

## Exploring the Applicability of the Science Communication Research Agenda to Agricultural Communications Scholarship

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# Exploring the Applicability of the Science Communication Research Agenda to Agricultural Communications Scholarship

## Abstract

Agricultural communications scholars do not use a national research agenda to guide their research, which could be limiting the impact and rigor of the discipline. In this commentary, we argue that agricultural communications scholars should adopt the science communication research agenda published by the National Academies of Sciences, Engineering, and Medicine in 2017 because the goals of science communication, outlined in the agenda, are relevant to agriculture. Members of the committee who developed the agenda study science communication in contexts of food, agriculture, life sciences, the environment, political science, health, nutrition, and psychology, among others. They developed the agenda with the intent for it to inform and guide research in all science communication sub-disciplines or areas involving contentious public issues. We provide examples of studies that have used the agenda to inform research in agricultural and natural resources communications. We also explain how research priorities outlined in the science communication research agenda align with agricultural communications scholarship. Recognizing there are challenges unique to agriculture, we recommend agricultural communications scholars use the science communication research agenda as a research guide and adapt the relevant research recommendations for agricultural communications.

## Keywords

agricultural communications, research agenda, science communication

## Cover Page Footnote/Acknowledgements

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## Introduction

Many sciences are foundational to agriculture—crop science, veterinary science, chemistry, food science, engineering, horticultural sciences, and entomology (Weiner, 2003)—but some still might question if agriculture is a science. Some believe it is not while others believe it is where science and technology meet in a practical manner (Hays, 2006). Others, yet, believe that agriculture is a science (Barrick et al., 2018; Justice, 1966) and that the objectives of science education are congruent with those of agricultural education (Hays, 2006).

From a social science perspective, more specifically communications, the same type of question might exist: Is agricultural communications a sub-discipline of science communication? We believe it is because the goals of science communication are relevant to agriculture and because agricultural science plays a key role in the everyday lives of people around the world. The National Academies of Sciences, Engineering, and Medicine (NASEM) (2017) outlines these goals as 1) “shar[ing] the findings and excitement of science;” 2) “increase[ing] appreciation for science as a useful way of understanding and navigating the modern world;” 3) “increase[ing] knowledge and understanding of science related to a specific issue that requires a decision;” 4) “influenc[ing] people’s opinions, behavior, and policy preferences when the weight of evidence clearly shows that some choices have consequences for public health, public safety, or some other societal concern;” and 5) “engag[ing] with diverse groups so their perspectives about science (particularly on contentious issues) can be considered in seeking solutions to societal problems that affect everyone” (p. 17–18).

More and more, social science scholars conducting research in contexts of health, political science, psychology, and sociology, among others, identify as science communicators (NASEM, 2017). As a result, science communication, as a discipline, has become inclusive and all-encompassing. Within agricultural communications, many scholars (e.g., Baker et al., 2021; Lundy et al., 2006; McLeod-Morin et al., 2020; Navarro & McKinnon, 2020; O’Brien, 2021; Parrella et al., 2021; Washburn et al., 2022) do believe they work within the broader discipline of science communication, and this belief has been expressed in their research. Although perspectives may vary, we write this commentary under the assumption that agricultural communications scholars are science communication scholars who simply conduct research in an applied scientific context—agriculture (Parrella et al., 2021).

## Agricultural Communications

More than 200 years ago agricultural communications emerged as a profession out of the need to disseminate agricultural information to rural audiences (Murphrey et al., 2013; Smith, 2012). This information was communicated by word-of-mouth of prominent producers and generally focused on practical agricultural science knowledge that producers could use to improve their operations or lifestyles (Boone et al., 2000; Gautreaux, 2011). As the agriculture and communications industries evolved and became more specialized, trained professionals were needed to meet the needs of diverse audiences (Siegfried, 2010). As a result, agricultural communications became an academic discipline 100 years ago (Boone et al., 2000; Cartmell & Evans, 2013; Irlbeck & Buck, 2017; Siegfried, 2010; Tucker et al., 2003).

