

CENTER FOR PUBLIC ISSUES EDUCATION

IN AGRICULTURE AND NATURAL RESOURCES

Final Report

Cattle and Climate Conversations

Workshop Assessment

With Southwest Region Animal Agriculture &
Climate Change Project



For More Information

Contact the Center for Public Issues Education at piecenter@ifas.ufl.edu or 352-273-2598

Suggested Citation

Wandersee, C., Telg, R., & Stokes, P. (2017). Cattle and Climate Conversations Workshop Assessment with Southwest Region Animal Agriculture & Climate Change Project. PIE2016/17-5. Gainesville, FL: University of Florida/IFAS Center for Public Issues Education.

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Acknowledgments

The following individuals contributed to the assessment development. Their help and expertise is acknowledged and appreciated.

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Executive Summary

Client/Project
February 2017

Introduction

Climate change presents many challenges for the agricultural industry, specifically where animal agriculture is involved. To inform and influence livestock and poultry producers, the USDA funded the *Animal Agriculture in a Changing Climate* project. The overall goal of the project is for Extension, in coordination with partner organizations, to encourage production practices that are environmentally sound, climatically compatible, and economically viable. One of the primary desired outcomes of the project is that stakeholder decisions result in reduced greenhouse gas emissions while maintaining, or increasing, America's production levels of meat, milk, eggs, and other animal products. To meet the training needs of Cooperative Extension Agents and USDA Natural Resources Conservation Services (NRCS) personnel in the Southwest, the 2016 Cattle and Climate Conversations Workshop was held in Denver, Colorado, in October. This report includes the assessment findings on the impact of the workshop on participants' approach to communicating contentious issues, including climate change. Attendees answered a survey at the conclusion of the workshop and participated in facilitated discussion groups to evaluate the workshop and to identify their perceptions about communicating about climate change. A follow-up survey was distributed to attendees three months later to determine what workshop content the participants had incorporated in their jobs.

Key Findings

- A statistically significant increase was found in levels of comfort for facilitating the application of university research, hosting programs, and delivering presentations on climate-change based information.
- Reported belief in climate change and the causes were mixed with most attendees indicating they believed climate change was occurring as a result of natural changes in the environment and human activities.
- Attendees ($n = 14$) indicated they should be a neutral source of factual information.
- About half of the attendees ($n = 14$) said they might consider changing their approach to communicating climate change with livestock producers as a result of attending the conference.
- Historic Climate Trends and Future Projections, presented by Dr. Nolan Doesken, received a mean benefit score of 3.52, the highest level of perceived benefit of all workshop sessions.
- The workshop had a mean benefit score of 3.00, indicating a high level of perceived benefit from the workshop.
- Seven attendees indicated that their communication style had changed a moderate amount, and four had made small changes in their communication style about climate change by the second survey to assess implementation of new communication strategy.
- Facilitated discussion analysis revealed most attendees preferred not to address the topic of climate change directly, but preferred to focus on other terminology including "climate variability."
- Workshop attendees suggested that future workshops utilize cattle-specific information as opposed to general climate change information.



Background

Climate change is a major issue facing agriculture producers throughout the United States. Global climate change is expected to negatively impact livestock systems. Current agriculture systems are based around climate trends from recent history; therefore, challenges arise when weather conditions are outside this production system infrastructure. Agriculturalists can acquire information from historical data and climate models for use in current and future farm planning. Through understanding potential climate and weather variability, agriculturists can evaluate their risk by determining the changes that pose the biggest threat to their operation and implement adaptation strategies.

To better prepare both Cooperative Extension Service agents and NRCS personnel in the Southwest to communicate and advise about climate change, academic and industry specialists presented to these groups at the 2016 Cattle and Climate Conversations Workshop. The workshop was part of a USDA-funded project titled *Animal Agriculture in a Changing Climate* project. The overall goal of the project, including the workshop, is for Extension, in coordination with partner organizations, to encourage production practices that are environmentally sound, climatically compatible, and economically viable. One of the primary desired outcomes of the project is that stakeholder decisions result in reduced greenhouse gas emissions while maintaining, or increasing, America's production levels of meat, milk, eggs, and other animal products.

Workshop attendees answered a survey at the end of the workshop and participated in facilitated discussion groups to evaluate the workshop and to identify their perceptions about communicating about climate change. A follow-up survey was distributed to attendees two months later to determine what workshop content the participants had incorporated in their jobs.

Methods

To assess the effectiveness and impact of the Cattle and Climate Conversations Workshop, a mixed-method approach was utilized. Immediately following the conclusion of workshop sessions, a facilitated discussion was held to gather attendees' opinions of the workshop, their thoughts on climate change, and communication strategies. Of the 35 people who attended the workshop, 27 people, divided into three groups, participated in the facilitated discussion. Two online surveys were also used to assess the benefit and effectiveness of the workshop and changes to communication strategy. The initial survey was distributed to attendees the evening the workshop concluded. The survey was distributed via email, with an initial email and two follow-up reminders. Twenty-nine individuals responded to the initial survey for a response rate of 82.9%. Due to the sensitive nature of the topic, force response was not built into the survey, resulting in varied numbers of completed responses for each variable. The second survey was sent to attendees 12 weeks after the workshop concluded to determine if suggested changes in communication strategy with cattle producers had been adopted. An initial email and two follow-up reminders were also sent for the second survey. Sixteen individuals completed the second survey for a response rate of 45.7%.



Findings – Survey One: Assessment of Cattle and Climate Conversations Workshop

Role in Extension or NRCS

Attendees of the Cattle and Conversation Workshop were asked to describe their role in their respective organizations of Extension or the Natural Resources Conservation Service. Most attendees ($n = 17$) were county or regional Extension agents (Table 1). Others attending the workshop included Extension specialists, research scientists, rangeland managers, and soil scientists. Attendees that fell into the “other” category reported positions as an air quality engineer, plant materials center manager, and other federal government positions.

