

After spending more than two dozen years working as a faculty member in agricultural communications, which involved leading international academic programs related to agricultural communications, I feel compelled to start a discussion about our academic discipline's movement from being nationally focused to being globally focused. Our discipline has finally grown to this point, and that should be a source of pride for all of us in the discipline. After decades of discussing the structure of our discipline and asking, "Are we there yet?" we can at last begin discussing legitimate global expansion and begin asking, "Are we global yet?"

This topic of global expansion has been an important part of my career's work—especially the work I have done on developing agricultural communications curricula in the United Kingdom. So, now, as my Scottish colleague Craig Davidson and I are making some progress on UK curriculum development, I feel somewhat led to escalate this disciplinary discussion about agricultural communications going global. I have spoken recently to several colleagues who are involved in international programming, and my aim here with this philosophical piece of writing is to share some of those projects with you, ending with the details about my own project in Scotland. Ultimately, my hope is that some early- to mid-career faculty who still have time in their career to start global programming will read my commentary and pick up the banner that some of us have been attempting to carry.

Lately, I have discovered that the story of our discipline expanding into other countries is interesting to lots of people—even people outside our small, insulated academic environment. My university system's Agricultural Experiment Station recently hired a new media relations and digital communications specialist—Jenifer Fouch. Jenifer is now a new ACE member. She is full of professional energy, and she hosted me on her podcast recently to talk about my research on developing agricultural communications curricula in the United Kingdom. By the day after the podcast was released (along with a well-written news release she wrote to accompany it), the story about my plan to create new graduate micro-certificates at Scotland's Rural College (SRUC) was campus news here at the university, capturing the top headline of the week. It was sort of interesting news, I thought at the time, because SRUC's new micro-credential program in agricultural communications will constitute the first-ever degree program in the agricultural communications discipline in the United Kingdom. Interest in Fouch's media relations efforts continued to gain steam, and I got actual media requests from journalists. The story made regional television news, then state-wide news in the *Arkansas Democrat Gazette*.

Slow news days during the dog days of summer? Maybe. But still, people who were not even very familiar with our profession or discipline found this story to be genuinely interesting. So, that made me think, professional agricultural communications practitioners and faculty members in the discipline across the US need to hear the story of the expansion of our discipline, too. They probably somehow missed the breaking news coverage in Arkansas (sarcasm intended). But, seriously, because it could affect them, agricultural communications faculty and practitioners should be even more interested than most news consumers.

I am in a unique position to know about several other projects that seek to globalize our discipline, and I want everyone to know about those as well. So, my motivation for creating this disciplinary commentary is first, to generate support for the effort, but also to generate collaboration; there is no need to reinvent the wheel every time we decide to do work to expand the discipline into a new global location, and there are lots of opportunities for young faculty and graduate students to get involved in these efforts as well.

In 2017, Erica Irlbeck and Emily Buck were the authors who asked in their commentary, "Are we there yet?" as they discussed whether our discipline was ready for an academic

professional society totally dedicated to the discipline. They cited some of the most foundational literature about our discipline at the time that discussed the growth of agricultural communications in the U.S.—from Weckman et al. (2000) to Miller et al. (2015). While that was an important commentary that helped pave the way to strengthen the structure of our discipline, their piece was about the *national* discipline and didn't consider our discipline in a *global* context. At the time, as we examined how far we have come, we had indeed come a long way. In fact, if you study the evolution of academic disciplines, you might describe agricultural communications as being at Kuhn's (2012) Normal Science stage, which is the second stage of disciplinary development where members of the discipline generally conduct unified research under an accepted framework or paradigm. However, we hadn't come far enough yet that global expansion should be a significant part of the discussion.

There had been, however, some things going on in the years before that article and around that same time that would lead to more talk of internationalizing the discipline. More veteran members of the discipline—David Doerfert, Jim Evans, Dwayne Cartmell, and Traci Irani (2007)—reported on the discipline's effort to develop an "international" research framework and agenda. Irani and Doerfert (2013) continued leading those kinds of important discussions about our future. Their commentary in the *Journal of Applied Communications* described the discipline on the 150th anniversary of the Land Grant system and projected what we might look like in another 150 years. They described how the "green divide," identified in a study by Goodwin et al. (2011, p. 8) had been inspiring the agriculture industry and its agricultural communications practitioners to create a stronger awareness and understanding between agricultural producers and consumers. They made the case that those practitioners' efforts were being guided by academic programming—teaching as well as research—in agricultural communications programs nationwide (but stopped short of "worldwide"). They also described challenges. One was that we were necessarily sharing courses with journalism and other academic departments on campuses because we didn't have enough faculty to teach all of our communications courses in the context of agriculture in our own departments. Further, they identified a lack of experienced, tenured faculty in the field and even fewer who have significant research appointments.

