Determining the Information Sources Wheat Producers Perceive as Scientists

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Introduction

Wheat producers are encouraged to adopt soil conservation practices to address increasing production demands and climate change (Feldman & Ingram, 2009; Korsching & Hoban, 1990; Vocke & Ali, 2013). Although there are several reasons for adopting conservation practices, many producers have not (Orem et al., 2023). Communication barriers between producers and scientists have been identified as a reason for low adoption (Feldman & Ingram, 2009). Because of the vast amount of conflicting information from multiple sources, studies show that producers rely on sources with whom they have developed trust, credibility, and a relationship (Moody, 2018; Orem et. al., 2023; Phiri et. al., 2019; Ranjan et. al., 2019). Agricultural populations indicate higher levels of trust in other producers/peers and local experts with little trust in government sources (Moody, 2018; Phiri et al., 2019; Ranjan et al., 2019). A greater understanding of wheat producers' perception of scientists and other technical experts could help develop more effective educational materials and communication strategies that increase soil conservation practices adoption.

Theoretical Framework

We used Hunt and Wald's (2020) framework to measure source credibility to identify the information sources that wheat producers perceive as scientists when seeking information about tillage and cover crop practices. Hunt and Wald (2020) define source credibility as a multi-dimensional model with four constructs: understanding, integrity, concern, and trust. Scientific goodwill plays a separate but related role in the influence of concern about scientific evidence, perceptions of scientists as experts, and beliefs about science. Goodwill is the degree to which an individual or group is perceived as having bias or alternative motives in their work.

Method

Our study employed a cross-sectional online survey, which was self-administered to minimize researcher bias (Frankel et al., 2019). The survey was distributed via e-newsletters or email lists by 10 wheat and grain associations using a modified version of Dillman's method (2014), garnering 46 usable responses. Questions about soil health, farmer identity, source credibility and goodwill were derived from previously developed survey questions (Coberley et al. 2020; Hunt & Wald, 2020) and a consultation with experts during the development of the instrument to ensure scale validity (DeVellis, 2003). Section four included a question asking participants to identify the sources they viewed as "scientists" and sources they would use to seek information about conservation practices. Participants could select more than one option from a list containing researchers, extension professionals, government agencies, industry professionals, local experts, other producers, or personal experience. Additionally, participants could select "other" and complete the open response prompt to indicate which sources they viewed as scientists. To analyze data, we ran frequencies and percentages for each information source based on the conservation practice (i.e., cover crops and no-till). Similar methods appear elsewhere because the current study was part of a larger NRCS-funded study.

Results

Most participants identified extension specialists ($f = 36$; 78.26%) and researchers ($f = 33$; 71.74%) as scientists they contact when considering tillage practices. Participants also chose other producers ($f = 28$; 60.87%) and industry professionals ($f = 27$; 58.70%) as scientists and

indicated they would rely on personal experience (*f* = 29; 63.04%) when making tillage decisions. In the context of cover crops, extension specialists (*f* = 34; 73.91%) and researchers (*f* = 33; 71.74%) were also identified by participants as scientists. Along with these, participants also identified other producers (*f* = 26; 56.52%), local experts/opinion leaders (*f* = 21; 45.65%), and personal experience (*f* = 20; 43.48%) as scientists.

Table 1

Information Sources Perceived as Scientist By Participants in the Context of Tillage Practices and Cover Crop Practices (N = 46)

Soil Conservation Practice and Information Source	*f*	%
Reduced to No-Till Practices		
Extension Professionals	36	78.26
Researchers	33	71.74
Personal Experience	29	63.04
Other Producers	28	60.87
Industry Professionals	27	58.70
Local Experts/Opinion Leaders	21	45.65
Government Agencies	6	13.04
Cover Crop Practices		
Extension Professionals	34	73.91
Researchers	33	71.74
Other Producers	26	56.52
Local Experts/Opinion Leaders	21	45.65
Personal Experience	20	43.48
Industry Professionals	17	36.96
Government Agencies	5	10.87

Note. Participants could select multiple answers, allowing for higher frequency of answers.

Conclusions

Some producers do not perceive industry professionals as scientists, suggesting that industry professionals may need to find new ways to foster relationships with producers and increase their credibility and goodwill in the context of soil conservation practices. Participants rarely perceived government agencies as scientists, despite the critical role agencies have in providing information and assistance about agricultural practices. Thus, in the context of tillage and cover crop practices, government agencies may also need to find ways to build credibility and particularly, their potential trustworthiness, integrity, and concern for producers' best interest.

Implications and Recommendations

The disconnect between producers and government agencies has important implications as the federal government continues to fund programs to encourage soil conservation practices in agricultural lands. The current study further demonstrates the need for more effective methods to establish trust with land managers and identify more effective strategies for two-way communication with producers to understand their needs and interests in adopting conservation practices. Furthermore, future research should continue to investigate how producers perceive information sources to have credibility and goodwill.

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