Figure 1. Role in Extension or NRCS

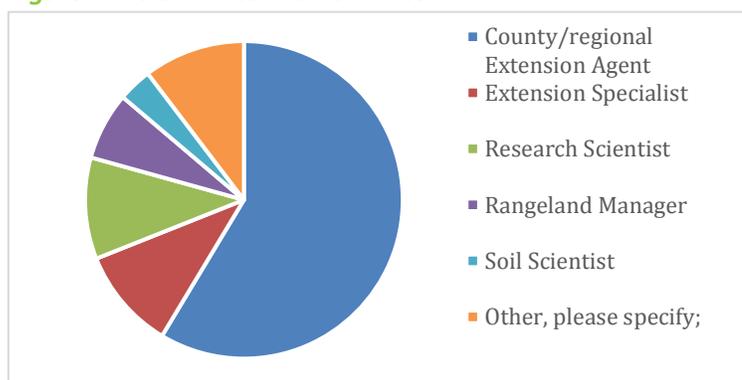


Table 1. Role in Extension or NRCS

County/regional Extension Agent	17
Extension Specialist	3
Research Scientist	3
Other (please specify)	3
Rangeland Manager	2
Soil Scientist	1
Total	29

Climate Change Belief

Attendees were asked to respond to a single multiple-choice question to explore their beliefs of climate change. One respondent did not believe climate change is occurring. Four attendees stated they did not believe there was sufficient evidence to know with certainty whether climate change is occurring. Two attendees believed climate change is occurring and is caused mostly by natural changes in the environment. Fifteen of the workshop attendees stated they believed climate change was occurring as a result of natural changes in the environment and human activities. Seven attendees stated they believe climate change is occurring and is caused by mostly human activities.

Comfort Presenting Climate-Change Information

Attendees were asked to rate their level of comfort for three presentation formats on the topic of climate change before and after attending the workshop. Comfort level was examined on a five-point scale, where “one” was “extremely uncomfortable” and “five” was “extremely comfortable.” Formats included the application of university research on climate change, hosting programs in their respective county/region on climate change, and delivering presentations in their county/region on climate change.

Comfort Presenting Climate-Change Information before Workshop

Nine attendees indicated that before attending the workshop they were extremely or somewhat uncomfortable facilitating the application of university research that deals with climate change (Table 2). Most attendees ($n = 13$) indicated before attending the workshop they were extremely or somewhat uncomfortable hosting programs that deal



with climate change, and 14 indicated they were extremely or somewhat uncomfortable delivering presentations on climate change (Table 2).

Table 2. Comfort presenting climate-change information before workshop

	Facilitating	Hosting	Delivering
Extremely uncomfortable	3	5	7
Somewhat uncomfortable	6	8	7
Neither comfortable nor uncomfortable	7	6	4
Somewhat comfortable	10	5	6
Extremely comfortable	1	3	3

Note: Comfort variables were measured on a five-point Likert-type scale *extremely uncomfortable (1)*, *somewhat comfortable (2)*, *neither comfortable nor uncomfortable (3)*, *somewhat comfortable (4)*, and *extremely comfortable (5)*.

Comfort Presenting Climate-Change Information after Workshop

After considering and rating their level of comfort before attending the workshop, Attendees were asked to rate their level of comfort presenting climate-change information after going through the workshop. After the workshop, 16 attendees rated themselves as being somewhat or extremely comfortable when facilitating the application of university research on climate change (Table 3). Fifteen attendees indicated that after the workshop they were somewhat or extremely comfortable hosting programs in their respective county or region that deal with climate change. A total of 15 attendees said they were somewhat or extremely comfortable delivering presentations that deal with climate change.

Table 3. Comfort presenting climate-change information after workshop

	Facilitating	Hosting	Delivering
Extremely uncomfortable	-	3	5
Somewhat uncomfortable	-	-	-
Neither comfortable nor uncomfortable	12	9	7
Somewhat comfortable	12	12	11
Extremely comfortable	4	3	4

Note: Comfort variables were measured on a five-point Likert-type scale *extremely uncomfortable (1)*, *somewhat comfortable (2)*, *neither comfortable nor uncomfortable (3)*, *somewhat comfortable (4)*, and *extremely comfortable (5)*.

Mean Comfort Levels Before and After Workshop

To examine the effectiveness of the workshop, means scores for comfort levels on facilitating the application of university research, hosting programs, and delivering presentation were examined. Means for comfort before and after the workshop were calculated and examined. The means for each variable increased after the workshop, indicating an increase in comfort level (Table 4).



To compare overall changes in comfort with facilitating, hosting, and delivering information and presentations on climate change, variables were combined into before and after indexes. Like the individual variables, the combined mean level of comfort increased after the workshop. The increase in mean indicates that the workshop was effective in increasing attendees' level of comfort when working within climate-change topics (Table 4).

Table 4. Mean change in comfort before and after workshop

	Before		After		M Change
	M	SD	M	SD	
Facilitating	3.00	1.11	3.71	0.71	0.71
Hosting	2.74	1.29	3.44	1.09	0.70
Delivering	2.67	1.39	3.33	1.30	0.67
Mean Index	2.80	1.17	3.49	.89	0.69

Note: Comfort variables were measured on a five-point Likert-type scale *extremely uncomfortable (1), somewhat comfortable (2), neither comfortable nor uncomfortable (3), somewhat comfortable (4), and extremely comfortable (5)*.

Paired sample t-tests were used to determine if there were statistically significant differences in the mean comfort scores before and after the workshop. There were statistically significant differences for all variables, including the mean indexes for combined variables. Results of the t-tests can be found in Table 5. To examine the effect of the workshop on comfort levels, eta squared was calculated for each set of corresponding variables. The eta-squared statistic indicated a large effect size according to the guidelines of Cohen (1988) (Table 5).

Table 5. Paired t-test results

	t	df	Sig. (2 tailed)	eta squared
Facilitating	-4.208	26	.000	.41
Hosting	-4.716	26	.000	.46
Delivering	-4.416	26	.000	.43
Mean Index	-5.196	26	.000	.51

Note: All t-test were calculated with a 95% confidence interval rating.

View of Role in Managing Climate-Change Conversations

Attendees of the conference were asked to describe how they view their role in managing climate-change conversations before and after attending the workshop. Attendees were offered four specific roles to select from and the option to write in another role. Most attendees ($n = 14$) said they felt their role was to serve as a neutral source of factual information for cattle producers. A slightly smaller group ($n = 8$) felt they served as educators communicating scientific information. Five attendees reported they viewed their role as a facilitator helping cattle producers develop their own perspective. It is important to note that no workshop attendee indicated they should serve as an advocate of a scientific fact when managing climate-change communication (Table 6.)



