

LAYING A NEW FOUNDATION

for Engaging Agricultural Media Gatekeepers
in Covering Agricultural Safety and Health

Final Report of a Pilot Project

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LAYING A NEW FOUNDATION

INTRODUCTION

This pilot project helps lay a new foundation for expanded and innovative coverage of agricultural safety and health by agricultural media. It serves the goal of improving the frequency and quality of agricultural and farm safety reporting by agricultural magazines and papers, which are among the most important information sources for farmers, farm families and farm workers. For example, results of a 2012 national survey among owners/operators/managers of U.S. farms and ranches revealed that 98% read agricultural magazines and papers at least monthly and 82% percent read them at least weekly.

At the same time, there appears to be great need and opportunity for these and other agricultural media to report more effectively about safety and health in one of the nation's most hazardous industries.

How can organizations interested in safety work with agricultural media gatekeepers to encourage increased safety coverage? How might they provide resources those agricultural reporters and editors can use to cover safety aspects more effectively?

This project addresses those goals through four related initiatives: (a) a review of literature about media coverage of farm and agricultural safety; (b) a comparative content analysis of safety articles published in trade media of three high-risk industries—agriculture, mining, and transportation; (c) a survey among agricultural journalists; and (d) a survey among university faculty members who teach courses in agricultural journalism and communications.

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Review of Literature: Media Coverage of Agricultural and Farm Safety

INTRODUCTION

Overview

Agriculture, one of the nation's most dangerous industries, also stands out as one of the most diverse in terms of age, gender, health, and educational status.¹ It involves infants through elders, and women as well as men. It involves health and safety issues that range broadly from skin care and back problems to maiming, disfigurement, and death. It ranges from the highly educated agricultural specialist to the farmworker from abroad without command of English. It spans a huge array of risks associated with activities such as operating machinery and equipment, managing livestock, using power tools, and working in settings that involve chemicals, dusts, smells, noise, electricity, heat sources, high work places, and other potential hazards.

Tractor accidents top the list of causes of death for agricultural production workers in the United States. Hard and Myers² reported that an average of about 200 tractor-related fatalities occurred annually between 1992 and 2005 in the United States. The list of other causes is nearly endless, creating a work death rate for agriculture eight times higher than the all-industry average.³

It is no wonder that safety has increasingly commanded attention for the wellbeing of the food system in this country and elsewhere. The farm safety movement may have begun during World War II when rural policymakers recognized that farm accidents threatened the nation's wartime mobilization efforts.⁴ But it has been propelled by a revolution in technological change through increased mechanization, new farming practices, and rising costs of doing things wrong. For example, Mariger⁵ cited an analysis indicating that the cost of a single serious agricultural injury resulting in a permanent disability was more than \$486,000. That was in 1995. Beyond the economics, safety issues play out in the daily lives of people on farms in the form of frustration, anxiety, stress, resentment, depression, fatigue, and other negative consequences that contribute to a loss of quality of life.⁶

Some Challenge Factors

Challenges involved in communicating specifically about farm/ranch and agricultural safety will emerge throughout this review of literature. However, it seems useful to identify a number of theoretical and other factors that researchers and others have identified in terms of safety and risk communications. (Appendix A lists additional literature reviewed but not cited in this text.)

Tebeaux⁷ is among the technical communicators who have linked farm accidents with human mindsets. Little has changed, she said, since 1975 when the tractor safety movement set lofty goals for accident reduction. "Simply phrased...85-90% of accidents are caused by unsafe acts that could easily be avoided." She suggested that most agricultural work-related accidents occur when people do not recognize hazards, do not understand what creates these hazards, do not know how to avoid many hazards, and do not have the proper attitude toward safety.

“Changing this mindset may be one of the most daunting tasks faced by technical communicators.”

At the same time, safety professionals emphasize the need to look beyond human error and unsafe acts. “It’s all about the safe workplace, elimination or control of hazards, etc.,” Purschwitz has emphasized. He notes that safety professionals have shifted away from emphasis on unsafe acts. (Purschwitz, Mark. Personal communication, March 22, 2014).

In a review of how rural couples relate to health and safety, Green⁸ reported that the process of making decisions about safety is complex and influenced by diverse factors. In fact, she noted, “many aspects of farming work against awareness being translated into action. These include time pressures, the need to rely on personal protective equipment that is uncomfortable and inconvenient, and the absence of any external imposition of safety regulations.”

Similar deterrents to action appeared in research involving farmers in Iowa. Only 5% of farm operators said they used ear protection during noisy tasks. Other least-common practices included checking smoke detectors (10%) and their batteries (15%), prohibiting extra tractor riders (13%), and using tractors with rollover protection to mow (27%).⁹

An analysis of risk factors revealed six variables to be significantly correlated with the frequency and severity of farm-related injuries. They included employment status, age of farm worker, gender of farm worker, hours of work exposure, type of farming operation, and severe hazards that exist on the farm. Highest risk was associated with hired workers more than the family members, men more than women, older (age 65+) more than younger, dairy and grain operations more than others, longer work hours more than fewer, and farms with more severe hazards.¹⁰

Reference to frequency of injury as a factor in risk analysis may be connected with an observation by researchers Beaudin, Jacoby, and Quick.¹¹ In an analysis of the theoretical foundations for promoting safe behavior, they emphasized that in reality accidents and injuries do not occur often enough or consistently enough to provide effective negative reinforcements. They note how we find ourselves getting away successfully with unsafe practices.

Major health and disease problems facing farmers have been analyzed in connection with farm-related injuries. Voaklander and colleagues¹² reviewed 30 related studies in the United States, Canada, Australia, and Europe. They identified five health- and disease-related factors most commonly reported as significantly contributing to agricultural injury: previous injury, hearing problems, depression, arthritis/muscular-skeletal problems, and sleep deprivation. Prescription medications also serve as an independent risk factor for farm injury. Researchers emphasized that more attention needs to be focused on the older farm worker.¹² Results of research among farmers in Virginia similarly led to recommending educational programs focused on aging farmers, as well as hazardous agricultural activities and weight control.¹³

Regulation enters the safety arena as an alternative to communications and education. Thu *et al.*¹⁴ noted in 1998 that regulation as an intervention strategy had been shown to be effective in Sweden, where mandatory retrofitting of rollover protective structures on tractors resulted in the virtual elimination of rollover related fatalities. The researchers added, however, that additional legislated regulation of farm safety was unlikely in the United States. They explored the potentials of a volunteer-based alternative, the Certified Safe Farm.¹⁴ Farmer resistance to more stringent regulations became stronger after passage of the Occupational Safety and Health Act in 1970 and subsequent creation of the Occupational Safety and Health Administration.⁴

Purschwitz notes that regulation serves as a stimulant to communications and education, as well as an alternative (Purschwitz, Mark. Personal communication, March 22, 2014). He sees it as “forced communication and education. People engage in this communication because they are forced by regulations to do certain things and also stay on top of their game. Farmers who would not turn out for a meeting on farm safety will turn out for a meeting about new safety laws affecting farm trucks, for example.”

Effectiveness of Educational Efforts

Numerous studies have demonstrated that educational interventions can be effective in creating awareness, increasing knowledge levels and changing perceptions related to farm safety. A comprehensive review of them is beyond the scope of this effort. They are characterized by a recent analysis by Jepsen and Beaudreault,¹⁵ finding favorable learner responses to a statewide farm safety day camp program. Dissertation research involving the efficacy of a “Keep on Track” educational intervention among rural school-age children revealed significant knowledge gain.¹⁶ Sorensen *et al.*¹⁷ observed increased readiness and intention to retrofit tractors with rollover protection through a social marketing approach used in Pennsylvania and New York. Their intention was not to educate, but to make the behavior change easier by removing barriers and providing a few emotional motivations (Sorensen, Julie A. Personal communication, 2014).

Evidence of effectiveness in changing safety behavior is less clear. DeRoo and Rautiainen¹⁸ are among researchers who have reviewed the existing evidence about farm safety interventions. Their analysis of 25 studies included interventions such as safety fairs, day camps, certification programs, workshops and courses for farm families, youth and agricultural workers. Multi-faceted interventions were targeted to farm operators and generally involved farm safety audits, followed by environmental or equipment changes and/or safety education. Most of the studies reported positive changes following the interventions. All of the multi-faceted safety interventions resulted in some positive changes. However, authors noted that evidence for the effectiveness of farm safety education programs was weak and difficult to interpret due to inadequate study designs. They called for more rigorous evaluations of farm safety intervention programs.¹⁸

COMMERCIAL AGRICULTURAL MEDIA and FARM SAFETY

Nature and Role of Commercial Agricultural Media

Agricultural media, as addressed in this review, are commercial media firms that specialize in providing agriculture-related information to farmers and ranchers in the United States. They include commercial farm periodicals (magazines, farm papers, and newsletters), radio and television stations and networks, websites, and other electronic channels these media firms use to provide agriculture-related information to farmers and ranchers. As independent media firms, they sustain themselves through income from subscriptions, advertising, and/or other sources. In this context, information providers such as agricultural organizations, educational institutions, government agencies, agricultural marketing firms, and other groups are not included in this review of coverage by commercial agricultural media. Nor are general media (such as newspapers) that sometimes report on food, farming, rural affairs, and other aspects of agriculture.

These commercial agricultural media firms publish hundreds of general and specialized agricultural magazines and farm papers in the United States, serving farmers, ranchers and other agricultural interests at all levels, local to national. Agriculture reporters employed by

commercial radio stations throughout the nation provide agricultural information on a daily—even moment-to-moment—basis. They do so through their local coverage and through content provided by more than 50 agriculture radio networks. A half dozen specialized television networks provide agricultural news, information, and entertainment on a daily or weekly basis, reaching millions of farm and non-farm viewers through stations across the nation. In addition, these commercial agricultural media firms leverage the equity of their trusted brands (*e.g.*, *Successful Farming* magazine, Farm Progress publications, Brownfield Ag Radio) across robust new networks of farm shows and other live events, social media and other digital products, data for direct marketing, market research and marketing services. Websites and electronic services hosted by these media organizations serve uncounted numbers of farm and nonfarm visitors.¹⁹

Commercial agricultural media consistently rank high in research about where farmers get their information. Results of a 2012 survey among 1062 owners/operators/managers of U. S. farms and ranches provided recent evidence. Respondents were invited to provide information about their use of 15 media channels, ranging from agricultural periodicals, broadcast programs, conferences, and farm shows to dealers, websites, social media, and applications on mobile devices. Eighty-two percent of respondents said they read agricultural magazines/newspapers at least weekly. Ninety-eight percent said they did so at least monthly.²⁰ Similarly, another recent national survey revealed that farmers rely heavily on agricultural radio, television and electronic sources for information about markets, weather and timely news.²¹

Research conducted among farmers in California illustrated the importance of agricultural media as a source of information about farm safety. More farm operators reported receiving their information from magazines and newspapers (87%) than from any other source.²²

Together, these commercial agricultural media represent the nation's largest program of continuing education for farmers, ranchers, and their families. They represent a major thoroughfare for communicating with those audiences about safety. They illustrate why researchers have emphasized the importance of mass communications in promoting healthy alternatives related to farm safety.⁹

Overview of Safety Coverage by Mass Media

It is important to differentiate between coverage of agriculture by general, nonfarm media and coverage by agricultural media. A considerable amount of research and discussion has focused on how—and how effectively—the general, nonfarm media cover agriculture, including safety aspects of it. Serving as example is an article in *Farmers Weekly* headlined, “Sloppy mainstream journalism is bad news for farming.” It involved what was described as a poorly-written article in a daily newspaper about bee safety and perhaps illustrates how the agricultural media—and farmers—throughout the world often hold critical views of how general media cover agriculture.²³

Even so, in this review we will see how some general tendencies of mass media manifest themselves in how agricultural media cover farm and ranch safety. Following is a brief look at research that has revealed how mass media tend to portray accidents, diseases, disasters, and other hazards.

In an article published in the journal, *Risk*, researchers Singer and Endreny reported finding that the media generally do not report on hazards and associated risks.²⁴ Instead, they said, media tend to report on specific instances of a hazard (*e.g.*, a flood, plane crash, or pollution of a town's water supply) that produce or are accompanied by specific harms. They are not

inclined to report about issues, long-term considerations, harms, risks, benefits, ethical or moral considerations, or even economic issues.

Singer and Endreny explained the gap in terms of an inherent conflict between the business of news and what social scientists and others call risk communication. “Nothing in the rules of journalism says that the reporter must, in addition to describing an industrial accident, also inform readers about the likelihood of such an event occurring again, or about the risks posed by the industry in general, or about alternatives and their benefits and costs,” the researchers explained. “The media do communicate risk information. They do it by the prominence and space accorded the account of a hazard...”.²⁴ Julie Sorensen added that economic need to generate income from advertising, subscriptions and other sources makes commercial media responsive to the desires of readers, who may have little interest in information about safety (Sorensen, Julie A. Personal communication,2014).

