Analysis

A large body of research on source credibility informed this study. The theory of source credibility contends that the credibility of the communicator of a message has substantial bearing on how the content of that message is perceived and evaluated by readers or an audience (Hovland et al., 1953). Carl Hovland and other researchers' foundational studies on the theory in the early 1950s drew a distinction between "high credibility" sources and "low credibility" sources, and their evidence showed that reader opinions were more likely to be swayed by stories from high credibility sources—defined mostly as government sources or sources linked to respected institutions. They isolated the concepts of "source expertise" and "trustworthiness" as the primary influencing factors on a reader's perception of source credibility (Hovland & Weiss, 1951; Hovland et al., 1953). Much of the later research on source credibility has continued to build on the ideas and definitions determined by this early work (Avery, 2009; Brinol et al., 2007; Heesacker et al., 1983; Lucassen & Schraagen, 2012; Petty et al., 1981).

The study and theories of source credibility have evolved and shifted focus over the past six decades, but one truth stands out: Credibility matters. The "credibility crisis" for the American media has been a topic of ample discussion and debate since the 1970s (Maier, 2005; Rouner et. al 1999; Gaziano, 1987). Public distrust is an obstacle to journalism's primary goal "to provide citizens with the information they need to be free and self-governing" (Kovach & Rosenstiel, 2001, 17). Moreover, when the public questions the credibility of health and science communication, a credibility problem can threaten public safety and health (Avery, 2009).

The mechanics of source credibility are less certain; researchers have spent more than half a century debating the primary factors involved in reader trust and the measurements used to evaluate it. Several areas of focus have emerged as the primary culprits in shaping a reader's perception of the credibility of a source of information. Much research has dwelled on the source—the communicator and his or her attributes—as the primary predictor of reader trust. Especially in early studies on source credibility, researchers tended to focus on the source of journalistic messages and operated under the idea that source credibility was controlled primarily by the characteristics of the person or institution delivering the message (Hovland & Weiss, 1951; Kelman & Hovland, 1953; Osgood et al., 1957). Some source-focused research has also noted a significant effect in the timing of a reader's discovery of the source on their thoughts on the message's credibility (Brinol et al., 2007). Other research has scrutinized the biases, attitudes and ideologies of the source and noted disparities in political ideology and assumptions about the news process between journalists and the general public that could affect perceptions of source credibility (Gaziano, 1987; Gladney, 1996; Martin et al., 1972).

Other researchers have devoted their attention to the reader and his or her biases, attitudes, and background. Often such studies try to pinpoint how readers assess bias and what role that plays in their perceptions of source credibility. Such studies tend to trace perceptions of bias to the reader's personal viewpoints and ideologies (Gaziano, 1987; Gladney, 1996; Kocher & Shaw, 1981; Rouner et al., 1999). Age and gender have also shown strong statistical significance as factors in reader attitudes toward media sources

(Robinson & Kohut, 1988). Overall, it seems clear that news consumers are a complex and varied group, and they bring attitudes and beliefs to every story they read.

Still other researchers in source credibility focus on the content of journalism; they evaluate its accuracy, biases, and level of complexity. Most accuracy-focused content studies show high rates of news inaccuracies, to the detriment of public trust (Maier, 2005; Tankard & Ryan, 1974; Tichenor et al., 1970). In general, most academic studies find error rates in general news stories that range between 40 and 60 percent. Perhaps not inaccurately, respondents considered reporter ignorance to be the primary factor behind the mistakes (Maier, 2005).

Agricultural journalism covers an increasingly complex industry. As agricultural producers become more reliant on advanced scientific and technological developments such as genetic engineering and self-driving tractors, communicating these changes and developments coherently and accurately can be challenge. Many studies have shown that scientific news, such as agricultural issues, poses a particular challenge to journalists. The content is more complex and nuanced, the general public has a low scientific literacy, the scientific community is smaller and not always cooperative, and traditional newsrooms are not equipped to deal with the long-term coverage science news requires (Dunwoody, 1986; Nelkin, 1995; Rogers, 1999; Stocking, 1999).

Thus the mainstream media—prone to inaccuracies in even general news stories—faces an even greater challenge in producing accurate agricultural news. Studies that have scientists review stories they were interviewed for find that science reporting is often distinguished by a significantly higher rate of error than regular new stories and

scientist interviewees were highly critical of science reporting in general (Tankard & Ryan, 1974; Tichenor et al., 1970). Agricultural news stories often rely on farmers and ranchers for interviews and information. Therefore, studies on the effect of content on a media outlet's credibility are doubly important when investigating the agricultural community's perceptions of media credibility.

With the growth of the Internet, more recent studies have attempted to measure the effect of different mediums and channels of news on source credibility (Chung et al., 2012; Johnson & Kaye, 1998; Kiousis, 2001; Lucassen et al., 2012). The most sophisticated, and probably most accurate, studies have combined all these factors— source, reader, content, and channel—in some measure. Some studies—psychology as well as mass media—focus on the influence of an audience's relationship and familiarity with the content and the source on the credibility and effectiveness of the source (Kohn et al., 1976; Heesacker et al., 1983; Henkel & Mattson, 2011).

Most studies that examine the agricultural community's trust and use of various information sources tend to use source-focused or channel-focused credibility theory and focus on agricultural information sources (as opposed to agricultural news). Many studies of agricultural producers' perceptions of source credibility—particularly older, foundational studies—have generally analyzed the producers' reactions and opinions to the source of their information alone (Ford & Babb, 1989; Gloy et al., 2000; Lichtenberg & Zimmerman, 1999; Sandoz Agro Inc., 1993; Schnitkey et al., 1992; Thomas, 1963). Increasingly, more recent studies of the agricultural community have examined the influence of the channel or medium by which producers receive their information on

4

source credibility (Boone et al., 2000; Lasley et al., 2001; Licht & Martin, 2007; O'Keefe et al., 2001; Tucker & Napier, 2002; Vergot et al., 2005). Finally, some research on the agricultural community's relationship to sources focuses on farm media's editorial content and assesses the potential for bias and omission due to advertising influences (Banning & Evans, 2001 & 2004; Hays & Reisner, 1989 & 1991; Reisner & Hays, 1989 & 1994; Reisner & Walter, 1994; Sommer & Pilisuk, 1982).

Since little quantitative source credibility research on the agricultural community has focused on views of mainstream media's agricultural news content, this study leaned heavily on foundational source-focused credibility theory. Content and medium have been proven to interact and influence perceptions of credibility, so this study attempted to remove the influence of content from the study by using a bland, self-composed story that does not touch on controversial agricultural issues, and all respondents received the story by one medium alone—email. Because reader attitudes and beliefs do influence source credibility, this study only sampled agricultural producers who use the agricultural services of DTN/The Progressive Farmer, which limits the sample to one group of people with similar backgrounds and occupations. The only factor that directly influenced these producers' responses to questions about their perceptions of credibility was the source of story. No doubt, as previous source credibility research has shown, the readers brought their own beliefs, knowledge, and biases to the content and to their perception of the source, but that is for another study. This study only tried to test the effect of the source on the readers' trust and asked additional questions measuring their awareness of advertising influence.