In academia, agricultural communications is commonly considered a sub-discipline within the broader agricultural education discipline, and its programs are often housed within agricultural education departments due to their relatively small size and emphasis in agriculture

(Tucker et al., 2003). Because of this association, as the discipline established its roots in academia, agricultural communications programs adopted characteristics of agricultural education programs. One of these adopted characteristics was the inclination to prioritize teaching by negating research (Tucker et al., 2003). Overtime, however, agricultural communications scholars have recognized the critical need to establish and improve research programs to increase the discipline's rigor and impact (Cartmell & Evans, 2013; Doerfert, 2003; Doerfert et al., 2007; Leggette & Redwine, 2016; Parrella et al., 2021; Whiting, 2002).

The concept of a national agricultural communications research agenda is not new. In 1954, the director of the National Project in Agricultural Communications (NPAC) made the first attempt to develop an agricultural communications research agenda, which aimed to accomplish five goals: 1) "Find out who is doing communication research and what is being done that is applicable to agricultural communications"; 2) "Encourage more and better new research on the part of individuals, regional groups, the USDA, state experimentation stations and others"; 3) "Encourage understanding of, interest in, and application of research results"; 4) "Do 'housekeeping' research for, and contribute to, the development of NPAC programs"; and 5) "Leave the NPAC research activities in such condition at the end of the grant period that they can be carried on in some productive, self-supporting fashion" (Cartmell & Evans, 2013, p. 58). Although this initiative motivated scholars to produce soaring amounts of research until the project ended in 1960, a subsequent research agenda did not follow until 2007 (Cartmell & Evans, 2013; Doerfert et al., 2007).

Because of the strong association between agricultural education and agricultural communications, the *2007–2010 National Research Agenda (NRA): Agricultural Education and Communication* included four priority research areas to guide agricultural communications scholarship, each of which are supported by three or four specific research questions: 1) "Enhance decision-making within the agricultural sectors of society;" 2) "Within and among societies, aid the public in effectively participating in decision making related to agriculture;" 3) "Build competitive societal knowledge and intellectual capabilities;" and 4) "Develop effective agricultural work forces for knowledge-based societies" (Osborne, n.d., p. 5). However, subsequent NRAs (e.g., Doerfert's [2011] National Research Agenda: American Association for Agricultural Education's Research Priority Areas for 2011–2015 and Roberts et al.'s [2016] American Association for Agricultural Education National Research Agenda 2016–2020; Doerfert, 2011) did not contain distinct recommendations for agricultural communications research. Instead, they contained broad research recommendations relevant to those studying education, communications, or leadership "in a context of food, agriculture, and natural resources" (Roberts et al., 2016, p. 6). Yet, few scholars who publish their research in the *Journal of Applied Communications* acknowledge the research agenda exists. As a result, agriculture communications research is not guided by a context-specific research agenda and has not been for some time (Irlbeck & Buck, 2017).

### **The Need for a National Agricultural Communications Research Agenda**

Rodriguez and Evans (2016) explained that national research agendas represent the strong commitment of a discipline to help address local and global issues facing individuals, organizations, and communities. They also direct individual and collaborative research efforts to be more focused (Rodriguez & Evans, 2016). "By setting forth a national research agenda, organizations [...] hope to catalyze researchers, policy professionals, and national, state, and

local leaders to improve how they respond to the challenges facing the discipline” (p. 30). Thus, supported by a nationwide network of dedicated scholars representing more than 40 universities, it is important that agricultural communications research be guided by a national research agenda, whether one be created or adapted (Cartmell & Evans, 2013; Miller et al., 2015).

We, as authors of this commentary and agricultural communications scholars, believe the absence of a national research agenda exists and have accumulated anecdotal evidence over time from our colleagues indicating the same. However, we acknowledge that not everyone in the discipline may believe this. Like research agendas in every discipline, it is unlikely that all agricultural communications scholars would use a national research agenda if one existed, but that does not mean that it would not be adopted and prioritized by some, if not many. Because we are, as a discipline, gaining research momentum, now is the time to establish a research agenda that can direct individual and collaborative research efforts to maximize impact.