Time and growth of programs across the U.S. have solved those problems to an extent, as those of us who were young faculty at the time now are now a part of the solution and many of our programs offer more communications courses in-house. Now that an entire generation of tenured, fully promoted faculty exists, some of us are doing more research than when we first began in our academic roles. This is because starting new teaching programs and developing new courses was our priority at that time earlier in our careers, but we can now focus more intently on the other aspects of academia.

Irani and Doerfert (2013) ultimately suggested a rebirth of the discipline may be at hand, led by new media technologies and by the fact that the planet was figuratively getting smaller as a result of communication innovations. I think where they were heading with this idea was, in a way, toward global expansion of our discipline. Here is what they wrote as they predicted our future: "You will find a discipline that is moving out of our single-focused box to one that is involved in transdisciplinary teams tackling the issues and problems associated with the challenges of a growing planet" (p. 10). We are only 10 years into their 150-year prediction, and they are already accurate. Their future-telling piece goes on to describe a team-science approach to both teaching and research in agriculture, which we are certainly seeing more of in agricultural

research institutions, but it is also easy to see how their concepts could apply with collaborative projects among global academic institutions as well.

Fast-forward to the last few years. Parrella et al. (2021) recently illustrated how our discipline has continued—at least from 2000 to 2021—to focus its research on improving and expanding agricultural communications academic programs and curricula. The fact that this is the discipline’s third most popular research topic sends a message to all of us agricultural communications academicians. We, collectively, are highly interested in learning how to grow our discipline. We want to prepare our students to succeed in the profession, and we want to do it within our own discipline—not by relying too heavily on the other disciplines that also prepare journalists and marketing communications professionals. We want to teach communications concepts and skills in the context of agriculture, food, and natural resources, and I believe agricultural and land-based colleges and universities across the globe want to do the same thing. They just need to learn how to get started.

Wyss and Cletzer (2023) are the most recent JAC authors to hammer home the most important curriculum-building concept in our discipline. That is, that good agricultural communications curricula begin with the mission of developing strong writers and capable reporters of agricultural news. In our discipline’s literature about building academic programs, this is the constant in an ever-changing environment that has become overrun with new technologies, platforms, and channels. Wyss and Cletzer (2023), called this environment “the continuous disruptive change in our profession” (p.15). We can and will try to keep up with the technologies in our classrooms, but we must also keep up with teaching students to be great writers. These were the same sentiments that survey and interview participants in the U.K. shared with my graduate students Sara Bell and Abby Davis, both of whom researched the perceptions of potential employers of students with agricultural communications training at the university level (Miller et al., 2020; Miller et al., 2024). Writing is foundational to the agricultural communications profession, and this concept appears to be global among those who would hire newly trained agricultural communicators in countries that lack degree programs in the subject.

So, presently, in 2024, it seems we are there now. Thanks to the leadership of veteran faculty members like Ricky Telg and his students and colleagues, we have our own scholarly professional society that we do not share with other disciplines and professions (the Society of Agricultural Communications Scholars), and we have created a new national research forum where we can share our disciplinary research (the National Agricultural Communications Symposium). Also, for many decades, we have had a strong professional organization in the Association for Communication Excellence, which has hosted our own respected academic journal, the *Journal of Applied Communications*. In fact, arguably, we have all the criteria higher education experts say define a discipline (Krishnan, 2009): (1) a specific objective for research efforts; (2) an collection of specialized knowledge; (3) accepted theories and conceptual models that help organize the accumulated knowledge; (4) specific agreed-upon terminology; (5) specialized and broadly accepted research methods; and (6) established academic departments and professional societies.

I can provide examples that check every one of these boxes, and so can the rest of us in the discipline. However, a couple of things still seem to be missing from our coming-of-age discipline.

