The Dynamic Relationship of Trust between Farmers and Environmental Agencies

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Introduction

<u>Scope of Issue: Cyanobacteria in Lake Champlain</u>

Pollution of surface waters affects sixty-five percent of the estuaries and coastal waters in the contiguous United States, primarily due to excessive nutrient inputs into waterways (NOAA, 2025). Additionally, the pollution resulting from excessive sediment and nutrient loading represents a significant and pervasive issue contributing to water quality problems globally (Borgwardt et al., 2019; Jenny et al., 2020; Schindler, 2012; Xia et al., 2020).

Nutrients such as phosphorus and nitrogen are naturally present in lakes due to geological erosion and the decomposition of organic matter within lacustrine ecosystems. However, anthropogenic activities, particularly those associated with wastewater management and agricultural practices, have resulted in elevated levels of nutrient pollution. Furthermore, climate change intensifies the issue by contributing to rising temperatures, which in turn accelerates algae growth. This influx of nutrients has led to the occurrence of eutrophication blooms. Eutrophication blooms arise when there is an excessive concentration of nitrogen and phosphorus in the water. These nutrients promote the growth of aquatic plants, notably algae and microbial biomass. As these plants flourish, they eventually decompose, resulting in a reduction of dissolved oxygen levels in the water. This decline occurs because decomposers, which break down the surplus of algae and plants on the lakebed, consume the dissolved oxygen. Consequently, the water can become hypoxic, creating challenges for the survival of many fish and other wildlife (EPA, 2015). Along with this legacy phosphorus, which is the accumulation of phosphorus building up over many years, these hypoxic states can cause the issue to worsen. This happens when there is a reduced amount of oxygen, which in turn releases bound phosphorus, and this drives a biogeochemical reaction that ultimately helps with exacerbating eutrophication (EPA, 2025).

Cultural eutrophication is characterized by the accelerated enrichment of aquatic environments through the accumulation of sediments and nutrients stemming from human activities, notably in agriculture, urban development, industrial output, and wastewater discharge (Akinnawo, 2023; Carpenter et al., 1998; Schindler, 2012). This phenomenon accelerates the natural eutrophication processes and contributes to significant ecological and human health issues, such as cyanobacteria blooms, anoxic conditions, and other critical concerns within freshwater ecosystems (Akinnawo, 2023; Kornijów, 2023; EPA, 2015).

The Lake Champlain Basin exhibits a distinctive land-to-water ratio; for each square mile of surface area, approximately 18 square miles of surrounding land contribute water to the lake, as reported in the 2024 State of the Lake and Ecosystem Indicators Report. The Vermont section of the basin features a diverse landscape that includes forests, farms, developed areas, wetlands, and waterways. Each year, approximately 38% of the lake's total phosphorus load comes from agriculture, while 20% comes from forests, 18% from streambank erosion, 16% from developed lands, 6% from wastewater treatment facilities, and 1% from wetlands (Lake Champlain Basin Program, 2025). This region contains seven sub-basins: Missisquoi, Lamoille, Lake Direct, Winooski, Otter/Lewis, South Basin, and Poultney-Mettowee. This ratio exacerbates nutrient overloading, driving eutrophication, which is defined as the excessive growth of aquatic plants and cyanobacteria due to elevated nutrient concentrations. Consequently, these blooms create "dead zones" that diminish biodiversity and degrade overall water quality (Isles et al., 2021). The presence of excessive cyanobacteria further imposes constraints on other plant and animal populations, thereby limiting biodiversity within both the lake and its surrounding watershed (Loewald et al., 2020). The Environmental Protection Agency (EPA) identifies agricultural runoff as the predominant source of nutrient loading, where elevated nutrient levels facilitate the proliferation of cyanobacteria, leading to extensive blooms particularly in shallow waters during the summer months.

In recent years, the proliferation of excess cyanobacteria, commonly referred to as "blue-green algae," has emerged as a pressing issue within Lake Champlain. Although cyanobacteria are typically benign in natural ecosystems, their rapid proliferation has become a significant concern due to the potential toxicity of high concentrations for aquatic organisms. Elevated levels of cyanobacteria can deplete dissolved oxygen in the water, resulting in hypoxic conditions that threaten the survival of native species (Isles. P., 2021). Agriculture remains the principal contributor to this water pollution, introducing significant quantities of nutrients, particularly phosphorus and nitrogen into aquatic systems via stormwater runoff and soil erosion (Aarons & Gourley, 2013; Cole et al., 2020; Laitos & Ruckriegle, 2012; Lind et al., 2019; Ribaudo et al., 1999; Withers et al., 2014; Manuel, 2014).

