

A COMPARISON OF THE PERCEIVED CREDIBILITY AND USEFULNESS OF  
BEEF CATTLE MAGAZINE ARTICLES WITH AND WITHOUT PHOTOGRAPHS

A Thesis

by

JAMES DALE SANDLIN

Submitted to the Office of Graduate Studies of  
Texas A&M University  
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

May 2008

Major Subject: Agricultural Education

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## ABSTRACT

A Comparison of the Perceived Credibility and Usefulness of  
Beef Cattle Magazine Articles With and Without Photographs. (May 2008)

James Dale Sandlin, B.S., Texas A&M University

Chair of Advisory Committee: Dr. Tracy A. Rutherford

This thesis explored the credibility and usefulness of beef cattle magazine articles with and without photographs perceived by students at a Southern land-grant institution. The thesis also explored the use of alternate forms of repeated measure to determine if a relationship existed in instrumentation when a photograph was presented first or presented second. The study found that credibility was perceived to be greater when photographs were present in an article. The study found that usefulness was perceived to be greater when photographs were not present in an article. The study found a relationship between credibility and usefulness when presented with and without photographs. The study found that perceived credibility was greater when an article presented with a photograph was presented first. The study also found that perceived usefulness was greater when an article without photograph was presented first. The findings of this study indicated that magazines should take these factors into account when a desired outcome is to increase editorial credibility and increase the effectiveness of the message.

## ACKNOWLEDGEMENTS

I thank God first and foremost for the abilities and talents that he has given me. I thank my fiancée M'Randa, for her tolerance and support on my worst days and continued support on my best days. I thank the Chair of my committee for the work that she has put in: Boss, thank you for the knowledge and support throughout the process, as well as the friendship. I thank the members of my committee: Dr. Boleman, I chose you for your knowledge of the beef cattle industry and statistics. Thank you for the continued guidance. Dr. Eilers, I chose you for your knowledge of photography. Thank you for your support and advice during this process. Dr. Starr, I chose you for your editing skills. Thank you so much for the knowledge that I learn from you daily, I appreciate it very much. More than that, I appreciate the friendship that we have. I hope that one day I'll be able to pass on the knowledge that you have given.

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## INTRODUCTION

Information from a photograph is understood and interpreted through our vision, both physically and mentally. Photographs capture a specific place in time and allow viewers to understand and even identify with the subject of the photograph. Photographs can stand alone; they can add meaning to the printed word; they may even enhance a reader's understanding of the message.

To date no research was found that studied the perceived credibility and usefulness of beef cattle magazine articles with and without photographs. The purpose of this study was to determine the value of photography, within beef cattle magazine articles, in the areas of credibility and usefulness. Understanding the value of photography in beef cattle magazine articles could possibly explain some effects in the trend of advertising pressure on editorial content in farm periodicals. Businesses wanting to inform an audience may use magazines as a source for their products and services. Magazines may be targeted because of the nature of their relationships with their subscribers. Banning and Evans (2005) wrote that some of the concerns about agricultural publishing were “effects of editorial staff cutbacks and consolidations of periodicals on editorial vigor, editorial independence, localized coverage, credibility and value to readers” (p. 4, ¶ 2). As outlined in Banning and Evans, this study explored the credibility and value to readers (usefulness) and their relationship within the beef cattle magazine industry.

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This thesis follows the style of the *Journal of Applied Communications*.

In beef cattle magazines, photographs with text may not always be crucial for subscribers because of their assumed background within the beef industry. Photographs might be helpful, however, for laymen to see more than just a cow, allowing them to see an animal's breed, gender, and even coloring. A relationship may exist between the credibility and usefulness of beef cattle magazine articles with and without photographs and was explored further in this study.

### *Definition and Overview of Magazine Publication*

The *Merriam–Webster Dictionary* (2004) defines a magazine as “a publication usually containing stories, articles, or poems and issued periodically” (p. 431). Magazines have been a staple of American agricultural news for centuries. The content of many early agricultural publications, such as the *Plough Boy* and the *American Farmer*, were contributions from agricultural societies (Boone, Meisenbach, & Tucker, 2000). Today's agricultural publications, such magazines as *Successful Farming* and *Progressive Farmer*, have been shaped by the early agricultural societies' efforts and may have developed the reliance of the public to receive the information sought. Johnson and Prijatel (1999) wrote, “Magazines' role in American history is secure. For more than 250 years, magazines have shown themselves to be an enduring medium” (p. 44).

The interaction of society and magazines is a mirrored relationship; they are dependent upon each other for change. Johnson and Prijatel (1999) wrote, Magazines [are] active members of a complex society, leading the discussion in many cases, but allowing others in society to take the action that will cause change. Change only happens when the messages

magazines present find a receptive ear in society. . . [and] those messages may not be heard without the help of magazines. (p. 76)

Boone, Meisenbach, and Tucker (2000) wrote, “As the agricultural industry changes, agricultural communications sits on the cusp of change too” (p. 25). The change for the reader may be in the vernacular, age, or education, whereas the print may change in format, content, publishing method, style, or circulation and delivery.

Daly, Henry, and Ryder (1997) wrote, “Nearly everyone reads magazines. The tactile pleasure of turning pages, the portability, photography, design and authority of the published word all contribute to the distinctive appeal of magazines” (p. 2). They wrote, “Magazine historian John Tebbel estimates that 22,000 magazines are published in the United States” (p 10). *Bacon’s Magazine Directory* (2004) lists 124 livestock magazines. A count from this category yielded 67 magazines listed beef cattle production as main topic or their title implied beef production. The magazine articles used in this study were a sample of the 67 beef cattle magazines. The photography of magazines as a reason for readership, described in Daly, Henry, and Ryder (1997), is a main component of this study.

Photographs in magazines can have a powerful effect. Lester (2006) wrote, “Photographs entertain and educate. They provide a historical record that relies on the idea that a camera does not lie. Throughout the history of photography the picture enjoyed far greater credibility than the printed or spoken word” (p. 263). Photography allows the viewer to see what happened at a specific place in time and potentially form a conclusion about the message it conveys. This concept should enhance the readers’ understanding and overall interpretation of the medium.

Johnson and Prijatel (1999) wrote, “Photos confer additional power to words on the page because most readers accept photographic images as an objective reflection of reality with built-in credibility and authority” (p. 232). Photographs could add meaning to beef cattle magazine articles by providing the reader with information about the subject matter, i.e., breed of the animal, cuts of meat, processing techniques, or product branding initiatives. Based upon these factors, the credibility and usefulness of these articles may be improved by the inclusion of photographs to the article.

### *Semiotics and Publishing*

Photographs are visual forms that allow viewers to generate meaning through their message. “Meaningful connections between what people see and how they use those images arise when mental processing is viewed as a human rather than mechanical process” (Lester, 2006, p. 64). Semiotics quantifies this process by content analysis of photography.

Semiotics is the study of signs as a part of social life (Chandler, 1994). Barthes, cited in Chandler (1994), explained semiotics as

Any system of signs, whatever their substance and limits; images, gestures, musical sounds, objects, and the complex associations of all of these, which form the content of ritual, convention or public entertainment: these constitute, if no languages, at least systems of signification. (¶ 5)

Lester (2006) wrote, “A sign is simply anything that stands for something else. Any physical representation is a sign if it has meaning beyond the object

itself. The viewer [however] must understand its meaning; if the viewer does not then it's not a sign for them" (p.55). The interpretation of a photograph could add or detract from its meaning. The focus of this study was the potential of a photograph to express semiotic attributes of credibility and usefulness.

The concept of semiotics was first proposed by Roman philosopher and linguist Augustine in A.D. 397 as the study of signs. Lester (2006) wrote, "(Augustine) recognized that universally understood entities afforded communication on many non-verbal levels" (p. 55). The theory of semiotics was developed by two men just before the beginning of World War I.

Ferdinand de Saussure, a Swiss linguist, developed a general theory of signs that was taken from notes by his students while he was a professor at the University of Geneva. Saussure, as cited in Ashwin (1984), explained his theory of semiology, "Semiology would show what constitutes signs, what laws govern them" (p. 43). Developing the method in which a sign is derived, may improve the cultural and social understanding in visual communication.

Charles Sanders Peirce, an American philosopher, published his theory of semiotics through conceptual application based upon photography. Peirce described three types of sign: iconic, indexical, and symbolic. These categories separate the meanings of photographic semiotics for each viewer. Lester (2006) described Peirce's contribution to semiotics as, "even the simplest image has complex cultural meaning . . . any picture often has all three types represented at the same time" (p. 57). Any picture may have one type of meaning, categorized

using Peirce's system, or may have multiple meanings, which can vary from person to person.

Roland Barthes strengthened the field of semiotics in the late 1960s with his development of a chain of associations, commonly known as codes. These codes are sent by an emitter, or encoder, and received by the receiver, or decoder. Boone, Meisenbach and Tucker (2000) described David Berlo's SMCR communication model as, "a source communicates a message over a channel to a receiver . . . these four components can be used to classify and describe some of the major areas of study in agricultural communications." (p. 73). The source for this study is the beef cattle magazine article and the photographs in the article serve as the channel that information is communicated through. Used correctly, communication is enhanced in ways previously unknown (Lester, 2006; Chandler, 1994). The evaluation of these codes can be used in photography where the photographer's ability and location when shooting the photograph can result in the difference of the signs conveyed by each picture.

Norwood (2005) wrote, "The photographer also controls the message by choosing what the camera will capture and ultimately [it] captures decodable signs." These connections (of decodable signs) have to be taught, and the social and cultural nature of the viewer can vary (Lester, 2006). By capturing signs, photography gives the viewer the ability to evaluate the message of the picture in order to add personal meaning.

The theoretical framework of semiotics has continued to advance through several authors: In the early 1980s, Asa Berger suggested four types of codes,

metonymic, analogical, displaced, and condensed; In 1976, Carolyn Bloomer suggested mental activities to bolster visual perception (Lester, 2006). Ashwin (1984) wrote, “In the decades since the pioneer work of Saussure and Peirce, semiotics has broadened into an international area of theoretical inquiry impinging on linguistics, social theory, film theory, cultural history and communications” (p. 43). Although semiotics has developed into a diverse field of study by providing a means of analyzing many different forms of communication, as Ashwin (1984) suggested, this study focused on photography and its possible semiotic attributes of credibility and usefulness.

It may be possible to derive credibility and usefulness through semiotics. Lester (2006) wrote, “You will find that any and all images have something to tell you because every picture created has some meaning to communicate” (p 112). Hill and Helmers (2004) wrote, “Visual elements are arranged and modified by a rhetor not simply for the purpose of emotional discharge but for communication with an audience” (p. 305). The communication that is given by a photograph may have an impact on the reader’s perception of credibility and usefulness.

### *Conceptual Framework*

The conceptual framework of this study is agenda-setting. Johnson and Prijatel (2000) described agenda-setting as “the theory that the media do not tell us how to think, they tell us what to think about” (p. 343). McCombs and Shaw (1972) wrote, “Readers learn not only about a given issue, but also how much importance to attach to that issue from the amount of information in a news story and its position” (p. 176). Although the

media do not tell people how to think, as Johnson and Prijatel (2000) suggested, the media can influence the way people think, speak, or act upon the messages.

