

Perceptions of Trust: Communicating Climate Change to Cattle Producers

Science communication researchers are increasingly calling into question the impact knowledge alone has on individuals' attitudes towards science (National Academies of Sciences, Engineering, and Medicine, 2016). The 2016 NASEM report noted that it would seem that "the more knowledge one has about science and the way it works, the more positive one's attitudes toward science will be and the more consistent one's decisions with scientific evidence" (NASEM, 2016, pp. 30-31). However, researchers acknowledge and have demonstrated that individuals develop attitudes about science in such contexts as personal values, trust, cues from mass media, and individual cognitive frames (Brossard et al., 2005; Druckman & Bolsen, 2011; Ho et al., 2008).

Due to its complexity, its global nature, and uncertainties brought up in academic and public communications (Moser & Dilling, 2004), climate change is a scientific topic that some members of the general public have received knowledge about from both scientific and mass media sources but have difficulty accepting. Zehr (2000) noted that U.S. media coverage of climate change tends to portray it as controversial, uncertain, and political. The mass media also tend to amplify scientific disagreement (Dixon, et al., 2015). Despite news media coverage of climate change and high awareness on the part of the general public (Lee et al., 2015), climate change is a low priority for most individuals (Upham et al., 2009). Arbuckle et al. (2013) found that climate change is also a low priority for agricultural producers, who have varying beliefs about the existence and causes of climate change.

The United States Department of Agriculture's National Institute of Food and Agriculture (USDA NIFA) awarded a multi-regional grant in 2011, titled the Animal Agriculture and Climate Change project, aimed at building capacity among Extension agents and agricultural technical service providers throughout the U.S. who work with livestock and poultry producers. The multi-institutional Animal Agriculture and Climate Change project formed working groups to identify key climate issues within their respective region and coordinated educational outreach that targeted extension needs and stakeholder interests. The overall goal of the project was for Extension, working with partner organizations, to effectively inform and influence livestock and poultry producers and consumers of animal products in all regions of the U.S. to move animal production toward practices that are environmentally sound, climatically compatible, and economically viable.

The Cattle and Climate Conversations Workshop for Cooperative Extension and Natural Resources Conservation Service, the last activity funded through the overall Animal Agriculture and Climate Change, took place in October 2016 in Denver, Colorado, for Extension and Natural Resources Conservation Service (NRCS) representatives in the Southwest and Mountain West who work extensively with cattle producers. The workshop's purpose was to provide information on climate change to be better equipped attendees to converse with cattle producers in the region about the topic. At the end of the day, focus groups of all attendees were held to assess their interest in communicating and educating cattle producers in the region about climate change. The purpose of this study was to identify how Extension agents and NRCS personnel viewed the issue of "trust," as it relates to communicating the topic of climate change to cattle producers in the Southwest and Mountain West regions.

Literature Review

Source credibility is a critical consideration in communication. Credibility is dynamic and is developed within the context of a two-way interaction between a communication source and a receiver (Perloff, 2017). The core characteristics of credibility are expertise, trustworthiness, and goodwill (Perloff, 2017). Scientists, as a profession, are seen to be trustworthy information sources (American Academy of Arts & Sciences, 2018). However, the public has not reached consensus about the science of climate change, due to a skeptical attitude about the topic influenced by messages from scientists and the media that may be contradictory (Gray, 2009; Whitmarsh, 2005; Whitmarsh, 2011). In addition, much of the public's information about climate change comes from the news media, and news media coverage of climate change tends to emphasize conflicts between scientists and politicians (Brossard, Shanahan, & McComas, 2009).

The ideological approach to attitudes posits that the structure of attitudes is top-down (Perloff, 2017). At the top of the hierarchy are big-picture attitudes or ideologies (like conservative vs. liberal). Attitudes toward specific policies or programs stem from these larger ideologies. As such, individuals may feel cognitive dissonance about supporting a policy or program if they feel it is divergent from their overall political ideology. Climate change has historically been a politically divisive issue (Nisbet, 2010; Dunlap & McCright, 2008).

Research indicates that personal experience with local weather can shape individuals' perceptions of global warming or climate change (Egan & Mullin, 2012). Those who have experienced long periods of unusually hot or cold weather are more likely to reassess their beliefs about the existence of climate change; however, the effect decays quickly and is unlikely to have a permanent attitude change (Egan & Mullin, 2012).