Table 6. Attendee view of their role in managing climate-change conversations before the workshop

Role	<i>n</i>
As a neutral source of factual information for cattle producers	14
As an educator communicating scientific information	8
As a facilitator helping producers develop their own perspective	5
As an advocate of an accepted scientific fact	0

Attendees were also asked to describe the view of their role after attending the workshop. Responses shifted slightly from the before-survey responses. After the workshop, 12 attendees indicated they should be a neutral source of factual information. The role of an educator communicating scientific information decreased by one, to seven attendees. In addition, two additional attendees, for a total of seven, indicated they viewed themselves as a facilitator to help producers develop their own perspective (Table 7).

Table 7. Attendee view of their role in managing climate-change conversations after the workshop

Role	<i>n</i>
As a neutral source of factual information for cattle producers	12
As an educator communicating scientific information	7
As a facilitator helping producers develop their own perspective	7
Other	1
As an advocate of an accepted scientific fact	0

One respondent indicated Extension or NRCS personnel had an “other” role to serve in the climate-change conversation. The respondent further expanded on this view of Extension and NRCS personnel’s role in managing climate change conversations by entering a text response:

“This is something that we have to be very careful with. We have to give scientific-based information, but it really needs to come from a climatologist or someone who is an expert in the field so that we don't lose trust with our producers on this delicate topic.”

In conjunction with their personal view of the role in managing climate-change conversations, attendees were also asked if they intended to change their approach in communicating climate-change information to producers. Seven attendees said they would change their approach in communicating climate-change information, while six said they did not intend to. About half of the attendees ($n = 14$) said they might consider changing their approach (Table 8).



Table 8. Attendee intent to change communication approach

	<i>n</i>
Maybe	14
Yes	7
No	6

A follow-up, text-entry question was included to further examine planned approaches to climate change. The responses are included below, grouped by intent to change communication approach.

Intending to Change Communication Approach

Attendees intending to change their climate-change communication approach focused on specific topics of conversation with their producers. They were more likely to be comfortable with the topic of climate change.

“Approach subject [climate change] as secondary benefit to already established practices.”

“By providing the scientific research, and help producers be aware of their role.”

“I have resources and have confidence in talking about climate change.”

“More economic emphasis”

“Paying closer attention to language and incorporating potential positive outcomes and opportunities.”

“Use more climate data as presented to help show the whole picture.”

May Change Communication Approach

Attendees that said they may consider changing their approach focused on incorporating climate data, adapting and promoting best management practices, and avoiding the direct topic of climate change.

“Bring into my programs a qualified person to talk on climatic issues.”

“Broaching conversations with more tact.”

“I am not going to approach a producer about this topic, but if it gets brought up, then we will talk about it. But I will not use the words ‘climate change.’”

“I feel more prepared to present factual information on climate change.”

“I will visit with my ag committee and present the topic to see if they feel educational programs are worth pursuing/presenting.”

“Incorporate indirect climate change and mitigation practices into other programmatic topics.”

“[Incorporate] more real-world discussion.”

“Open the dialogue about climate variability.”



“Talk about best management practices that are profitable and also assist in alleviating problems with gas emissions.”

“Tell them to continue the good work they are already doing in this area.”

“The ‘climate’ of the cattle business is always changing from prices to disease to available forage, droughts and floods. ‘Climate change’ is too politically charged and has an agenda, which I am not comfortable in associating with. I will continue to work with producers to make day-to-day decisions on what affects those things they can control and improve monitoring of their specific resources so they can make best decisions to adapt and change what they can. Weather patterns have and will continue to change and affect many facets of the livestock industry. Monitoring those patterns on their specific operations and having some contingency plans that address the highs and lows of those patterns will be my focus.”

“[I] will provide weather pattern data to make producers aware some management changes may be necessary in years to come.”

Will Not Change Communication Approach

Attendees who did not intend to change their communication approach cited several reasons for not doing so. The reasons included that they were already relaying climate-change information and planned to continue or were concerned about keeping their job if they brought up the topic.

“I currently engage in relaying info on CC [climate change] and plan to continue.”

“I don't think my approach has changed.”

“I like my job. Cattle producers would run me out of the state for ‘pushing’ this.”

“Mostly cow-calf producers that are doing best management practices now.”

“My normal communication approaches match those advocated at the workshop.”

“None of the information shared was applicable to my situation.”

Assessment of Benefit from Workshop Sessions

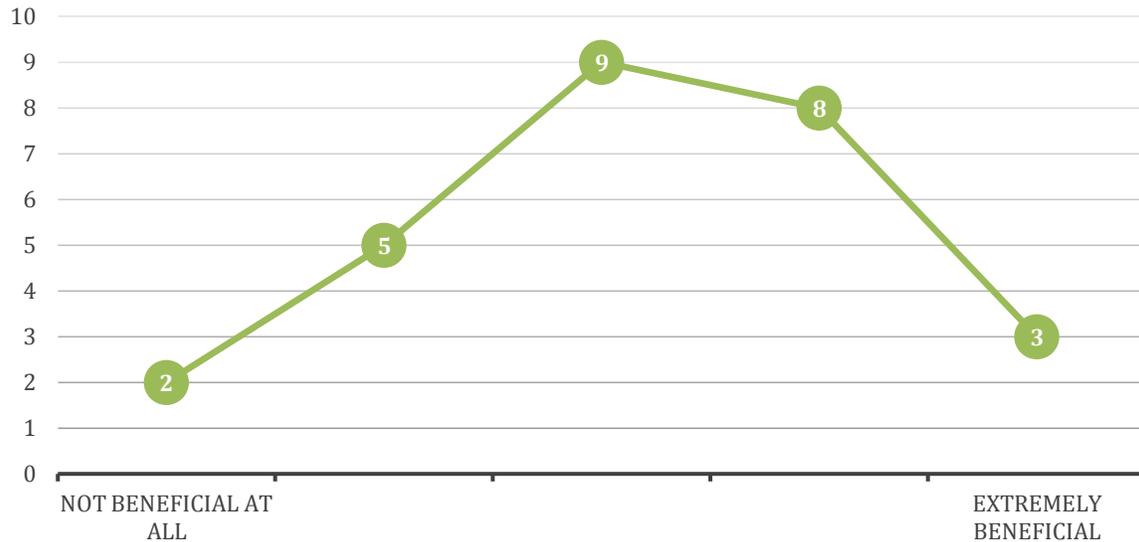
Attendees were asked to rate the level of benefit they found in each of the six workshop session on a sliding, semantic-differential scale. The scale values were set to range from “zero” indicating “no benefit” to a “four” indicating “extremely beneficial.” Attendees were also offered the option to provide additional feedback through open-ended text entry responses.