Johnson and Prijatel (2000) wrote, “Magazines also act as agenda setters when they identify and frame the issues on which society focuses” (p. 77). Brooks, Kennedy, Moen, and Ranly (2005) wrote, “The viewpoint, or perspective, from which you tell a story serves as the frame for that story. Like the frame around a picture, the frame of a story contains it, limits it and determines how much the reader sees” (p. 13). By framing an issue, magazines may cause readers to consider another viewpoint on a topic that may or may not have been the reader’s initial viewpoint upon first reading of the article. When magazines identify and frame issues they change the way society reacts to certain situations. Magazines allow readers the ability to form their own conclusions based upon the information the magazine conveys (Johnson & Prijatel, 2000). The manner in which the photograph dictates a reader’s idea could be critical to magazine publishing in determining how and what the reader takes from an article.

Hill and Helmers (2004) wrote that “visual arguments constitute the species of visual persuasion in which the visual elements overlie, accentuate, render vivid and immediate, and otherwise elevate in forcefulness a reason or set of reasons offered for modifying a belief, an attitude or one’s conduct” (p. 50). Photographs can change reader’s beliefs or attitudes or can instill an action in readers. Beef cattle magazine articles could use this concept to influence their reader’s value of usefulness. This could be associated with the purchase of goods or services, reaction to a current issue, or persuade their readers to accept a new technology or practice within the beef cattle industry.



### *Credibility and Usefulness*

Lester (2006) wrote, “Throughout the history of photography, the picture enjoyed far greater credibility than the printed or spoken word” (p. 263). Harris and Lester (2002) explained credibility as derived through tradition, story choice, design consideration, and reader perception of the entity that produces the photograph. Journalism relies on credibility in response to readers’ ability to believe the story. Bentele, as cited in Schweiger (2000), wrote, “Credibility is a variable attributed to communicators by recipients” (p. 39). Without credibility given to a publication by its readers, the publication could fail (Banning & Evans, 2005). The credibility that may or may not be given to a magazine should be a concern for the publication’s well-being.

Berlo, Lemert, and Mertz (1969) suggested that credibility can be measured by using three criteria: safety, qualification, and dynamism. This method allows for the various points of interference in the magazine’s communication cycle with the reader and different methods of presenting the material. Berlo, Lemert, and Mertz (1969) wrote:

(Safety) includes a general evaluation of the affiliative relationship between source and receiver, as perceived by the receiver. . . [qualification] is a dimension of evaluative meaning that is peculiar to the situation in which information-transmission is involved. . . [dynamism] is a combination of the potency and activity factors of general connotation. . . They provide a base for tying the notion of these source evaluations to various processes of social influence, and various typologies of communication receivers. (pp. 574-576)

Kleinmuntz and Schkade (1993) described usefulness as a trade-off between decision aids and decision outcomes much like a cost-benefit approach. Davis (1989)

wrote, “Perceived usefulness is the degree to which a person believes that using a particular system would enhance his or her job performance” (p. 320). For this study, the usefulness of an item was based on consumer decision-making (CDM). Olshavsky and Granbois (1979) wrote, “The most pervasive and influential assumption in consumer behavior research is that purchases are preceded by a decision process” (p. 93). CDM is based upon the central idea that more than one choice is available for each consumer. Many factors affect CDM: budget allocation, generic allocation, store patronage, and brand purchase. Each of these factors affects the behavior of the consumer (Olshavsky & Granbois, 1979). Beef cattle magazine articles may affect consumer purchasing, as outlined in Olshavsky and Granbois.

Pankoff and Virgil (1970) wrote, “[U]sefulness [relative value] of an item of information as an input to the decision problem is determined by the market demand for it; that is, aggregate demand by users for making their decisions” (p. 270). Input-demand as a measure of the usefulness of information dictates that usefulness is determined by the individual in the decision-making process.

Lester (2006) wrote, “One of the strongest forms of communication is when words and images are combined in equal proportions (p. 64). . . .” And “the challenge of media presentation and analysis is to know when coverage is proper and necessary” (p. 89). This statement refers to the equal ratio of the photograph dimensions to the dimensions of the story content. The media, for this study of magazines, should consider this ratio to potentially maximize the effectiveness of their message.

Banning and Evans (2005) wrote, “Pressures on several fronts are intensifying concerns about not only the editorial independence of the commercial farm press but also the financial health and well being of it” (p. 3, ¶ 2). Banning and Evans (2005) described advertising pressures on farm periodicals as “a bottom line item. To a person, they saw editorial credibility as a moneymaker for their publications, and lack of it a potential source of financial ruin” (p. 10, ¶ 2). The perceived credibility and usefulness of photography in beef cattle magazine articles may affect beef cattle magazines editorial credibility, as outlined in *Banning and Evans (2005)*.

### *Methodology*

This study sought to determine students’ perceived credibility and usefulness of beef cattle magazine articles with and without photographs, at a Southern land-grant university, who were enrolled in a beef cattle production course. Four null hypotheses guided this study:

- H<sub>01</sub>. There is no difference in perceived credibility of articles in beef cattle magazines with and without photographs.
- H<sub>02</sub>. There is no difference in perceived usefulness of articles in beef cattle magazines with and without photographs.
- H<sub>03</sub>. There is no relationship between perceived credibility and usefulness of photographs in beef cattle magazines.
- H<sub>04</sub>. There is no difference between alternate forms of equivalent materials tested where text with or without photographs is tested first.

This study was a quasi-experimental, one-variable, multiple-condition design, containing two treatments, and each participant served as a control. A one-variable, multiple-condition design involves random assignment of two or more groups. The two treatments were text with photographs and text without photographs. In this design, groups differ by multiple variables that were the treatments.

Gall, Gall, and Borg (2007) wrote, “[This design] generally yield[s] three or more mean scores, or similar descriptive statistics. Therefore, the usual test of statistical significance in these experiments is univariate or multivariate analysis of variance, univariate, or multivariate analysis of covariance, or a nonparametric equivalent” (p. 412). This study was approved by the Institutional Review Board at Texas A&M University (#2007–0384).

The population for this study was 85 students enrolled in four elective, interest-based, beef cattle courses at a Southern land-grant institution. Courses were chosen based on the assumption that student enrollment in the course indicated an interest in the beef industry. The population was contacted through course instructors. Student responses remained confidential by pre-coding each instrument, and filing the completed instruments in a secure location.

The researcher designed two versions of the instruments using copies of five tear sheets from *Drovers* (May and October 2006) and *Kansas Stockman* (July and November/December 2006), of one-page articles that utilized text and photographs. The instrument was constructed based on Dillman’s (2000) principles of the social exchange theory. The tear sheets were changed to accommodate one version with photographs and one version without photographs. By using identical examples, respondents’ answers

focused upon the perceived influence of photograph credibility and usefulness rather than upon content.

Each question used a closed-ended, nominal-attitudinal scale in which respondents chose yes or no. The instrument was checked for validity by peer review where the reviewers did not contribute to the development of the instrument (Dillman, 2000). The reliability was tested through a measure of internal consistency. Miller, Torres, and Lindner (2005) wrote, “A measure of reliability can also be obtained using a single administration of an instrument and is generally referred to as a measure of internal consistency” . . . “this method produces a very conservative estimate of reliability” (p 14). The instrument used road signs as navigational guides, as outlined in Dillman, because they are familiar to most students.

The instruments were developed into three sections. The first section used five descriptive statements regarding subject use and knowledge of beef cattle magazines: I read magazines, I read beef cattle magazines, I subscribe to beef cattle magazines, my family subscribes to beef cattle magazines, and beef cattle magazines are my chief source of information about the beef industry. The second section was prefaced with an example article, included for clarity of response. Miller, Torres, and Lindner (2005) wrote, “Clarity is very important because no one is usually available to the respondent to explain unclear items” (p. 6). The questions posed, about the example article, were similar to those used to gather credibility and usefulness information. The example was followed by five magazine tear sheets and two questions: the first questioning credibility, the second questioning usefulness. The third section included demographic questions: gender, classification, academic major, age, where the student grew up, and expected date of

graduation. The responses were used to determine trends associated with credibility and usefulness.

The study used simple random sampling of participants, as outlined in Gall, Gall, and Borg (2007), by allowing the existing seating arrangement dictate the distribution of the instruments. The data were gathered in a classroom at the conclusion of class meeting times, allowing students not wishing to participate the opportunity to dismiss themselves without disrupting students who were completing the survey. Non-respondent error included participants who did not attend class.

The data were coded and hand-entered into electronic format. The data were analyzed using SPSS<sup>®</sup> v. 15. Analysis was conducted using *t*-tests and correlations. The alpha level was set *a priori* at  $\alpha = .05$ .

The researcher recognized that limitations existed within the study. Utilization of one-page articles is a limitation; the researcher wanted to limit the amount of reading in the study that could cause incomplete responses or mortality. Dillman (2000) wrote, "One objective is to reduce nonresponse. It has been shown that respondent-friendly questionnaire design can improve response rates, but only to modest degrees" (p. 81). Increasing the length of the articles used may yield different results.

There may be other limitations to the study. If the study was conducted using a larger population of students or a population consisting of people within the beef cattle production industry, the results may differ. If other reliability tests would have been conducted the instrument could have been improved. If a pilot test would have been implemented, the reliability of the instrument could have been improved.

A COMPARISON OF PERCEIVED CREDIBILITY AND USEFULNESS OF  
ARTICLES IN BEEF CATTLE MAGAZINES WITH AND WITHOUT  
PHOTOGRAPHS

*Synopsis*

Information from a photograph is understood and interpreted through our vision, both physically and mentally. Photographs capture a specific place in time and allow viewers to understand and even identify with the subject of the photograph. Photographs can stand alone; they can add meaning to the printed word; they may even enhance a reader's understanding of the message.

The purpose of this study was to determine the value of photography, within beef cattle magazine articles, in the areas of credibility and usefulness. No research was found addressing credibility and usefulness in beef cattle magazines. Understanding the value of photography in beef cattle magazine articles could possibly negate some effects in the trend of advertising pressure on editorial content in farm periodicals. Banning and Evans (2005) wrote that some of the concerns about agricultural publishing were "effects of editorial staff cutbacks and consolidations of periodicals on editorial vigor, editorial independence, localized coverage, credibility and value to readers" (p. 4, ¶ 2). This study explored the credibility and value to readers (usefulness) and their relationship within the beef cattle magazine industry.

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perceived credibility and usefulness of beef cattle magazine articles with and without photographs, the focus of this study.

### Definition and Overview of Magazine Publication

The *Merriam–Webster Dictionary* (2004) defines a magazine as “a publication usually containing stories, articles or poems and issued periodically” (p. 431). Magazines have been a staple of American agricultural news for centuries. The content of many early agricultural publications, such as the *Plough Boy* and the *American Farmer*, were contributions from agricultural societies (Boone, Meisenbach, & Tucker, 2000). Today’s agricultural publications, such magazines as *Successful Farming* and *Progressive Farmer*, have possibly been shaped by the agricultural societies efforts and may have developed the reliance of the public on receiving the needed information they offered. Johnson and Prijatel (1999) wrote, “Magazines’ role in American history is secure. For more than 250 years, magazines have shown themselves to be an enduring medium” (p. 44).

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### Semiotics and Publishing

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Ferdinand de Saussure, a Swiss linguist, developed a general theory of signs that was taken from notes by his students while he was a professor at the University of Geneva. Charles Sanders Peirce, an American philosopher, published his theory of semiotics through conceptual application based upon photography. Peirce described three types of sign: iconic, indexical, and symbolic. These categories separate the meanings of photographic semiotics for each viewer. Lester (2006) described Peirce’s contribution to semiotics as, “even the simplest image has complex cultural meaning. . . any picture often has all three types represented at the same time” (p. 57). Roland Barthes developed a chain of associations, in the late 1960s, commonly known as codes. These codes are sent by an emitter, or encoder, and received by the receiver, or decoder. Used correctly, communication is enhanced in ways previously unknown (Lester, 2006; Chandler, 1994). The evaluation of these codes can be used in photography where the photographer’s ability and location when shooting the photograph can result in the difference of the signs conveyed by each picture.