Research indicates that while people are aware of climate change, they do not know what they as individuals can do to mitigate its effects or even if humans are the primary contributors to climate change (Leiserowitz et al., 2013). Taylor et al. (2017) found that even when individuals do acknowledge humans' contribution to climate change that does not necessarily result in taking personal action to reduce the effects of climate change. Arbuckle et al. (2013) studied Iowa farmers, focusing on their support for actions taken related to climate change adaptation and mitigation. They found that while 68 percent of farmers surveyed believed that climate change was occurring, only 10 percent attributed the change mostly to human activities. In their study, 35 percent believed climate change to be caused equally by human activities and natural variation, and 23 percent pointed primarily to natural causes of climate change (Arbuckle et al., 2013). While beliefs are varied, the researchers did not find a significant association between beliefs and farmer attitudes toward adaptive action. Farmers were less inclined to support the mitigation of climate change that involved government regulation (Arbuckle et al., 2013). Sherren and Verstraten (2012) conducted a study of maritime farmers in Nova Scotia to understand their perspectives on climate change and wetlands. In their sample of livestock farmers, farmers did not indicate whether they considered there to be significant climate changes in their area. They did, however, discuss adaptive practices related to water quality and quantity, soil erosion protection, and wetlands conservation.

Scientists have posited if farmers do not believe that climate change is happening and that it does not pose a threat to their livelihoods, they are not likely to make changes in their agricultural practices (Howden et al., 2007). In a study of agricultural producers in the Central Great Plains, respondents questioned climate change's scientific validity on many fronts, including historical variability of weather data (Campbell Hibbs, et al., 2014). These researchers noted that producers

were concerned about climate change, but they made a distinction between climate variability and anthropogenic (originating from human activity) climate change. Arbuckle et al. (2014) found that Iowa farmers viewed the topic of climate change less confidently and doubted the existence of anthropogenic climate change. Campbell Hibbs et al. (2014) noted that Extension educators are well suited to engage agricultural producers about climate change. Rohling et al. (2016) emphasized the importance of localizing messages about climate change for farmers, helping them see the impact of climate change with local and geographically relevant data.

Methodology

Three one-hour focus groups, comprised of 29 attendees of the Cattle and Climate Conversations Workshop, were conducted simultaneously at the end of the first day of the conference. Focus groups are a group interview, allowing researchers to explore a variety of opinions about an issue quickly (Lindlof & Taylor, 2011). In bringing together a group of people for a guided discussion, researchers are able to hear how individuals express their ideas to each other and how people “compare, contrast and critique each other’s perspectives on a topic” (Lindlof & Taylor, 2011, p. 184). Participants were divided into the three groups randomly, by color dots that had been affixed to their nametags prior to the start of the workshop. Attendees were employees of Extension Services or the NRCS in states in the Southwest and the Mountain West. Their jobs included serving as research scientists, rangeland managers, soil scientists, air quality engineers, plant materials center manager, and other federal government positions. The largest number of participants, by state, was from Texas, followed by Oklahoma and New Mexico.

The 17 questions in the moderator’s guide focused on four major areas: workshop benefits and existing needs, climate beliefs and perceptions, climate conversations and frame tactics, and climate science and science communication. Each focus group was moderated by a member of the University of Florida’s Institute of Food and Agricultural Sciences’ Center for Public Issues Education in Agriculture and Natural Resources (PIE Center). Focus groups were audio recorded and transcribed to ensure the accuracy of the data. Transcripts were analyzed by using inductive data analysis – which condenses data into summary findings and helps establish clear links between research objectives and summary findings – to allow themes to emerge (Creswell, 2007; Thomas, 2006). Each moderator identified major themes in his or her focus group, and then compared the themes to the remaining focus groups, in order to identify the overarching themes from all three focus groups (Kitzinger, 1995). Three moderators who conducted the focus groups were also authors of this article. To maintain confidentiality, transcripts were coded and attributed to participants by focus group numbers (example: “G1, 4” meant “Focus Group 1, Participant 4”). These codes are also how participants are identified in the Findings section. Focus Group 1 was comprised of nine participants, Focus Group 2 was comprised of 12 participants, and Focus Group 3 was comprised of eight participants.

Findings

“Trust” was the thread that wove together the themes that emerged about the beliefs Extension agents and NRCS personnel have related to the topic of climate change and trust’s impact on the acceptance of climate change. Some themes indicated distrust, such as the politically charged nature of climate change and people’s distrust of weather forecasting. However, in one theme, the concept of trust was seen as a unifier, as participants described the trust they have built with cattle

producers and the need to help them. Specific topics about trust included the politically charged nature of climate change, climate change data manipulation, the negativity of media surrounding climate change, weathercasters getting predictions wrong, agriculture getting a “black eye” with the public, and participants’ relationships with cattle producers.

