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**AAC**

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in Agriculture, Natural Resources, and Life and Human Sciences*

# The Journal of Applied Communications

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*\*presented at the 2012 Association for Communications Excellence  
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# A Textbook Example: Lessons Learned about Visual Content Used for an Agricultural Communications Textbook

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Ricky W. Telg

## Abstract

This professional development article details lessons learned during the process of providing visual content for a new agricultural communications textbook. Textbook authors thought they had all of the visual content approved, but learned late in the textbook-writing process that many visual materials (photographs and videos) needed multiple levels of approval. Some specific “lessons learned” include being cognizant of what is in the backgrounds of visuals; knowing who owns visual content; making sure that any co-sponsor of a communications piece must approve its use, even if the lead organization approves; and receiving approval from second- and possibly third-generation visual sources. This article is important to visual communicators, in light of the move at many universities to provide content – that for many years had been provided free to clients – for a fee.

## Keywords

video, photography, copyright

In 2009, fellow University of Florida professor Tracy Irani and I approached a textbook publishing company with an idea to write an agricultural communications textbook that would appeal to faculty of upper high school students (juniors and seniors) and college students. Each of the 17 chapters in *Agricultural Communications in Action: A Hands-on Approach* (publication date 2012) covers a different topic related to agricultural communications. The book includes topics such as news writing, business writing, research methods, photography, Web design, new media, media relations, video production, risk and crisis communications, campaign development, and public speaking, among others. Irani and I wanted to provide a framework to help improve the communications skills of high school and college students as well as professionals because the content covers much of what ACE members, Extension agents, and other agricultural communicators do on a daily basis.

However, what started as a way for us to instruct others evolved into our own learning experience. What follows are some of the things I learned along the way about providing visual content for a textbook, which is a commercial venture. Because much of what ACE members write and produce are for educational purposes, some readers of this article may wonder about the applicability of the content to ACE membership. However, given much material — such as bird or plant identification

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manuals or curricula and educational materials — ACE members produce now are sold, at least as cost-recovery items, the line between “educational” and “commercial” may be blurring.

As someone who comes from a video production background, followed later in my career with newspaper reporting, I thought I was fairly adept for having an “eye” for visual content that could get my media organization into trouble. For example, when dealing with visual content that has children in it, I knew always to secure signed release forms from the children’s parent or guardian. I thought I had “covered my bases” in the materials provided for the textbook. I was wrong.

I had gotten release forms for people who were featured in photographs in the book and in videos that accompanied the textbook in the instructor’s supplemental materials. I also received approvals from companies that had materials — brochures, news releases, newsletters, graphic designs, and other visuals — included as examples in the book. But what I did not anticipate was that because of a litigious society, American textbook companies have become extremely careful about all visual content. My publisher’s representative said the publication company once got into trouble for including a photograph with a tractor in it from a particular farm equipment manufacturing company without getting an approval from the equipment company prior to publication.

What I have learned in publishing textbook content has drastically changed how I frame video and photo shots and has caused me to rethink my “eye” of what I see in the viewfinder. Reading the following “lessons learned” when providing visual content for a commercial (for-profit) venture may cause you to consider how we, as communicators, collect and disseminate visual information.

### **Lesson Learned 1: Backgrounds matter.**

One of the “extras” for the textbook is a DVD of 15 videos that feature professional communicators who discuss varying topics, ranging from public relations tactics to framing messages for various audiences. One of the videos was to have included interviews I shot in 2005 with two University of Florida faculty members who discussed research they conducted related to crisis communication following the devastating 2004 hurricane season that struck Florida. As a videographer, one of the standard backgrounds to use with a researcher when you do not have a background that pertains to the topic is a bookshelf lined with books. So since I did not have a background that pertained to hurricanes, I used the fallback background: books on shelves. The publishing company liked the video but said the video could not be used in its present form due to the books on the shelves. The titles on the spine of the books, such as *Webster’s Dictionary*, could be read in the video’s frame. Because the books were not in the publishing company’s “family,” the video could not be used because we would have had to get approval from all of the books’ publishers and because we would be promoting other companies’ books.

What I learned from this is to check my backgrounds. Now, I look for titles I can read and logos I can see clearly in my viewfinder. And if I see golden arches, book titles, or content that can be associated with or that brands a company, I will reframe my shot to eliminate the commercialized visual, even though I may only be shooting the video for an educational purpose. As a rule, I no longer use bookshelf shots.

### **Lesson Learned 2: Content ownership matters.**

As previously mentioned, I thought I had received release forms or the proper approvals for all of the visual content in the textbook. I had releases for all of the photographs and had approvals for the visual examples (brochures, newsletters, and graphics). However, what I learned is even though

you may have approval, it might not be the correct approval. Following are some examples of what happened in the area of “content ownership matters.”

***Lesson Learned 2a: All co-sponsors on a communications piece have to approve its use, even if the lead organization approves.***

One of the examples I wanted to use was a nicely designed brochure from Florida Dairy Farmers Inc., the state’s dairy association. I had requested and received approval from the communications director and the executive director to use the brochure. I thought my job was done. My publishing company representative loved the brochure, but asked if I had gotten approval from all of the organizations whose logos appeared in the brochure. The brochure was of the 3-a-day program that Kraft Foods co-sponsored. So, in addition the Florida Dairy Farmers’ logo, the brochure included a logo for Kraft and two other dairy-related organizations. The publisher said although I had approval from FDF to use the brochure, all co-sponsors of the brochure had to agree to the brochure’s inclusion in the textbook. I had to pull the brochure and replace it with a different example because I could not get approvals from all the organizations.

***Lesson Learned 2b: Visual content previously approved for a different purpose does not mean you have approval for your purpose.***

I planned to use a newsletter from Florida Dairy Farmers as an example of good newsletter design. Again, I received approval from FDF representatives, and again, I thought I had done everything I needed for the newsletter to be included in the textbook. Again my publisher’s representative loved the newsletter, but (again) a problem arose. The newsletter featured photos on the front page of a National Football League player at a school to promote dairy consumption in elementary-age children; he was photographed with several children at the school. The publisher’s representative said even if FDF had received photo release forms from the NFL, the player, and the children’s parents to use the photograph in the newsletter, the release form did not extend to the newsletter’s inclusion in my textbook. I used a different newsletter example instead.

***Lesson Learned 2c: Second-generation approval may be needed.***

Because one of the target audiences for this book is high school students and college students, I wanted to include materials that would appeal to that age range, so I asked for examples from the state’s 4-H and FFA offices. I received materials that showcased 4-H exhibits and highlighted the Florida FFA Convention. I received permission from the 4-H agent and the state 4-H office for the 4-H content; I received approvals from the graphic designer and the Florida FFA executive director. The publishing company was pleased I had gotten approval from the state agencies, but the representative wondered if I had gotten approval from the national organizations, since 4-H and FFA both have national logos. I had not contacted the national offices. In this case, I was able to track down the correct persons at the two national organizations and received approvals; however, in one case, it took almost three months to get approval. In this particular situation of approvals, I was pleased the publishing company pushed me to get the approvals from the national level because 4-H is very strict about use of the 4-H cloverleaf emblem. According to the 4-H website (USDA, n.d.), every unauthorized use of the 4-H emblem carries a penalty of \$10,000 and potential jail time. I had used the 4-H emblem four times in my book. My publisher does not cover liabilities such as this, so if I had misrepresented the 4-H emblem, I could have been penalized as much as \$40,000 for the four times the emblem was used.

Lastly, every video I created as supplemental materials was equally scrutinized. In one video, I had used a photograph provided by the interviewee. Because the interviewee did not know who the person was in the photo, I ended up having to cut the photo and reedit the video. In another example, which happened to be the same video that featured the two faculty members interviewed in front of bookshelves, I received hurricane footage from another state; however, because it could not be determined if the footage was from the state agency or was file footage from a commercial media outlet, I could not use it. As a result of this and the “bookshelf” problem, I ended up pulling the entire video from the supplemental materials; it was impossible to redo the interviews, since one faculty member had taken a job at another university, and it was too difficult to reedit the video.

### **What I Learned**

Writing a textbook is an extremely time-consuming and lengthy process. Irani and I started the process in 2009 and saw the finished product in early 2012. College students may complain about the price of textbooks, but from going through the textbook-production process, publishing companies spend a tremendous amount of time and effort to ensure the content is accurate, the design is appealing, and the material is approved properly. This last point has taught me the most valuable lesson.

The bottom line is for a for-profit venture, everything related to visuals matters. My situation may have been extreme, but my experience may be becoming the norm, rather than the exception. From what my publishing representative told me on multiple occasions, publishing companies are becoming more leery about where content comes from because of the possibility of a lawsuit for material not authorized or approved by all responsible parties. Content I thought had been approved properly ended up not being acceptable content.

As has been noted, this process has made me rethink any visual content is in my viewfinder before I shoot video or a photograph. I am involved in two projects that, although instructional in nature, have the capacity for being offered for sale in the future. I am being extremely careful because I do not want to go through more “lessons learned” by having content I would have to go back through multiple hoops to get approved. My recommendation for photographers and videographers would be to take a second look for your shot composition so you are not including any commercialized content.

I also have become more conscientious about the content of materials I am provided. Just because I have approval from an organization, I have learned second- and sometimes third-level approvals must be attained before the material is truly “approved.” This may be the area where professional communicators will need to become more aware, especially as it pertains to for-profit materials.

As shown, getting approval from an organization may only be a first step; more approvals may be necessary before a visual can be used. As state agencies use more shared content as a cost-cutting measure and with the availability of more online content, communicators will need to be even more diligent to consider every aspect of a visual element — such as logos or photographs of people embedded in other content — before publishing the material for instructional purposes, either for free or for for-profit ventures. Consulting legal counsel or a publishing company representative may be necessary if any question arises about the appropriateness of using certain visual materials.

### **About the Author**

ACE member Ricky Telg is a professor in the University of Florida’s Department of Agricultural Education and Communication.

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# Brand Salience and Brand Differentiation of the Florida Forest Service

**Quisto Settle, Joy Goodwin, Rlcky Telg,  
Tracy Irani, Hannah Carter, and Al Wysocki**

## **Abstract**

This study addressed the themes affecting the brand salience and brand differentiation of the Florida Forest Service (FFS). Six focus groups were conducted at different locations in Florida. FFS suffered from a lack of brand salience and differentiation. Brand salience is the extent to which a brand comes to mind for the public. Brand differentiation is the extent to which a brand separates itself from competitors in the public's perceptions. Three themes emerged that affected brand salience: the importance of forests, brand identifiers, and external communications. Two themes emerged for affecting brand differentiation: forest and natural resources organizations and communications. The following recommendations were made for public organizations: ensure the organization's brand is present in the public's external environment, create salient messages and brand identifiers, test messages and brand identifiers prior to implementation, and consistently use messages and brand identifiers. The following recommendations were made for future research: replicate the research to other settings to address the transferability of the findings, conduct quantitative research to address brand salience and differentiation for public organizations in a generalizable manner, and research perceptions of public organizations' communications.

## **Keywords**

brand, salience, differentiation, organizations, forestry

## **Introduction and Literature Review**

"A brand is a complex, interrelated system of management decisions and consumer reactions that identifies a product (goods, services, or ideas), builds awareness of it, and creates meaning for it" (Franzen & Moriarty, 2009, p. 6). While a brand is not a tangible entity that can be discerned through any of the five senses, it still exists as a socially constructed entity (Loken et al., 2010). Branding has value to the organizations and the public. From the organizational perspective, a positive brand can protect an organization in the event of a crisis like Tylenol had in 1982 (de Chernatony, 2001). The brand also aids the organization by serving as a guarantee for the public by reducing uncertainty associated with the product or service, as well as simplifying the public's choices (de Chernatony, 2001; Keller & Lehmann, 2006).

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*This manuscript is based on a paper presented at the 2012 Association for Communication Excellence Conference.*

Walvis (2008) used neuroscientific findings to develop branding laws. The logic was that a brand is perceived by individuals and, as such, is dependent upon neural processing. The first law states brands are more likely to be chosen if they are relevant and distinct from competing brands. The second law states brands are more likely to be chosen when they repeat a specific message. The third law states brands whose messages garner more active participation will create a richer host of neural connections to the brand and will more likely be chosen.

Branding applies to how agriculture and natural resources organizations, the Florida Forest Service (FFS) in this instance, are perceived by the general public. While brands are a complex notion that includes components that are internal and external to the company, the external component is essentially the relationship that exists between the organization and the public (Franzen & Moriarty, 2009). While it is not plausible to affect the public's perceptions of agriculture and natural resources as a whole through any one action, it is plausible to affect the public's perceptions of individual organizations one study at a time.

### **Brand Differentiation and Salience**

Brand differentiation is the extent a brand separates itself from other brands (Ehrenburg, Barnard, & Scriven, 1997). Brand differentiation is a type perceptual brand positioning, which is the mental location of a brand relative to competitors (Franzen & Moriarty, 2009). Brands seek to be perceived differently from other brands in the product category based on attributes relevant to consumers. While differentiation is usually thought of in terms of the product, Aaker (1996) stated that the organization itself can be used as a means of differentiation. The organization can do this through its values and culture, its people by exemplifying the values and culture to provide credibility, its programs, and its assets and skills. Brand differentiation is not concerned with whether or not a brand is better than its competitor but is instead concerned with having an original product or service to separate it from competitors (Tybout & Calkins, 2005).

Salience is the extent to which a brand is accessible in the mind of a consumer (Franzen & Moriarty, 2009). This can occur internally through presence in the consumer's memory or externally through presence in the consumer's social surroundings. The more memory retrieval cues that are attached to the brand, the more likely it becomes that the brand will be purchased (Romaniuk & Sharp, 2006). The increased salience also "provides a sense of assurance that the brand will be appropriate for the situation" (Romaniuk & Sharp, 2006, p. 335), which fits into the functions of the brand that reduce uncertainty for consumers (de Chernatony, 2001; Franzen & Moriarty, 2009; Keller & Lehmann, 2006; Tybout & Cornelius, 2006). For external presence, brands that are more present in the media will be more successful because they will be more salient to the public (Anschuetz, 1997; Ehrenberg et al., 1997; Miller & Berry, 1998). This notion is similar to agenda setting, which is the transfer of topic salience from the media to the public based on the amount of coverage the media gives the topic (Scheufele & Tewksbury, 2007).

Salience and differentiation are related. "Brands become salient because they somehow distinguish themselves from their surroundings. They are noticed because they are simply different, a quality that can manifest itself, for example, in a special visual identity or a charismatic, unique brand personality" (Franzen & Moriarty, 2009, p. 173). Another link between differentiation and salience is that a brand will be differentiated by what the public perceives as the most salient characteristics (Franzen & Moriarty, 2009). Franzen and Moriarty suggested for well-differentiated brands to be more successful with advertising efforts, they cannot change the public's evaluations of important

characteristics, but these important characteristics can be made more salient to the public. While not explicitly stated as such, Franzen and Moriarty were essentially recommending organizations use advertising efforts to engage in agenda setting, which has been suggested for businesses (Carroll & McCombs, 2003).

### **Public Organizations and Branding**

Keller and Lehmann (2006) stated that there was a lack of branding research that assessed the broader impacts of brands. One area where branding can be applied is public organizations. While research has focused on marketing activities of public organizations, there is a general absence of branding literature for public organizations like FFS (Wæraas, 2008), and there is also discussion relating to the appropriateness of applying private-sector marketing strategies to public organizations (Butler & Collins, 1995; Laing, 2003; Walsh, 1994).

Public organizations' legitimacy depends on public value, which occurs when a public organization provides a product or service that cannot be reasonably met by private organizations and satisfies those receiving the services and the general citizenry paying for the service (Hoggett, 2006; Moore, 1995). Due to increases in consumerism and competition, public organizations are increasingly using marketing techniques, leading to more public relations and marketing staff in public organizations (Walsh, 1994). Wæraas (2008) stated public organizations are increasingly using corporate branding, but the application of private-sector strategies to public organizations is not understood (Moore, 1995), including marketing (Butler & Collins, 1995; Laing, 2003; Walsh, 1994). Whelan, Davies, Walsh, and Bourke (2010) stated that public organizations need to go beyond only providing public value to a point of also fostering relationships with the public, which effective branding can aid.

The application of private-sector strategies is difficult because public organizations are typically more complicated than private organizations. First, public organizations must have approval from not only those they immediately serve but also the general public (Hoggett, 2006; Moore, 1995). Second, public organizations have multiple roles and identities that need to be represented (Hoggett, 2006; Wæraas, 2008, 2010). Third, public organizations' roles and purposes differ from private organizations (Laing, 2003; Walsh, 1994; Wæraas, 2008).

### **Purpose and Research Questions**

The purpose of this study is to understand what influences the brand saliency and differentiation of a public organization, as perceived by members of the public. The research questions guiding this study are:

- 1) What constitutes the public's perceptions of brand salience for the Florida Forest Service?
- 2) What constitutes the public's perceptions of brand differentiation for the Florida Forest Service?

### **Methods**

Qualitative methodology was used for this study. The purpose of qualitative research lies in the pluralistic nature of life, with broad explanations of life being replaced by explanations grounded in individual situations (Flick, 2006). This study sought to improve understanding of the factors affecting brand salience and differentiation for a public organization. The research was funded by a grant received from FFS. The research occurred after a name and logo change.

The brand of FFS was explored using focus groups. Templeton (1994) defined focus groups as “small, temporary communit[ies], formed for the purpose of the collaborative enterprise of discovery” (p. 4). The guided group discussion allows participants to contrast their beliefs and experiences with each other (Morgan, 1998). It is common for the group to act on and provide perspective on opinions that differ from that of the majority in order to validate the viewpoints (Flick, 2006). Focus groups allow the discussion to remain relevant to the research questions through the efforts of a moderator (Morgan, 1998).

As a public organization, FFS is accountable to all Florida residents (Moore, 1995; Vandlik, 1995). Therefore, the target population consisted of Florida citizens of both urban rural areas, with an external marketing firm recruiting participants using computer-assisted telephone interviewing (CATI). Four focus groups were conducted with urban residents, and two were conducted with rural residents. The focus groups were conducted in four cities – Orlando, Tallahassee, Gainesville, and Ft. Myers – throughout the state, providing environmental triangulation (Guion, Diehl, & McDonald 2009). There were 54 participants, with 7 to 10 participating in each group, meeting Krueger’s (1998a) recommendation of 6 to 12 participants. Participants were provided with a \$50 incentive.

A moderator’s guide was used for each focus group to guide discussions. The moderator’s guide was created using recommendations from Krueger (1998b). The topics addressed forests, forest management by public organizations, and FFS’s communications. A summary was confirmed by the participants for validation after each focus group to provide member checking (Creswell, 2007). The moderator’s guide was reviewed by a panel of researchers and FFS staff to ensure credibility (Ary, Jacobs, Razavieh, & Sorensen, 2006).

Each focus group lasted approximately two hours. A moderator trained in focus groups methodology moderated all of the focus groups to ensure consistency. The moderator was a young, adult female with a background in agriculture and natural resources. An assistant moderator and note taker were also present. The focus groups were audio and video recorded for verbatim transcripts. Peer debriefing occurred between the researchers present after each focus group location. This allowed the researchers to understand each other’s viewpoints, observations, and interpretations of the focus groups, adding validity to the study (Krueger, 1998a). The transcripts were completed by a third party. Transcript-based analysis was used because it is considered the most rigorous means of analyzing focus groups (Krueger, 1998a) and maintains the richness of the data (Bloor, Frankland, Thomas, & Robson, 2001). The data were analyzed and separated into dominant themes according to Glaser’s (1965) constant comparative method through a qualitative data analysis program. The method consists of creating categories for each new incident, solidifying category boundaries as analysis progresses, ending in the creation of themes. This analysis was conducted by the assistant moderator, who was a young, adult male with a background in agriculture and natural resources.

## Results

### ***RQ 1: What Constitutes the Public’s Perceptions of Brand Salience for the Florida Forest Service?***

A major issue facing FFS was a lack of brand saliency for the participants. Prior to being told of the name change, participants were asked if they had heard of DOF. The majority of participants said they had heard of DOF. But when participants were asked earlier what state agency was responsible for forests in Florida, only the rural Tallahassee group had a participant mention the Division of Forestry by name, though the other five groups had participants who said Department of Forestry.

Participants also attributed the care of forests in Florida to other state organizations. These other organizations also tended to lack salience with participants. While the brand of FFS lacked salience, there were aspects of FFS and its purpose that were salient, as well as themes affecting the general saliency of FFS. The themes addressing the first research question were the importance of forests, brand identifiers, and external communications.

### **Importance of forests.**

The first theme addressing the brand salience of FFS was the participants' perception of the importance of forests. This perceived importance was multifaceted, including subthemes of nature, uses, and need to be protected.

One of the aspects of the nature subtheme was the positive benefit forests had on air quality. One Ft. Myers participant said forests were "the lungs of the Earth." Participants also viewed forests as important for flora and fauna. Some participants viewed forests as untouched by man. A Gainesville participant said "Usually in an ecosystem that has been there for a while, especially things that are like a state forest or a national forest, you have got areas that have not really been [trampled] on so much by man."

The second subtheme included the various uses for forests. One type of use was recreation. A Ft. Myers participant said, "I used to do a lot of hunting and fishing. My biggest thing up in New Jersey was hiking and fishing up there." Another type of use that was salient with participants was business. A Gainesville participant said, "Well, I need to just to talk about the money part. There is a lot of lumber. It has to be done, unless we come up with some better materials." The business use, specifically development, was also perceived by participants as a threat to forests. A participant in the second Orlando focus group said

I lived in Boca for a while, and there was this forest that was relatively near our development. It was beautiful because it had wild orchids all through it. And one day, the bulldozers showed up, and it just became this vast...as far as you can see of wasteland. I don't know if they ever did build the development. They just tore it all out and put it for sale. It was sad.

The third subtheme was the perception that forests need to be protected. The participants perceived that people through individual actions and development, which was discussed in the preceding subtheme, were threats to forests. In regard to individual actions, a Gainesville participant said, "Everybody loves to make a fire, but then there is a difference between a bonfire and just a moderate fire that you can enjoy and cook with and sit around and enjoy. There is no need to be wasteful." Participants also perceived wildfires as threats to forests. Some of the participants talked about the importance of prescribed burns for protecting forests from larger fires. A Ft. Myers participant said, "I think of the controlled burns as management, so if there was a fire it wouldn't take it all down." Another aspect of this subtheme was protecting forests from natural threats. Another Gainesville participant said, "I think some of those diseases, beetles and stuff, can take over if it is not caught in time."

### **Brand identifiers.**

Participants used the brand identifiers to identify the organization's context, as well as the brand identifiers eliciting different responses from the participants. In particular, the participants were

reacting to specific elements of the brand identifiers. The theme of brand identifiers had two sub-themes: the name of the organization and the logo of the organization.

The name “Florida Forest Service” was the first subtheme of brand identifiers. While the name was more of a point of differentiation that will be discussed in the second research question, the name also affected salience. A positive aspect was that it sounded helpful to some of the participants because the word “service” was included. One Ft. Myers participant said, “Yeah, if I own a forest, would they come in and help me? They probably would.” While salient for some participants, the name also led to uncertainty for others. A participant in the second Orlando focus group said, “It’s not enough, not enough to explain what it is.”

The second subtheme for brand identifiers was the logo (Figure 1). This included the trees in the logo, the shape of the logo, and how the logo would look on uniforms, signs, and so forth. The trees in the logo elicited mixed reactions from the participants. The positive comments were nonspecific. As one rural Tallahassee participant said, “I like the trees.” Negative reactions centered on the specific trees used in the logo, including where the trees were from. One Ft. Myers participants said, “I am still trying to puzzle over those trees. I wish that they were trees that are native to Florida, and those might be.” The trees illustrated the lack of brand salience. One Gainesville participant who was under the impression that other activities were under FFS’s purview said, “If they had maybe a lake in the background, with water and maybe a fish there and animals along the side, it would be a little bit more representative of everything that they do.” The next aspect of the logo was its shape, which many participants believed was shaped like a law enforcement badge. A participant in the first Orlando group said, “I think when you see it, you will think about the trees, but you will also think about law enforcement too. You will feel secure.” The other shape that came to mind for some participants was a highway sign. A participant in the second Orlando group said, “I would say it looked like a highway sign when I first saw it.” The last aspect of the logo was how it would look on signs, uniforms, and pamphlets. A second Tallahassee participant said “Don’t they usually wear brown or green uniforms? So, if that is on a green or a brown uniform, it is going to get lost.”



*Figure 1.* Logo for the Florida Forest Service.

### **External communications.**

This theme consisted of external communications or lack thereof that affected the brand salience of the organization. The theme included three subthemes: the FFS brand lacking salience, choice of

communication media, and mascots. The three subthemes address the communication practices that participants believed FFS should or should not be engaging in.

The FFS brand lacked salience for participants, leading to the first subtheme. When directly asked what state agency was responsible for forests, only the rural Tallahassee group had a participant say “Division of Forestry,” the old name of FFS. This occurred despite the fact that the majority of participants saying they had heard of DOF when asked later in the discussion. None of the participants were aware of the name change from DOF to FFS that had occurred in the preceding months. Many participants wanted FFS to be more visible to the public. One Ft. Myers participant said, “Let the community or public know exactly what your services are because obviously we didn’t know all that they did for us.” This desire for the organization to communicate more was not unopposed, though. As one participant in the first Orlando focus group said, “Isn’t their money better spent managing forests than educating us about what they do? I mean, we see the results of what they do, so we don’t have to know everything.”