Session One: Differing Roles and Responsibilities for Cooperative Extension and NRCS for Improving Resiliency to Climate Variability: Developed by Dr. Robert Burns – Assistant Director for Extension, Tennessee; Presented by Dr. Saqib Mukhtar - Associate Dean & Ag. Program Leader, UF/IFAS Extension, Florida

Most attendees ($n = 9$) found a medium level of benefit in the presentation. Three attendees found the session to be extremely beneficial. Figure 2 presents the full results of the semantic-differential scale. Overall, the session received a mean benefit score of 2.19, indicating a moderate level of perceived benefit.



Figure 2. Differing Roles and Responsibilities for Cooperative Extension and NRCS for Improving Resiliency to Climate Variability



Attendees also provided several comments on why they felt the session was beneficial or not beneficial. It is important to note that Dr. Burns was unable to attend the workshop; Dr. Mukhtar presented the information in his place. Some comments related to the session’s benefits are provided here:

“Clarifies focus on a federal agency and a state agency.”

“It stressed the importance of groups working together, and the fact that we need to use scientific research in making recommendations.”

“It was a good review of structure and roles.”

“[Benefit in highlighting the] commonalities of NRCS and Extension.”

“Getting to discuss topics and how we can address these regionally.”

“[The session] highlighted the fact that NRCS and Extension need to work better together and deliver a unified message.”

“[The session] reaffirms my suspicions about the importance of language and how facts are presented.”

“[The session] pointed out our differences and where we can work together.”

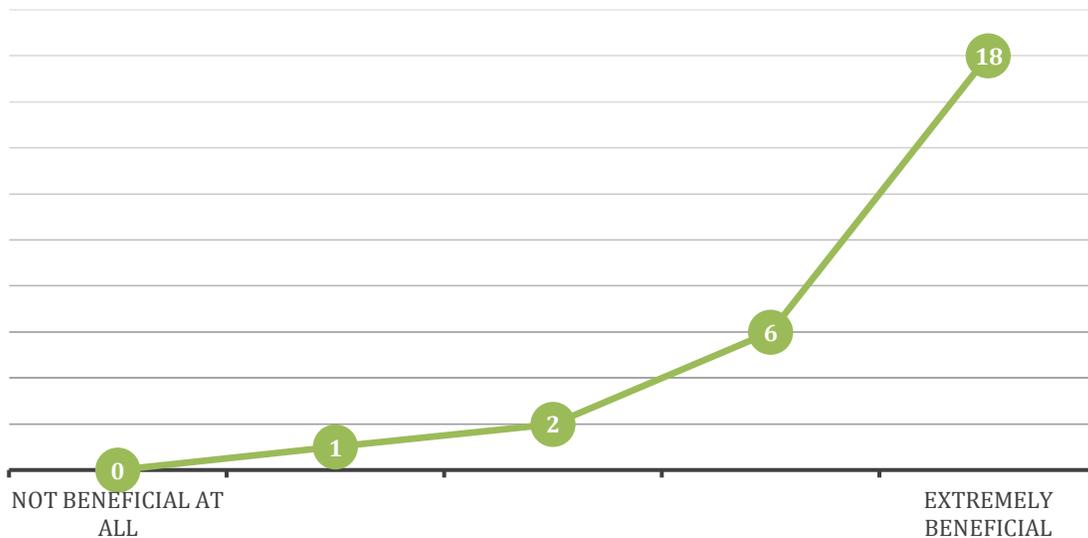
“Showed the different approach to the issues.”



Session Two: Historic Climate Trends and Future Projections: Presented by Dr. Nolan Doesken, Colorado State Climatologist and Senior Research Associate, Fort Collins, CO

A majority of attendees ($n = 18$) found the presentation to be extremely beneficial, giving the presentation a rating of four. Six workshop attendees rated the benefit level as a three, indicating a somewhat beneficial level in the session. Two attendees found the presentation to have a medium benefit or were neutral to it, while one indicated it was not very beneficial (Figure 3). This session received a mean benefit score of 3.52, indicating a high level of perceived benefit.

Figure 3. Benefit of Historic Climate Trends and Future Projections



Attendees also provided comments as to why they found the session beneficial. Overall, attendees cited the quality of the data presented and the speaker energy and style as the top reasons they found benefit in the session:

“Best presentation of the day. Information was pertinent.”

“Clear concise scientific data on the climate.”

“Climate perspectives over last 100 plus years.”

“Entertaining speaker that kept us engaged. Presented facts, figures, and actual observations, not a bunch of modeling.”

“Good scientifically based program. Liked that he pointed out the way things are delivered can change the perception of audience.”

“Great data, excellent way of presenting.”

“He was a great presenter that put the whole thing into perspective for me.”

“[The] info in graphs, charts, trends in scale [were beneficial].”