Literature Review

Literature

Farm media—defined as any published magazine or paper "targeted at farm producers and [not including] academic journals" (Banning & Evans, 2001, 22)—have long held an influential and trusted place in the agricultural producer's world. They first emerged in the early 1800s, often in conjunction with a growing number of agricultural societies. The publications started to gain significant traction and popularity in the agricultural community in the 1850s, and farmers have relied on them as a primary source for independent agricultural information since. Farm media expanded in the early 20th century, held steady during the world wars and then continued to grow and thrive with the introduction of television and radio (Boone et al., 2000). The 1970s were a high point for the industry, when the average American farm subscribed to seven different farm journals (23). However, the farm crisis of the 1980s, a rapidly shrinking percentage of Americans involved in agriculture, and industry-wide consolidation took a toll on farm media in the latter half of the 20th century (Boone et al., 2000; Evans, 2012).

Around the same time that farm media were expanding their role as an information source for farmers in the 1850s, mainstream newspapers were also beginning to incorporate agriculture into their daily reporting. Improved print and telegraph technology allowed newspapers to reach more readers than ever, and metropolitan dailies like the New York Times and the Chicago Tribune began employing farm writers to cover agriculture (Boone et al., 2000, 9-10). The farm beat, as such coverage was known,

thrived in the early and mid-1900s, but like farm media, mainstream agricultural coverage suffered as the 20th century neared its close.

During the nationwide reduction of agricultural coverage in newspapers in the 1970s, agricultural editors, reporters, beats, journalism training programs and news stories disappeared in great numbers (Evans, 2012; Pawlick, 2001). Scholars and critics familiar with the industry argue that mainstream agricultural coverage that does persist is low quality and spotty, and the industry is largely under-covered (Crossfield, 2011; Hochberg, 2010; Pawlick, 2001; Reisner & Walter, 1994). Because the bulk of the American populace relies primarily on the mainstream news media for news on agriculture, the public's knowledge of a vital, influential industry is increasingly inadequate (Reisner & Walter, 1994).

The waning mainstream coverage of agriculture has left the agricultural community feeling marginalized and misunderstood by the public (Licht & Martin, 2007). Agricultural news that does reach the public tends to be shallow, stereotyped, and event-based (Reisner & Walter, 1994, Pawlick, 2001). With the advent of genetic modification, precision technology, and industrialized farming practices, agriculture is an increasingly scientific field, and science journalism is a challenging profession. Most mainstream newsrooms lack the resources for the long-term, in-depth coverage science news requires, interview subjects can be hard to find, and the content is complex and often foreign to the general public (Dunwoody, 1986; Nelkin, 1995; Rogers, 1999; Stocking, 1999). A comparatively higher rate of inaccuracies in science news stories due to these tensions is also well documented (Tankard & Ryan, 1974; Tichenor et al., 1970).

Unsurprisingly, this combination of marginalization and inadequate and often inaccurate coverage of agriculture has left many agricultural producers wary and distrustful of mainstream media. Most research on agricultural producers' use of information sources has focused on where farmers get agricultural *information* as opposed to agricultural *news*; however, producers' attitudes toward mainstream media inevitably surface in most of these studies. In focus groups directed by Melea Licht and Robert Martin, Iowa farmers explained that they use mass media for the bulk of their information but turn to interpersonal communications for more specific, local, farm issues. They consider information from individual meetings and consultations to be more reliable and necessary for distilling the larger quantities of information they received from mass media news outlets, which they regarded with limited trust (Licht's thesis, 2007; Licht & Martin, 2007). Intense feelings of misrepresentation by mainstream media were widely shared by the participating farmers. They described local newspapers as "anti-agriculture," focused on "bad news," and generally uninterested in agriculture. Television coverage and ads evoked even stronger statements: "Most of them [sic] makes the farmers look like a bunch of idiots," one said. Another said: "Their perception of farmers is insulting to our intelligence—including ads. They make us look like hicks sitting out there with three-pronged pitchforks" (Licht's thesis, 2007, 106, 77). Other comments highlighted a feeling of marginalization and invisibility: "There just aren't enough farmers to make it ag [sic] a priority for them (daily newspapers)," one farmer noted. "You've got to be quick to catch any ag information on TV… only negative ag info makes it to TV" another reported (Licht's thesis, 2007, 59, 34).

8

A sense of persecution by mainstream media often pervades studies on agricultural producers' attitudes toward information sources. Public and media scrutiny of agriculture-related environmental problems over the last three or four decades is widely resented among agricultural communities (Sandoz-Agro Inc., 1993; Lichtenberg & Zimmerman, 1999; Vandenabeele & Wildemeersch, 2012). In one study, an overwhelming 87 percent of producers stated that the news media's inaccurate reporting had produced unnecessarily negative public perceptions of farming-related environmental issues. Overall, farmers indicated that news media poorly educated in environmental and agricultural issues were distorting farmers' image as stewards of the land, and although they felt proper education could correct the problem, they did not trust the media to do it (Sandoz Agro, Inc., 1993). In another study, farming landowners' rankings of information sources were compared to non-farming landowners. The results showed that farmers were far more likely to rank newspapers, radio, and TV as the least influential and the least trusted sources than the non-farming respondents (Perry & Rikoon, 1992).

Other studies have acknowledged that mainstream media do tend to emphasize agriculture's role in environmental problems, and farmers who place more value on mainstream news tend to show more concern about environmental issues (Lichtenberg & Zimmerman, 1999; O'Keefe et al., 2002). Perhaps the most damaging feeling of all— fear—emerged in one study where researchers observed that, in the media landscape, some farmers feel like an "anxious spectator" who "feels quite vulnerable and experiences little involvement in the debate" (Vandenabeele & Wildemeersch, 2012, 63).

9

In the same study, farmers reported feeling a sense of "powerlessness" in the face of media reports on environmental disasters (66).

In contrast, farmers have consistently ranked farm media as one of the most important and trusted informative sources for farmers since studies on this topic began back in the 1960s (Thomas, 1963; Ford & Babb, 1989). Only interpersonal, direct communication—such as consultations or on-farm visits and tours—outranks or comes close to farm magazines for trust and credibility among farmers (Bruening et al., 1992; Ford & Babb, 1989; Licht & Martin, 2007; Schnitkey et al., 1992; Thomas, 1963; Tucker & Napier, 2002). In every study where mainstream media sources such as consumer newspapers or television stations were included as an option for information sources, they ranked far below farm media options in credibility and usefulness (Bruening et al., 1992; Gloy et al., 2000; Licht & Martin, 2007; Lichtenberg & Zimmerman, 1999; Perry & Rikoon, 1992; Schnitkey et al., 1992; Thomas, 1963).