The second subtheme for external communications was the choice of communication media. Participants’ responses differed, illustrating the variety of channels needed to reach a broad group. Communication channels mentioned by the majority of the groups were Internet-based communications, billboards/highway signs, broadcast communications, and paper-based communications. For reaching the individual participants directly, results again varied. The two most prominent responses were Internet-based communications and mail. For Internet-based communications, an urban Tallahassee participant said “We are going to stop having mail in about a year or two. Let’s just get over it. I really do think electronic communication and in a way that is non-obtrusive.” Participants without Internet access preferred traditional mail. One participant in the first Orlando focus group said, “I don’t have e-mail. You are going to have to send me a letter or call me.” Other participants did not believe that e-mail or direct mail communications would be effective. Another urban Tallahassee participant said “I would feel that most people are going to throw the mail in the can. That e-mail, they are going to delete it.... I think you should just save the money and do something else besides try to communicate.”

The last subtheme that emerged was mascots. There were repeated mentions of Smokey Bear and Yogi Bear, even though participants were not asked about bears or mascots. Yogi Bear was mentioned in four of the focus groups, with two of the groups mentioning Yogi Bear when they saw the new FFS logo. A participant in the second Orlando group said, “I can see [the logo] with Yogi Bear and a picnic basket.” Smokey Bear was mentioned in five of the focus groups, with many participants wanting FFS to have a mascot. A participant in the first Orlando focus group said, “Everyone knows who Smokey the Bear is.” While Smokey Bear and the message of preventing forest fires were salient, salience did not transfer to FFS, which along with the United States Forest Service and other state forest services can use Smokey Bear as a mascot. Participants did not know what organization was responsible for Smokey Bear. In regards to Smokey Bear’s focus on forests fires, a Gainesville participant said, “Maybe Smokey the Bear isn’t a good thing because it is really focusing on fires, not everything that the Forest Service really does. We talked about conservation, the parks, recreation.”

## **RQ 2: What Constitutes the Public’s Perceptions of Brand Differentiation for the Florida Forest Service?**

The FFS brand lacked differentiation from similar organizations, which was related to the brand’s lack of salience. Because participants were not fully aware of what FFS and the similar organizations’

purposes were, they were not always able to distinguish between the organizations. The themes that affected the differentiation of the FFS brand were forests and natural resources organizations and communications. There is overlap with themes from the first research question because there is a relationship between salience and differentiation.

### **Forests and natural resources organizations.**

The scope of the organizations, specifically forestry and natural resources, was one of the themes affecting the differentiation of FFS from similar organizations. There were two subthemes: overlap of natural resources organizations and forestry as a point of differentiation. An issue facing FFS was the lack of differentiation that was occurring. When looking at a list of DOF/FFS and similar organizations, a participant in the first Orlando group said, “A lot of duplication.... Swallow them all up [into one organization].” Participants perceived there was overlap because the different organizations operated in forests and natural resources areas. In some cases, activities of other organizations were being attributed to FFS by participants, though this was often corrected by other participants. A Gainesville participant said:

I would imagine that they [DOF/FFS] are the ones that do the training for park rangers, so that they, in turn, can manage the parks that they are in charge of, as well as educate those that come to enjoy it.

In response a second Gainesville participant said

I don't think that Division of Forestry trains park rangers.... I could be mistaken. And that may have changed. Because for a while I was looking into trying to get on as park staff because I thought that would just be the perfect job, as far as I could see.

Not all participants believed that there should be a lot of differentiation between the organizations. A rural Tallahassee participant said, “They shouldn't want to be distant from them because they can all help each other. I mean, like major catastrophes or like big fires, you know. They should all work together.” FFS's focus on forestry was a point that helped create differentiation for some participants, which constituted the second subtheme. A participant in the second Orlando focus group said, “It seems to, just by the name ‘Forestry,’ I would think their main focus would be the botanicals as opposed to, necessarily, the wildlife population.”

### **Communications.**

The communications theme includes subthemes of brand identifiers and external communications. These communications-related concepts affected the differentiation of the FFS brand from similar organizations.

There were two aspects for the brand identifiers subtheme as points of differentiation: the name and the logo. Participants were using components of the names to figure out what the organizations' activities were and where the organizations operated, which relates to the use of forestry in the name as a point of differentiation from the preceding theme. In regards to the new FFS name, one Gainesville participant said:

I think it well defines what they are doing as the service. What you have got up there is the Florida Forest Service, U.S. Forest Service, then you go into the Park Services, and then you go into Wildlife and Fish; two different organizations.

Other participants saw the new name being less differentiating than the name “Division of Forestry.” A different Gainesville participant said, “Now it looks the same as a bunch of them because it has ‘service’ in it.” For the aspect of the logo relating to differentiation, the misattribution of activities to FFS from the first research question reemerged, affecting the evaluation of the logo. A third Gainesville participant said, “I don’t know. That logo leads one to believe that it is just about forests.”

The subtheme of external communications affecting brand differentiation relates to the lack of salience. When speaking about how DOF fit in the state organizational hierarchy, an urban Tallahassee participant said “See, I can’t tell you, just like... I couldn’t tell you for a million dollars the differences between all three of those U.S. departments [listed on the screen].” Participants wanted to know the purposes of the different organizations and why they should each be receiving money. A participant in the second Orlando focus group said, “Make it clear as to what they are up to and why money should keep going there because as they talk about budget cuts and whatnot, I get angrier and angrier about the cuts in education.”

## Conclusions

### **RQ 1: What Constitutes the Public’s Perceptions of Brand Salience for the Florida Forest Service?**

FFS suffered from a lack of brand salience, which can be more important than brand image for success (Anscheutz, 1997; Ehrenberg et al., 1997; Miller & Berry, 1998). Without this salience, there is not the automatic selection of FFS in the minds of the public for the protection of Florida forests and becomes especially important considering public organizations’ need for public support, especially in political environment that seeks to cut public spending (Franzen & Moriarty, 2009; Hoggett, 2006; Moore, 1995; Pillow, 2011). Three themes emerged for the first research question: the importance of forests, brand identifiers, and external communications.

Forests were salient and valued, similar to results by Schmithüsen and Wild-Eck (2000). Organizations that ensured the long-term health of forests were also valued, but a positive brand image may not be as important for success as brand salience (Miller & Berry, 1998). Protecting Florida forests could be a message for FFS to improve brand salience. This basic message encompasses the various duties of FFS, which is important for public organizations (Hoggett, 2006; Wæraas, 2008, 2010). Focusing on a specific message will improve the likelihood of brand and marketing success (Thorson & Moore, 1996; Walvis, 2008; Weiss & Tschirhart, 1994).

The second theme was FFS’s brand identifiers affecting salience. The name “Florida Forest Service” was used to identify the context (i.e., forests) and location (i.e., Florida) of FFS’s work, though this was not enough for all participants. The logo also affected salience of the FFS brand. Like the inclusion of “Forest” in the organization’s name, the inclusion of trees helped identify the context of FFS’s work, though the chosen trees were not always perceived positively. The logo being shaped like a badge also evoked feelings of authority from many of the participants. Other public organizations should be aware that the public’s perceptions of the organizations’ purposes and activities can be affected by elements included in brand identifiers.

The third theme of external communications of FFS was an important aspect of the brand salience problem. The lack of awareness prevents salience because it is necessary to be in the public’s

environment for salience to occur (Ehrenberg et al., 1997; Franzen & Moriarty, 2009; Miller & Berry, 1998; Scheufele & Tewksbury, 2007). Part of this process of improving brand salience through external communications was the choice of communication media, which need to be chosen appropriately for effective communication campaigns (Weiss & Tschirhart, 1994). Internet-based communications were preferred to reach the public directly by many, but not all members of the public will have access to the Internet.

Another avenue of improving brand salience through external communications was mascots. The success of Smokey Bear as an advertising campaign has been documented (Capello, 1999; Donovan & Brown, 2007), and was exhibited with Smokey Bear being salient with participants when discussing forests, as was Yogi Bear. FFS did not have a clear mascot. FFS can use Smokey Bear, but Smokey Bear is also associated with the United States Forest Service, as well as other state forest services (Smokey Bear, n.d.). Along with the risk of blurred lines of differentiation of sharing a mascot, there is another downside of using Smokey Bear as a mascot. Like those who have questioned whether the success of the Smokey Bear advertising campaign was beneficial to forests (Brown, 1999; Dods, 2002; Donovan & Brown, 2007; Jacobson, Monroe, & Marynowski, 2001), a Gainesville participant questioned the unintended outcomes of Smokey Bear's success. Smokey Bear also has a significant amount of brand equity, which is basically the strength of the brand with stakeholders (Franzen & Moriarty, 2007), because of the success of Smokey Bear campaign (Capello, 1999; Donovan & Brown, 2007). It is likely that it will be difficult for any developed mascot to out-compete Smokey Bear in terms of garnering brand salience because of this pre-existing brand equity.

### **RQ 2: What Constitutes the Public's Perceptions of Brand Differentiation for the Florida Forest Service?**

Like brand salience, FFS also suffered from a lack of brand differentiation. A lack of differentiation could decrease FFS's brand success because brands are more likely to be chosen if they are relevant and distinct from competing brands (Walvis, 2008). The lack of brand salience hurt brand differentiation (Carpenter, Glazer, & Nakamoto, 1994; Franzen & Moriarty, 2009). Because awareness was low for FFS and its activities, it hurt FFS's ability to differentiate its brand from similar organizations. The themes that emerged were forests and natural resources organizations and communications.

The first theme was FFS's activities relating to forests and natural resources, which could aid and hurt brand differentiation. While viewing the organizations in a broader natural resources context hurt the differentiation of FFS's brand from the other organizations, concentrating on the care of forests helped differentiate FFS's brand from the other organizations. By focusing on a message of protecting forests to increase salience, FFS can also use that salient brand characteristic to improve brand differentiation and generate more favorable evaluations by the public through communications (Franzen & Moriarty, 2009; Thorson & Moore, 1996).

The second theme of communications, or lack thereof, also affected differentiation. As with brand salience, a lack of external communications hurt brand differentiation because of low awareness of FFS and its activities. The new name also affected differentiation, though the valence of the effect varied. It aided differentiation by identifying the context and location of FFS's work, but it hindered differentiation because many of the similar organizations were also included "Service" in the title. This could be beneficial. While brands need to stand apart from competitors to be successful, they also have to be similar enough to be considered part of the same brand category when the public

makes decisions (Kornberger, 2010). For the logo, the trees helped give context to the organization, which could aid differentiation, but the inclusion of “Agriculture & Consumer Services” could hurt differentiation. The inclusion of FDACS caused confusion for some participants, though it helped others understand the organizational structure if they knew that FDACS was the parent organization. In cases of organizational hierarchy, the inclusion of the parent brand can cause confusion.

## **Recommendations**

### **For Public Organizations’ Branding Efforts**

The first recommendation is to ensure that the organization’s brand is present in the public’s external environment to increase salience, which is necessary for brand success and differentiation (Anscheutz, 1997; Ehrenberg et al., 1997; Franzen & Moriarty, 2009; Miller & Berry, 1998). By being present in the public’s environment, the transfer of salience to the public’s agenda can occur for public organizations (Carroll & McCombs, 2003; McCombs, 2005). This is complicated, though, because external communications could be perceived as financial mismanagement, which affects perceptions of the brand’s integrity (Whelan et al., 2010). One opportunity is during wildfires when FFS’s activities are more public. Efforts can be made to increase FFS’s presence in the media. This is not as direct as other options, but it may not be perceived as a mismanagement of money. Another option may be public service announcements. They could increase the presence of public organizations’ brands in the public environment without being perceived negatively because the campaigns would be supporting the mission of the organizations, not just promoting the organization (Whelan et al., 2010). A variety of communication media are needed to reach different audience segments.

Because of the financial climate of Florida and the risk for negative perceptions of certain external communications by public organizations (Pillow, 2011; Whelan et al., 2010), public organizations like FFS need to effectively leverage the resources they already have to promote the brand, which is addressed by the rest of the recommendations. The second recommendation is to create a salient message and brand identifiers. A salient message will create a network of perceptual connections to the brand for members of the public, which increases the likelihood of being remembered when the public makes decisions on which organizations to support and which receive budget cuts (Franzen & Moriarty, 2009; Hoggett, 2006; Moore, 1995; Pillow, 2011; Romaniuk & Sharp, 2006). Improving the salience of the organization can also help differentiate the organization (Franzen & Moriarty, 2009). Messages should use specific words that will create connections reflective of the organization’s actions, creating message salience (Romaniuk & Sharp, 2006; Wæraas, 2010). It is also important for brand identifiers to include salient elements. When participants described their opinions of the brand identifiers, they focused on specific elements. For DOF/FFS, the names elicited different types of reactions, including helpfulness because of “Service” in FFS and authoritarianism because of “Division” in DOF. Organizations should be mindful of word choice when making the decision to change or develop an organization’s name because of potential associations. For logos and visual identifiers, other public organizations should be aware the public’s knowledge or lack thereof can affect perceptions of what should be included in the logo and other visual identifiers. State public organizations should try to include state-specific elements in logos to help build a connection with members of the state’s public to improve brand salience.

The third recommendation is to test messages and brand identifiers before implementation because they affect brand perceptions through their included or excluded elements. Testing can reduce the risk of unwanted perceptions being associated with the messages or brand identifiers. Short-term

costs are outweighed by the long-term risks of implementing the wrong messages or brand identifiers.

The fourth recommendation is for public organizations to consistently use messages and brand identifiers. Focusing on a specific, consistent message could improve success because it is more likely to be remembered by the public (Thorson & Moore, 1996; Walvis, 2008; Weiss & Tschirhart, 1994). The message must also encompass the scope of the organizations' activities (Hoggett, 2006; Wæraas, 2008, 2010). Similar to the message, consistent use of the brand identifiers is more likely to be remembered (Walvis, 2008). The use of separate logos for individual campaigns and programs could dilute the brand because it distracts from main brand identifiers (Loken et al., 2010). It is important for there to be communications personnel to monitor the use of brand identifiers and messages to prevent brand dilution.

### **For Future Research**

The first recommendation for future research is to address the transferability of the findings to other settings, including other public organizations, context of work (e.g.s, wildlife conservation, park service, etc.), and locations (i.e., other states). The study addressed only one organization, and while other organizations were brought up in the discussions, more in-depth discussions of other organizations are necessary to understand the transferability of the findings. Not all public organizations are the same (Laing, 2003; Scrivens, 1991; Wettenhall, 2003), and as such, multiple organizations need to be addressed to better understanding branding of public organizations.

Along the same lines, the second recommendation is to conduct quantitative research to address themes of brand salience and differentiation of public organizations to further the area of research through generalizable findings. Future research should expand to larger samples and populations. The results from this study indicate a lack of presence in the participants' external environment adversely affected FFS's brand salience and differentiation. Future research can address the interaction between brand presence (or lack thereof) and the salience and differentiation for public organizations' brands.

The third recommendation is to address perceptions of public organizations' communications. FFS lacked brand salience and differentiation, which could be improved by increasing communications, but communications that solely promote the organization could be perceived negatively (Whelan et al., 2010). On the other hand, participants wanted to know public organizations' purposes. These are conflicting desires. It needs to be determined on a larger scale what the public's perceptions are for public organizations' external communications. Because public organizations depend on public support, these public perceptions are necessary for the continued vitality of public organizations (Hoggett, 2006; Moore, 1995).

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# Selected GO TEXAN Members' Online Presence: A Communications Audit

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## Abstract

Prior research has indicated that alternative, or nontraditional, agricultural producers have more difficulty marketing their products, which may lead to them turning to online and social media tools to meet their unique marketing needs. In order to assess the extent to which alternative agriculture producers are using these communication tools, a communications audit was conducted to determine and describe how select members of the GO TEXAN network are utilizing websites and social media tools for their alternative agricultural business or company. A majority of the members included in this study were found to be using websites, while fewer were utilizing social media tools. Facebook, blogs, and Twitter were found to be the most popular social media tools used. Both website and social media content was found to be mostly general information about the company and either its products or services or marketing and advertising information. Future research should be conducted on effective methods to train businesses in employing social media and online tools for marketing, promotion, and advertising.

## Keywords

websites, social media, alternative agriculture, communications audit, content analysis, GO TEXAN, online communication

## Introduction

In the past decade, the emergence of Web 2.0 technologies (blogs, social networking sites and wikis) on the Internet has created a new culture for communicating, connecting, marketing, and advertising, not only for individual people, but for products, businesses, and industries, as well (Borsheim, Merritt, & Reed, 2008). First, the evolution of Web 2.0 allowed for a more user-generated, socially connected Web. With the Web being more social, users want to feel connected and a part of the Web 2.0 applications they are utilizing (Anderson, 2007). Organizations recognized this phenomenon, and started incorporating social media avenues in their marketing schemes to promote products and services as a means to have an active, online community interested and willing to provide feedback (Mangold & Faulds, 2009).

The technologies these organizations are implementing can be grouped under the Web 2.0 umbrella, but more specifically, social media applications (Borsheim et al., 2008). Society has changed

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drastically as a result of social media, especially when considering the ways in which people want to consume information (Qualman, 2009). A growing online community is now looking for information in new ways through the use of an increasing number of social media channels. In 2011, two-thirds of online adults (66%) were using social media platforms such as Facebook, Twitter, MySpace or LinkedIn (Smith, 2011).

As new communication methods are introduced, the marketing, promotion, and advertising of products has become an area of particular focus for many manufacturers and companies, including those within the agricultural industry. As more alternative or nontraditional agricultural products and services are introduced to the world, finding a way to market these products becomes a challenge for agriculturalists. According to Gold (2007), alternative agriculture includes nontraditional crops, livestock, and other farm products; service, recreation, tourism, food processing, forest/woodlot, and other enterprises based on farm and natural resources; unconventional production systems such as organic farming or aquaculture; or direct marketing and other entrepreneurial marketing strategies. Alternative, or nontraditional, agriculture producers experience more difficulty in marketing their products and must find creative ways to market effectively (Hazzell, 2005).

The Texas Department of Agriculture implemented a marketing program in order to help market Texas agriculture that “represents Texas agri-business on state, national and international levels by building recognition for the GO TEXAN market” (Texas Department of Agriculture, 2011a, para. 2). According to the GO TEXAN website (2011a), “more than 25 million Texans shop, travel and dine out in support of Texas business and agriculture and look for the GO TEXAN mark” (Texas Department of Agriculture, 2011a, para. 1). The GO TEXAN network has three types of membership: Product and Associate Membership, Restaurant Membership, and the Wildlife Initiative. Within each of these membership levels, members are allowed to use the official GO TEXAN mark “on product packaging and promotional materials” (Texas Department of Agriculture, 2011c, para. 4) in order to identify the company as a Texas business (Texas Department of Agriculture, 2011b).

Many agriculturalists are embracing state programs, such as the GO TEXAN network, along with social media as tools to market their farm-related businesses (Hardesty, 2011). Social media tools provide opportunities for communities to share information and are available online and, for the most part, free of charge (Kinsey, 2010). This makes social media use an attractive and potentially advantageous avenue for agriculturalists looking for ways to market and promote their business and products.

### **Literature Review/Theoretical Framework**

Although social media is a relatively new concept, its uses for marketing and promoting companies and products have been found to be advantageous (Angel & Sexsmith, 2009). Social media provides new opportunities to market businesses and products (including those within the agricultural industry) to audiences that might not be reached through traditional methods of marketing. Through the use of social media, firms can engage in timely and direct end-consumer contact at a relatively low cost and higher levels of efficiency than can be achieved with more traditional communication tools (Kaplan & Haenlein, 2010).

The changing nature of communications has encouraged more businesses to utilize a promotional mix with traditional media (i.e. television, newspaper, radio) and social media (Mangold & Faulds, 2009). General Electric and Procter & Gamble are two organizations that found the importance of utilizing social media in their media campaigns, because “first, social media enables companies to

talk to their customers, and second, it enables customers to talk to one another” (Mangold & Faulds, 2009, p. 358). CM Photographics directly recognized the impact of utilizing a \$600 Facebook ad and being allowed to target their intended audience. From this ad, CM Photographics generated \$40,000 in revenue over a 12-month time span (Facebook, 2011).

One technique an organization can use to market their products is to utilize social media avenues, which could help organizations that face hindered research and development spending (Angel & Sexsmith, 2009). Gary Vaynerchuk, a family business owner, personally found “\$15,000 in direct mail equals 200 new customers; \$7,500 in billboard costs equals 300 new customers; and \$0 on Twitter equals 1,800 new customers” (Qualman, 2009, p. 257). This new technology allows organizations to engage with customers and relate to one another without any cost to the organization (Angel & Sexsmith, 2009).

Social media is being used not only for advertising purposes, but also for customer service experiences (Best Buy, 2011). According to a case study on Twitter, Best Buy created a Twitter account, @twelpforce, to provide customer service through a real-time experience. As of December 15, 2010, @twelpforce had more than 2,900 employees signed up to help respond to questions and more than 38,000 questions had been answered (Best Buy, 2011). Social media is not just a new technology teenagers are utilizing, but a fundamental shift in marketing strategies (Angel & Sexsmith, 2009; “How Social,” 2010). By utilizing social media outlets, organizations can further their dollars on products and service awareness. In addition, businesses have an opportunity to build relationships with their consumers and “accelerate innovation and collaboration” (“How social”, 2010, p. 59).

Mangold and Faulds (2009) discussed how social media use has changed the way consumers communicate, find and view information, advertise, and trust sources of information. Organizations recognized this phenomenon and started incorporating social media avenues in their marketing plans to promote products and services as a means to have an active, online community interested and willing to provide feedback (Mangold & Faulds, 2009). Consumers are turning more frequently to various types of social media to conduct their information searches and to make purchasing decisions (Lempert, 2006; Vollmer & Precourt, 2008). Research has shown a shift from the global population seeking information rather than waiting on experts to give it to them, and more recently, to the information finding them, through the growth of social media (Seger, 2001). Because of social media, society is changing and it is important for organizations to change with it (Qualman, 2009). As consumers change where and how they gather information about the products they buy, those wanting to market and advertise to consumers must also shift how and where they make information available. Agricultural companies must change and evolve to keep up with the demands of current technologies and audiences (Seger, 2011).

The interactive nature of Web 2.0 technologies creates the need for communicators to be aware of the presence of an interaction partner involved in a communication medium (Universiteit Twente, 2010). Biocca, Harms, and Burgoon (2003) defined social presence as the “sense of being with another” (p. 456) and said that studies that explore human-computer interaction use the theory to study “how this ‘sense of being with another’ is shaped and affected by interfaces” (p. 456)

Social presence research is often conducted to explore, describe, or examine some aspect or the effects of technology (Biocca et al., 2003). In the context of mediated communication, the conceptualization of social presence was developed from Short, Williams, and Christie (1976). Short and colleagues said social presence is “the salience of the other in a mediated communication and the consequent salience of their interpersonal interactions” (Short et al., 1976, p. 65).

Kaplan and Haenlein (2010) combined social presence theory with media richness theory to develop a classification of social media. Media richness theory states the goal of any communication is to address ambiguity and reduce uncertainty (Daft & Lengel, 1986). Within this theory, types of media are classified on a spectrum from rich to lean. More rich forms of media (e.g. face-to-face communication) allow more information to be transmitted in a given time frame. These mediums can “overcome different frames of reference or clarify ambiguous issues to change understanding in a timely manner” (Daft & Lengel, 1986, p. 560). Lean media (i.e. impersonal letter) do not allow for feedback, clarification, or detailed information to be transmitted (Daft & Lengel, 1986). Social media, according to Kaplan and Haenlein (2010), is unique because of the richness of the medium and the degree of social presence it allows. This indicates that social media allow significant amounts of information to be broadcast to large audiences within a short amount of time and that the information can influence the behavior of others.

With the addition of self-presentation and self-disclosure concepts, Kaplan and Haenlein (2010) classified social media in regard to their level of social presence/media richness (low, medium, high). Blogs were ranked as low in social presence/media richness, social networking sites and content communities (e.g. YouTube) were ranked as medium, and virtual social worlds and game worlds were ranked as high.

### **Purpose and Objectives**

The 2011-2015 National Research Agenda Priority Area 2 states that social science research goals should address “the use of new technologies and social networking tools for communication to selected target audiences” (Doerfert, 2011, p. 17). The rapid growth of social media use has created new channels for communicating about a variety of topics. Addressing how these channels can be used to effectively to communicate about the agricultural topics and products can offer new opportunities for those within the industry. The first step for doing so involves determining what, if any, social media tools are currently being used by agriculturalists, so that researchers may identify areas of potential need for expanding social media used amongst agriculturalists.