The decline in aquatic health has profound implications for the economic and social well-being of the Lake Champlain Basin and the state of Vermont. Lake Champlain serves as a vital resource for Vermont's economy, generating substantial income from tourism, fishing, and real estate activities, contributing approximately $580 million annually. Yet, nutrient pollution poses a significant threat to these economic benefits. Estimates suggest that a mere one-meter decrease in water clarity might lead to financial losses of up to $177 million, through declines in tourism and property valuation. Furthermore, the lake is a critical source of drinking water for approximately 145,000 residents of Vermont, and nutrient pollution elevates the risk of harmful algal toxins infiltrating untreated water supplies (Decerega et al., 2016). Despite the major economic value of Lake Champlain there has been a lack of efforts in regulations and preventing agricultural runoff from continuing.

Due to insufficient action regarding more adoption of Best Management Practices, this thesis seeks to examine the underlying factors contributing to this issue. The primary objectives of this research involve conducting surveys with the Vermont Agency of Agriculture (VAAFM), a state-level organization, and UVM Extension, a locally based program to assess whether these environmental bodies have made efforts to cultivate a relationship founded on trust. Along with this understanding there is a notable difference between the methods of the VAAFM and UVM Extension, since the VAAFM must enforce laws and regulations, whereas the UVM Extension is helping farmers that have volunteered and are seeking out support. This difference in their reasoning for getting farmers to adopt Best Management Practices could have an impact on how they establish trust.

In this context, trust is operationally defined as an individual's willingness to engage and collaborate with others. Accordingly, this study aims to address the question: Are environmental agencies effectively fostering trust with farmers to promote improved agricultural practices? Is there any noticeable difference between how the VAAFM and UVM Extension build trust with farmers?

This project analyzed the strategies employed by various environmental agencies to establish trust, as such insights could provide valuable guidance for other organizations striving to build trust in their environmental efforts. The research aspired to elucidate the methods by which government officials have sought to develop and sustain trusting relationships. In the case of Vermont, fostering a trusting relationship between farmers and government officials may serve as a mechanism to mitigate the excessive levels of cyanobacteria in Lake Champlain. Through this investigation, I learned about the governmental perspective within the farmer-to-government dynamic.

My research investigated the approaches adopted by environmental agencies in facilitating trust to create constructive relationships with farmers. By fostering trust between environmental agency personnel and farmers, these entities may be better positioned to implement effective agricultural practices. I surveyed environmental agency employees to determine the extent to which they are successfully building trust. This project is significant as it illuminates the complex relationship between environmental entities and farmers' perceptions of trust. Historical interactions between these groups have been less than ideal (Cantrill, 2009). Acknowledging the imperfections in the farmer to environmental agencies relationships presents opportunities for constructive change. This understanding is particularly crucial in the environmental sector, as insights into farmers' reliance on environmental agencies can prompt a reevaluation of how these agencies approach the promotion of sustainable agricultural practices. Cultivating trust between farmers and environmental agencies is essential for significantly reducing agricultural runoff that adversely impacts Lake Champlain.

Ultimately, this research endeavored to contribute to a more sustainable future for subsequent generations. By empowering individuals to address pressing issues related to Lake Champlain, my findings extend beyond my immediate influence, equipping stakeholders with the knowledge needed to forge trust in environmental initiatives.

Adoption of Conservation Programs

Despite the health of Lake Champlain being a significant concern for both local communities and environmental advocates, farmers have been notably reluctant to adopt BMP which could alleviate some of the ecological pressures impacting the ecosystem (Cantrill, J., 2009). This reluctance raises important questions about the factors influencing farmers' decision-making processes. A component of this decision-making depends heavily on the individual characteristics of each farmer. Research indicates that those with higher levels of education, increased awareness of environmental issues, and a demonstrated understanding of the importance of adopting beneficial agricultural practices for the surrounding environment are more likely to embrace BMP (Prokopy, L.S. et al., 2008; Ryan, Erickson, & De Young, 2003; Saltiel, Bauder, & Palakovich, 1994; Stock, 2007).

In addition, there are various reasons why some farmers might be more willing to adopt new practices while others remain resistant. Key factors contributing to this willingness include access to reliable and actionable information, the quality and clarity of educational resources offered, and the financial capacity to implement changes.

Moreover, farmers with a strong network of connections to local farming communities or watershed groups often find additional support, which can motivate them to explore and adopt BMP (Baumgart-Getz, A., et al., 2012). This suggests that social dynamics and community engagement play a crucial role in influencing individual farmer behavior.

Farmers' willingness to partake in environmental programs or initiatives often encompasses a multitude of concerns and motivations. Some may prioritize economic factors, weighing the cost of implementing new practices against potential benefits (Baumgart-Getz et al., 2012). Others may be driven by a personal, ethical commitment to sustainability or a desire to maintain a positive reputation within their community. Nevertheless, despite extensive research on the reasons behind farmers' choices to adopt new practices, there remains a significant gap in the literature regarding the perspective of environmental agencies (Longfield, 2023; Weber, 2017; Vaske, J. J., et al, 2020; Varble, S., et al, 2016).