Even early studies noted the influence of the information channel—print, television, or radio—on credibility (Thomas, 1963). As the Internet has emerged as a major media platform, more recent studies have specifically focused on the effect this channel of information could have on credibility. Internet access for rural agricultural communities is growing. Between 2003 and 2011, the number of rural residents with Internet access rose from 52 to 61 percent (Gualtieri, 2012). Farmers are more likely than ever to use computers, Internet information sources, and social media (Gloy & Akridge, 2000; Gualtieri, 2012). Although most studies on farmers' information preferences produce contradictory reports on the influence of certain demographic factors (Gloy et

al., 2000), the factors of age and education indisputably influence technology use. Younger, more educated producers are more likely to use and prefer Internet channels for their information (Gloy & Akridge, 2000; Tucker & Napier, 2002).

Despite this digital information expansion, agricultural producers show a continued preference for traditional farm media, and Gloy et al. (2000) report that it "appears that the Internet might be a complement rather than a substitute for traditional information sources" (258). Even though the Internet has given farmers a wide range of rapidly disseminated information options, this range and speed has instead reinforced and renewed their well-documented desire for personal, one-on-one communication (Lasley et al., 2001). Even as they move online, farm media publications remain a highly ranked and widely preferred source of agricultural news and information among farmers' increasingly large pool of options (Licht & Martin, 2007; Tucker & Napier, 2002).

Just as mainstream media coverage of agriculture has contracted and suffered, many studies contend that the quality and extent of farm media's agricultural news coverage has also suffered. Farm magazines were initially subscription-based. With each subscription, farmers exchanged money for the magazine's content, so in essence, every payment or lack thereof was input from the reader on the content; the reader had influence on editorial decisions. Farm magazines have become smaller and more specialized and have mostly transitioned to free, controlled circulation, wherein farmers receive a free subscription in exchange for giving the magazine their demographic information. The result is a publication almost entirely dependent on advertising income, and the advertisers, not the readers, are now a primary influence on editorial content

(Boone et al., 2000; Banning & Evans, 2001). At the same time, the agricultural industry, including publishers, has undergone massive consolidation. Between 1993 and 2002, the top agricultural publishers increased their market share by more than 30 percent (Evans, 2012). Likewise, a shrinking number of corporations now control the vast majority of biotechnology patents, seed production, and livestock production systems (Banning & Evans, 2005).

The consequences of a highly consolidated industry, fewer publishers of farm media, and extremely powerful advertisers have been well documented. Studies over several decades have consistently shown that farm media reporters and editors are increasingly subject to substantial advertising pressure on their content, in the form of threats, withdrawn ads, and editorial trade-offs (Banning & Evans, 2001 & 2004; Hays & Reisner 1990 & 1991; Reisner, 1994; Reisner & Hays 1989 & 1991; Reisner & Walter, 1994). Not only do farm media face more intense agricultural advertising pressure than mainstream media (Reisner & Hays, 1991), but many agricultural writers and editors reported that this influence does change and influence their content (Reisner 1994; Reisner & Walter, 1994).

In one study, agricultural journalists themselves evaluated news stories produced by mass media reporters, farm media reporters, and newspaper agriculture beat reporters (Reisner & Walter, 1994). They concluded that mass media reporters who are not familiar with agriculture produced superficial, stereotyped stories that were not biased toward industry, farm media reporters produced stories that were not superficial or stereotyped but *were* biased toward industry, and newspaper agriculture beat reporters

12

produced stories that were less superficial than mainstream reports and less biased toward agro-industry than farm media reports (526). As a result, scholars have expressed concern that farm media under-cover social, economic, and environmental problems related to agricultural practices and tend to serve an advocacy role for agro-industry in controversial issues (Bannings & Evans, 2001; Reisner 1992; Reisner & Walter, 1994).

Although many anecdotal accounts suggest agricultural producers are aware of these advertising tensions and trade-offs in farm media content, only one study attempted to quantitatively measure this awareness (Bannings & Evans, 2004). The majority of respondents (from a variety of ages and types of operations) reported that they did see advertising influence in farm media content in the form of editorial trade-offs, bias in stories, and decisions on what and what not to cover. Other studies have shown that farmers are capable of separating the usefulness or influence of a source from its trustworthiness. Although farmers generally indicated that they seek information from sources they trust most highly, they do use some sources (particularly mass media) a moderate amount while maintaining a lower level of trust in them (Constance & Rikoon, 1992 & 1993). These studies suggest that farm media readers are fairly savvy when it comes to evaluating content from various information sources, but more research is needed.

Most of the available studies on the agricultural community only measure their preferences for agricultural *information* sources, as opposed to agricultural *news* sources. Few mainstream media sources could be expected to match farm media for its production of agricultural information such that a farmer uses to run a farming operation. However,

farm media and mainstream media do overlap in their coverage of major agricultural news events, and this convergence is an understudied topic (Reisner & Hays, 1991, 42). Moreover, in the focus groups of Licht's 2007 study, farmers at times indicated that they do actively compare mainstream media's agricultural *news* coverage to farm media's (Licht, 2007, 97). This study attempts to fill a gap in the research by specifically examining how agricultural producers perceive differences in credibility between mainstream and farm media in relation to their agricultural news content. It also measures whether producers detect the presence of advertising influence in a farm media story or consider the lack of such influence in a mainstream media story.

Method Review

Mass media researchers have long lamented the lack of an academic consensus for a functional definition of credibility (Meyer, 1988). Yet most studies accept the Webster's New Collegiate definition that Philip Meyer recommends—something that "offers reasonable grounds for being believed" (567). Many researchers also invoke Carl Hovland and Walter Weiss's concept of "trustworthiness," from their foundational study on source credibility (Gaziano & McGrath, 1986; Hovland & Weiss, 1951, 636).

In 1986, Cecilie Gaziano and Kristin McGrath developed a 12-point scale for measuring credibility for the American Society of News Editors to use in credibility research. The scale consisted of 12 bipolar semantic differential items such as "fair or unfair" and "biased or unbiased," and sought to measure fairness, bias, trustworthiness, completeness, factual nature, and accuracy (Gaziano & McGrath, 1986, 455). The researchers also added three items that would attempt to measure a "social concerns

factor," which would account for feelings of trust associated with a media source's relationship to the community (454-455).