The purpose of this study was to determine and describe how selected GO TEXAN members utilize social media outlets and online tools. This research study sought to determine how social media outlets and online tools (Facebook, Twitter, blogs, websites, You Tube, Flicker, etc.) were being utilized by alternative agriculturists in the GO TEXAN network. For the purposes of this study, alternative producers includes those that produce specialty crops, small-scale fruits and vegetables, or anything outside of the large farms that grow grains, oilseed, or fiber crops. Since this was a communications audit, only the social media and online sites utilized by members of the sample were investigated, not the members themselves. The following objectives were used to guide the study:

1. To describe the utilization of websites by the selected GO TEXAN members.
2. To describe the social media presence of the selected GO TEXAN members.

### **Methods/Procedures**

In order for organizations to gain more insight into the effectiveness of the communications methods being used, a communications audit can be conducted (Coffman, 2004). “The communications audit is a method of measuring communications effectiveness internally and externally” (Strenski, 1978, p. 17). The results of a communications audit allow “streamlining communication

with members without compromising efficiency and reach” (Keiser & Stein, 2006, p. 1). One type of communications audit that can be conducted is a content analysis. According to Krippendorff (2004), content analysis is a research technique for making replicable and valid inferences from texts to the contexts of their use. It is an unobtrusive technique that allows researchers to analyze data for the meanings, symbolic qualities, and expressive contents they have and of the communicative roles they play for the data’s sources (Krippendorff, 2004). Understanding the methods of communication between the producer and consumer has “an impact on the way users interact with the organization and others” (Keiser & Stein, 2006, p. 2). With communication channels varying from traditional to social, and new outlets developing daily, it is important to analyze them and determine the need of a communications audit for an organization (Keiser & Stein, 2006).

This study used a qualitative content analysis design to determine how selected GO TEXAN members utilized websites and social media outlets. The population for this sample consisted of members within the GO TEXAN network. Only current, active (dues-paid) members of the GO TEXAN network were considered to be members of the population. The sample for this study was selected using purposeful sampling. As defined by Gall, Gall, and Borg (2007), purposeful sampling is done to “select cases that are ‘information-rich’ with respect to the purpose of the study” (p. 178), so that a “deeper understanding of the phenomena being studied” (p. 178) can be achieved. This type of sampling allows researchers to better understand the selected sample, rather than infer results to a larger population (Gall, Gall, & Borg, 2007). Using the criteria of identifying GO TEXAN members who were engaged in alternative agricultural enterprises involving nontraditional crops, livestock, and other farm products, an employee of the GO TEXAN program selected the GO TEXAN members that met the aforementioned definition of alternative agriculture production and provided their names and contact information. Alternative producers were selected because, as Hazzell (2005) stated, alternative producers experience more difficulty in marketing their products and may be more likely to utilize the social media being investigated in this study. The provided sample consisted of 42 GO TEXAN members who operate a variety of alternative agricultural businesses throughout the state of Texas.

Due to the fact that a purposeful sample was selected, some sampling error may be present. Only GO TEXAN members who were deemed to be involved in alternative or nontraditional agricultural enterprises were selected. The researchers established this criterion, but the GO TEXAN representative was responsible for determining which members fit this specific criterion. This may have led to some error due to bias created by the representative selecting the sample. Because only members who met the alternative agriculture criterion were selected, the data found from this study are only valid for this particular sample, and, therefore, cannot be generalized to a larger population.

Researchers investigated the GO TEXAN members’ use of multiple social media and websites. Specifically, this study examined each member’s use of websites, Facebook, Twitter, blog platforms, YouTube, and Flickr in connection with their agricultural business. The researchers analyzed the content found on the online communication sites used by individuals in the sample. This content was coded according to the type of information presented. Content categories represented material regarding marketing or advertising information, general information about the company and its products, e-commerce and online purchasing, personal use not related to the business or products, and combinations of these content categories. Researchers also reported the frequency of when each type of social media or website was updated. A coding book was developed by the researchers to assist in the data collection, which was used as they completed the content analysis. This coding book

outlined the categories of information the researchers examined as they inspected each website and social media outlet used by the members of the sample. The researchers entered the code that corresponded to the information present on the sites used by each member of the sample.

This study was conducted using observations and interpretations of the content found on social media and online sites used by individuals in the sample for their agricultural enterprises. No examination or analysis of their personal online presence was conducted. A panel of experts comprised of agricultural communications professors at [university] examined the document for face validity and completeness. The researchers who collected the data for this study were trained on the coding methods used to analyze the content on the social media and online sites under investigation to ensure inter-rater reliability. Because more than one researcher collected data on this instrument, it was essential that all researchers coded content in the same way to avoid error in the results. Using Microsoft Office Excel to record their observations, the researchers searched each GO TEXAN members' name or company name to identify if they had a website and the different types of social media sites. For each site found, the researchers analyzed the content displayed and how often they updated or posted new information to that site.

The most common type of internal validity issue at risk in this study was that of inter-rater reliability. Having multiple researchers coding the data for this study created an extraneous variable that may have affected the results. The data gathered through this study is only applicable to the sample from which it was collected and cannot be generalized to a larger population.

Data collection was conducted in October and November of 2011. Using open and axial coding, the researchers looked for themes and subthemes in the qualitative data collected. Descriptive statistics such as the mean, mode, and frequencies were calculated where appropriate.

## **Results/Findings**

### **Describe the Utilization of Websites by the Selected GO TEXAN Members**

Two types of websites were found for the members of this study. Websites were found that were provided and maintained by the business or company themselves, as well as websites that were provided and maintained by a third-party or external organization. Websites provided and maintained by the business or company themselves contained information and content that was uploaded or supplied by the business. They were responsible for updating and maintaining the content on these websites for their own use. Websites provided by a third-party or external organization were not the responsibility of the business or company nor was it their responsibility to provide content or maintain the website.

The researchers found 71.4% ( $n = 30$ ) of the sample had a website related to their business or product that they provided and maintained themselves. These websites were found to have a copyright date ranging between 2005 and 2011. Of those websites, 14 had a copyright date of 2011, indicating they had been created or updated within the past year. Six of the sites reported no copyright date.

The researchers found half ( $n = 15$ ) of the user generated and maintained websites contained material related to the marketing of products or services offered by the member and general information about the company or business. Marketing information included descriptions of the products or services provided by the GO TEXAN member, reviews and testimonials about the company or business and its products or services, information on where to buy the products, or how to contact the company about products or services offered. General information included history of the com-

pany or business, biographies about the owners and staff who run the company or business, contact information, frequently asked questions (FAQs), and mission or goal statements for the company or business. Slightly fewer ( $n = 12$ , 40%) of the websites included e-commerce content in addition to marketing and general information content. E-commerce content included opportunities for users to purchase products online via the company's website.

Qualitative comments regarding the websites noted several sites ( $n = 9$ , 21%) used a very simple or outdated design, were difficult to navigate, or had missing links. Other websites ( $n = 6$ , 14%) had more user-friendly and/or modern design, ease of navigation, and quality of information provided.

In addition to user generated and maintained websites, the researchers found 26.2% of the sample ( $n = 11$ ) had websites that were provided and maintained by a third party or an external organization. These externally provided websites were found to have a copyright date ranging between 2010 and 2011, with most being reported as 2011. One site did not report a copyright date.

The third-party or external websites found for the sample ( $n = 11$ , 26.2%) were provided by a number of sources on behalf of the companies and business, and of these, the majority ( $n = 10$ , 90.9%) provided content related to marketing and general information. Most of these websites contained general information about the company or business within a larger site that provided similar information about other related businesses. One such site, [www.texasandwine.com](http://www.texasandwine.com), provided basic profiles with general information about many Texas wineries and products. Some of these sites also provided links to the company's own website, where users can view content provided by the company themselves.

### **Describe the Social Media Presence of the Selected GO TEXAN Members**

Social media presence was explored based on popular venues of social media commonly used online. Facebook, Twitter, blogging, YouTube and Flickr were evaluated for each member of the sample. Researchers also found additional social media sites for some member other than the ones listed above.

#### **Facebook.**

Researchers found the most commonly used social media site used by the sample was Facebook. In this study, half ( $n = 21$ , 50%) of the sample maintained a Facebook profile, all of which were categorized as business type profiles. The majority of these profiles, 95.2 percent ( $n = 20$ ), contained general information about the company, as well as marketing information about their products or services. General information included in these Facebook profiles included history of the company or business, biographies about the owners and staff who run the company or business, contact information, maps and directions to facilities, and mission or goal statements for the company or business. Marketing information included descriptions of the products or services offered by the company or business, information on where to buy or how to contact the company about products or services offered, and comments from users or followers of the company or business and its products or services.

This study found the number of likes each business profile had ranged from seven to 1,763. The mean number of likes was found to be 392 ( $SD = 448.4$ ). It was also found that the frequency of Facebook profiles used varied from no updates in more than six months ( $n = 1$ , 5%) to updates at least once a day ( $n = 1$ , 5%). The most commonly reported frequency of use found was those who updated two to three times per month ( $n = 10$ , 47.6%).

### Twitter.

Twitter proved to be a less popular social media tool for the sample of this study. Researchers found 16.7% ( $n = 7$ ) of the sample had a Twitter account for their company or business. All of the Twitter accounts found for this sample contained general information and marketing content. The use of each Twitter account by the members of the sample varied from six total tweets to 1,169 total tweets ( $M = 418.29$ ,  $SD = 421.11$ ). Users tweeted about new products and services provided by the company or business, promotional offers or events involving their company or products, and news involving their company or business.

The number of Twitter accounts each member of the sample was following ranged from 11 to 508 ( $M = 202$ ,  $SD = 186.09$ ). The number of followers each member of the sample had ranged from 66 to 1,405 ( $M = 358.29$ ,  $SD = 473.24$ ). The frequency of Twitter use varied from no new tweets in the past three to six months ( $n = 1$ , 14%) to tweets two to three times per week ( $n = 3$ , 42.8%), which was found to be the most commonly reported frequency of use.

### Blogs.

Blogs were utilized by 19 % ( $n = 8$ ) of the GO TEXAN members of this sample. The blog platform used by each member varied, with a fairly even distribution between three different platforms. The most popular blogging platform used by this sample was Blogger/Blogspot ( $n = 3$ , 37.5%), followed by blogs run through the company's website itself ( $n = 2$ , 25%), and Wordpress ( $n = 1$ , 12.5%). Blog use ranged from one total blog entry to 158 total blog entries ( $M = 33.86$ ,  $SD = 55.19$ ) with 62.5% ( $n = 5$ ) containing content relating to general information about the company and its products and marketing information. Blog entries were found to be similar in content to Twitter tweets, but with more detail and sometimes included pictures. E-commerce content was included in 12.5% ( $n = 1$ ) of blogs. The researchers of this study found that of the blogs evaluated for this sample, 50% ( $n = 4$ ) had not had new posts in more than six months, 25% ( $n = 2$ ) received their last post in the past one to three months, and 25% ( $n = 2$ ) had new posts two to three times per month.

### YouTube.

YouTube and Flickr were found to be the least commonly used social media tools by the members of this sample. YouTube was found to be used by only one member (2.4%). This company had established a YouTube channel that contained two videos at the time this study was conducted. Both videos were aimed at the marketing and promotion of the company, along with providing basic details of its everyday operations. No new videos had been uploaded to the company's YouTube channel in more than six months.

### Flickr.

Like YouTube, researchers found that Flickr was utilized by only one member (2.4%) of the sample. Twenty-three photos were found on the Flickr page, with a focus on general photos of the member and their business and products. No date was found as to when the photos were uploaded, so frequency of use is unknown, but they appeared to be from generally the same time of year, which led researchers to believe they were uploaded all at the same time.

### Other Social Media.

In addition to the social media outlets investigated above, 21.4% ( $n = 9$ ) of the members of this sample were found to have utilized other social media for their companies and businesses. A variety

of other social media outlets were found to be associated with members of this sample with content including general information, marketing and advertising, and e-commerce channels. LinkedIn profiles were found for 7% ( $n = 3$ ) of the sample. LinkedIn serves as an online networking community to connect companies and business professionals from across the country. Foursquare pages were found for 7% ( $n = 3$ ) of the sample, as well; however, these sites were not utilized by the same members who utilized LinkedIn. Foursquare allows patrons of businesses and organizations to “check-in” at specific locations and post information about that location to that page. The Foursquare pages found for the members of this sample were created by the patrons who had checked-in at the business location, not created by the businesses themselves. A TripAdvisor profile was found for 2.4% ( $n = 1$ ) of the sample. TripAdvisor allows patrons and fans of local businesses to rate and review their experience with a business. Users of TripAdvisor look for highly rated and well-reviewed businesses to visit while in a certain area. jAlbum was utilized by 2.4% ( $n = 1$ ). jAlbum is similar to Flickr, in which users create a page to which they upload photos to share with others. Finally, Groupon was utilized by 2.4% ( $n = 1$ ) of the sample. Groupon allows businesses to market and promote their company and products by offering highly discounted deals to Groupon subscribers. The frequency of use of these additional social media outlets was found to range from no updates or uploads in more than six months ( $n = 3, 33.33\%$ ) to updated or uploaded content within the past one to three months ( $n = 1, 11\%$ ).

### **Discussion/Implications/Recommendations**

This research study sought to determine how selected GO TEXAN members utilized social media outlets and online tools. As Kaplan and Haenlein (2010) suggested, using social media allows for more timely and direct end-consumer contact at a relatively low cost and at higher levels of efficiency than traditional communication tools. The results found the majority (71.4%) of the GO TEXAN members in the sample were using some type of website to promote and market their business or company, but far less utilized social media sites. As Kaplan and Haenlein (2010) indicated, social media’s degree of media richness and social presence allows it to be an effective tool for reaching large audiences and communicating detailed information; however, many of the GO TEXAN members in this study did not take advantage of social media opportunities. This indicates an area where agricultural communication practitioners can help agricultural businesses more effectively use social media in their promotion efforts, thus increasing their social presence.

Some members of the sample had websites provided by a third party or external organization. Although these sites were not generated or maintained by the company themselves, they provided valuable marketing and business exposure for those companies and businesses. The same can be said for the social media profiles created by the GO TEXAN members’ patrons and users. The businesses themselves did not create these pages or profiles, but they can benefit from site traffic and good ratings, reviews, and comments regarding their business or product. This should be a valuable lesson to all businesses and companies in regard to social media and online presence and the affect it can have on their reputation.

The copyright dates and frequency of use varied for the websites and social media outlets evaluated for this study. Some websites had no copyright at all, which provided users with no indication as to how old the information on the site was. Up-to-date and timely pages and content are more effective and attractive to users of this content. As Seger (2011) mentioned, agriculturally related companies must change and evolve to keep up with the demands of current technologies and audi-

ences, which includes keeping website and social media content current and up-to-date. Maintaining a company's website or social media site should be made a priority to ensure users' trust in the content and information presented.

Future research should be conducted regarding social media use and how it can benefit agricultural businesses and companies. Several areas of further research can be developed from the results of this study such as understanding agricultural businesses' and companies' perceived ease of use and perceived usefulness of each social medium. The results of this study are limited due to the small, non-random sample; therefore, replicating this study with a larger, random sample would provide more generalizability. Such research could provide valuable information to further our understanding of website and social media use by agricultural companies and businesses. Some companies were found to not be utilizing websites and social media, so research could be conducted to explore as to why. If information on why some members did not use these tools could be collected, researchers may be able to develop ways to help social media and website use become more widely employed. Another area of research that may be of interest to researchers includes evaluating efforts to help agricultural businesses implement social media and websites, especially those that are classified as being media rich (Daft & Lengel, 1986), for marketing, promotion and advertising purposes. Some may not be using online or social media tools because they simply do not know how. After a training program has been developed and implemented, a cross-sectional study could be conducted to determine if the training impacted the use of these tools for marketing and promotion.

Social media and online sites hold great potential for marketing and promoting businesses of all types and sizes. As Kaplan and Haenlein (2010) described, utilizing social media tools, particularly those which are classified as medium or high in media richness and social presence, can allow information vital to influencing public behavior to be disseminated to large audiences in a short amount of time. As the world becomes increasingly technological, utilizing these tools will become more and more essential for effective marketing of agricultural businesses and products.

If agricultural businesses and companies are educated about the importance and effectiveness of utilizing websites and social media for promotion and marketing, they could potentially see an increase in consumers and revenue. Furthermore, education of social media tools and their impact on today's society could help agricultural businesses and companies understand what social media tools they should or should not incorporate into their marketing mix and why. We live in a society that uses the Internet on a daily basis, whether it is via smart phones or computers, and providing educational efforts to agricultural businesses and companies in order for them stay up-to-date with technology is imperative to their vitality.

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# Media Dependency during a Food Safety Incident Related to the U.S. Beef Industry

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## Abstract

Food safety issues are an important topic in the mainstream media. Media coverage of food safety, particularly the beef industry, has the potential to alter consumers' perceptions of and attitudes toward the beef industry. Much of the media coverage about food safety incidents related to beef is negative, causing concerns and frustrations among the industry. The media has an important and powerful influence on society; there is a benefit to understanding the role of the media and how people use media in their everyday lives. This study examined consumers' dependencies on media during normal times when a food safety incident has not occurred or is not expected to occur and during a potential food safety incident in the beef industry. The results showed that consumers use different mediums to receive information during a food safety incident than during normal times. Internet, television news channels, and radio were the top mediums that respondents considered helpful in receiving information related to food safety incidents. Respondents spent more time per week on mediums during normal times than during a food safety incident. Agricultural communicators need to send messages to the mediums consumers use daily to educate the public about food safety issues.

## Keywords

media dependency, beef, food safety, U.S. beef industry, agricultural communications, consumers

## Introduction

Food is a basic necessity for all consumers, and less than 30 years ago, consumers accepted that the food they purchased was safe (Anderson, 2000; Charlebois, 2008). A shift in consumer attention toward food safety issues has occurred in recent years as a result of various food scares, including *Salmonella*, *Escherichia coli* 0157:H7 (*E. coli*), and *bovine spongiform encephalopathy* (BSE) (O'Neill, 2005; Schroeder & Mark, 2000; Schupp, Gillespie, O'Neil, & Prinyawiwatkul, 2006). Although many consumers would consider the United States food supply the safest in the world, food safety incidents cause concerns for consumers (Crutchfield & Roberts, 2000; Verbeke, 2005). Consumers are becoming more interested in the processing and quality of their food, which has caused quality differentiation to be a deciding factor in food choices (Grunert, 2005; Piggott & Marsh, 2004; Schroeder & Mark, 2000).

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Most consumers receive agricultural information from the media (Sitton, 2000), and misperceptions about the industry stem from a lack of basic agricultural knowledge (Frick, Birkenholz, & Machtmes, 1995). The media plays an important role in today's society, making news, Internet, magazines, and other media consumption an everyday routine (McCullagh, 2002). The media has changed significantly over time from a thing of curiosity to its present role as an information system vital to society (DeFleur & Ball-Rokeach, 1989). This vital information system is used to report and inform individuals of events occurring across the world (McCullagh, 2002). Food safety concerns are increased by negative media coverage of food safety incidents, particularly beef-related incidents, and negative messages have the potential to affect consumers' perceptions of the industry (Anderson, 2000; Buzby, 2001; Schupp et al., 2006). Although consumers are supplied with a wealth of information from the media, Swinnen, McCluskey, and Francken (2005) suggested that some information regarding food safety issues is misinforming.

A beef-related food safety incident can damage the agricultural industry and economy, causing concern for the industry (Burton & Young, 1996; Economic Research Service, 2010; Johnson, 2008; O'Neill, 2005; Schroeder, Tonsor, Pennings, & Mintert, 2007; Schupp et al., 2006). *Salmonella* and *E. coli* cost more than \$3 billion in 2009 (ERS, 2010). Foodborne illnesses contracted by these pathogens are also an area of concern. According to the Centers for Disease Control and Prevention (CDC, 2011), approximately 48 million Americans become ill and 3,000 die each year as a result of foodborne pathogens. *E. coli*, the pathogen highly associated with contaminated beef, was one of the top five pathogens contributing to hospitalization and death (CDC, 2011). The U.S. beef industry experienced a decline in beef exports after the 2003 BSE incident, when 53 countries closed their borders to the U.S. beef market (Johnson, 2008; O'Neill, 2005; Schroeder et al., 2007). Additionally, BSE cases in Europe caused a decrease in meat consumption (Charlebois, 2008).

Consumers also believe that foodborne illnesses pose a high risk to their health (Schroeder et al., 2007). A survey by Schroeder et al. (2007) found that 50% of consumers believed *E. coli* was the largest risk associated with food safety. Risk perceptions among consumers also were the main driver for reduced beef consumption (Schroeder et al., 2007).

### **Media Dependency Theory**

Because of the influence of mass media and research describing it as an entity that is consumed constantly, the media dependency theory (MDT) was used to support this study. MDT describes the relationship among audiences and the media and how that relationship affects society (Ball-Rokeach & DeFleur, 1976). Dependency is described as "a relationship in which the satisfaction of needs or the attainment of goals by one party is contingent upon the resources of another party" (Ball-Rokeach & DeFleur, 1976, p. 6). In the case of media and society, the media is dependent on society, and that dependence determines how individuals use media.

The information presented by the media is needed for individuals to attain their goals (Loges, 1994). Information is considered as a resource for individuals; they must rely on the media to supply those resources (DeFleur & Ball-Rokeach, 1989). The three types of resources—gathering and creating, information processing, and dissemination—allow individuals to achieve the personal and collective goals of understanding, orientation, and play (DeFleur & Ball-Rokeach, 1989).

The goals of media dependency are further divided into self and social aspects (DeFleur & Ball-Rokeach, 1989). Understanding and orientation, more specifically social understanding, interaction orientation, and action orientation, are most related to this study. Social understanding is achieved

when individuals use the media to understand and interpret the world around them (DeFleur & Ball-Rokeach, 1989). Lowrey (2004) found that most individuals used the media after the 9/11 terrorist attacks to meet their understanding goals. A state of chaos and uncertainty made individuals seek information from the media to understand what was happening (Lowrey, 2004). Closely related is action orientation, in which individuals use the media as a guide to forming behaviors of their own (DeFleur & Ball-Rokeach, 1989). Interaction orientation is achieved by the media supplying information about handling new or difficult situations (DeFleur & Ball-Rokeach, 1989).

The mass media is an outlet that offers “speed of transmission and structural connectedness to ‘expert’ sources of information,” which satisfies the needs of the public (Lowrey, 2004, p. 339). This dissemination role of the media is especially needed when issues of important international trade and health concerns arise (Buzby, 2001). When an issue arises that heightens social conflict or ambiguity, dependency on media is increased (Ball-Rokeach & DeFleur, 1976). Examples of social conflict or change include environmental problems, energy crises, wars, and political corruption (Ball-Rokeach & DeFleur, 1976), and could be extended to food safety incidents.

### **Purpose and Objectives**

With changing consumer perceptions and concerns (Verbeke, 2005), agricultural communicators must provide effective food safety messages to the public. Also, communicators must be aware of the outlets consumers depend on to receive general information and food safety information. The purpose of this study was to describe consumers’ self-reported dependencies on media channels during normal times when a food safety incident has not occurred or is not expected to occur and during a food safety incident related to the U.S. beef industry. The following objectives were used to guide this study:

1. Describe consumers’ dependency on media for general information.
2. Describe consumers’ dependency on media for information during a food safety incident related to the U.S. beef industry.
3. Describe differences in consumers’ use of media for general information and information during a food safety incident.
4. Describe differences among rural, urban, and suburban consumers’ use of media for general information.
5. Describe differences among rural, urban, and suburban consumers’ use of media for information during a food safety incident.

### **Methods**

The accessible population for the study included Texas A&M University former students (N = 160,208) with a valid email address who were registered with The Association of Former Students of Texas A&M University. The database was stratified by college, and a predetermined number of individuals were selected from each college to produce a sample (n = 4,500) that reflected the distribution of graduates from all of the colleges represented in the database. In a previous study (Robertson, 2009) that used similar sampling methodology, a response rate of approximately 12% was obtained. In this study, the expected response rate was 10%, so a sample size of 4,500 was selected to ensure the number of respondents would meet sample size guidelines described by Krejcie and Morgan (1970).

This study used an online questionnaire modeled after a previous media dependency study and appropriate literature (Ball-Rokeach, 1985; Ball-Rokeach & DeFleur, 1976; CFI, 2010; DeFleur &

Ball-Rokeach, 1989; Jakob, 2010; Robertson, 2009). The questionnaire consisted of five sections: knowledge of agriculture, normal media use, media use during a beef-related food safety incident, perceptions of the beef industry, and demographics. The knowledge of agriculture and demographic sections included multiple-choice and fill-in-the-blank items. Respondents reported their estimated normal use and media use during a beef-related food safety incident in hours per week; explanations of “normal” and “food safety incident” were provided. The perceptions of beef industry section included scaled items using a 5-point rating scale ranging from strongly disagree (1) to strongly agree (5).

Content validity was established through a panel of four experts. Revisions to the questionnaire were made based on the feedback from the panel of experts. Reliability was established through a pilot study of Texas A&M University agriculture and life sciences graduate students. Using Cronbach's alpha, reliability was calculated for 83 scaled items and resulted in a Cronbach's alpha coefficient of .968.

The questionnaire was implemented based on the principles of the Tailored Design Method outlined by Dillman, Smyth, and Christian (2009). An introductory email was sent to the selected individuals. Beginning one week after the introductory email, two reminders were sent on a weekly basis to individuals who had not yet responded to the survey. Nonresponse error was examined by comparing the means of early respondents to the mean of the late respondents (Linder & Wingenbach, 2002). No significant differences were found between early and late respondents.