In their book, *Reporting on Risk*, Singer and Endreny noted that the media are reactive, “not only in the sense of reporting on events that have already occurred rather than anticipating future trends, but also in the sense that they rarely, if ever, structure the terms of the debate about issues. Instead, they adapt the frames provided by dominant social institutions.”²⁵

Commenting on the gap between views held by the health care sector and views held by the media, Pedlar²⁶ observed that a satisfactory outcome requires an understanding of the differing perspectives. It also, he said, requires experience, skill and time in cooperating to produce working relationships, leading to trust on the part of all concerned. “When this does occur, it can result in outcomes that are of benefit to the community.”²⁶

Coverage of Safety by Agricultural Media

Amount of coverage. Relatively little research has addressed the amount of safety-related editorial coverage in agricultural media. A content analysis of a farm paper in Australia emerged as the only research project identified in this literature review as having examined the amount of coverage within the total editorial context of the periodicals examined. Shea and Chapman²⁷ analyzed the content of 76 issues of *The Land*, a weekly farm paper published in New South Wales, Australia, with more than 180,000 readers. Their analysis of 10,336 pages in issues published from April 1998 to October 1999 identified only 54 individual articles and 3 reviews about rural health and safety. The total number of articles in those issues was not reported. Authors concluded that the paper was being under-utilized for news and commentary on rural health and safety issues.²⁷

Topics and nature of coverage. Beyond the amount and share of coverage, most research about safety-related reporting in agriculture has focused on topics covered. And much of that research involved media outside the United States For example, Shea and Chapman²⁷ found that chemicals, chain saws, tractors and motor vehicles accounted for three-fourths of the health and safety topics addressed in *The Land*. Remaining topics involved pumps, sun protection, storage, childcare and general workplace safety.²⁷ The researchers observed that coverage emphasized injuries relating to mechanical equipment used in the rural sector, including information on prevention of injury, safe use of machinery and current legislation.

In Sweden, tractor and motor vehicle safety, risk and injury prevention, general workplace safety, public prosecution, and forestry accidents were the topics addressed in 89% of the 178 safety articles that Lundälv analyzed in the *Land Lantbruk* newspaper.²⁸ Farm-related injury reporting about tractors and motor vehicles made up 35% of those articles, published from 2000 to 2005 .²⁸

These researchers were inclined to call attention to topics which were not covered, as well as those covered. Lundälv, in particular, emphasized how reports tended to focus on circumstances and did not provide information on injury prevention or the advantages of social support and psychosocial intervention for family members.²⁸ The researchers noted little coverage of reactions of family members and relatives, personal and social costs of stress, and long-term social consequences. They saw little coverage about loss of productivity, loss of mental and/or physical ability, and the impacts of morbidity, back pain, sprain, and injury. They cited lack of coverage about consequences for children, drowning, skin cancer, animal-human (zoonotic) illnesses, respiratory diseases, depression and suicide, and other safety and health issues related to farming and farm life.^{27,28}

In Canada, Ozegovic and Voaklander²⁹ took a broader approach to analyzing safety information in media. They reviewed news articles about agricultural injuries and fatalities from 2007 to 2009, using the media database of the Canadian Agricultural Safety Association. The database included articles from national newspapers, magazines with an agricultural focus, and weekly and daily newspapers in Canada. Among the 392 injury/fatality articles included in this analysis, only 10% contained what the researchers identified as a strong prevention message that provided appropriate advice, information for services, or useful prevention strategies to readers. Information reported in most injury/fatality articles was incomplete, especially lacking in why the event occurred and how to prevent it from happening again. Stronger messages appeared slightly more often in rural than urban newsprint. Of special concern was an idea permeating some of the articles that injuries and fatalities are simply part of the job in the agriculture sector. Authors emphasized the need to integrate agricultural safety messages into a societal context.²⁹

Information gaps and issues along other lines have been reported. Reed and colleagues³⁰ analyzed 293 photographs in three popular U.S. farm magazines. Their findings highlighted the risk of emphasizing unsafe practices without realizing it. Twenty-four percent of photos appearing in general articles showed unsafe practices, 56% reflected best practices, and 20% mixed messages. Researchers expressed greatest concern about the high percentage of unsafe photos involving children. They urged media to take more responsibility for safety content of photographs they choose to print, whether in general articles or in advertisements.³⁰ Rein provided a guide for editors, illustrators, cinematographers and photographers in communicating farm safety.³¹

Warnings about readability and legibility also have emerged in agricultural safety research. For example, agricultural periodicals often publish information that includes instruction details, decals, icons and other visual features. An analysis by Tebeaux⁷ of tractor safety warnings in operator manuals raised caution flags. It revealed that many warnings contain excessive information, confusing visuals and safety icons, poor document design and illegible typefaces. The author acknowledged that product liability drives the messages included in owner's manuals.³²

Special Approaches That Agricultural Media Use

Three examples illustrate some special ways in which commercial agricultural media cover and address agricultural safety. Sometimes they provide major support for specific programs of safety information and education. One documented example involved a Safe Farm public health communications campaign conducted in 1992 by Iowa State University Extension. The campaign relied heavily upon volunteer media cooperation.⁹ Efforts included recorded public service announcements sent monthly to Iowa radio stations. Those generated at least 180

hours of free air time on more than 100 Iowa radio stations. News releases sent to newspapers, agricultural periodicals and other print outlets resulted in more than 300 newspaper articles that reached a potential 5.03 million Iowa newspaper subscribers.⁹

A second approach is illustrated by a major initiative of a farm magazine, *Progressive Farmer*, to protect youngsters from the dangers of farm life. Progressive Farmer Farm Safety Day Camps were supported on the national, state, and local levels by numerous groups and individuals.³³ Youths were taught how to stay safe around tractors, grain bins, electrical wires, power tools, and fire. The program grew from 11 day camps in 1995 to 250 day camps in 2001.³⁴ During the spring and summer of 1997, more than 10,000 youngsters took part in 140 day camps in their local communities.³³ In 2013, what is now known as the Progressive Agriculture Safety Day Program supports more than 370 safety day events throughout North America.³⁵

Recognition is another approach used to encourage safety coverage by agricultural media. In 1982, the American Agricultural Editors' Association launched an award program, "Agricultural Safety: Live and Growing." The award recognized member publications that best promote farm safety through editorials, news articles, and features.³⁶

Perspectives of Agricultural Journalists and Editors

Insights about how these important information gatekeepers view agricultural safety and health can be inferred by what has been reviewed above—by the amount and nature of their coverage. Other evidence of anecdotal nature emerges through case reports, such as that from Miller, Schwab, and Peterson.⁹ They reported that the Safe Farm program captured the attention of media in Iowa.

Beyond anecdotal information, relatively little empirical evidence has been gathered to date. Cartmell³⁷ is among those who have surveyed editors about how they decide to print, or not print, agricultural news. The study involved editors of newspapers in Arkansas, so it is tangential to this review. The respondents were not editors of agricultural media, and the invited responses did not focus on safety information. Results suggested that the editors based their decisions on standard journalistic criteria of reader interest, accuracy, timeliness, and trustworthiness of the agricultural information.³⁷

Research by Abrams and Meyers³⁸ addressed more directly the question of how agricultural editors view coverage of safety and health. They used in-depth telephone interviews with seven agricultural editors throughout the nation. Farm safety emerged as one of four major kinds of risk the editors identified. Researchers reported, "Farm safety is a risk issue that most of these editors said they cover on a regular basis. Many referred to farming as 'one of the most dangerous occupations [in the United States].'"³⁸ These agricultural editors expressed interest in providing information that attenuates rather than amplifies risk. Also, they differentiated themselves from daily media and news sources by being inclined to provide advice and actionable solutions to risk issues in agriculture.³⁸

SAFETY IN THE MINDS AND LIVES OF FARMERS AND FARM FAMILIES

No review of literature about providing farm safety information would be useful without examining what farmers and their families bring to it. Audience-oriented perspectives are highly complex and situation bound, beyond the scope of a review effort such as this. The following brief overview examines safety and health within the context of awareness, interest levels, knowledge levels, and attitudes among farmers and their families. An understanding of these dimensions can be vital to those who wish to communicate effectively with farmers and their

families about safety and health. This overview also explores parameters and identifies some themes, challenges and opportunities for communicating about safe and healthy lives—from the audience perspective.

Knowledge About Farm Safety and Health

Dozens of case reports have documented information needs in relation to farm safety across many topics, audiences, and levels. Some have identified lack of awareness, low levels of knowledge, and resulting lack of interest regarding specific activities that may involve personal risk. For example, Johnson highlighted the need for increasing the safety knowledge among immigrant workers, especially given the risk involved in industries such as agriculture and construction.³⁹

Some research projects have demonstrated how added knowledge may influence farming decisions. For example, Traoré *et al.*⁴⁰ found that information about health effects of chemicals for pest control was a driving force behind the adoption of sound environmental practices by potato farmers in the Quebec province of Canada.

However, increased knowledge of risk alone does not necessarily translate into safe and healthy behavior. Beaudin *et al.*¹¹ cited evidence of farmers being aware of unsafe behavior, yet practicing it due to social influences, the image of being a “rugged individual,” and the cost of safety, in terms of time and convenience.

One cannot assume that being in a farm setting assures knowledge of personal risks around the farm. Research by Sullivan revealed that children under observation lacked knowledge about farm safety whether they lived on or off the farm.¹⁶

Beliefs and Attitudes About Farm Safety and Health

Several themes emerge in a review of research literature about beliefs and attitudes that farmers and farm families hold regarding farm safety and health.

Concern. One theme reflects the feelings of concern of farmers and farm families. Wadud *et al.*⁴¹ found farmers in central Missouri concerned about breathing problems (47%), hearing problems (41%), and skin problems (25%). Farmers who believed these problems were preventable were more likely to take precautions to prevent them. The most common barriers to using breathing protection were “I work in an open area” (57%); “I don’t think of it” (41%); and “It is not convenient” (40%). The most common barriers to using hearing protection were “It is not convenient” (50%); “The noise doesn’t bother me” (29%); and “I need to hear the machinery” (28%). The most common barriers to skin protection were “It is too hot to wear long sleeves” (67%); “Sunscreen is too messy” (43%); and “Clothing is too restrictive or uncomfortable” (31%).⁴¹

Miller *et al.*⁹ found that Iowa farm operators considered themselves “very aware” of farm dangers. However, they did not consider themselves “very careful.”⁹ Michigan farmers who took part in a study by Smith *et al.*⁴² reported feeling high levels of threat regarding hearing loss from their activities. Skin disease emerged as a major concern among Latino farm workers in North Carolina.⁴³

A large majority (79%) of adolescent Latino farm workers in Oregon reported that pesticides could cause health problems, and over half reported they had fears about these health effects. McCauley *et al.*⁴⁴ found that almost half (45%) of the young workers in their study reported feeling some concern that they had become sick from being around pesticides. More than 20% reported that they mix and/or apply agricultural chemicals, with few having received

pesticide training. When asked if a teenager working in the field would experience some health problems in the future, 81% reported that it was somewhat to definitely likely. Almost three-fourths said they feel definitely or somewhat likely to experience health problems in the future.⁴⁴

Farmers who took part in a study in Saskatchewan, Canada, were reported to be almost always aware of the risks they take. None considered himself reckless or careless, thinking instead in terms of taking “calculated risks.” They assessed their level of risk in different ways. Those who tended to be less cautious generally compared themselves to other situations that they saw as being more hazardous, thereby reducing their perceived relative risk. Others compared themselves favorably with their fathers’ generation while some even justified the risks they take by drawing on the example of city dwellers.⁹

Farm safety emerged as a concern among Old Order Amish farmers in Pennsylvania. Researchers Rhodes and Hupcey⁴⁵ found special concern about safety risks to children. The most commonly identified hazard was animals, followed by equipment, vehicles, and chemicals. Falls were the most common mechanism of injury.

Iowa farmers who took part in a study by Freeman, Schwab, and Pollard were asked what factor in their background or farming practices had made it possible for them to avoid injury from grain augers.⁴⁶ The most common response (26%) involved the concept of having respect or fear of the equipment, followed by being careful (21%), and using common sense (18%).⁴⁶

Timing aspects of fear about safe farming operations appeared in research by Richter, Hall, and Deere⁴⁷ In a series of focus groups, owners of family farms in Arkansas agreed that planting and harvesting seasons were particularly dangerous times for accidents.

Confidence. The sense of confidence of farmers emerged as a theme in this review of research, with examples ranging across various sectors of activity.