First, just as we have come into our own as a discipline (again, yes, we are “there”), the long-standing paradigm of academic disciplines is changing. Entire universities are upheaving their academic program models in favor of team-science models that toss academic disciplines

out the window and focuses on multi-disciplinarianism and trans-disciplinarianism. I think this may have been what Doerfert and Irani were predicting back in 2013: the future most likely involves our discipline or at least individuals in our discipline joining forces directly with other disciplines to solve big problems and to teach students in a better way—through genuine problem solving. And I am not just talking about the social science disciplines joining forces—I am talking about the physical and biological sciences and other applied social scientists—the agronomists, animal scientists, food scientists, agricultural engineers, ag economists, and rural sociologists—accepting us as one of them and joining with us. We are headed toward multi-disciplinary academic teams that may minimize the concept of the traditional academic department in favor of research and teaching centers and multi-state projects—entities that conduct research and teach students to be problem solvers themselves through team science. The National Research Council (2015) describes it well and embraces it, and research is being conducted this way more often now than ever before. So, this is an issue related to the expansion of our discipline, but it should be continued in more detail in a separate JAC commentary. The reason I mention it here is that the concepts of team science, team teaching and multi- and trans-disciplinarianism certainly will directly impact the expansion of our discipline internationally.

Secondly, and most germane to this paper, our academic discipline has been bounded by geography, but our *profession* is not, and we haven't given this enough thought over the years. How can it be that we have an International Federation of Agricultural Journalists that lists member guilds in 60 countries (IFAJ, 2024) but we have an academic discipline that hardly has any representation outside the borders of the United States? How can it be that our research papers are presented at international conferences like the Association for International Agricultural and Extension Education and our articles are published in that association's journal, but there is no agricultural communications discipline to speak of internationally? How can it be that professional development opportunities for journalists to improve their agricultural reporting exist in countries like Kenya, Liberia, and Ghana and also in countries like Canada, the United Kingdom and Australia, but students can't pursue degrees that specifically train agricultural communicators in any higher education institution in those countries? How can this be? Well, it won't continue to be—not for much longer anyway.

The reason our discipline is not likely to stay geographically bound to the U.S. is that there is a growing demand for the profession globally, and that demand is driving a demand for international growth of the academic discipline. A few of us who have seen the opportunity for our discipline to be helpful in other places around the world are providing the impetus for this movement. In fact, while I have an impactful project going on in Scotland, some of my colleagues have also been doing academic work internationally in other places. Most of these projects have paved significant inroads for the expansion of our discipline into other places. Ranging from international study tours that simply raise awareness of our discipline globally to institutional agreements for faculty and curriculum sharing in the discipline, these international efforts are important first steps. I spoke to several U.S. faculty members who have projects going, and I recorded their efforts to share with readers of this article. They were so kind to share their work with me, and I should mention that each of them has approved of my description of their work, which ranges from coordination of international study tours to development of graduate curricula in agricultural communications.

## **Illinois' Connections in Switzerland, Ireland, Australia, and Canada**

I recently had a nice conversation with Owen Roberts, who is a lecturer and director of the agricultural communications program at the University of Illinois Urbana-Champaign. Roberts is also a former president of the International Federation of Agricultural Journalists and has a strong interest in the topic of this commentary. This year, Roberts took a group of nine agricultural communications students and one agricultural leadership student to the 2024 IFAJ Congress in Switzerland. He explained that in his role at UIUC, where he has been in since 2020, global awareness, skill development, and critical thinking have emerged as the guiding pillars of his agricultural communications academic program. So, leading a group of undergraduate students to an agricultural journalism conference in Switzerland makes perfect sense. However, Roberts and the UIUC have much more than that one international agricultural communications project going on.

In support of the first pillar—global awareness—Roberts and his colleagues have developed a Visiting Global International Journalist program. The first international scholar to visit the Illinois campus was Claire McCormack in 2023. McCormack is a prominent agricultural journalist in Ireland in addition to being a researcher in media work and agriculture at the School of Agriculture and Food Science at University College Dublin (UCD) (McCormack has published in this journal, in fact). This academic exchange was supported by UIUC's Dr. Jim Evans Agricultural Communications Initiative. Roberts told me he selected McCormack “because she had been both a journalist and an academic” in the discipline, which made her a very unique visiting scholar. She visited seven classes in a week, spoke to the UIUC Agricultural Communicators of Tomorrow student group, and spoke to a group of interested alumni at a homecoming football game gathering. What a fantastic cultural and professional exchange. This year, the visiting scholar will be Kallee Buchanan from Australia, a prominent rural journalist for the Australian Broadcasting Corporation who also has significant experience teaching media writing at Central Queensland University.