Because evidence exists that agricultural communications is a sub-discipline of science communication and because the goals of science communication are congruent with the goals of agricultural communications, we believe agricultural communications scholars should gravitate more toward science communication than they do toward agricultural education and rely more on national recommendations for the broader science communication discipline than on the agricultural education discipline to guide their scholarship. In our commentary, we explore this idea. In fact, based on our adopted definitions of agricultural communications, science communication, and agricultural education, it is clear that agricultural communications corresponds better with science communication than it does agricultural education from a research perspective. Although there are numerous definitions and descriptions of these disciplines, we did not find any that were at odds. In other words, the definitions and descriptions we found were consistent and described each discipline similarly (e.g., Burns et al., 2003; Christian & Kingsley, 2015; Manouselis et al., 2013; Mercer-Mapstone & Kuchel, 2017; National Association of Agricultural Educators, 2017; NASEM, 2017; Straksiene & Gasiunaite, 2018).

To our discussion, we use the following definitions of agricultural communications, science communications, and agricultural education. Agricultural communications refers to “the exchange of information about the agricultural and natural resources industries through effective and efficient media, such as newspapers, magazines television, radio and the Web, to reach appropriate audiences” (Telg & Irani, 2012, p. 4). Science communication refers to the “use of appropriate skills, media, activities, and dialogue to produce one or more of the following personal responses to science [...]: Awareness, Enjoyment, Interest, Opinion-forming, and Understanding” (Burns et al., 2003, p. 183). Agricultural education refers to “a process of training learners in the process of agricultural productivity as well [*sic*] as the techniques for teaching agricultural science” (Collins et al., 2017, p. 1; Egbule, 2004). By definition, the purpose and methods of agricultural communications tend to parallel those of science communication and not of agricultural education, further supporting our argument that agricultural communications scholars should rely on the national recommendations for science communication research.

### **The Science Communication Research Agenda**

In 2017, the NASEM published *Communicating Science Effectively: A Research Agenda* to guide science communication research and practice, particularly related to “issues that are

contentious in the public sphere” (p. 1). A committee of prolific science communication scholars wrote the 153-page agenda with support from five funding agencies—the Burroughs Wellcome Fund, the Climate Central via the Rita Allen Foundation, the Gordon and Betty Moore Foundation, The David and Lucile Packard Foundation, and The Hewlett Foundation (NASEM, 2017). The committee that wrote the agenda represent a wide variety of social sciences, including life sciences communication, food and agricultural communication, psychology, human ecology, and political science (NASEM, 2017; see Table 1). They developed the agenda with the intent for it to inform and guide research in all science communication sub-disciplines or areas involving contentious public issues.

Although now six years old, the agenda addresses science communication research priorities that can be considered timeless because they are broad and relevant to all science communication sub-disciplines. Essentially, the research problems they address are impossible to fully solve in all relevant science contexts and communication environments in just six years. Examples of such research priorities are provided later in the document (see Tables 4, 5, and 6). That is not to say, however, that the agenda does not lack newer or emerging research priorities, but we do not know of plans to update the science communication research agenda.

**Table 1***Disciplines and Areas of Expertise of the Committee Members who Wrote the Science Communication Research Agenda*

Committee Member Name	Location	Area of Expertise/Research Focus
Alan Leshner	American Association for the Advancement of Science, Washington, D.C.	Psychology; biology of behavior; science and technology policy; science education; public engagement with science
Dietram Scheufele	Department of Life Sciences Communication, University of Wisconsin-Madison	Political communication; science communication; science and technology policy; influence of algorithmically-curated information environments on sense-making; societal impact of emerging technologies (e.g., CRISPR)
Ann Bostrom	School of Public Policy and Governance, University of Washington	Risk perception, communication, and management; environmental policy and decision-making under uncertainty
Wändi Bruine De Bruin	Department of Engineering and Public Policy, Carnegie Mellon University; Sol Price School of Public Policy, University of Southern California	Behavioral decision-making; risk perception and communication; public perceptions of extreme weather and climate change; public perceptions of emerging technologies
Karen Cook	Department of Sociology, Stanford University	Social interaction; social networks; social exchange; trust
Thomas Dietz	Sociology and Environmental Science and Policy, Michigan State University	Human ecology; cultural evolution; public environmental values and beliefs