Mariger expressed surprise in some perspectives of Utah farmers who took part in his analysis of agricultural health and safety needs.⁵ The 154 respondents reported having experienced 186 injuries or illnesses related to 21 kinds of agricultural hazard during the previous three years. “The respondents surprisingly reported their own general health to be quite good,” he reported, adding that 75% of the respondents stated that agriculture had a positive impact on their health.”⁵

Tractor operators, in general, do not read manuals, specifically warnings, until an accident or breakdown occurs, Tebeaux reported.⁷ That observation was based on safety literature, discussions with dealers and communication teams employed by manufacturers, and insights offered by agricultural engineering faculty members at the University of Nebraska. Resistance to reading manuals and warnings reflects the operators’ confidence in being able to operate safely without them. Tebeaux also observed that many tractor operators believe themselves relatively invulnerable to accidents, confident in taking “short cuts” that may involve safety consequences and sometimes disabling safety devices. She noted that older operators are particularly resistant to reading safety materials.⁷

Morgan *et al.*⁴⁸ emphasized in their research about tractor overturns that farmers are particularly reluctant to retrofit older tractors with rollover protective structures (ROPS), reflecting their confidence in being able to operate safely without them. Similarly, findings in the Brazilian Amazon led researchers to report that the majority of farmers (78%) did not read the product labels of farm pesticides, some of which are considered extremely hazardous. Farmers felt confident using the chemicals without information from the labels, which they felt the print was too small, instructions were too long, and language was overly technical. They relied mainly on common sense, information from other farmers, and their retailers.⁴⁹

Expressions of confidence also emerged in a study involving custom harvesters. It revealed relatively low concern about, and high confidence in, their knowledge of OSHA regulations and worker's compensation regulations.⁵⁰

Independence. Characteristics of the farmer as independent and autonomous have emerged in studies involving farm safety and health. For example, thematic analysis of interviews with farmers in Texas led Peterson *et al.*⁵¹ to note that all respondents emphasized how farming provided independence. They commonly described farming as a gamble, and themselves as gamblers, through three primary images. First, they described themselves as risk takers, constantly facing uncertainties and proud of being able to respond creatively to them. Second, they reported that while it is "not logical" for them to continue farming, they did so because the lifestyle filled a deeply personal need. Third, they explained that farming provided independence. Respondents admitted a sense of power in "beating the odds." They prized the independent life-style their profession allows, being one's own boss and in control.⁵¹ This sense of autonomy may make them vulnerable to safety and health issues.⁴

A related self-image of the farmer as a "rugged individual" is identified in safe-behavior research, such as that reported by Beaudin *et al.*¹¹ Farmers interviewed by Peterson *et al.*⁵¹ prized the independent life-style their profession allows. They celebrated the ability to choose their own work habits with statements such as, "You're your own boss."⁵¹

Part of the findings comes from Australia where Durey and Lower⁵² have conducted research among farmers regarding farm safety. They concluded: "Many farmers interviewed believed that the knowledge and skills they acquired from their extensive experience of farming was sufficient to represent themselves as experts in the area of safety. While this broadens understanding of the constraining factors to safety implementation on farms, farmers' assertion of their autonomy by not adopting OH&S regulations paradoxically puts their lives at risk and those of their families."⁵²

As noted, expression of independence plays out in feelings of resistance to rules and regulations and sometimes to educational efforts. Even volunteer programs aimed at making farms more safe face questions from farmers. Consideration of a voluntary Certified Safe Farm program raised issues in the minds of farmers who took part in focus groups in Iowa and Nebraska. Evidence appeared in some of the perspectives and questions they raised: "The program should not be mandatory." "Farmers need to have input on what modifications should be made." "Who will be the expert to write up the guidelines?" "Who will monitor the program?"¹⁴

Fatalism. Some researchers have noted evidence that agrarianism influences beliefs of farmers about their safety and health. For example, Wadud *et al.*⁴¹ observed how, in line with agrarian philosophy, farmers may accept difficulties as an unavoidable reality of their occupation—their "cross to bear." Lack of control over weather, crop disease, national economics, international politics, and other adverse life events may keep them from taking precautions to reduce their health and safety risks.⁴¹

This perception is evident in findings such as those observed by Richter *et al.*⁴⁷ among farmers in Arkansas. Researchers reported that participants in the study repeatedly commented that accidents were just a part of the business of farming and farmers must live with them.

Gender aspects. Some researchers have called attention to gender differences in beliefs and attitudes involving farm safety and health. For example, a review by Durey and Lower⁵² summarized research suggesting that men focus on working life, machinery and economic problems, with less concern about risk to others. In contrast, women worry more about safety

and tend to focus on home, family, and environmental risks. Reference is made to research suggesting that women assume a nurturing role, while men adopt a tougher, more rugged role.⁵²

A recent study in Brazil assessed the risk perceptions of farm men, women, and teenage children involving exposure to pesticides. Most men could identify major risks posed by pesticide use. However the vast majority did not attribute much importance to these risks and usually neglected preventive measures such as using protective equipment or observing wind direction during spraying. Among women, all reported that spraying pesticides was a possible threat, although some denied any risk if this activity was done quickly. Researchers summarized responses from teenage children as basically, “If my parents do it, it is okay.”⁵³

AGRICULTURAL MEDIA—APPROACHES THAT MAY SERVE

The literature about safety in agriculture features wide-ranging suggestions about how to communicate with farmers, farm families, and farm workers. This review will focus specifically on approaches that involve, or are seen as holding potential for involving, commercial agricultural media.

Topics

Appendix B lists some 100 farm safety and health topics found in the literature reviewed. Many of the topics were identified through literature searches or selected for study by researchers who analyzed specific aspects of farm safety and health. Some became apparent through insights provided by farmers, ranchers, and family members in the form of concerns, activities, and suggestions. This list is by no means a comprehensive compilation; however, it may reveal gaps and opportunities for researchers and others interested in improving farm safety and health in all its complexity. A general review of terms used in relation to agricultural health and safety has been provided by Donham *et al.*⁵⁴

Messaging

Insights from farmers in Missouri about respiratory diseases, noise-induced hearing loss, and skin cancer led Wadud and colleagues⁴¹ to see potentials in two basic message themes: (a) confirm concern about the problem, and (b) emphasize that it is preventable.

Similarly, in communicating with farmers and landscape workers about hearing protection, researchers Smith *et al.*⁴² recommended three message themes. They suggested developing messages that (a) confirm the threat, (b) provide methods to control or mitigate the harm, and (c) encourage the audience member as being capable of performing the tasks.

Extensive research about risk messaging has addressed the relative advantages of messages that feature fear appeals and that feature narrative, informational, or statistics. Morgan *et al.*⁴⁸ are among those who have studied these aspects in terms of agricultural safety. Responses from farmers they surveyed in Kentucky provided mixed results. Respondents evaluated messages containing narrative-based messages significantly more favorably than informative messages, but not more favorably than messages that feature statistics. Messages containing fear appeals were evaluated more favorably than informative messages. However, a “master message” containing both fear appeals and a narrative was not evaluated more favorably than messages relying on either fear appeal or narrative alone. Researchers concluded that developing a persuasive health campaign is more difficult than it might seem on the surface. They concluded that however tempting it is to “stick to the facts” about an issue, campaigns that rely solely on informing about an issue are not likely to be as successful as those intended to actively

persuade.⁴⁸ Findings of this nature hold implications for the role of agricultural media, which focus primarily on providing information.

A content analysis of farm safety health messages prompted Campbell to emphasize the role of empathy in messaging.⁵⁵ Elements of empathy include understanding how an injury situation that involved someone became possible, judging the circumstance to be realistic, understanding how it could happen to oneself or one's family, feeling an identification with the victim, having thoughtful concern for the victim and feeling emotion.

Research about farm safety also emphasizes the importance of moving beyond simple words. Analysis of a safety campaign that produced change prompted Miller, Schwab, and Peterson⁹ to emphasize relating information to true events, tied to real-life, everyday situations. They found success in providing facts and figures about Iowa farmers, perhaps a neighbor or relative, who had been hurt or killed in farm-related accidents. Every message provided such information, along with practical information about how to avoid specific hazards associated with those accidents.⁹ Brann *et al.*⁵⁶ recommended using content and design that addresses the needs of rural all-terrain vehicle (ATV) riders more effectively than existing ATV safety materials. For example, they cited need for safety messages about appropriated-sized vehicles, safety gear, solo riding, speed limits, and riding locations.⁵⁶

Impacts of “imagining” also have emerged in research involving farm safety. Welbourne *et al.*⁵⁷ found that farmers who were instructed to imagine themselves experiencing negative consequences or risks that could result from negligent use of a skid steer loader were more likely to perceive themselves as susceptible to such accidents. Also, farmers who received a safety message that encouraged them to mentally simulate engaging in safety behaviors reported more positive attitudes toward engaging in the safety recommendations. They also were more likely to indicate that they would share this safety information with other farmers, compared to farmers who received a control version of the safety recommendation information.⁵⁷

Research by Sorensen and associates supports the approach of encouraging farmers to imagine the safety risks they face. Moreover, the types of risk farmers are invited to “imagine” make a difference in the success of that approach. For example, farmers are accustomed to pain, surviving difficult circumstances, being tough and tolerating risk. However, “children, liability, costs, loss of the farm are all reasons for being safe that really work for farmers (Sorensen, Julie, Personal communication, 2014).

Emphasis on Children

This literature review revealed special efforts to inform farm children about safety and encourage them to follow safe practices. Most reports have involved activities that did not center on efforts of agricultural media. Instead, they have tended to feature approaches such as farm safety day camps,^{58,59} living agriculture classrooms,⁶⁰ safety videos,⁶¹ and cartoon-style illustrations and comic formats.⁶² These efforts have emphasized the effectiveness of hands-on, active participation. Impact of fathers as safety teachers appeared in a recent study by Jinnah *et al.*⁶³ in which they found that when fathers were involved in teaching and modeling tractor seatbelt safety for youth, it increased the likelihood of both fathers and youth wearing seatbelts on tractors with rollover protection.

Related Venues for Communicating About Farm Safety

This review focuses on how commercial agricultural media cover safety. In addition, however, many other organizations communicate about farm safety. They use a wide range of

approaches and venues, some of which have been reported and analyzed. We will include only a few to illustrate the variety of venues. For example, coordinated safety efforts, such as the Farm Safety and Health Week of the National Safety Council, have encompassed use of general media, agricultural media, events, recognition programs, and other efforts at local, regional, and national levels.

Some safety promotion efforts have featured venues such as safety day camps, living agriculture classrooms, rural road tractor safety and other demonstrations, role playing, interviews, games, driver education programs, videos, posters, cartoons and comics, safety audits, billboard advertising, health screenings, first aid kits, farm medic training sessions, and school curricula. News articles, public safety announcements, and editorials provided by media have been popular means of promoting farm safety and health.^{9,64}

Use of local community theater was shown to be effective in a study among Hispanic farm workers in the state of Washington. Elkind *et al.*⁶⁵ found that a local community one-act Spanish play by a community players' group increased safety and health knowledge among those who attended. Schermann and associates⁶⁶ found that storytelling was an appealing method for delivering farm safety information to Hmong families in Minnesota and Wisconsin. Other community-based, participatory approaches and lay health promoter programs are being implemented.⁶⁷

The slow-moving vehicle emblem is among the prominent visual means of advancing safe use of farm vehicles and equipment. Uneven use of it among states has prompted calls for providing the driving public with consistent information to help prepare drivers for meeting farm equipment on the road.⁶⁸

Some studies have highlighted the effectiveness of interactive venues, such as using local farmers to provide farm safety training.⁴⁷ The value of broad participation also is reflected in calls for professional communities of practice related to farm safety.⁶⁹ Methods that involve memory aids, behavior reinforcement, and practice have been identified as more effective than more traditional training methods for promoting safe behavior.¹¹

Recent research is also revealing the effectiveness of social media in communicating about safety and health. Sublet *et al.*⁷⁰ found the Science Blog of the National Institute for Occupational Safety and Health (NIOSH) a useful channel for providing safety and health information in the workplace. Gualtieri⁷¹ identified advantages of social media in educating farm families about health and safety based on timeliness, greater reach, and greater engagement.

Coalitions and cooperative programs have shown potential. For example, the Agricultural Safety and Health Council (ASHCA) was convened in 2006 to promote communications and partnerships, promote evidence-based best practices, and engage with researchers in agricultural safety and health. Within two years, the Council had grown to involve 30 organizations.⁷² In the United Kingdom, a coalition of industry organizations was noted for working together to “dispel myths and challenge farming’s macho culture.”⁷³ In Canada, the Government of Alberta provided funding to agricultural societies to help promote farm safety in the province.⁷⁴

SUMMARY OBSERVATIONS

Need and constraints in engaging farm periodicals

This literature review underscores the logic of engaging commercial farm media more extensively in the mission of farm safety. In the United States they serve as one of farmers' most-used and most-valued sources for many kinds of information.

Constraints on that effort emerged from this review. The journalism tradition that farm media follow emphasizes reporting accounts/news of incidents rather than risks, hazards, and prevention. The tradition provides no mandate for advocating in the news pages. As a result, accident reporting is expected to characterize much of the coverage commercial farm media assign to farm safety. This review identified few content analyses that reveal the amount and nature of safety information in such media, so a more definitive understanding of this constraint awaits further research.

One research effort provided evidence that editors of commercial agricultural periodicals hold positive attitudes about covering farm safety. However, an understanding of interests and attitudes held by agricultural journalists and editors remains open to further study, as does an understanding of connections between their attitudes and how they actually report on this topic. For example, their interests in safety may be tempered by lack of an advertising base and limited if their studies of readership, listenership, and viewing patterns show relatively low audience interest in safety articles.

What People Bring to the Interaction

Several themes emerged from parts of the review that involved what farmers, farm families, and farm workers bring to information about their safety. They show concerns about threats to their safety, such as exposure to sunlight and harm to their children. At the same time, they show signs of confidence in their knowledge and common sense, matched with the inclination to downplay risks. They tend to see themselves as independent risk-takers who can beat the odds. And, under that assessment of risk may lie feelings that accidents are part of the farming business and that difficulties are an unavoidable reality. Another apparent theme involves differences in how farm men and women view risk and safety.

Outcomes of Safety Information

The review identified evidence that safety information can change knowledge levels, attitudes, and intentions. However, these findings fit within a larger body of research that cautions against assuming that improved knowledge, attitudes, and intentions will translate into desired action. Human behavior remains too complex to categorize so simply. Farmers and farm workers may understand risks they run in certain practices, but decide against minimizing them. Studies in this review identified risks such as time pressure, long work hours and sleep deprivation, uncomfortable safety equipment, financial limitations and costs of safety measures, inconvenience, past success with unsafe acts, language, literacy, age, hearing problems, weight and mobility, medications being taken, and beliefs about work and health.