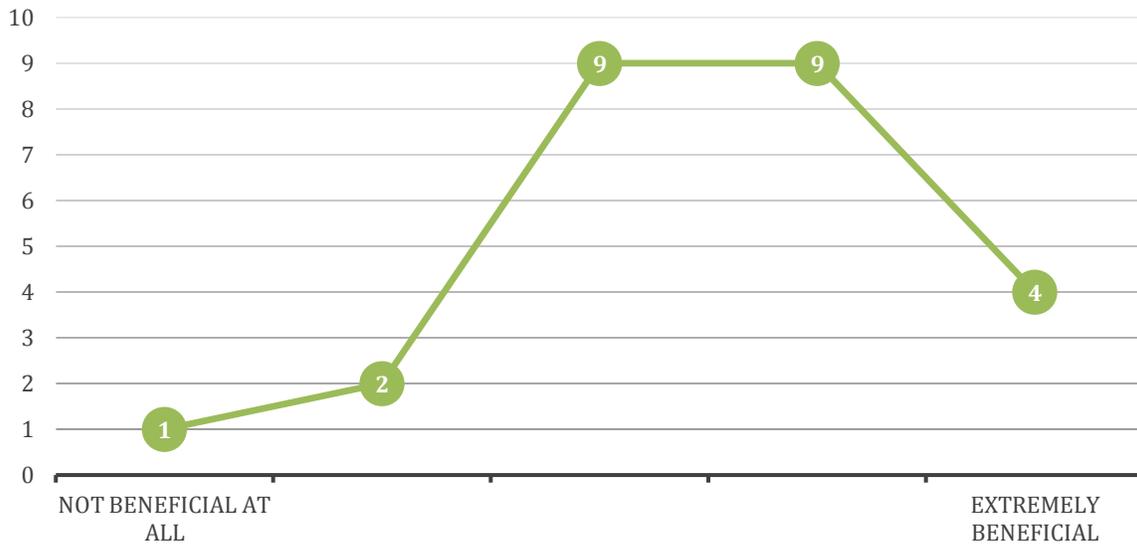
“It gave a great overview of how to look at climate data.”

“Made me reevaluate the way I look at graphs and charts, along with giving me ideas on creating them as well.”

Session Three: Vulnerability of Cattle Production to Climate Change on U.S. Rangelands: by Dr. Matt Reeves, Research Ecologist, US Forest Service

Overall, attendees of the Cattle and Climate Workshop rated the session as being moderately or somewhat beneficial (Figure 4). The session received a mean benefit score of 2.52, indicating a moderate level of perceived benefit.

Figure 4. Vulnerability of Cattle Production to Climate Change on U.S. Rangelands



Text-entry responses provided further insight into attendees’ perceived benefit of the session:

“Good presentation but the challenge of predicting weather patterns 60-100 years out is a challenge.”

“Modeling is interesting. I feel like Dr. Reeves could have done a more thorough explanation on the background of the project.”

“Trends in variation based on region.”

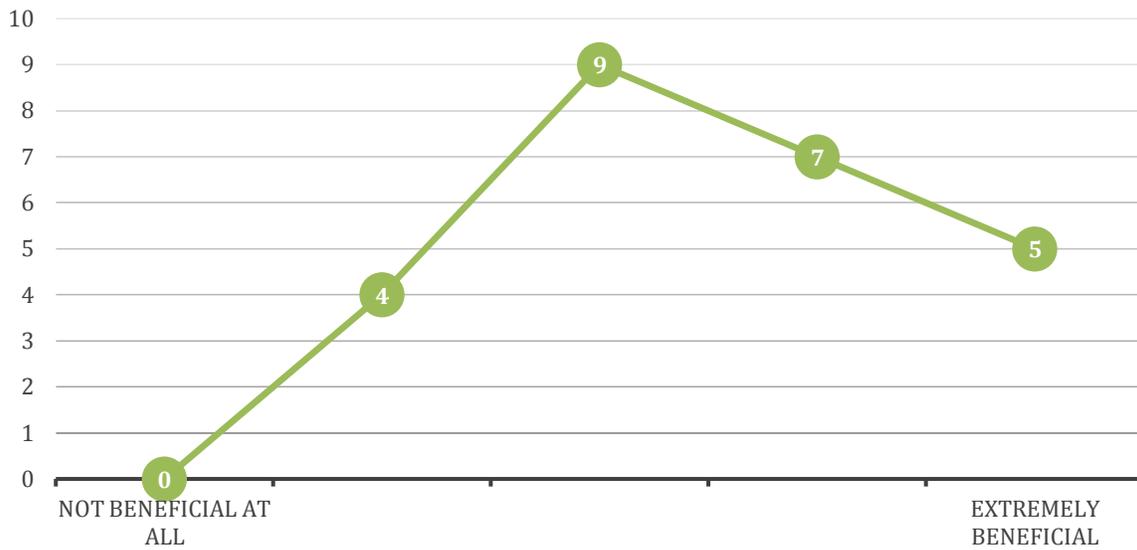
“[The session was] very beneficial to my location and the magnitude of rangeland and forest.”

Session Four: Building Blocks for Climate Action and Mitigation: Presented by Clay and Sarah Pope, USDA Southern Plains Climate Hub, El Reno, Oklahoma

Most attendees ($n = 21$) rated session four “Building Blocks for Climate Action and Mitigation” as having a moderate level of benefit, to extremely beneficial (Figure 5). Overall, attendees’ ratings resulted in a mean benefit score of 2.52.



Figure 5. Building Blocks for Climate Action and Mitigation



Several attendees expressed that they felt the session was promotional, while others pointed to redundancy of the presented data. Attendees enjoyed the information presented and the focus on terms to use when discussing climate change with producers.

“Dial back the rhetoric - it's not a sales pitch.”

“Most of the presentations shared had redundant information.”

“Positive outcomes that we can implement.”

“Provided awareness for the topic. A few good ‘terms’ to use when talking to producers.”

“It was informative as it gave descriptive practices on mitigation to climate factors.”

“They did a great job of explaining how to frame the climate change discussion.”

