Research

The Relationship Between Familiarity with the Texas Alliance for Water Conservation and Use of Water Conservation Behaviors

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Introduction

Spanning beneath eight states, the Ogallala aquifer is one of the world's largest underground sources of freshwater. The Texas High Plains region sustains agricultural production by using the Ogallala as a source of irrigation water. Since it was established in 2005, the Texas Alliance for Water Conservation (TAWC) project has worked to extend the life of the Ogallala aquifer through research and education efforts (TAWC, n.d.). The TAWC is a partnership of agriculture producers, industries, universities, and government agencies with the mission to "conserve water for future generations by collaborating to identify those agricultural production practices and technologies that, when integrated across farms and landscapes, will reduce the depletion of groundwater while maintaining or improving agricultural production and economic opportunities" (TAWC, 2015, para. 1). Evidence exists that producer-members of the project have successfully integrated water conservation practices on their demonstration sites to use their water more efficiently and effectively. However, more research is needed to determine the current use of water conservation practices among agricultural producers outside of the project in the Texas High Plains. Findings from this study could be beneficial to other water conservation organizations across the entire Ogallala Aquifer, as well as other areas of the nation who are seeking ways to encourage producers to implement more efficient practices.

Theoretical Framework

The theoretical framework for this study was based on Rogers (2003) diffusion of innovations theory. According to Rogers (2003), "diffusion is the process in which an innovation is communicated through certain channels over time among the members of a social system" (p. 5). Innovations are ideas, practices, or objects that are seen as new by an individual. To encourage broader adoption of an innovation, change agents and others must work fervently and often over a long period of time (Rogers, 2003).

Purpose and Research Questions

The purpose of this study was to explore what impact the TAWC has on Texas High Plains agricultural producers' adoption of water conservation practices. The primary research question was: What is the relationship between the respondents' familiarity with TAWC and use of water conservation practices?

Methods

This study used descriptive survey research methodology with a questionnaire mailed to 1,000 agricultural producers in the 39-county area of the Texas High Plains who were not TAWC producer-members. Respondents indicated their familiarity with TAWC outreach efforts and current use of water conservation behaviors. Respondents were given several specific practices within each of these behavior categories and asked to indicate "yes" or "no" in regard to current use. Producers' familiarity with the TAWC project was measured using a 5-point Likert-type scale were 1= *Not at all familiar* and 5= *Extremely familiar*. Data were then recoded to create two groups with *Not at all familiar* and *Slightly familiar* in one group and those who were *Somewhat*, *Moderately*, and *Extremely familiar* in another. Additional data were collected, but are not reported in this manuscript. Data analysis was conducted using SPSS® version 22 for

Windows™. A total of 183 responses were collected, but only 108 were complete enough for subsequent analysis.

Findings

Sixty-two respondents were classified as "not as familiar" with TAWC and 46 were classified as "more familiar" with TAWC. Of those classified in the "not as familiar" group, 31 were not at all familiar with TAWC. A cross tabulation analysis demonstrated the relationship between respondents' level of familiarity with TAWC and use of techniques to irrigate crops (Table 1), monitor soil moisture (Table 2), and evaluate crop water demands (Table 3).

Table 1.
Use of Irrigation Techniques by Level of Familiarity with TAWC

	Number of Techniques		
Level of Familiarity	None	1	2 or more
Low	11	13	22
High	5	11	18

Table 2.
Use of Techniques to Monitor Soil Moisture by Level of Familiarity with TAWC

	Number of Techniques		
Level of Familiarity	None	1	2 or more
Low	9	31	10
High	3	16	16

Table 3.
Use of Techniques to Evaluate Crop Water Demands by Level of Familiarity with TAWC

	Number of Techniques		
Level of Familiarity	None	1	2 or more
Low	28	10	12
High	7	6	23

Conclusions/Implications/Recommendations

As change agents, members of the TAWC are working to encourage broader adoption of water conservation techniques. Based on a visual inspection of the data, it appears the TAWC may have a stronger influence on producers' adoption of soil moisture monitoring and crop water demand evaluation techniques than producers' use of advanced irrigation application technologies. This needs to be further examined in future research because the TAWC seeks to encourage the responsible use of all three of the water conservation behaviors instead of just one or two of the behaviors. For practitioners, this study provides support for continued outreach and communication efforts to encourage adoption of water conservation behaviors.

References

Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). New York: Simon & Schuster.

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