Implications and Ideas for Safety Coverage and Messaging

These resources identified some promising ideas for engaging commercial farm media more effectively with the interests of farm people and the goal of safe farming and ranching. Included among these ideas and approaches are the following:

- The literature identified more than 100 farm safety topics to cover and provided evidence about which topics may deserve highest priority for coverage.
- It revealed successful messaging strategies for reporters, including uses of empathy, and “imagining.”
- It highlighted the need for reporters to cover farm safety differently for men and women.
- It identified potentials for increasing safety coverage by tying safety information and education with current and potential safety regulations that affect farms, farm families, and rural communities—and attract their attention.
- In terms of media relations, it called attention to the need to differentiate between the journalistic criteria that reporters and editors use for reporting news and the stances they can take through their editorial pages and policies. It illustrated some special ways in which farm periodicals have engaged with farm safety, beyond news coverage. Examples included sponsored safety events for youths and recognition programs. The review provided a variety of other venues for engagement, ranging from videos and community theater to health screenings and school curricula.
- It emphasized potentials for greater collaboration between farm media and organizations interested in farm safety. It also provided some examples and ideas for doing so.
- It provided evidence pointing to the potentials for commercial farm media to use their relatively new social media channels to report on safety.

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APPENDIX A

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APPENDIX B

Topics Identified in the Review of Literature

- Aircraft—risks, management
- Alcohol use
- All-terrain vehicles (ATVs)
- Animal behavior, feeding, care
- Assistive technology
- Augers, conveyor belts, elevators—risks, transportation, safe use
- Barbed wire—risks, use
- Bathrooms—access
- Burns
- Chain saws
- Chemicals/pesticides/herbicides/fungicides—mixing, handling, use, storage, disposal, spills
- Chemicals other than pesticides
- Child labor laws
- Child safety—babysitting, other
- Climbing, heights
- Clothing—selection, washing after chemical applications
- Confined spaces
- Crush injuries
- Dairy pipeline cleaning
- Depression
- Drugs
- Dusty environments
- Electrical equipment, wiring
- Emergency response
- Ergonomics
- Eye care
- Facilities—confinement buildings, silos, manure pits, gates, fences, stairways, railings, other
- Falls/falling hazards
- Fatigue—risks, management
- Feeding sites
- Fertilizers—risks, use
- Fitness
- Fire—prevention, fighting, risks
- Firearms
- First aid
- Forestry, tree care
- Fuels
- Fungicides—risks, use
- Gases, fuels
- Global positioning system (GPS)—risks, safe use
- Grain—risks, handling
- Ground conditions/terrain
- Hazard identification and solutions
- Hearing—risks, management
- Heat sources/burn hazards
- Heights—risks, management
- Helmet—selection, use
- Horses—risks, riding, management
- Insects—risks, management
- Insurance aspects
- Isolation—risks, management
- Labels—design, legibility, comprehension
- Leaks and spills
- Legislation
- Lifting—risks, techniques
- Light and lighting—importance, risk of working after dark, management
- Livestock—behavior, risks, medicines, management
- Logging
- Machinery and equipment—operation, repair
- Molds
- Motions—picking, weeding, other
- Mower—risks, management
- Musculoskeletal damage
- Noise/sounds
- Odors—risks, protection
- Operation instructions/manuals
- Pets
- Play areas
- Poisons/poisoning—types, risks, prevention, treatment
- Power take-off (PTO)—risks, safe operations
- Protective equipment
- Pumps—irrigation, wells, safe use
- Railroad crossings
- Repetitive motions
- Road and pedestrian safety
- Regulation
- Rollover—prevention, management

- Signs, symbols, emblems, logos
- Safety equipment—PTO shields, cages, guards, fire extinguishers, other
- Seatbelts—roles, effectiveness, use
- Shop and workplace safety
- Skin—work-related problems (sun, plant, insect, moisture, chemicals), care
- Solvents, cleaners
- Stress—factors, effects
- Suicide
- Sunlight—risks, precautions, management
- Swimming—risks, care
- Temperature extremes
- Tobacco use
- Tools—power, hand-risks, usage
- Tractors and vehicles—risks, rollover, operation, other
- Traffic—signage, speed limits, safety rules
- Vibration—risks, management
- Violence prevention
- Warning—decals, symbols
- Water—access, supply, consumption
- Water—quality for drinking, testing
- Water—working in or near, water bodies
- Welding—risks, management
- Wet and slippery conditions, locations
- Zoonoses

LAYING A NEW FOUNDATION

Content Analysis of Safety Coverage by Trade Periodicals in Three High-Risk Industries: Agriculture, Transportation, and Mining

INTRODUCTION

This pilot project features a content review of a selection of trade periodicals from the fields of agriculture, transportation, and mining—three of the nation’s most hazardous industries in terms of human safety. The analysis involved collecting data on the amount and general nature of occupational safety coverage. It offers a comparison across these three fields, providing insight on how agricultural publications compare to those serving other industries. It also examines the nature of, and reasons for, similarities and differences.

Research Questions

Q 1. How does the amount of coverage about human safety compare among the analyzed trade periodicals that serve the agriculture, transportation and mining industries?

Q 2. How does the nature of coverage about human safety compare among the analyzed trade periodicals that serve the agriculture, transportation and mining industries?

METHODS

Selection Process

For this study, the list of selected agricultural, transportation, and mining periodicals was cultivated by first evaluating the availability of relevant periodicals through databases of the University of Illinois Library. A list from these three fields was drafted from the University of Illinois, Urbana-Champaign databases^a and expanded upon with special resources from the Communications and Funk ACES Libraries.^b These initial searches identified 160 agricultural, 38 transportation, and 10 mining periodicals for consideration.

Three requirements were identified for a periodical to qualify for this study: (1) it should hold national interest; (2) issues of it should be available for a 5-year period, from 2008 through 2012; and (3) digital holdings should be easily accessible for use. The locality and the time limits were proposed in order for the findings of this study to be relevant to the coverage trends of the present, adding value to the research.^c

The first round of the selection process entailed checking the University of Illinois Library holdings to be sure that the full text was indeed available for immediate perusal. The next round eliminated periodicals that did not fall within the decided 5-year span. Another investigation revealed that a select number of publishers needed to be contacted, as a few major agriculture titles did not provide virtual archive access to the public or to the University^d. Challenges emerged through unavailability of content for requested years and through lack of response. In one case, a combination of print and digital format was provided. However, time constraints did not permit this periodical to be included.

^a Mostly ProQuest, LexisNexis, and Ebsco.

^b The 2013 AgriMarketing Services Guide and the Standard Rate and Data Service.

^c The majority of the originally-included mining periodicals were international, and therefore excluded.

^d Some of these included Successful Farming, Progressive Farmer, Farm Journal, AOPA Pilot, Flying Magazine, BusRide, and The Trucker.

The final round of elimination provided what the researchers considered a reasonable number for the amount of time allotted, as the list was still quite large. Any additional eliminations were due to formatting challenges or inconsistent access found further along in the process.

The final list of selected periodicals is shown in Figure 1. There are 140 articles from 9 agriculture periodicals, 282 articles from 7 transportation periodicals, and 106 articles from 2 mining periodicals.

Figure 1. List of selected periodicals.

<p>Agriculture (9) American Vegetable Grower Beef Corn and Soybean Digest Cotton Grower Farm Industry News Florida Grower Western Farm Press Western Fruit Grower Ag Week</p>	<p>Transportation (7) American Trucker Material Handling Product News Motor Age Professional Distributor Railway Age Roads & Bridges Commuter-Regional Airline News</p>
	<p>Mining (2) Mining & Quarry World / Mining World Coal Age</p>

Content Analysis

Keywords

A “keyword” part of the content analysis was structured to feature two aspects of media coverage. One aspect involved recording the number of occurrences of each of 20 keywords in each journal article. This “common denominator” list of keywords was developed as a means of identifying safety-related terms that might be found in safety articles throughout all three industries. Selected by a safety specialist, the list excludes terms such as “tractor,” which would bias toward the agriculture industry. These keywords were cultivated by prior knowledge of the industries and were supported by initial perusal of the resources.

The keywords included:

accident	safety inspection	safety strategy
emergency	safety regulation	safety strategies
emergencies	safety protocol	risk communication
hazard	safety technology	risk assessment
die	safety technologies	public safety
death	safety assessment	injury prevention
injury	safety equipment	

One aspect of this analysis was to filter the articles that discussed safety from the ones that did not, sorting through the articles by relevance. Once the final publication list was compiled from the process detailed above, each article ran through a similar script of cultivated safety keywords:

accident* OR emergenc* OR hazard* OR die OR death OR injur* OR (safety
 ADJ (inspect* OR regulat* OR protocol OR technolog* OR assess* OR

equipment* OR strateg*) OR (risk ADJ (communicat* OR assess*)) OR (public ADJ safet*) OR (injur* ADJ prevent*)^e

A scripting program was created with these keywords so that each article PDF could be scanned and documented.^f Each article was converted into machine-readable text documents and run through the program, resulting in a total keyword count for each word.

The keyword list and script were helpful in that they recognized the articles which included any or all of these keywords and discarded the articles that did not include these keywords and were therefore considered not safety related. This string was slightly altered for each database for optimal results.

Content Review and Coding

One of the goals of this project was to gather information about the quantity and nature of safety coverage within and among the three industries. This was accomplished by manual review of articles, recording those that included accident/incident reports and those that included safety tips and/or number statistics. The reporting articles were more or less news reports that included a summary and facts about an incident or accident. This was valuable information, because this kind of coverage determines how informed the readers are about the possible dangers in the field and the level of safety in their workplace. These features were coded using a created database^g; each article was read, documented, and coded by one researcher.

“Statistics” were defined as numbers that represented fatality and injury totals that occurred in the workplace. This portrayed the extent to which the number of fatalities and injuries was presented by journalists to impress on the reader the importance of safety procedures. A “y” or “n” in the statistic column signaled that the article did or did not include safety statistics.

The coding for safety “tips” was similar to statistics, with the exception of a “p” for “promotional.” This meant that the type of technology or equipment that was being discussed reported safety features or was created to decrease worker risk, thus increasing worker safety. This kind of discussion within an article demonstrates that safety is an active concern within the occupational field and is being reviewed for the reader’s awareness.

In addition, each article was coded with a “1” for “informative writing” and a “3” for a “narrative” account. An example of informative writing would be a news report; an example of a narrative would be a first-person account of an incident. A few articles included both of these; such articles were included in the narrative count (see Table 1). This was important for determining the contextual nature of safety coverage. The results help determine which style of writing is most used for promoting preventative measures for readers.

It is important to note the emphasis on human safety. Articles that addressed chemical, weather, or crop safety were not included, unless they also included human safety. Articles that included tips about protecting equipment from wear, crops from failing, or livestock from disease were eliminated from the study as they did not pertain to protecting the worker from injury.

^e Script created by Matthew Harrington.

^f Program and script created by Thomas O’ Malley.

^g A Google Docs spreadsheet was used so team members could easily share and edit.

Table 1. Narrative/First-person Accounts of Accidents/Incidents

	Agriculture	Transportation	Mining
Narrative account of incident/accident	7	3	1
Percent (%):	47	9	10

RESULTS

Research Question 1

How does the amount of coverage about human safety compare among the analyzed trade periodicals that serve the agriculture, transportation and mining industries?

1. Total number of safety-related articles in all periodicals, by industry

The 18 trade journals in this content analysis published 528 safety-related articles during the 5-year period from 2008–2012. Table 2 reveals that the 9 Agriculture periodicals published 140 of such articles, with a range from 4 to 50 articles in the various periodicals. The 7 Transportation periodicals published 282 safety-related articles, with a range from 7 to 59 (Table 2). The 2 Mining periodicals published 106 safety-related articles, with a range from 16 to 90 (Table 2).

Table 2. Coverage about human safety c among analyzed trade		Table 3. Safety-related articles in periodicals published monthly (or nearly monthly.)	
Publication Title	# of Safety Articles	Publication Title	# of safety articles
Agriculture Safety Totals (140)		Agriculture Publications	
A1	7	A1	7
A2	9	A2	9
A3	14	A3	14
A4	31	A4	31
A5	6	A5	6
A6	8	A6	8
A7	11	A8	50
A8	50	Total:	125
A9	4	Average:	17.9
Transportation Safety Totals (282)		Transportation Publications	
T1	31	T1	31
T2	58	T3	36
T3	36	T4	7
T4	7	T5	45
T5	45	T6	59
T6	59	Total:	178
T7	47	Average	35.6
Mining Safety Totals (106)		Mining Publications	
M1	16	M2	90
M2	90	Total:	90
		Average	90

These data provide a useful indication of the amount and range of safety coverage. However, they do not lend themselves to comparisons within a given industry sector, or among the three sectors, because the periodicals vary in frequency of publication. Most are published monthly, but some are published as often as weekly, and some as seldom as four times a year.

2. Average number of safety-related articles, by industry

An analysis of numbers of safety-related articles in periodicals published monthly or near-monthly permits one to compare the amount of coverage across these three industries. Table 3 identifies the seven monthly Agriculture periodicals, seven monthly Transportation periodicals, and one monthly Mining periodical involved in this analysis.

Totals show that the Transportation and Mining periodicals averaged considerably more safety-related articles than did the Agriculture periodicals. The Transportation periodicals averaged 35.6 safety-related articles per periodical during the 5-year period, and the sole monthly Mining periodical averaged 50 safety-related articles. The seven monthly Agriculture periodicals averaged only 17.9 safety-related articles during the 5 years.

These data also confirm the wide range of safety coverage by monthly periodicals within the industries. For example, the number of safety-related articles published in the Agriculture periodicals during the 5 years ranged from 6 to 50, and in the Transportation periodicals from 7 to 59.

Research Question 2.

How does the nature of coverage about human safety compare among the analyzed trade periodicals that serve the agriculture, transportation and mining industries?

a. Safety aspects addressed (keyword analysis)

Keywords appearing most frequently in articles across the three industries were: “accident,” “die,” “death,” “hazard,” “emergency,” and “injury” (Table 4).