Roberts' role in expanding our academic discipline actually began in the mid 2000s when he was teaching an agricultural writing course at the University of Guelph in Ontario, Canada. He taught the course as a side-job in addition to his role as director of research communications there. His successful course led to the establishment the first international affiliate of the Agricultural Communicators of Tomorrow student organization called CanACT. Though the University of Guelph did not have an academic program in agricultural communications, students in the extension education discipline, Roberts said, were drawn to the agricultural communications discipline, partially as a result of taking Roberts' agricultural communications course, which he taught as an extra duty on top of his role as director of research communications. The strong student interest in agricultural communications as a career led to the development of an undergraduate distance education diploma program in 2006, which had great initial momentum, but the program was soon derailed by other administrative priorities and never fully made it off the ground, according to Roberts.

## **Florida's “Streaming Science” Program in Canada**

Connected loosely to Roberts via the city of Guelph is current University of Florida PhD student Madison Dymant. Dymant actually grew up there near the University of Guelph, where Roberts practiced agricultural journalism and taught for so long. Though her family members are

alumni, she never attended there and left home to study at the University of Kentucky, then at Ohio State for her master's degree in agricultural communications, where she published research on the prospective development of an agricultural communications program at the University of Guelph (Dyment, 2022). She then moved on to the University of Florida for her Ph.D., also in agricultural communications. While at UF, Dyment and her faculty mentor, associate professor Jamie Loizzo, developed a relationship with the Ontario Agricultural College (OAC) at the University of Guelph. Working with faculty in multiple agriculture-related disciplines, they created Streaming Science, a project-based learning approach to prepare the next generation of agricultural and natural resources communicators to become stronger communicators of science-based information. In this program, Loizzo and Dyment's UF undergraduate and graduate students interviewed OAC research faculty and produced communication products in several online media genres, including podcasts, electronic field trips, photo essays, and videos. Their special topics course, titled Podcasting to Increase Science Literacy, included eight undergraduate students and 12 graduate students. Dyment, reflecting on the success of the program, explained that the professions of science communication and agricultural communications are extremely important to research and teaching faculty and administrators at Guelph. Science communication is new area of academic focus at Guelph, she said, and there is a good deal of affirmation for the need for this type of curricula in Canada.

### **Texas Tech's Agricultural Communications Fulbright Fellow in Australia**

Funded by a prestigious Fulbright Scholar Award, Texas Tech's Courtney Meyers was a visiting scholar last year at Charles Sturt University in Australia. Her project involved teaching and conducting agricultural communications research there. Meyers said she observed that agricultural communications is not a formal academic discipline in Australia but that faculty she encountered were "surprised to learn about the scope and scale of what we do (in the agricultural communications discipline)." In conducting her research, Meyers met numerous professionals working in agricultural communications roles. She said they were always excited to learn that our discipline is a formal area of study in the U.S. and were generally inquisitive about what we teach students and the types of career paths they follow after graduation.

Part of Meyers' research involved interviewing agricultural communications professionals about the challenges and opportunities facing the Australian agricultural industry. This work was an extension of a project that began in advance of her fellowship experience in which she and her graduate student had conducted face-to-face interviews with Australian agricultural communications professionals and faculty members. The results, which are reported in an in this journal (Thorn, et al., 2022), describe a vision for an academic program that emphasizes strong agricultural science knowledge accompanied by strong writing, speaking, and strategic communication skills. Once Meyers arrived for her fellowship at Charles Sturt University, she continued interviewing professionals in the field there, asking them questions about what they do in their professional roles and seeking their opinion of developing curriculum for agricultural communications as an academic discipline. The professionals told her they had found their roles by either studying agriculture and being skilled at communication or by studying communication and being interested in agriculture.