**Table 1 Continued**

Committee Member Name	Location	Area of Expertise/Research Focus
William Hallman	Department of Human Ecology, Rutgers University	Public perceptions of controversial issues concerning food, health, and the environment, such as genetically modified foods, animal cloning, avian influenza, accidental and intentional food contamination incidents, and food recalls
Jeffrey R. Henig	Political Science and Education, Teachers College; Political Science, Columbia University	American politics; rural politics; racial politics; privatization; school reform
Robert Hornik	Annenberg School of Communication, University of Pennsylvania	Health-focused mass media interventions; novel methods for choosing campaign message themes; the effects of ordinary media exposure on health behavior
Andrew Maynard	School for the Future of Innovation in Society, Arizona State University	Communication; emerging technologies; food safety and response; health and risk perception; human dimensions of science and technology; materials science, nanoscience; public and community health, science communication and broadcasting
Matthew Nisbet	Communication Studies, Northeastern University	Climate change and energy politics; political communication; science technology and society
Ellen M. Peters	Department of Psychology, The Ohio State University	Judgment and decision making; risk perception; risk communication
Sylvia Rowe	SR Strategy, Washington D.C.; School of Nutrition Science and Policy, Tufts University	Science communication to policy continuum on global food system issues including agriculture, food, nutrition, and sustainability

*Note.* Information gathered from the NASEM (2017) and from committee members' departmental website or curriculum vitae.



The science communication research agenda contains five chapters that discuss the challenges of effective science communication and outlines a research agenda with methods to overcome those challenges and achieve the goals noted previously in our discussion (NASEM, 2017). The committee used the following definition of science communication to establish their scope of work:

The exchange of information and viewpoints about science to achieve a goal or objective such as fostering greater understanding of science and scientific methods or gaining greater insight into diverse public views and concerns about the science related to a contentious issue. (NASEM, 2017, p. 1–2)

To inform the research agenda, the committee identified “psychological, economic, political, social, cultural, and media-related” factors that influence how people understand, perceive, and use science within the context of contentious issues (NASEM, 2017, p. 1). Because we believe that agricultural communications is a distinct sub-discipline within science communication and it often deals with communicating about contentious issues in the public sphere, scholars could adopt the science communication research agenda as a guide for their applied science communication work.

### **Implementation of the Science Communication Research Agenda**

In the context of agriculture and natural resources, a variety of studies directly used the agenda as the basis for research. For example, Bielicki et al. (2019) investigated “stakeholder perspectives on sustainability in the food-energy-water nexus” and used the agenda to inform their sample selection (p. 1). Lambrecht et al. (2019) examined the use of rhetoric to improve weather forecast communication and explained how their study responded to the agenda’s call to encourage public engagement in science communication. They achieved this by demonstrating that “expressions of beliefs, values, and norms” that represent societal attitudes toward weather forecasts can improve science communication from the National Weather Service when they are incorporated into visual communication (p. 557). In addition, Lull et al. (2020) investigated public perceptions of genetically engineered mosquitoes to prevent the spread of Zika virus and used principles from the agenda to develop a systems approach that served as their theoretical framework. As another example, Akerlof et al. (2020) tested the effect of three climate change issue frames on public perceptions of personal risk and collective efficacy. They used the agenda to support their effort in “bridging the divide between communication research and practice” (Akerlof et al., 2020, p. 679).

Several scholars used the agenda to inform research focused specifically in agricultural communications. One example, published by Fischer et al. in 2020, assessed “how issue involvement and pre-existing attitudes influenced the nature of processing in the form of visual attention allocation to value-oriented versus scientific message frames” (p. 8). We believe this research responds to the agenda’s call to investigate when framing issues matters and how competing message frames influence certain outcomes (NASEM, 2017). Another example, published by Abrams et al. in 2020, investigated stakeholder perceptions of the federal government research process to improve science communication effectiveness. The authors conducted the study under the premise that “some stakeholders and individuals will leverage scientific uncertainty” (Abrams et al., 2020, p. 4) as a way “to protect their economic interests or ideological preferences” (NASEM, 2017, p. 61). The study also used knowledge translation and transfer framework, both of which are elements discussed in the agenda (i.e., knowledge

brokering, boundary organizations; Ontario, 2016).