In 1988, Meyer analyzed and tested this scale and offered a smaller, more concise credibility index of his own. He broke the concept of credibility into two factors: believability and "community affiliation," defined as "maintaining harmony in and leadership status with the newspaper's community." He argued that the two concepts must be measured separately (Meyer, 1988, 567). His credibility scale pared down the Gaziano-McGrath scale to these semantic differential items: "Fair-Unfair," "Unbiased-Biased," "Tells the whole story-Doesn't tell the whole story," "Accurate-Inaccurate," and "Can be trusted-Can't be trusted." His community affiliation scale contained only four items: "Watches out after your interests," "Concerned about community's well being," "Patriotic," and "Concerned mainly about the public interest" (Meyer, 1988, 573-574).

In 1994, Mark West attempted to cross-validate the Gaziano-McGrath and Meyer credibility scales. He concluded that only Meyer's five-point credibility scale had acceptable reliability and sufficient empirical validity to accurately and reliably measure the concept of credibility. His results showed that the Gaziano-McGrath scale items did not measure the same concept and that Meyer's community affiliation scale produced unacceptable reliability and validity levels (West, 1994).

Many quantitative academic studies on agricultural producers' use and preference of information sources and source credibility use semantic differential items similar to Meyer and McGrath-Gaziano's scales or list the source and employ Likert scale responses to measure the respondent's opinion on the items or the source (Bruening,

1992; Gloy et al., 2000; Lichtenberg & Zimmerman, 1999; Vergot et al., 2005). Other studies on this topic use directional statements about the credibility or usefulness of the source and use either Likert scales or nominal categories to measure the respondent's agreement or disagreement (Banning & Evans, 2001 & 2005; Bruening, 1992; Constance 1995; Reisner & Hays, 1989 & 1991; Reisner & Walter, 1991 & 1994). Others employ a ranking scale and allow producers to list their source options in order of preference or use (Ford & Babb, 1989; Schnitkey et al., 1992; Thomas, 1963; Tucker & Napier, 2001).

Academic studies on how farmers and journalists perceived the presence of advertising influence on farm media content have generally used two sets of questions to measure these perceptions (Banning & Evans, 2001 & 2004). One set measures perceptions of the presence of advertising influence by offering three nominal categories ("agree," "neutral," and "disagree") in response to statements such as "Agricultural reporters and editors are under no obligation to please advertisers" (Banning & Evans, 2004, 12). The other set focuses on whether producers believe advertising influence is a problem. Farmers are given several statements such as "attempts by advertisers to influence what stories appear" and can select one of two nominal categories: "Not a problem" or "problem in some cases" (12).

The majority of these agricultural community studies were self-administered mail or email surveys. Surveys have the advantage of high external validity, relative ease of production and administration, and an inexpensive design, particularly in the case of email or Internet surveys. However, they also lack the control over independent and dependent variables that can be found in field experiments (Wimmer & Dominick, 2011).

Samuel Stouffer once accurately noted that field experiments leave "a wide-open gate through which other uncontrolled variables can march." (Meyer, 1988, 567-568). Yet field experiments have the critical ability to show causality between variables while maintaining a natural setting (Wimmer & Dominick, 2011). Since this study sought to identify the effect of source on perceptions of credibility and not just a correlation, the study was designed as a field experiment in the form of an email survey containing an agricultural news story—both a format and content with which agricultural producers are familiar. The only validated credibility scale—Meyer's five-point scale—was used to evaluate and measure the first research question:

RQ 1: How does the media source of an agricultural news story—mainstream or agricultural media—affect agricultural producers' trust and perceptions of the credibility of the story, regardless of content?

A trimmed-down version of Banning and Evans' statements about advertising pressure was used to evaluate the second research question. Three of their statements were revised to focus only on the reader's knowledge of potential influence, without attempting to measure attitudes toward that influence. For consistency of design, the three statements used a corresponding five-point Likert scale to answer the second research question:

RQ 2: Do agricultural producers detect the presence or influence of advertising in agricultural news stories differently when they read stories produced by mainstream and agricultural media sources?

Method

Design

This study was a one-factor field experiment design, implemented through the use of online surveys. Participants received an email survey composed of a news story and a series of questions. Everyone in the sample read the same news story, but the story was labeled with one of two possible news sources (the between subject condition). Half of the stories were labeled with a mainstream media source, the Chicago Tribune, and the other half were labeled with a farm media source, DTN/The Progressive Farmer.

Sample

The sample was drawn from an email list of subscribers to DTN/The Progressive Farmer, an agricultural company that distributes agricultural information, data and news to more than half a million U.S. subscribers. Using a random number generator, two sets of 10,000 email addresses were selected from subscribers who fit the criteria of commercial farmers who work on 250 or more acres of row crops, with no geographic limits. One set of 10,000 emails was assigned to one condition and the other set of 10,000 to the second condition, so each participant received one of two possible versions of the survey. To determine how many responses were needed to generate a proper sample size, a G-power was calculated for ANCOVA and for one-tailed t-tests, using the standard media research effect size of 0.3 to 0.4. According to the results, the sample needed 250 participants per group.

Stimulus

The survey asked participants to read a mock news story of roughly 250 words (see Appendix 2). The news story was written deliberately to be a bland and uncontroversial article about the conclusion of one agricultural company, DuPont's, lawsuit against another agricultural company, Monsanto, in the summer of 2012. The events were factual and both mainstream and farm media covered the lawsuit. The survey story was written using six sources' accounts of the event: the New York Times, the Wall Street Journal, Farm Journal, Successful Farmer, Monsanto, and DuPont. Therefore, the story was one agricultural producers could expect to find in either mainstream or farm media. It involved agricultural companies that produce a lot of agricultural advertising, so questions about advertising influence were relevant despite the uncontroversial content. The story was reviewed and deemed appropriate for the survey and its audience by Dr. Sandy Rikoon, MU Professor and Curators Distinguished Teaching Professor of Rural Sociology, who has extensive experience surveying agricultural communities.

Half of the news stories bore the headline of DTN/The Progressive Farmer, a farm media company that regularly covers agricultural news and whose name is familiar to agricultural producers. The other set of stories bore the headline of the Chicago Tribune. The Chicago Tribune was selected because it is a major newspaper that most agricultural producers would readily recognize and identify as a mainstream news source but would also be less likely to elicit the predetermined opinions that national papers such as the New York Times and the Wall Street Journal might produce. Likewise, the Tribune is

urban enough to avoid eliciting feelings of familiarity or comfort, such as a newspaper like the Des Moines Register might produce for an agricultural producer.

The source of the story—either DTN/The Progressive Farmer or the Chicago Tribune—acted as the independent variable of news source in the field experiment. To ascertain that participants noted and processed the independent variable, one final question on the survey asked respondents which type of source—farm or mainstream media—produced the story they read.

