Communicating Water-related Information to Landowners: Identifying Preferred Communication Channels, Perceived Source Trustworthiness, and Preferred Types of Information

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Introduction/Need for research

Pollution is impacting water quality in the Little River watershed. More specifically, the Little River tributary is failing to meet recreational use standards (TECQ, 2014a). Failure to meet standards is partially due to bacteria pollution that can be traced to agricultural practices—the leading nonpoint sources of pollution in the nation's waterways (CDC, 2010). However, such pollution can be reduced when landowners adopt best management practices (BMPs) associated with watershed-based plans (WBPs). One way to increase adoption of BMPs is to disseminate information through landowners' preferred communication channels and information sources.

Rosenberg and Margerum (2008) noted newsletters were a preferred method of communication because they are a "quick, convenient, and non-invasive method of getting information" (p. 488). Yet, some agri-marketing individuals and organizations successfully used social media to educate the agricultural community and communicate about current agricultural issues (White, Meyers, Doerfert, & Irlbeck, 2014). In addition to preferred communication channels, Midwest landowners preferred to receive information from local university extension agents, soil and water conservation districts, and natural resources conservation services because of their perceived level of trustworthiness (Mase, Babin, Prokopy, & Genskow, 2015).

The information diffusion theory guided this study as it focused on shortening, sharpening, and assimilating messages for specific audiences (Quarles, Jeffres, Sanchez-Ilundain, Neuwirth, 1983). Messages should include the positive effects (e.g., economic gain, visual pleasing, property and environmental improvements) of implementing BMPs (Guo, 2014) and not include specific environmental dimensions (e.g., current water quality levels; Jackson-Smith & McEvoy, 2011) or negative impacts of agricultural practices on water quality (Baumgart-Getz, Prokopy, Floress, 2012). Noted in research priority one of the AAAE National Research Agenda, "understanding of agriculture must take into account a person's contextual differences" (Roberts, Harder, & Brashears, 2016, p. 15), which was applied in this study through three research objectives: 1) describe landowners' preferred communication channels, 2) perceived source trustworthiness, and 3) preferred types of information.

Method

This quantitative study was part of a larger research project focused on the Little River watershed in Texas and was conducted using survey methodology. We identified a population of 7,592 landowners using Geographic Information Systems (GIS) coordinates to target landowners specifically in the Little River watershed. Using an online sample calculator with a 95% confidence level and a 1.96 confidence interval, we obtained a simple random sample of 1,881 (Bryman, 2015). We mailed questionnaires using Dillman's Tailored Design method (Dillman, Smyth, & Christian, 2014), and participants had the option to return the questionnaire via mail or to complete the questionnaire online. The instrument included 24 questions. The five-point Likert-type *preference scale* included ≤ 1.50 = least preferred; 1.51–2.49 = slightly not preferred; 2.50–3.49 = no preference; 3.50–4.49 = slightly preferred; 4.50 ≤ = most preferred. The four-point Likert-type *trustworthy scale* included ≤ 1.50 = not trustworthy; 1.51–2.49 = somewhat trustworthy; 2.50–3.49 = trustworthy; 3.50 ≤ = very trustworthy. We delivered 1,880 questionnaires and achieved a 25% (n = 462) response rate, resulting in 275 usable responses. We analyzed the data using SPSS 23 and ran descriptive statistics and t-tests on categorical data. We found the instrument reliable with a post-hoc Cronbach's alpha of .95 (Field, 2013), and we

established instrument validity using content experts who specialize in water resources and have extensive experience in developing WBPs (Bryman, 2012). No significant differences existed between early and late respondents (Lindner, Murphy, & Briers, 2001).

Results

Landowners most frequently receive water-related information through direct mailings (f = 109, 48.0%) and less frequently through social media (f = 201, 90.1%). Although there were no significant differences between direct mailings and other preferred communication channels ($t(221) = .431$, $p = .682$), participants reported a higher preference for direct mailings ($M = 3.99$; $SD = 1.16$). Additionally, there were no significant differences among participants' reported ages and their communication channel preferences ($F(3,214) = 1.172$, $p = .321$, 1- $\beta = .313$) and no significant differences between male and female participants and their communication channel preferences ($t(91.82) = -.391$, $p = .697$). However, landowners who currently receive information through direct mailings, email, books, newspapers, social media, magazines, television, radio, and websites preferred to receive information through those communication channels more than those who do not currently receive information through the same communication channel. The differences were statistically significant and represented a medium to large effect size.

Furthermore, landowners perceived Texas A&M AgriLife Extension as a trustworthy source of information ($M = 3.16$; $SD = .82$). Although no statistical differences were found among age groups related to perceived source trustworthiness ($F(3,229) = .679$, $p = .130$, 1- $\beta = .488$), participants aged 54 and younger and participants from all other ethnicities found Texas A&M AgriLife Extension to be more trustworthy than participants from other age groups and Caucasian participants. Additionally, landowners who have received information from Texas A&M AgriLife Extension, industry groups, government agencies, friends and neighbors, and environmental groups perceived the source to be more trustworthy than those who do not receive information from the same source. The differences were statistically significant and represented a medium to large effect size. Last, participants reported an interest in receiving all types of water-related information (e.g., water quality levels, specific conservation practices).

Conclusions/Implications/Recommendations

Participants wanted water-related information delivered through direct mailings, which was similar to Rosenberg and Margerum (2008) and Howell and Habron (2004). In addition, they reported Texas A&M AgriLife Extension as a trustworthy source (Rosenberg & Margerum, 2008; Mase et al., 2015). We recommend that Texas A&M AgriLife Extension, an identified trustworthy source build communication strategies that included shortened, sharpened, and assimilated messages and are tailored to fit landowners interest in receiving all types of water-related information (Quarles et al., 1983). Communication preferences do not need to be specific to gender, age, or ethnicity but should be targeted to the overall population demographics. Although landowners' reported a lack of preference for social media, agricultural organizations use social media to inform agricultural audiences (White et al., 2014), thus additional research regarding social media to deliver water-related information should be conducted. It is imperative that landowners have access to educational materials in an effort to reduce pollutants that enter the waterways and, ultimately, to improve water quality in the watershed.

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