which makes it harder to apply the findings to other regions and settings. Second, all measures relied on self-response, which may be influenced by response bias or the desire to give socially acceptable answers. Third, satisfaction was measured using one question. While acceptable for global assessment, this does not capture specific aspects such as peer interaction, facilitator quality, or content relevance. Fourth, we measured adoption intention intention instead of actual adoption intention of the practices. Intentions do not always translate into action, especially when decisions are complex. Finally, Resource Stewardship perceptions may reflect deeply rooted values and prior experiences unlikely to change through a short-term intervention. This may explain why knowledge gain was only weakly related to Resource Stewardship perceptions. These limitations highlight the need for more rigorous, long-term studies.

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Ethical Approval

This study involving human participants was reviewed and approved by the Institutional Review Board (IRB) of the University of Maryland Eastern Shore (UMES).

Informed Consent

Informed consent was obtained from all participants before they participated in the post-event evaluation survey. Participation was voluntary, and participants were informed of their right to decline participation.

Conflict of Interest

The authors declare that they have no conflict of interest.

REFERENCES

Afzal, F., & Crawford, L. (2022). Students' perception of engagement in online project management education and its impact on performance: The mediating role of self-motivation. *Project Leadership and Society, 3,* 100057. https://doi.org/10.1016/j.plas.2022.100057

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-T

Akanda, M. G. R., Mittra, P. K., & Biswas, A. (2025). Adoption intention of climate smart agricultural practices among coastal farmers: Insights from a selected southern area of Bangladesh. *American Journal of Environment and Climate, 4*(3), 28–34. https://doi.org/10.54536/ajec.v4i3.5318

Antwi-Agyei, P., & Stringer, L. C. (2021). Improving the effectiveness of agricultural extension services in supporting farmers to adapt to extreme weather variability: Insights from northeastern Ghana. *Climate Risk Management, 32,* Article 100304. https://doi.org/10.1016/j.crm.2021.100304

Bentley, S. V., Irons, J., & Lawes, R. (2026). Knowledge is power: The importance of subjective knowledgeability for supporting technology adoption intention in the Australian grain industry. *Precision Agriculture, 27,* Article 123. https://doi.org/10.1007/s11119-026-10423-9

Birner, R., Davis, K., Pender, J., Nkonya, E., Anandajayasekeram, P., Ekboir, J., Mbabu, A., Spielman, D. J., Horna, D., Benin, S., & Cohen, M. (2009). From best practice to best fit: A framework for designing and analyzing pluralistic agricultural advisory services worldwide. *The Journal of Agricultural Education and Extension, 15*(4), 341–355. https://doi.org/10.1080/13892240903309595

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). Lawrence Erlbaum Associates.

Coleman, B., Bunch, J. C., & Roberts, T. G. (2024). Experiential learning in agricultural education: A philosophical discussion. *Journal of Agricultural Education, 65*(1), 283–302. https://doi.org/10.5032/jae.v65i1.2479

Diamantopoulos, A., Sarstedt, M., Fuchs, C., Wilczynski, P., & Kaiser, S. (2012). Guidelines for choosing between multi-item and single-item scales for construct measurement: A predictive validity perspective. *Journal of the Academy of Marketing Science, 40*(3), 434–449. https://doi.org/10.1007/s11747-011-0300-3

Erekalo, K. T., Gemtou, M., Kornelis, M., Pedersen, S. M., Christensen, T., & Denver, S. (2025). Understanding the behavioral factors influencing farmers' future adoption intention of Weather-Resilient Production: A multi-group analysis. *Journal of Cleaner Production, 510,* 145632. https://doi.org/10.1016/j.jclepro.2025.145632

Feder, G., Just, R. E., & Zilberman, D. (1985). Adoption intention of agricultural innovations in developing countries: A survey. *Economic Development and Cultural Change, 33*(2), 255–298. https://doi.org/10.1086/451461

Field, A. (2018). *Discovering statistics using IBM SPSS Statistics* (5th ed.). SAGE.

