Research

Before it Hits the Fan: Pre-Crisis Beef Producer Information Source Preferences

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Abstract

The purpose of this statewide study was to determine preferences for the sources of information beef producers in Oklahoma use and trust when they seek information about agriculture during a crisis. Participants in this study were randomly selected from a population of 48,000 beef producers in the Oklahoma. All 470 respondents completed a telephone survey conducted by the Oklahoma Agricultural Statistics Service (OASS). Descriptive statistics, t-tests, and cross tabulations were used to analyze the data. Producers preferred their veterinarians when seeking information about animal health issues and any agriculturally related crisis; and preferred to receive information through county extension publications. They also perceived the local veterinarian as the most trusted and reliable source of information available. The Oklahoma State University Cooperative Extension Service, through the county extension agents and the local area livestock specialists, and the USDA were also trustworthy and reliable sources.

Introduction and Conceptual Framework

Each day, the public is bombarded with pages upon pages of information from many different sources. With so many sources of information available, trustworthiness and reliability are paramount. Correct and helpful information is critical for both consumers and producers alike to facilitate their way through a typical day; but, what if there's a crisis involving the food and fiber system?

In the event of a terrorist attack against agriculture, the public will be forced to make life-sustaining decisions in regard to their health, safety and the food they provide to their families or produce for consumption. State agencies, special interest groups, manufacturers and the media will have the responsibility of disseminating information to both consumers and producers.

Penrose (2000) and Covello (2003) suggested there is a value in clearly identifying the key audience stakeholders, especially before a crisis occurs. Understanding and responding to the audience provides information sources the best opportunity to serve those groups when emergency is needed (Wray, Kreuter, Jacobsen, Clements, & Evans, 2004).

Riesenberg and Gor (1989) maintained the issue of the "communication gap" between the extension service personnel and the farmer has been the "stumbling block" of the "methods employed for the dissemination of agricultural information" (p.7). Past studies of farmers and other agriculturalists show the preference of the two types of sources of information dissemination, interpersonal and mass media, as identified by Riesenberg and Gor (1989); furthermore, farmers are reported to prefer the interpersonal style or method of receiving information when they have a choice between interpersonal and mass media.

Interpersonal

In a study of part-time and full-time beef farmers, Obahayujie and Hillison (1988) found part-time beef farmers preferred methods using personalized visits or on-farm demonstrations. Riesenberg and Gor (1989) found agriculture producers preferring to receive information about new and innovative programs by interpersonal and interaction methods. Bruening (1991) reported Iowa farmers also preferred field demonstrations and county and local meetings as useful communication methods when learning about environmental issues. In a later study by Bruening, Radhakrislma, and Rollins (1992), the same preference was shown by Pennsylvania farmers for methods including demonstrations, tours, or on-farm consults when seeking to learn information about the environment. The least favored methods were those with minimal interaction, for example home study or computer assisted instruction.

In a study surveying extension agents about their perceptions of appropriate methods for outreach, Ohio Cooperative Extension Agents reported a high level of preference for the interactive interpersonal methods and low levels of preference for the mass media based methods (Bouare & Bowen, 1990). Historically, the extension service has been and remains a primary source of information for rural areas (Martin & Omer, 1988; Richardson and Mustian, 1994; Buford, Bedeian & Lindner, 1995).

Mass media

Okai (1986) identified extension publications and radio and TV as two of the top four preferred information sources by small-scale Missouri farmers; however, vocational agricultural instructors and area extension specialists were ranked the lowest. A later study by Padgitt (1987) found the opposite when results showed university extension specialists and the Cooperative Extension Service to be considered the most reliable sources, while methods employing radio and television were considered the least reliable.

In the second half of the full-time/part-time farmer study mentioned earlier, Obahayujie and Hillison (1988) maintained full-time farmers preferred mass media, such as newsletters publications, bulletins, radio programs, and leaflets/pamphlets, to the interpersonal type of communication. Richardson (1989) and Richardson, Clement, and Mustian (1997) maintained traditional extension audiences, such as beef producers, prefer newsletters, bulletins, personal visits, and field day or method demonstrations. Gamon, Bounaga and Miller (1992) and Carter and Batte (1994) agreed farmers show a preference for traditional delivery methods.