Norwood (2005) wrote, “The photographer also controls the message by choosing what the camera will capture and ultimately captures decodable signs.” These connections (of decodable signs) have to be taught, and the social and cultural nature of the viewer can vary (Lester, 2006). By capturing signs, photography gives the viewer the ability to evaluate the message of the picture in order to add personal meaning.

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### Conceptual Framework

Johnson and Prijatel (2000) describe agenda-setting as “the theory that the media do not tell us how to think, they tell us what to think about” (p. 343). McCombs and Shaw (1972) wrote, “Readers learn not only about a given issue, but also how much importance to attach to that issue from the amount of information in a news story and its position” (p. 176). Although the media do not tell people how to think, as Johnson and Prijatel (2000) suggested, the media can influence the way people think, speak, or act upon the messages.

Johnson and Prijatel (2000) wrote, “Magazines also act as agenda setters when they identify and frame the issues on which society focuses” (p. 77). By framing an issue, magazines may cause readers to consider viewpoints on a topic that may or may not have been their first viewpoint received upon first reading of the article. Magazines generally allow readers the ability to form their own conclusions based upon the information the magazine conveys (Johnson & Prijatel, 2000). The manner in which the photograph dictates a reader’s idea could be critical to magazine publishing in determining how and what the reader takes from an article.

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### Credibility and Usefulness

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Berlo, Lemert, and Mertz (1969) suggested that credibility can be measured by using three criteria: safety, qualification, and dynamism. This method allows for the various points of interference in the magazines communication cycle with the reader and different methods of presenting the material. Berlo, Lemert, and Mertz wrote:

[Safety] includes a general evaluation of the affiliative relationship between source and receiver, as perceived by the receiver. . . [qualification] is a dimension of evaluative meaning that is peculiar to the situation in which information-transmission is involved. . . [dynamism] is a combination of the potency and activity factors of general connotation. . . They provide a base for tying the notion of these source evaluations to various processes of social influence, and various typologies of communication receivers. (p. 574–576)

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input to the decision problem is determined by the market demand for it; that is, aggregate demand by users for making their decisions” (p. 270). Using input demand as a measure of the usefulness of information, dictates that usefulness is determined by the individual for their decision making process.

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Banning and Evans (2005) wrote, “Pressures on several fronts are intensifying concerns about not only the editorial independence of the commercial farm press but also the financial health and well being of it” (p. 3, ¶ 2). Banning and Evans described advertising pressures on farm periodicals as “a bottom line item. To a person, they saw editorial credibility as a moneymaker for their publications, and lack of it a potential source of financial ruin” (p. 10, ¶ 2). The perceived credibility and usefulness of photography in beef cattle magazine articles may affect beef cattle magazines editorial credibility, as outlined in Banning and Evans.

This study sought to determine students’ perceived credibility and usefulness of beef cattle magazine articles with and without photographs, at a Southern land-grant

university, who were enrolled in a beef cattle production course. This research was part of a larger study.

### *Methodology*

This study was a quasi-experimental, one-variable, multiple-condition design, containing two treatments, and each participant served as a control. A one-variable, multiple-condition design involves random assignment of two or more groups. The two treatments were text with photographs and text without photographs. In this design, groups differ by multiple variables that were the treatments.

Gall, Gall, and Borg (2007) wrote, “[This design] generally yield[s] three or more mean scores, or similar descriptive statistics. Therefore, the usual test of statistical significance in these experiments is univariate or multivariate analysis of variance, univariate, or multivariate analysis of covariance, or a nonparametric equivalent” (p. 412). This study was approved by the Institutional Review Board at Texas A&M University (#2007–0384).

Two null hypotheses guided this study:

- H<sub>01</sub>. There is no relationship between perceived credibility and usefulness of photographs in beef cattle magazines.
- H<sub>02</sub>. There is no difference between perceived credibility and usefulness of alternate forms of equivalent materials tested text with or without photographs is tested first.



### Population

The accessible population was students enrolled in the College of Agriculture and Life Science at a southern Land-Grant university. The convenience sample for this study was 85 students enrolled in four elective, interest-based, beef cattle courses at a Southern land-grant institution. Courses were chosen based on the assumption that student enrollment in the course indicated an interest in the beef industry. The population was contacted through course instructors. Student responses remained confidential by pre-coding each instrument, and filing the completed instruments in a secure location.

### Instrument

The researcher-designed two versions of the instruments using copies of five tear sheets from *Drovers* (May and October 2006) and *Kansas Stockman* (July and November/December 2006), of one-page articles that utilized text and photographs. The instrument was constructed based on Dillman's (2000) principles of the social exchange theory. The tear sheets were changed to accommodate one version with photographs and one version without photographs. By using identical examples, respondents' answers focused upon the perceived influence of photograph credibility and usefulness rather than upon content. The instrument was present in two forms, with the articles were reversed in use of photograph with text.

Each question used a closed-ended, nominal-attitudinal scale in which respondents chose yes or no. The instrument was checked for validity by peer review consisting of people who did not contribute to the development of the instrument (Dillman, 2000). The reliability was tested through a measure of internal consistency. Miller, Torres, and Lindner (2005) wrote, "A measure of reliability can also be obtained

using a single administration of an instrument and is generally referred to as a measure of internal consistency” . . . “this method produces a very conservative estimate of reliability” (p 14). The instrument used road signs as navigational guides, as outlined in Dillman, because they are familiar to most students.

The instruments were developed into three sections: The first section used five descriptive statements regarding subject use and knowledge of beef cattle magazines; the second section was prefaced with an example article and was followed by five magazine tear sheets and two questions: the first questioning credibility, the second questioning usefulness; the third section included demographic questions.

The study used simple random sampling of participants, as outlined in Gall, Gall, and Borg (2007), by allowing the existing seating arrangement dictate the distribution of the instruments. The data were gathered in a classroom at the conclusion of class meeting times, allowing students not wishing to participate the opportunity to dismiss themselves without disrupting students who were completing the survey. Non-respondent error included participants who did not attend class.

The data were coded and hand-entered into electronic format. The data were analyzed using SPSS<sup>®</sup> v. 15. Analysis was conducted using *t*-tests and correlations. The alpha level was set *a priori* at  $\alpha = .05$ .

### Limitations

The results of this study are not generalizable beyond the convenience sample population because true random sampling of the accessible population was not possible.

*Results*

Of the 85 students sampled, 66 responded, resulting in a response rate of 78%.

Demographic characteristics of the respondents are in Table 1.

Table 1

*Selected Demographic Characteristics of Respondents*

<b>Variable</b>	<b>n</b>	<b>%</b>
Sex		
Female	35	54.7
Male	29	45.3
Classification		
Senior	31	48.4
Graduate Student	16	25.0
Junior	14	21.9
Sophomore	2	3.1
Freshman	1	1.6
Major		
Animal Science	54	84.4
Other	10	15.6
Age		
21	19	29.7
23 and Over	19	29.7
22	13	20.3
20	12	18.8
Under 20	1	1.6
Where the Student Grew Up		
Farm or Ranch	29	45.3
Town under 10,000 people	8	12.5
Town or City between 10,0001 and 59,999 people	7	10.9
City between 60,000 and 249,999 people	7	10.9
City over 250,000 people	7	10.9
Rural Area, not farm or ranch	6	9.4

Note: two students did not respond to demographic questions

Students perceived credibility as being significant,  $r = .11$ , when compared against all respondents. Perceived usefulness was also significant,  $r = -.15$ , when compared against all respondents. Table 2 shows these findings. A statistically significant ( $p < .05$ ) relationship ( $r = .11$ ) was found for credibility between text with photos and without photos.

Table 2

*Credibility and Usefulness, With and Without Photograph*

Variable	Mean	Correlation	t	Sig. (2-tailed)
With photo Credibility	1.65	5.04	.00	.11
Without photo Credibility	1.40			
With photo Usefulness	1.70	-2.24	.03	-.15
Without photo Usefulness	1.80			

Note:  $n=66$

The factors of credibility and usefulness were analyzed against the two forms of instrument to examine trends that existed within these data. The mean scores of these factors is in Table 3.

Table 3

*Credibility and Usefulness Against Forms*

	Form	n	Mean	Std. Deviation	Std. Error Mean
With photo credibility	A	33	1.73	.24	.04
	B	33	1.58	.36	.06
With photo understanding	A	33	1.40	.32	.06
	B	33	1.92	.22	.04
Without photo credibility	A	33	1.36	.34	.06
	B	33	1.43	.26	.05
Without photo usefulness	A	33	1.88	.28	.05
	B	33	1.72	.25	.04

### *Conclusions*

A relationship was found when credibility, with and without photographs, was tested against itself. A relationship was also found when usefulness, with and without photographs, was tested against itself. Based on the findings of this study, students' perceived credibility, compared against all respondents, should be taken into account in reference to beef cattle magazines audience needs. The credibility of articles should be considered by the individual magazine because reader perceptions of the magazine dictate their success or failure (Harris & Lester, 2002; Schweiger, 2000). The findings of this study, with regard to credibility, should improve beef cattle magazines' ability to enhance their reader's perceptions and ultimately improve the magazines' stance in the industry.

Regarding perceived usefulness, magazines should take into account the findings of this study based upon their audience's needs. The audience's perceived need of the usefulness of the magazine's articles input into their decision making process is crucial. The audience's ability to use a magazine's article to improve job performance or production performance, dictates what is purchased or what methods are adopted in regard to these areas (Olshavsky & Granbois, 1979; Davis, 1989). Overall, this study found that credibility and usefulness are important to the magazine industry based upon the magazine's individual philosophy. The findings of this research caused both null hypotheses to be rejected.

THE RELATIONSHIP OF PERCEIVED CREDIBILITY AND USEFULNESS  
OF BEEF CATTLE MAGAZINE ARTICLES WITH AND WITHOUT  
PHOTOGRAPHY WHEN ALTERNATE FORMS TESTING IS UTILIZED

*Synopsis*

Information from a photograph is understood and interpreted through our vision, both physically and mentally. Photographs capture a specific place in time and allow viewers to understand and even identify with the subject of the photograph. Photographs can stand alone; they can add meaning to the printed word; they may even enhance a reader's understanding of the message.

The purpose of this study was to determine the value of photography, within beef cattle magazine articles, in the areas of credibility and usefulness. No research was found addressing credibility and usefulness in beef cattle magazines. Understanding the value of photography in beef cattle magazine articles could possibly negate some effects in the trend of advertising pressure on editorial content in farm periodicals. Banning and Evans (2005) wrote that some of the concerns about agricultural publishing were, "effects of editorial staff cutbacks and consolidations of periodicals on editorial vigor, editorial independence, localized coverage, credibility and value to readers" (p. 4, ¶ 2). This study explored the credibility and value to readers, usefulness, and their relationship within the beef cattle magazine industry.

In beef cattle magazines, photographs with text are not always crucial for subscribers because of their assumed background within the beef industry. Photographs might be helpful, however, for laymen to see more than just a cow, to see an animal's breed, gender, and even coloring. A potential relationship may exist between the

perceived credibility and usefulness of beef cattle magazine articles with and without photographs, the focus of this study.