Although there were similarities and differences in terms of how these publications used the agenda, their methods varied. Some reported quantitative data obtained using survey and experimental research designs. Others reported qualitative data obtained using a phenomenological case study and content analysis. Aside from disciplines related to agriculture and natural resources, scholars have also used the agenda to inform research in health communication (Dockter et al., 2020; Fontaine et al., 2018; 2019; Kessler et al., 2020; Moukarzel et al., 2020; Tong et al., 2018; Torres et al., 2021), science communication (Barthel, 2020; Bilandzic et al., 2020; Tong et al., 2019; Yeo et al., 2020; Yuan et al., 2018), and science communication in education (Garza et al., 2021; O’Keeffe & Bain, 2018; Unertl et al., 2018). The variation in disciplines, methods, and agenda implementation demonstrates the diversity and applicability of the agenda and how it can be used in a range of science communication-related contexts with different research designs.

### **Agricultural Communications Research**

As the basis for our argument, we sought evidence through journal manuscripts published in the *Journal of Applied Communications* (JAC). We found multiple articles in JAC reporting results from studies that identified research themes supporting agricultural communications (see Table 2). Through this and our understanding of how the science communication research agenda has been implemented, we can more confidently discuss the potential alignment of the science communication research agenda with agricultural communications scholarship.

**Table 2**

*Research Themes Supporting Agricultural Communications*

Citation	Context	Research Themes
Williams & Woods (2002) as cited in Miller et al., 2006	Ag comm research published between 1992 and 2001	Information technology; electronic media; communications management; media relations; professional development; distance education; publications; research methods; international; writing; accountability
Miller et al., (2006)	Ag comm research published between 2000 and 2004	Communications management; information technology; media relations; distance education; professional development; publications; accountability; biotechnology communications; electronic media; research; international; writing; academic programs; graphic design
Edgar et al., (2009)	Ag comm research published between 1997 and 2006	Information sources and technology; communications management; communications of scholarship (research methods and models); biotechnology communications; media relations; distance education; accountability; consumer/audience

**Table 2 Continued**

Citation	Context	Research Themes
Williford et al. (2016)	Ag comm research published between 1968 and 2015	response and analysis; curriculum and program development; electronic media; institutional organization and institutionalization; food, agricultural, natural resources, health, and family* Channel development, use, or research; consumers/publics; educating professionals; journalism; higher education; research analyses; organizational communication and management; marketing/public relations; Extension, youth, rural programs*
Parrella et al. (2021)	Ag comm research published between 2000 and 2019	Agriculture and media relations/practices; public perceptions/understanding of agriculture and natural resources; agricultural communications academic programs and curricula; role of social media in agricultural communications; effects of message framing on consumer perceptions and behaviors; agricultural communications students; improving science communication efforts; agricultural communications campaigns; visual literacy and/or visual communication; evaluation research in agricultural communications (including communication audits); role of agricultural communications professional organizations*

*Note.* \* indicates additional research themes were identified.

In addition to research themes, some articles we found reported results from studies that identified other characteristics of agricultural communications research (see Table 3).

**Table 3**

*Other Characteristics of Agricultural Communications Research*

Citation	Context	Main Findings
Naile et al. (2010)	Frameworks and methods most commonly used in ag comm research published between 1990 and 2006	Most research was guided by conceptual frameworks; the most common research methods used included mail and online surveys, mixed methods, content analyses, and focus groups
Baker & King (2017)	Theories and models used in ag comm research published between 1995 and 2015	Less than half of the articles included a theory or model, and the ones that did used it to inform research as opposed to testing or building theory

**Table 3 Continued**

Citation	Context	Main Findings
Parrella et al. (2021)	Perspectives of ag comm scholars	<i>Message Framing Influencers</i> believe it is most important to investigate how message frames influence consumer perceptions and behaviors; <i>Extension-Focused Scholars and Practitioners</i> believe it is most important to investigate Cooperative Extension System communication; <i>Discipline-Conscious Researchers</i> believe it is most important to investigate agricultural communications academic programs and curricula; <i>Tech-Savvy Scholars</i> believe it is most important to investigate technology in agricultural communications*

*Note.* \* indicates other *most important* and *least important* beliefs were identified for each perspective.