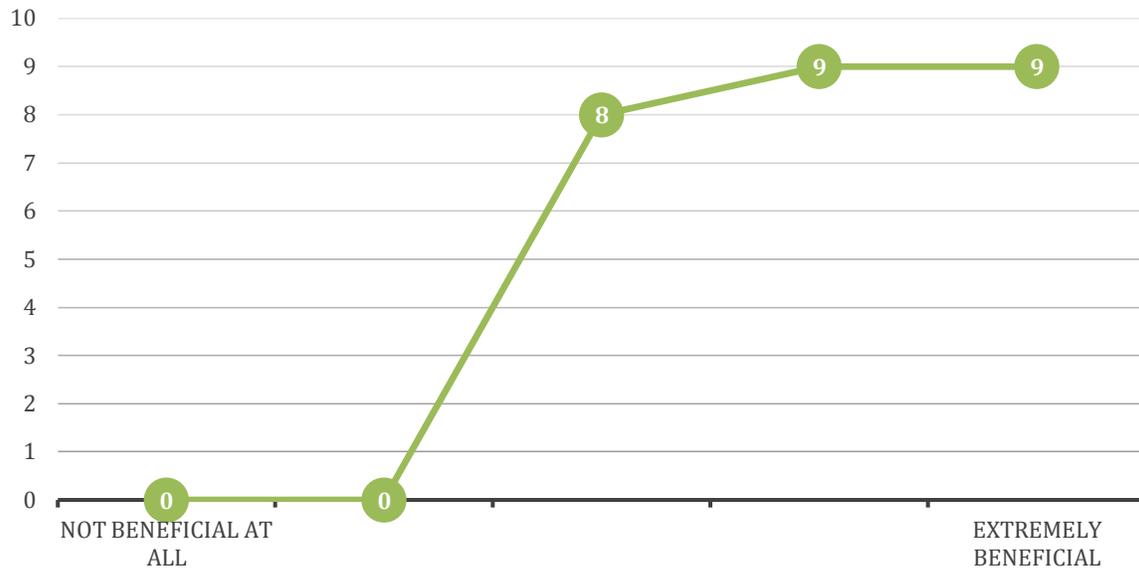
“Took away several ways to broach climate variability with producers. Different ways to approach issues.”

Session Five: How to ‘Talk Climate’ with Cattle Producers: Presented by Bill Hammerich, Chief Executive Officer, Colorado Livestock Association

All attendees gave at least a two rating to this session, for a mean benefit score of 3.04, indicating a high level of perceived benefit from the session. Eight attendees rated the session as a two, and nine individuals each rated the session as a three and four (Figure 6).



Figure 6. How to 'Talk Climate' with Cattle Producers



Text-entry responses indicated that attendees enjoyed hearing from a presenter who was knowledgeable of the cattle operation business, but struggled to find the relevance of the presentation to the session title. Attendees appreciated the perspective on collaborating with producers and how to be proactive.

“Again, he reinforced the importance of language. Choose words carefully.”

“Enjoyed hearing from someone in the industry about the issue, not just researchers.”

“I found the information good but I am not sure that his talk had much to do with the title or was all that relevant to my situation.”

“Good example of groups communicating and working together. Would have preferred having an actual ‘producer’ present as well to tell their side.”

“Good information and background on what confinement operations are doing.”

“Good to hear what producer organizations are addressing and their focus points.”

“He did a great job explaining how cattle producers make their decisions.”

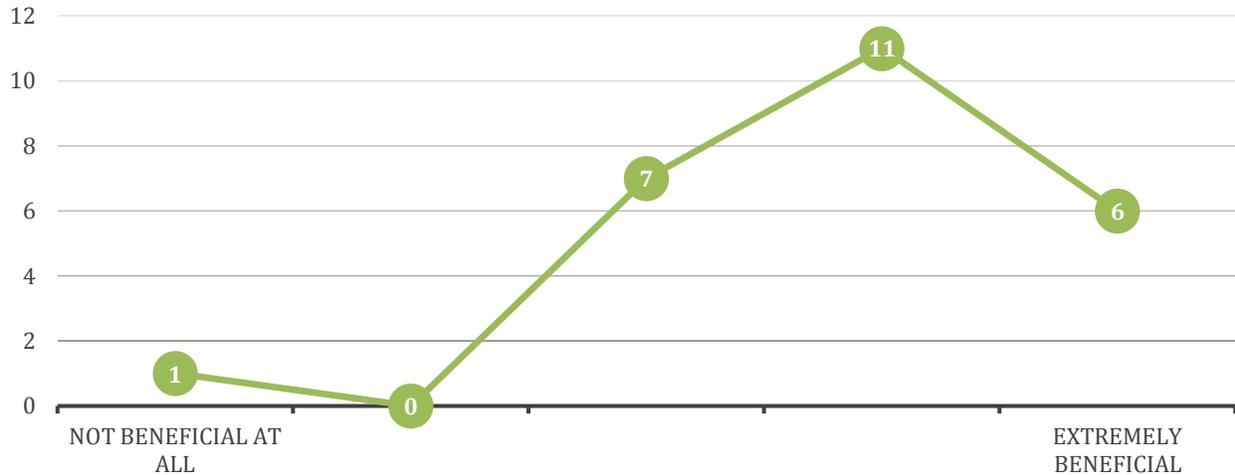
“He showed how farmers worked to get scientific data that has helped them avoid unrealistic regulations. Also, using the data to make recommended changes.”



Session Six: Facilitated Discussion with Extension Agents and NRCS Personnel: Presented by Dr. Ricky Telg, Director; Cassie Wandersee; and Phillip Stokes, Center for Public Issues Education, University of Florida

Attendees provided mixed ratings of the facilitated discussion portion and communication strategy review session. One respondent rated the session as having no benefit at all. Seven attendees rated the session as a two on the benefit scale, indicating a moderate level of benefit. Eleven rated the session as a three, and six rated the session as a four, or extremely beneficial (Figure 7). The session received an overall mean score of 2.84.

Figure 7. Facilitated Discussion with Extension Agents and NRCS Personnel



Attendees provided several comments on the session focusing on the positivity of open-ended discussion with others in their field of work. It was suggested that the discussion should be held on the following day to allow processing time of the workshop.

“Good discussion on the topic.”

“If truly confidential, a chance to convey actual information to administrators and program coordinators without fear of retribution or censor.”

“It was a good chance to hear thoughts and ideas from others. A session like this really needs to be the next day after individuals have had a chance to process some of the presentations. There was information that I would have preferred to research in greater depth before providing some of the feedback. Ending a long day with it was not the best timing.”

“It was great to hear different viewpoints and to see how other people think differently about issues.”

“It’s always great to get to interact with your colleagues, especially on controversial issues.”