### Definition and Overview of Magazine Publication

The *Merriam–Webster Dictionary* (2004) defines a magazine as “a publication usually containing stories, articles or poems and issued periodically” (p. 431). Magazines have been a staple of American agricultural news for centuries. The content of many early agricultural publications, such as the *Plough Boy* and the *American Farmer*, were contributions from agricultural societies (Boone, Meisenbach, & Tucker, 2000). Today’s agricultural publications, such magazines as *Successful Farming* and *Progressive Farmer*, have possibly been shaped by the agricultural societies efforts and may have developed the reliance of the public on receiving the needed information they offered. Johnson and Prijatel (1999) wrote, “Magazines’ role in American history is secure. For more than 250 years, magazines have shown themselves to be an enduring medium” (p. 44).

The interaction of society and magazines is a mirrored relationship; they are dependent upon each other for change. Johnson and Prijatel (1999) wrote, Magazines (are) active members of a complex society, leading the discussion in many cases, but allowing others in society to take the action that will cause change. Change only happens when the messages magazines present find a receptive ear in society. . . (and) those messages may not be heard without the help of magazines. (p. 76)

Boone, Meisenbach, and Tucker (2000) wrote, “As the agricultural industry changes, agricultural communications sits on the cusp of change too” (p. 25). The change for the reader may be in the vernacular, age, or education, whereas the print may change in format, content, publishing method, style, or circulation and delivery.

Daly, Henry, and Ryder (1997) wrote, “Nearly everyone reads magazines. . . The tactile pleasure of turning pages, the portability, photography, design and authority of the published word all contribute to the distinctive appeal of magazines” (p. 2). They wrote, “Magazine historian John Tebbel estimates that 22,000 magazines are published in the United States” (p 10). *Bacon’s Magazine Directory* (2004) lists 124 livestock magazines. A count from this category yielded 67 magazines listed beef cattle production a main topic or their title contained implied beef production. The magazine articles used in this study were a sample of the 67 beef cattle magazines. The photography of magazines as a reason for readership, described in Daly, Henry, and Ryder (1997), is a main component of this study.

Photographs in magazines can have a powerful effect. Lester (2006) wrote, “Photographs entertain and educate. They provide a historical record that relies on the idea that a camera does not lie. Throughout the history of photography the picture enjoyed far greater credibility than the printed or spoken word” (p. 263). Photography allows the viewer to see what happened at a specific place in time and potentially form a conclusion about the message it conveys. This concept should enhance the readers’ understanding and overall interpretation of the medium.

Johnson and Prijatel (1999) wrote, “Photos confer additional power to words on the page because most readers accept photographic images as an objective reflection of



reality with built-in credibility and authority” (p. 232). Photographs could add meaning to beef cattle magazine articles by providing the reader with information about the subject matter, i.e. breed of the animal, cuts of meat, processing techniques, or product branding initiatives. Based upon these factors, the credibility and usefulness of these articles may be improved by the inclusion of photographs to the article.

### Semiotics and Publishing

Photographs are visual forms that allow viewers to generate meaning through their message. “Meaningful connections between what people see and how they use those images arise when mental processing is viewed as a human rather than mechanical process” (Lester, 2006, p. 64). Semiotics quantifies this process by content analysis of photography.

Semiotics is the study of signs as a part of social life (Chandler, 1994). Barthes, cited in Chandler (1994), explained semiotics as

Any system of signs, whatever their substance and limits; images, gestures, musical sounds, objects, and the complex associations of all of these, which form the content of ritual, convention or public entertainment: these constitute, if no languages, at least systems of signification. (¶ 5)

Lester (2006) wrote, “A sign is simply anything that stands for something else. Any physical representation is a sign if it has meaning beyond the object itself. The viewer (however) must understand its meaning; if the viewer does not then it’s not a sign for them” (p.55). The interpretation of a photograph could add

or detract from its meaning. This study focused on the potential of a photograph to express semiotic attributes of credibility and usefulness.

The concept of semiotics was first proposed by Roman philosopher and linguist Augustine in A.D. 397 as the study of signs. Lester (2006) wrote, “(Augustine) recognized that universally understood entities afforded communication on many non-verbal levels” (p. 55). The theory of semiotics was developed by Ferdinand de Saussure and Charles Sanders Peirce just before the beginning of World War I.

Ferdinand de Saussure, a Swiss linguist, developed a general theory of signs that was taken from notes by his students while he was a professor at the University of Geneva. Charles Sanders Peirce, an American philosopher, published his theory of semiotics through conceptual application based upon photography. Peirce described three types of sign: iconic, indexical, and symbolic. These categories separate the meanings of photographic semiotics for each viewer. Lester (2006) described Peirce’s contribution to semiotics as, “even the simplest image has complex cultural meaning. . . any picture often has all three types represented at the same time” (p. 57). Roland Barthes developed a chain of associations, in the late 1960s, commonly known as codes. These codes are sent by an emitter, or encoder, and received by the receiver, or decoder. Used correctly, communication is enhanced in ways previously unknown (Lester, 2006; Chandler, 1994). The evaluation of these codes can be used in photography where the photographer’s ability and location when shooting the photograph can result in the difference of the signs conveyed by each picture.

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H<sub>01</sub>. There is no relationship between perceived credibility and usefulness of photographs in beef cattle magazines.

H<sub>02</sub>. There is no difference between alternate forms of equivalent materials tested where text with or without photographs is tested first.

### Population

The accessible population was students enrolled in the College of Agriculture and Life Science at a southern Land-Grant university. The convenience sample for this study was 85 students enrolled in four elective, interest-based, beef cattle courses at a Southern

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Each question used a closed-ended, nominal-attitudinal scale in which respondents chose yes or no. The instrument was checked for validity by peer review consisting of people who did not contribute to the development of the instrument (Dillman, 2000). The reliability was tested through a measure of internal consistency. Miller, Torres, and Lindner (2005) wrote, "A measure of reliability can also be obtained using a single administration of an instrument and is generally referred to as a measure of internal consistency" . . . "this method produces a very conservative estimate of reliability" (p 14). The instrument used road signs as navigational guides, as outlined in Dillman, because they are familiar to most students.



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The data were coded and hand-entered into electronic format. The data were analyzed using SPSS<sup>®</sup> v. 15. Analysis was conducted using *t*-tests and correlations. The alpha level was set *a priori* at  $\alpha = .05$ .

### Limitations

The results of this study are not generalizable beyond the convenience sample population because true random sampling of the accessible population was not possible.

### *Results*

Of the 85 students who were sampled, 66 responded, with a response rate of 78%. Analysis of student responses for credibility and usefulness found usefulness with photograph to be statistically significant ( $p < .05$ ) in regard to credibility without photograph. When student responses of credibility and usefulness were analyzed, usefulness with photograph was found to be statistically significant ( $p < .05$ ) in regard to

credibility without photograph,  $r = .30$ . A statistically significant relationship ( $p < .05$ ) was found between credibility without photograph and usefulness without photograph.

Table 4 shows these relationships.

Table 4

*Correlations of Credibility and Usefulness, All Subjects*

		With photo credibility	With photo usefulness	Without photo credibility	Without photo usefulness
With photo credibility	Pearson Correlation	1	-.105	.112	-.026
	Sig. (2-tailed)		.399	.373	.835
With photo usefulness	Pearson Correlation		1	.267(*)	-.153
	Sig. (2-tailed)			.030	.221
Without photo credibility	Pearson Correlation			1	-.317
	Sig. (2-tailed)				<.01
Without photo usefulness	Pearson Correlation Sig. (2-tailed)				1

Note: \* Correlation is significant at the 0.05 level (2-tailed).  $n = 66$  participants. All variables were measured with a yes/no scale.

Instrument form A presented text with photograph first. The correlations of credibility and usefulness from all students were tested against instrument form A to determine a relationship between them. A statistically significant correlation ( $p < .05$ ) was found when usefulness with photograph was compared to credibility without photograph,  $r = .30$ . Table 5 shows this relationship.

Table 5

*Correlations of Credibility and Usefulness in Instrument Form A*

		With photo credibility	With photo usefulness	Without photo credibility	Without photo usefulness
With photo credibility	Pearson Correlation	1	.13	-.02	-.042
	Sig. (2-tailed)		.5	.90	.82
With photo usefulness	Pearson Correlation		1	.28	-.09
	Sig. (2-tailed)			.12	.62
Without photo credibility	Pearson Correlation			1	-.26
	Sig. (2-tailed)				.14
Without photo usefulness	Pearson Correlation				1
	Sig. (2-tailed)				

Note: n=33 participants per condition. All variables measured on a yes/no scale.

Instrument form B presented text without photograph first. Analysis of the correlations of credibility and usefulness from all students were tested against instrument form B to determine a relationship between them. Credibility without photograph was found statistically significant ( $p < .05$ ) compared to usefulness without photo,  $p < .05$ . The correlation between usefulness with photograph was statistically significant when compared to usefulness without photograph,  $p < .04$ . Table 6 shows this relationship.

Table 6

*Correlations of Credibility and Usefulness in Instrument Form B*

		With photo credibility	With photo usefulness	Without photo credibility	Without photo usefulness
With photo credibility	Pearson Correlation	1	.08	.31	-.16
	Sig. (2-tailed)		.68	.08	.37
With photo usefulness	Pearson Correlation		1	.23	.40(*)
	Sig. (2-tailed)			.20	.04
Without photo credibility	Pearson Correlation			1	-.35(*)
	Sig. (2-tailed)				.05
Without photo usefulness	Pearson Correlation				1
	Sig. (2-tailed)				

Note: \* Correlation is significant at the 0.05 level (2-tailed). n=33 participants per condition. All variables measured on a yes/no scale.

Analysis of multiple forms testing, using bivariate correlations, found that credibility between subjects' forms, was statistically significant  $r = .50$ . The repeated measures within the subjects credibility was found to be statistically significant through comparing the articles with or without a photograph,  $p < .01$ . Analysis with or without photograph and the form of instrument yielded a statistical significant difference,  $p < .03$ .

Analysis of the multiple forms testing, using bivariate correlations, found that usefulness between subjects' forms was statistically significant difference,  $p < .01$ . Repeated measures within subjects' usefulness with and without photograph found a statistically significant difference,  $p < .01$ . Comparing with or without photograph across forms yielded a statistical significant difference,  $p < .01$ . Table 7 shows these differences.

The differences of mean scores and the relationship between alternate forms testing, and credibility and usefulness declined throughout the test and are in Figures 1 and 2.

Table 7

*Mixed ANOVAs of Credibility and Usefulness with Repeated Measure of With/Without Photograph and Between Subject Variance of Order of Presentation*

Credibility					
Between Subjects					
Source	Sum of Squares	df	Mean Square	F	Sig.
Form	.05	1	.05	.52	.50
Error	6.7	64	.11		
Repeated Measure Within Subjects					
Source	Sum of Squares	df	Mean Square	F	Sig.
With/Without Photograph	2.1	1	2.1	27	<.01
With/Without Photograph* Form	.41	1	.41	5.2	.03
Error(With/Without Photograph)	5.0	64	.08		
Usefulness					
Between Subjects					
Source	Sum of Squares	df	Mean Square	F	Sig.
Form	1.12	1	1.12	14.3	<.01
Error	5.03	64	.080		
Repeated Measure Within Subjects					
Source	Sum of Squares	df	Mean Square	F	Sig.
With/without Photograph	.64	1	.64	10	<.01
With/Without Photograph * Form	4.0	1	4.0	59	<.01
Error(With/Without Photograph)	4.3	64	.07		

Note: All variables measured on a yes/no scale.