### **Agricultural Communications and the National Science Communication Research Agenda**

Specific sections of the science communication research agenda, which include research recommendations, are directly relevant to the agricultural communications sub-discipline.

### **Research on Agriculture-Related Controversies**

Controversies usually involve conflicts over people's beliefs, values, and interests, and misinformation can spread when scientific uncertainty is "mischaracterized, exploited, or exaggerated to serve particular interests" (NASEM, 2017, p. 6). Such misinformation makes it difficult for trustworthy and credible sources to relay information and change consumer behaviors (NASEM, 2017). Therefore, research is needed to help us understand how to best communicate controversial or polarizing agricultural information. Table 4 provides specific science communication research recommendations related to science controversies that could be investigated through the lens of agricultural communications.

**Table 4***Science Communication Research Recommendations Related to Science Controversies that Could be Investigated Through the Lens of Agricultural Communications*


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“Develop detailed approaches to understanding audiences’ responses to uncertainties about science in cases of science-related controversy that can be implemented on a large scale”
“Examine the effects on audiences when science communicators are open about their own values and preferences”
Investigate “best strategies for communicating science about contentious social issues if there is distrust of the science or of the scientific community”
“Identify effective strategies for correcting misinformation and to determine the role of different communicators, such as opinion leaders, in affecting people’s awareness and understanding of accurate scientific information”
Identify “effective ways of communicating scientific consensus, as well as degrees or types of uncertainty”
“Investigate effective ways of framing or reframing an issue, how much framing matters, and when is it best done”
Investigate “to what extent and in what ways communicating science during public engagement processes can be effective once an issue has already become controversial”

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*Note.* NASEM, 2017, p. 6–7.

These research recommendations align with agricultural communications research themes that have been previously published in *JAC: communications management, biotechnology communications, consumer/audience response and analysis, consumers/publics, public perceptions/understanding of agriculture and natural resources, effects of message framing on consumer perceptions and behaviors, and improving science communication efforts* (Edgar et al., 2009; Miller et al., 2006; Parrella et al., 2021; Williams & Woods, 2002; Williford et al., 2016). These research themes fit well within the scope of research perceived to be most important by *Message Framing Influencers* because they are interested in the effects of message framing, consumer perceptions and behaviors, media relations, agricultural advertising, and improving science communication (Parrella et al., 2021).

### **Agricultural Communications in the Complex Media Environment**

The media landscape continues to change rapidly as new communication channels emerge constantly (NASEM, 2017). It is important that agricultural communications scholars determine how people and decision-making entities consume agricultural information and evaluate different media sources (NASEM, 2017). Table 5 provides specific science communication research recommendations related to the complex media environment that could be investigated through the lens of agricultural communications.

**Table 5**

*Science Communication Research Recommendations Related to the Complex Media Environment that Could be Investigated Through the Lens of Agricultural Communications*

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Determine how accurate scientific information can “be heard among many competing messages and sources of information”
Determine how agricultural communicators can “reach audiences that face barriers to accessing and using scientific information, such as those with lower levels of education and income or those with strongly held views”
“Determine roles and effective approaches for communicating science through social media platforms and blogs”
Determine if certain forms of media are “better than others in promoting awareness or understanding or informing public opinion about scientific information or science”
Investigate “the effects of changes in media on how people understand and perceive science through social media and other social networks”
“Understand and track over time how science is covered in the media to determine how the media are affecting people’s perceptions, understanding, and use science in a dynamic communication environment” in the context of agriculture

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Note. NASEM, 2017, p. 7–8.