Nordstrom, Wilson, Kelsey, Maretzki and Pitts (2000) found focus groups to suggest and recommend mass media methods (TV, newspapers, and radio) as tools to disseminate agricultural education materials. Boone and Zenger (2001) also found homemaker focus to use mass media. The study also showed extension information as more accurate and reliable than mass media, but extension information was more difficult to obtain.

When looking at specific issues such as food safety, Whatley, Doerfert, Kistler, and Thompson (2005) reported there to be five primary sources of information: experiential, family, government agencies, professional associations, and media. Food safety information is about educating the consumer and Whatley, et al. (2005) suggested identifying consumer information source trust is the first step in any consumer education plan; however, Whatley, et al. (2005) suggested little information has been collected about food safety source trust.

In a previous study, Frewer and Miles (2003) did identify medical sources as being a highly trusted source when communicating about food risks, while the government sources and many envi-

ronmental pressure groups were trusted less; and the food industry was trusted the least.

Although Woodson (2005) maintained newspaper, radio, and television are sources all county extension agents use, Boldt (1987) suggested county extension agents use varying media sources to disseminate information to diverse audiences. Carter and Batte (1994) suggested their findings indicate print media are most likely to be well received by farmers seeking information through educational materials.

Identifying the sources of information beef producers use and trust prior to a crisis event could mean the difference between chaos and ordered preparedness. The problem addressed by this study is the lack of information showing where beef producers seek information and the sources of information trusted by those beef producers in the context of an agriculturally related crisis, such as an incident of agroterrorism.

The study also showed extension information as more accurate and reliable than mass media, but extension information was more difficult to obtain.

Purpose and Objectives

The purpose of this study was to identify the preferences for the sources of information Oklahoma beef producers' use and trust when seeking information about agriculture during a crisis. Specifically, this study addressed the following research questions:

1. What are the sources of information beef producers in Oklahoma use when seeking information about an agriculturally related crisis?
2. What are Oklahoma beef producers' levels of trust and reliability in the information sources used?
3. How did Oklahoma beef producers' perceptions toward information source trust and reliability differ based upon the demographics of age, farm size, education level, and access to a computer with Internet access?

Methods and Procedures

For this study, a beef producer was operationally defined as any individual owning at least one animal of any beef cattle breed. Descriptive research was chosen as the research method since the study dealt with perceptions of beef producers and their preferred sources of information used when seeking to learn more about animal health issues in the context of an agriculturally related crisis.

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

The questionnaire was divided into two parts, each part coinciding with the two objectives of the study: information sources and source trust. Three categorical questions assessed the respondent's perceptions about sources of information they would choose first when given a choice and the medium in which they would like information presented to them (Ashlock, 2006).

Two additional questions obtained the respondent's level of reliability and trust in specific sources of information using Likert-type questions. The scales used for both questions were as follows: Reliable: 1 = Not Reliable, 2 = Slightly Reliable, 3 = Neutral, 4 = Reliable, 5 = Very Reliable; and Trust: 1 = Not Trustworthy, 2 = Slightly Trustworthy, 3 = Neutral, 4 = Trustworthy, 5 = Very Trustworthy. The remainder of the survey instrument was used to collect demographic information about the beef producers. Questions in this area were closed-ended or partially closed-ended.

To minimize measurement error, the construction of the questionnaire was completed under the guidance of a panel of experts in both the academic and beef cattle production fields for instrument validation. Data were collected by the OASS using in-house computer-aided telephone interviewing procedures. Data collection error was controlled by conducting a formal interviewer training session to familiarize the interviewers with the instrument. The OASS used seasoned interviewers to ensure ease of use with the computer system. A comparison of early and late responders was examined to control for nonresponse error based on guidelines set forth by Lindner, Murphy, and Briers (2001). No significant difference between early and late responders was shown to exist. The instrument was found to be reliable with a Cronbach's alpha of .84. Data were analyzed and interpreted using frequencies, percentages, means, modes, standard deviations, and cross tabulations.

Findings

The data was collection over a period of twelve, non-consecutive days. A random sample (n = 2,000) was drawn from the overall target population of beef producers in Oklahoma (N = 48,000). Of the sample population, 678 completed calls were made providing the researcher with 470 usable responses.