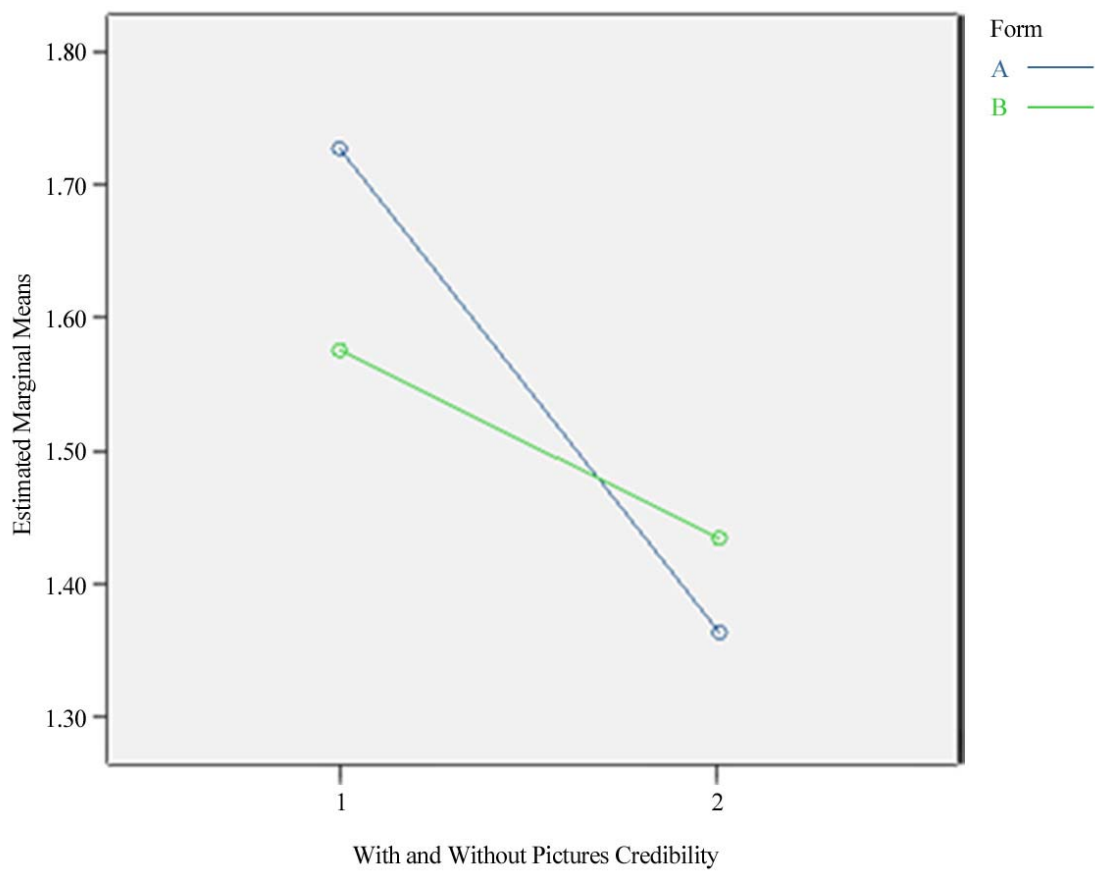


Figure 1

*Profile Plots of Credibility Using Repeated Measures*

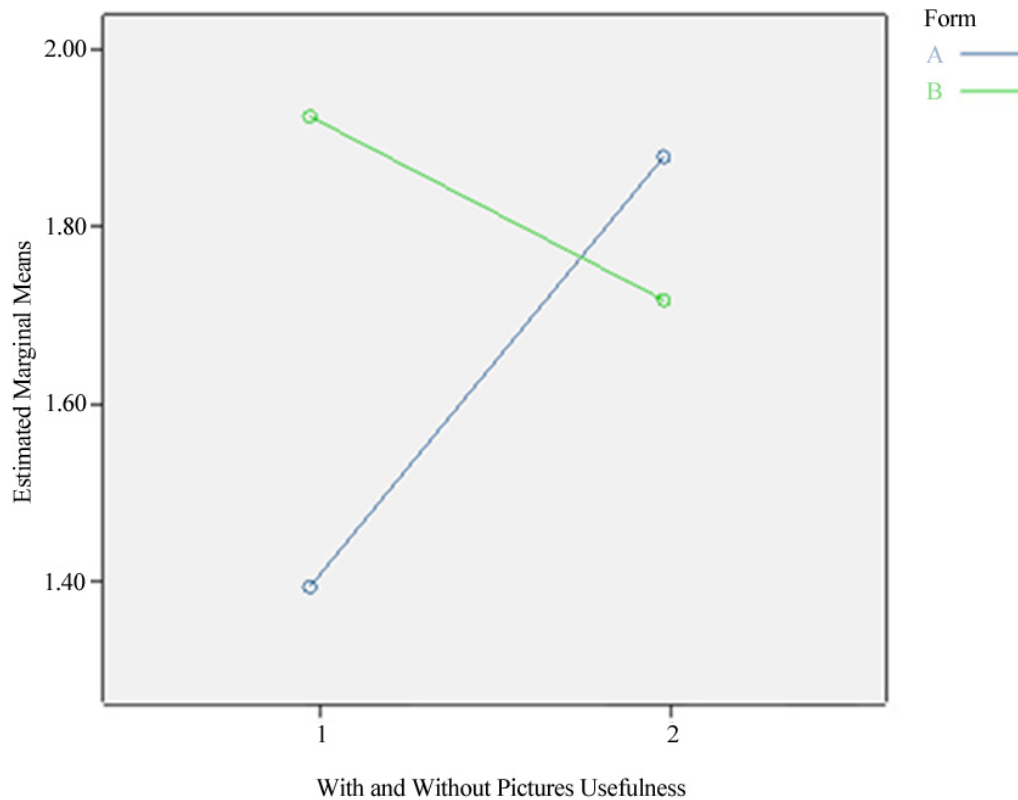


Figure 2  
*Profile Plots of Usefulness Using Repeated Measure*

### *Conclusions*

Based upon the relationships found between credibility and usefulness, the researcher rejected both null hypotheses. Students gave greater credibility to the article with a photograph than the article without a photograph. Students gave greater usefulness to the article without a photograph than the article with a photograph.

Students perceived credibility and usefulness as a factor for the magazine industry, especially in the areas of the addition or omission, of photographs based on repeated measurement. The determination of addition or non-use of photographs, through repeated measurement, should be viewed by beef cattle magazines as their chief concern. By adding photographs, these magazines would increase reader perception of the

credibility of the article. By non-use of photographs, these magazines would increase reader perception of the usefulness of the article. In the case of advertising pressure vs. editorial credibility (Banning & Evans, 2005), where editorial credibility was the magazines' chief concern, photographs should be included in their articles. This also has implications on visual argumentation, which dictates that visual elements have the possibility of modifying a belief or attitude. This study shows that the use of photography does not affect reader perception of usefulness. However, the response of the reader to an article without photographs, increased reader perception of usefulness, may change a person's attitudes or beliefs about the content within that article.

In the area of repeated measure, this study shows that both instrument forms A and B, as the student answered the survey, credibility decreased. The student's perceived credibility was highest on instrument form A, photographs shown first. The study found usefulness was decreased on instrument form A but increased on instrument form B as the student progressed through the instrument. The study found that overall both with and without articles credibility and usefulness are related in that credibility is preferred with a photograph and usefulness is preferred without.



## CONCLUSIONS

Four null hypotheses guided this study:

- H<sub>01</sub>. There is no difference in perceived credibility of articles in beef cattle magazines with and without photographs.
- H<sub>02</sub>. There is no difference in perceived usefulness of articles in beef cattle magazines with and without photographs.
- H<sub>03</sub>. There is no relationship between perceived credibility and usefulness of photographs in beef cattle magazines.
- H<sub>04</sub>. There is no difference between alternate forms of equivalent materials tested where text with or without photographs is tested first.

Of the 85 students who were sampled, 66 responded, with a response rate of 78%.

Demographic descriptions of the respondents are in Table 1.

Students perceived credibility as being significant,  $r = .11$ , when compared against all respondents. Perceived usefulness was significant,  $r = -.15$ , when compared against all respondents. Table 2 shows these findings. A statistically significant relationship ( $p=.11$ ) was found for credibility between text with photos and text without photos.

The factors of credibility and usefulness were processed against the two forms of instrument to examine trends that existed within the data. Table 3 shows these findings.

Analysis of student responses for credibility and usefulness found usefulness with photograph to be statistically significant in regard to credibility without photograph. When student responses of credibility and usefulness were analyzed, usefulness with photograph was found to be statistically significant in regard to credibility without

photograph,  $r = .30$ . A statistically significant relationship ( $p < .05$ ) was found between credibility without photograph and usefulness without photograph. Table 4 shows these relationships.

Instrument form A presented text with photograph first. The correlations of credibility and usefulness from all students were tested against instrument form A to determine a relationship between them. A statistically significant correlation ( $p < .05$ ) was found when usefulness with photograph was compared to credibility without photograph,  $r = .30$ . Table 5 shows this relationship.

Instrument form B presented text without photograph first. Analysis of the correlations of credibility and usefulness from all students were tested against instrument form B to determine a relationship between them. Credibility without photograph was found statistically significant compared to usefulness without photograph,  $r = .05$ . The correlation between usefulness with photograph was statistically significant when compared to usefulness without photograph,  $r = .04$ . Table 6 shows this relationship.

Analysis of multiple forms testing was performed using bivariate correlations, found that credibility between subjects' forms, was statistically significant  $r = .50$ . The repeated measures within the subjects credibility was found to be statistically significant through comparing the articles with or without a photograph,  $r = < .01$ . Analysis with or without photograph and the form of instrument yielded a statistical significant difference,  $r = .03$ .

Analysis of the multiple forms testing was performed using bivariate correlations, found that usefulness between subjects' forms, was statistically significant,  $p < .01$ . Repeated measures within subjects' usefulness with and without photograph found a

statistically significant difference,  $p < .01$ . Comparing with or without photograph across forms yielded a statistical significant difference,  $p < .01$ . Table 7 and Figures 1 and 2 show these differences.

As a result of this study, null hypothesis one was rejected. The findings of this study caused the researcher to reject null hypothesis one. Magazines should take into account students' perceived credibility, compared against all respondents, based on their audience's needs. The credibility of their articles should be considered by the individual magazine because reader perceptions dictate magazine success or failure (Banning & Evans, 2005; Harris and Lester, 2002; Schweiger, 2000). The findings of credibility should improve magazines ability to enhance their reader's perceptions and ultimately improve or maintain their stance in the industry.

As a result of this study, null hypothesis two was rejected. Beef cattle magazines should take into account perceived usefulness based upon their audience's needs. Magazines should take into account students' perceived usefulness, compared against all respondents, based on their articles input into audience decision making process. The audience's ability to use a magazines article to improve their job performance or production performance, dictates what they will purchase or what method they adopt in regard to these areas. This study supports the concept of visual persuasion (Hill and Helmers 2004). The visual persuasion of the articles without photographs was that the students perceived the information alone to be more useful.

The researcher retained null hypothesis three because of the relationships found between credibility and usefulness. Students, when presented an article incorporating text with a photograph, gave greater credibility to that article than the article without a

photograph. Students gave greater usefulness to the article without a photograph than the article with a photograph.

Students perceived credibility and usefulness as a factor for the magazine industry, especially in the areas of the addition or omission, of photographs based on repeated measurement. The determination of addition or non-use of photographs, through repeated measurement, should be viewed by beef cattle magazines as their chief concern. By adding photographs, these magazines would increase the reader's opinion of the credibility of the article. By non-use of photographs, magazines would increase the reader opinion of the usefulness of the article. In the case of advertising pressure vs. editorial credibility (Banning & Evans, 2005), where editorial credibility was the magazines' chief concern, photographs should be included in their articles based upon these findings. This has implications on visual argumentation, which dictates that visual elements have the possibility of modifying a belief or attitude (Hill & Helmers, 2004). This study shows that the use of photography does not affect the reader's usefulness. However, the response of the reader to an article without photographs, increased usefulness, may change a person's attitudes or beliefs about the content within that article.