Dependent Variables

Two dependent variables were evaluated by a series of questions respondents answered after reading the news story.

The first dependent variable was the readers' perception of credibility. Using Meyer's validated credibility scale, five of the survey questions addressed this variable by offering respondents five bipolar semantic differential items: Unfair-Fair, Biased-Unbiased, Can't be trusted-Can be trusted, Did not tell the whole story-Told the whole story and Inaccurate-Accurate. Each item had a corresponding 5-point Likert scale response option, where 1 was the lowest score possible (i.e. unfair, biased, can't be trusted, did not tell the whole story, and inaccurate) and 5 was the highest score possible (i.e. fair, unbiased, can be trusted, told the whole story, and accurate). The five credibility variables produced a Cronbach's Alpha of 0.91, well within the standard range of 0.7 to 1.0. Out of 25 possible points, the credibility scale's overall mean was a 17.3, with a standard deviation of 4.84.

The second dependent variable was the readers' perception of agricultural advertising influence in the story. Three questions addressed this variable by posing three bipolar semantic differential items: The news story was probably influenced by agricultural advertising-The news story was probably not influenced by agricultural advertising, The writer had an obligation to please agricultural advertisers-The writer had no obligation to please agricultural advertisers and The news story was probably hard to write without influence from agricultural advertising-The news story was probably easy to write without influence from agricultural advertising. These questions also corresponded with a 5-point Likert scale response option, where 1 was the lowest score possible (i.e. the news story was probably influenced by advertising, the writer had an obligation to please advertisers, and the news story was probably hard to write without influence), and 5 was the highest score possible (i.e. the new story was probably not influenced by advertising, the writer had no obligation to please advertisers, and the news story was probably easy to write without influence). The three advertising items produced a Cronbach's Alpha of 0.85, within the accepted range of 0.7 and 1.0. Out of 15 possible points, the scale's overall mean was a 10.58, with a standard deviation of 2.99.

Four additional questions measuring the participants' gender, occupation, age, and education followed the credibility and advertising items. The survey concluded with six questions asking participants about their use and opinion of farm and mainstream media news sources. Of these, the first two questions asked participants how often they used farm media and mainstream media for their agricultural news. A corresponding 5-point Likert scale gave them the following options: 1 (never), 2 (rarely), 3 (sometimes), 4

(often) and 5 (daily). The next two questions asked participants how well they thought farm media and mainstream media covered agriculture. They answered on a 5-point Likert scale, from 1 (very poorly) to 5 (very well). The last two questions asked participants if they felt farm media and mainstream media had their best interests at mind. A 5-point Likert scale measured these responses, from 1 (not at all) to 5 (very much so).

Covariate

A covariate item asked respondents how often they do business with Monsanto and DuPont Pioneer, the two companies featured in the mock news story. A corresponding 5-point Likert scale gave them the following options: 1 (never), 2 (rarely), 3 (sometimes), 4 (often) and 5 (daily). This question sought to account for any variance a relationship with the featured companies might have produced in responses to the questions about credibility and the influence of agricultural advertising.

Procedure

In two email blasts, a link to one version of the survey was sent to one email set of DTN subscribers and a link to the second version of the survey was sent to the second set. The recruitment script in the body of the email explained that the recipient had been selected to volunteer for a research survey conducted by a University of Missouri graduate student studying agricultural journalism. As an incentive, the script explained that participating in the survey gave respondents a chance to enter into a drawing for a farm supply store gift card. The email included a link to the survey. A week after the initial email, a follow-up email was sent out to the subscriber list, which reminded them

they had been selected to participate in the survey. The two sets of e-mail blasts produced 183 responses, 93 from the DTN story and 90 from the Chicago Tribune story.

Data Analysis

Descriptive tests were run on the demographic and media use questions. A Pearson's correlation was run to check for correlation between the covariates and the dependent variables. No correlations were found, so simple ANOVAs were run on the two scales, credibility and advertising influence, to answer RQ 1 and RQ 2. A multivariate analysis of variance (MANOVA) was then run on the individual credibility items, as well as a comparison of means, to further explore the interaction of the news source with the credibility scale.

Results

Two e-mail blasts produced 183 responses—93 participants read the DTN/Progressive Farmer story and 90 read the Chicago Tribune story. To ensure that the results represented the source's effect on credibility, only the respondents who correctly identified the source of their story as farm or mainstream media were considered. Any responses that incorrectly identified the source of the story were dropped, which left a total of 122 responses, 70 from the Chicago Tribune story, and 52 from the DTN story. The total usable responses were less than the minimum sample size of 250 participants per condition determined by the G-power test.

The response rate, 0.9 percent, and the usable response rate, 0.6 percent, are low. Online surveys often produce the lowest responses of almost all data collection methods, with rates as low as 2 percent reported in some studies (Adams & Monroe, 2012). DTN's

Advertising Promotion Manager, Jackie Rowell, noted that past DTN e-mail surveys

produce steeply declining response rates when the surveys pose more than three to four

questions. She reported rates as low as 0.5 percent for some e-mail surveys, which used

similar methods to this study. This low response rate presents the potential for non-

response bias.

Table 1
Demographics of the Sample

Gender	%		Occupation	%		Age	%		Education	%
Male	81.5		Active Ag Prod.	62.2		Under 35	5.9		High School Attendance	1.7
Female	18.5		Retired Ag Prod.	16.0		35 to 44	10.1		High School Graduate	16.8
			Not an Ag Prod.	16.0		45 to 54	23.5		2-Yr College/Trade Program	11.8
			Ag Supplier	5.9		55 to 64	31.1		4-Yr College Attendance	10.9
						65 to 74	18.5		4-Yr College Graduate	32.8
						Over 75	10.9		Advanced Degree	26.1

Of the final sample used for analysis, 81.5 percent of respondents were male, and

18.5 percent were female. (For demographic breakdowns, see Table 1). Sixty-two percent

identified themselves as active producers, 16 percent identified themselves as retired,

another 16 percent said they were not an agricultural producer and 5.9 percent identified

themselves as agricultural suppliers. The social trend of aging farmers was evident in the

sample. Only 16 percent of the respondents were under the age 45, 73.1 percent were

between the ages of 45 and 74, and 10.9 percent were over the age of 75.

Respondents with at least some college education made up 69.8 percent of the

sample. Graduates of a 4-year college made up 32.8 percent, and 26.1 reported having

advanced graduate degrees. Two-year college or trade program graduates made up 11.8

percent, 17 percent were high school graduates and only 1.7 percent lacked a high school

degree.