Politically Charged Nature of Climate Change

One agent summarized several participants’ views about climate change, namely that climate change has a political side, resulting in agents’ reluctance to communicate about climate change to cattle producers:

Climate change is so politically charged. It’s not something that I think any of us are comfortable jumping into and discussing. (G1, 4)

Extension agents and NRCS personnel also felt the cattle producers they worked with did not trust federal agencies to govern climate change mitigation practices on their ranches. Extension agents and NRCS personnel said the politically charged nature of climate change may impact their educational programming and the ability to maintain trust with cattle producers if the agents and NRCS employees stressed “climate change” too much.

It’s a politically charged topic. From an education standpoint, you start getting the hand in the face that says you start mentioning any politically charged topic. All of us, from the programming standpoint, program toward managing, teaching producers how to deal with weather streams, changes in drought, changes in too much, too little moisture, how to manage your cow herd to be best management practices, so on and so forth. That’s what we do as educators. That’s what our producers are asking for. (G1, 4)

Manipulating Climate Change Data

Participants noted that they did not always trust the data they could use to educate cattle producers because weather data is relatively young, compared to the “life cycle of the Earth” (G1, 3).

Weather’s constantly going to be changing. From the life cycle of the Earth, we’ve only been measuring weather for about 125, 150 years. Do we really have a good pool of data of what the Earth’s actually doing and where we’re at and that type of deal? (G1, 3)

Others noted that they need to ensure the accuracy of data that could be viewed by cattle producers as having been manipulated or interpreted incorrectly or with bias.

I think that there is a lack of trust in the models behind all of it (climate change). There’s a lack of trust in the underlying data. Then you also have the lack of understanding of not so much the statistics, but the models and how the models take the data and utilize it. (G1, 5)

We talked about the historical trends of climate variation and how those trends can be manipulated by simply changing a scale, so it all really depends on the interpretation of the data as to what you want to present, how you want to convince someone on climate variability. (G3, 2)

But focus group participants also stressed that trustworthy climate change data is needed by their client groups for them to have successful cattle operations.

We need data. We're telling people we need to reduce this. We need to have a starting point to know is it going to be done through genetics or through nutrition or through mitigation. What's going to be the plan of action we're going to have to take? (G1, 4)

Negativity of Media Surrounding Climate Change

A large majority of participants said the news media's coverage of climate change was a major factor in how negatively cattle producers view climate change.

I think there's a humongous gap in trust, whether that be lack of trust of the concept as a whole. In the way it's been reported, I think they're (news reporters), overall, fairly negative. (G1, 5)

Several participants said the news media's over-reporting of climate change and the negative tone in their news reports about climate change impacts has caused people to reach a "weariness" threshold.

People have climate change weariness. They're sick of hearing about it because they think they're being berated for it. You hear just the negative parts in the media, rather than the opportunities that may arise from a changing climate. We can go grow grapes in a lot of places we never dreamed of now. That's an opportunity. People don't talk about that. They just talk about starving children and that the water's going to be undrinkable and stuff like that. (G1, 8)

Just the way the media over-hypes everything. They (cattle producers) just have a hard time stomaching anything that comes out of CNN or NBC or wherever they're getting their local news from. (G1, 1)

News media and social media reports also have roles in reinforcing or changing people's perceptions that climate change is happening, participants said, at the agriculture sector's expense. Participants said agriculture, for the most part, incorporates climate change-friendly practices, but the news media does not report on these practices, which causes the general public to distrust agriculture.

For the media, agriculture's always been an easy target, even though the data we saw today, we produce less than, what was it, 10 percent, 14 percent of the supposed greenhouse gases, compared to the rest, industrialization and all that. Studies throughout Oklahoma State have shown that more greenhouse gases are produced in the shipping of the products than the actual production of the product. The public perception, just knowledge of that – how do you fight the media machine? (G1, 6)

A minority of participants noted, though, that news reports about climate change had caused them to believe climate change was happening.

I've been in production agriculture for 30 years, and I know about climate variability, but what convinced me that we're on a trend toward longer-term climate change was reading some of the articles in the scientific journals. One that really put me over was a National Geographic article. (G3, 7)

Participants also noted that the general public was using many information sources, including social media, in order to find what the public believes to be trustworthy news sources on climate change.