As a result of this study, null hypothesis one was rejected. In the area of repeated measure, this study shows that both instrument form A and B, as the student answered the survey, credibility decreased. The student's perceived credibility was highest on instrument form A, photographs shown first. The study found that usefulness was also decreased on instrument form A but increased on instrument form B as the student progressed through the instrument. The study found that overall both with and without articles credibility and usefulness are related in that credibility is preferred with a

photograph and usefulness is preferred without. The study supported Lester (2006) argument that a balanced design is necessary to maximize communication between the magazine and reader. The student's perception that an article with a photograph is more credible than an article without a photograph is more useful, supports a balanced method. By placing both photograph and text in a balanced page design, communication is enhanced and should maintain or increase editorial credibility (Banning & Evans, 2005).

The findings of perceived credibility and usefulness of students in this study should be used by beef cattle magazines to enhance their editorial credibility. The editorial credibility of beef cattle magazines should be evaluated to determine the organization's philosophy. If the organization's philosophy desires more credibility in an article it should add photographs or if it desires more usefulness in an article it should remove or limit photographs based on these findings.

Some recommendations for further research are

- Testing subjects from multiple universities to determine if location varies results.
- Testing subjects from beef cattle production industry to determine if response varies.
- Develop questions in instrument that specifically address credibility and usefulness rather than an implied method.

The recommendations of practical application are that magazines should utilize these findings to improve their market research in the areas of black and white vs. color, with or without photographs, and increase of advertising space. The findings support questioning beef cattle magazine current methods in order to improve their relationship with their audience.

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## APPENDIX A

## INSTRUMENT FORM A

The following survey instrument constitutes tear sheets containing articles from the beef cattle magazines *Drovers* and *Kansas Stockman* in the 2006 calendar year that were written by: S. Bopp, T. Domer, S. Hagins, J. Maday, D. Mowitz, and C. Pitney.



## A Comparison of the Perceived Use and Credibility of Beef Cattle Magazine Articles With and Without Photographs



Survey Instrument  
Fall 2007

This survey instrument consists of articles from beef cattle magazines to gauge your perception of use and credibility of these articles using text alone and text with photographs. Please read each article and complete the accompanying questions. This survey should require 20 minutes of your time. Usually, it is best to respond with your first impression, without giving the statement much thought.

Your responses will remain confidential. Your participation in this survey is entirely voluntary and in no way will your participation or non participation have an affect on your grade in this course.

Please also complete one copy of the consent form, found as an addendum to your survey, and keep one copy for your record of involvement.

Thank you again for your cooperation. It is only through you that research can be conducted.

## Begin Here:

1. I read magazines.  
 Yes     No
2. I read beef cattle magazines.  
 Yes     No
3. Beef cattle magazines are my chief source of information regarding the beef cattle industry.  
 Yes     No
4. I subscribe to beef cattle magazines.  
 Yes     No
5. My family subscribes to beef cattle magazines.  
 Yes     No



## Instructions and example:

Please read the following excerpt from a beef cattle magazine and answer the following questions.

### Wrapped up in rope

By Dave Mowitz, Machinery Editor

Gene Miller wanted something different to display at the many antique machinery shows he attended. So about 20 years ago the Stillwater, Minnesota, collector decided to specialize – in rope makers no less.

At that time Miller, like a good many tractor or engine collectors, had a rope maker or two he had picked up just for fun. Then he got serious about these unique devices and 55 rope makers later, he has no intention of slowing down. “There are far more models out there to find,” he points out. “Like other unusual farm collectibles, it surprises you how many companies made

such a specialized device.”

But Miller does far more than just collect rope makers. If you are fortunate enough to run across his display at a show, you’ll discover Miller hard at work making rope. And he urges spectators to get in on the action by choosing from a wide array of polypropylene twine spools. In the process of turning out their own rope, Miller explains how the machines operate and the history behind their innovation. He relates how farmers, desperate for rope but lacking sisal or hemp, would use salvage materials like cotton string,



Gene Miller encourages show spectators to make their own multicolored rope using his vintage makers.

binder twine, or old rags.

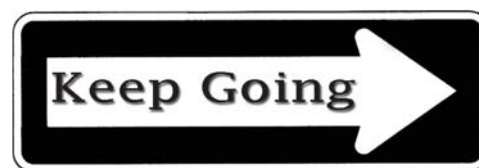
Rope making is one of the oldest arts in history, dating back to 17,000 B.C. Learn more about the history of the craft at [www.rope-maker.com](http://www.rope-maker.com). ■

I. The information in this article is explained fully.

Agree       Disagree

II. Photographs would add to the understanding of the information in this article.

Agree       Disagree



Please read the following excerpt from a beef cattle magazine and answer the following questions.

### Seeing red

According to some consumer advocates, case-ready packaging is dangerous.

These groups, including the notorious Safe Tables our Priority and Consumer Federation of America, are protesting case-ready, saying it's deceptive and that it leads consumers to believe their meat is fresher than it may truly be.

Their gripe: Some packers and suppliers add carbon monoxide to case-ready packages in order to stabilize the meat's bright-red color, which, according to some independent tests, remains even after improper-temperature storage. The packaging is not labeled as containing carbon monoxide, which critics say is misleading.

According to the National Cattlemen's Beef Association, carbon monoxide has been used in the Norwegian meat industry for more than 20 years and was approved by the Food and Drug Administration for use in U.S. meat packaging in 2001. And most retailers are — or at least should be — attuned to sell-by dates and have strict policies against selling outdated meat. (I'm hopeful the industry learned from the 2002 re-dating "Dateline" exposé.) So by all accounts, properly handled case-ready meat is safe.

But most consumers, many of whom judge meat by its color, don't know that. In fact, the headline-grabbing stories earlier this spring describing meat "laced" and "spiked" with carbon monoxide made case-ready sound downright dangerous to consumers who don't



understand the rationale behind the gas's use or who are unaware that gases are used in meat packaging. Consumers have been painted the victims in this situation, and guess who the villain is?

Meat industry, you're on the hot seat. Consumers are calling for transparency. How will you respond?

A few retailers, including Kroger and Publix, have responded to the media flurry with quick decisions to stop carrying meat packaged with carbon monoxide. There has also been an immediate legislative snowball, with members of Congress urging the FDA to ban the use of carbon monoxide in meat.

One Oregon newspaper recently conducted an online discussion "spiked" with carbon monoxide made case-ready sound downright dangerous to consumers who don't

color of meat isn't the only indicator of freshness (product texture and odor are two other indicators). The program could also note that carbon monoxide is not used in all case-ready packaging and that when it is used, it occurs at very low levels (0.4 percent, according to the NCBA) and is harmless. Even a simple explanation of the how's and why's of case-ready packaging would be helpful.

As consumers become more attuned to what's in their food and where it comes from, proactive, open communication is vital. To stay in this ever-competitive game, we need to do a better job of communicating why we do what we do. Otherwise, someone else — in this case, the media — will undoubtedly communicate it for us. If that happens with other industry hot topics, the consequences could be disastrous. □

*By Christy Pitney*

6. The information in this article is explained fully.

\_\_\_\_\_ Agree

\_\_\_\_\_ Disagree

7. Photograph adds to the understanding of the information in this article.

\_\_\_\_\_ Agree

\_\_\_\_\_ Disagree



Please read the following excerpt from a beef cattle magazine and answer the following questions.

## From meat to meals

When Swanson introduced the TV dinner in 1954, consumers loved it.

Most likely, that wasn't because of the way the frozen meals tasted — it was because of their convenience. Suddenly, dinner could be ready in minutes. ¶ Back then, a fully cooked pot roast that was refrigerated, not frozen, was unheard of, but now the category of heat-and-eat foods is expanding rapidly. In particular, it's been a huge growth area for beef.

Today there are about 80 heat-and-eat beef products bringing in around \$1 billion in annual sales.

When market studies conducted by NCBA examined U.S. population trends, attitudes about nutrition and health, and consumer time, all the research pointed to the importance of today's lifestyle trends (a phrase that was also unheard of in 1954). Specifically, researchers heard a lot about the growing importance of convenience and the increasing value of time. How does that translate into consumer behavior? No surprise—consumers reported that they were spending less time preparing meals, and they didn't tend to plan meals in advance. One of the conclusions of the research was that consumers wanted to buy not just meats, but meals.

Heat-and-eat beef products offer a solution to that consumer problem. The products can go from grocery bag to microwave to the table in about 10 minutes; because they're not frozen, they seem more like homemade food.

While the short preparation time is critical, as is nutrition, today's consumers are not going to give up on taste; research has shown this, too. Grocery industry studies showed that 90 percent of shoppers rate taste as a very important factor when deciding which foods to buy. Nutrition, price and ease of preparation followed. That's good news for the beef industry: beef's strongest attribute is consumer's preference for its taste.

Are heat-and-eat products doing anything for the beef producer? Absolutely. They have had a considerable effect on beef sales in many outlets. And beyond generating more sales, the products often use overlooked cuts from the chuck and round—cuts many consumers don't know how to prepare and therefore do not buy. We're talking about things like briskets and pot roasts that now have new opportunities to reach consumers. That, in turn, means that the chuck and round can make more significant contributions to total carcass value. They can take some of the pressure off the ribs and loins and middle meats, which have in the past had to provide about 70 percent of the profit from a carcass.

Another thing it means for producers is that consistency will only continue to grow in importance. Processors will need to rely on those briskets being the same size.

More of heat-and-eat products are coming—things such as stews, Swiss steak and prime rib roasts; grocery industry analysts call this a huge growth area. Its success is good news for the beef industry, as the meat business transforms into the meal business.

8. The information in this article is explained fully.

\_\_\_\_\_ Agree                      \_\_\_\_\_ Disagree

9. Photographs would add to the understanding of the information in this article.

\_\_\_\_\_ Agree                      \_\_\_\_\_ Disagree



Please read the following excerpt from a beef cattle magazine and answer the following questions.

BEEF INDUSTRY  
TALKING POINTS  
**Organic, Natural,  
Grass-fed**

# DESIGNER LABELS

BY JOHN MADAY



Americans spend less than 10 percent of their disposable income on food. That's an average, of course, based on data from the USDA's Economic Research Service. Food purchases take a bigger bite from the budgets of low-income families, even if they shop for the best values. Consumers on the higher end of the income scale, meanwhile, can buy specialty foods from the most exclusive stores and dine in high-end restaurants, while spending far less than 15 percent of their income on food.

The majority of Americans can afford to eat well. According to USDA/ERS, 88 percent of American households were "food secure" throughout the entire year 2004. This means they had access, at all times, to enough food for an active, healthy life for all household members.

However, the agency's survey indicates that almost 12 percent of households were "food insecure" at least some time during that year. The continuing challenge of domestic and global poverty underscores the need for efficient production that keeps food affordable, while still generating profits for producers and processors.

On the other hand, demand for premium, specialty products offers opportunities for producers to pursue higher sale prices while accepting higher production costs. Not long ago, there really was just one type of consumer for beef in the United States, says Iowa State University economist John Lawrence, and the main priority was price. Today, he says, society is more diverse, with more consumers willing to pay higher prices for products with specific traits.