Table 2 *Media Use Results for the Sample*										
	MM Use for Ag News	FM Use for Ag News			Quality of MM Ag News	Quality of FM Ag News			MM Interests in Ag Comm.	FM Interests in Ag Comm.
	%	%			%	%			%	%
1 (Never)	1.7	1.7		1 (Very Poorly)	31	4.3		1 (Not at All)	48.3	4.3
2 (Rarely)	15.5	1.7		2	37.9	5.2		2	28.3	6.0
3 (Sometimes)	39.7	22.4		3	19.8	19.0		3	20.7	17.2
4 (Often)	31.0	56.9		4	8.6	51.7		4	6.9	53.4
5 (Daily)	12.1	17.2		5 (Very Well)	2.6	19.8		5 (Very Much so)	0.9	19.0
Mean	3.36	3.86			2.14	3.78			1.89	3.77
MM = Mainstream Media FM = Farm Media										

Respondents reported using farm media far more for agricultural news: 74.1

percent said they use farm media for agricultural news often or daily compared to the

43.1 percent who said they use mainstream media for agricultural news often or daily.

(For all media use results, see Table 2). However, 39.7 percent of respondents said they

sometimes used mainstream media for agricultural news, 31 percent said they used it

often, and 12.1 percent said they used it daily.

Respondents were critical of the mainstream media's agricultural coverage. The quality of mainstream media coverage of agriculture received an average ranking of 2.14, whereas farm media received a much higher average ranking of 3.78. Thirty-one percent of respondents gave mainstream media the lowest ranking (very poorly), compared to 4.3 percent who gave farm media the lowest ranking. Only 2.6 percent gave mainstream media the highest ranking (very well), compared to 19.8 percent who gave farm media the highest ranking. Overall, among this group, farm media was valued much more highly for agricultural news.

When respondents were asked to rank how much farm media and mainstream media had the agricultural community's interests in mind, the disparity in responses between the two types of media widened. Respondents gave the mainstream media a low average ranking of 1.89 and gave farm media a high average ranking of 3.8. Almost half of the respondents (48.3 percent) said mainstream media did "not at all" have the best interests of the agricultural community in mind, compared to only 4.3 percent who said the same of farm media. Only one person (0.9 percent) said mainstream media "very much so" had the best interests of the agricultural community in mind, compared to the 19 percent who said the same of farm media.

The covariates, which ranked how often the respondent interacted with Monsanto or DuPont Pioneer, were measured to see if they had a relationship with the eight dependent variables. No significant correlation was found, so including them in the analysis was not necessary.

26

A one-way ANOVA was run to determine the effect of source on the readers' perception of credibility for the news story. News source was significantly related to credibility ($F(1,121) = 7.44$, $p = .007$), with readers ranking the credibility of the DTN story ($M = 3.73$, $SD = .13$) significantly higher than the credibility of the Tribune story ($M = 3.26$, $SD = .11$).

A one-way ANOVA was also run to determine whether news source was predictive of readers' perceptions of advertising influence. News source was not significantly related to perceptions of advertising influence ($F(1,121) = 1.32$, $p = 0.25$), with readers ranking the likelihood of advertising influence in the DTN story ($M = 3.65$, $SD = 0.14$) not significantly different from the Tribune story ($M = 3.45$, $SD = 0.12$).

To probe the interactions between the story source and each item of the credibility scale, a Multivariate Analysis of Variance (MANOVA) was calculated for the five items: The amount of bias in the story, the story's fairness, the story's accuracy, the story's completeness and the story's trustworthiness.

Table 3				
Tests of Between-Subjects Effects				
Source	Dependent Variable	*df*	*F*	*p*
Survey Source	Fairness	1	6.430	.013**
	Bias	1	10.497	.002**
	Completeness	1	3.216	.075
	Accuracy	1	3.664	.058
	Trustworthiness	1	4.799	.030**
** : Significant at $p < .05$ level				

The one-way MANOVA was calculated to test the effect of story source on the reader's responses to the individual credibility items. A significant effect was found ($Lambda(8,113) = .85$, $p = 0.02$), as expected. Follow-up univariate ANOVAS (see Table 3) indicated that the readers' perception of the fairness of the story was significantly related to news source ($F(1, 120) = 6.43$, $p = 0.01$). The readers' ranking of the fairness of the DTN story ($M = 4.02$, $SD = 1$) was significantly higher than the readers' ranking of the fairness of the Chicago Tribune story ($M = 3.54$, $SD = 1.05$). (For all means and standard deviations, see Table 4). The readers' perception of the bias in a story was also significantly related to news source ($F(1,120) = 10.5$, $p = 0.002$). The readers ranked the DTN story ($M = 4.15$, $SD = 1.07$) as significantly less biased than the Chicago Tribune story ($M = 3.49$, $SD = 1.16$). The readers' perception of the trustworthiness of the story was also significantly related to news source ($F(1,120) = 4.80$, $p = 0.03$). The readers' ranking of the DTN story ($M = 3.71$, $SD = 1.14$) was significantly higher than the readers' ranking of the Tribune story ($M = 3.26$, $SD = 1.13$).

However, the readers' perception of the accuracy of the story was not significantly related to news source ($F(1,120) = 3.66$, $p = 0.06$). Readers' ranking of the accuracy of the DTN story ($M = 3.71$, $SD = 0.89$) was not significantly different from readers' ranking of the accuracy of the Chicago Tribune story ($M = 3.36$, $SD = 1.09$). Nor was the readers' ranking of the completeness of the story significantly related to news source ($F(1,120) = 3.22$, $p = 0.08$). Readers' ranking of the completeness of the DTN story ($M = 3.06$, $SD = 1.30$) was not significantly different from their ranking of the Tribune story ($M = 2.66$, $SD = 1.18$).

Table 4				
Comparison of Means for Dependent Variables				
Dependent Variable	Source	Mean	Std. Deviation	N
Fairness	DTN/PF	4.02	1.00	52
	Chicago Tribune	3.54	1.05	70
Bias	DTN/PF	4.15	1.07	52
	Chicago Tribune	3.49	1.16	70
Completeness	DTN/PF	3.06	1.27	52
	Chicago Tribune	2.66	1.18	70
Accuracy	DTN/PF	3.71	.893	52
	Chicago Tribune	3.36	1.09	70
Trustworthiness	DTN/PF	3.71	1.14	52
	Chicago Tribune	3.26	1.13	70

Discussion

The results of the study showed that the news source of the story significantly influenced the respondents' perceptions of overall credibility. Testing the individual credibility items separately helped unpack this result. Specifically, readers who read the story labeled DTN/The Progressive Farmer ranked the story's trustworthiness, fairness and lack of bias significantly higher than those who read the story labeled the Chicago Tribune. The variable of bias produced the most significant difference among readers' responses to the credibility variables (see Table 4).