## Findings

Descriptive analyses for the media use sections of the questionnaire are reported in this paper. Inferential analyses related to media use and analyses of the knowledge of agriculture and perceptions of the beef industry sections will be reported in future papers.

Responses were obtained from 579 of the 4,500 former students emailed, resulting in a response rate of 12.9%. Of the respondents who indicated their gender ( $n = 471$ ), 52.5% were male and 28.8% were female. Thirty-nine percent of the respondents ( $n = 475$ ) described the area they lived in as suburban, 21.2% as urban, and 20.9% as rural. The respondents ( $n = 471$ ) ranged in age from 23 to 84 years with a mean age of 50.16 years ( $SD = 12.66$ ). More than half of the respondents (54.6%) lived in Texas; thirty-two other states and 19 countries were represented. The longest time lived in the respondent's present community was 84 years.

Of the respondents who reported their level of education ( $n = 476$ ), 29.0% indicated they completed a bachelor's degree, 28.5% had a master's degree, and 14.9% had a doctoral or law degree. Nine percent of respondents indicated they had completed some graduate school. About two-thirds (67.5%) of the respondents ( $n = 391$ ) have not served in the military, and 13.8% indicated they have served in the military. Respondents ( $n = 471$ ) indicated whether they were conservative (29.0%), moderately conservative (19.9%), moderate (16.8%), moderately liberal (8.5%), liberal (4.8%), or other (2.4%).

In regards to marital status, 60.1% of respondents were married, 3.3% divorced, and 12.8% single; 176 respondents have at least one child under 18 years of age living with them, with a range from zero to six children. In regards to employment status ( $n = 467$ ), 60.1% of respondents are employed full-time, 8.6% of respondents are employed part-time, and 11.9% of respondents are not employed. Based on respondents' 2010 household income before taxes ( $n = 440$ ), 40.4% of respondents earned more than \$100,000; 13.0% of respondents earned \$75,000 to \$100,000; 12.4% of respondents

earned \$50,000 to \$75,000; 8.6% of respondents earned \$25,000 to \$50,000; and 1.6% of respondents earned less than \$25,000. Almost three-quarters (73.6%) of the respondents ( $n = 426$ ) said they are white; 0.9% of respondents indicated they are African American; and 3.6% of respondents indicated they are Hispanic, Spanish, or Latino.

### Normal Times

Respondents were asked to indicate how many hours per week they spent gathering information for personal use from a provided list of mediums (see Table 1). Internet was the medium people used most for gathering information. Respondents used the Internet an average of 10.58 ( $SD = 11.03$ ,  $Mdn = 7.00$ ) hours per week. Television shows and movies and television news channels were the next highest in hours of use per week, with means of 7.98 ( $SD = 7.38$ ,  $Mdn = 6.00$ ) and 5.79 ( $SD = 6.99$ ,  $Mdn = 4.00$ ), respectively. Respondents indicated that Twitter was used least often for gathering information, averaging 0.14 ( $SD = 0.6$ ,  $Mdn = 0.00$ ) hours per week.

Table 1  
*Hours per Week Spent on Media for Personal, Business, and/or Entertainment use*

Medium	<i>n</i>	<i>M</i>	<i>SD</i>	Range	<i>Mdn</i>
Internet	502	10.58	11.03	80	7.00
Television (shows, movies)	489	7.98	7.38	50	6.00
Television (news channels)	502	5.79	6.99	90	4.00
Radio	489	5.07	6.42	50	3.00
Newspapers	475	2.20	3.72	50	1.00
Facebook	461	1.93	4.55	50	0.00
Magazines	456	1.50	2.05	20	1.00
Email list subscriptions	452	1.12	1.93	15	0.00
Other	328	0.79	3.22	40	0.00
Blogs	443	0.47	1.77	20	0.00
YouTube	445	0.37	0.88	10	0.00
RSS Feeds	439	0.23	1.23	20	0.00
Twitter	440	0.14	0.61	7	0.00

### Food Safety Incident

Respondents were asked to provide how many hours per week they spent on certain media channels to get information concerning a food safety incident related to the beef industry (see Table 2). An average of 2.15 ( $SD = 6.96$ ,  $Mdn = 1.00$ ) hours per week was spent on television news channels, making it the most used medium for information concerning a food safety incident. The least used medium was Twitter, with respondents indicating they use it .01 ( $SD = 0.14$ ,  $Mdn = 0.00$ ) hours per week.

Table 2  
*Hours per Week Spent on Media for Food Safety Information Related to the Beef Industry*

Medium	<i>n</i>	<i>M</i>	<i>SD</i>	Range	<i>Mdn</i>
Television (news channels)	456	2.15	6.96	90	1.00
Internet	446	1.94	4.24	32	1.00
Radio	438	1.20	3.19	40	0.00
E-mail list subscriptions	452	1.12	1.93	15	0.00
Television (shows, movies)	427	0.57	3.11	50	0.00
Magazines	418	0.45	1.38	20	0.00
RSS Feeds	413	0.11	1.49	30	0.00
Facebook	416	0.08	0.57	8	0.00
Blogs	412	0.05	0.31	4	0.00
YouTube	414	0.02	0.15	1	0.00
Twitter	415	0.01	0.14	2	0.00
Newspapers	436	0.91	2.87	50	0.00
Other	339	0.17	1.05	16	0.00

### **Rural, Urban, and Suburban Consumers**

Medium use among community type also was examined during normal times and during a food safety incident. Because of the large decrease in the means after the fourth medium, only the top four mediums were reported. Suburban respondents spent the most time watching television shows and movies, while rural respondents spent the most time on television news channels and radio. Urban respondents spent the most time on the Internet (see Table 3).

During a food safety incident, media use was reported with low means (see Table 4). Suburban respondents spent the most time on television shows and movies and the Internet. Urban respondents spent the most time on television news channels, and rural respondents spent the most time on radio for information related to a beef food safety incident.

### **Comparison**

Based on the respondents' indications of how many hours per week they used specific mediums, the mediums were ranked with the ranking of "1" being most used and "13" being least used. The rankings for the mediums were compared between normal times and times during a food safety incident related to the beef industry (see Table 5). During normal times, respondents indicated they use Internet more hours during the week than other mediums. The least used medium in a week was Twitter. During a food safety incident, television news channels were used the most per week and the category of other was least used.

Mediums used during normal times and during a food safety incident also were ranked according to community type (see Table 6). For the most part, rankings stayed consistent across the three types of community for both time periods.

Table 3  
*Community Type and Normal Media Use (hours per week)*

Community Type	Medium			
	TV (shows and movies)	TV (news channels)	Radio	Internet
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Urban	8.03 (7.12)	6.04 (6.85)	5.14 (7.54)	12.20 (11.52)
Suburban	8.15 (7.72)	5.45 (5.46)	4.85 (4.82)	10.52 (10.79)
Rural	7.83 (7.49)	6.20 (9.01)	5.86 (8.32)	9.45 (11.38)

Table 4  
*Community Type and Media Use During a Food Safety Incident (hours per week)*

Community Type	Medium			
	TV (shows and movies)	TV (news channels)	Radio	Internet
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Urban	0.46 (2.12)	3.08 (9.97)	0.79 (2.06)	1.83 (4.14)
Suburban	0.66 (4.03)	1.68 (3.44)	1.14 (2.36)	2.17 (4.78)
Rural	0.61 (2.09)	2.38 (8.63)	1.78 (5.04)	1.82 (3.53)

Table 5  
*Rank Comparisons for Media Use During Normal Times and During a Food Safety Incident Related to the Beef Industry*

	Rank Order	
	Normal Times	Food Safety
Medium		
Internet	1	2
Television (shows, movies)	2	5
Television (news channels)	3	1
Radio	4	3
Newspapers	5	12
Facebook	6	8
Magazines	7	6
Email list subscriptions	8	4
Other	9	13
Blogs	10	9
YouTube	11	10
RSS Feeds	12	7
Twitter	13	11

Table 6  
*Rank Comparisons for Media Use During Normal Times and During a Food Safety Incident Related to the Beef Industry Based on Community Type*

Medium	Normal Times			Food Safety		
	Urban	Suburban	Rural	Urban	Suburban	Rural
Internet	1	1	1	2	1	2
Television (shows, movies)	2	2	2	6	5	5
Television (news channels)	3	3	3	1	2	1
Radio	4	4	4	4	3	3
Newspapers	5	5	6	3	4	4
Magazines	6	7	7	5	6	6
Facebook	7	6	5	11	10	11
Email list subscriptions	8	8	8	7	8	7
Other	9	9	9	10	7	8
Blogs	10	11	10	9	11	9
YouTube	11	10	11	13	11	10
RSS Feeds	12	11	12	8	9	9
Twitter	13	12	13	12	12	12

**Conclusions**

The media plays a dominant role in society, saturating institutions and individuals (Berger, 2003; McCullagh, 2002). It is a central hub for information during a social change or conflict, invariably causing audiences to depend on the mass media for information (Ball-Rokeach & DeFleur, 1976). Respondents indicated they spent more hours per week on Internet and watching television shows and movies to receive general information during normal times. News channels and radio also were among the most used mediums during normal times. Patwardhan and Yang (2003) found that Internet users displayed dependency relations and that Internet is an “integral part of individuals’ media environments” (p. 65). A report from the Pew Internet and American Life Project (2010) found that Internet is the third most-popular news medium after national television news, which varies from the finding of this study. However, the findings are supported by the fact that 92% of Americans use multiple platforms to get daily news (Pew Internet & American Life Project, 2010). Respondents in this study indicated using multiple mediums such as the Internet, shows and movies, and news channels.

Respondents did not indicate strong media dependencies during a potential food safety incident. This could be because a major food safety incident was not occurring at the time of the study. Food recalls were reported by the USDA and the U.S. Food and Drug Administration (Food and Drug Administration, 2011); however, these recalls were not as large-scale as the BSE case in 2003. Additionally, perceived threat or ambiguous situations have been found to increase dependencies (DeFleur & Ball-Rokeach, 1989; Loges, 1994; Lowrey, 2004; Robertson, 2009); respondents in this study did not feel threatened by a food safety outbreak because no such incident was happening at the time of the survey. The finding that television news was the most-used medium during a food safety incident is supported by research concerning major crises. Television news was the medium of choice for people during two major hurricanes and after the 9/11 terrorist attacks (Gordon, 2009; Lowrey, 2004). Lowrey (2004) reported that television lends itself to threatening situations because of the immediacy of information.

The differences among media use during normal times and during a food safety incident is supported by the media dependency theory. Individuals construct their media dependencies based on the situation and on which mediums will help them achieve their goals (DeFleur & Ball-Rokeach, 1976). If the situation is a crisis or conflict, individuals will return to their normal media use after the crisis is over (DeFleur & Ball-Rokeach, 1976). Additionally, the rankings of rural, urban, and suburban media use showed that during both time periods, the use of the specific mediums stayed consistent. With only slight variations, each community type spent time on the mediums in the same order. The specific mediums used most often changed between normal times and during a food safety incident; this indicates that consumers choose to use certain mediums during a food safety incident than during normal times. Therefore, based on the media dependency theory, individuals can depend on different mediums for different situations, altering their media choices based on the situation and their goals.

### **Recommendations**

Media dependency research includes major national disasters or conflicts that could easily be recalled by individuals, such as major hurricanes and the terrorist attacks of 9/11 (Gordon, 2009; Loges, 1994; Lowrey, 2004; Tai & Sun, 2007). Because the most recent and major food safety incident was more than seven years ago, and individuals did not indicate high media dependencies during a food safety outbreak, it is recommended that a similar study be conducted in close proximity to a national food safety outbreak. This would help determine if individuals could recall their media dependencies more accurately.

More research also could be conducted in the area of rural, urban, and suburban consumers and their use of media as news sources. Additionally, a study of a different population with a different background could produce valuable results because the population of this study was mostly conservative and educated individuals with some agricultural experience.

In regards to practice, it is recommended that agricultural communicators be aware of the mediums consumers use during normal times. By sending messages to the mediums consumers use daily, communicators will be able to educate and inform the public about agriculture and food safety issues. Additionally, it is noted that agricultural communicators should be aware of the amount of time consumers spend on certain media channels and the variety of media used in obtaining information (Robertson, 2009).

The findings in this study have implications for agricultural communicators and the beef industry. Individuals indicated that Internet, news, and radio were the most-used mediums during both

normal times and food safety incidents; however, the order of the top three differs. By targeting consumers through the mediums that appeal to them in different contexts, agricultural communicators can disseminate information more effectively to help people prevent and recover from food safety incidents. In addition, with the Internet becoming a more interactive and immediate forum for information with the web 3.0 technologies (Hendler, 2009), communicators must constantly expand their technology-related skills to be as effective as possible in sharing information, particularly in times of social conflict and ambiguity.

This study also holds implications for educating the public about agriculture and the food industry. Educating a public that has little or no knowledge about the food sector could teach consumers to search for multiple sources of information, rather than relying on a few negative media messages.

### About the Authors

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# Expressions of Social Presence in Agricultural Conversations on Twitter: Implications for Agricultural Communications

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## Abstract

Computer-mediated environments such as social media create new social climates that impact communication interactions in un-mediated environments. As computer-mediated communication (CMC) stimulates more social communities, many communication behaviors will evolve and adapt to the unique social environment created by CMC. This study examined social variables during two different synchronous conversations on Twitter through a qualitative document analysis that coded messages into affective, interactive, and cohesive categories. Categories were determined by indicators within each message such as emoticons, direct responses, and the use of individuals' names. The researcher concluded that most social variables in the Twitter conversations fit into the interactive social presence category but that affective and cohesive responses supported personal connection and structure within the conversations. It was also found that the same category of responses could function differently in each conversation. However, both conversations in this study appeared to be successful. Therefore, agricultural communicators should feel comfortable using CMC that contains social presence dimensions to circulate agricultural information among populations across the globe. Additional research should be conducted to examine social presence among new topics, populations, and other forms of CMC.

## Keywords

Twitter, social presence, agricultural communications, social media, computer-mediated communication

## Introduction

Computer-mediated communication (CMC) supports the everyday activities of most Americans (Taylor, Jowi, Schreier, & Bertelsen, 2011). Spitzberg (2006) defined CMC as "any human symbolic text-based interaction conducted or facilitated through digitally-based technologies" (p. 630). CMC offers new forms of communication, such as posts and comments that can be archived, found in searches, and distributed to the masses (Chan, 2008). These activities have created a unique social environment that challenges traditional communication behaviors (Bartter et al., 2009). In the beginning, CMC held a very matter-of-fact or un-relational connotation. More recently, many

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people have begun using CMC as a means to initiate and develop relationships (Spitzberg, 2006). As innovations become more convenient and affordable, the importance of CMC is likely to increase (Spitzberg, 2006). Already, almost 78% of the population in North America is using the Internet (Internet World Stats, 2011), with more than 140 million active users on Twitter.com (Twitter, 2012).

The Internet has grown from an objective research tool of the information age to a powerful catalyst for societal change where people engage in networking through chatting, messaging, and blogging (Bartter et al., 2009). These types of new media have become a primary stage for sharing information, meeting new people, and learning (Bartter et al., 2009). Popular examples of new media include Facebook, YouTube, Flickr, blogs, Delicious, and Twitter (Bartter et al., 2009; Kaplan & Haenlein, 2010).

Twitter is described as a “real-time information network” that allows users to publish 140-character messages called tweets (Twitter, 2011, An information network, para. 1). Tweets are known as a form of micro-blogging (Jansen & Zhang, 2009; Zhao & Rosson, 2009). Depending on a user’s preference, tweets can be accessed publicly or they can be private, meaning that tweets are viewable only to users who subscribe to another user’s Twitter feed (Honeycutt & Herring, 2009; Twitter, 2011). Twitter also allows users to categorize tweets with a hashtag, which marks topics with a “#” symbol to link tweets about the same topic (Twitter, 2011). The use of hashtags makes it easy for users to engage with others who have similar interests (Miller, 2010). Twitter platforms such as TweetChat automatically add a designated hashtag to outgoing tweets and enable users to view only the tweets about one topic in a streaming format (Ferguson & Pettit, 2009).

Populations across agriculture have adopted the use of Twitter. For example, in 2009, third-party applications for CMC inspired a group of farmers to develop #AgChat (AgChat Foundation, 2011). #AgChat is a weekly, moderated conversation on Twitter for “people in the business of raising food, feed, fuel, and fiber” (AgChat Foundation, 2011, Why Agvocacy, para.1) with a mission to “empower farmers and ranchers to connect communities through social media platforms” (AgChat Foundation, 2011, Mission, para. 1). Similarly, #GardenChat is an online conversation where people interested in gardening come together and share stories about their personal growing experiences. These communities convene online using hashtags to locate other people tweeting about similar topics (Twubs, 2011). In the case of #AgChat, all participants follow and contribute to a stream of tweets marked with the #AgChat hashtag (AgChat Foundation, 2011). All participants of #GardenChat follow and contribute to a stream of tweets marked with the #GardenChat hashtag (Gardenchat, 2011).

A review of previous research in agricultural education and communications revealed no research that specifically examined social cues and levels of perceived social presence in computer-mediated communications, such as Twitter. Social presence theory has been used in the past to describe differences in face-to-face communication and CMC, but further research was needed to expose how these differences relate to levels of perceived social presence and communication interactions on a Twitter-based platform related to agriculture. Specifically, this study supported two priorities of the National Research Agenda (Doerfert, 2011): “Priority 2: New Technologies, Practices and Products Adoption Decisions” (p. 8) and “Priority 4: Meaningful, Engaged Learning in All Environments” (p. 9).

### **Theoretical Framework**

This study was grounded in the theory of social presence. With the increasing use of computer-mediated communication and resulting communities such as #AgChat and #GardenChat, social

presence has taken on greater importance (Dunlap & Lowenthal, 2009). Founded on the psychological concepts of un-mediated environments, social presence was first defined by Short et al. (1976) as some level of salience (i.e., state of being there) between two people using a communication medium. According to Short et al. (1976), social presence is an important part of the process through which people develop knowledge and opinions about other people's characteristics and beliefs. Social presence often is described using the concepts of intimacy and immediacy, or the function of physical distance, eye contact, smiling, and "the perceptual availability of persons to one another," respectively (Argyle & Dean, 1965; Mehrabian & Diamond, 1971, p. 282).

Since the original theory was developed, social presence also has been defined as the level of awareness of another during communication and the resulting value of that awareness (Walther, 1992), and "the degree of feeling, perception and reaction of being connected to another intellectual entity on CMC" (Tu, 2002, p. 2). Biocca, Harms, and Burgoon (2003) described social presence as a "sense of being with another" who is symbolized in the form of "text, images, video, 3D avatars ... computers and robots" (p. 1). Shen and Khalifa (2007) endorsed the concept of social presence that described a user's experience in three dimensions: awareness, affective social presence, and cognitive social presence.

Social context is interpreted by communicators through static and dynamic cues (Sproull & Keisler, 1986). Static cues are objects such as a large desk or personal belongings, while dynamic cues include nonverbal behavior such as nodding the head or frowning (Sproull & Keisler, 1986). A lack of these social cues during communication via computers can cause deindividuation, or a state in which users feel a loss of individuality (Spears & Lea, 1992; Taylor, 2011). Missing social cues in CMC can be replaced with response time; humorous or personalized message content; or paralinguistic and emoticons, such as happy and sad faces (Anderson, Garrison, & Archer, 2001; Picciano, 2002; Richardson & Swan, 2003; Rourke et al., 2001; Taylor et al., 2011). In a study by Tu (2002), the most commonly used emoticon was ":-)," while paralinguistic was commonly expressed through punctuation, abbreviations, font styles, and unique phrases. Participants indicated that emoticons and paralinguistic made the conversation more comfortable (Tu, 2002). Kalman and Rafaeli (2010) also found that time-related, nonverbal, chronemic cues such as "pauses, time of day, and silence" (p. 55) affect online communication by meeting users' expectations about response time and encouraging or discouraging the amount of friendly content expressed in a message.

Daft and Lengel (1986) concluded that mediums without nonverbal cues result in concise, matter-of-fact communication that eliminates unnecessary interactions. For this reason, they emphasized that vague or expressive information should be transmitted through more personal mediums (Daft & Lengel, 1986). Similarly, additional research indicated that as communication moves along the continuum from face-to-face to computer-mediated interactions, it increasingly will be experienced as less personal and sentimental and more matter-of-fact (Walther, 1996). In a study conducted by Born and Miller (1999), respondents were concerned about the "effectiveness of student/professor interactions" in Web-based courses and cited this concern as a barrier to distance education (p. 37). In a later study by Nelson and Thompson (2005), "lack of personal contact" was identified as a potential barrier to online learning (p. 42). Moreover, studies on social presence suggested that researchers have not come to consensus about whether social presence is a function of communication mediums, techniques used by communicators, or a combination of mediums and techniques (Richardson & Swan, 2003).

Social presence allows online users to identify with others in a group and contributes to sharing of useful knowledge (Shen, 2010). By making introductions during the first few online learning

sessions, teachers can foster social presence to build trust and participation among group members (Johansen, Vallee, & Spangler, 1988). Gunawardena (1995) found that students felt more social presence when instructors interacted with “introductions and salutations.” Tu (2002) found that participants felt more social presence when teachers supported a positive attitude about keyboarding skills and gave special attention to students who needed to further develop their skills. In addition, Murphrey and Dooley (2000) suggest that a “virtual presence” be provided for online learners (p. 49). Thus, it is important for online teachers and moderators to practice techniques that support social presence (Tu, 2002).

According to Kaplan and Haenlein (2010), business administrators have been investigating CMC to discover how social networks can be leveraged to benefit their businesses. However, a lack of nonverbal and paraverbal cues such as tone, pitch, and inflection in CMC can result in unorganized conversations, misperceptions, and confusion (Rhoades, 2011; Taylor et al., 2011). In addition, the lack of social cues in CMC resulted in a depersonalized or anonymous experience (Taylor, 2011).

### **Purpose**

The purpose of this study was to gain a deeper understanding of social presence among users who participated in agriculture-related conversations in computer-mediated environments. Such insights into social presence can help guide agricultural communicators’ online interactions with various stakeholders. The study was conducted in two parts. Part one focused on describing social variables through the examination of logged “tweets,” and part two focused on perceived social presence and participant satisfaction among users during conversations in computer-mediated environments. The purpose of this paper, as part of the larger study, is to report findings from part one.

### **Methods**

Mixed-methods that combined a qualitative content analysis of Twitter transcripts and online quantitative participant surveys were employed in the overall study. Part one of the study consisted of a qualitative content analysis in which individual messages were unitized into affective, interactive, and cohesive components of social presence based on the “Model and Template for Assessment of Social Presence” (Rourke et al., 2001). Demographic characteristics of respondents that were collected during part two of the study also are reported to provide context.

Based on the model created by Rourke et al. (2001), affective tweets were defined as tweets that contained expressions of emotion, humor, attraction openness, or self-disclosure, such as emoticons and indicating location. Interactive tweets were defined as tweets that referred to the presence of another person, such as quoting previous comments or asking general questions (Rourke et al., 2001). Cohesive tweets were defined as tweets that mentioned a specific individual either by their first name or Twitter username, or that used group pronouns such as “we,” “us,” or “all” (Rourke et al., 2001).

Seven weeks of #AgChat and #GardenChat Twitter conversation transcripts were examined. The weeks were selected based on alignment of conversation dates and the researchers’ availability to monitor the conversations and follow-up tweets. Twitter messages and participants from #GardenChat and #AgChat conversations were selected for research based on two main criteria that supported the purpose of the study: (1) these online communities use computer-mediated communication to collaborate consistently throughout the year for a guided conversation on Twitter, and (2) these online communities support agricultural communications by helping those in the business and hobby of agriculture tell agriculture’s story to the public from their perspectives (AgChat Foundation, 2011; Gardenchat, 2011).

Of the seven selected transcripts for each conversation, the three central weeks were examined for social presence. The two weeks at the beginning and end of the seven-week period were used for comparison of conversation characteristics, such as numbers of users and tweets posted, to establish that the weeks selected for qualitative examination represented typical conversations (see Table 1). Individual tweets from the three selected Twitter conversations were unitized based on the “Model and Template for Assessment of Social Presence” (Rourke et al., 2001). During unitization, only the messages without any indication of the senders were viewable. Each tweet was examined for affective, interactive, and cohesive components of social presence and assigned one or more categories, depending on two researchers’ interpretation of the messages. Each researcher independently assigned categories to the tweets, and then the researchers agreed on the final unitization of the tweets to establish dependability.

Table 1  
*Tweets and Users of #AgChat and #GardenChat Conversations*

Conversation Relevant to Survey	Tweets	Users	Tweets	Users
	<u>#AgChat</u>		<u>#GardenChat</u>	
Two weeks before	1,039	137	1,286	98
One week before	980	115	998	95
Week of survey	915	148	1,452	87
One week after	841	132	765	59
Two weeks after	1,130	117	1,162	70

The researchers independently assigned the same categories to 83% of the tweets from week three, 86% of the tweets from week four and 81% of the tweets from week five, prior to coming to consensus on the final categories to be assigned to the tweets.