Gary Smith, Monfort distinguished professor of meat science at Colorado State University, agrees. Smith says packer sources have told him that for about 70 percent of consumers, price remains the primary consideration in their beef purchases. The other 30 percent are able and willing to pay what it costs to get the attributes they want, such as the improved palatability of premium, branded beef or the less-tangible benefits of beef from natural or organic production systems.

So what are the differences between conventional beef and some of these specialty products? √

10. The information in this article is explained fully.

\_\_\_\_\_ Agree                      \_\_\_\_\_ Disagree

11. Photograph adds to the understanding of the information in this article.

\_\_\_\_\_ Agree                      \_\_\_\_\_ Disagree



Please read the following excerpt from a beef cattle magazine and answer the following questions.

**F I E L D D A Y**

## Irrigated grazing shows profitability

BY SCARLETT HAGINS

Sam Hands said irrigated pasture has proven to be a high-producing, high-quality forage for cow-calf pairs or stocker cattle. The co-owner of Triangle H Grain and Cattle, located near Garden City, gave producers an inside look into his irrigated grazing program during a KLA and Kansas State University Ranch Management Field Day held this summer.

Triangle H is credited as being one of the early innovators of converting cropland to intensively grazed irrigated perennial grasses. Much of the acreage owned by the Hands family is irrigated by center pivot systems.

The ranch pastures contain a mixture of cool-season grasses to maximize productivity, including smooth bromegrass, meadow bromegrass, intermediate wheatgrass, orchardgrass and Garrison creeping foxtail. A blend is the most popular choice for irrigated pasture because, compared to warm-season grasses, it responds more readily to water and fertilizer, and the timing of growth coincides with the forage needs of most livestock producers. K-State Extension Specialist Ron Hale does suggest, however, that each species within the mixture be of equal palatability to prevent overgrazing and elimination of any one variety.

"Grass variety selection should be based on criteria other than published annual yields," said Hale. "Producers need to take into account factors such as soil adaptation, fertility and water requirements, and winter hardiness."

On average, management requirements for irrigated pasture are 20" to 24" of irrigation above normal precipitation, 200 lbs. to 300 lbs. of nitrogen and 20 lbs. to 40 lbs. of phosphorus per acre. According to Hands, his grass receives 20" of irrigation, 270 lbs. of nitrogen applied in five installments and 40 lbs. of phosphorus annually.

"These numbers may vary depending on the season, but in a typical year, we can run one to one-and-a-quarter cow-calf units per acre from mid-April to late November," he said.

To prevent overgrazing, Hands utilizes a pasture rotation system and provides some supplemental feed during the summer months. Hale said the rotational program should be based on cattle consuming 40% to 50% of available forage each time through to obtain the best animal and forage performance. A cool season grass mix will produce 40% to 50% of its dry matter from May to early June, 20% to 40% from late June through August and 20% to 30% in the fall.

"Cattle numbers must be matched to grass growth," said Hale. "Moving the cattle must be based on the condition and needs of the grass, not on the calendar."

Although cool-season grasses typically start to green up in April, Hale cautions against grazing too early. He advises producers to avoid grazing pastures in the spring until 8" to 10" of new growth have developed. He said cool-season grasses need a period of uninterrupted spring growth to gain vigor for sustained production. In addition, this extended growing time will allow pastures to maintain animal numbers for a longer period.

Stocker cattle grazing irrigated pasture can gain 2 lbs./head/day in May and June said Hale, but generally drop to 1.25 lbs. to 1.5 lbs./day in July and August. The recommended carrying capacity for stockers and cow-calf pairs is 2,500 lbs. of cattle per acre for spring grazing. Hale said stocking rates should go down in the summer to 1,000 lbs. of cattle per acre for stockers and 900 lbs. of cow-calf pairs per acre, but climb in the fall to 1,500 lbs./acre and 1,350 lbs./acre, respectively.

Hands admits irrigated grassland requires a great deal of management and encourages producers to become familiar with the irrigation, fertilizer and grazing management requirements needed to sustain highly irrigated pasture.

"This is not something you wake up one morning and decide to do," said Hands. "It takes a lot of preliminary work and constant management, but with that effort can come profitability." **ks**



12. The information in this article is explained fully.

\_\_\_\_\_ Agree                      \_\_\_\_\_ Disagree

13. Photograph adds to the understanding of the information in this article.

\_\_\_\_\_ Agree                      \_\_\_\_\_ Disagree





Please read the following excerpt from a beef cattle magazine and answer the following questions.

**M A N A G E M E N T**

## Rising energy costs test feedyards

BY TODD DOMER

The cost of hauling a 750 lb. steer from Lexington, KY, to a Scott City feedyard is \$6 per hundredweight based on current fuel prices. Same thing from Helena, MT. This represents an increase of nearly 50% over a year ago and is aggravating losses in the feeding sector. With cattle trucks coming through the gates on a daily basis, higher transportation costs are a challenge for Kansas feedyard managers.

Andrew Murphy, chief operations officer for Innovative Livestock Services (ILS) of Great Bend, said the price of fuel "has changed the mindset of how we approach that part of our business." This includes maximizing the number of backhauls to avoid "empty" miles.

"In a perfect world, all of our cattle would come from exactly the same location where we take finished cattle. We would cost-effectively make all of our own protein supplements and all of the grain haulers would have a backhaul to reduce our rates," said Murphy. "Unfortunately, that is not the world we live in."

With six ILS feedyards in Kansas and Nebraska under his watch, minimizing freight costs is important to the bottom line. Murphy is looking at business models outside the beef industry to possibly get a new perspective on an old problem. His analysis of other businesses that rely heavily on transportation is in the early stages.

Companies ranging from UPS to trash services have passed increased energy prices on to customers. Due to the beef business structure, however, the option of directly passing fuel costs on to the consumer does not exist. The added expense is factored into bids on cattle in all weight classes, with the cow-calf producer ultimately absorbing the cost. Fairleigh Feed Yard Manager Jerry Kuckelman of Scott City said not much can be done other than taking care of the primary business at hand.

"If you do the right things feeding cattle, it will make up for the increased cost as much as possible," said Kuckelman.

Trucking isn't the only feedyard activity dependent on energy. Steam-flaking grain, cleaning pens and delivering feed to the bunk have become more costly as well. Knight Feedlot Manager Mark Knight of Lyons said he has reverted back to using electric dry-roll mills to process feed. This equipment was last used at the yard 20 years ago, prior to the widespread application of steam flakers. He estimates the switch back to dry-roll cut the amount of energy required to process a bushel of feed nearly in half.

"It will help reduce our cost of gain," said Knight.

While management at Fairleigh hasn't done anything dramatic, steps are in place to keep expenses for energy down. According to Kuckelman, forward contracting natural gas has worked in the feedyard's favor much of the time. Instead of Fairleigh trucks hauling manure out, farmers are coming to get it. Employees understand the need to be efficient on trips involving company vehicles. Saving energy at the Scott City yard is an attitude, not a trend.

At the next level in the beef supply chain, Cargill Meat Solutions (CMS) Director of Communications Mark Klein said higher freight costs haven't changed buying practices. CMS and other processors, which pay the freight from the feedyard to the plant on most purchases, continue to buy cattle close to their facilities. In that respect, Kansas feeders continue to have an advantage due to the number and location of plants operating within the state. Most animals finished in Kansas attract stronger bids from nearby processing facilities than those in slaughter-deficit areas, the difference being transportation costs.

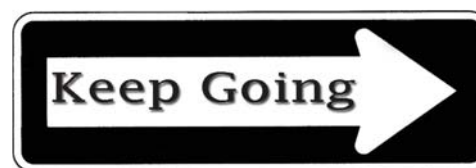
From top to bottom, those with a stake in beef production are taking steps to save a gallon here and a BTU there. Finding those efficiencies is a challenge considering the industry is using a mere .55% of the nation's total fossil fuel to produce a commodity that feeds the U.S. and countries around the world. **LS**

14. The information in this article is explained fully.

\_\_\_\_\_ Agree                      \_\_\_\_\_ Disagree

15. Photographs would add to the understanding of the information in this article.

\_\_\_\_\_ Agree                      \_\_\_\_\_ Disagree



## Personal Characteristics

Sex: \_\_\_\_M      \_\_\_\_F

Classification: \_\_\_\_\_

Major: \_\_\_\_\_

Age: \_\_\_\_\_

Where you grew up:

\_\_\_\_ Farm or ranch

\_\_\_\_ Rural area, not farm or ranch

\_\_\_\_ Town under 10,000

\_\_\_\_ Town or city between 10,001 and 59,999 people

\_\_\_\_ City between 60,000 and 249,999 people

\_\_\_\_ City over 250,000 people

Expected date of graduation: \_\_\_\_\_



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## APPENDIX B

## INSTRUMENT FORM B

The following survey instrument constitutes tear sheets containing articles from the beef cattle magazines *Drovers* and *Kansas Stockman* in the 2006 calendar year that were written by: S. Bopp, T. Domer, S. Hagins, J. Maday, D. Mowitz, and C. Pitney.

## A Comparison of the Perceived Use and Credibility of Beef Cattle Magazine Articles With and Without Photographs



Survey Instrument  
Fall 2007

This survey instrument consists of articles from beef cattle magazines to gauge your perception of use and credibility of these articles using text alone and text with photographs. Please read each article and complete the accompanying questions. This survey should require 20 minutes of your time. Usually, it is best to respond with your first impression, without giving the statement much thought.

Your responses will remain confidential. Your participation in this survey is entirely voluntary and in no way will your participation or non participation have an affect on your grade in this course.

Please also complete one copy of the consent form, found as an addendum to your survey, and keep one copy for your record of involvement.

Thank you again for your cooperation. It is only through you that research can be conducted.

## Begin Here:

1. I read magazines.  
 Yes     No
2. I read beef cattle magazines.  
 Yes     No
3. Beef cattle magazines are my chief source of information regarding the beef cattle industry.  
 Yes     No
4. I subscribe to beef cattle magazines.  
 Yes     No
5. My family subscribes to beef cattle magazines.  
 Yes     No



## Instructions and example:

Please read the following excerpt from a beef cattle magazine and answer the following questions.

### Wrapped up in rope

By Dave Mowitz, Machinery Editor

Gene Miller wanted something different to display at the many antique machinery shows he attended. So about 20 years ago the Stillwater, Minnesota, collector decided to specialize – in rope makers no less.

At that time Miller, like a good many tractor or engine collectors, had a rope maker or two he had picked up just for fun. Then he got serious about these unique devices and 55 rope makers later, he has no intention of slowing down. “There are far more models out there to find,” he points out. “Like other unusual farm collectibles, it surprises you how many companies made

such a specialized device.”

But Miller does far more than just collect rope makers. If you are fortunate enough to run across his display at a show, you’ll discover Miller hard at work making rope. And he urges spectators to get in on the action by choosing from a wide array of polypropylene twine spools. In the process of turning out their own rope, Miller explains how the machines operate and the history behind their innovation. He relates how farmers, desperate for rope but lacking sisal or hemp, would use salvage materials like cotton string,



Gene Miller encourages show spectators to make their own multicolored rope using his vintage makers.

binder twine, or old rags.

Rope making is one of the oldest arts in history, dating back to 17,000 B.C. Learn more about the history of the craft at [www.rope-maker.com](http://www.rope-maker.com). ■

I. The information in this article is explained fully.

Agree       Disagree

II. Photograph adds to the understanding of the information in this article.

Agree       Disagree





Please read the following excerpt from a beef cattle magazine and answer the following questions.

## Seeing red

According to some consumer advocates, case-ready packaging is dangerous.