Meyers said that while the leap to create an entire new course (degree program) in agricultural communications seemed like a monumental hurdle, many of the academic representatives she spoke with recognized the need to integrate communication skills in the

existing agriculture curriculum. This method of taking the first steps toward agricultural communication curriculum in countries where the discipline does not exist was also a recommendation of our study in the U.K. (Miller et al., 2020). Meyers, taking her lead from this observation, served as a guest lecturer in an animal science class at her host institution, where she taught about how animal scientists can leverage their communication skills to benefit the agriculture industry in Australia.

Since returning from Australia, Meyers has had some success in recruiting a few Australian students to pursue their graduate degrees in agricultural communications at Texas Tech. She said her hope is that as they return home, they will be able to demonstrate the advantages of this type of degree and encourage professionals and academics to explore formally developing agricultural communications as an academic area of study there in Australia.

### **Virginia Tech's Agricultural Communications Efforts in Ghana**

Meanwhile, among the places around the globe where there are movements to establish academic programs in our discipline, Ghana may one of the most interesting. A new agreement among three institutions has led to a plan to develop the first agricultural communications academic program in Ghana. Tracy Rutherford, who is the agricultural, leadership, and community education department head at Virginia Tech University, recently returned from Ghana, where she and a team of graduate students and faculty colleagues are planning to facilitate a new post-baccalaureate program that emphasizes communications in rural development. Virginia Tech agricultural communications doctoral student Jessica Spence and Assistant Professor Jean Parrella, who is an expert in communications related to functional foods, are both engaged with this project as well.

Working with faculty and administrators at the University of Cape Coast (UCC) in Cape Coast, Ghana, and the University of Media, Arts and Communication (UniMAC) in Accra, Ghana, the Virginia Tech team will serve as curriculum consultants on this project. UCC Agricultural Economics and Extension faculty will provide expertise in agricultural extension, and the UCC communications faculty and UniMAC faculty will provide expertise in media and communications. Rutherford said the timing is perfect to establish this new master's-level program: "It absolutely is the right time for (UniMAC and UCC faculty to develop this program)—the right people in the right places. UCC has had extension without developing the ag comm. They are just (developing extension communications efforts) a lot faster than we did (in the US Cooperative Extension Service)—later, but faster." As a result of this growth in extension communications, there appears to be a strong demand for communications professionals who have an understanding of agriculture, food, and sustainability issues.

Rutherford explained that during the planning meetings in Ghana with faculty from the three universities, it became clear that this was the first time for communications faculty to realize that taking courses in other science-based areas would be valuable. "UniMAC has a really good radio and TV program," she said. "Seeing what they can do in those spaces is incredible, but the students were learning the communication skills outside the science aspect of what they were communicating." The realization by Ghanaian faculty and administrators that the agricultural communications discipline brought a practical context to communication studies was encouraging for Rutherford to see, she said.

Also, as is the case in many developing countries, the United Nations' 17 Sustainable Development Goals (SDGs) guide important social movements that drive new academic

programs (U.N. DES, n.d.). Local economies also drive demand for new academic programs, as well, and Rutherford observed that both are spurring the effort to develop new agricultural communications curriculum. In particular, the local food industry in Ghana is growing rapidly there and is an important aspect of agriculture that will require stronger agricultural communicators. “There is a Ghana food movement!” Rutherford said. In addition, climate communication has become a guiding concept in the UniMAC communications curriculum. Both of these movements in Ghana will need strong marketing communicators who understand the audience, media, and messages involved in helping consumers and food businesses find local foods and purchase them.

The multi-institution team will propose this 15-month master’s program to Ghana’s higher education curriculum authority this year. Once the curriculum has been approved by the Ghana Tertiary Education Commission (GTEC), the degree program can be offered. The program will contain an element of experiential learning, and in Ghana, students are required to perform a year of federal service, so that year of service could be an avenue for the practical learning aspect that most US ag comm programs have.