### **Findings and Discussion**

The population for #AgChat included 148 participants, 34 of whom reported demographic characteristics via an online questionnaire, resulting in a response rate of 22.97%. The population for #GardenChat included 87 participants, 15 of whom reported demographic characteristics via an online questionnaire, resulting in a response rate of 17.24%. Due to the viral nature of survey distribution, nonresponse error could not be addressed.

Of the 34 #AgChat survey respondents, 67.6% were female and 32.4% were male. Of the 15 #GardenChat survey respondents, 73.3% were female and 26.7% were male. Nearly half (44.1%) of #AgChat respondents were between 26 and 45 years of age. More than half (53.3%) of #GardenChat respondents were above 45 years of age. Most respondents were Caucasian.

Each conversation had one Latino respondent. and one #GardenChat respondent was African American. Overall, 18 states and two countries were represented by #AgChat respondents. Multiple

respondents indicated that they were located in California ( $n = 4$ ), Indiana ( $n = 4$ ), Iowa ( $n = 3$ ), or Wisconsin ( $n = 3$ ).

Other respondents were either the only one or one of two people from their specified states. Eleven states and one country were represented by #GardenChat respondents, who were either the only one or one of two people from their specified states.

Respondents rated themselves based on their Twitter experience. Of the #AgChat respondents, seven rated themselves as experts, 24 rated themselves as intermediate users, and three rated themselves as novice users. No #AgChat respondents rated themselves as having no Twitter experience. Respondents also indicated how many #AgChat discussions they had participated in using a range of zero to more than 10. The most frequent responses were more than 10 ( $n = 15$ ), two ( $n = 5$ ), one ( $n = 4$ ), and four ( $n = 3$ ). Of the #AgChat respondents, 23 reported the environment around them while participating in the conversation contained some background noise, such as people talking or television sounds; 10 reported that it was peaceful and quiet; and one reported that it was noisy and stressful. When asked if they had ever met in person any of the other #AgChat participants before the most recent discussion, 22 #AgChat respondents reported “Yes” and 12 reported “No.”

Six #GardenChat respondents rated themselves as expert Twitter users, seven rated themselves as intermediate users, and two rated themselves as novice Twitter users. No #GardenChat respondents rated themselves as having no Twitter experience. Respondents also were asked to indicate how many #GardenChat discussions they had participated in using a range of zero to more than ten. The most frequent responses were more than 10 ( $n = 9$ ) and six ( $n = 2$ ). Of the #GardenChat participants, six reported the environment around them while participating in the conversation contained some background noise, such as people talking or television sounds; six reported that it was peaceful and quiet; two reported that it was noisy and stressful; and one reported that the environment was not like any of these options. When asked if they had ever met in person any of the other #GardenChat participants before the most recent discussion, six #GardenChat respondents reported “Yes” and nine reported “No.”

### **Respondents' Interest in Agriculture**

To align with the standard introduction included in #AgChat, respondents were asked to report their interests in agriculture. Of the #AgChat respondents, 38.2% reported that they were involved in marketing and communications, while 32.3% reported that they were involved in production. Other frequent interests of #AgChat participants included farming and sales/business. Twelve of the 34 #AgChat respondents indicated more than one interest in agriculture. Of the #GardenChat respondents, 46.7% reported that they were involved in marketing and communications, while 46.7% reported that they had a home garden. Other interests of #GardenChat participants included production, green living, sales/supplies, and public gardening. Eleven of the 15 #GardenChat respondents indicated more than one interest in agriculture.

### **Social Presence Dimensions: #AgChat**

The first archived conversation for #AgChat included 1,308 total tweets; the second included 915 tweets; and the third included 1,130 tweets. In each conversation, interactive tweets were the most prominent, with more than 75% of tweets falling into that category (see Table 2).

Table 2  
*Categorization of #AgChat Tweets*

	Affective	Interactive	Cohesive
Week before survey			
Tweets/category	432	1,017	467
Total tweets	1,308	1,308	1,308
% of total	33.03%	77.75%	35.70%
Week of survey			
Tweets/category	307	761	329
Total tweets	915	915	915
% of total	33.55%	83.17%	35.96%
Week after survey			
Tweets/category	217	1,006	311
Total tweets	1,130	1,130	1,130
% of total	19.20%	89.03%	27.52%

Though the #AgChat conversations officially started at 8 p.m. and ended at 10 p.m. Eastern, the conversations were archived and analyzed from 7:30 p.m. to 10:30 p.m. to view tweets from a full range of users, including those who may engage early, late, and throughout the official conversations.

It appeared that cohesive tweets, especially tweets from the moderator, in the #AgChat transcript played a prominent role in fostering a structured conversation. For example, 30 minutes before each #AgChat conversation began, the moderator of #AgChat sent a tweet announcing the start of conversation, such as “Hope folks are grabbing a snack & getting ready for #agchat cause we’re T-minus 30 minutes -- please use twubs.com.” This tweet was coded as cohesive due to the use of the group pronoun “we’re” and affective due to the use of the word “hope” (Rourke et al., 2001). While this tweet and others like it are directed to the group as a whole, it does not interact with specific individuals or refer to previous comments. Thus, it was not coded as interactive.

Later in the conversations, the moderator sent another cohesive tweet announcing the format of the conversation that said, “Format for #agchat 1) Networking 8-8:15 pm ET 2) Moderated ?s 3) Executable idea 4) 9:55 Ask your own ?s, pitch your site or get ideas.” Some participants retweeted this message, making the message interactive. However, the original message not only reinforced the structure of the conversation, but also helped foster a cohesive environment by addressing the group with guidelines that applied to everyone in the conversation.

Other cohesive tweets emphasized the format of the conversation and highlighted the importance of time. For example, the moderator noted a one-minute tardy in officially starting the conversation by sending a message that said, “Welcome all, a minute late in officially opening doors! #agchat” Participants also were kept on schedule with warnings from the moderator, such as “Couple more minutes and then we’ll be going to another female in ag question. Great job Tweeps! #agchat,” or “Q3 coming on up and we’ll be moving on to new topic... #agchat.” All of these tweets were coded as cohesive due to the use of greetings and group pronouns. One of these tweets was coded as interactive since the phrase “Great job” complimented others.

While cohesive tweets seemed to maintain structure of the conversations, it appeared that affective tweets may have helped participants become acquainted with each other. The moderator asked participants to provide meaningful introductions that included their locations and interests in agriculture. Though the moderator sent a cohesive tweet to request introductory information, such as “Guidelines for #agchat, 8-10pmET 1) intro w/ location & #ag interest 2) stay on topic 3) start,” the responses were affective due to the disclosure of information. The moderator also sent a tweet directed to Twitter users who may have been watching the streaming conversation but not introducing themselves: “Intro time. Tell us who you are, even if you are lurking tonight. #agchat.” Many tweets during the first 15 minutes of the conversations included users’ names, states, and relationships to agriculture, all of which fell under self-disclosure, making them affective responses.

In addition to serving as introductory messages, affective tweets may have provided unrequested information. Affective tweets often included information that was irrelevant to the main topic of the conversations. During the time allowed for introductions, participants shared the requested information as well as their most recent activities, what they were doing while participating in #AgChat, and their food and beverage choices. One participant tweeted, “Will try not to get my keyboard greasy from the cheese curd goodness since I’m tweeting in from my new #Wisconsin home for #agchat tonight.” Even after the time allotted for introductions, participants who joined the conversations late contributed similar information.

The most prominent category of tweets, interactive, occurred during the middle of the conversations, when participants had the opportunity to respond to specific questions. After introductions, the moderator asked between 12 and 14 questions that related to agriculture. Responses to these questions were at least coded as interactive due to the fact that participants were responding to a previous comment or question. These tweets often were recognized by a “Q” followed by the current question number. Though the moderator asked participants via a cohesive message to identify to which question they were responding, questions containing the “Q” were coded as interactive. For example, if a participant was responding to question one, they would include “Q1” in their response. Some participants responded to the questions by sending a message to the entire group, meaning that some responses were not directed at another user and did not retweet other users’ messages. However, some participants seemed to engage in conversation with just one or two individuals instead of the group as a whole by using specific Twitter usernames in the beginning of their responses. This situation is illustrated by tweets such as “@TruffleMedia very cool that you had it ‘up your sleeve’ #Agchat.” Tweets such as these were coded as cohesive for the use of an individual user’s name. Some participants retweeted other participants’ messages either with or without an additional comment. These kinds of tweets were coded as interactive due to the references to previous messages. Many participants replied to questions with messages that included emoticons, such as “Q12: Every now and then step outside your comfort zone ;- ) #agchat.” These tweets were coded as affective for the use of a text-based expression of emotion.

Before the last five minutes of the conversations, a tweet was sent announcing the time allotted for personal pitches. The tweet said, “You’ve done great and it’s now PITCH time. Feel free to share your ‘stuff,’ ask a ? of your own, get feedback. #agchat.” This announcement tweet was coded as interactive due to its complimentary nature. Tweets in response to this interactive message were more affective. Many participants expressed self-disclosure by sending links for personal blogs and websites, as well as personal recommendations and information. As the #AgChat conversations came to a close, many participants used affective and cohesive tweets to express appreciation for an enjoyable conversation. These tweets noted the end of the conversation through phrases such as “that’s a wrap” and “very well done.” Some latecomers expressed disappointment for missing the conversation with affective tweets that included statements such as “Sad I missed #AgChat ...”

Overall, the #AgChat conversations appeared to be very structured, as the moderator used many cohesive tweets to give instructions for format and introductory content, as well as indicators of time. Questions and responses in interactive tweets easily were identified by the use of “Q” followed by the question number before each question and before participants’ responses. Participants generally seemed to be speaking to the #AgChat community as a whole through interactive and cohesive tweets, with exceptions of cohesive and interactive comments directed to individual users by a few individuals. The conversation was comparable to a situation in which a moderator asks a group of people one question at a time while each person responds to the entire group with his or her answer.

### **Social Presence Dimensions: #GardenChat**

The first archived conversation for #GardenChat included 998 total tweets; the second included 1,452 tweets; and the third included 1,162 tweets. Of these, interactive tweets were the most prominent (see Table 3).

Though the #GardenChat conversations officially started at 9 p.m. and ended at 10 p.m. Eastern, the conversations were archived and analyzed from 8:30 p.m. to 10:30 p.m. to view tweets from a full range of users, including those who may engage early, late, and throughout the official conversation.

Tweets before the official #GardenChat conversation were interactive and may have functioned as a way to make online users aware of the upcoming conversation. While these interactive tweets in the #GardenChat transcript did not indicate a specific format, the tweets did indicate that the conversation would begin soon. Before the advertised start of #GardenChat at 9 p.m. Eastern, tweets indicated participants were preparing for the evening’s conversation. These tweets included statements such as “Getting ready for #gardenchat tonight? ...” and “T minus 25< and counting!!” These tweets seemed to encourage potential participants and were coded as interactive and affective due to the question and the expression of emotion through punctuation.

As 9 p.m. Eastern approached, participants began to send messages with a more social function, such as greetings like “Hello! #gardenchat.” Information such as names or locations was not requested by the moderator. However, some participants indicated their locations through tweets such as “#gardenchat hello from the drought land TX.” These tweets were coded as affective due to the volunteered, personal information that expressed self-disclosure. Many participants did not include this type of information in their introductions. Therefore, many tweets in the first few minutes of the conversations were interactive or cohesive.

The moderator welcomed participants at the beginning of the conversations with a message that said, “Welcome to #gardenchat : 9-10 p.m. ET on Twitter ...” Some participants continued to send greeting-type messages as the conversations began. These types of messages were coded as cohesive due to the use of words that addressed the group as a united entity.

Table 3  
*Categorization of #GardenChat Tweets*

	Affective	Interactive	Cohesive
Week before survey			
Tweets/category	368	659	457
Total tweets	998	998	998
% of total	36.87%	66.03%	45.79%
Week of survey			
Tweets/category	340	1,067	727
Total tweets	1,452	1,452	1,452
% of total	23.42%	73.48%	50.07%
Week after survey			
Tweets/category	258	844	688
Total tweets	1,162	1,162	1,162
% of total	22.20%	72.63%	59.21%

Participants used interactive tweets to gain information about the upcoming conversation. For example, some participants in multiple conversations sent messages that said, “@TheGardenChat Topic tonight? #gardenchat” and “Hi #gardenchat! What’s the topic tonight? #gardenchat.” These tweets were later addressed in the conversation through additional interactive tweets. Many participants’ interactive tweets related to gardening or questions asked by the moderator, while many affective tweets related to participants’ snacks, favorite dining venues, and other topics unrelated to gardening.

After participants were welcomed to the conversations, the greetings became fewer and fewer. Questions in interactive tweets were sent to the group by random participants as the questions were developed, rather than having been planned ahead of time and sent by the moderator. Participants were not asked to indicate to what question they were responding, so responses were not clearly associated with specific questions. In two of the three archived conversations, some tweets indicated that participants were watching a live streaming video of the moderator; “OMG! I’m on Ustream and I can see and hear ya’ll! So much fun #gardenchat.” Tweets like this one were coded as affective for the expression of emotion through punctuation and cohesive for the use of the group pronoun “ya’ll.” Tweets in the #GardenChat conversations imitated many small groups of people in a room, rather than one large group of people having a discussion. As 10 p.m. Eastern approached, no warn-

ing was given that the conversation was about to end. Many users noted the end of the conversation and complimented others with affective tweets, such as “This was fun to watch. Thanks. Have to go see if my garden is OK after the hard rain. Night. #gardenchat.”

Overall, tweets in #GardenChat seemed to create several small conversations among several individuals more than one conversation among all participants. One category of tweets did not influence the conversation more than another category. A formal structure or attention to time was not apparent through a concentrated collection of tweets. Participants generally seemed to be speaking to other individuals, rather than the #GardenChat community as a whole.

## Conclusions

For this study, the definition of social presence was operationalized as the level of salience between two people using a communication medium (Short et al., 1976). Social presence was created as a function of communication mediums and social variables found within #AgChat and #GardenChat messages. Based on the finding that most tweets in both conversations were interactive, it seemed that social presence on Twitter often is created through interactive responses, such as asking other people questions and referring to previous comments. This conclusion aligns with previous research that found reaching out to others contributes to social presence, helps users to identify with others in a group, and contributes to useful knowledge contribution (Shen, 2010).

Further, tweets indicated that it might be possible for interactive responses, as well as cohesive and affective responses, to function differently. For example, many interactive responses in the #AgChat conversations took place in a structured format during the time when the moderator asked questions and gave participants the opportunity to respond. Interactive responses in the #GardenChat conversations took place in a less structured environment where participants engaged with others through a combination of affective and interactive responses. Further, cohesive tweets in #AgChat helped maintain conversation structure by announcing important times and format for the upcoming conversation, while cohesive tweets in #GardenChat announced the upcoming conversation, encouraged others to participate, and acknowledged participants' contributions as a whole. Affective tweets in #AgChat contained more personal information such as locations and occupations, while affective tweets in #GardenChat focused on expressions of emotion. These conclusions align with previous research that found Twitter hosts a variety of users with different goals and interests (Java, Finin, Song, & Tseng, 2007) and that social presence can be separated into different dimensions (Rourke et al., 2001).

Overall, social dimensions in #AgChat and #GardenChat conversations involved messages that acknowledged and expressed appreciation for participants in the group. Participants did not appear to be concerned with developing and maintaining close relationships with other participants. Rather, most social dimensions supported a general relationship founded on commonalities of agriculture and gardening. Outside of these general topics in these one or two hour conversations, it did not seem that participants cared to associate closely with other participants. This conclusion supports previous research findings that Twitter users fall into different categories depending on their intentions and that if Twitter is irrelevant to users' intentions, they are less likely to use it (Dunlap & Lowenthal, 2009; Java et al., 2007). Also, the moderators of the #AgChat and #GardenChat conversations influenced the social dynamics of participants, which aligns with previous research that found online moderators should practice techniques in support of social presence (Tu, 2002).

## Recommendations

Many studies about social presence have been conducted to explain the differences between CMC and face-to-face communication (Short et al., 1976). More research should be conducted to compare social presence dimensions in CMC and face-to-face environments. For example, a comparison of social presence dimensions that exist among a sample group engaging in conversation in a face-to-face environment with the social presence dimensions that exist among the same sample group engaging in conversation via CMC could be examined. To build on this study, further research should be conducted to investigate the best methods of supporting components of social presence. Future research also should be conducted to improve methods of measuring social presence, especially since some aspects of social presence have been deemed highly subjective and are thought to be measured best by self-reported tools (Biocca & Harms, 2002). Finally, further research should examine social presence dimensions among varying populations and sample groups that convene about topics outside of agriculture or about subtopics of agriculture, such as sustainability, production, or organics. Members of these groups should include individuals outside of #AgChat, #GardenChat, and Twitter to investigate social presence dimensions within other forms of computer-mediated communication.

## Implications

Studies about social presence and CMC have been conducted to investigate the possible benefits that CMC can provide for businesses (Kaplan & Haenlein, 2010). However, some researchers have found that a lack of nonverbal and paraverbal cues, such as tone, pitch, and inflection, in CMC can result in unorganized conversations, misperceptions, and confusion (Rhoades, 2001; Taylor et al., 2011). Other researchers have found that lack of social cues in CMC resulted in a depersonalized or anonymous experience (Taylor, 2011). However, both conversations in this study, whether structured or unstructured, portrayed elements of social presence and appeared to be successful. Therefore, agricultural communicators should be confident that with certain social presence dimensions, Twitter conversations can be a successful way to communicate agricultural stories to others.

## About the Authors

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# Beef Producers' Risk Perceptions of an Agroterrorism Event Occurring in Oklahoma

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## Abstract

The purpose of this statewide study was to determine Oklahoma beef producers' perceptions of the susceptibility of the state's beef industry to a terrorist attack. Participants in this study were randomly selected from a population of 48,000 beef producers in this Oklahoma. All 470 respondents completed a telephone survey conducted by the Oklahoma Agricultural Statistics Service. Descriptive statistics, t-tests, and cross tabulations were used to analyze the data. Oklahoma beef producers perceived the beef industry was susceptible to an agroterrorism event, believed the feedlots to be at an elevated level of threat, were confident in their own operation's biosecurity measures, believed their own operation was not susceptible to an agroterrorism event, and did not believe they had enough information about protection from terrorism to the beef industry.

## Keywords

Agroterrorism, Agricultural Crisis, Beef Producer Risk Perception, Crisis Planning

## Introduction/Purpose

Prior to September 11, 2001, the United States had been a potential target for acts of terrorism targeting agriculture. Horn (1999) maintains the awareness of this threat, to plant and animal commodities, has increased within the intelligence and counterterrorism communities during the past two years; the USDA has worked with these communities to position agriculture to anticipate and respond to such a threat.

After September 11, 2001, the possibility of intentional threats to agricultural safety became a reality. Former Secretary of Agriculture Ann Veneman (2002) stated:

The intentional threats to agricultural products and our food supply have required us to do much more; we have been working closely with other federal agencies, state agriculture departments, academia, and the agriculture sector on many fronts to secure and strengthen planning and preparedness (p. 1).

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Correct and helpful information is crucial for the public to navigate their way through an agriculturally related crisis situation. Studies assessing public relation practices show the importance of openness and forthright communication (Newsom, Scott & Turk, 1989; Pinsdorf, 1987; Seeger & Ulmer, 2001). Effective crisis management relies on the foundation of effective planning and communication before, during and after the incident (Fink, 1986; Henry, 2000; Seeger, Sellnow & Ulmer, 2003).

Henry (2000) maintained being prepared is the first step. “Anticipate every possible crisis. Then develop a communications plan for each potential crisis. Be prepared to respond immediately; this is essential if one hopes to avoid a crisis or be able to manage one if the inevitable happens” (p. 22). Seeger et al. (2003) maintained the inability to move through effective recovery after a crisis could be brought on by poor communication. For agroterrorism response and prevention, Lane (2002) maintains there is a need for a community understanding of local and regional industry hazards and, more importantly, that reduction of confusion or miscommunications will require a national strategy.

Seeger et al. (2003) further maintained organizations might inhibit the public’s ability to effectively assess the potential harm and risk of a situation if the organization has failed to supply or support a healthy exchange of information. “A fundamental goal of crisis management is to try to reduce the uncertainty of potential harm for both the organization and the stakeholders” (Seeger et al., 2003, p. 139).

### **Risk Perception**

Past research regarding risk perception has focused on hazards and their different perceptions within society (Fischhoff, et al., 1978; Slovic, Fischhoff & Lichtenstein 1980; Slovic, 1987), as well as the association between trust and hazard assessment risk indexes (Cvetkovich, 1999; Greenburg & Williams, 1999). The depth of knowledge by the general public is relatively low regarding hazards and new technologies (Siegrist, Gutscher, & Earle, 2005). Luhman (1989) and Earle and Cvetkovich (1995) maintain when there is an absence of knowledge, the importance of trust is paramount, and the public will cope with the lack of knowledge by relying on social trust (trusting in specific entities) to reduce the uncertainty they face (Siegrist & Cvetkovich, 2000).

Studies show that public misconception of risk can lead to decisions to oppose such advancements as agricultural-food biotechnologies (Lichtenstein, Slovic, Fischhoff, Layman, & Combs, 1978), and this misconception can be attributed in part to a media-manipulated public opinion (Renn, Burns, Kasperson, Kasperson, & Slovic, 1992). The solution, according to Gaskell, et al., (2004), is to provide the public with an accurate account of risk or hazard information through trustworthy and credible sources.

### **Purpose and Objectives**

The purpose of this study was to add to the knowledge base regarding the risk perceptions of Oklahoma’s beef producers when considering the susceptibility of the state’s beef industry to a terrorist attack. Specifically, this study addressed the following research questions:

1. What are Oklahoma beef producers’ perceptions of the susceptibility of the state’s beef industry to an agroterrorism event?
2. Did Oklahoma beef producers’ perceptions toward the susceptibility of the state’s beef industry to agroterrorism differ based upon the demographic variables of age, farm size, and education level?

## Methods/Procedures

For this study, a beef producer was operationally defined as any individual owning at least one animal of any beef cattle breed. Descriptive research was chosen as the research method because the study dealt with beef producers' perceptions regarding potential agroterrorism events causing an agriculturally related crisis.

The target population of this study was all beef producers in Oklahoma. The population, according to the Oklahoma Agricultural Statistics Service (OASS), was approximately 48,000 beef producers. The sample frame of beef producers in the state was updated each year through property assessment records. The number was fluid and approximated because of the fluctuation of citizens investing in the ownership of cattle or selling off their cattle and divesting in the beef industry. Krejcie and Morgan (1970) suggest a minimum of 381 respondents for a 95% confidence level and a sampling error of +/- 5% for a population of this size. To ensure the minimum number of respondents was met, a random sample of 2,000 names from the target population was selected by using a computerized random selection process.

The original questionnaire was divided into three parts, each part coinciding with the three objectives of the study. Only the first objective is reported on in this paper. Questions 1-4 ascertained attitudinal perceptions of risk by using categorical questions, and question 5 was a five-point Likert-type question assessing level of threat with the U.S. Department of Homeland Security's threat levels: 1 = Low, 2 = Guarded, 3 = Elevated, 4 = High, and 5 = Severe (Ashlock, 2006). At the end of the survey, demographic information was collected about the responding beef producers. Questions in this area were closed-ended or partially closed-ended.

To minimize measurement error, construction of the questionnaire was completed under the guidance of a panel of experts in both the academic and beef cattle production fields. Data were collected by the OASS by using in-house computer-aided telephone interviewing procedures. Conducting a formal interviewer training session to familiarize the interviewers with the instrument controlled data collection error. The OASS used seasoned interviewers to ensure ease of use with the computer system. A comparison of early and late respondents was examined to control for nonresponse error based on guidelines set forth by Lindner, Murphy and Briers (2001). By using a *t*-test, no significant difference between early and late respondents was shown to exist. The instrument was found to be reliable with a Cronbach's alpha of .84. Data were analyzed and interpreted with frequencies, percentages, means, modes, standard deviations, and cross tabulations.

## Results/Findings

Data were collected over a period of 12, nonconsecutive days. A random sample ( $n = 2,000$ ) was drawn from the overall target population of beef producers in Oklahoma ( $N = 48,000$ ). Of the sample population, 678 completed calls were made providing the researcher with 470 usable responses.

### Demographics of Oklahoma Beef Producers

The typical Oklahoma beef producer was male (69.72%) and had at least some high school education (59.80%). The average age of the typical beef producer was 59.5, with a range from 24 to 90 years of age; and the producer owns a computer with access to the Internet (62.3%).

Beef producers are primarily employed within the beef industry (57.90%) owning a cow-calf operation (87.45%) with a herd size from 1 to 49 head of cattle (35.12%). Other operation sizes included 31.06% of respondents owning from 100 to 499 head, 23.83% of respondents owning 50 to 99 head, 5.96% owning 500 to 999 head, and 2.13% owning 1,000 or more head of cattle.

### Beef Producers' Perceived Risk

Research Question 1 sought to determine beef producers' perceived level of susceptible risk regarding the Oklahoma beef industry. Survey Questions 1 through 5 were designed to answer this research question.