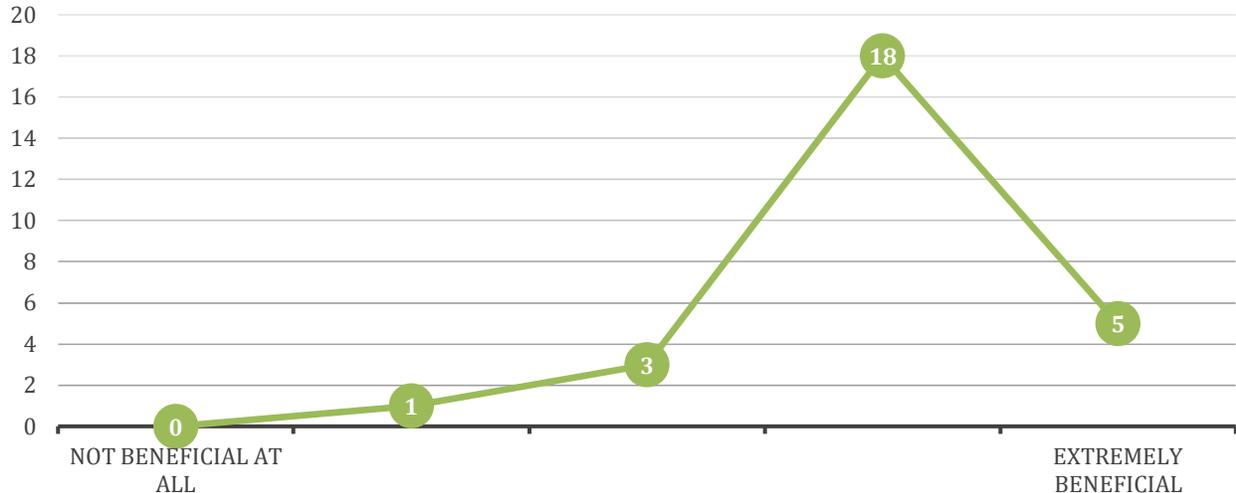
“Listening to what peers are thinking about climatic issues.”



Overall Benefit of Cattle and Climate Conversations Workshop

Finally, attendees were asked to rate the overall level of benefit they found for the full workshop. The workshop had a mean benefit score of 3.00, indicating a high level of perceived benefit from the workshop. See Figure 8.

Figure 8. Overall Workshop Benefit Score Rating



Training Still Needed in Regards to Having Conversations with Cattle Producers about Climate Change

To follow-up to the benefit score rating of the workshop, attendees were asked to provide text-entry responses about the training they still needed. Their responses are provided below:

“A plan for visiting with producers. Unless told otherwise, I will continue to utilize best management practices.”

“A training about how to actually have the conversation. Although the workshop was good, the impression I got from most people was that they were not going to talk about climate change because it is too politically charged and will shut people down, so instead we talk around the issue.”

“As a specialist, we address climatic issues but in different formats.”

“As we discussed, producers are doing an excellent job in this area. For the most part, they already practice management techniques that favor climate mitigation. This program was not intended to teach us how to work with the general public on climate change, but that should be our next step, showing how good a job agriculture is already doing and what else can be done by everyone. Also, using science and not emotions to communicate with them.”

“Best practice management ideas that are both profitable for the producers and assist in reducing gas productions.”

“Emphasize that carbon sequestration is not a magic wand. It takes thousands of years to accumulate and one season of cultivation to remove.”

“How to set up workshops for producers.”



"I feel that more information on how all of this has an impact on the cattle industry is needed."

"I think that practice sessions would help."

"More info regarding cow/calf producers and talking with them."

"More training and data in all areas. But this should be something that a specialist talks about in a meeting."

"More training on climate change. Best management practices. Positive results of mitigation."

"Need more training on the basics-science and research"

"Possibly just an awareness level at this point."

"Summarized current data"

"The workshop focused more on communicating climate change in general rather than communicating climate change with cattle producers. It may have been better to focus a little more heavily on that part."

"Training for state-level specialist on the topic."

Training on tools that a producer can use now to help with seasonal and yearly variability is much more applicable. Drought monitoring, tools for producers to record their weather data, emphasis on seasonal outlooks, etc."

"What is cow/calf production's role?"

What Materials are Still Needed

Finally, attendees were asked what materials they still need to help them prepare for conversations or that could be provided to cattle producers. Attendees suggested a wide variety of materials, but were most interested in fact sheets, historical data, and simple handouts or tools. Their suggestions are provided below:

"Fact sheets."

"Going to check out materials that have already been established by this grant. But, also need to continue research to continue to make agriculture more efficient."

"Having the available resources from the workshop to provide to the producers, and any updated information accessible."

"Maps and graphs. Forecasting."

"Materials that focus on sustainability."

"More short fact sheets- localized impacts."

"PowerPoints that can be modified, fact sheets and short videos."

"Real data that is non-biased and research based. I still feel that this is too politically charged to discuss in a public forum with county producers."



“Regional fact sheets or brochures.”

“Research-based factsheets.”

“Risk management information and historical data.”

“Scientific-based information on climatic issues.”

“Short fact sheets about adaptation efforts.”

“Simple hand-outs with sites or tools that they can use to observe and track their ranch conditions.

Some of the PowerPoint presentations used during the workshop would be very helpful.

“Tools for forecasting that are more understandable / accessible.”

Findings – Survey Two: Assessment of Communication Style Changes

During the workshop, attendees were presented with a communication strategy known as the “Triangle of Needs and Interests” (Moore, 2014). Attendees were asked specifically if they had implemented aspects of the strategy or changed their communication style since attending the workshop. Sixteen workshop attendees responded to the second follow-up survey. Most Attendees ($n = 10$) to the survey were county or regional Extension agents. The individual that selected “other” as their role provided the title of “USDA” in the text-entry option.

Table 9. Role in Extension or NRCS

	<i>n</i>	%
County/regional Extension Agent	10	62.5
Rangeland Manager	2	12.5
Extension Specialist	1	6.3
Research Scientist	1	6.3
Soil Conservationist	1	6.3
Other, please specify	1	6.3

Attendees were asked to describe their level of comfort in having conversations about climate change with cattle producers. A majority of attendees ($n = 10$, 62.5%) indicated they were extremely or somewhat comfortable having conversations with cattle producers about climate change. Four attendees indicated a neutral position, and only two attendees indicated they were somewhat or extremely uncomfortable (Table 10). An overall mean of 3.36 (SD = 1.09) was found for the comfort variable. A mean of 3.36 indicates a largely neutral level of comfort.