These research recommendations align closely with many of the agricultural communications research themes scholars have identified in the recent decades, including *information technology, information sources and technology, electronic media, media relations, graphic design, consumer/audience response and analysis, information development, consumers/publics, marketing/public relations, agriculture and media relations/practices, public perceptions/understanding of agriculture and natural resources, role of social media in agricultural communications, effects of message framing on consumer perceptions and behaviors, improving science communication efforts, visual literacy and/or visual communication, technology in agricultural communications, and portrayal of agriculture in entertainment media* (Edgar et al., 2009; Miller et al., 2006; Parrella et al., 2021; Williams & Woods, 2002; Williford et al., 2016). In addition, these research recommendations fit well within the scope of work conducted by *Message Framing Influencers* and *Tech-Savvy Scholars* who, together, believe it is important to investigate consumer perceptions and behaviors, media relations, agricultural advertising, technology in agricultural communications, visual literacy, visual communication, and science communication improvement (Parrella et al., 2021).

### **Research Methods in Agricultural Communications**

Agricultural communications, like any sub-discipline within science communication, represents a complex system inclusive of many factors, which the science communication research agenda categorizes as the information being communicated, communication channels, communicator, audience(s), and entities or individuals communicating falsities (NASEM, 2017). Therefore, a systems approach to research within agricultural communications is needed to understand how these factors interact (NASEM, 2017). Table 6 provides specific science

communication research recommendations related to rigorous research methods that could be investigated through the lens of agricultural communications.

## Table 6

### *Science Communication Research Recommendations Pertaining to Rigorous Research Methods that Could be Deployed in Agricultural Communications*

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“Analyses of large datasets, such as those derived from social media and other emerging online communication platforms, to assess changes in people’s responses to science communication” in the context of agriculture (NASEM, 2017, p. 9)
Conduct “one-time and longitudinal cross-sectional surveys using representative samples” (NASEM, 2017, p. 87)
Conduct “research that includes in-depth description of the contexts in which the science communication being investigated occurs can support inferences about other conditions to which the findings might apply” (NASEM, 2017, p. 87)
Effectively measure “the quality and effectiveness of science communication are needed, keeping in mind that whether such an effort is effective depends on the goals of the communicator and that the communicator and the target audiences may define successful communication differently” (NASEM, 2017, p. 87)
“Randomized controlled field experiments to assess the impact of a particular approach to communicating science on changes in people’s understanding, perception, or use of science” (NASEM, 2017, p. 9)
Simulations “of real-world communication environments” (NASEM, 2017, p. 9)

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These research recommendations distinctly align with agricultural communications research themes identified in previous studies: *research methods, research, communications of scholarship (research methods and models), channel development, use, or research, research analyses, and use of rigorous research methods in agricultural communications* (Edgar et al., 2009; Miller et al., 2006; Parrella et al., 2021; William & Woods, 2002; Williford et al., 2016). These research themes also align seamlessly with the agricultural communications scholarship that *Discipline-Conscious Researchers* believe is most important—commitment to conducting research that can advance the discipline, investigating agricultural communications academic programs, and using rigorous research methods (Parrella et al., 2021).

## **Applying the Science Communication Research Agenda to Agricultural Communications Scholarship**

Research agendas provide great benefit to academic disciplines and the scholars working within them (Rodriguez & Evans, 2016). They can help bolster scholarly output and inspire scholars to further develop and explore their area of a research focus. Additionally, research agendas can provide insight into novel frameworks and methodological approaches that scholars can use to help solve local and global issues facing individuals, organizations, and communities (Rodriguez & Evans, 2016). Ultimately, research agendas increase the depth and rigor associated with any discipline’s scholarship, and we believe the science communication research agenda could impact agricultural communications in this way by the strengthening and uniting of

research efforts. Therefore, as opposed to agricultural communications scholars looking to the American Association for Agricultural Education to publish a national agricultural communications research agenda, they could adopt discipline-specific research priorities outlined in the science communication research agenda.