Survey Question 1 asked respondents to rate their level of agreement with a statement regarding Oklahoma's susceptibility to an agroterrorism event using a five-point Likert-type scale (1 = Disagree, 2 = Somewhat Disagree, 3 = Neither Agree nor Disagree, 4 = Somewhat Agree, 5 = Agree). When asked to describe their level of agreement with the statement: "The Oklahoma cattle industry is susceptible to an agroterrorism event," a majority (63%) of the state's beef producers agreed with the statement.

Table 1  
*Beef Producers' Perceptions of Beef Industry Susceptibility to Agroterrorism*

	%	<i>M</i>	<i>SD</i>
Disagree	12.3	3.62	1.33
Somewhat Disagree	8.1		
Neither Agree/Disagree	16.6		
Somewhat Agree	31.5		
Agree	31.5		

*Note:* Scale: *M* = 4.20 or higher = agree, 3.40 – 4.19 = somewhat agree, 2.60 – 3.39 = neutral, 1.80 – 2.59 = somewhat disagree; and 1 – 1.79 = disagree.

After examining this question through cross-tabulation by age, farm size and education level, the data revealed no trend based on this demographic analysis within each group. Mean scores for each age decade showed no change in the trend of the means, and all scores remained in the "somewhat agree" range (Table 2). This trend was prevalent when looking at the age decade and removing the group with only one respondent, producers age 90 years and above.

When analyzing the same question in terms of farm size and its affect on perceptions relating to each beef producers' agreement level of beef industry susceptibility, the trend remained in the "somewhat agree" range until it dropped to the "neutral" range for beef producers with 1,000 head of cattle or greater (Table 2). Finally, when analyzing this same question in terms educational level, the trend remained in the "somewhat agree" range. (Table 2).

Survey Question 2 asked respondents to rate their perception of the level of threat with multiple types of beef cattle operations by using a five-point Likert-type scale (1 = Low, 2 = Guarded, 3 = Elevated, 4 = High, 5 = Severe), corresponding to the threat levels identified by the U.S. Department of Homeland Security. Oklahoma beef producers reported "Ranches" to have a "Low" threat level; "Livestock Exhibitions," "Local Marketing Facilities," "Regional Marketing Facilities," "Background Operations," and "Stocker Operations" were reported to have a "Low to Guarded" threat level; and "Feedlots" were reported to have an "Elevated" threat level (Table 3).

Survey Question 3 asked respondents to state whether they felt their own operation was susceptible to an agroterrorism event. The majority of the respondents (62.8%) disagreed with the possibility, 26.8% agreed, and 10.4% answered "don't know" to the question.

Table 2  
*Beef Producers' Perception of Susceptibility and Confidence Cross-Tabulated by Age, Farm Size, and Education Level*

Age Decade	Susceptibility		Confidence	<i>M</i>	<i>(n)</i>
	<i>M</i>				
20s	3.60		3.00		5
30s	3.62		3.21		29
40s	3.50		3.58		66
50s	3.67		3.62		97
60s	3.64		3.42		135
70s	3.61		3.68		107
80s	3.57		3.48		23
90s	4.00		3.00		1
<b>Farm Size</b>					
1 to 49 head	3.54		3.63		158
50 to 99 head	3.55		3.48		112
100 to 499 head	3.79		3.44		146
500 to 999 head	3.82		3.57		20
1000 + head	2.80		2.80		10
<b>Education Level</b>					
No formal education	3.70		3.75		57
High school	3.54		3.62		224
Associate's degree	3.66		3.35		77
Bachelor's degree	3.71		3.39		62
Master's degree	3.51		3.37		35
Education specialist	4.00		1.00		1
Professional	5.00		4.00		1
Doctorate	3.80		3.00		5

*Note:* Scale for both Susceptibility and Confidence: *M* = 4.20 or higher = agree/very confident, 3.40 – 4.19 = somewhat agree/confident, 2.60 – 3.39 = neutral, 1.80 – 2.59 = somewhat disagree/slightly confident, and 1 – 1.79 = disagree/not very confident.

Table 3  
*Beef Producers' Perceptions Regarding Level of Threat to Multiple Operation Types*

Operation Type	Threat Level %					<i>M</i>	<i>SD</i>
	Low	Guarded	Elevated	High	Severe		
Ranches	52.60	26.80	12.80	4.90	2.60	1.78	1.02
Livestock exhibitions	37.20	31.50	16.40	12.80	1.70	2.51	6.41
Local marketing Facility	38.70	28.30	18.70	11.70	2.60	2.11	1.12
Regional marketing Facility	26.60	31.30	24.70	13.80	3.40	2.57	4.59
Background operation	48.10	26.40	16.80	6.40	1.90	2.29	6.41
Stocker operation	41.30	30.40	17.20	7.40	3.40	2.22	4.60
Feedlots	18.50	23.00	30.40	19.40	8.30	3.17	6.38

*Note:* Scale: *M* = 4.20 or higher = severe, 3.40 – 4.19 = high, 2.60 – 3.39 = elevated, 1.80 – 2.59 = guarded, and 1 – 1.79 = low.

Survey Question 4 asked respondents to answer “Yes” or “No” to: “Do you believe you have enough information about protection if a terrorist act was directed to the beef industry in Oklahoma?” The majority of the respondents said “No” (58.7%), 27.2% said “yes,” and 14% answered “Don’t Know” to the question.

Survey Question 5 sought to determine the perceptions of beef producers regarding bio-security measures. When asked “How confident are you in your own bio-security measures?” 60.2% of respondents reported being confident in their biosecurity measures; of those, 38.7% were confident, and 21.5% were very confident (Table 4).

Table 4  
*Level of Confidence in Their Own Bio-Security Measures*

Confidence Level	%	<i>M</i>	<i>SD</i>
Not confident	9.40	3.53	1.21
Slightly confident	10.40		
Neutral	20.00		
Confident	38.70		
Very confident	21.50		

*Note:* Scale: *M* = 4.20 or higher = very confident, 3.40 – 4.19 = confident, 2.60 – 3.39 = neutral, 1.80 – 2.59 = slightly confident, and 1 – 1.79 = not confident.

Examining this question further by age, farm size, and education level, revealed no trend based on the demographics within each group. Mean scores for each age decade showed a slight increase in the trend of the means, but all scores remained in the neutral range (Table 2).

When analyzing the same question in terms of farm size and its effect on perceptions relating to each beef producers’ own confidence level of bio-security, the trend remained somewhat constant in the “somewhat confident” range until it reached beef producers with 1,000 or more head of cattle where it dropped into the “neutral” range (Table 2).

Finally, educational level was inversely related with beef producers’ biosecurity confidence level; levels of confidence generally decreased as the educational level of beef producers increased. This trend was prevalent in all groups except the two groups with only one respondent, education specialist and professional.

**Overall Findings Related to Oklahoma Beef Producers’ Perceptions of Agroterrorism Risk**

The typical beef producer believes the Oklahoma beef industry is susceptible to an agroterrorism event (63.0%). Typical beef producers also believe feedlot operations (*M* = 3.17) and local marketing facilities (*M* = 2.57) to be the most threatened types of operations, at an elevated and guarded level of threat, respectively. The typical beef producer is confident in their own operation’s bio-security measures (60.2%), believes their own operation is not susceptible to an agroterrorism event (62.8%), but does not believe they have enough information about protection from terrorism to the beef industry (58.7%).

When comparing cross-tabulated mean scores of the demographic variables of age, farm size, and education level, no mean trend was shown to influence the level of agreement beef producers’ reported when asked about the susceptibility of Oklahoma’s beef industry to agroterrorism. When examining the variable of farm size, beef producers with herd sizes of 1,000 or more head reported a decline in the mean to a “neutral” agreement level regarding susceptibility.

The same trend was found when beef producers were asked to indicate their level of confidence in their own operation's bio-security measures. Beef producers' confidence level did not change based on age, farm size, or education level. Only in the case of beef producers with herd size greater than 1,000 head was there any movement in agreement level. As with susceptibility, these beef producers reported a decline in confidence to the "neutral" level, whereas the other producer's answers remained in the "somewhat confident" level.

### **Discussion/Conclusions**

The typical Oklahoma beef producer perceives the state's cattle industry is susceptible to terrorist activities targeting the beef industry. Specifically, operations with large numbers of cattle and public access are perceived to be more susceptible to an agroterrorism event than smaller, private cattle operations.

Although the typical beef producer in Oklahoma feels confident in his or her own operation's bio-security measures, this feeling may be overconfidence due to producers' self-reported lack of information about protection from terrorism to the beef industry. These findings suggest there is a gap in the pertinent agroterrorism information communicated to the typical Oklahoma beef producer regarding biohazard safety and protection. This lack of information may have affected the producers' varying perceptions of risk between personal farms and statewide industry. This conclusion supports previous research by Fink (1986), Henry (2000), Seeger et al. (2003), and Lane (2002) which implores the need for pre-crisis communication efforts to effectively plan and recover from a crisis event.

Does this lack of information about protection imply the typical beef producer is overconfident in his or her own ability to prepare for an agroterrorism event? Or, does the lack of information imply a producer's inability to assess or predict the level of threat to the beef industry as a whole? It is unclear at this early level of inquiry whether the typical beef producer is more certain about their own operation and uncertain about larger operations.

Regardless, there are different levels of uncertainty. The producer may simply not have a level of knowledge of agroterrorism protection that allows for an informed opinion. In either situation, more information regarding agroterrorism and crisis planning must be provided at the producer level. Therefore, it is imperative to further explore this knowledge level gap and its effect on producers' ability to effectively negotiate the different stages of a crisis. This implication is supported by Seeger et al. (2003) who suggested poor communication can influence the ability to move through effective crisis recovery efforts.

### **Recommendations for Future Research**

Pre-crisis dissemination of information is vital as effective preparation levels depend on accurate, timely information. The researchers recommend assessing the level of preparedness of larger, publicly accessed marketing facilities and feedlots, which were identified by Oklahoma beef producers as being at a higher risk of agroterrorism. This assessment will allow for determination of the type of information needed to provide feedlots and marketing facilities opportunities to create a more effective crisis plan based upon current preparedness levels. Future research should be conducted to determine additional, in-depth perceptions of feedlot and marketing facility owners and managers in regard to perceived preparation levels as well as their perceptions of risk to their operations.

Once the knowledge gap regarding preparedness is assessed on the large, public operation level, private beef producers in Oklahoma should participate in the assessment of their own operation

to determine the local level knowledge gap. Once these gaps are identified, information needed to increase the level of knowledge can be disseminated, thereby reducing any uncertainty the lack of information creates.

Neuliep and Grohskopf (2000) maintain communication competence includes communication satisfaction and those considered to be competent communicators may be effective in reducing uncertainty. Future research should seek to determine how communication competence affects the communication satisfaction and uncertainty reduction of beef producers when they seek information about possible crisis events. This type of study may be used to correlate levels of communication competency with levels of perceived uncertainty or lack of information.

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# Agricultural Communication Students Perceptions, Knowledge, and Identified Sources of Information about Agritourism

Katie Amaral, Leslie D. Edgar, and Donald M. Johnson

## Abstract

With the struggling economy, agriculturalists are seeking new ways to become economically stable and viable. Agritourism is a topic that has not yet been evaluated at the collegiate level. Yet it may be an answer for agriculturalists seeking new approaches to profitability. The purpose of this study was to determine the perceptions, knowledge, and sources of information of agricultural communications students at the collegiate level in order to strengthen agritourism marketing competencies and skill development in postsecondary education. This quantitative descriptive study assessed agricultural communications students (N = 66) from 11 universities across the nation to determine students' perceptions, knowledge, and identified sources of information regarding agritourism. The study maintained an 80.5% response rate. Most respondents were female (81.0%), and the majority of respondents were majoring or double majoring in agricultural communications (94%). Almost all respondents had families involved in agriculture (95.2%). Respondents ranked agriculture (M = 4.98, SD = 0.12) and agritourism (M = 4.45, SD = 0.66) as important. Agriculture-related festival(s) or event(s) (M = 4.46, SD = 0.75) were noted as the most important agritourism venue. Generally, respondents had previously attended an agritourism event (61.5%). Website (95.4%), print advertisement(s) (93.8%), and word-of-mouth (81.5%) were identified as the best sources of information in promoting agritourism. Over half of the respondents indicated not knowing whether or not their state had an agritourism department (52.3%). Future studies involving non-agricultural students' perceptions and knowledge of agritourism must be conducted. Efforts should be made to increase agritourism marketing education and training in postsecondary education.

## Keywords

agritourism, agriculture, agricultural communications, rural tourism, students' perceptions

## Introduction

Twenty percent of the population in the United States lives in rural areas, but only 1% is directly employed in agriculture (Carpio, Wohgenant, & Boonsaeng, 2008). In 2004, farm-based recreation or agritourism, which includes hunting, fishing, horseback riding, and other on-farm activities, provided income to about 52,000 U.S. farms (2.5%) (Brown & Reeder, 2007). Agritourism consultants

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*Research previously presented at the Region AAAE and the National AAAE conferences as a manuscript.*

and researchers have predicted that agritourism in the U.S. will grow by 30% each year over the next decade (Das & Rainey, 2008; Eckert, 2008; Miller, McCullough, Rainey, & Das, 2010).

Agritourism is any activity, enterprise, or business designed to increase farm and community income by attracting the public to visit agricultural operations and outlets that provide educational and/or recreational experiences to help sustain and build awareness of rural quality of life (University of Arkansas Division of Agriculture, 2006). Therefore, agritourism can be defined in a variety of ways. Pittman (2006) called agritourism the crossroads of tourism and agriculture. The Tennessee Agritourism Initiative (TAI) defined agritourism as “an activity, enterprise, or business which combines primary elements and characteristics of agriculture and tourism, and provides an experience for visitors which stimulates economic activity and impacts both farm and community income” (Bruch & Holland, 2004, p. 1). The TAI group noted attractions consistent with this definition include agriculture-related and on-farm events; including places, such as museums, festivals and fairs, century farms, corn-maze enterprises, farmers markets, tours, retail markets, festivals and fairs, petting zoos, fee-fishing, horseback riding, bed-and-breakfast establishments, pick-your-own produce farms, and wineries. In addition, in other states like Arkansas, on-farm hunting involving the farm’s agricultural resources as a part of the hunting enterprise (i.e. rice fields for duck hunting) is also categorized as agritourism (Ramsey & Schaumleffel, 2006).

Many terms are employed in the literature describing tourism activity in rural areas: (a) agritourism/agrotourism, (b) farm tourism, (c) rural tourism, (d) soft tourism, (e) alternative tourism, (f) ecotourism, (g) green tourism, and several others. Though these terms are sometimes used interchangeably, most, technically, have specific meanings, and these meanings may differ, especially across regions and internationally (Roberts & Hall, 2001). Although various names have been used to identify expanding agricultural enterprises to the general public, the common thread is rural areas expanding on current agricultural endeavors. These endeavors are used to capitalize on tapping additional resources with the traditional distinction that recreation includes activities carried out by day-visitors, whereas to qualify to be a tourist you have to stay overnight (Tribe, Font, Griffiths, Vickery, & Yale, 2000).

Agritourism can provide a way for improving the incomes and potential economic viability of small farms and rural communities. Agritourism can be a supplementary, complimentary, or primary enterprise for a farm. “Travel and tourism are big businesses across the globe. In the United States alone, leisure travelers spend more than \$341 billion and support more than 5.85 million jobs” (Blacka et al., 2001, p. 5). Agritourism is increasing in popularity (Pittman, 2006) as a way for traditional agricultural producers to become financially stable and provide a profit.

Agritourism operations exist in every state. In many states, organizations, state officials, citizens and others have undertaken efforts to enhance agritourism. Several states have agritourism promotion efforts underway, including Alabama, Mississippi, Missouri, Utah, North Carolina, Kansas, Oklahoma, and New Mexico (Pittman, 2006). The types of efforts and the degree to which they are undertaken vary substantially between states. For example, agritourism efforts made in some states involve the state government, while other state activities are conducted by non-governmental associations or through university systems.

The continual growth of agritourism in America is a relatively recent phenomenon when compared to farm-stay programs and working farms that have existed for years in Europe. In the early 1990s almost 25% of vacations were spent in a rural setting in Europe (Tribe et al., 2000). With a large population living in rural areas and such a small population employed directly by agriculture it

can be assumed that individuals will visit agritourism operations because there are limited options for entertainment. Because of the limited number of entertainment offerings individuals are more likely to participate in agritourism activities (Bruch & Holland, 2004; Carpio et al., 2008).

In the previous 30 years, agritourism has become a more relaxed setting for an increasingly urban population. It can be an escape from urban life with participation in traditional rural activities such as picnicking and fishing which contribute to the feeling of harmony (Hall, Mitchell, & Roberts, 2003). A recent report indicated that white individuals are 10% more likely to visit a farm; whereas families with children six years of age and younger are 4% more likely to visit a farm as an entertainment venue (Carpio et al., 2008). The study reported that the average number of trips to a farm was approximately 10 times, with an estimated expenditure of \$174.82 per trip. The type of tourist who visits agritourism venues differs demographically; but it is important to understand who is visiting the family farm in order to better serve the tourist as well as ensure that economic growth and diversity continue (Koh & Hatten, 2002). Promotion and marketing is an important component of agritourism success. The Virginia Cooperative Extension Services suggested promoting agritourism businesses by word-of-mouth, printed materials, media, direct mail, community network, and a website (Blacka et al., 2001).

An exhaustive review of literature failed to identify research studies assessing postsecondary students' knowledge or perceptions of agritourism. Agricultural communication students' knowledge and perceptions regarding agritourism may prove valuable due to their potential future influence and impact on promoting, advertising, and marketing these venues. Research priority area (RPA) #2 in the *National Research Agenda (NRA): Agricultural Education and Communication, 2007-2010* noted the explicit need to aid the public in effectively participating in decision making related to agriculture (Osborne, n.d.). The charge was echoed in a recent update of the research agenda and reinforced the need to prepare a professional workforce to meet the needs of 21<sup>st</sup> century agriculture (Doerfert, 2011). Agricultural communication students assist publics in making efficient and effective decisions regarding agriculture. These future agricultural communicators and their knowledge and perceptions will influence the messages they create. Therefore, it is important to determine agricultural communication students' perceptions and knowledge of agritourism as well as identify informational sources used to gain understanding on agritourism-related topics. Additionally, the study can assist faculty in designing university curriculum to assist agricultural communications students in promoting and supporting agriculture, specifically agritourism.

### **Conceptual Framework**

This study was grounded in the following relevant topics: (1) agritourism; (2) educational program planning in agriculture; and (3) adult program planning. The theoretical framework of this study was based on Media-Society Theory III: Functionalism theory (McQuail, 2005) and was used as a focus to design of the study. Specifically, McQuail (2005) noted that exploration of specific gratifications that motivate people to be attracted to specific media is almost as old as empirical mass communication research. The Uses and Gratifications Approach prevailed in the late 1950s and continued through the 70s as television focused on a consumer-based approach where viewers could be program selective. Blumler and Katz (1974) posited that the Uses and Gratifications Approach allowed different people to receive the same communication message for very different purposes. Essentially, the same media content may gratify different needs for different individuals and the consumer is the gatekeeper for selecting the received information. This study focused on assessing the agritourism information sources of students.

A common model used in adult education is the Lifelong Education Program Planning (LEPP) model by Rothwell and Cookson as cited in Kilgore (2003). The model consists of four quadrants: exercising professional responsibility, engaging relevant contexts, designing the program, and managing administrative aspects. The steps of the model are designed to assist adults in exercising professional responsibility, because it is important to ensure that a program meets the needs of the students (Rothwell & Cookson, 1997 as cited in Kilgore, 2003). Before teaching a sound agricultural communications program, an assessment should be used to determine learners' current knowledge and needs (Seevers, Graham, Gamon, & Conklin, 1997). Kilgore (2003) touted that a program planner's work is never done and just as the needs change for adults in education they will continually change for agritourism. One way to educate the special needs of adult students is by having a college level course to educate them about agritourism and marketing and promotion skills that can be employed to support U.S. agriculture. This study focused on assessing the agritourism educational needs of students.

An adult's deep need to be self-directing is particularly important in program planning. Boone, Saffret, and Jones (2002) wrote that target publics make their own decision about educational needs and what will fulfill those needs. Therefore, successful program planning for adults typically begins by determining attitudes and perceptions.

Lasswell claimed that media performed four basic functions for society: (a) surveying the environment to provide news and information, (b) correlating response to this information (editorial function), (c) entertaining (diversion function), and (d) transmitting culture to future generations (Lull, 2000, p. 111). Charles R. Wright (1959), an American sociologist, expanded Lasswell's view of media functions by outlining manifest and latent functions as well as dysfunctions of mass media communication. "Wright proposed that when the media alerted the public to a health risk, for instance, it was serving its news and information function, but if a public panic was created, this was a dysfunction" (Macnamara, 2003, p. 3).

Media-Society Theory III: Functionalist theory (McQuail, 2005) explains how information is diffused through a social system and consists of five elements. These elements are information, correlation, continuity, entertainment, and mobilization (McQuail, 2005). Information consists of providing facts about events and facilitating innovation. A study conducted by the state of Pennsylvania asked operators to rate their top five resources to market agritourism as well as visitors to use of resources (Ryan, DeBoard, & McCellan, 2006). The operators ranked (1) word-of-mouth, (2) repeat business, (3) newspaper advertisements, (4) brochures, and (5) Internet/websites as the top five. The visitors ranked (1) Internet/ websites, (2) information/welcome centers, (3) brochures, (4) travel books/guides, and (5) word-of-mouth as their top sources for finding information about agritourism (Ryan et al., 2006). This information depicts where agritourism visitors and operators get information about agritourism activities. Therefore, it is important to assess students' perceptions and knowledge of agritourism and identify specific sources of agritourism information.

### **Purpose and Objectives**

The purpose of this study was to determine the knowledge and sources of information of agricultural communications students at the collegiate level in order to strengthen agritourism marketing competencies and skill development in postsecondary education. The research objectives of the study were to:

- 1) Describe students' perceptions of the importance of agritourism.
- 2) Identify students' level of agritourism knowledge.

- 3) Identify sources of information about agritourism used at the collegiate level.
- 4) Describe demographic characteristics of the participating students.

## Methodology

This study used a descriptive survey methodology. The statistical analysis was descriptive in nature, and the instrumentation followed Dillman's Total Tailored Design method (2007). The target population for this study included all participants at the Agricultural Communicators of Tomorrow (ACT) Professional Development Conference held in Stillwater, Oklahoma, February 26 through March 1, 2009. This audience was identified due to their background and knowledge of communication and media sources and their representation of multiple institutions teaching a variety of courses. Currently, 13 universities have ACT (Agricultural Communicators of Tomorrow) chapters and eleven chapters were represented at the conference. There were 91 students registered for the 2009 conference and 82 attended the four-day event.

Prior to the conference an instrument was developed. Questions for the instrument were modeled after a previous study completed by Sussex County Office of Conservation and Farmland Preservation in New Jersey (New Jersey Agritourism Survey, n.d.) and based on a survey conducted in Tennessee (Jensen, Dawson, Bruch, Menard, & English, 2005). The questionnaire booklet consisted of 25 questions and was designed by the principal researcher. The study was designed to collect perceptions, knowledge, sources of information, and select demographics of agricultural communications students attending the 2009 ACT conference. A field test was administered to faculty and students in the Agricultural and Extension Education Department at the University of Arkansas resulted in minor changes to the instrument to improve clarity and establish face and content validity.

To determine instrument stability, the instrument was administered twice (at a 14 day interval) to 10 students enrolled in an agricultural communications bachelor's degree program at the University of Arkansas. The agreement percentage between the first and second administrations was 71.3%, indicating acceptable instrument reliability (Gall, Gall, & Borg, 2006). There were 66 respondents from the 2009 ACT conference, resulting in an 80.5% response rate. Data were analyzed using the Statistical Software for Social Sciences (SPSS) 15.0 to identify frequencies, standard deviations, and means. Open-ended responses were analyzed using open coding (Creswell, 2007; Glense, 2006; Strauss & Corbin, 1990). Open coding consists of "breaking down, examining, comparing, conceptualizing, and categorizing data" (Strauss & Corbin, 1990, p. 61).

## Findings

### Demographics

Respondents ( $N = 66$ ) were from ten universities throughout the nation. The highest number of respondents ( $n = 18$ ) were from Oklahoma State University, which is where the conference was held (28.1%). The Ohio State University had the second highest amount of students completing the instrument ( $n = 9$ ; 14.1%). Tarleton State University had 12.5% ( $n = 8$ ) of the respondents, followed by Kansas State University ( $n = 7$ ; 10.9%), Texas Tech University ( $n = 6$ ; 9.4%), and California Polytechnic University—San Luis Obispo ( $n = 5$ ; 7.8%). The four schools with the lowest percentage of respondents were University of Arkansas ( $n = 4$ ; 6.3%), Missouri State University ( $n = 3$ ; 4.7%), Texas A&M University with two ( $n = 2$ ; 3.1%), and the University of Florida ( $n = 2$ ; 3.1%).