Reader responses to the survey questions about their media use help shed some light on why producers showed more trust and regard for the DTN story. Overall, respondents indicated that they favored farm media sources for agricultural news, with 74 percent reporting using it "often" or "daily" for agricultural news. However, a substantial number—43 percent—reported that also they use mainstream media sources often or

daily for agricultural news, and another 40 percent reported using it for agricultural news "sometimes." This total of 83 percent of respondents who at least sometimes use mainstream media sources for agricultural news is surprising, given the low ranking of trust and use that agricultural producers have given mainstream media sources in past studies. However, it does echo Melea Licht's 2007 focus groups, where farmers explained that they do consult mass media sources regularly but rely on "interpersonal" communication with trusted people such as Extension representatives to distill and filter that information. "They depend on interpersonal information more even though they receive a higher quantity of information from the media," Licht explained (Licht, 2007, p. 29-30).

Respondents indicated a starkly negative perception of the mainstream media's agricultural news, despite their high consumption of it. Echoing results of past studies, respondents gave the mainstream media low scores for the quality of agricultural coverage and reported a strong sense of estrangement from mainstream news sources (see Table 4).

These results present an agricultural community that displays little trust and comfort with the mainstream media's coverage of agriculture but that nonetheless consults it on a regular basis for agricultural news. This combination—the familiarity that comes with regular use of mainstream media and the reported sense of estrangement and disrespect toward that same media—helps explain why readers trusted the DTN story more and considered it more fair and less biased than those who read same story labeled as the Chicago Tribune. Overall, these results lend support to the idea that, for

30

agricultural producers, disrespect for the mainstream media's agricultural coverage has translated into an automatically more negative perception of the credibility of a news story produced by a mainstream media source.

However, when the credibility variables were tested alone, two items—the story's completeness and accuracy—were not significantly influenced by the source of the story. Readers of both stories gave it low rankings for completeness and middling scores for accuracy (see Table 4).

Perhaps the source of the story simply has less influence on producers' perceptions of a story's accuracy or completeness, but the influence of content is more likely at play here. Although this study attempted to remove the variable of content, writing any news story where content will not interact with reader's attitudes, previous knowledge, and regard for the story is impossible. In this case, the blandness of the story, which was intended to limit its influence on perceptions of credibility, might have produced these similar rankings of accuracy. The story was a short and an entirely factual recital of events. Such straightforward (and dull) content would have made it difficult for even a distrustful reader of the mainstream media to suspect significantly more inaccuracies than a more trusting reader of the DTN story. Likewise, the story's short length (250 words) presented readers with a mere summary of the lawsuit, lacking detail or context. Readers' low rankings for completeness, which did not vary significantly by source, are probably a natural (and laudable) reaction to such a brief news article.

Overall, this study reflects and advances past research on how agricultural producers use information sources. The results of Licht and Martin's 2007 study, which

exposed farmers' intense feelings of marginalization and misrepresentation by the mainstream media, are mirrored in the low scores that the mainstream media earned in this study on the quality of its agricultural coverage and its interest in the agricultural community. In general, previous research has shown that the agricultural community trusts and ranks farm media far higher than mainstream media sources for agricultural information (Bruening et al., 1992; Gloy et al., 2000; Licht & Martin, 2007; Lichtenberg & Zimmerman, 1999; Perry & Rikoon, 1992; Schnitkey et al., 1992; Thomas, 1963). This study takes these results a step farther by suggesting that those factors—more regard for farm media and more exposure to it—have produced a community more likely to consider a news story fair, unbiased, and trustworthy when it is labeled with a farm media source.

However, when it came to assessing the story's accuracy and completeness, producers in this study were less influenced by the story source. Content might hold more sway with these concepts than even the source of the story. Interestingly, although readers ranked the stories similarly for accuracy and completeness, they still showed a tendency to rank the bias, trust, and fairness of the story differently by source. So although readers probably do consider content when evaluating a story, their pre-determined attitudes toward the source of the story appear capable of overruling the merits of an individual story when they consider its overall credibility.

Even the few nonresponses to individual items in the survey contribute to the overall impression of discomfort with mainstream media and corresponding trust in farm media. All of the survey's nonresponses were from readers of the Chicago Tribune story;

readers of the DTN story answered all the questions. Of the six nonresponses among the Tribune respondents, half chose not to answer the media use questions and half passed over both the demographic and media use questions.

With regard to RQ 2, the survey responses to the role of agricultural advertising influence were less consistent with previous literature—limited as it is. Reader responses to questions of advertising influence were not significantly different between the DTN and Tribune story.

These results run somewhat counter to a previous study where the majority of farmers surveyed did acknowledge increased agricultural advertising influence on farm media in the form of editorial trade-offs, bias in stories, and decisions on what to cover (Banning & Evans, 2004).

The results of the present study are concerning, in part because of a key difference between this survey and the Banning & Evans survey. In that 2004 study, readers were asked point-blank whether they noticed or considered increased advertising influence in farm media stories, and their answers suggested that they did. Here, however, when agricultural producers were asked about advertising influence on specific content—namely a story about two major agricultural advertisers—they showed little awareness of this interaction. So although readers might recognize the general possibility of more advertising influence in farm media content, they might not necessarily take it into account every time they read a news story, such as this one.

The sample size could have contributed to this result, as well. A sample size closer to the minimum indicated by the G-Power test (250 per condition) might have shown an effect for producers' perceptions of advertising influence.

Yet another possible factor at play here is, once again, content. Although the story did address two major agricultural advertisers, it presented a summarized, factual, and uncontroversial account, which could have led readers to expect little advertising influence. Nonetheless, this remains a somewhat disquieting result when viewed in light of the many studies that reveal a farm media under more advertising pressure than ever before (Banning & Evans, 2001 & 2005; Hays & Reisner, 1989, 1990 & 1991; Reisner, 1994; Reisner & Walter 1994).

The lack of correlation between the covariates and the dependent variables is interesting. The participants' responses to the questions about credibility and advertising influence were not influenced by the varied relationships they held with the advertisers. Here, the savvy farmer from the 2004 Banning & Evan study resurfaces. The results suggest that agricultural producers are capable of separating their assessment of a news story from their personal interaction with the subjects of the story—even when those subjects are large agricultural advertisers who are extremely influential in their lives and work.

Limitations

This study's sample was pulled from a list of individuals who had given DTN/The Progressive Farmer an e-mail address for all their correspondence. As a result, the respondents likely have experience and habits involving computer technology that might

not represent the larger universe of agricultural producers. Specifically, a 2011 study reported that only 60 percent of rural residents (which generally include agricultural producers) have access to high-speed Internet connections (Gualtieri, 2012). Past studies have shown that higher levels of education are positively correlated with technology use, so this sample probably represents participants with more education than the general farm and ranching population (Gloy & Akridge, 2000). Education levels reported by this sample—nearly 70 percent of respondents with at least some college education and more than one-quarter with advanced graduate degrees—are notably higher than past studies (Oshel et al., 2009; Tucker & Napier, 2002; Gloy et al., 2000). However, several studies have found that education has little or no influence on agricultural producers' opinion of media and agricultural information sources (Bruening et al., 1992; Constance, 1995; Gloy et al., 2000; Israel, 1991). So this slight skewing toward more educated readers might not have a substantial effect on their responses to questions about the story they read.