These environmental agencies are essential stakeholders in the dialogue surrounding agricultural practices, yet their insights and approaches to addressing farmers' hesitations are often underrepresented in academic discourse. Additionally, farmers themselves encounter a variety of challenges that may impact their decision-making, including fluctuating market conditions, climate variability, and regulatory pressures (Olson, K., 2013). Understanding these complexities can lead to more effective outreach strategies tailored to farmers' needs, ultimately benefiting both the agricultural community and the health of ecosystems like Lake Champlain.

By fostering open communication and collaboration between farmers and environmental agencies, there is potential for creating a more sustainable future for both agriculture and natural resources.

Background on Project

The primary objective of this research was to determine if environmental agencies in Vermont prioritize trust-building methods to cultivate effective working relationships with farmers. Ultimately, this thesis assessed environmental agencies' efforts to establish trust with farmers, promote sustainable agricultural practices, and identify opportunities for improvement. This thesis consists of surveying environmental agencies on their methods of building trust to determine if they are placing continuous effort into establishing trust.

Understanding the strategies that environmental agencies employ to gain trust can provide valuable insights for other organizations seeking to foster confidence in their environmental initiatives. It also underscores the significance of maintaining trusting relationships between environmental officials and the public. The case of Vermont will be used to illustrate how a trusting relationship between farmers and government officials can potentially contribute to reducing the excess of cyanobacteria in Lake Champlain. By emphasizing the governmental perspective, this research seeks to raise awareness about the working relationship between Vermont farmers and government entities. Agricultural runoff is a primary source of phosphorus, which has been linked to the proliferation of these bacteria (EPA, 2023).

While there is extensive research on the motivations behind farmers' adoption of new practices, there is a notable scarcity of literature addressing the perspectives of environmental government agencies on this topic. To address this gap, this research explored how government and environmental agencies can effectively facilitate trust to establish supportive relationships with farmers. By fostering trust between environmental officials and farmers, we can implement improved agricultural practices that may help mitigate the cyanobacteria issue.

Act 64 - Vermont Clean Water Act

The substantial ecological, economic, and social ramifications of nitrogen and phosphorus loading in Vermont prompted the enactment of Act 64, known as the Vermont Clean Water Act, in 2015. In 2014, CLF environmental advocacy organization focused on New England's environment and communities, filed a petition against the Vermont Agency of Agriculture, Food, and Markets (VAAFM) under 6 V.S.A § 4813(a), arguing that certain critical areas in the Lake Champlain Basin should be subject to mandatory Best Management Practices (BMPs) and Required Agricultural Practices (RAPs). Additionally, given the poor water quality in the Lake Champlain Basin, a Total Maximum Daily Load (TMDL) was implemented into the plans.

This legislative response followed the intervention of the federal Environmental Protection Agency, which emphasized the urgency of addressing nonpoint source pollution, particularly stormwater runoff and agricultural practices. Act 64 mandates the enhancement of regulatory frameworks concerning agriculture, forests, streambank erosion, developed lands, wastewater treatment facilities, and wetlands pollution sources.

Key provisions of the act include the establishment of the Clean Water Fund, the introduction of new regulatory measures, the formation of regional planning commissions, and the implementation of Total Maximum Daily Loads (TMDLs) for specific pollutants (O'Grady, 2017). Furthermore, Act 64 has served as a foundational legal framework for subsequent regulations, including the Required Agricultural Practice Rule, thereby reinforcing efforts to improve water quality and manage nutrient loading in Vermont's watersheds.

A Total Maximum Daily Load (TMDL) represents a regulatory framework designed to establish the maximum permissible levels of pollutants that a body of water can sustain while fulfilling its designated uses, such as recreational and drinking water. Under Section 303(d) of the Clean Water Act, the Environmental Protection Agency (EPA) provides authorization for the TMDL plans proposed by states. Following the enactment of new water quality standards, an accompanying implementation plan can be developed to facilitate the restoration of the impacted water body.

On September 6, 2024, the EPA conducted a joint petition involving the Conservation Law Foundation, the Vermont Natural Resources Council, and the Lake Champlain Committee. The review focused on Vermont's enforcement of Act 64. Despite Vermont's efforts, it was found that specifically the Required Agricultural Practices (RAPs) and National Pollutant Discharge Elimination System (NPDES) permits had not been adequately complied with or implemented by the Agency of Natural Resources (ANR) and the Agency of Agriculture, Food & Markets (AAFM). This included failures to administer permits, require and oversee Nutrient Management Plans (NMPs), address permit and program violations, impose adequate enforcement penalties, collect fines when necessary, and conduct inspections and monitoring of regulated activities. The EPA has determined that, despite having sufficient time to rectify these longstanding program deficiencies, Vermont has failed to do so (Cash, 2024). As a result, Vermont has fallen short of expectations, which has led to insufficient management of agricultural runoff. This situation makes it increasingly crucial to address the issue. Vermont must continue to build strong partnerships with farmers to ensure they are fulfilling their clean water obligations more effectively.