Agriculture articles contained the highest frequencies of those words. “Accident” was most prevalent, appearing an average of 1.5 times in each Agriculture article, 1.3 times in each Transportation article, and 0.87 times in each Mining article. Articles in Agriculture mentioned “death” or “die” an average of 1.3 times per article, more than Transportation (0.75) and Mining (1.24). Agriculture articles mentioned “injury” 0.56 times, compared with Transportation (0.28) and Mining (0.45).

Table 4. Keyword frequencies.

Keyword	Agriculture	Transportation	Mining	Totals
Accident	212	362	92	666
Emergency	65	91	96	252
Emergencies	2	6	4	12
Hazard	92	109	83	284
Die	84	175	111	370
Death	100	37	20	157
Injury	78	79	48	205
Safety inspection	4	30	0	34
Safety regulation	6	2	3	11
Safety protocol	0	1	1	2
Safety technology	1	8	0	9
Safety technologies	0	5	0	5
Safety assessment	0	1	1	2
Safety equipment	6	7	2	15
Safety strategy	0	0	0	0
Safety strategies	0	1	0	1
Risk communication	0	0	0	0
Risk assessment	0	5	2	7

Public safety	0	3	0	3
Injury prevention	1	0	0	1
Totals:	651	922	463	2036

Appearing much less frequently in all three industries were words associated with prevention, such as: “safety inspection,” “safety regulation,” “safety technology,” and “risk assessment.”

b. Other aspects of content in safety-related articles

Non-accident/incident reports dominated safety coverage in all three industries. Such reports accounted for 89% of safety-related articles in Agriculture periodicals (125/140), 88% in Transportation periodicals (248/82), and 91% in Mining periodicals (96/106).

Some differences among the three industries emerged in the articles that involved accidents/incidents. Table 5 shows the number of articles that included accident reports. Those articles were coded as to whether they included safety tips and/or statistics. The Agriculture accident articles were more likely to include tips and statistics than the other industries and were much more likely to use first-person narration.

Table 5. Number of articles that included accident/incident reports

Type of Report	Agriculture	Transportation	Mining
Reports with statistics, no tips	3 (20%)	2 (6%)	0 (0%)
Reports with both statistics & tips	2 (13%)	4 (12%)	0 (0%)
Reports with tips, no statistics	2 (13%)	3 (9%)	0 (0%)
Accidents with neither	8 (54%)	25 (73%)	10 (100%)
Total:	15	34	10

When considering all safety articles, not just articles describing accidents, inclusion of tips and statistics were much more likely in Agriculture publications (Table 6). Nearly 48% Agriculture safety articles (67/140) included tips and nearly 34% (47/140) included statistics.

Table 6. Tips and statistics in all safety articles

	Agriculture	Transportation	Mining	Totals
All safety articles	140	282	106	528
Tips included	67 (47.9%)	54 (19.1%)	12 (11.3%)	133 (25.2%)
Statistics included	47 (33.6%)	45 (16.0%)	15 (14.2%)	107 (20.3%)

DISCUSSION

We are mindful of the pilot nature of this content analysis and the limitations accompanying it. As a pilot effort, it is limited in the extent to which findings represent trade periodical coverage of safety within and among these three industries.

At the same time, however, our review of the literature suggests that this content analysis features pioneering efforts to increase understanding about matters of major importance to the nation’s safety mission.

- This is one of few content analyses that have assessed the nature of safety coverage by U. S. agricultural periodicals, which serve as a major channel of safety information for producers. Furthermore, it sheds light on aspects of safety coverage that have not been assessed in past research.
- It may be the first such content analysis (or one of few) that reveals amounts of safety coverage in the United States.

- It is believed to be the first content analysis that compares safety coverage by trade periodicals in three of the nation’s most hazardous industries.

What do the findings represent, within that context? What may account for the findings and what are the implications of them?

Considering the Amount of Safety Coverage

No baseline is available to permit interpretation of trends in the amount of coverage identified and forces influencing it. For example, one cannot rigorously assess whether 140 safety-related articles in these agricultural periodicals during the 5-year period represent high, medium, or low amounts of coverage. Two findings stand out, perhaps.

One observation is that periodicals in all three industries varied greatly in the amount of their safety coverage. Future research could help identify reasons for variation, whether rooted in the preferences of individual reporters, editorial policies of periodicals, varied features of the industry sectors, or other factors. Opportunity seems apparent for considerable expansion of coverage by periodicals in all three industries.

The second—and perhaps more revealing—finding is that, on average, periodicals covering the transportation and mining industries ran considerably more articles than those covering agriculture. This research project did not compare the level and nature of regulation in these three industries. However, regulations are observed to be relatively more abundant and stringent within the transportation and mining industries. In that context, one possible interpretation is that greater periodical coverage in those two industries is related to greater levels of safety regulations within them. This interpretation would be consistent with a suggestion by Purschwitz that regulation serves as a stimulant to communications and education, as well as an alternative. “People engage in this communication because they are forced by regulations to do certain things and also to stay on top of their game.”(Purschwitz, David. Personal communication, 2014.)

Considering the Nature of Safety Coverage

The cross-industry analysis of keywords found in safety articles reveals how the trade periodicals in all three industries are oriented more to events (e.g., “accident,” “injury,” “death,” “emergency”) than to prevention (e.g., inspection, strategy, assessment, regulation). This tendency is consistent with other research described in the literature review. Reasons for the tendency may trace to traditional journalism guidelines that place more emphasis on reporting what happened (e.g., prominence, timeliness, nearness, human interest) than on what might happen and how to avoid it.

Despite this tendency, the content analysis showed that most safety-related articles did not feature specific accidents or incidents. In fact, “non-accident/incident” articles made up 88-91% of the safety-related articles across the three industries. This gap between journalistic orientation and coverage-in-practice may represent lack of access to information about specific accidents or incidents. Such an interpretation would be consistent with the responses from surveyed agricultural journalists. They expressed active interest in gaining access to more reports of safety-related incidents.

Across the three industries, agricultural periodicals clearly showed the most inclination to include safety statistics and tips in articles that involved specific accidents/incidents. Reasons are not clear. However, this tendency may be rooted in the Extension heritage of agriculture in America, emphasizing education to help farmers make informed decisions. If so, within

agriculture the Extension concept represents opportunity to expand the platform for educational content in safety-related articles. Within the transportation and mining industries, it may serve as a promising model for helping trade periodicals gather and use such content.

Considerations for Follow-Up Methods of Analysis

We would note several observations and suggestions about methods used in this analysis, and in content analyses that may follow.

First, we regret not being able to quantify the amount of safety-related coverage as a share of the total “news hole” of editorial material in the periodicals analyzed. Varied digital formats for these periodicals did not permit identifying the total number of articles in a given issue. Nor did they permit identifying the total number of column inches of editorial material in an issue. For example, some periodical databases featured a number count of articles, and others did not. Perhaps methods can be identified for adding these comparative dimensions to future content analyses.

Second, the content of these trade journals across the digital databases used was not uniform, and this posed problems with content analysis. Extraneous features (i.e. comics, sidebar text, announcements, advertisements) were included or excluded, depending on the database. This disrupted the accuracy and consistency of the word count, which can be a valuable measurement of an article’s length. For further research, a single database could be used or in-print versions of the articles could be counted to ensure the utmost word count accuracy. These data would be valuable to determine the prominence of safety and health articles in each journal and field.

Third, the reliability of future editorial content analysis will be strengthened by adding to the number of persons conducting it. Time and budget constraints in this pilot effort limited the analysis to one reviewer.

LAYING A NEW FOUNDATION

Communicating about Farm and Agricultural Safety—Reporters/Editors Survey

INTRODUCTION

Commercial agricultural media are important information sources for farmers and farm families, as well as for other change agents in the agriculture industry (e.g., insurers, bankers, advertisers). The 2012 Media Channel Study revealed that 82% of U.S. farmers used printed agricultural magazines and newspapers at least weekly. If agricultural media gatekeepers can be influenced on the importance of agricultural occupational safety, then farmers, agricultural workers, and their families can be reached with improved prevention messaging.

This particular research dimension of the pilot project, “Laying a new foundation for engaging agricultural media gatekeepers in covering agricultural safety and health,” consisted of a survey of agricultural journalists. The survey was one of four key components of the pilot project, along with: a systematic type of literature review of agricultural occupational safety coverage; a comparative content analysis of safety articles published in three high-risk industries—agriculture, mining, and transportation; and a survey of university faculty members who teach courses in agricultural journalism and communications.

It is expected that pilot findings will guide efforts to encourage increased safety coverage and provide resources that agricultural journalists can use to cover safety more compellingly.

OBJECTIVES

Objectives of the journalists’ survey were to assess:

- attitudes of agricultural journalists toward occupational safety coverage;
- their sources of safety knowledge;
- their preferred methods of accessing safety knowledge.

The survey also asked about media tools used by agricultural journalists, whether they or a family member had experienced a serious injury or “close call” related to farming, and demographic information.

METHODS

An online survey was chosen involving members of the American Agricultural Editors Association (AAEA). The association, established in 1921, serves editors, writers, and photographers (journalists) working for agricultural publication companies, as well as communications professionals working in agribusiness and producer organizations. This survey was sent to 150 journalists. It was not sent to ag communicators (e.g., public relations and marketing professionals).

Research Electronic Data Capture (REDCap), a secure web application for building online surveys for research studies, was used for this survey. Respondents were invited to answer a 17-question survey. Questions were in the format of Likert scale, check-all-that-apply, and demographics. Topics addressed and wording for the instrument were guided by a review of literature about farm safety communication, a content review of agricultural publications, an informal face-to-face survey of 25 journalists and other media professionals at a professional conference in August 2012, and interaction with journalists in a media relations capacity.

The survey was developed collaboratively by project team members in the National Farm Medicine Center and the Agricultural Communications Documentation Center at the University

of Illinois, Urbana-Champaign. The survey was sent by email to the 150 identified journalists on January 29, 2014. Two reminders were sent by email during the 3-week response period.

The effort resulted in 41 completed questionnaires, a response rate of 27%. The responses represent a substantial majority of editorial departments at top-circulation agricultural media groups.

RESULTS

Research Question 1

From your perspective, how important is media coverage of the occupational safety of farmers, their families and farm workers in comparison with other aspects of agriculture?

Respondents place high priority on safety coverage (Table 1). Ninety-eight percent (40/41) answered that safety coverage is “important” or “somewhat important.”

Comments from respondents included:

- “...We do not cover it enough. With greater coverage it might actually remind governments about the need for help and improved safety standards for what is a very dangerous profession.”
- “Safety articles are important for farm audiences not just for the safety information they deliver ... but also because they illustrate the publication’s interest in the reader as a whole person. ... That is a special relationship between a trade pub and its readers.”
- “I think most farmers are aware of dangers but choose to take risks anyway.”
- “Important, but I often wonder how well these stories are read – except coverage of fatalities.”

Importance	Number	Percent
Important	32	78%
Somewhat important	8	20%
Neutral	0	0%
Somewhat unimportant	1	2%
Unimportant	0	0%

Research Question 2

How would you describe occupational safety coverage by farm magazines and farm papers compared with media coverage of safety in other industries?

Eighty-four percent (34/41) responded “adequate” or “somewhat adequate (Table 2).”

Comments from respondents included:

- “There is often knee-jerk coverage following an incident, but ag media are hesitant to ‘call out’ safety issues that farmer reader/listeners/readers may see as intrusive or regulatory.”
- “Company-published industrial magazines put great emphasis on safety, which is exemplary.”
- “Coverage tends to focus on kids camps which are important, but ignore adult dangers.”

How adequately	Number	Percent
Adequate	12	29%
Somewhat adequate	22	55%

Neutral	3	7%
Somewhat inadequate	3	7%
Inadequate	1	2%

Research Question 3

How would you describe the reporting by farm magazines and farm papers in explaining the scope of agricultural injury issues, and providing practical safety information?

Respondents thought the coverage was good overall amongst agricultural publications (Table 3), with 77% (31/41) saying “adequate” or “somewhat adequate.”

Comments from respondents included:

- “In my jurisdiction it is very hard to get facts and figures. Government cutbacks have eliminated farm safety specialists and the information on injuries and deaths is often old by two or three years.”
- “It is a challenge to report on safety in a way that will engage farmers.”

Table 3. How adequately injury reporting is covered by the media.		
How adequately	Number	Percent
Adequate	9	22%
Somewhat adequate	23	55%
Neutral	3	8%
Somewhat inadequate	5	12%
Inadequate	1	2%

Research Question 4

How would you describe your own reporting of occupational safety in agriculture?

Journalists gave themselves a good rating overall (Table 4), on the line between “adequate” and “somewhat adequate” (30/41, 74%).

Comments from respondents included:

- “I have a very busy beat and quite often do not have much time to devote to that coverage.”
- “We spend over \$10,000 annually in readership studies, safety is a complex topic and difficult to engage readers. That’s with 30-plus years of third-party data.”
- “Often times it’s hard for someone who was in an accident to open up about it. That can be a roadblock to coverage because we lack the gripping first-person accounts.”

Table 4. How journalists rated their own reporting of safety.		
How adequately	Number	Percent
Adequate	13	32%
Somewhat adequate	17	42%
Neutral	5	12%
Somewhat inadequate	5	12%
Inadequate	1	2%

Research Question 5

What type of article do you consider most appropriate for reporting on agricultural safety?

A contradictory gap emerged. Only one responded “Follow-up to accident,” yet the comments indicate a strong feeling that accident follow-ups are effective and dominate safety coverage (Table 5).