Disseminating easy-to-understand, applicable, relatable information via social media is probably one of our best ways of sharing not only with producers but also with the general public. (G3, 8)

Weathercasters Getting Predictions Wrong

Similar to news media coverage of climate change, participants also pointed to weathercaster's inability to accurately predict the weather as a reason their cattle producer stakeholders did not trust the concept of climate change. This is consistent with prior research findings that personal experience with local weather shapes perceptions of global warming or climate change (Egan & Mullin, 2012).

We really don't know what's going to happen next week. I think it's detrimental for us to go and talk about climate change when we don't have a good basis to talk about. It's always interesting and probably puts a feather in our hat if we can bring a climatologist onboard to do that and not put that responsibility on NRCS or Extension to talk about that aspect of it. (G2, 1)

Personally, this is what I think is one of the biggest reasons why everyone throws the bullsh** flag on climate change, is because the weatherman, every night, tells them what it's going to do for the next 10 days. They're not even right about tomorrow most of the time. (G2, 4)

This uncertainty or distrust of what weathercasters predict will happen the next day or next week has carried over into the cattle producers' views on climate change, focus group participants said.

As we go out into the counties and work with our constituents, very rarely can we ever be wrong, okay? You're wrong a couple times and they'll quit listening to you. It's interesting, to me, with watching our TV and watching the weather most nights. How wrong can they be? If they're right 30 percent of the time, hey, that's a pretty darn good number. That's 70 percent of the time that they're wrong. (G2, 1)

Even the experts have certain questions: what's the weather going to be like today? Next year? The answer to a lot of the questions is, 'We're not sure. We don't know. We have a pattern, and we can look at the pattern and what we've done in the past. We really don't know what's going to happen tomorrow.' That's a challenge, any time you're dealing with educational programs, which is what I do. (G2, 7)

Getting a "Black Eye" with the Public

Although not directly related to climate change, participants clearly held the view that the agriculture sector, in general, had received a "black eye" with the public about a variety of topics, including climate change, which has caused the public to distrust agriculture.

To better educate them (general public) to where it's not the evil farmer out there in his laboratory pouring chemicals, the perception that a lot of our ignorant public has about production agriculture....I think agriculture has been taking a black eye

on this, and we need to be able to tell the general public that we've already been addressing these issues so that people realize we're not villains. We're trying to produce a good, safe food source for you while protecting the environment and trying to feed and clothe our families at the same time. (G2, 11)

The public's lack of trust is impacting agriculture's influence on certain issues, including climate change, participants said, but this lack of trust is also an opportunity for Extension agents and NRCS personnel to educate the public to be better informed about the positive impact agriculture has.

When I was real young, everyone scoffed at the idea of organics. Now, a lot of guys have their organic cattle. I think what someone brought up, the consumer side, that's what drove that situation. I think it's going to be the same thing with climate change 10 or 15 years from now. The people in Portland and Seattle and Kansas City and St. Louis are the voting bloc that is driving the regulation, but they're also the larger consumer. The commodity market is at the cities and the ports. Consumer education, more so than even our education or the landowner education, will drive the market. (G2, 4)

Participants, though, said that agriculture has not done a good job of communicating a positive message, resulting in agriculture being "its own worst enemy" (G2, 8).

All it takes is a bad actor and we're now more visible in this virtual reality world than ever before. In years past, where we said, 'Go away, leave me alone, this is my land, I can do what I want.' We changed that attitude, thankfully. It does behoove us to educate, continue to educate, consumers at a very high level. (G2, 8)

Relationships with Cattle Producers

Extension agents and NRCS personnel said that to begin the conversation about a politically charged topic, such as climate change, a foundation of trust and respect has to be established. They said they have been able to create just such a relationship with the cattle producers in their region. They are quick to point out that the cattle producers they work with do not want to talk about climate change, but if the topic comes up, both cattle producers and Extension and NRCS have to have "common ground" (G2, 5).

I think it's a topic where we're uncomfortable initiating the conversation. If the producer comes to us with questions, I think, for the most part, we are comfortable, or at least comfortable enough to get them to maybe point them in the right direction or get some assistance with the technical data. (G1, 2)

I think that's knowing the producer and having that relationship with them, a long-term relationship. I don't think you during your first week in a new county, drive out on the turn road, jump out and start talking about climate change. You have to have that longer-term relationship with the producer. Naturally, just like your friends, your family, you know which uncle you can have an in-depth scientific conversation with. You know which uncle you just want to talk about fantasy football with. I think it's the exact same thing. (G1, 5)

They said much of that positive relationship was established not just by current Extension agent or NRCS personnel, but by those who had been employed in these positions previously and who

had built a foundation of trust through the practical methods they had provided to cattle producers to make their cattle operations more profitable.