Trust

Trust has been conceptualized through various lenses across multiple disciplines (Blind, 2009), signifying its integral role in social dynamics and relational engagements. In the social sciences, trust is frequently regarded as a pivotal component of human interactions and decision-making processes (Cook, 2001; de Vries et al., 2019; Emborg et al., 2020; Stern & Coleman, 2015). It can be succinctly defined as the positive perceptions that individuals harbor towards one another, facilitating the attainment of mutually desired outcomes within relationships (Wheeless & Grotz, 1977). Fundamental to the notion of trust is the relational bond that exists among entities, which may include individuals, institutions, concepts, processes, or objects (Stern & Coleman, 2015).

In the realm of public governance, the cultivation of trust is recognized as a gradual endeavor, heavily dependent on the accountability and transparency of governmental entities, as well as the perceptions held by the constituents they serve. Empirical evidence suggests that the establishment of trust considerably influences stakeholders' willingness to engage with governmental initiatives. For instance, in rural agricultural contexts in China, heightened trust in government institutions has positively impacted farmers' participation in rural tourism initiatives targeting the agricultural sector (Yu, X., 2022).

Recent academic inquiries have increasingly concentrated on strategies to enhance farmer participation in the adoption of environmentally sustainable practices (Chang et al., 2023; Dumbrell et al., 2016; Zawojska, 2010). A specific study conducted in Poland sought to measure the degree of trust that farmers possess toward state agricultural agencies, assessing the relative efficacy of these programs. Approximately 200 Polish farmers were surveyed using a ten-point

Likert scale to gauge their sentiments. The researchers utilized "Partial Least Squares Path Modelling" to analyze theoretical constructs such as trust, institutional image, performance, and satisfaction (Zawojska, 2010). The findings revealed a statistically significant correlation between the perceived image of agricultural agencies, the expectations of the respondents, their satisfaction with the agencies' operations, and the perceived quality of services rendered.

In Vermont, prior investigations have explored the interplay between trust and farmers' willingness to engage with government and agricultural agencies within the Lake Champlain Water Basin (Longfield, 2023). This research involved qualitative interviews with 18 farmers, offering nuanced insights into the factors influencing farmer enrollment in environmental programs, their perceptions of governmental bodies, and their levels of trust in these agencies. Notably, this study found no significant correlation between levels of trust in government entities and participation in conservation programs. Nevertheless, substantial evidence exists underscoring the necessity of trust and collaborative partnerships between landowners and government agencies for effective natural resource management (Borrie & Liljeblad, 2006; Rasch & McCaffrey, 2019; Siegrist & Cvetkovich, 2000).

Methods

Participants

IRB approval, specifically an Exemption 2 protocol was obtained to ensure the rights of and the welfare of participants (see Appendix B). In this study, we conducted a survey of employees from the UVM Extension program and the Vermont Agency of Agriculture, Food, and Markets (VAAFM) to explore trust-building methods. Participants were required to have direct contact with farms, as we aimed to investigate the relationship between environmental agency employees and farmers. Only those actively working for the UVM Extension program or

VAAFM were eligible to partake in the study. Individuals without farm contact were excluded from the analysis. Approximately, 55.5% identified as female, 36% as male, 2.77% as non-binary, and 5.5% preferred no to state how they described their gender identity. For the breakdown on association with origination it came out to 22 participants from the VAAFM and the other 14 participants from the UVM Extension program. Along with this the distribution of how many years individuals worked at said companies was approximately 17% less than 1 year, 31.3% worked 3-5 years, 25% worked 5-10 years, and 31.3% worked over 10 years. Our sampling did not focus on factors such as age, gender, or years of employment, and we ensured there was no discrimination based on race, gender, or job title. A total of approximately 39 environmental employees were surveyed from our employee database.

Procedure and Measures

The initial steps involved establishing a database of employees sourced from public websites of government agencies and universities. While the VAAFM had pre-existing Excel spreadsheets detailing each employee and their job titles, compiling the employee list for UVM Extension required navigating through various documents to identify the relevant data for the Extension program.

The survey was developed as an original tool, without reliance on any standardized surveys for reference. The first section contained demographic questions regarding the employees. A key question was, “Do you have contact with farmers and assist farmers in your job?” This served as a screening question; if respondents answered “No,” their responses were eliminated from the analysis. The focus of this survey was exclusively on participants who maintain active and current working relationships with farmers, although some may support staff members who assist farmers. The aim was not to explore the indirect support that staff members provide but to gain insights into the direct interactions between farmers and government officials.

Demographic questions included inquiries about participants' organization of employment, gender, years of employment with the organization, and job descriptions. The latter half of the survey concentrated on enquiring about environmental employees' methods of building trust and having forced-choice questions with spaces for participants to expand upon their options. The final question was an open-ended question, directly asking about the implication of having trust established with the farmer and whether it will result in a higher chance of the farmer's willingness to participate in the best management strategy. My analysis of these questions, many of them are quantitative meaning that that a simple descriptive statistic about the distribution of demographics and the proportion of environmental employees making strategies. For the open-ended question aimed at gathering qualitative data, a more in-depth analysis is required. This involves conducting a thematic analysis that will utilize an inductive coding method, allowing us to incorporate codes and discernible patterns as the analysis unfolds. By examining individuals' responses to the final free-response question, it became evident that the majority recognized the significance of establishing trust, with only one participant expressing that it was "not necessarily" important. In addition, a Fischer's exact test will be conducted to determine if there is statistically significant associated difference between UVM extension and the governments agencies trust building methods for this small sample size.