Findings Related to Demographics of Beef Producers in Oklahoma

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

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

Findings Related to Preferred Information Sources

During the survey, respondents were asked three questions regarding preferred information sources. Two questions gave the respondents a choice of "Yes" or "No" to a list of information sources and an opportunity to give an open-ended response for additional sources. When asked "When you seek information about animal health issues, where do you first look," respondents indicated "Veterinarian" 34.9% of the time; "Other" and "Internet" were 12.55% and 11.70%, respectively. Responses to the "Other" category provided additional sources as being "County Extension Agent," "Oklahoma State University," "Law Enforcement," "Family," and the "Oklahoma Cattleman's Association." The remaining 40.86% of responses were divided between "Magazines" – 10.70%, "USDA" – 9.36%, "Television" – 9.15%, "Newspaper" – 6.59%, "Radio" – 2.98%, and "Word of Mouth" – 2.76%.

The second question asked, "When you seek information about an agriculturally related crisis, where do you first look." Respondents indicated "Veterinarian" 26.81% of the time; "Television" 14.25% of the time; and the "Internet" 13.62% of the time.

The remaining 45.32% of responses were divided between "Other" – 12.98%, "USDA" – 11.70%, "Newspaper" – 10.00%, "Magazines" – 3.62%, "Radio" – 3.19%, "Word of Mouth" – 2.55%, and the "State USDA" – 1.28%. Responses to the "Other" category provided additional sources as being "County Extension Agent," "State University," "Local Agricultural Department," "Law Enforcement," "Government Agencies," "Family," "Oklahoma State University Veterinarian Services," "Noble Foundation," "Oklahoma Cattleman's Association," and the "High Plains Journal."

The final question asked respondents to identify preferred methods for receiving information. When asked, "What would be your number one preference to receive information about an agriculturally related crisis," 49.36% of the respondents identified through a "County Extension Publication". Of the remaining 50.64%, "Other" methods were identified 15.11% of the time, "Local Meetings" were identified 10.21% of the time, "Mail" was identified 6.59% of the time; "Newspapers" were identified 6.38% of the time; "Don't Know" was a choice 4.25% of the time, "E-mail" was identified 3.62% of the time, and the "Internet" was chosen 2.76% of the time. Responses to the "Other" category provided additional sources as being "Television," "Friends," "Radio," "Sale Barns," "Oklahoma State University," and the "Noble Foundation."

Findings Related to Level of Trust in Preferred Information Sources

Research question two sought to determine the Oklahoma beef producers' perceived level of trust and reliability of multiple information sources. Two questions were designed to answer this research question.

The first question asked respondents to rate their level of reliability regarding multiple information sources using a five-point Likert-type scale (1 = Not Reliable, 2 = Slightly Reliable, 3 = Neutral, 4 = Reliable, 5 = Very Reliable). When asked "What sources do you believe to be the most reliable," 56.8% of respondents reported the "Local Veterinarian" as very reliable; "Area Livestock Specialist (45.4%)," "County Extension Agent (50.0%)," "Local Daily Newspaper (36.2%)," "Local Weekly Newspaper (31.3%)," "USDA (44.5%)," and "ODAFF (41.5%)" as reliable; "AgriNet (43.4%)," "Breed Association (43.4%)," "Cowman Magazine (54.5%)," "High Plains Journal (56.6%)," and the "Internet (49.1%)" as neutral (Table1).

Table 1
Beef Producers' Information Source Reliability

Information Source	M	SD
AgriNet	3.33	.923
Area Livestock Spec.	3.53	.899
Breed Association	3.35	.899
County Extension Agent	3.85	1.010
Cattlemen's Magazine	3.19	.887
High Plains Journal	3.21	.906
Internet	2.82	1.049
Local Daily newspaper	2.85	1.152
Local Weekly newspaper	2.80	1.104
Local Veterinarian	4.36	.937
USDA	3.89	1.032
Okla. Dept. of Ag, Food & Forestry	3.64	1.007

Note: Classification based on the scale: M = 4.20 or higher = Very Reliable; 3.40 – 4.19 = Reliable; 2.60 – 3.39 = Neutral; 1.80 – 2.59 = Slightly Reliable; and 1 – 1.79 = Not Reliable

The second question asked respondents to rate their level of trust regarding multiple information sources using a five-point Likert-type scale (1 = Not Trustworthy, 2 = Slightly Trustworthy, 3 = Neutral, 4 = Trustworthy, 5 = Very Trustworthy). When asked "What is your level of trust in the following sources of information," 54.7% of respondents reported the "Local Veterinarian" as very reliable; "AgriNet (35.7%)," "Area Livestock Specialist (46.4%)," "County Extension Agent (50.4%)," "Local Daily Newspaper (35.3%)," "USDA (49.8%)," and "State's USDA (43.8%)" as reliable; "Breed Association (40.9%)," "Cowman Magazine (53.8%)," "High Plains Journal (54.5%)," and the "Internet (48.3%)" as neutral (Table 2).