Some of their (agriculturalists) trust has come from generations or years of evolution of, "Yes, we present the science, but the science we present is practical and applicable." While it may have the big picture as part of the concept, it's focused on their issue, their target, their pest, their product, whatever the case may be. Ultimately, it all plays into this big picture that we're calling climate variability, but for them, it's, 'I want the earliest maturing corn because I know we're going to have a rough year.' Again, that trust goes back to the generations of giving them practical, research-based information that they can apply and not talking to them about the theories. (G3, 8)

Discussion and Conclusions

Findings indicate varying levels of distrust related to sources of information and influence on the topic of climate change greatly impacting how and whether Extension Service and NRCS employees actually talk "climate change" to cattle producers. Participants in this study said distrust in the government, due to the politicizing of climate change, and in the media, due to how climate change is often negatively reported, were major factors in why they were apprehensive about talking about climate change to cattle producers, or in why cattle producers were not enthusiastic about listening about climate change. In many instances, participants felt they were being forced to discuss climate change, even though they felt that the cattle producers they worked with did not want to talk about it.

They said the over-reporting of climate change through the news media has caused their cattle producer clients to reach a "weariness" threshold; in essence, because of hearing about climate change so much in the media, cattle producers are not receptive to hearing about it from Extension agents and NRCS representatives. Still, a minority of participants said that the news media's reports caused them to believe that climate change was occurring.

Participants pointed to climate data as not being trustworthy as a factor in why they did not believe climate change was occurring. They said extrapolating only the last 150 years or so of climate data did not provide a convincing argument to them that climate change was actually occurring because the Earth has been in existence for so long. They also noted that climate data could be manipulated to say whatever someone wanted it to say and that they were critical of passing on "manipulated" data to cattle producers. Similar to their belief that climate data could be incorrect, misleading, or manipulated, participants said weathercasters reporting inaccurate weather predictions also caused them to question the veracity of climate change information. They said if they cannot trust weathercasters to accurately predict what the weather will be like 10 days from now, how can they trust climate scientists to accurately predict whether the climate is actually changing and what future impacts will be?

Trust was established through long-enduring relationships with cattle producers. Those who had already created a foundation of trust and respect were more likely to discuss controversial issues, like climate change, because of the "common ground" that had been established. Current employees may not have created relationships with cattle producers; rather, relationships may have been built by prior Extension agents or NRCS personnel who had worked with cattle producers previously. Current employees built upon the preceding Extension and NRCS employees' work to continue establishing trust in their relationships.

Although not directly related to climate change, participants noted that the public's distrust of agriculture causes the industry to have a "black eye" on various topics, including climate change. In order to address this perception, participants said the agriculture sector must be proactive in communicating a positive message to the public.

Recommendations

As a result of this study's findings, the following recommendations for practice and research are provided. In order to talk about controversial issues, like climate change, it is important to create relationships with clients. Participants in this study felt that relationships they had established or built upon from those who had been in their job position previously allowed them to be more open to "talk climate change" with cattle producers. Without this established relationship, most may not have felt comfortable discussing climate change.

Communication and education professionals working with cattle producers should avoid politicizing the topic of climate change if they want climate-related programs to be accepted. The Kettering Foundation (<https://www.kettering.org/>) provides a good model of facilitating controversial or divisive topics, such as climate change, by focusing on what people can do collectively to address problems affecting their lives, communities, and nation. Due to the divisive nature of climate change, as shown in this study, training in the Kettering Foundation model or a similar program to "talk climate change" in non-threatening, nonpolitical ways may be necessary for professionals who deal with this topic regularly. It is also recommended that programs similar to the Cattle and Climate Conversations Workshop be conducted to give communication and education professionals with the requisite knowledge, data, and presentation skills to "talk climate change."

Because this study focused exclusively on Extension and NRCS personnel who worked with cattle producers in the Southwest and Mountain West, this study should be replicated with Extension faculty and NRCS employees in other geographic areas or with Extension faculty in other subject matter areas to determine their perceptions of their clientele's level of trust in climate change.

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