Once the survey was formulated and IRB approval specifically an Exemption 2 protocol had been obtained (see Appendix B), the process of emailing the survey consisted of sending out the survey twice a month from February through April. Something of note was that no information such as participants' names or clear identifiers was included, the intention was to ensure that people could be completely anonymous when taking the survey.

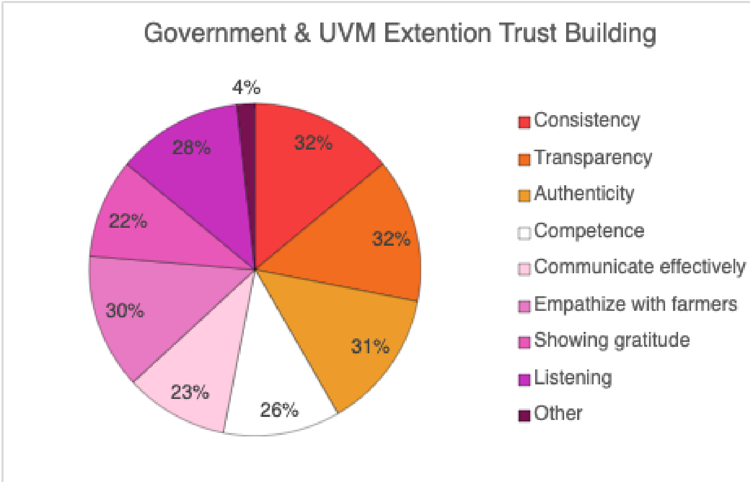
Results

The survey was administered to approximately 153 employees from the VAAFM and 162 employees from the UVM Extension, resulting in a total of only 39 completed responses. This yields a response rate of 12%. However, since three of the participants did not work directly with farmers, the number of relevant responses was reduced to 36, further decreasing the response rate to 11%.

When considering the most effective methods for building trust as identified by both the UVM Extension and VAAFM, the overall proportions are as follows: 32% for Consistency, 32% for Transparency, 31% for Authenticity, 26% for Competence, 23% for Effective Communication, 30% for Empathizing with Farmers, 22% for Showing Gratitude, 28% for Listening, and 4% for Other (Figure 1).

To investigate potential differences in trust-building methods employed by various agencies, Fischer's exact test was employed. The results indicated no statistically significant differences in the trust-building approaches adopted by these agencies (see Appendix C). Additionally, a risk ratio analysis was conducted to explore the likelihood of various trust-building methods (Consistency, Transparency, Authenticity, Competence, Effective Communication, Empathy toward Farmers, Gratitude, Active Listening) being favored across different agencies.

Figure 1. The proportion of both agency's trust building methods



Note. The figure demonstrates the proportion of what both the UVM Extension and VAAFM decided was the most effective way of establishing trust.

Another significant aspect of the study involved a thematic analysis of responses to the final open-ended survey question, which inquired: “Have you noticed that farmers are more willing to collaborate with you and your organization when trust is established?” The findings revealed that approximately 97% of respondents affirmed the importance of establishing trust stating "yes", while only 3% indicated that it was not significant by stating "no".

Upon deeper examination of individual responses, distinct themes emerged. Notably, 9.7% of participants identified competency as a pivotal factor in establishing trust. Their statements included remarks such as “I think demonstrating competency is key,” “Building relationships is a huge part of my job, and being able to be a resource for farmers across various aspects is essential,” and “After natural disasters, prompt and clear information regarding resources and grant availability is crucial.” These comments highlight the perception of competency as integral to providing valuable support and information to farmers.

Furthermore, another key theme that surfaced was the importance of empathy toward farmers, with approximately 6.45% of respondents articulating its critical role in cultivating trust.

Responses included, “I am also a farmer; they know I understand their perspective,” “Farmers are more inclined to engage with and welcome someone to their farm if they have had positive experiences with them in the past,” and “I work with several farms that previously had unsatisfactory interactions with my predecessors or other personnel in my organization, and they expressed feelings of being unheard and disrespected.” This emphasis on understanding and acknowledging farmers' perspectives underscores the necessity of prioritizing their needs in the trust-building process.

Discussion

This analysis of collected data, although derived from a limited sample size, underscores the necessity of caution when generalizing findings to the broader population. This constraint significantly curtails the breadth of inferences that can be drawn from our observations. Nonetheless, the insights gained provide a valuable glimpse into the perspectives of employees within environmental agencies.