Table 2
Beef Producers' Information Source Trust

Information Source	M	SD
AgriNet	3.47	.934
Area Livestock Spec.	3.53	.904
Breed Association	3.34	.898
County Extension Agent	3.89	.969
Cattlemen's Magazine	3.25	.832
High Plains Journal	3.29	.847
Internet	2.79	1.018
Local Daily newspaper	2.78	1.189
Local Weekly newspaper	2.77	1.134
Local Veterinarian	4.45	.765
USDA	3.87	1.003
Okla. Dept. of Ag, Food & Forestry	3.69	.904

Note: Classification based on the scale: M = 4.20 or higher = Very Trustworthy; 3.40 – 4.19 = Trustworthy; 2.60 – 3.39 = Neutral; 1.80 – 2.59 = Slightly Trustworthy; and 1 – 1.79 = Not Trustworthy

The data were cross-tabulated by examining the level of trust in the multiple information sources in comparison to age, farm size, education level, and computer/Internet usage. The data reinforced the veterinarian as the trusted information source and age had no effect on perceptions of trust in the veterinarian.

The findings also revealed age as having no effect on perceptions of trust toward the Internet or local/weekly newspapers, as all age groups reported lower trust scores for these three information sources. When analyzing the same question as compared to farm size and its affect on perceptions relating to each beef producers' trust in information sources, the trend remained the same as reported above with the local veterinarian as the most trusted source. The findings also showed the same decreasing trend in trust toward the Internet and local/weekly newspapers.

When assessing the beef producers' level of trust in information sources by education level, beef producers' trust level appeared to increase as the amount of education level increased. This increasing trend is prevalent if the two groups with only one respondent, education specialist and professional, are removed. Although the Internet and local daily/weekly newspaper were continuing to be categorically low, all areas of trust showed slight increasing trends of trust as educational level increased. When assessing the beef producers' level of trust in information sources by computer usage with Internet access, data revealed a higher amount of trust with the beef producers who owned an Internet accessible computer.

Although the Internet and local daily/weekly newspapers were categorically low, all areas of trust showed an increased level of trust regarding each information source with the exception of the local daily and weekly newspapers and the local veterinarian. In each of these three categories, the trust level means were virtually equal. Data revealed the veterinarian was a highly trusted source regardless of computer usage/Internet access and the local daily and weekly newspapers were regarded less trustworthy regardless of computer usage/Internet access.

Conclusions-Implications-Recommendations

Conclusions related to Beef Producers' Preferred Sources of Information

The typical beef producer from Oklahoma looks first to his or her veterinarian when seeking information about animal health issues and any agriculturally related crisis. Secondarily, producers turn to the Internet and television. In addition, beef producers prefer to receive information through county extension publications. These findings support previous research showing value of extension publications, Internet, and television as preferred information sources (Okai, 1986; and Taylor & Perry, 2005); especially the television in the event of bioterrorism, and the influence of the Internet on crisis communication (Pollard, 2003). College graduates and older audiences preferred print publications; as compared to audiences under 30 who preferred radio and television forms of media (Reina, 1995).

Based upon the findings above, it was concluded the veterinarian services profession should be prepared to provide the Oklahoma beef producers any type or form of information regarding preparatory actions for or protection from terrorist activities.

It was also concluded the OSU Cooperative Extension Service's print publications are considered a primary method of disseminating information for the state's beef producers regarding agroterrorism or beef industry crisis issues.

Conclusions Related to Level of Trust in Preferred Information Sources

The typical beef producer from Oklahoma views the local veterinarian as the most trusted and reliable source of information. The county extension agent, USDA, and local area livestock specialists are also trustworthy and reliable sources. While findings from Okai (1986) show a lack of preference for area extension specialists, this study revealed beef producers in Oklahoma as having a high level of trust for the area livestock specialists, supporting previous research by Padgitt (1987).