Comments from respondents included:

- “I would prefer to run the prevention message, though the ‘after accident’ report can be quite effective.”
- “Faces make the message more relevant than a list of accidents and deaths.”
- “Localized accidents always seem to hit home the most with growers, making them slow down, at least for a while. ...”
- “Preventive is a continuing need, but attention spans are typically more attuned following a real incident.”
- “Together with personal stories from farm families the educational message hits home more effectively. Alone, pretty un-sexy.”
- “Prevention is clearly the best course safety-wise, but anecdotes from accidents tend to really capture readers and may have a better shot at inspiring changes in behavior.”
- “It’s hard to deliver a prevention message without a scary example.”

Type of article	Number	Percent
Education, prevention	28	69%
Follow-up to accident	1	2%
Both	12	29%

Research Question 6

What source(s) do you use in covering stories about people’s safety in farming and agriculture (Check all that apply.)

Nearly 90% of respondents said they utilized “university specialists/educators,” despite the fact universities have drastically cut staff devoted to farm safety over the past decade (Table 6). More than three-quarters indicated they rely on “farm safety organizations.” More than half used “farm associations” and “USDA/other federal, state agencies.” When asked how frequently they accessed these sources, most answered “sometimes.”

Comments from respondents (“Other sources”) included:

- “Court cases where farm workers sue after a death or injury as well as tips from readers.”
- “Companies that have honored facilities for good safety records”
- “Farmers who have experienced accidents.”
- “Insurance company program people.”
- “Occupational Safety and Health Administration.”

Table 6. Sources used in covering stories about safety.

Sources	Number	Percent
University specialists/educators	36	88%
Farm safety organizations	32	78%
Farm associations	24	59%
USDA/other federal, state agencies	23	56%
Other	7	17%
Journalists in other media	5	12%
None	2	5

Research Question 7

How would you describe the information available to you for understanding and covering agricultural safety?

Only five (12%) answered negatively, “somewhat inadequate” (Table 7). However, three comments challenge safety advocates to do better.

Comments from respondents included:

- “It seems to come out once a year for farm safety week then goes silent.”
- “It’s not easily accessible. We have to search for it.”
- “I don’t think I’ve received one news release from any organization related to safety since I started as editor a year ago. If news releases are sent to me we would run them on the (web) site and perhaps in the magazine as well.”

Table 7. How adequate available information is for understanding/covering safety.

How adequately	Number	Percent
Adequate	14	34%
Somewhat adequate	20	49%
Neutral	2	5%
Somewhat inadequate	5	12%
Inadequate	0	0%

Research Question 8

What types of information and information sources would you find useful in covering agricultural safety? (Check all that apply.)

Nearly all (38/41) prefer statistics on farm injury (Table 8). Statistics, along with the previously indicated accident story angle, seem to be the easiest pegs on which to hang stories. The next-most popular source was “contact lists of safety experts” (85%).

Table 8. Type of information found useful in covering safety.

Types of information	Number	Percent
Statistics on ag injury	38	93%
Contact lists safety experts	35	85%
Death/injury reviews	27	66%
E-mail alerts to safety-related articles	26	63%
Public service ads	8	20%
Other	1	2%

Research Question 9

What media skills and social media tools do you use (Check all that apply.)

The journalists report heavy use of social media, with more than half of them sharing content via micro-blog, video and long-form (e.g., Facebook, Google+) tools (Table 9). Nearly

half use long-form blogging and photo sharing. Just 10% share via audio (podcast), perhaps not surprising given these are “print” journalists.

Table 9. Media skills and social media tools used.		
Skills, social media tools	Number	Percent
Long-form sharing (Facebook, Google+)	31	76%
Video sharing (You Tube, Blip)	23	56%
Micro-blogging (Twitter)	23	56%
Long-form blogging (Wordpress)	19	46%
Photo sharing (Pinterest, Flickr)	19	46%
Audio sharing (Vocaroo, Sound Cloud)	4	10%
Other	2	5%

Research Question 10

Which factor do you think is most important in creating a safer agricultural work environment?

More than half responded “industry-endorsed best practices,” indicating a preference for agriculture regulating itself. Alternately, journalists overwhelmingly believed that regulations are least effective (Table 10).

Table 10. Effective factors in creating a safer agricultural work environment.		
Factor	Number	Percent
Most Effective		
Better design of equipment, buildings	15	37%
Industry-endorsed best practices	21	51%
Safety regulations on farms	5	12%
Least Effective		
Better design of equipment, buildings	2	5%
Industry-endorsed best practices	8	20%
Safety regulations on farms	31	75%

Research Question 11

Have you or a family member had a serious injury or “close call” doing work related to farming and agriculture?

More than half (30/41, 73%) responded that they or a family member had experiences a serious injury related to farming and agriculture.

Comments from respondents included:

- “My uncle was trapped inside a combine and died. Another uncle was trapped by a baler and suffocated. My father’s left hand was mangled in a baler. I have been attacked by livestock.”
- “My uncle was killed in a tractor rollover.”
- “We had numerous close calls in our family. We had neighbors who weren’t so lucky.”
- “My father had his arm cut off in a combine accident.”
- “My uncle was killed in a hay baling accident.”

Research Question 12

How would you describe your level of interest in the agricultural safety aspects of the subject area(s) you cover?

An overwhelming majority (38/41) said they are “interested” or “somewhat interested” in the safety aspects of their beats (Table 11).

Level of interest	Number	Percent
Interested	24	59%
Somewhat interested	14	35%
Neutral	1	2%
Somewhat uninterested	1	2%
Uninterested	1	2%

Research Question 13

How would you best describe your position?

Of journalists responding, 33 (80%) indicated their position as reporter or editor, and 8 (20%) indicated their position as freelance reporter.

Research Question 14

For how many years have you covered agriculture?

Of respondents, 93% had at least 10 years’ experience covering agriculture (Table 12).

Years	Number	Percent
Less than 1	0	0%
1-9	3	7%
10-19	9	22%
20-29	7	17%
30+	22	54%

Research Question 15

Your age group.

Nearly 70% of journalists responding are age 50 or older (Table 13).

Age	Number	Percent
18-29	2	5%
30-39	7	16%
40-49	4	10%
50-64	24	59%
65+	4	10%

Research Question 16

Gender.

Slightly more than half (23/41, 56%) of journalists responding were male; 18/41 (44%) were female.

Research Question 17

Any final comments?

Comments from respondents included:

- “We appreciate the safety reminders so we can pass them along.”

- “Interesting survey ... I have never taken a survey on this issue before. I think there could be much more discussion and printed articles that could delve into this subject matter.”
- “Safety regulations are one of the most contentious issues in farming. For too many years the ‘small farm exception’ has allowed a lot of safety issues to go ignored – from equipment to hours worked to industrial issues such as grain bin and livestock production safety. Farmers want to be treated like professional businessmen, until that means falling under more safety scrutiny. Then they squeal. It’s unfortunate. One life saved is worth the hassle.”
- “Farm safety is an important topic, but it is also a bit of an eye-roller as in, 'Oh geez here is another article on farm safety,' with a prompt page turn. I have a small farm, young children, and work full time off the farm. I am very busy and when I have a job that needs done I often do not take the time to follow the safety precautions that I write about, even if it is just a few minutes. Most farmers I know are the same way. They are busy and safety is a hassle. Safety is a consideration, but not always a top priority. Regulations will not work because effective enforcement would be virtually impossible and arbitrary at best. Unfortunately, the most shocking and effective cure for a lack of safety on the farm is the coverage of a horror story and the terrifying statistics to remind us that these safety concerns are real.”
- “I’m always looking for good story ideas related to corn or soybean production, other than the usual, 'be safe during harvest' story most outlets run in early September. Most of my story ideas come from Extension Service reports and research, or from looking at statistics.”
- “This is a tough beat to cover. While the subject is compelling, it's hard to effect change. People skip over things that make them uncomfortable or make them cringe. Yet they are oddly attracted to it too. There are built in hazards that will always be part of this job. How do we report on it and help people be smart without turning them off before they get the message.”
- “I have benefitted by working with some very dedicated farm safety reporters and specialists.”
- “There is a perception that farm safety stories do not score high in readership. If true, that indicates a lack of reader interest. My guess is the lack of strong interest in safety begins on the farm.”
- “Our first quarter edition has a theme of safety and we run an average of 8 articles on different safety issues.”
- “Your survey made me realize we need to cover cattle-related injuries much more than we do.”

CONCLUSIONS AND DISCUSSION

This survey provided valuable insights into the perspectives, sources of safety information, and preferred methods of knowledge delivery among experienced agricultural journalists—a key information gatekeeper group regarding occupational safety in farming and agriculture.

Findings suggest that the journalists consider occupational safety in agriculture to be very important compared with other aspects of their beats. More than three-quarters said farm magazines do at least a somewhat adequate job of covering safety, and about the same percentage gave a similar positive assessment of their own personal coverage of safety.

However, their notion of “adequate” might be colored by the fact that safety consistently ranks low in readers surveys, according to survey comments by several journalists.

Comments offered to Question 5, “*What type of article do you consider most appropriate for reporting on agricultural safety?*,” indicate that accidents remain the most compelling way to tell the safety story, despite only one of 41 journalists checking “follow-up to accident” as the most appropriate type of story for reporting on safety. This identifies a challenge for safety specialists who want to move beyond the accident. What other compelling approaches can be used to report on safety?

The survey confirmed that journalists look first to university Extension specialists and farm safety organizations for safety information. The most useful types of information are statistics on agricultural injury and contact information of safety experts, according to the journalists. Detailed statistics are hard to come by; surveillance is expensive, and it is sometimes very difficult for researchers to capture farm accidents (e.g., independent farmers, undocumented Hispanic farm workers). However, contact lists of safety experts could be compiled quickly and inexpensively. Public service advertisements ranked low on the list of preferred sources for journalists, but advertising departments will use public service ads when space allows, so the ads are still worth providing. A recent example was the July 2014 issue of *Progressive Farmer* magazine, which devoted a full page to an ad condemning the practice of children as extra riders on tractors.

Question 10 was an attempt on the part of the authors to gauge the lingering impact of the failed 2012 attempt by the U.S. Department of Labor to update federal agricultural labor laws for hired youth. Stories at the time gave ample voice to opponents of the proposed changes. The journalists maintained their distance in this survey, overwhelmingly voting “safety regulations” least effective in creating a safer ag work environment. This might guide safety experts in the types of story ideas they pitch to the agricultural media.

The vast majority of journalists have had experience with serious farm injuries or “close calls,” with a number of them providing details in the comments section. Might this predispose them to the “accident” angle?

In summary, the survey has identified safety perceptions and needs of ag media, and provided possible intervention angles for agricultural safety experts.

LAYING A NEW FOUNDATION

National Survey: Teachers Of Agricultural Communications

INTRODUCTION

“Where is the education and training to come from?” two leaders of the Agricultural Safety and Health Council of America (ASHCA) asked in a 2009 issue of the *Journal of Agricultural Safety and Health*.¹ Dennis J. Murphy and Barbara C. Lee highlighted nine critical issues that undergird support, motivation and effort for safety in the nation’s most hazardous industry—an industry with a work death rate eight times higher than the all-industry average. They cited weak and dwindling support for farm safety and health in cooperative extension programs, farm legislation, state agencies, and commodity groups. They emphasized critical need for better connections between agricultural cooperatives, insurance companies, farm and ranch suppliers, and support services to professional safety and health organizations and societies.

“Demographics of the agricultural workforce are changing rapidly, and farms are branching into agrotainment, biomass energy production, and genomic and nanotechnology,” they emphasized. “These changes create a greater need for diversity of educational information and methods.”¹

They did not mention the nation’s largest resource for non-formal, continuing education of farmers, ranchers and their families—the agricultural media of America. Hundreds of commercial farm magazines, papers, newsletters, and other resources arrive at the homes of farm and ranch families daily, weekly, and monthly, by mail or online. Thousands of agricultural radio and television programs are aired daily throughout the nation. These are among the most used and valued sources of information for farmers, ranchers, and their families.

Professional agricultural journalists select, gather, and process the editorial content of those articles and programs. Communicators who specialize in agricultural public relations and marketing communications plan and prepare advertisements and other information about products and services available to producers.

In short, these agricultural journalists and communicators represent a promising response to the question, “Where is the education and training to come from.” And the educational mission traces to special teaching programs at colleges and universities located throughout the nation.

A substantial and increasing share of reporters and editors of agricultural media in the United States have majored or otherwise taken courses in agricultural journalism/communications while attending college. Universities are a major source of professionals in this field. During 2011, for example, nearly 1500 undergraduate students were enrolled in agricultural journalism/communications degree programs at U. S. land-grant universities. More than 130 students were enrolled in masters and doctoral programs. Enrollment in degree programs has increased substantially across the years, as has the number of agricultural communications courses taught.

Therefore, those who advise agricultural communications students and teach agricultural communications courses are key gatekeepers for encouraging future agricultural journalists and communicators to consider the importance of occupational safety in farming and agriculture. Such courses can help students understand dimensions of safety and develop skills in

communicating effectively about it. These professional journalists and communicators offer special impact, because they operate from platforms that reach thousands and sometimes millions of people throughout agriculture and society.

Teachers of these agricultural communications courses also are important in serving students who are not preparing to be professional journalists or communicators. A majority of students in many agricultural communications courses are preparing for careers in all parts of agriculture—for example, as professionals in the livestock industry, agricultural business, foods and nutrition, horticulture, crops, and other sectors.