The survey responses reveal a predominant consensus regarding the importance of establishing trust with farmers in fostering effective working relationships. Most participants affirmed the critical nature of trust as a foundational element in these interactions, establishing a baseline for understanding the relational dynamics at play. We cannot definitively conclude that from our sample, environmental agencies are always trying to establish trust. However, it is possible that individuals who are already striving to build trust will continue to support and contribute to this cultivation of trust.

Fisher’s exact test indicated no statistically significant differences in the trust-building methods employed by participants (see Appendix C). While the UVM Extension and the Vermont Agency of Agriculture, Food and Markets (VAAFM) may adopt distinct strategies to engage individuals, their approaches to establishing rapport with farmers remain largely aligned in our sample. These findings suggest that both the VAAFM and UVM Extension, despite their differing mandates and responsibilities concerning farmer engagement, utilize foundational trust-building principles. This alignment likely reflects their shared mission to promote water quality and cultivate positive relationships with farming communities, reinforcing the notion that effective collaboration hinges on these universal trust-building methodologies. Notably, the most favored methods of building trust identified as Consistency (32%), Transparency (32%), Authenticity (31%), and Empathy (30%), are core principles in trust development (see Figure 2).

Limitation

A significant limitation identified in this study relates to the constraints of time and the specific skills required for conducting a comprehensive analysis of open-ended questions. Had the researcher possessed a more advanced understanding of coding techniques for thematic analysis, greater insights could likely have been gained from examining the responses of individual participants.

Furthermore, the use of a survey developed by the researcher presents another limitation, as its validity remains in question. This instrument has not been widely utilized across various contexts, raising concerns about its reliability and generalizability. Additionally, the lack of a rigorous validation process complicates the evaluation of the survey's effectiveness. Since it was designed specifically for this research context, there is a notable absence of empirical evidence to support its validity.

The small sample size is another critical limitation that affects the overall validity of the survey findings, as many results cannot be generalized or considered within a broader context.

The low response rate and potential nonresponse bias may significantly impact the sample, leading to reduced statistical power and inaccurate estimations of effect sizes.

Looking ahead, it is recommended to conduct additional surveys with environmental governmental agencies, as well as state and local organizations, to determine whether tangible differences in outcomes exist. Furthermore, adopting a semi-structured interview approach could enable more in-depth discussions and provide nuanced insights, rather than relying solely on predetermined response options, as was the case in this research. Initiating the surveying process earlier could also enhance the overall effectiveness of the study. Exploring the job distribution within Environmental agencies, particularly focusing on how trust is built among individuals in various roles, presents a fascinating area for investigation. Analyzing the dynamics of trust within teams and how it impacts job effectiveness could provide valuable insights. Additionally, examining the qualifications, backgrounds, and interpersonal strategies of those who successfully cultivate trust could reveal important patterns and best practices that enhance collaboration and efficiency in these organizations. Further research in this domain could significantly contribute to our understanding of workforce dynamics in the environmental sector.

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Appendix A: Survey Questions

Directions: Please take a moment to carefully read each question in this survey. Our goal with these questions is to understand the methods you use to build trust with farmers. We appreciate your effort in completing as much of the survey as possible. The estimated time for completion is approximately 10 minutes.

1. Do you have contact with farmers and help farmers in your job?
   A. Yes
   B. No
2.What organization are you associated with?
   A. Government organization
   B. Extension organization
3. How long have you been working at the organization?
   A. Less than 1 year
   B. 3-5 years
   C. 5-10 years
   D. Over 10 years
4. How do you describe yourself?
   A. Female
   B. Male
   C. Non-binary
   D. Transgender
   E. Other: _____________

F. Prefer not to state

5. How would you describe your job? (Select all that apply)

- ❑ Administrative support/Legal
- ❑ Animal and Food Safety
- ❑ Conservationist
- ❑ Educator/community outreach
- ❑ Environmental and Agricultural Health
- ❑ Finance/Grant writing
- ❑ Human resources
- ❑ Inspector
- ❑ Marketing
- ❑ Human resources
- ❑ Researcher/Scientist
- ❑ Technical support
- ❑ Other: ___________________

7. Please select the methods you use to build trust with farmers and explain why you find these methods effective in establishing trust. (Select all that apply)

- ❑ Consistency (e.g. following through on promises, and creating a sense of dependability/reliability)
  Free response:_____________________

- ❑ Transparency (e.g. sharing information openly, providing feedback, and open communication)
  Free response:_____________________

- ❑ Authenticity (e.g. be honest about challenges and problems in a project)
  Free response:_____________________

- ❑ Competence (e.g. demonstrate sufficient knowledge, skills, and experience within the field)
  Free response:_____________________

- ❑ Communicate effectively and often with farmers
  Free response:_____________________

- ❑ Empathize with farmers' struggles
  Free response:_____________________

- ❑ Showing gratitude towards farmers' efforts and hard work

Free response:____________________

- ❑ Listening and consistently hearing out Farmers
  Free response:____________________

- ❑ Other: __________
  Free response:____________________

8. Have you noticed that farmers are more willing to collaborate with you and your organization when there is trust established?