When comparing the cross-tabulated mean scores of the demographic variables of age and farm sizes, no trend was shown to influence beef producer's perceptions of trust in the varied information sources. However, when comparing the means by education level, the level of trust increased as the beef producers' education level increased. The same trend was found when comparing computer usage and Internet access; beef producers reported higher levels of trust if they owned a computer with Internet access.

It is important to note only in the instance of the Internet and local daily or weekly newspapers did the variables of age, farm size, education level, or computer usage/Internet access have no affect on trust. In all cases, the level of trust in these three sources of information remained lower than any other source. While previous studies show the Internet (Newport & Saad, 1998), and local daily or weekly newspapers (Reina, 1995; and Denton, 1996) as trustworthy sources, this study supports research by Newport and Saad (1998) showing local newspapers having low credibility.

Rogers (2003) defines opinion leadership as "the degree to which an individual is able to influence other individuals' attitudes or overt behavior in a desired way with relative frequency" (p. 27). Based upon the findings above, it can be concluded veterinarians, county extension agents, the USDA, or local area livestock specialists can be influential in shaping the opinions of this state's beef producers.

It can also be concluded veterinarians, county extension agents, the USDA, or local area livestock specialists should have the requisite knowledge of preparedness levels, crisis planning, and agroterrorism protection to provide or disseminate information regarding agroterrorism or crisis communications. This conclusion supports the findings of Fink (1986); Henry (2000); and Seeger, Sellnow, and Ulmer (2003) who found for crisis management to be effective there is a need for a strong foundation of effective planning and communication before an incident.

Implications for Preferred Information Sources

The beef producers in Oklahoma report to seek information regarding any animal health issue or agriculturally related crisis through their veterinarian first and then turn to the Internet or television as secondary sources. Beef producers also reported preferring information to be disseminated through county extension publications as a first choice.

This study was not designed to assess agroterrorism and crisis literacy or knowledge levels of those organizations of individuals providing information to the public; the findings above highlight important implications to the agricultural communications profession. For example, what is the type and quality of the information being provided by veterinarians, the Internet, on television, or by county extension publications? What level of knowledge of agroterrorism or crisis planning do these individuals possess? If the typical beef producer from Oklahoma is looking toward these sources of information, should it be imperative to know to what level these sources are informed?

It may be interesting to investigate why beef producers cite the Internet as a preferred secondary source of information, but continually rate it as a neutrally trusted source. Are beef producers using the Internet to guide their knowledge seeking engagements with the local veterinarian, while remaining cautious or wary of the information found on the Internet?

Once beef producer's agricultural crisis planning literacy level is assessed, an exploration of the types and quality of information found is essential to determine the information gap between what a beef producer receives and the level of uncertainty remaining.

A study by Okai (1986) showed the area extension specialist as a low ranked source of information by small-scale Missouri farmers. This study showed the opposite in reporting the area livestock specialist as a preferred source of information by Oklahoma beef producers.

Implications for Information Source Trust

Beef producers from Oklahoma view the local veterinarian as the most trusted and reliable source of information available. The County Extension agent, USDA, and local area livestock specialist are also viewed as trustworthy and reliable sources.

This finding's implication reinforces the fact the veterinarian, county extension agent, USDA, and area livestock specialists are a vital channel for the dissemination of information to Oklahoma beef producers. This implication is important since it helps the beef cattle industry identify and document the opinion leaders of the group.

The final implication of the findings on trust involves not so much which sources beef producers trust and rely upon, but more importantly, who they do not. The findings show the Internet was found to be a neutral information source when it came to both trust and reliability. The importance

of this point, discussed above, is that the Internet was reported to be a secondary source of information to the veterinarian, but not seen as a highly trusted or reliable source of information.

If the USDA, county extension agents, and area livestock specialists are seen as trusted and reliable sources, and the Internet is not, why do beef producers report the Internet's usage so highly? Is it because the Internet is a medium available 24 hours per day with no office hours or scheduling problems? If so, then an exploration of the content found at frequented sites by beef producers is needed to ensure accurate and timely information.

How do the USDA, county extension agents, and area livestock specialists move upwards on the list of sources of information if they are so trusted? It may imply if beef producers trust the USDA, county extension agent, and area livestock specialists so much and use the Internet as an important source of information, there is an opportunity for these entities to deliver or disseminate information via the Internet to Oklahoma beef producers.