Instruction in communicating through media about agricultural safety holds strong promise, although it is not easy. As Pedler² observed, the science-media interface is challenging. He noted that while the media are constrained by the need for timelines, simplicity, brevity, and pursuit of personal stories, the scientists see media as a pipeline for the transmission of information to the public in a way that can be easily understood.² Similarly, media may be inclined toward reporting agricultural injuries and fatalities more than toward educating their readership on how these events can be avoided or eliminated.³

However, research such as that by Teran and associates⁴ reveals the potentials for effective teaching and learning about safety and health. Their research among 2000 high school students revealed that a health and safety curriculum had significant impact in terms of increase in knowledge, attitudes, and behavior. The teaching also had extended effects in the broader community as the majority of students reported sharing the new information with others.⁴

What follows is a report of research to assess the potential for agricultural communications faculty members to help improve the direction, unity of effort, and practice of safety throughout the food and agriculture complex.

RESEARCH QUESTIONS

This research dimension of the Upper Midwest Agricultural Safety and Health (UMASH) project focuses on those key gatekeepers—faculty members who teach agricultural journalism/communications courses and advise future professionals at universities throughout the nation. In particular, it involves seven research questions:

1. How do those who teach agricultural communications courses perceive the relative importance of farm and agricultural safety?
2. How do they perceive the effectiveness of communications with farmers, farm families, and farm workers about occupational safety?
3. How do they perceive the extent to which coverage of farm safety requires special reporting skills?
4. How extensively is farm safety addressed in agricultural communications courses?
5. To what extent are those who teach agricultural communications courses interested in using teaching resources about farm safety communications?
6. In what topics are they most interested?
7. In what form(s) might teachers welcome and use educational resources about farm safety communications?

METHODS

An online survey methodology was chosen, involving universities that offer identified majors, options, or concentrations in agricultural journalism or agricultural communications.

Thirty-five programs were identified through directories, university websites, and other means. One faculty member was selected from each university, with selection based on seniority and identified program leadership roles.

Research Electronic Data Capture (REDCap), a secure web application for building online surveys for research studies, was used for this survey. Respondents were invited to complete an eight-item questionnaire. Topics addressed and wording for the instrument were guided by a review of literature about farm safety communications and by pretest conversations with four agricultural communications faculty members at a professional conference during August 2013.

The survey was developed collaboratively by project team members in the National Farm Medicine Center and the Agricultural Communications Documentation Center, University of Illinois, and it was approved by Institutional review boards of the University of Illinois and Marshfield Clinic Research Foundation. The National Farm Medicine Center was identified in the survey introduction. The survey was sent by email to the 35 identified faculty members on November 5, 2013. Two reminders were sent by email during the 2-week response period.

This effort resulted in 23 completed questionnaires, response rate of 66%. Responses represent a substantial majority of total enrollment in agricultural journalism/communications courses and degree programs at universities throughout the nation.

RESULTS

Research Question 1

From your perspective, how important is safety in comparison with other aspects of farming and agriculture?

Results reported in Table 1 reveal that respondents place high priority on safety in farming and agriculture, with 87% identifying safety as extremely important. One respondent noted the special importance of this topic for farm audiences.

This finding is consistent with results of research among high school agriculture teachers in Texas. Researchers found that teachers exhibited strong personal beliefs consistent with proper safety preparedness and practices in agriculture settings.⁵

Table 1. Importance of safety in comparison with other aspects of farming and agriculture.		
Importance	Number	Percent
Extremely	20	87%
Somewhat	2	9%
Not very	0	0%
Not	0	0%
No opinion	1	4%
Total	23	100%

Research Question 2

How effectively is safety being communicated with farmers, farm workers and others in agriculture?

About one-half (52%) of respondents answered positively to this question, but marginally so (Table 2). None said they believe safety is being communicated very effectively. Nearly one-third said they hold no opinion about the effectiveness of efforts to communicate about safety with farmers, farm workers, and others in agriculture.

“I’m really not sure,” one respondent explained. “I would think there could be farm advertising influences on editorial content related to safety. Yet, you do see some safety stories. Honestly, I’m not sure ‘how effectively’ the topic is covered.”

Another respondent observed that food safety is not being communicated well, “but I do believe risk-to-life safety is.”

A third respondent observed, “It can be effectively communicated through the communication channels of commodity groups and farm organizations. I do not see the coverage addressed in mainstream media because the writers fail to show the newsworthiness of the situation.”

“I think the key question is how effectively is it being taken up by producers,” said another respondent, emphasizing the gap across media coverage, awareness of safety among farmers, and the practices they actually follow.

Table 2. How effectively safety is being communicated with farmers, farm workers, and others in agriculture.		
How effectively	Number	Percent
Very	0	0%
Somewhat	12	52%
Not very	3	13%
Not	1	4%
No opinion	7	31%
Total	23	100%

Research Question 3

To what extent are special communications skills involved in reporting farm and agricultural safety?

Findings in Table 3 show that more than one-half of respondents recognize some special communications skills needed to cover farm and agricultural safety.

Here are some of the special skills identified by respondents:

- Knowledge of farming operations, tools, and technologies.
- Understanding the nature of farming and the agricultural industry.
- Knowledge of the inherent risks involved in farming and agriculture.
- Awareness of and familiarity with terminology involving farming and equipment.
- Knowledge of national statistics related to farm safety.
- Knowledge of science and agriculture.
- Understanding of farmer attitudes and practices related to safety.
- Special familiarity with media, media skills and media relations involved in communicating about farm safety.

Table 3. Extent to which special communications skills are involved in reporting farm and agricultural safety.		
Extent	Number	Percent
Many special skills involved	0	0%
Some special skills involved	12	52%
Few special skills involved	5	22%
No special skills involved	1	4%
No opinion	5	22%
Total	23	100%

Research Question 4

Does any course work in your agricultural communications program involve covering—or otherwise communicating about—farm and agricultural safety?

Responses shown in Table 4 suggest that relatively few courses in these programs involve communications aspects of farm and agricultural safety. Three-fourths of respondents indicated that course work in their programs does not involve this subject area. An added 17% said they do not know whether or not such course work is offered.

Table 4. Existing course work in your program that involves covering or communicating about farm and agricultural safety.		
Existence of course work	Number	Percent
Yes	2	9%
No	17	74%
Don't know	4	17%
Total	23	100%

One respondent at a university offering such courses replied, “We provide opportunities for students to cover many issues in agriculture through practical communications assignments. Occasionally, students choose, or are assigned, topics related to farm safety.” These opportunities take place in courses such as Agricultural Communications, Graphic Design in AFLS, Electronic Communications in Agriculture, Agricultural Reporting and Feature Writing, and Agriculture Campaigns.

Another faculty respondent identified three courses that include units on communicating safety: Agricultural Communication, Risk and Crisis Communication, and Organizational Power and Advocacy. “Most relevant is the Risk and Crisis class,” the respondent explained.

In terms of teaching resources used, a respondent reported, “All classes use case studies and resources from extension services. As you know, safety and communication are not often specifically addressed in traditional ag comm textbooks, so we’ve supplemented this void with our own materials.”

Research Question 5

What topics, if any, would be useful in your agricultural communications courses?

Findings reported in Table 5 reveal that two-thirds or more of respondents expressed interest in three of the four topics: communicating about risk assessment and management, issue management, and ethics and journalistic guidelines in describing/portraying farm and agricultural safety. Ethics and journalistic guidelines commanded greatest interest, with 83% indicating that the topic would be useful in their agricultural communications courses.

Responses suggest that respondents place about equal priority on prevention-oriented coverage and incident/follow-up coverage of farm and agricultural safety.

Table 5. Topics that would be useful in agricultural communications course.

Topics	Number	Percent
Communicating about risk assessment and management in the context of farm safety		
Yes	15	65%
No	8	35%
Communicating about issue management (e.g., child ag labor laws)		
Yes	16	70%
No	7	30%
Ethics and journalistic guidelines in describing/portraying farm and agricultural safety		
Yes	19	83%
No	4	17%
Preventive vis a vis incident/follow-up coverage of farm and agricultural safety		
Yes	11	48%
No	12	52%

Research Question 6

To what extent do you think you or your teaching associates might be interested in having access to teaching resources that involve covering—or communicating about—farm and agricultural safety?

Findings in Table 6 indicate that 78% of respondents find some interest in having access to teaching resources that involve covering—or communicating about—farm and agricultural safety. About one-fifth expressed a high level of interest, while more than one-half said they are somewhat interested.

Table 6. How effectively safety is being communicated with farmers, farm workers, and others in agriculture.

How effectively	Number	Percent
Very	0	0%
Somewhat	12	52%
Not very	3	13%
Not	1	4%
No opinion	7	31%
Total	23	100%

Research Question 7

What form(s) of teaching resources addressing safety would you be most likely to use in agricultural communications courses?

Responses summarized in Table 7 indicate that the responding teachers would find use in varied forms of teaching resources about communications aspects of farm and agricultural safety.

Printed materials ranked highest, with 70% of respondents indicating that teaching resources in that form would be useful. However, in this regard one responded explained, “We don’t need copies of the materials—just web access.”

Table 7. Form of safety-oriented teaching resources most likely to be used in agricultural communications courses.

Form	Number	Percent
Visual presentations for projection in classes with scripts and option for localization		
Yes	14	61%
No	9	39%
Printed resources, comprehensive or by topic		
Yes	16	70%
No	7	30%
Audiovisual presentation for projection in classes, online access or self-instruction		
Yes	13	56%
No	10	44%
Multi-media teaching modules		
Yes	15	65%
No	8	35%

More than one-half of the respondents (56–65%) indicated that the other three forms would be used in agricultural communications courses.

These preferences are both consistent with, and different from, those expressed by high school agriculture teachers in Texas who were invited to express their preference for teaching materials about farm safety. Those teachers preferred safety videos with study guides, class demonstration/simulation activities, and individual study booklets. They expressed relatively low preference for interactive media as teaching tools.⁵

DISCUSSION

This survey provides valuable insights, nationally, about the activities, perspectives, and interests of an important gatekeeper group regarding occupational safety in farming and agriculture.

Findings suggest that agricultural journalism/communications teachers in U.S. universities consider occupational safety in farming and agriculture to be highly important. At the same time, they recognize a need for improving communications about it. They report that their agricultural communications courses currently place little emphasis on safety. Moreover, they recognize some special skills in reporting effectively about the subject. Most express interest in gaining access to teaching resources about this subject. They recognize some topics of special interest to them, as well as some forms in which they would like to receive those teaching resources.

Therefore, the survey has identified a need and opportunity for planning and providing teaching resources to strengthen communications in support of occupational safety in farming and agriculture. It also has provided a road map for action in serving teachers of agricultural journalism/communications in the United States and the thousands of students in their courses each year.

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LAYING A NEW FOUNDATION

RECOMMENDATIONS

Research efforts through this pilot project substantially sharpen focus and add power for decisions about helping agricultural media strengthen their coverage of farm and agricultural safety.

The research findings prompt a range of recommendations for action, with special emphasis on two prime audiences: (1) agricultural journalists associated with commercial agricultural media in the United States, and (2) agricultural communications faculty members in the United States and the students they are helping prepare to be agricultural journalists and communicators. Also included are recommendations for further research in this subject area.

AGRICULTURAL JOURNALISTS

Insights from the literature review, content analysis and national survey among agricultural reporters and editors prompt the following recommendations for engaging agricultural media gatekeepers more fully and effectively:

A. Resources for Reporting About Safety

Establish a national repository of agricultural accident stories accessible to journalists and academic researchers. The repository would use a defined method to gather accident story “clippings” and make them searchable by accident mechanism (tractor, animal, fall, etc.) and other keywords. The survey revealed that journalists prefer accidents as a means of telling the safety story, and they also desire injury/fatality statistics, which they say provide context for when a local accident occurs. A repository would address both needs. These sentiments were echoed in informal interviews with 25 journalists at the 2014 Agricultural Media Summit, the largest annual gathering of agricultural journalists and communicators in the United States. They also mentioned “immediacy” as a reason for wanting a repository, saying that the incomplete federal injury estimates that are available are usually out-of-date. Several such repositories have been established at various times (e.g., Penn State, Ohio State, Purdue, the University of Iowa’s National Institute for Occupational Safety and Health (NIOSH)-funded agricultural safety center), but they have been state or regional in scope. A nationally-focused repository is in the formative stages at the National Children’s Center for Rural and Agricultural Health and Safety, part of the National Farm Medicine Center. The NIOSH-funded Children’s Center project is focused only on accidents involving youth age 18 and under, but the methods under development could benefit from feedback from this Upper Midwest Agricultural Safety and Health (UMASH) pilot and subsequently be applied to all ages.

In concert with the repository of agricultural accident reports, develop and provide a new and regular “safety beat” service that is oriented specifically for agricultural media. For example, the service can provide updates, news, event announcements, and ideas for covering current and approaching matters related to farm and agricultural safety and health. It can provide background briefings to help agricultural reporters address safety-related issues and developments. Research findings suggest special potential in providing timely, useful information that can help farmers stay abreast of proposals, perspectives and developments that involve safety regulations and policies that involve them.

Address the expressed desire of farm reporters to gain improved access to available statistics related to farm and agricultural safety and health. Such an effort may involve

identifying current sources of such information (e.g., National Safety Council, agriculture centers). Need and potential may also exist for initiating new procedures for gathering and sharing such information. The statistics can help reporters highlight the importance of following safe procedures. Cumulative statistics and farm-incident databases developed through such an effort may also permit reporters to carry out comprehensive, in-depth analyses that are currently not feasible.