In the other categories of age, gender, and occupation, this sample was consistent with past studies; it presented an aging, primarily male population, with 84 percent of the respondents directly involved in agriculture, either as an active or retired producer or an agricultural supplier. The aging of America's agricultural community is well documented by the U.S. Department of Agriculture's 2007 Census of Agriculture, which showed that one-quarter of the nation's agricultural operators were over 65 and only 8 percent were under 35. Likewise, 29 percent of this study's respondents were over 65, and only 6 percent were under 35. The percentage of female respondents to this study—18.5 percent—also seems fairly representative of the larger farming population. The Census of

Agriculture estimated that only 9 percent of the nation's "primary agricultural operators" were female. However, up to 30 percent of "all operators," which included people who are the second or third person involved in a farming or ranching operation, were estimated to be female. This study's number seems to fall safely in between these extremes, which makes sense, since it is possible that either the primary operator or a less involved member of the farm could be responding to the DTN e-mail.

The final usable sample size, 122, came in well under the G-power test's result of 250 participants per condition. As a result, the sample might not have been large enough to detect real effects. Furthermore, the low response rate (0.9 percent) and usable response rate (0.6 percent) make non-response bias—the possibility that non-respondents differed in attitude and demographics from those who did respond—a legitimate concern. As discussed, the results of this study likely exclude agricultural producers who do not use the Internet regularly. Given the agricultural community's well documented distrust of mainstream media, some might suspect that many producers declined to finish the survey when they saw the Tribune news story label. However, the even initial distribution of the responses to each survey—93 for DTN and 90 for the Tribune—suggests that no, producers appeared to answer (and not answer) both surveys with equal frequency.

However, those who read the DTN story were twice as likely to identify the source of the story incorrectly. Forty-three of the 93 DTN respondents (46 percent) incorrectly identified the source as mainstream media, compared to 18 of the 90 Tribune respondents (20 percent) who incorrectly identified the source as farm media.

Since both stories were labeled in the same manner, this discrepancy is hard to explain. Perhaps the story's content played a role. In past studies, producers have accused the media of only covering agriculture when something negative happens in the industry (Licht's thesis, 2007). This news brief, which documented a court battle between two agricultural companies, could be perceived as negative agricultural news, and could have caused recipients of the DTN story to automatically attribute it to a mainstream media source.

Perhaps also, the agricultural community's disregard for the mainstream media's agricultural news coverage surfaced here. Reading a story labeled by a news source that inspires feelings of distrust could have prompted recipients of the Chicago Tribune story to be more alert and aware of the source and thus more likely to identify it correctly.

We can at least conclude that for 33.3 percent of all respondents, the news source was not significant enough to be noted accurately. This alone is interesting, because it suggests that producers might not always assess the credibility of a news story with source in mind. As suggested earlier, perhaps the content of a news article is more important to some readers than its source.

Future Direction

Overall, this study's findings on agricultural producers' perceptions of credibility provide a logical progression in the body of research on the agricultural community. Previous research has demonstrated that farmers and ranchers rank and trust farm media highly among their information options. This study now suggests that this positive relationship with farm media (and a negative relationship with mainstream media), has

made agricultural producers' perceptions of a news story's credibility partly dependent on the source of the story. Although producers evaluated the accuracy and completeness of the story without significant influence from the news source, they showed a strong tendency to trust the farm media story more and view it as less biased and fairer than the mainstream media story.

The results of this study should not be overstated, and future studies are needed to examine and elaborate upon its findings. The primary limiting factor here was the aforementioned problem of content. No amount of careful writing could remove the influence of content, and the factual and summarized nature of the story used in this study might have influenced some of the responses. Nor can we ignore the fact that one-third of the respondents did not correctly register the source of the story they read. As a result, the findings of this study can only be generalized so far. Future studies could strive to make the source of the story more obvious to respondents. For instance, asking respondents to identify the news source immediately after reading the news item might inspire them to check the story and move forward with the correct source in mind.

The results of the advertising variables especially should be considered with caution. Where the credibility scale is a verified and oft-used measure of credibility, this smaller advertising influence scale was modeled after previous studies but tailored for the news story in question. As such, it does not represent an accepted measurement of advertising influence, although the high reliability of the scale does suggest that the items successfully measured the same concept. Still, more studies are needed to determine an

appropriate scale to measure perceptions of this influence and to unpack the interaction of content and source on agricultural producers' perceptions of advertising pressure.

The body of research on the agricultural community could benefit from future studies that use the design and questions of this survey but include different kinds of content, such as a controversial news story. For instance, several studies show that farmers and ranchers feel they have been misrepresented in mainstream media coverage of agriculture-related environmental issues (Lichtenberg & Zimmerman, 1999; Sandoz Agro, 1993; Vandenabeele, J. & Wildemeersch, 2012). The news story could address, for example, hypoxia in the Gulf of Mexico, which is a large zone of oxygen-depleted water that cannot support animal life. This phenomenon has been attributed to fertilizer chemicals running off farmland into rivers that discharge into the Gulf of Mexico. Perhaps a more controversial environmental news story such as this one might cause producers to evaluate the accuracy and completeness of the story with more attention to news source than they demonstrated for this study's bland, uncontroversial news story. News stories with different mainstream or farm media labels might also produce different results. Perhaps using a more familiar mainstream media source—such as group of producers' local newspaper—would inspire more trust in the credibility of a story. National urban newspapers with perceived political leanings—such as the New York Times and the Wall Street Journal—might produce different results, as well.

Changing content in a future study might also clarify the interaction of content with perceptions of advertising influence. A more controversial story involving the interests of an agricultural advertiser, for instance, might make producers more alert to

advertising influence than the bland story they read in this study. Future studies could also phrase the advertising influence scale's three items differently or pose different questions entirely regarding advertising. For instance, questions that make the respondent consider the role of advertising in their life—How often do you encounter agricultural advertising? Which seed/equipment/fertilizer companies do you do business with most?—might inspire more consideration of advertisers' influence on the content they just read.

Overall, as the discussion of the covariate findings and the advertising scale suggest, agricultural producers' perceptions and evaluations of advertising influence in farm and mainstream media are complex and not yet well understood. More studies like this could further our understanding of how content and source interact when agricultural producers weigh the credibility and advertising influence in an agricultural news story.