Table 10. Level of Comfort in Climate Change Conversations

	<i>n</i>	%
Extremely comfortable	3	18.8
Somewhat comfortable	7	43.8



Neither comfortable nor uncomfortable	4	25.0
Somewhat uncomfortable	1	6.3
Extremely uncomfortable	1	6.3

Attendees were asked to describe how they viewed their role in climate change conversations; many ($n = 7$) viewed themselves as neutral sources of factual information for cattle producers, with slightly fewer attendees ($n = 5$) as educators communicating scientific information. One attendee viewed himself or herself as an advocate of an accepted scientific fact.

Table 11. Role in Climate Change Conversations

	<i>n</i>	%
As a neutral source of factual information for cattle producers	7	43.8
As an educator communicating scientific information	5	31.3
As a facilitator helping producers develop their own perspective	3	18.8
As an advocate of an accepted scientific fact	1	6.3

When asked if their communication style had changed as a result of the Cattle and Climate Conversations Workshop, seven attendees indicated that their style had changed a moderate amount and four had made small changes. One attendee said that their communication style had changed significantly.

Table 12. Has Your Communication Style Changed Because of the Cattle and Climate Conversations Workshop?

	<i>n</i>	%
It has changed a moderate amount	7	43.8
I have made small changes	4	25.0
It hasn't changed at all	4	25.0
Yes, it has changed significantly	1	6.3

Workshop attendees were asked why their communication style has changed and provided the following comments:

“[I am] a bit more comfortable in day-to-day conversations as the topic come up.”

“I am more aware of state regulations on climate control and nutrient regulations. I communicate these issues and where producers can go for more information.”

“I do not approach the subject as climate change; I present the facts and let the producer take their own actions.”

“I have the ability to cover topic areas that make changes.”

“I know common areas of discussion, so I'm able to bring up those topics.”



“I now have more information for my delivery.”

“It has been more informational when the topic was discussed.”

“[I am] more confident about how to present the climate change conversation.”

“[I am] more familiar with weather issues.”

“[I am] more willing to share info.”

“Reminding producers that their management has impacts beyond the pasture fence or field edge.”

“The workshop validated my existing communication style to ranchers.”

Attendees were also asked why they had not changed their communication style. They cited the following reasons:

“[I was] already having similar discussion with producers.”

“I enjoyed the way the material was presented, but there was nothing in particular I thought I could change in my communication strategy as a result of it.”

“I like my position. If I should bring [climate change] up with my clientele, my knowledge as an educator would be called in question and I would not be trusted.”

Finally, producers were asked what materials or resources they still needed to have effective conversations with cattle producers about climate change. Many workshop attendees stated that they would like tangible, information-based handouts to show producers. They also expressed interest in additional training on climate change and access to local climate data.

“It would be great to have more tangible things to show other than basically just numbers and graphs. It is hard to convey climate change just using numbers and graphs of data. However, it is hard to get a more ‘hands on’ tangible for something like the climate change data.”

“One pagers, convenient cards, pamphlets, etc. that do not take a lot of time to digest.”

“Any device that can measure and show risks to the climate.”

“Continued updates on innovations and management ideas that work.”

“Current maps, charts and tables based on current science on temp and precipitation trends.”

“Data showing the climate trend.”

“Fact sheets, website with links to research summary info that impacts the producer, economics of good management practices.”

“Information about their operations, their struggles as well as contact details of the people they will listen to.”

“More training on climate change. Also, training on what positive management changes producers can utilize to mitigate climate change and increase climate resiliency.”



“Research data from the models that was presented to me would be more helpful.”

“Scientific materials that producers can trust. It really doesn't matter to them about climate change. They are concerned about what is happening now and how they can best react to the current changes to stay in business another year.”

“Scientific perspective of mother nature and the continuous changes that occur.”

Findings – Facilitated Discussion

During the facilitated discussion portion of the conference, attendees were asked to provide their opinions about several topics, including their views on climate change and how to communicate the topic of climate change to cattle producers. In this report, however, discussion will focus on attendees' thoughts about the workshop.

Overall, attendees held positive views about the workshop's content. They thought the data and the tools to use that were presented were especially beneficial.

“The general concept of the information presented was good to have in an arsenal to start a conversation, build a relationship with a producer.”

“It's been very eye-opening. There's a lot more out there than any of us understand or realize. I wasn't even aware of the climate ag tools stuff.”

Attendees also thought they were provided with ways to approach the sometimes contentious topic of “climate change” with cattle producers in their region in less confrontational ways, just by the way the topic is framed or communicated, such as by using “climate variability” instead of “climate change.”

“As soon as those words ('climate change') spill out of someone's mouth, it seems as though the conversation turns pretty volatile, pretty quick. Being able to say something like '(climate) variability,' I think, allows folks to consider digesting it before they shut down.”

“I liked the way (a presenter) emphasized 'climate variability' versus 'climate change,' because 'climate change' is one of those things you hear and automatically, you want to turn it off because you think it's a bad thing. 'Climate variability' is more suitable, in my mind.”

Attendees also shared their thoughts about how to make future workshops or conferences on cattle issues better. They said they would like to have more information that is cattle-specific, as opposed to information specifically about climate change, and testimonials from cattle producers who are using best management practices that mitigate the effects of climate change.

“I'd like to hear more specifically about cattle. I know the answer, but I like to hear in regards to breed, performance, size, the list can go on and on.”

“It's been an excellent conference, but it hasn't necessarily matched the title of the conference (because of the lack of emphasis on cattle).”

“I think the climate aspect was really good. I would've liked to see more on cattle and how we could have addressed some of the issues that we face out West. Drought is a continuous problem for us. I would've liked to have seen how we can handle some of our cattle situations that we have in the West in this conference.”



“I think a lot of this was targeted towards confined livestock and not rangeland production cow-calf operations.”

“I would have liked to have seen more from producers, from different kinds of producers that actually have an active plan to deal with climate variability and how it does affect their economics, how their attitudes may have changed. More testimonials.

References

Moore, C. W. (2014), *The mediation process: Practical strategies for resolving conflict*. : San Francisco: Jossey-Bass.