Recommendations for Future Research

Pre-crisis dissemination of information is imperative and effective preparation levels are dependent upon accurate information. Neulip and Grohskopf (2000) stated "communication satisfaction may be a part of communication competence, in that competent interactants may be especially adept at reducing uncertainty" (p. 74). It is suggested future research be conducted to determine how communication competence affects the communication satisfaction and uncertainty reduction of beef producers when seeking information about possible crisis events. This type of study may be used to correlate levels of communication competency with levels of perceived uncertainty or lack of information.

Based upon the findings regarding the identification of information sources, it is recommended content analysis research be completed to determine the quality and type of information being disseminated to this state's beef producers. Once information type and quality is identified, researchers can determine the information gap and adjust the quality level and type of information dissemination.

Through this study, the question of where beef producers seek information was identified. It is suggested researchers use this knowledge to identify what types of information Oklahoma beef producers are interested in learning from the identified sources of information. This information will provide an insight into the areas of uncertainty beef producers are seeking to reduce through preferred and trusted communication channels.

Recommendations for Practitioners

Primary sources of information, i.e. the veterinarian, USDA, county extension agents, and local livestock specialists, should maintain a well-informed breadth of knowledge about agroterrorism and the affects to the Oklahoma beef industry. While their preparedness levels should include knowledge for their own level of expertise, they should anticipate being sought for questions regarding preparedness on protection and bio-security issues from producers.

Since this study identified sources of information used by Oklahoma beef producers, it is suggested these sources of information be used to deliver information to the beef producer in a proactive manner, rather than simply waiting for the beef producer to seek information. This identification of preferred sources of information reinforces the need to reduce Riesenberg and Gor's (1989) suggested "communication gap stumbling block" between the extension service personnel and the farmer through effective information diffusion.

Past studies of farmers and other agriculturalists show the preference of both interpersonal and mass media methods of information diffusion (Riesenberg & Gor, 1989). This research allows practitioners to understand the preferred information needs of beef producers; thereby increasing the effectiveness of future communication efforts by disseminating information more directly to beef producers through these identified preferred sources.

Based upon the findings that the veterinarian, USDA, county extension agents, and area livestock specialists are the most trusted and reliable sources for Oklahoma beef producers, it is suggested these sources use combined efforts to disseminate information through the preferred channels of veterinarians, Internet Web sites, and television. More specifically, use combined knowledge from all trusted sources of information to support a multi-sourced Web site sponsored by these primary trusted sources for dissemination of information through the Internet to beef producers.

Recommendations for Educators

Frazier (1999) maintained for the future of education and information dissemination:

> There is a clear need to develop effective educational programs for stimulating continued attention of congressional decision-makers, for alerting companies that may be perceived as infrastructure targets to terrorists, and for training first responders who will come into contact with affected people, pets, or livestock after an bioterrorism attack occurs. (p. 4)

Oklahoma State University finds itself at the fountainhead of this information. Three of the four primary sources identified by beef producers (veterinarians, county extension agents, and area livestock specialists) are trained and educated within the confines of the OSU system. The land-grant university mission of research, teaching, and extension are essential to the role of increasing the information levels and knowledge of students, employees, and the public.

It is recommended the agricultural communications profession seek to determine the levels of information veterinarians are receiving, both in school as well as through continuing education, to provide opportunities for veterinarians to realize the vital role they play as opinion leaders within the beef industry.

It is recommended the same manner of assessment be conducted to determine the most effective method for educating those members of the Oklahoma Cooperative Extension Service about their role as opinion leaders and providers of information to the beef industry. It is essential for extension personnel to realize their importance as highly respected sources of information to rural America (Martin, Omar, 1988; Richardson & Mustian, 1994; Buford, Bedeian, & Lindner, 1995).

Finally, in a study by Okai (1986), vocational agricultural instructors were reported as a low ranked source of information by small-scale Missouri farmers. It is recommended the state's agricultural education profession is assessed to determine its level of involvement in the dissemination of information to beef producers. Agricultural educators have an opportunity to educate youth in matters of potential threats to agriculture. This information dissemination to young adults may have the potential to increase the agricultural educator's position as a preferred source of information when students graduate and become working adults in society.

Keywords

agroterrism, uncertainty reduction theory, crisis communications

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