In response to sentiments expressed in the Journalists Survey, establish a searchable database of safety experts, making it accessible to journalists, Extension staff, and other interested parties. The International Society for Agricultural Safety and Health (ISASH) would seem to be an excellent partner. The 200 or so members of ISASH include agribusiness and academic professionals who come at safety from a variety of perspectives—e.g., engineering, medicine, communication/marketing, education, safety. The collective expertise of ISASH members is quite expansive but needs to be packaged. Special emphasis can be placed on helping reporters gain access to expert sources who can address new and “breaking” issues (e.g., safety aspects of guidance systems for farm equipment and agriculture-related uses of drones).

B. Recognition for Excellent Safety Coverage

Develop a national and integrated reporter recognition program that highlights and encourages excellence in covering the safety and health aspects of farming and agriculture. It might feature separate recognition initiatives for reporting about health safety and farming/agriculture safety. It might even encompass recognition of coverage involving the many production aspects of food safety. Various agricultural journalist organizations (e.g., American Agricultural Editors’ Association, Livestock Publications Council, North American Agricultural Journalists, Turf and Ornamental Communicators Association, American Horse Publications) might wish to collaborate in recognizing excellent safety coverage in their respective fields of journalism.

Some of the recognition might take the form of awards, with recipients chosen on the basis of stories entered for judging. Other recognition might take the form of professional fellowships that would permit selected agricultural journalists to investigate and report on the safety aspects of timely, important topics.

C. Professional Development

Provide a continuing program of professional development for agricultural journalists in the arena of reporting about farm and agricultural safety. The program might feature elements such as:

- Safety-oriented sessions at meetings of the professional organizations of agricultural journalists, or special workshops and seminars on reporting about safety. These micro-sessions might focus on new and promising ways to report on changes in the agriculture industry that involve new and emerging safety issues for farmers, farm workers and farm families. They offer opportunities for bringing various kinds of journalism expertise (e.g., uses of new media, data mining) to bear on coverage of safety.
- Feature articles, case histories, and self-study modules provided on a continuing basis in the newsletters and online “resource” sections of the websites of the professional organizations of agricultural journalists.
- Development of a credit-based agricultural journalism study program oriented to covering farm and agricultural safety and health. It might be developed in cooperation

with a university, as perhaps a special concentration within an existing graduate degree program in agricultural journalism and communications. Course work might involve safety-oriented studies in combination with journalism studies. It might be offered through a blended program of online and on-site learning.

D. Serving Special Farm Audiences

Research in the review of literature identified special challenges and opportunities for reporting effectively about farm and agricultural safety and health. Three audiences call for special attention by journalists.

Farm women often read the commercial farm periodicals, according to results of readership research. However, the literature review identified evidence that farm women differ from farm men in their safety risks, practices, and perspectives. This difference calls for agricultural reporters and editors to tailor some of their topics, messages, and delivery approaches to meet the needs of farm women. We recommend developing resources for agricultural reporters that (a) help them tune in on research about safety in the lives and minds of farm women, (b) identify sources of useful information and expertise for serving the information needs of farm women, and (c) offer ideas for stories and messages that can interest and help farm women.

Safety education for farm children has earned considerable attention by organizations interested in farm safety. Many existing safety education programs are oriented toward children, including some programs sponsored and conducted by commercial farm periodicals as a public service. Beyond such efforts, agricultural media are in good position to reach the farm parents, with a special eye on helping them keep their children safe and healthy. We recommend an effort to provide agricultural reporters with supplies of story ideas and resources for informing farm parents about how to keep their children safe and healthy in the changing rural environment.

Farm workers. Serving this audience poses special challenges for agricultural media. The goal calls for innovative, focused efforts. Farm workers—especially those who are temporary, seasonal employees—are not widely exposed to information in the farm periodicals represented here. Print media face special challenges due to language and literacy issues among such employees. We recommend developing an effort to inform commercial agricultural journalists and editors about ways in which they can (a) gather and prepare information that is suited to the interests of farm employees and (b) deliver that information effectively, perhaps through special cooperation and efforts of the farmer readers and their employees.

A few sample approaches might involve publishers inserting special (perhaps funded) information for farm workers into regular issues for use as handouts and training sessions by farm employers; developing recognition programs that feature farm workers who excel in safe practice; developing in-service, on-site programs in which experienced farm workers teach new workers; and use of smartphone apps, videos, and other kinds of audio-visual media that can cut through the barriers of language and culture. Agricultural safety messages also could be channeled through Spanish-language radio programming on stations to which farm workers listen in various regions.

E. Serving Agricultural Journalists Through Means Beyond Print

The content analysis involved in this project emphasized how to engage agricultural reporters and editors who are associated with commercial farm periodicals that are published in

print. As print journalists, they are key gatekeepers for communicating about agricultural safety and health.

In addition, the goal of engaging agricultural media gatekeepers more effectively prompts a recommendation to involve agricultural reporters and editors who are associated with broadcast and other media platforms such as mobile telecommunications, websites, and a wide variety of social media.

Farm radio and television broadcasters deliver programming about markets, weather, news, events, and other agricultural matters via thousands of stations and networks throughout the nation. They fill a special niche in being more flexible and timely than print media. They also are special in providing agriculture-related information to urban as well as farm and rural residents. We recommend carrying out an initiative that involves elements such as the following:

- Identify the aspects of farm and agricultural safety and health that are most closely related to the inherent strengths of broadcast and other electronic media (e.g., ability to deliver safety information quickly, interactivity).
- Analyze the kinds of agricultural information that agricultural broadcasters currently deliver.
- Conduct a survey among them to understand their perspectives about the importance of farm safety, the value of reporting about it, sources from which they gather information about safety, kinds and forms of safety information they prefer, and means by which they prefer to receive it.
- Develop an action program to address those special needs and interests.

The electronic platforms managed by many commercial agricultural media firms offer special potential for providing farmers with useful safety information. These platforms often face fewer limitations of time and space, compared with periodicals and broadcasts. They also can be information-rich, in terms of conveying information by varied audiovisual means and involving viewers easily through their interactive features.

TEACHERS OF AGRICULTURAL JOURNALISM AND COMMUNICATIONS

Insights from the literature review and national survey among teachers of agricultural journalism and communications prompt the following three categories of recommendations:

A. Resources for Teaching This Subject

Develop a project to improve communications education in support of farm and agricultural safety by providing resources for teachers to use in agricultural communications courses at colleges and universities throughout the nation.

Following are recommended steps for that effort:

1. Identify and develop a coalition of funding partners for the project.
2. Form a project team with members representing farm safety expertise, agriculture-related communications expertise, audience/producer perspectives, teacher perspectives and student/learner perspectives.
3. Plan and develop teaching resources (e.g., modules, videos, experiential activities) in forms identified through the survey. Incorporate into them the needed special reporting skills and high-priority topics that teachers identified.
4. Plan a strategy for delivery and use of the educational resources.
5. Prepare and distribute the teaching materials to teachers.

6. Plan and carry out an evaluation effort to assess how the resources were used and how the teachers and students perceived them. Identify needs and opportunities for improvement and enhancement of the teaching resources. Identify needs and opportunities for research initiatives related to communicating about occupational safety in farming and agriculture.
7. Develop a plan for communicating with these teachers and their assistants on a continuing basis and for helping them interact with each other about teaching this subject. Possible content might involve research findings, news, case examples, commentaries and reports of teaching methods used. Possible venues might involve website(s), conferences, workshops, webinars, videos, symposia and other systems or settings that involve agricultural communications teachers. Workshops and orientation sessions in the academic and research special interests groups of the Association for Communication Excellence in Agriculture, Natural Resources, and Life and Human Sciences (ACE) may hold special promise.

B. Recognition for Teachers

Plan and carry out initiatives for recognizing and encouraging excellence in teaching effective reporting about farm and agricultural safety.

These may take the form of national, regional or thematic (e.g., equipment, animal) awards for agricultural communications teachers. Such programs may develop through collaboration with the major professional organization of these teachers (Association for Communication Excellence in Agriculture, Natural Resources, and Life and Human Sciences). Selection may be based on criteria such as innovativeness in teaching methods and development of resources for teaching safety-related journalism. The recognition program may emphasize teaching how to cover new, emerging, and important safety aspects of a changing agriculture and food industry (e.g., precision farming technologies and practices, genomics, applications of nanotechnology in food and agriculture, agritourism enterprises, renewable energy technologies and practices, hazards in changing workplaces).

Announcement of the award programs will regularly call the attention of agricultural communications teachers to safety-related journalism. Awards they receive will contribute to their academic careers. Announcement of selected recipients throughout the academic journalism community will call attention to agricultural journalism and to the importance and dynamics of safety-related journalism, at large.

C. Recognition for Students

Plan and carry out initiatives for recognizing and encouraging excellent, innovative student reporting about farm and agricultural safety and health.

Recognition initiatives for students may take forms such as:

- Awards for safety stories. These awards might be national, regional or thematic in nature. They might be based on competitions for safety-related reporting about farm and agricultural safety and health (e.g., stories from class assignments, freelancing projects, or other student reporting activities). They may involve a variety of media platforms—print, broadcast, online, video, audio, and other, as selected. The national college student organization, Agricultural Communicators of Tomorrow (ACT) might be invited as a collaborator.
- Experiential reporting opportunities for winners. Examples might include student involvement in media centers and activities at conferences, workshops, and other events of farm safety organizations, extension services, and other groups involved in

- advancing farm and agricultural safety and health. Selection might be based on interest and qualifications, through applications from students.
- Journalism-oriented internships for undergraduate or graduate students, based on competitive application. Internships might be hosted by farm safety organizations, rural health organizations, extension services, government agencies, agricultural suppliers, and other institutions involved in advancing farm and agricultural safety and health. Interns might work in local, regional or national settings.
 - Support for undergraduate and/or graduate research projects that relate to safety and health aspects of reporting about food and agriculture. Selection of student researchers might be based on competitive application. Selected undergraduates might carry out their research activities on their home campuses. Research projects for some graduate students might involve fellowships that permit them carry out thesis or dissertation research through concentrated efforts at resource sites such as the Agricultural Communications Documentation Center at the University of Illinois. Undergraduate and graduate students who carry out such research projects might be supported in reporting results at conferences of farm safety organizations, or other venues.

RECOMMENDATIONS FOR FURTHER RESEARCH

Following are some research projects that build upon findings of this pilot project and will add important guidance for serving agricultural and general media more effectively.

- Repeat the Content Review and Journalists Survey elements of this pilot using mainstream (non-agricultural) media, assuming that most farmers consume mainstream as well as ag-focused media. Look for similarities and differences in journalists' perceptions and publication content. For the survey portion, researchers could possibly work through the membership of the Association of Health Care Journalists and/or the Institute for Rural Journalism and Community Issues at the University of Kentucky.
- Research selected international publications (e.g., Australia's *The Land*) and how they currently cover farm health and safety. Compare findings with the nature and amount of coverage in the United States, incorporating the nature categories and coding used in this study.
- Get a closer look at prevention versus news and incident reporting in the United States and beyond. Content analyze the safety-related articles in a sample of agricultural periodicals.
- Dig further into the characteristics and perceptions of agricultural reporters, the current principles of reporting in the United States and how these factors influence safety coverage in agricultural media.
- "Beyond the Accident." In this pilot survey, ag journalists expressed a preference for accidents as vehicles for "teachable moment" reporting of agricultural safety, but what other ways can they tell compelling safety-related stories? Informal interviews with 25 journalists at the 2014 Ag Media Summit revealed non-accident story ideas driven by technology, human interest, psychology, and the economic bottom-line. Compelling story-telling might overcome market survey data that indicate "safety" ranks low among interests of readers.
- Analyze current perspectives about safety and health among farmers who read and do not read agricultural periodicals. Among farm readers, identify their perceptions about the

amount and nature of safety coverage, including types of coverage (accident reports, accident narratives, advertisements, prevention tips) that have helped them in their work. Gather demographic information about gender differences as well as age differences among these farm readers.

- Research radio, television, and other media channels for trends in agricultural safety and health coverage. Include coding topics similar to those used in this project to permit cross-references across media, and to determine which media format indicates more coverage and more farmer attention.
- Research the amount and nature of coverage in farm periodicals regarding safety aspects of crop protection and chemical use. Compare findings with those of this current, more-general study.
- Conduct a study that identifies and analyzes the goals and interests of organizations wishing to promote farm safety and health. Use findings to identify potentials for creating new networks and collaboration between them and various organizations of agricultural journalists and editors.
- Carry out focus group research with a sample of receptive journalists that participated in this survey. Brainstorm methods of reporting effectively about farm and agricultural safety and health, with special emphasis on identifying ways to incorporate prevention into news and feature articles.
- Conduct research among farmers to determine effects of news reports that feature penalties awarded for not following safety regulations. Is this negative approach an effective way to gain attention of farmers? Will this kind of information help override tendencies to believe that hazards are inevitable?
- Conduct a longterm research project that addresses how agricultural periodicals can present more safety statistics and provide contact information of safety experts, based on these journalist survey results. Track these changes and their effects over an extended time period.
- Analyze the message appeals and framing used in public service advertisements that feature farm and agricultural safety and health. Use data from readership studies to assess levels of readership, in general, and to identify appeals that gain most attention among farm readers.
- Conduct research on the nature and level of safety regulations in all three industries—agriculture, transportation, and mining. Assess possible relationships between the amount of safety coverage and the level of safety regulation in those respective industries.
- Explore features of the Extension model, in terms of seeking to identify within it some effective new methods for incorporating more “safety prevention” into the journalism reporting model that features news and events.
- Analyze the specific course materials and methods that agricultural communications educators use to promote safety, inside and outside their classrooms. Identify teaching models that can be implemented to increase safety awareness and improve safety skills in the younger generations.