Free response: ____

Appendix B: IRB Approval

University of Vermont

Committees on Human Subjects
Serving the University of Vermont
and the UVM Health Network

RESEARCH PROTECTIONS OFFICE
213 Waterman Building
85 South Prospect St.
Burlington, Vermont 05405
Email – irb@uvm.edu
Human Subjects Research

Exemption Certification - Initial

To:	Anoushka Carass
From:	Coralee Tye, IRB Regulatory Analyst
Approved Date:	January 15, 2025
Study#:	CHRBSS (Behavioral): STUDY00003474
Study Title:	The Dynamic Relationship of Building Trust between Farmers and Environmental Agencies
Sponsor:	Psychological Science
Finalized Documents:	Carass_SurveyQuestions_IRB 3 (1).pdf ; Consent Information Sheet_Carass.pdf ; E-Mail Recruitment_Carass (1) (1) (1).pdf ; Exempt 2_Carass.pdf ;

The study referenced above was reviewed by the Chair of the IRB (or an authorized designee) using the exempt procedures set forth under 45 CFR 46.104. While the project is exempt from IRB review, it is required that researchers follow all human subject protection regulations and notify the IRB of any problems that arise during the conduct of the project.

<u>Exemption Category: (2)(i) Tests, surveys, interviews, or observation (non-identifiable)</u>
(2) Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met: (i) The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects

Consent/HIPAA/Waiver Determinations:
•Waiver of Documentation of Consent under 46.117(c)(1)

This determination applies only to the activities described in this IRB submission and will no longer apply should any changes be made. If changes are necessary, please submit a modification for consideration of a continued exemption.

Exempt protocols will be closed after 3 years if there has been no modification of the study record in that time. You will receive annual notices to update the IRB on the status of your exempt research. If a protocol is closed by the IRB and you indicate it is still active, a new protocol will need to be submitted to allow the IRB to ensure the research is still exempt from the regulations.

Appendix C: Chi-Squared Test

Please select the methods you use to build trust with farmers and explain why you find these methods effective in establishing trust. (Select all that apply) - Selected Choice Consistency (e.g. following through on promises, and creating a sense of dependability/reliability) * What organization are you associated with?

Crosstab

Count

		What organization are you associated with?		
		Government organization	Extension organization	Total
Please select the methods you use to build trust with farmers and explain why you find these methods effective in establishing trust. (Select all that apply) - Selected Choice Consistency (e.g. following through on promises, and creating a sense of dependability/reliability)	Consistency (e.g. following through on promises, and creating a sense of dependability /reliability)	18	12	30
	2	4	2	6
Total		22	14	36

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.094[a]	1	.760		
Continuity Correction[b]	.000	1	1.000		
Likelihood Ratio	.095	1	.758		
Fisher's Exact Test				1.000	.569
Linear-by-Linear Association	.091	1	.763		
N of Valid Cases	36				

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 2.33.

b. Computed only for a 2x2 table

Please select the methods you use to build trust with farmers and explain why you find these methods effective in establishing trust. (Select all that apply) - Selected Choice Transparency (e.g. sharing information openly, providing feedback, and open communication) * What organization are you associated with?

Crosstab

Count

		What organization are you associated with?		
		Government organization	Extension organization	Total
Please select the methods you use to build trust with farmers and	Transparency (e.g. sharing	20	12	32

explain why you find these methods effective in establishing trust. (Select all that apply) - Selected Choice Transparency (e.g. sharing information openly, providing feedback, and open communication)	information openly, providing feedback, and open communication)			
	2	2	2	4
Total		22	14	36

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.234[a]	1	.629		
Continuity Correction[b]	.000	1	1.000		
Likelihood Ratio	.229	1	.633		
Fisher's Exact Test				.634	.510
Linear-by-Linear Association	.227	1	.634		
N of Valid Cases	36				

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 1.56.

b. Computed only for a 2x2 table

Please select the methods you use to build trust with farmers and explain why you find these methods effective in establishing trust. (Select all that apply) - Selected Choice Authenticity (e.g. be honest about challenges and problems in a project) * What organization are you associated with?

Crosstab

Count

		What organization are you associated with? Government organization	Extension organization	Total
Please select the methods you use to build trust with farmers and explain why you find these methods effective in establishing trust. (Select all that apply) - Selected Choice Authenticity (e.g. be honest about challenges and problems in a project)	Authenticity (e.g. be honest about challenges and problems in a project)	18	13	31
	2	4	1	5
Total		22	14	36

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.872[a]	1	.350		

Continuity Correction[b]	.193	1	.660		
Likelihood Ratio	.945	1	.331		
Fisher's Exact Test				.628	.342
Linear-by-Linear Association	.848	1	.357		
N of Valid Cases	36				

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 1.94.

b. Computed only for a 2x2 table

Please select the methods you use to build trust with farmers and explain why you find these methods effective in establishing trust. (Select all that apply) - Selected Choice Competence (e.g. demonstrate sufficient knowledge, skills, and experience within the field) * What organization are you associated with?