Food and Agriculture Organization of the United Nations. (2013). Weather-Resilient Production *sourcebook*. https://www.fao.org/Weather-Resilient-agriculture-sourcebook/en/

Food and Agriculture Organization of the United Nations. (2019). *The state of food and agriculture 2019: Moving forward on food loss and waste reduction*. https://www.fao.org/3/ca6030en/ca6030en.pdf

Gemtou, M., Kakkavou, K., Anastasiou, E., Fountas, S., Pedersen, S. M., Isakhanyan, G., Erekalo, K. T., & Pazos-Vidal, S. (2024). Farmers' transition to Weather-Resilient Production: A systematic review of the decision-making factors affecting adoption intention. Resource Stewardship*, 16*(7), 2828. https://doi.org/10.3390/su16072828

Gifford, R. (2014). Environmental psychology matters. *Annual Review of Psychology, 65*, 541–579. https://doi.org/10.1146/annurev-psych-010213-115048

Gurung, D., Karki, L. B., Bhandari, P. B., Mentreddy, S. R., & Ojha, S. (2026). Factors influencing the adoption intention of Weather-Resilient agricultural practices in Maryland, USA. *International Journal of Smart Agriculture, 4*(1), 1–11. https://doi.org/10.54536/ijsa.v4i1.5550

Joshi, A., Diaz, J., Chaudhary, A. K., Jayaratne, K. S. U., & Galindo, S. (2024). Enhancing the effectiveness of Extension program evaluations by validating the trustworthiness of self-reported measures of Extension program outcomes. *Advancements in Agricultural Development, 5*(4), 59–71. https://doi.org/10.37433/aad.v5i4.519

Kallas, Z., Serra, T., & Gil, J. M. (2010). Farmers' objectives as determinant with predictor of organic farming adoption intention: The case of Catalonian vineyard production. *Agricultural Economics, 41*(5), 409–423. https://doi.org/10.1111/j.1574-0862.2010.00454.x

Kassem, H. S., Alotaibi, B. A., Muddassir, M., & Herab, A. (2021). Factors influencing farmers' satisfaction with the quality of agricultural extension services. *Evaluation and Program Planning, 85*, 101912. https://doi.org/10.1016/j.evalprogplan.2021.101912

Kirungi, D., Senyange, B., Wesana, J., Sseguya, H., Gellynck, X., & De Steur, H. (2023). Entrepreneurial and attitudinal determinant with predictor for adoption intention of Weather-Resilient Production technologies in Uganda. *Cogent Food & Agriculture, 9*(2), 2282236. https://doi.org/10.1080/23311932.2023.2282236

Knowler, D., & Bradshaw, B. (2007). Farmers' adoption intention of conservation agriculture: A review and synthesis of recent research. *Food Policy, 32*(1), 25–48. https://doi.org/10.1016/j.foodpol.2006.01.003

Liao, C., Ross, H., Jones, N., & Palaniappan, G. (2024). System lacks systems thinking: Top-down organization and actor agency in China's agricultural extension system. *Systems Research and Behavioral Science, 41*(1), 82–99. https://doi.org/10.1002/sres.2943

Lipper, L., Thornton, P., Campbell, B. M., Baedeker, T., Braimoh, A., Bwalya, M., Caron, P., Cattaneo, A., Garrity, D., Henry, K., Hottle, R., Jackson, L., Jarvis, A., Kossam, F., Mann, W., McCarthy, N., Meybeck, A., Neufeldt, H., Remington, T., Sen, P. T., Sessa, R., Shula, R., Tibu, A., & Torquebiau, E. F. (2014). Weather-Resilient Production for food security. *Nature* Extreme weather variability*, 4*, 1068–1072. https://doi.org/10.1038/nclimate2437

Meijer, S. S., Catacutan, D., Ajayi, O. C., Sileshi, G. W., & Nieuwenhuis, M. (2015). The role of knowledge, attitudes, and perceptions in the uptake of agricultural and agroforestry innovations among smallholder farmers in sub-Saharan Africa. *International Journal of Agricultural* Resource Stewardship*, 13*(1), 40–54. https://doi.org/10.1080/14735903.2014.912493

Meuwissen, M. P. M., Feindt, P. H., Spiegel, A., Termeer, C. J. A. M., Mathijs, E., de Mey, Y., Finger, R., Balmann, A., Wauters, E., Urquhart, J., Vigani, M., Zawalińska, K., Herrera, H., Nicholas-Davies, P., Hansson, H., Paas, W., Slijper, T., Coopmans, I., Vroege, W., Ciechomska, A., Accatino, F., Kopainsky, B., Poortvliet, P. M., Candel, J. J. L., May, D., Severini, S., Senni, S., Soriano, B., Lagerkvist, C.-J., Peneva, M., Gavrilescu, C., & Reidsma, P. (2019). A framework to assess the resilience of farming systems. *Agricultural Systems, 176*, 102656. https://doi.org/10.1016/j.agsy.2019.102656

