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

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## Introduction

The 2007–2010 National Research Agenda (NRA): Agricultural Education and Communication highlighted four research priorities important to agricultural communications. Even though subsequent NRA's referenced agricultural communications as a dimension of agricultural education, they did not include research priorities specific to agricultural communications (Doerfert, 2011). Thus, agricultural communications research is not guided by a research agenda (Irlbeck & Buck, 2017), but developing one specific to the discipline could provide much needed direction and help scholars work toward shared goals. In 2017, the National Academies of Science, Engineering, and Medicine (NASEM) published *Communicating Science Effectively: A Research Agenda* to guide science communications research and practice, particularly related to "issues that are contentious in the public sphere" (NASEM, 2017, p. 1). Because agricultural communications is a distinct field within the broader science communications discipline that often deals with contentious issues, this agenda could serve as a guide for agricultural communications research and unify scholarship.

## Conceptual Framework/Research Questions

The NASEM (2017) report—*Communicating Science Effectively: A Research Agenda*—served as the conceptual base for this study. Written by a team of prolific science communications scholars with support from Climate Central via the Rita Allen Foundation and three other funding agencies, the 153-page report contains five chapters that discuss the challenges to effective science communications and outline a research agenda with methods to overcome those challenges. We reviewed the agenda and became familiar with its scope and recommendations for research. The purpose of our study was to determine how the science communication research agenda has been used to inform research in agriculture, natural resources, and related disciplines and to establish a philosophical and practical understanding of how the agenda can be used to guide research in agricultural communications. Four questions guided the study: 1) How many of the publications that cited the agenda used it to inform the research reported?; 2) How many of the publications that used the agenda to inform research focused on agriculture, natural resources, and related disciplines?; 3) How did the identified publications use the agenda to inform the research reported?; and 4) How does the agenda align with the scholarly base of agricultural communications?

## Methods

We conducted a philosophical study to achieve the study's purpose. Philosophical studies are beneficial when the goal of research is to establish a foundation for understanding certain practices within a profession (Burbles & Warnick, 2006). According to Google Scholar on June 14, 2021, 279 publications cited the research agenda. We reviewed each of these publications to determine their characteristics and use of the agenda. Using a Microsoft Excel spreadsheet, we categorized the authors, titles, year and place of publication. We included only publications that reported empirical results in English (i.e., journal articles, conference

proceedings, theses, dissertations), thereby excluding books and book chapters, editorials, essays, colloquial papers, commentaries, duplicates, and artifacts not in English ($n$ = 155). Then, we explored if and how each of the remaining 124 publications used the agenda in their research. We excluded publications that casually cited the agenda, meaning they merely used it to introduce science communication, borrowed a definition, referenced it in their discussion of the deficit model, or included it in their discussion of recommendations for future research ($n$ = 102).

## Findings

Twenty-two of the 124 empirical publications that cited the research agenda used it to inform the research reported, which is the intention of a research agenda. For example, one used it to guide the data analysis procedures, one used it to develop a model, and one used it to create focus group questions (Bilandzic et al., 2020; Stempel & Becker, 2019; Tong et al., 2018). In addition, 39 of the 124 empirical journal articles that cited the agenda focused directly on agriculture or natural resources. However, only seven used it to inform the research reported. Specifically, Bielicki et al. (2019) investigated stakeholder perspectives on sustainability in the food-energy-water nexus and used the agenda to inform sample selection. In addition, Lull et al. (2019) investigated public perceptions of genetically engineered mosquitoes to prevent the spread of Zika virus and used principles from the agenda to develop a guiding framework.

The research agenda makes clear recommendations for science communications research regarding message framing, social media use, internet as an information source, public perceptions, media representations, and professional development. All of these research topics have direct relevance to agricultural communications scholarship. Over the last two decades, scholars have conducted several reviews of journal articles published in the *Journal of Applied Communications* to identify research themes supporting the scholarly base of the discipline. Some of the most prevalent themes identified include *electronic media*, *media relations*, *communications management*, *professional development*, *distance education*, *information sources and technology*, *biotechnology communications*, *message framing*, *social media use*, and *public perceptions* (e.g., Edgar et al., 2009). Thus, there is clear overlap between agricultural communications research areas and research priorities identified by the agenda that can advance science communications and all sub-disciplines.