Crosstab

Count

		What organization are you associated with?		
		Government organization	Extension organization	Total
Please select the methods you use to build trust with farmers and explain why you find these methods effective in establishing trust. (Select all that apply) - Selected Choice Competence (e.g. demonstrate sufficient knowledge, skills, and experience within the field)	Competence (e.g. demonstrate sufficient knowledge, skills, and experience within the field)	16	10	26
	2	6	4	10
Total		22	14	36

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.007[a]	1	.932		
Continuity Correction[b]	.000	1	1.000		
Likelihood Ratio	.007	1	.932		
Fisher's Exact Test				1.000	.611
Linear-by-Linear Association	.007	1	.933		
N of Valid Cases	36				

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 3.89.

b. Computed only for a 2x2 table

Please select the methods you use to build trust with farmers and explain why you find these methods effective in establishing trust. (Select all that apply) - Selected Choice Communicate effectively and often with farmers * What organization are you associated with?

Crosstab

Count

		What organization are you associated with?		
		Government organization	Extension organization	Total
Please select the methods you use to build trust with farmers and explain why you find these methods effective in establishing trust. (Select all that apply) - Selected Choice Communicate effectively and often with farmers	Communicate effectively and often with farmers	14	9	23
	2	8	5	13
Total		22	14	36

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.002[a]	1	.968		
Continuity Correction[b]	.000	1	1.000		
Likelihood Ratio	.002	1	.968		
Fisher's Exact Test				1.000	.626
Linear-by-Linear Association	.002	1	.969		
N of Valid Cases	36				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.06.

b. Computed only for a 2x2 table

Please select the methods you use to build trust with farmers and explain why you find these methods effective in establishing trust. (Select all that apply) - Selected Choice Empathize with farmers' struggles * What organization are you associated with?

Crosstab

Count

		What organization are you associated with?		
		Government organization	Extension organization	Total
Please select the methods you use to build trust with farmers and explain why you find these methods effective in establishing trust. (Select all that apply) - Selected Choice Empathize with farmers' struggles	Empathize with farmers' struggles	17	13	30
	2	5	1	6
Total		22	14	36

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.496[a]	1	.221		
Continuity Correction[b]	.584	1	.445		

Likelihood Ratio	1.653	1	.199		
Fisher's Exact Test				.370	.228
Linear-by-Linear Association	1.455	1	.228		
N of Valid Cases	36				

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 2.33.

b. Computed only for a 2x2 table

Please select the methods you use to build trust with farmers and explain why you find these methods effective in establishing trust. (Select all that apply) - Selected Choice Showing gratitude towards farmers' efforts and hard work * What organization are you associated with?

Crosstab

Count

		What organization are you associated with?		
		Government organization	Extension organization	Total
Please select the methods you use to build trust with farmers and explain why you find these methods effective in establishing trust. (Select all that apply) - Selected Choice Showing gratitude towards farmers' efforts and hard work	Showing gratitude towards farmers' efforts and hard work	11	8	19
	2	11	6	17
Total		22	14	36

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.175[a]	1	.676		
Continuity Correction[b]	.006	1	.939		
Likelihood Ratio	.176	1	.675		
Fisher's Exact Test				.742	.470
Linear-by-Linear Association	.170	1	.680		
N of Valid Cases	36				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.61.

b. Computed only for a 2x2 table

Please select the methods you use to build trust with farmers and explain why you find these methods effective in establishing trust. (Select all that apply) - Selected Choice Listening and consistently hearing out Farmers * What organization are you associated with?

Crosstab

Count

	What organization are you associated with?	Total

		Government organization	Extension organization	
Please select the methods you use to build trust with farmers and explain why you find these methods effective in establishing trust. (Select all that apply) - Selected Choice Listening and consistently hearing out Farmers	Listening and consistently hearing out Farmers	18	12	30
	2	4	2	6
Total		22	14	36

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.094[a]	1	.760		
Continuity Correction[b]	.000	1	1.000		
Likelihood Ratio	.095	1	.758		
Fisher's Exact Test				1.000	.569
Linear-by-Linear Association	.091	1	.763		
N of Valid Cases	36				

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 2.33.

b. Computed only for a 2x2 table

Please select the methods you use to build trust with farmers and explain why you find these methods effective in establishing trust. (Select all that apply) - Selected Choice Other * What organization are you associated with?

Crosstab

Count

		What organization are you associated with? Government organization	Extension organization	Total
Please select the methods you use to build trust with farmers and explain why you find these methods effective in establishing trust. (Select all that apply) - Selected Choice Other	Other	2	2	4
	2	20	12	32
Total		22	14	36

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.234[a]	1	.629		
Continuity Correction[b]	.000	1	1.000		
Likelihood Ratio	.229	1	.633		
Fisher's Exact Test				.634	.510

Linear-by-Linear Association	.227	1	.634		
N of Valid Cases	36				

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 1.56.

b. Computed only for a 2x2 table