The majority of the respondents ( $n = 64$ ) were seniors ( $n = 25$ ; 39.1%), followed by juniors ( $n = 16$ ; 25.0%), freshmen ( $n = 12$ ; 18.8%), sophomores ( $n = 7$ ; 10.9%), and graduate students ( $n = 4$ ;

6.3%). The majority of respondents were majoring or double majoring in agricultural communications (94%). The highest number of respondents ( $n = 42$ ) were agricultural communications majors (65.6%). Six respondents (9.4%) were agricultural communications and animal science double majors. Two respondents (3.0%) were agricultural science and agricultural communications double majors, two (3.0%) were agricultural services and development double majors, and two (3.0%) were agricultural science majors. Single respondents (1.6%) reported double majors in agricultural communications and one of the following: agricultural education, English, poultry science, agricultural business, Spanish, leadership development, advertising, dairy science, agricultural science, and agriculture unknown. Overall, 59 respondents indicated an educational focus in agricultural communication (92.2%).

Respondents were asked to identify the type of community in which they grew-up. The largest percentage (44.8%) of students had grown-up on a farm, while the smallest percentage had grown-up in a rural non-farm (less than 10,000) area (12.7%) or a city (more than 10,000) (12.7%).

The mean respondent age was 20.5 years ( $SD = 1.6$ ). One half (50%) of the respondents were either 20 or 21 years of age. Of the 63 respondents reporting gender, 47 were female (81.0%) and 16 were male (19.0%). Of the 61 respondents reporting ethnicity, 56 were Caucasian (91.8%). Single respondents (1.6%) reported the following ethnicities: Caucasian and Native American, Native American, Caucasian and Hispanic, Hispanic, and Portuguese.

The last series of demographic questions asked the respondent about their family's involvement in agriculture and agritourism, 95.2% of respondents indicated that their families were involved in agriculture ( $n = 63$ ). However, for the majority of respondents (74.6%), farming was not the family's primary source of income. Only three (4.8%) respondents indicated that their family operated an agritourism venue.

### **Perceptions of Agritourism**

Respondents were asked to rank their perceived level of importance of two terms, agriculture and agritourism, on a 5 point Likert-type scale (1.00-1.49 = "very unimportant"; 1.50-2.49 = "slightly unimportant"; 2.50-3.49 = "neutral"; 3.50-4.49 = "slightly important"; 4.50-5.00 = "very important"). Students perceived both terms as being "slightly" to "very important". Agriculture had the highest mean with a score of 4.98 ( $SD = 0.12$ ), followed by agritourism ( $M = 4.45$ ;  $SD = 0.66$ ).

Respondents were asked to rate their self-perceived level of importance of 11 agritourism venues on a 5 point Likert-type scale (1 = "very unimportant" and 5 = "very important"). Responses in Table 1 indicate that eight of the 11 venues had means of 4.0 or greater. The most important perceived agritourism venue was agriculture-related festival(s) or event(s) ( $M = 4.46$ ,  $SD = 0.75$ ). Pick-your-own produce or fruits and on-farm hunting tied as the second most important venues ( $M = 4.28$ ,  $SD = 0.86$ ). The least important perceived agritourism venue was on-farm fishing ( $M = 3.69$ ,  $SD = 0.93$ ).

Table 1  
*Perceived Importance of Agritourism Venues (n = 65)*

Venues	<i>M</i>	<i>SD</i>
Agriculture related festival or events	4.46	0.75
Pick-your-own produce or fruits	4.28	0.86
On-farm hunting	4.28	0.86
Winery	4.26	0.91
Agriculture-related museum	4.26	0.91
Community farmers market	4.23	0.84
Christmas tree farm	4.23	0.89
Pumpkin Patch	4.12	1.01
On-farm lodging	3.80	0.96
On-farm retail outlet	3.71	0.86
On-farm fishing	3.69	0.93

**Knowledge of Agritourism**

An open-ended question was used to determine how respondents defined agritourism. Eleven primary themes resulted from the open-ended question. Of the 55 responses, 26 (47.3%) included the word “tour.” The following is an example response: “Touring agricultural related locations for education and information.” Six respondents (10.9%) noted the word “visit.” A typical response was, “Visiting or touring agricultural related businesses and industries.” Four (7.3%) mentioned “show,” with an example being, “Showing the world agriculture from every perspective.” Entertainment was mentioned by one (1.8%) respondent who stated, “Using agriculture as a source of entertainment and information for the public.”

Respondents were questioned about whether or not their home state had an agritourism department. Of the respondents (*n* = 65) over half 52.3% did not know if their state had an agritourism department; 41.5% indicated their home state had an agritourism department, and 6.2% indicated their home state did not have an agritourism department. Respondents were asked to identify whether or not they had heard certain terms related to agritourism. The most recognized term was “agritourism” (84.8%), followed by “rural tourism” (66.7%). Table 2 identifies additional responses to agritourism terminology.

Table 2  
*Knowledge of Agritourism Terminology (n = 66)*

Terms	Yes		No		Don't Know	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Agritourism	56	84.8	6	9.1	4	6.1
Rural tourism	44	66.7	19	28.8	3	4.5
Farm tourism	41	62.1	19	28.8	6	9.1
Community Supported Agriculture	36	54.5	24	36.4	6	9.1
Eco-tourism	29	43.9	30	45.5	7	10.6
Green tourism	17	25.8	43	65.2	6	9.1

**Sources of Agritourism Information**

Respondents (*n* = 65) identified sources of information regarding agritourism information and promotion, and the results are reported in Table 3. Word-of-mouth (81.5%) and paid advertising in local paper, radio or television (70.7%) were the most common previously exposed/observed methods of agritourism promotion.

Table 3  
*Sources of Information about Agritourism (n = 65)*

Sources of Information	Yes		No		Don't Know	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Word-of-mouth	53	81.5	6	9.2	6	9.2
Paid advertising in local paper, radio or television	46	70.7	9	13.8	10	15.4
Website	42	64.6	12	18.5	11	16.9
Free media relations with local paper, radio or television station	41	63.0	6	9.2	18	27.7
Free media relations within travel magazines (e.g. article in magazine)	36	55.4	11	16.9	18	27.7
Paid advertising with travel magazines	35	53.8	12	18.5	18	27.7
Free advertising relations with local paper, radio or television station	33	50.8	10	15.4	22	33.8
Paid advertising with trade associations	29	44.6	13	20.0	23	35.4
Direct mailing	29	44.6	24	36.9	12	18.5

To determine sources of information, respondents ( $n = 65$ ) identified if specific types of media would be helpful in promoting agritourism (Table 4). The type of media with the highest percentage was website (95.4%). Print advertisement was the second most effective type of media to promote agritourism (93.8%). The media types with the lowest percentage were Myspace (50.8%) and wikis (33.8%).

Table 4  
*Sources of Information to Look for Specific Information about Agritourism Events (n=65)*

Types of Media	Yes		No		Don't Know	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Website	62	95.4	1	1.5	2	3.1
Print advertisement	61	93.8	1	1.5	3	4.6
Television advertisement	59	90.8	1	1.5	5	7.7
Radio advertisement	59	90.8	2	3.1	4	6.2
Facebook	57	87.7	5	7.7	3	4.6
Email	55	84.6	5	7.7	5	7.7
Blogs	42	64.6	11	16.9	12	18.5
Myspace	33	50.8	25	38.5	7	10.8
Wikis	22	33.8	18	27.7	25	38.5

Respondents identified how they ( $n = 65$ ) had learned about an agritourism event, if previously visiting one. As shown in Table 5 respondents identified that word-of-mouth (69.2%) and friends (63.1%) were the most frequent sources of information about agritourism events. Tourism book and billboards (20%) were the two least frequent ways of learning about agritourism events.

Table 5  
*Sources of Information to Learn About Agritourism Site (n = 65)*

Source of Information	Yes		No	
	<i>f</i>	%	<i>f</i>	%
Word-of-mouth	45	69.2	20	30.8
Friends	41	63.1	24	36.9
Farm sign	31	47.7	34	52.3
Website	30	46.2	35	53.8
Newspaper	26	40.0	39	60.0
Farm advertisement on radio	22	33.8	43	66.2
Internet search	22	33.8	43	66.2
Magazine	20	30.8	45	69.2
Billboard	13	20.0	52	80.0
Tourism book	13	20.0	52	80.0

Respondents ( $n = 65$ ) were asked where they would look for specific information if they were to consider visiting an agritourism site or farm. As shown in Table 6, Internet search (72.3%) had the highest percentage, followed by local newspaper (30.8%), magazine (24.6%), and the yellow pages (9.2%).

Table 6  
*Source of Information to Look for Specific Information about Agritourism Events (n = 65)*

Source of Information	Yes		No	
	<i>f</i>	%	<i>f</i>	%
Internet search	48	72.3	17	26.2
Local newspaper	20	30.8	45	69.2
Magazine	16	24.6	49	75.4
Yellow pages	6	9.2	59	90.8

### Conclusions, Discussion, and Implications

The majority of the respondents in this study were female (81.0%) and most were Caucasian (91.8%). Research indicates that this is often the case with agricultural communications professionals as shown in the study of Agricultural Communicators in Excellence (ACE) members where 58.8% were female and 94.9% were Caucasian (McGovney, 2005). As shown in the literature review Caucasian individuals are 10% more likely to visit a farm than other ethnicities (Carpio et al., 2008). The largest percentage of respondents in this study described the community they grew-up in as a farm. Previous research has indicated that rural farms are attractive tourist destinations (Brown & Reeder, 2007). If the majority of the respondents were raised on a farm it may be possible for them to implement agritourism venues in their family’s farming operation to expand, increase or stabilize profitability.

Participants in this study noted that the terms “agriculture” and “agritourism” were important. Research has shown that many terms are employed in the literature to describe tourism activities in rural areas (Roberts & Hall, 2001). Most respondents in this study recognized the term “agritourism” and it was the most recognizable term in rural/farm related tourism (Roberts & Hall, 2001). Therefore, this study supports the importance of using the term “agritourism” to describe recreational events associated with agriculture. Almost half of the respondents in this study identified “touring” as a relevant theme in agritourism; therefore, it can be assumed that many view agritourism as a type of tour. Media-Society Theory III: Functionalism (McQuail, 2005) theory notes that entertainment relates to providing amusement, diversion and the means of relaxation as well as reducing social tension and entertainment was also a primary theme identified. Because agritourism can be entertaining it can be assumed that it is a form of entertainment and should be promoted as such.

Over half of the respondents in this study reported not knowing if their state had an agritourism department. Research shows that agritourism operations exist in every state, and in many states, organizations, state officials, citizens, and others have undertaken some type of effort to enhance agritourism (Pittman, 2006). It is clear that agritourism is not being promoted to the level of audience saturation.

The majority of respondents in this study noted exposure to agritourism promotion via word-of-mouth; perhaps this is an indication that many individuals are learning about agritourism events from an acquaintance. The second highest percentage of agritourism exposure was through paid

advertisements; therefore, it may be possible that participants are reading about agritourism events in these venues and then passing that information along to a friend. Research in Tennessee indicated that of the respondents, 50% or more used word-of-mouth, business sign, a state website and newspaper advertisements to advertise their agritourism operations (Blacka et al., 2001; Jensen et al., 2005). This research study follows closely to the Tennessee report (Jensen et al., 2005) and echoes the need to train post-secondary agricultural communications students in diverse promotion techniques to better meet industry needs.

Respondents in this study noted that direct mailing and paid advertising with trade associations were the least wanted sources of information regarding agritourism. This is likely due to college students not receiving direct mailings or trade magazines. Websites were identified as the best type of media followed by print advertisement. A Tennessee study asked respondents (consisting of current agritourism business owners) to identify marketing and promotion assistance services needed (Bruch & Holland, 2004). The top five identified were (1) Internet site development, (2) liability and insurance issues, (3) assistance identifying and making tour bus and travel group contacts, (4) market research, and (5) visitor safety analysis. Research has shown that “students of the millennial generation spend an average of nearly 6.5 hours in front of some type of media each day” (Phipps, Osborne, Dyer, & Ball, 2008, p. 291). Because of this, agritourism websites should have effective tags to assist with ease and efficiency of agritourism searches. This study supports previous research that indicates that agritourism business owners should use a website to promote their business (Bruch & Holland, 2004; Ryan et al., 2006), and collegiate students should be trained in website development and promotion and marketing techniques to better meet the needs of the growing agritourism enterprises in the U.S.

Respondents indicated that they had learned about previously attended agritourism events by word-of-mouth and friends. A Pennsylvania study indicated that agritourism operators rated their top five resources for marketing agritourism as (1) word-of-mouth, (2) repeat business, (3) newspaper ads, (4) brochures, and (5) Internet/ websites (Ryan et al., 2006). Visitors ranked the top marketing resources as (1) Internet/ websites, (2) information/ welcome centers, (3) brochures, (4) travel books/guides, and (5) word-of-mouth as their top sources for finding information about agritourism. This study supports and validates these findings and notes the importance of training students with competencies in marketing, communications, promotion, and advertising as well as in technical skills such as website and print media development.

Previous research indicates that agritourism has increased in interest and scope and is speculated to increase exponentially over the next decade (Brown & Reeder, 2007; Das & Rainey, 2008; Eckert, 2008; Miller, McCullough, Rainey, & Das, 2010). Recent focus in agricultural education and communications identified the need to prepare the public in effectively participating in decision making related to agriculture and prepare a professional workforce that is prepared to meet the needs of 21<sup>st</sup> century agriculture (Doerfert, 2011; Osborne, n.d.). Therefore, there is a need to focus university level courses on agritourism education and diverse ways of promotion, marketing, advertising, and skill development to provide future agricultural communicators with the skill-sets needed to meet the ever changing needs of agriculture.

### **Recommendations for Further Study**

Media-Society Theory III: Functionalism theory shows continuity is about forging and maintaining commonality of values. Many agricultural communications students were raised on a farm

and it can be assumed that they share similar values especially since 95.2% of the respondents have family involved in agriculture (McQuail, 2005). With only 25.4% of the respondents having farming as their family's primary source of income, and 44.8% growing up on a farm it can be assumed that agritourism may be feasible alternative to expand/add to their current operations. Additional research should be focused in this area.

When given six terms related to agritourism, the term agritourism was the most recognized (84.8%). Other terms: rural tourism, farm tourism, community supported agriculture, eco-tourism and green tourism all had varying degrees of recognition, but further research would need to be conducted to determine if the phrases should continue to be included in reference to agritourism.

It is recommended that agritourism business owners not promote their operation with direct mailings and paid advertising with trade magazines. Websites are recommended to represent agritourism operations because 95.4% of respondents felt it would be the most helpful in promoting agritourism. Also, with 72.3% using an Internet search, it is important to create effective website keywords to help with searches. Myspace and wikis are not recommended as promotion tools for agritourism. It is also recommended that agritourism venues have an identifiable farm sign because almost half (47.7%) of the respondents had attended an agritourism venue because of advertisement on a farm sign.

Based on the small population of the study, it is recommended that further research be conducted with non-agriculture collegiate students since only 12.7% were from a city with 10,000 or more individuals and 95.2% had family involved in agriculture. The population was also predominately female (81.0%), so a sample group with more males would be another recommendation, as well as, including more than ten universities and a broader range of ethnicities.

Additionally, curriculum should be integrated into collegiate courses. Because websites and print media were noted as the most successful means for agritourism promotion, university students (particularly agricultural communications students) should be highly trained in these areas. Also, an agritourism conference would be useful since word-of-mouth had one of the highest means as an effective communications piece. A conference would also enable collegiate students interested in agritourism to gather and gain knowledge as well as share experiences.

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# Impact of Newspaper Characteristics on Reporters' Agricultural Crisis Stories: Productivity, Story Length, and Source Selection

*Judith M. White and Tracy Rutherford*

## **Abstract**

This study examined coverage of the December 2003 bovine spongiform encephalopathy (BSE) event to discover differences in sources used by reporters based on their employing newspapers' geographical location, circulation and ownership type.

Sixty-two stories dealing with the first U.S. bovine spongiform encephalopathy incident were subjected to content analysis. Stories – published from December 23, 2003 to October 31, 2004 -- were selected through a keyword search from U.S. newspapers included in the LexisNexis database. These stories were divided into two equal groups based on reporters' work-role identity and were analyzed by length, number of sources, and source variety and the employing newspapers' geographical location, circulation and ownership type. ANOVA and bivariate correlation were among statistical analysis techniques used.

Results indicated numbers of stories, story length and numbers of sources per story are related to newspaper location, and use of scientists and agricultural scientists as sources, to newspaper ownership type. Circulation and ownership type explained a statistically significant amount of variance in number of sources used.

Results of this study linking newspaper location (proximity to event, community heterogeneity and urbanity) to crisis coverage as measured by story length and number of sources cited lend support to previous research and lend credence to the assumption that newspaper characteristics influence news coverage. And the correlation between chain ownership and the use of scientists as sources for crisis stories suggests that ownership does matter for news coverage. Thus, in the age of convergence, whether through merger or adoption of new media, the particulars of a given newspaper's identity should be considered when predicting or evaluating the nature of its news coverage.

Although this study was limited by small sample size and restriction to the first U.S. BSE event on December 23, 2003, the above findings may prove useful to agricultural public information officers and media relations practitioners in "pitching" stories and sources for similar agriculture-based crises. In particular, this study addresses priorities stated in the National Research Agenda -- the desire of agricultural communicators to "aid

the public in effectively participating in decision-making related to agriculture,” through providing information on which such decisions can be based (Osborne, 2007, p. 4).

### Keywords

mad cow, BSE, reporters, sources, newspapers

### Introduction and Review of the Literature

In dealing with crises, reporters’ abilities to identify and use appropriate news sources are important to effective, reliable news coverage. Therefore, factors influencing these abilities should be identified, and ways should be found to enhance those factors and to optimize such source choices. Previous research has explored factors such as the influence on source choice of reporters’ personal characteristics and of their institutional work routines, but less attention has been focused on the influence of newspapers’ characteristics on the work of their reporters.

Research indicates that in addition to the attributes of sources, reporters and information subsidies, newspapers’ circulation sizes and locations -- for example, geographic placement or classification as urban or rural areas -- may affect coverage and source choice (Caburnay et al., 2003; Crawley, 2007; Marks, Kalaitzandonakes, Wilkins, & Zakharova, 2007). For example, small circulation newspapers may be more likely to use news releases from the *PR News Wire*, an organization featuring news subsidies from providers who pay for their service (Morton & Ramsey, 1994); other research also has highlighted reliance by reporters for larger, regional and national newspapers on news subsidies (Lehman-Wilzig & Seletzky, 2012; Liu, Vedlitz, & Alston, 2008). In contrast, newspapers in larger, more pluralistic communities give greater coverage to controversial science topics such as environmental contamination or political “hot topics” like immigration, although involvement of an area with controversial subject matter in some way — for example, local economic dependence on the covered industry — may affect coverage (Branton & Dunaway, 2009; Eshbaugh-Soha & Peake, 2008; Griffin & Dunwoody, 1995, 1997; Hindman, 1996). Daily newspapers in small but demographically and economically heterogeneous communities may be expected to favor local government and industry when reporting environmental conflict (Griffin & Dunwoody; Hindman; Taylor, Lee, and Davie, 2000).

However, changes occurring in the social structures of smaller media markets may be making them more like their larger counterparts when it comes to patterns of source quotation on controversial issues (Harry, 2001; Pritchard, Terry, & Brewer, 2008; Scott, Gobetz, & Chanslor, 2008; Winseck, 2008). Accordingly, amount and nature of coverage of the 2003 BSE event may have varied with newspaper location and circulation size.

Coverage of the spotted-owl conflict in the Pacific Northwest exhibited differences in number, length, and sources used, based on newspaper location, including physical distance, social distance and place characteristics (Bendix & Leibler, 1999). Similarly, story frames used in coverage of BSE differed along national lines (Cannon & Irani, 2011; Ruth, Eubanks, & Telg, 2005), and objectivity in reporting the crisis varied among one national newspaper and two larger outlets located in different areas of the United States (King, Cartmell, & Sitton, 2006). Thus, readers relying on any particular newspaper may receive different viewpoints of a controversy.

The 1990s saw a sharp increase in newspaper mergers and acquisitions (George, 2006). By 2004, only 20 percent of U.S. dailies were independent (Aronoff, Ward, and Kenyon, 2004), reflecting an increasing trend toward concentration of ownership, with decreases in the numbers of cities with competing dailies and increases in numbers of chain-owned papers and sizes of chains (Fan,

2009). However, the chains themselves remained largely family owned or controlled (Aronoff, Ward, & Kenyon). As the first decade of the 21<sup>st</sup> century progressed, percentages of ownership remained dynamic as the result of mergers and acquisitions, often of one chain by another (Edmonds, Guskin, & Rosenstiel, 2011; Noam, 2008). The newspaper industry failed to rebound in 2010, and going into 2011-12, most newspapers – faced with declining print circulation and advertising revenues and reduced profit margins -- bowed to the inevitable and added or planned to add Web content (Edmonds, Guskin, & Rosenstiel). More and more newspapers are controlled by outside companies, but recent studies indicate little difference in performance among newspapers regardless of ownership (Lacy & Blanchard, 2003; Pritchard, Terry, & Brewer, 2008; Scott, Gobetz, & Chanslor, 2008). Nonetheless, the current study reflects trends and ownership data current as of October 31, 2004, consistent with the timeframe of stories analyzed.

Research by Donohue, Olien, and Tichnor (1985) indicated that type of ownership a newspaper has may affect its editorial direction most likely through its staffing decisions; newspaper owners can decide who gets hired, who gets fired and who covers what story. Subsequent research does not totally support their conclusions, but later studies do support the contention that ownership consolidation affects news content (Fan, 2009). However, Miljan and Howorun (2003) found that, even though 95 percent of Canada's newspapers were owned by chains, differences existed in coverage within the chains themselves, somewhat easing concerns that chain ownership homogenizes coverage, and George (2006) concludes that ownership concentration encourages story differentiation and variety, thus benefiting news consumers.

Another concern, however, is whether newspaper ownership impacts coverage of issues that constitute a conflict of interest for the owners. Newspapers' coverage of the 1996 Telecommunications Act differed substantially, according to the financial interests of their corporate owners; frequency of coverage did not vary, but content did (Gilens & Hertzman, 2000). Ownership concentration may affect product position, product variety, and readership in markets with daily papers; however, these effects might actually benefit readers through introducing new content, eliminating duplication, and encouraging diversity (George, 2006).

According to the *editorial vigor theory*, corporate newspapers may be more hierarchical and formalistic than those with other ownership structures, putting less emphasis on product quality and more on profits, with reporters at such papers were more likely to “emphasize active, interpretive, investigative, and crucial roles for the news media” (Demers, 1998, p. 574). However, corporate newspapers also may base employment on technical qualifications and exhibit a high degree of efficiency in decision making, with more social criticism of mainstream sources in newspapers located in large pluralistic communities and having a corporate form of organization (Demers; Eshbaugh-Soha & Peake, 2008; George, 2006; Fan, 2009).

Investment in newspapers by major Wall Street investors may cause greater emphasis on financial performance, but most such investors take a long-term view of these papers' performance, not jumping in and out of share ownership (Maguire, 2003). However, caution should be exercised against regarding that long-view as necessarily good, since institutional investors also may want a say in how the paper is run and may be unwilling to subordinate financial objectives to journalistic ones (Edmonds, Guskin, & Rosenstiel, 2011; Maguire).

Perhaps more important than ownership is the extent to which rural areas and smaller municipalities are served by newspapers, since the number of newspapers in small markets has decreased substantially since 1972:

The marketplace of ideas in small media markets is an important commodity that demands careful scrutiny when considering the policies related to the structure of local media. Daily newspapers, television stations and radio stations play a crucial role in the marketplace of ideas (Chambers, 2003, p. 57).

Recognition of the importance of local media has spurred many smaller newspapers to add Web-assisted reporting and Internet editions or access and larger, regional papers to expand into local community markets by offering local sections targeting specific communities (Edmonds, Guskin, & Rosenstiel, 2011; Noam, 2008). Although reporters at smaller papers may be expected to acquire technology training on their own, recent research failed to find much resistance from journalists to adopting new ways of reporting the news, and owners have embraced new technologies as methods of expanding their reach across multiple delivery mechanism (Adams, 2008; Winseck, 2008).

This study examined source choices for the December 23, 2003 bovine spongiform encephalopathy (BSE or mad cow disease) event; this incident was the first such case of BSE in the United States, occurring in one Washington state cow imported from Alberta, Canada. Using the BSE event as a case study of breaking agricultural crisis news, this research sought to discover the sources reporters use when covering such stories and the impact of newspaper differences, including location, circulation, and ownership, on coverage of these issues.

### **Study Objectives**

This study sought answers as to whether newspaper location, circulation size, and/or ownership affect length of stories and number and variety of sources used in reporting crises. Coverage of the first BSE event in the United States was selected for examination, because this event was novel, newsworthy, significant to the public, and agriculturally relevant, requiring reporters to explain complex, science-intensive information.

Data about the relationships between newspaper characteristics and reporters' numbers of stories, story length, and source selection was in turn used to (1) suggest directions for further research into how newspaper characteristics might impact reporters' abilities to cover science-intensive crisis news and (2) suggest implications for "pitches" of expert sources and their research results by agricultural public information officers (PIOs) and media relations professionals to inform news media stories about agricultural crises.