## Conclusions/Recommendations

Interestingly, few scholar groups ($n$ = 22) across science disciplines have used the agenda to inform their research. Seven of the scholar groups studied it in an agriculture-related discipline, and two specifically studied agricultural communications (Abrams et al., 2020; Fischer et al., 2020). We believe the agenda has great applicability to agricultural communications research and that scholars in the discipline should use principles and recommendations from the agenda that are relevant in agricultural contexts to guide their work. For example, as suggested by the agenda, framing effects research should be conducted that investigates how competing social media messages influence various outcomes (i.e., cognitive dissonance) as it relates to controversial scientific issues (i.e., agricultural biotechnology). Perhaps, agricultural communications scholars should adopt the existing NASEM agenda and use it to study science communications in the context of agriculture.

## References


Abrams, K., Bonser, C., & McCord, A. (2020). Exploring science communication effectiveness in the U.S. Federal Government research process: A case study with the U.S. livestock producer's antimicrobial use research. *Journal of Applied Communications*, *104*(4), 1–18. https://doi.org/10.4148/1051-0834.2343

Bielicki, J. M., Beetstra, M. A., Kast, J. B., Wang, Y., & Tang, S. (2019). Stakeholder perspectives on sustainability in the food-energy-water nexus. *Frontiers in Environmental Science*, *7*(7). https://doi.org/10.3389/fenvs.2019.00007

Bilandzic, H., Kinnebrock, S., & Klingler, M. (2020) The emotional effects of science narratives: A theoretical framework. *Media and Communication 8*(1). https://doi.org/10.17645/mac.v8i1.2602

Burbules, N. C., & Warnick, B. R. (2006). Philosophical inquiry. In J. L. Green, G. Camilli, & P. B. Elmore (Eds.), *Handbook of complementary methods in education research* (pp. 489–502). Routledge.

Doerfert, D. L. (2011). *National research agenda: American Association for Agricultural Education's research priority areas for 2011–2015*. Department of Agricultural Education and Communications, Texas Tech University.

Edgar, L., Rutherford, T., & Briers, G. (2009). Research themes, authors, and methodologies in the Journal of Applied Communications: A ten-year overview. *Journal of Applied Communications*, *93*(1–2), 21–34. https://doi.org/10.4148/1051-0834.1201

Fischer, L. M., Meyers, C., & Cummins, R. G. (2020). Creating relevancy in agricultural science information: Examining the impact of motivational salience, involvement and pre-existing attitudes on visual attention to scientific information. *Journal of Applied Communications*, *104*(2), 1–23. https://doi.org/10.4148/1051-0834.2287

Irlbeck, E., & Buck, E. B. (2017). Are we there yet? Toward an agricultural communications academic organization. *Journal of Applied Communications*, *101*(3), 1–7. https://doi.org/10.4148/1051-0834.1838

Lull, R. B., Akin, H., Hallman, W. K., Brosard, D., & Jamieson, K. H. (2020). Modeling risk perceptions, and approval of releasing genetically engineered mosquitoes as a response to zika virus. *Environmental Communication*, *14*(7). https://doi.org/10.1080/17524032.2019.1685558

National Academies of Sciences, Engineering, and Medicine (NASEM). (2017). *Communicating science effectively: A research agenda.* The National Academies Press. https://doi.org/10.17226/23674

Stempel, P. & Becker, A. (2019). Visualizations out of context: Addressing pitfalls of real-time realistic hazard visualizations. *International Journal of Geo-Information*, *8*(8) 318. https://doi.org/10.3390/ijgi8080318

Tong, A., Crews, D. C., Schell, J. O., de Boer, I. H., Chonchol, M., & Mehrota, R. (2018). Young kidney professionals' perspectives and attitudes about consuming scientific information: A focus group study. *Clinical Journal of the American Society of Nephrology, 13*, 1587–1597. https://doi.org/ 10.2215/CJN.01760218