These groups, including the notorious Safe Tables our Priority and Consumer Federation of America, are protesting case-ready, saying it's deceptive and that it leads consumers to believe their meat is fresher than it may truly be.

Their gripe: Some packers and suppliers add carbon monoxide to case-ready packages in order to stabilize the meat's bright-red color, which, according to some independent tests, remains even after improper-temperature storage. The packaging is not labeled as containing carbon monoxide, which critics say is misleading.

According to the National Cattlemen's Beef Association, carbon monoxide has been used in the Norwegian meat industry for more than 20 years and was approved by the Food and Drug Administration for use in U.S. meat packaging in 2001. And most retailers are — or at least should be — attuned to sell-by dates and have strict policies against selling

outdated meat. (I'm hopeful the industry learned from the 2002 re-dating "Dateline" exposé.) So by all accounts, properly handled case-ready meat is safe.

But most consumers, many of whom judge meat by its color, don't know that. In fact, the headline-grabbing stories earlier this spring describing meat "laced" and "spiked" with carbon monoxide made case-ready sound downright dangerous to consumers who don't understand the rationale behind the gas's use or who are unaware that gases are used in meat packaging. Consumers have been painted the victims in this situation, and guess who the villain is?

Meat industry, you're on the hot seat. Consumers are calling for transparency. How will you respond?

A few retailers, including Kroger and Publix, have responded to the media flurry with quick decisions to stop carrying meat packaged with carbon monoxide. There has also been an immediate legislative snowball, with members of Congress urging the FDA to ban the use of carbon monoxide in meat.

One Oregon newspaper recently conducted an online discussion "spiked" with carbon monoxide made case-ready sound downright dangerous to consumers who don't

How about implementing an education program? Such a program could instruct consumers that the red color of meat isn't the only indicator of freshness (product texture and odor are two other indicators). The program could also note that carbon monoxide is not used in all case-ready packaging and that when it is used, it occurs at very low levels (0.4 percent, according to the NCBA) and is harmless. Even a simple explanation of the how's and why's of case-ready packaging would be helpful.

As consumers become more attuned to what's in their food and where it comes from, proactive, open communication is vital. To stay in this ever-competitive game, we need to do a better job of communicating why we do what we do. Otherwise, someone else — in this case, the media — will undoubtedly communicate it for us. If that happens with other industry hot topics, the consequences could be disastrous. □

By Christy Pitney

6. The information in this article is explained fully.

\_\_\_\_\_ Agree                      \_\_\_\_\_ Disagree

7. Photographs would add to the understanding of the information in this article.

\_\_\_\_\_ Agree                      \_\_\_\_\_ Disagree



Please read the following excerpt from a beef cattle magazine and answer the following questions.

## From meat to meals

When Swanson introduced the TV dinner in 1954, consumers loved it. Most likely, that wasn't because of the way the frozen meals tasted — it was because of their convenience. Suddenly, dinner could be ready in minutes. ¶ Back then, a fully cooked pot roast that was refrigerated, not frozen, was unheard of, but now the category of heat-and-eat foods is expanding rapidly. In particular, it's been a huge growth area for beef.

Today there are about 80 heat-and-eat beef products bringing in around \$1 billion in annual sales.

When market studies conducted by NCBA examined U.S. population trends, attitudes about nutrition and health, and consumer time, all the research pointed to the importance of today's lifestyle trends (a phrase that was also unheard of in 1954). Specifically, researchers heard a lot about the growing importance of convenience and the increasing value of time. How does that translate into consumer behavior? No surprise — consumers reported they were spending less time preparing meals, and they didn't tend to plan meals in advance. One of the con-

clusions of the research was that consumers wanted to buy not just meats, but meals.

Heat-and-eat beef products offer a solution to that consumer problem. The products can go from grocery bag to microwave to the table in about 10 minutes; because they're not frozen, they seem more like homemade food.

While the short preparation time is critical, as is nutrition, today's consumers are not going to give up on taste; research has shown this, too. Grocery industry studies showed that 90 percent of shoppers rate taste as a very important factor when deciding which foods to buy. Nutrition, price and ease of preparation followed. That's good news for the beef industry: beef's strongest attribute is consumers' preference for its taste.

Are heat-and-eat products doing anything for the beef producer? Absolutely. They have had a considerable effect on beef sales in many outlets. And beyond generating more sales, the products often use overlooked cuts from the chuck and round — cuts many consumers don't know how to prepare and therefore do not buy. We're talking about things like briskets and pot roasts that now have new opportunities to reach consumers. That, in turn, means that the chuck and round can make more significant contributions to total carcass value. They can take some of the pressure off the ribs and loins and middle meats, which have in the past had to provide about 70 percent of the profit from a carcass.

Another thing it means for producers is that consistency will only continue to grow in importance. Processors will need to rely on those briskets being the same size.

More of heat-and-eat products are coming — things such as stews, Swiss steak and prime rib roasts; grocery industry analysts call this a huge growth area. Its success is good news for the beef industry, as the meat business transforms into the meal business. ¶



8. The information in this article is explained fully.

\_\_\_\_\_ Agree                      \_\_\_\_\_ Disagree

9. Photograph adds to the understanding of the information in this article.

\_\_\_\_\_ Agree                      \_\_\_\_\_ Disagree



Please read the following excerpt from a beef cattle magazine and answer the following questions.

BEEF INDUSTRY  
TALKING POINTS  
**Organic, Natural,  
Grass-fed**

# DESIGNER LABELS

BY JOHN MADAY

Americans spend less than 10 percent of their disposable income on food. That's an average, of course, based on data from the USDA's Economic Research Service. Food purchases take a bigger bite from the budgets of low-income families, even if they shop for the best values. Consumers on the higher end of the income scale, meanwhile, can buy specialty foods from the most exclusive stores and dine in high-end restaurants, while spending far less than 15 percent of their income on food.

The majority of Americans can afford to eat well. According to USDA/ERS, 88 percent of American households were "food secure" throughout the entire year 2004. This means they had access, at all times, to enough food for an active, healthy life for all household members.

However, the agency's survey indicates that almost 12 percent of households were "food insecure" at least some time during that year. The continuing challenge of domestic and global poverty underscores the need for efficient production that keeps food affordable, while still generating profits for producers and processors.

On the other hand, demand for premium, specialty products offers opportunities for producers to pursue higher sale prices while accepting higher production costs. Not long ago, there really was just one type of consumer for beef in the United States, says Iowa State University economist John Lawrence, and the main priority was price. Today, he says, society is more diverse, with more consumers willing to pay higher prices for products with specific traits.

Gary Smith, Monfort distinguished professor of meat science at Colorado State University, agrees. Smith says packer sources have told him that for about 70 percent of consumers, price remains the primary consideration in their beef purchases. The other 30 percent are able and willing to pay what it costs to get the attributes they want, such as the improved palatability of premium, branded beef or the less-tangible benefits of beef from natural or organic production systems.

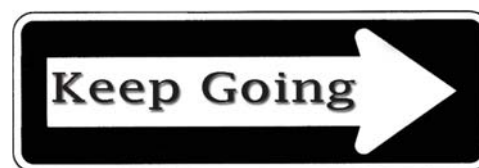
So what are the differences between conventional beef and some of these specialty products?

10. The information in this article is explained fully.

Agree       Disagree

11. Photographs would add to the understanding of the information in this article.

Agree       Disagree



Please read the following excerpt from a beef cattle magazine and answer the following questions.

**F I E L D D A Y**

## Irrigated grazing shows profitability

BY SCARLETT HAGINS

Sam Hands said irrigated pasture has proven to be a high-producing, high-quality forage for cow-calf pairs or stocker cattle. The co-owner of Triangle H Grain and Cattle, located near Garden City, gave producers an inside look into his irrigated grazing program during a KLA and Kansas State University Ranch Management Field Day held this summer.

Triangle H is credited as being one of the early innovators of converting cropland to intensively grazed irrigated perennial grasses. Much of the acreage owned by the Hands family is irrigated by center pivot systems.

The ranch pastures contain a mixture of cool-season grasses to maximize productivity, including smooth bromegrass, meadow bromegrass, intermediate wheatgrass, orchardgrass and Garrison creeping foxtail. A blend is the most popular choice for irrigated pasture because, compared to warm-season grasses, it responds more readily to water and fertilizer, and the timing of growth coincides with the forage needs of most livestock producers. K-State Extension Specialist Ron Hale does suggest, however, that each species within the mixture be of equal palatability to prevent overgrazing and elimination of any one variety.

"Grass variety selection should be based on criteria other than published annual yields," said Hale. "Producers need to take into account factors such as soil adaptation, fertility and water requirements, and winter hardiness."

On average, management requirements for irrigated pasture are 20" to 24" of irrigation above normal precipitation, 200 lbs. to 300 lbs. of nitrogen and 20 lbs. to 40 lbs. of phosphorus per acre. According to Hands, his grass receives 20" of irrigation, 270 lbs. of nitrogen applied in five installments and 40 lbs. of phosphorus annually.

"These numbers may vary depending on the season, but in a typical year, we can run one to one-and-a-quarter cow-calf units per acre from mid-April to late November," he said.

To prevent overgrazing, Hands utilizes a pasture rotation system and provides some supplemental feed during the summer months. Hale said the rotational program should be based on cattle consuming 40% to 50% of available forage each time through to obtain the best animal and forage performance. A cool season grass mix will produce 40% to 50% of its dry matter from May to early June, 20% to 40% from late June through August and 20% to 30% in the fall.

"Cattle numbers must be matched to grass growth," said Hale. "Moving the cattle must be based on the condition and needs of the grass, not on the calendar."

Although cool-season grasses typically start to green up in April, Hale cautions against grazing too early. He advises producers to avoid grazing pastures in the spring until 8" to 10" of new growth have developed. He said cool-season grasses need a period of uninterrupted spring growth to gain vigor for sustained production. In addition, this extended growing time will allow pastures to maintain animal numbers for a longer period.

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Andrew Murphy, chief operations officer for Innovative Livestock Services

With six ILS feedyards in Kansas and Nebraska under his watch, minimizing freight costs is important to the bottom line. Murphy is looking at business models outside the beef industry to possibly get a new perspective on an old problem. His analysis of other businesses that rely heavily on transportation is in the early stages.

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"If you do the right things feeding cattle, it will make up for the increased cost as much as possible," said Kuckelman.

Trucking isn't the only feedyard activity dependent on energy. Steam-flaking grain, cleaning pens and delivering feed to the bunk have become more costly as well. Knight Feedlot Manager Mark Knight of Lyons said he has reverted back to using electric dry-roll mills to process feed. This equipment was last used at the yard 20 years ago, prior to the widespread application of steam flakers. He estimates the switch back to dry-roll cut the amount of energy required to process a bushel of feed nearly in half.

"It will help reduce our cost of gain," said Knight.

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14. The information in this article is explained fully.

\_\_\_\_\_ Agree                      \_\_\_\_\_ Disagree

15. Photograph adds to the understanding of the information in this article.

\_\_\_\_\_ Agree                      \_\_\_\_\_ Disagree



## Personal Characteristics

Sex: \_\_\_\_M \_\_\_\_F

Classification: \_\_\_\_\_

Major: \_\_\_\_\_

Age: \_\_\_\_\_

Where you grew up:

\_\_\_\_ Farm or ranch

\_\_\_\_ Rural area, not farm or ranch

\_\_\_\_ Town under 10,000

\_\_\_\_ Town or city between 10,001 and 59,999 people

\_\_\_\_ City between 60,000 and 249,999 people

\_\_\_\_ City over 250,000 people

Expected date of graduation: \_\_\_\_\_



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