We believe that, because agricultural communications scholars span across more than 40 universities and the discipline continues to grow in terms of academic programs and research publication, prolific scholars could unite to establish a national research agenda specific to agricultural communications as Cartmell and Evans (2013) and Miller et al. (2015) suggested. However, we see no need for them to start from scratch to develop a national agricultural communications research agenda. Prolific science communication scholars who operate within contexts of food, agriculture, life sciences, the environment, political science, health, nutrition, and psychology, among others, created the science communication research agenda. They used their combined expertise and decade's worth of peer-reviewed literature to inform the research recommendations for science communication and its many sub-disciplines.

A variety of communication-related sub-disciplines have used the agenda, including health communication, environmental communication, and science communication in education. Therefore, it is intended for scholars across science communication-related disciplines to implement the agenda within their chosen context. The same is true for agricultural communications scholars. It is evident that the research priorities discussed in the agenda correspond to research currently conducted in agricultural communications and outlines a rigorous research path for future agricultural communications research. As is, the science communication research agenda may not provide useful research recommendations for *all* agricultural communications scholars. For example, many *Discipline-Conscious Researchers* investigate the scholarship of teaching and learning in agricultural communications (e.g., agricultural communications academic programs and curricula; Parrella et al., 2021). The science communication research agenda “does not directly address topics in formal science education, such as effective teaching methods or curricula related to communicating science” (NASEM, 2017, p. 15). For *Discipline-Conscious Researchers* working in this space, the American Association for Agricultural Education National Research Agenda could still provide more appropriate research direction, depending on the scholar.

Recognizing there are challenges unique to agriculture, we recommend agricultural communications scholars use the science communication research agenda as a research guide and adapt the relevant research recommendations for agricultural communications. Then, based on their individual and combined expertise, agricultural communications scholars can add priorities to the agenda that are distinct to agricultural communications, such as research needs related to communication in the Cooperative Extension System, producers' use of communication channels, agricultural communications academic programs and curricula, and public perceptions of agriculture (Parrella et al., 2021). As a result, a new research agenda could be proposed that merges the science communication research agenda with research priorities specific to agricultural communications and is appropriate and useful for all agricultural communications scholars.

At minimum, we encourage leaders in the discipline (e.g., past and current JAC editors and editorial board members, National Agricultural Communications Symposium officer team members, ACE board members) to use their platforms and bring this conversation to the table. Aside from calling on agricultural communications leaders to consider promoting the use of the science communication research agenda and its adaptation to others in the discipline, we hope



this commentary: 1) provides research direction for agricultural communications scholars who are seeking recommendations to improve the rigor of their research; 2) draws attention to a document for agricultural communications scholars to explore if they are interested in understanding how their research can contribute to the broader science communication discipline; and 3) reveals opportunities, or where to find opportunities, for agricultural communications scholars who are interested in identifying collaborators or funding sources outside of where they traditionally look. We believe, and hope others agree, that the significant impact we desire as agricultural communications scholars will not result from separating ourselves from science communication but rather uniting ourselves with science communication.

### Positionality Statement

The first author of this commentary is a third-year doctoral candidate studying agricultural communications and the second author is an associate professor in agricultural communications and journalism who directs a science communications lab. The third and fourth authors—one a second-year master’s student and one a recent master’s graduate—also study or work in agricultural communications. Our positionalities as graduate students and faculty, working in a science communications lab and studying agricultural communications, influenced how we interpreted the alignment of agricultural communications research with research recommendations in the science communication research agenda. We recognize that three of us—the graduate students—are limited in knowledge and expertise; however, we believe our positions and perspectives allowed us to approach this argument with a unique and eager lens. The faculty member provided a balance in perspective based on her years of experience in the discipline. At the time of writing, all four authors had a primary research appointment and worked at an R1: Doctoral University with expectations for high research activity and productivity. The first and second authors still do. Therefore, we are highly motivated by administrative expectations and personal interest to conduct and publish research. Our positionalities as research-focused scholars sparked our interest and desire in writing this commentary, which challenges us to be more intentional about aligning our research with the national research priorities in science communication. This commentary was written as part of a course at Texas A&M University.

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