Negera, M., Alemu, T., Hagos, F., & Haileslassie, A. (2022). Determinant with predictor of adoption intention of Weather-Resilient agricultural practices among farmers in Bale-Eco region, Ethiopia. *Heliyon, 8*(7), e09824. https://doi.org/10.1016/j.heliyon.2022.e09824

Novak, A., Alif, Ž., Juvančič, L., & Šumrada, T. (2025). What affects farmers' intention to learn about Resource Stewardship in online settings? An application of the extended theory of planned behaviour in Slovenia. *Journal of Rural Studies, 114*, 103548. https://doi.org/10.1016/j.jrurstud.2024.103548

Palis, A. G., & Quiros, P. A. (2014). Adult learning principles and presentation pearls. *Middle East African Journal of Ophthalmology, 21*(2), 114–122. https://doi.org/10.4103/0974-9233.129748

Prokopy, L. S., Arbuckle, J. G., Barnes, A. P., Haden, V. R., Hogan, A., Niles, M. T., & Tyndall, J. C. (2015). Farmers and extreme weather variability: A cross-national comparison of beliefs and risk perceptions in high-income countries. *Environmental Management, 56*(2), 492–504. https://doi.org/10.1007/s00267-015-0504-2

Quarshie, P. T., Abdulai, S., & Fraser, E. D. G. (2023). (Re) assessing Weather-Resilient Production practices for sustainable food systems outcomes in sub-Saharan Africa: The case of Bono East Region, Ghana. *Geography and* Resource Stewardship*, 4*(2), 112–126. https://doi.org/10.1016/j.geosus.2023.02.002

Rogers, E. M., Singhal, A., & Quinlan, M. M. (2019). Diffusion of innovations. In D. W. Stacks, M. B. Salwen, & K. C. Eichhorn (Eds.), *An integrated approach to communication theory and research* (3rd ed., pp. 182–186). Routledge. https://doi.org/10.4324/9780203710753-35

Roussy, C., Ridier, A., & Chaib, K. (2017). Farmers' innovation adoption intention behavior: Role of perceptions and preferences. *International Journal of Agricultural Resources, Governance and Ecology, 13*(2), 138–152. https://doi.org/10.1504/IJARGE.2017.086439

Sutherland, L.-A., & Marchand, F. (2021). On-farm demonstration: Enabling peer-to-peer learning. *The Journal of Agricultural Education and Extension, 27*(5), 573–590. https://doi.org/10.1080/1389224X.2021.1959716

Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education, 48*(6), 1273–1296. https://doi.org/10.1007/s11165-016-9602-2

Toomey, A. H. (2023). Why facts don't change minds: Insights from cognitive science for the improved communication of conservation research. *Biological Conservation, 278*, 109886. https://doi.org/10.1016/j.biocon.2022.109886

Truong, D. D. (2022). Farming households' satisfaction with quality of agricultural extension services: A case study of Quang Binh province, Vietnam. *Frontiers in Sustainable Food Systems, 5*, 779477. https://doi.org/10.3389/fsufs.2021.779477

Waddington, H., Snilstveit, B., Hombrados, J., Vojtkova, M., Phillips, D., Davies, P., & White, H. (2014). Farmer field schools for improving farming practices and farmer outcomes in low- and middle-income countries: A systematic review. *Campbell Systematic Reviews: Better Evidence for a Better World, 10*(1), i–335. https://doi.org/10.4073/csr.2014.6

Wang, L., Zhang, P., Chen, L., Luo, H., & Li, J. (2025). Research on the impact of practical teaching quality in Chinese agricultural universities on students' behavioral intention to serve "agriculture, rural areas, and farmers." Resource Stewardship*, 17*(24), 10905. https://doi.org/10.3390/su172410905

Wauters, E., Bielders, C., Poesen, J., & Govers, G. (2010). Adoption intention of soil conservation practices in Belgium: The importance of attitudes and perceived behavioral control. *Journal of Environmental Management, 91*(6), 1211–1220. https://doi.org/10.1016/j.jenvman.2010.02.023

Wiek, A., Withycombe, L., & Redman, C. L. (2011). Key competencies in Resource Stewardship: A reference framework for academic program development. Resource Stewardship *Science, 6*(2), 203–218. https://doi.org/10.1007/s11625-011-0132-6

World Bank. (2012). *Agricultural innovation systems: An investment sourcebook*. https://doi.org/10.1596/978-0-8213-8684-2