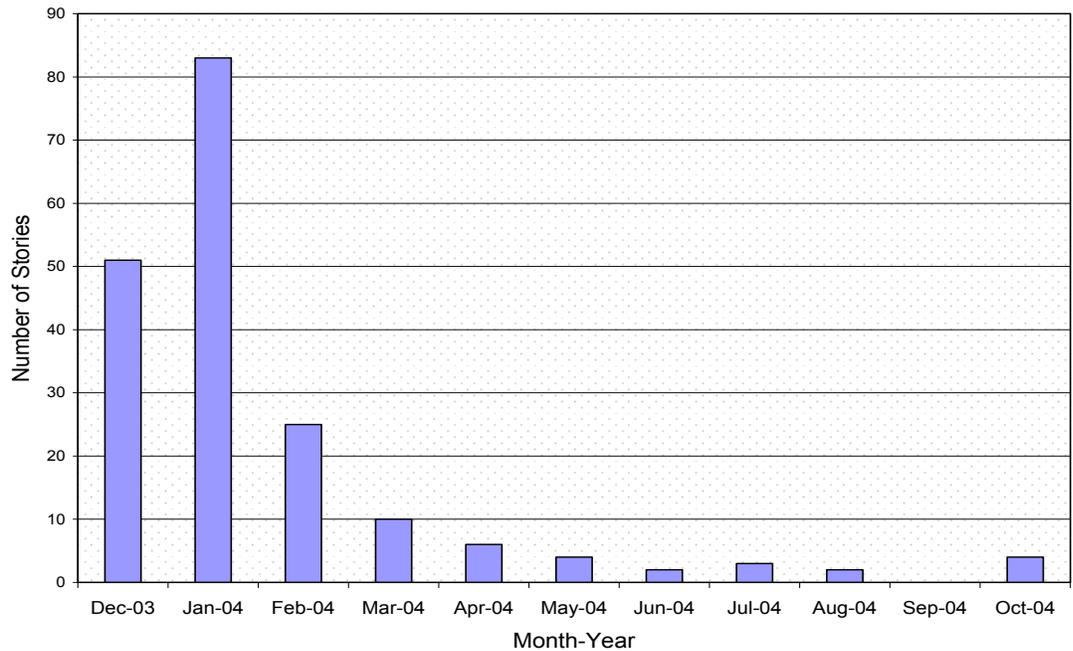
### **Methods**

#### **Study design, population of interest, and sample.**

To answer the study's questions about source use in U.S. newspaper coverage of the United States' first BSE event, a quantitative content analysis of stories in selected major U.S. newspapers was conducted (Macnamara, 2003; Stemler, 2001). Results of content analyses have been used to guide planning for crisis communication (Coombs, 2012; Dyer, Miller, & Boone, 1991), although numerous researchers caution that their results cannot reliably be used to analyze complex newsroom issues or to address issues of audience impact, thus limiting framing constructs based on such analyses (Bartlett, Sterne, & Egger, 2002; Heinrichs & Peters, 2004; Lavie and Lehman-Wilzig, 2005).

The newspapers included in the population of interest were those represented in a census of stories on BSE from LexisNexis for the eleven-month period from December 23, 2003 (the date the

first BSE event occurred) through October 31, 2004 (the end of the month just before occurrence in November of the second U.S. BSE event). A search of the LexisNexis database was conducted (search terms “General News,” “Major Papers,” “mad cow” AND “production” AND “agriculture”) and yielded 296 stories, 190 of them from U.S. newspapers. To minimize potential differences in newsroom organization, policies, and practices and in national politics and culture, only newspapers from the United States were included in this study’s analysis. Temporally, the U.S. stories from the search were distributed as shown in Figure 1.



**Figure 1.** Stories per month about BSE appearing on LexisNexis from 12/23/2003 through 10/31/2004

This distribution helped to determine the study timeframe, as numbers of stories peaked in the three months after the December 2003 BSE event, then dwindled to almost none by October 2004, immediately before the second U.S. BSE event.

The newspapers in the population were grouped by the geographic regions where they were headquartered (Crawley, 2007). The stories from this search represented U.S. newspapers as shown in Table 1.

Of the newspapers listed, only the *Christian Science Monitor*, the *New York Times*, *USA Today*, and *The Washington Post* can be considered “national papers”; the rest “are regional papers with regional influence” (B. Steffens, Executive Director, National Newspaper Association, personal communication, March 7, 2005).

Content analysis was applied to compare a *census* of all stories in the population written by science-specialty beat reporters (31) with an equal-sized *random sample* of stories written by non-science-specialty-beat reporters. Reporter work-role identity was established by byline credit or by referencing the reporter in *Bacon’s Newspaper Directory*, 2004 edition (2004 edition used because stories were written in 2003 and 2004; thus directory information was current for the timeframe analyzed). Stories taken from the Associated Press wire were excluded from analysis in this study, as the study objective was to correlate story characteristics and reporter roles with ownership of specific newspapers.

Table 1  
*Geographic Distribution of Newspapers in Population, Based upon Regions of the United States as Defined by the Associated Press (Goldstein, 2005) and as Named in Bacon’s Media Directory (2004)*

Region of United States	Newspaper	Circulation
New England	<i>The Boston Globe</i> [Massachusetts]	448,817
Middle Atlantic	<i>The Buffalo News</i> [New York]	218,385
East North Central	<i>Chicago Sun–Times</i>	492,156
	<i>The Plain Dealer</i> [Cleveland]	373,137
	<i>The Columbus Dispatch</i> [Ohio]	261,566
	<i>The Pittsburg Post–Gazette</i> [Pennsylvania]	248,176
West North Central	<i>Milwaukee Journal–Sentinel</i>	257,599
	<i>Omaha World Herald</i> [Nebraska]	200,238
	<i>St. Louis Post Dispatch</i> [Missouri]	286,939
	<i>StarTribune</i> [Minnesota]	375,504
South Atlantic	<i>The Atlanta Journal–Constitution</i>	410,761
	<i>St. Petersburg Times</i> [Florida]	354,869
West South Central	<i>San Antonio News–Express</i>	239,912
	<i>Houston Chronicle</i>	548,508
	<i>The Times–Picayune</i> [New Orleans]	260,720
Mountain	<i>Denver Post</i>	301,108
	<i>Rocky Mountain News</i> [Denver]	301,005
Pacific	<i>The Oregonian</i> [Portland]	344,550
	<i>The Sacramento Bee</i> [California]	302,804
	<i>The San Diego Union–Tribune</i> [California]	346,387
	<i>San Francisco Chronicle</i>	514,265
	<i>The Seattle Times</i> [Washington]	239,470
National	<i>The Christian Science Monitor</i>	80,191
	<i>The New York Times</i>	1,130,740
	<i>USA Today</i>	2,250,474
	<i>The Washington Post</i>	796,367

**Data coding and analysis.**

Each story was reviewed and coded by two trained coders, according to a codebook based initially on the variables of interest and refined through four iterations of coder training. Initial coder training was conducted using content analysis of 10 randomly selected stories from the dataset; these sto-

ries were eliminated from the dataset before selection of the stories that form the basis of this study (except for any stories written by science specialty-beat reporters, which were kept in the census of such stories and recoded for later analysis). During coder training, additional coverage themes were identified for use in analysis of the dataset, and coders were instructed in accurate recognition of all themes/content-analysis categories (Holsti 1969; Riffe, Lacy, & Fico, 2005). Coding variations were identified and addressed, and all differences between coders were resolved successfully. Intercoder reliability at the  $p < .01$  level was achieved, as indicated by intercoder correlation coefficients for each pair of variables (Field, 2009).

Coding for certain variables was unambiguous. For example, each story was labeled on its face according to its length (interval level data) and its newspaper of origin (nominal). Whether the reporter of each story was a science specialty-beat reporter (nominal) could be ascertained either by a byline containing the reporter's work-role identity (job title) as printed on the story or by consulting *Bacon's Newspaper Guide* (2004). Newspaper circulation (interval) and identity of its owners (nominal) also were determined from its listing in *Bacon's*. Newspapers were classified into location by region (nominal) using the groupings in *The Associated Press Stylebook and Briefing on Media Law* (Goldstein, 2005). The number of sources (interval) included in each story was determined by counting each unique source only once.

Arbitrary categories were created for circulation level (ordinal); newspapers were classified as having 300,000 or fewer subscribers (6 newspapers in sample), as having more than 300,000 but fewer than 500,000 subscribers (7 newspapers), or as having more than 500,000 subscribers (5). Similarly, newspapers in the population were classified as being owned by a chain (12 newspapers in the sample); by an individual, family, or independent corporation (5); by an academic organization (1, Poynter Institute); or by a religious organization (*Christian Science Monitor*, no stories in sample).

Finally, 15 dichotomous nominal variables (present vs. not present) were established for classifying sources into types, based on a list of source types extrapolated from similar studies (Albaek, Christiansen, & Togeby, 2003; Armstrong, 2004; Barr, Irlbeck, & Akers, 2012; Gasher, Hayes, Hackett, Gutstein, Ross, & Dunn, 2007; Sumpter & Braddock, 2002; Sumpter & Lukaszewski, 2001; Telg & Raulerson, 1999; Zoch & Turk, 1998). Dichotomous measurement of independent variables has been found to have little serious effect on the probability statements underlying parametric procedures of inferential statistics, that is, common inferential statistical procedures, for example, ANOVA, may be used on such data (Field, 2009).

Predetermined categories of sources for this study comprised government representatives, government scientists, business representatives, business scientists, agricultural producers (farmers and ranchers), university representatives, university agricultural scientists, all other university scientists, Extension representatives, Extension scientists, trade association representatives, consumer group representatives, media, consumers (general public), and undefined. Each named individual used as a source was placed into the appropriate category based on his or her institutional/organizational affiliation as identified in the story being coded. For example, Secretary of Agriculture Ann Venneman was placed in the government representative category, and the named owner of a meat market was placed in the business representative category. The decision was made to classify veterinarians as scientists rather than merely as representatives of their particular employing organizations, in order to capture their particular expertise for inclusion in the "scientist" category.

An undefined category was included because many sources were unnamed (see Beall & Hayes, 1992, for comparable treatment of unnamed sources). This category was applied to all organizations

for which no individual representative was named, for example, USDA or Extension, and to all generic sources, such as industry experts, consumers, and similarly cited sources. Such a category varies from those used by some other studies, which entirely excluded “collective anonymous sources like ‘voters’ or ‘government officials’” (Sumpter & Braddock, 2002, p. 543). An exception was made for media outlets for which no individual representative was named; all citations of media outlets were coded as media rather than as undefined because it was deemed desirable to track all sourcing of other newspapers, books, Web sites, etc.

Three additional interval variables were calculated from those that had been coded. All scientist categories — business scientists, university scientists, university agricultural scientists, Extension scientists — were summed to yield the variable “total scientists,” and all agricultural scientist variables — university agricultural scientists and Extension scientists — were summed to yield the variable “total agricultural scientists.” Finally, all 15 original source categories were summed to yield the variable “source variety.”

Relationships between coded variables were analyzed to determine statistical significance at  $p < .05$  levels. Depending on the levels of measurement for the particular variables being analyzed, the following statistical procedures and tools were employed: comparison of means using one-way ANOVA; bivariate correlation using Spearman rho; and forced-entry linear regression.

This study represents a part of a larger research effort undertaken by the first author in completion of her doctoral dissertation.

## Findings

As reported in Table 2, almost half of the stories in the sample (28 out of 62) were from newspapers in the Pacific West region (regions defined by AP, Goldstein, 2005), near where the United States’ first BSE outbreak occurred; 12 of these stories were from the *Oregonian* in Portland.

Newspapers with circulations greater than 300,000 but less than 500,000 accounted for nearly one-half of the stories (11 newspapers, 28 stories). Newspapers with circulations of 300,000 or less and those with circulations equal to or exceeding 500,000 accounted for almost equal numbers of stories, although twice as many papers had the smaller circulation (10 newspapers, 18 stories) as had the larger (5 newspapers, 16 stories).

Table 3 lists intercorrelations among newspaper circulation, circulation level, location, owner, and ownership type.

Newspaper location was found to be statistically significantly correlated with circulation/circulation level. Circulation/circulation level was statistically significantly correlated with owner/owner type.

Table 4 shows intercorrelations between newspaper characteristics and story characteristics.

Numbers of stories written, story length, and numbers of sources per story were found to be related to newspaper location. And selection of scientists and agricultural scientists as sources was found to be correlated with ownership type (chain, independent group, academic institution, or religious organization).

Table 2  
*Newspapers with Stories in Sample: Circulation, Number of Stories, and Story Length*

Region	# Stories	Newspaper and Circulation	# Stories and Length of Each
Middle Atlantic	1	<i>The Buffalo News</i> [New York] 218,385	1 – 1,418
East North Central	2	<i>The Pittsburg Post-Gazette</i> [PA] 248,176	2 – 745; 1,057
West North Central	9	<i>Milwaukee Journal-Sentinel</i> 257,599	2 – 984; 1,157
		<i>Omaha World Herald</i> [Nebraska] 200,238	4 – 652; 969; 1,138; 1,508
		<i>St. Louis Post Dispatch</i> [Missouri] 286,939	1 – 292
		<i>StarTribune</i> [Minnesota] 375,504	2 – 448; 692
South Atlantic	3	<i>The Atlanta Journal-Constitution</i> 410,761	2 – 220; 1,323
		<i>St. Petersburg Times</i> [Florida] 354,869	1 – 1,029
West South Central	3	<i>Houston Chronicle</i> 548,508	3 – 533; 670; 878
Mountain	5	<i>Denver Post</i> 301,108	2 – 304; 424
		<i>Rocky Mountain News</i> [Denver] 301,005	3 – 563; 707; 2,749
Pacific	28	<i>The Oregonian</i> [Portland] 344,550	12 – 524; 801; 956; 1,207; 1,306; 1,337; 1,408; 1,514; 1,519; 1,708; 1,769; 2,433
		<i>The Sacramento Bee</i> [California] 302,804	5 – 413; 1,126; 1,209; 1,244; 1,406
		<i>The San Diego Union-Tribune</i> 346,387	2 – 1,586; 2,248
		<i>San Francisco Chronicle</i> 514,265	2 – 1,154; 1,548
		<i>The Seattle Times</i> [Washington] 239,470	7 – 671; 714; 825; 907; 1,006; 1,094; 1,638
National	11	<i>The New York Times</i> 1,130,740	4 – 843; 1,079; 1,465; 1,815
		<i>USA Today</i> 2,250,474	5 – 466; 497; 1,510; 1,538; 1,685

Table 3  
*Intercorrelations Between Newspaper Characteristics*

	Location	Circulation	Circulation Level	Owner	Owner Type
Location	–	.555*	.587*	.056	-.132
Circulation	.555*	–	.925*	.038	-.400*
Circulation Level	.587*	.339*	–	-.016	-.498*
Owner	.056	.460*	-.016	–	.426*
Owner Type	-.132	-.400*	-.498*	.426*	–

*Note.* Spearman rho used as test statistic. \* $p < .05$

Table 4  
*Intercorrelations Among Newspaper Characteristics and Number of Sources, Story Length, Source Variety, Number of Scientist Sources, and Number of Agricultural Scientist Sources*

	No. Sources	Story Length	Source Variety	No. Scientists	No. Ag Scientists
Location	.329*	.293*	.120	.059	.045
Circulation	.238	.130	.075	-.007	-.017
Circulation Level	.203	.099	.109	.099	.069
Owner	-.182	-.146	-.088	-.216	-.172
Owner Type	-.135	-.058	-.153	-.331*	-.294*

*Note.* Spearman rho used as test statistic. \* $p < .05$

## Discussion

### *Relationships to previous studies.*

This study addressed the effect of newspaper characteristics, including circulation, location, and ownership, on reporters' source choices in covering science-intensive crisis stories. Coverage of the first U.S. BSE event was chosen as exemplary of the type of agricultural-related crisis stories frequently generated and of special interest to agricultural communicators. The study found newspaper location to be related to numbers of stories written, story length, and numbers of sources per story; this relationship may be at least partially explained by such factors as links between event proximity and perceived newsworthiness and by the increased resources of national newspapers. The correlation of use of scientists and agricultural scientists as sources with type of newspaper ownership shown by these data is unanticipated, and no studies were found that explored this relationship.

The authors appreciate the limited sample examined, and they do not attempt to draw generalizations beyond the population considered. However, in general and within its limitations, the findings of this study lend support to previous research showing that the amount and nature of coverage (represented in this case by differences in story length and in number of sources used per story) may vary with a newspaper's geographic location. More stories in this sample were printed by newspapers in the Pacific West region, and the *Oregonian*, located in Portland, printed more stories than any other newspaper. Since the December 2003 BSE outbreak occurred in Washington state, this finding supports the ideas that the closer to an event in physical and social distance and in place characteristics a newspaper is, the more coverage it is likely to devote to the event in terms of number of stories, story length, and source choice (Bendix & Liebler, 1999; Caburnay et al., 2003; Crawley, 2007; Marks, Kalaitzandonakes, Wilkins, & Zakhorova, 2007). Thus, newspapers in the far Midwest and on the West Coast might logically be expected to provide greater coverage of a crisis occurring in Washington state (Branton & Dunaway, 2009; Eshbaugh-Soha & Peake, 2008; Griffin & Dunwoody, 1995, 1997; Hindman, 1996; Taylor, Lee & Davie, 2000). And, given the possible seriousness of the event for public health and for the nation's economy, national newspapers might also have been expected to pay particular attention to the event (Bendix & Liebler; Branton & Dunaway; Cannon & Irani, 2011; Eshbaugh-Soha & Peake; Harry, 2000; Haygood, Hagins, Akers & Keith, 2002; King, Cartmell, & Sitton, 2006; Ruth, Eubanks, & Telg, 2005).

Coverage by the *Oregonian*, located in cosmopolite, urban Portland, also supported previous findings that newspapers in larger, more pluralistic communities tend to give greater coverage to controversial science topics, with mitigation by involvement of a community with the controversy (Branton & Dunaway, 2009; Eshbaugh-Soha & Peake, 2008; Griffin & Dunwoody, 1995, 1997; Hindman, 1996; Taylor, Lee & Davie, 2000). Portland, for example, had no such involvement in the BSE outbreak.

The decreasing numbers of papers located in rural settings and the tendency of urban papers to give little coverage to agricultural news imply that agriculturally relevant events that do not occur near a major urban paper may not receive the coverage they deserve (Caburnay, 2003; Cahill, Morley, & Powell, 2010; Cartmell, Dyer & Birkenholz, 2001; Griffin & Dunwoody, 1995, 1997; Hindman, 1996; Reisner & Walter, 1994; Thompson & Kelvin, 1996). Additionally, unless agriculturally-relevant news is perceived as important to owners of urban papers, fewer agricultural reporters may be needed to join their staffs. These trends may be mitigated somewhat through efforts by larger urban papers to expand coverage into suburban/rural areas through establishment of special editions aimed at such areas; expansion of all coverage by means of online editions of even local newspapers; and inclusion of coverage of agricultural issues in other beats, such as small business, technology, or food/health reporting (Cahill, Morley, & Powell, 2010; De Jonge, Van Trijip, Renes, & Frewer, 2010; Edmonds, Guskin, & Rosenstiel, 2011; Noam, 2008; Reisner, 2003; Saunders, 2002).

However, research indicates that reports written by reporters with low levels of agricultural literacy may be superficial and more likely to perpetuate stereotypes than those written by more expert reporters:

Both farmers and public thus receive biased and fragmented reporting that may polarize their views on current agricultural issues. Even if reporters are aware of critical shortcoming in their coverage, improvement may require reduction in structural constraints on story choice. (Reisner & Walter, 1994, p. 525).

Thus, research showing differences among stories written by reporters assigned to different newspaper beats, such as that by White and Rutherford (2009) and Gasher et al. (2007), remains an important line of investigation. Newspaper editors may in fact realize the importance of agricultural news, but may view it as more appropriately covered by business, technology, or health beat reporters, depending on its subject matter.

The chain-owned newspapers in this sample used a statistically significantly greater number of scientists and agricultural scientists as sources. This contradicts findings of little difference in coverage by chain-owned newspapers compared to coverage by newspapers with other ownership structures (Lacy & Blanchard, 2003; Pritchard, Terry, & Brewer, 2008; Scott, Gobetz, & Chanslor, 2008). Other researchers investigating ownership's impact or lack of impact on news content did not shed any light on this particular result (Aronoff, Ward & Kenyon, 2005; Fan, 2009; George, 2006; Griffin & Dunwoody, 1995, 1997; Picard & van Weezel, 2008). The correlation of use of scientists and agricultural scientists as sources with type of newspaper ownership is unanticipated and apparently has not been explored by other researchers. Although the majority of stories in the sample (48 of 62) were from chain-owned papers, differences existed among these stories, supporting previous findings that individual chain-owned papers exhibit coverage differences, even if their owners are the same (George, 2006; Miljan & Howorun, 2003).

### ***Implications for the National Research Agenda in Agricultural Communications and for agricultural public information officers and media relations practitioners.***

This study addresses priorities stated in RPA2 -- the desire of agricultural communicators to "aid the public in effectively participating in decisions making related to agriculture," through providing information on which such decisions can be based (Osborne, 2007, p. 4).

In particular, implications of this study and the support it offers previous research may help agricultural public information officers (PIOs) and media relations practitioners in their efforts to "disseminate . . . relevant information that facilitates public decision making about high priority agricultural issues" and to "improve the effectiveness of mass media coverage of agricultural issues" (Osborne, 2007, p. 4). Improving such professionals' understanding of newspaper characteristics that influence coverage may help them more effectively craft their information subsidies and determine better to which newspapers such subsidies should be pitched.

Concentrating on the newspaper most likely to provide coverage will facilitate effective use of time and other resources by practitioners and improve their chances for placement of important agricultural information. In this instance (2003 BSE event), the knowledge that proximity and urban-location influence coverage might have determined on which newspapers agricultural media relations practitioners would concentrate their attention. Additionally, continuing convergence among media should encourage PIOs to expand their focus to encompass the realities of coverage entailed in increasing reliance on Web-based editions of existing publications (Ruth-McSwain, 2008). It is to be hoped that studies such as this one will contribute to enhancing the effectiveness of practitioners through increasing their ability to target receptive media.

### ***Recommendations for further research.***

Because newspapers must pay for the privilege of having their stories listed by the LexisNexis database, the resulting self-selection may obscure possible distinctions between large urban and smaller, rural newspapers in coverage of events like the December 2003 BSE outbreak (Branton & Dunaway,

2009; Caburnay et al., 2003; Cannon & Irani, 2011; Chambers, 2003; Crawley, 2007; Eshbaugh-Soha & Peake, 2008; Marks, Kalaitzandonakes, Wilkins, & Zakharova, 2007; Ruth, Eubanks, & Telg, 2005). Thus, further research replicating this study for similar agricultural crises, including smaller, more rural papers, is recommended.

The closest papers to the outbreak site included in the LexisNexis database were in Seattle, Washington, and Portland, Oregon. Future research samples should include newspapers in communities closer to crises' locations and newspapers in more homogenous, less pluralistic communities and/or with economic interests in the agriculture industry. These geographic locations would allow further comparisons with previous research (Bendix & Leibler, 1999; Cannon & Irani, 2011; Demers, 1998; Harry, 2001; King, Cartmell, & Sitton, 2006; Ruth, Eubanks, & Telg, 2005; Taylor, Lee & Davie, 2000). Similarly, investigation of the other interests held by the owners of the newspapers in this and other samples would allow analysis of possible economic conflicts of interest if such ownership included financial investment in agricultural industries (George, 2006; Maguire, 2003; Picard & van Weezel, 2008).

Since significant differences were found in the use of scientist and agricultural scientist sources by chain-owned papers, focus on these variables with regard to differences among papers owned by different chains and within multiple papers owned by the same chain potentially could be illuminating (Aranoff, Ward, & Kenyon, 2004; Edmonds, Guskin, & Rosenstiel, 2011; Fan, 2009; Lacy & Blanchard, 2003; Noam, 2008; Pritchard, Terry, & Brewer, 2008; Miljan & Howorun, 2003; Picard & van Weezel, 2008; Scott, Gobetz, & Chanslor, 2008).

And although differences in story numbers and types of sources were found, investigation of the role of information subsidies in reporter identification of sources was beyond the scope of this study; additional research is recommended to investigate differences in the ways in which types of newspapers, based on location, circulation, ownership, handle such subsidies (Lehman-Wilzig & Seletzky, 2012; Liu, Vedlitz, & Alston, 2008). Additionally, exploration of the effect of use of stories from the Associated Press should be explored.

Overall, the authors believe that the reach and impact of this study could be increased by its replication for other similar populations and other types of crisis events, allowing the application of a grounded theory approach to the additional data to develop stronger conclusions and more effective applications for agricultural PIOs and media relations practitioners.

## Conclusions

Results of this study linking newspaper location (proximity to event, community heterogeneity, and urbanity) to crisis coverage (as measured by story length and number of sources cited) add support to previous research and lend greater credence to the assumption that newspaper characteristics influence news coverage. And the correlation between chain ownership and the use of scientists as sources for crisis stories suggests that ownership does matter for news coverage. Thus, in the age of convergence, whether through merger or adoption of new media, the particulars of a given newspaper's identity should be considered when predicting or evaluating the nature of its crisis coverage and when targeting newspapers for dissemination of important agricultural news to the public.

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