The agricultural communications skids in Ghana were actually greased for Virginia Tech’s participation by an existing course offered through the State University of New York’s Collaborative Online International Learning (COIL) Center. Taught and led by Virginia Tech Professor Van Crowder in Ghana to U.S. agriculture students studying abroad, this project-based learning course focuses on communication in international development. “They’re looking at working with funding agencies—development, design, and evaluation of international development projects,” Rutherford said. “How do you get buy-in from stakeholders, how do you engage partners, how do you raise money?” Faculty from UniMAC bring in the Ghanaian development aspect. In addition to Crowder’s work, Spence was the in-country director for the International Agricultural Education Fellowship Program (IAEFP) in Ghana. Operating in Guatemala and Ghana and directed by Norman Borlaug Institute for Agriculture’s Regional Director for Africa, Jack Elliot, this program is a partnership with AgriCorps and is hosted at the Borlaug Institute at Texas A&M University. IAEFP trains and supports fellows to work with teachers and community members in developing countries to implement school-based agricultural education and establish youth leadership clubs.

## **Arkansas’ Collaborations in the United Kingdom**

As I write, I am enjoying my sabbatical in Scotland, supported by my institution, the University of Arkansas I have a guest-lectureship here at Scotland’s Rural College for the semester. My primary project at SRUC is to develop a collection of master’s level micro-certificates in agricultural communications, the first program of its kind in the U.K. My colleague here, agriculture program team leader Craig Davidson, is a former high school agriculture teacher in Bakersfield, California, who has returned to his roots in Scotland. He and I have been grinding away through the curriculum approval process and have found success. Fully approved through Scotland’s higher education curriculum quality control process, the curriculum for the micro-certificates is taking shape, and the first modules are set to be offered in February 2025.

The approved curriculum contains five modules, each resulting in its own micro-credential upon completion. The intention is for the five modules to eventually become a full-fledged master’s degree in agricultural communications at Scotland’s Rural College. The

modules include Agricultural Communications and Journalism, an overview of the profession and discipline; Integrated Marketing Communications in Agriculture, focused on marketing communications; Digital Media in Agriculture, featuring theory and skills-based training in photography, videography, and digital media management; Issue Management and Crisis Communication in Agriculture, focusing on risk and crisis communication and communication targeting public policymakers; and Science Communication in Agriculture, addressing the various audience characteristics, genres, and media involved in communicating about complex scientific topics to the public. These courses will be offered asynchronously, mostly to working professionals and some full-time graduate students in other disciplines as electives. With topics and content guided by my previous research and by Davidson's work to garner support and input from key stakeholders in Scotland and around the UK, the micro-certificate curricula are the focus of a significant amount of attention at SRUC. Most expect the program to quickly build a high enrollment. The program is likely to appeal to domestic professionals in the agricultural marketing communications profession, early-career agricultural journalists, and agricultural consulting professionals, in addition to international students looking to develop an academic background in the discipline before applying to full master's and PhD programs.

## Conclusion

First, in closing, I am so pleased to have been able to catch up with my colleagues and talk to them about their work to expand our discipline internationally. It did occur to me, however, that even though I was thorough in working to identify international projects in our discipline, I may have missed someone or some institutions that are leading projects about which I am unaware. My apologies to those people if this is the case. Still, these examples of international expansion are significant, and they represent huge successes and growth for our discipline.

In Kuhn's (2012) model of disciplinary development, the third stage—the stage we might move to next in order to grow—is called the *Crisis stage*. This is the stage where problems or anomalies with the current paradigm require shifts in disciplinary thought and structure. So, though I wouldn't call it a crisis, our lack of international presence is an anomaly at best and could be characterized as a problem for sure. But it is a problem many of us are happily working to solve. So, it is my hope that if you are an early- or mid-career faculty member you will consume this article and find it both educational and motivational. I respectfully and sincerely hope you will read this, feel the sense of solidarity in our discipline regarding our collective desire to expand across the globe, and find your place in that movement.

## References

- Dyment, M. A. (2022). *Attitudes toward agricultural communications program development at the University of Guelph: A student and industry perspective* [Master's thesis, Ohio State University]. OhioLINK Electronic Theses and Dissertations Center.  
[http://rave.ohiolink.edu/etdc/view?acc\\_num=osu1650477466704687](http://rave.ohiolink.edu/etdc/view?acc_num=osu1650477466704687)
- International Federation of Agricultural Journalists [IFAJ]. (2024). Membership.  
<https://www.ifaj.org/membership/our-members/>

- Goodwin, J. N., Chiarelli, C., & Irani, T. (2011). Is perception reality? Improving agricultural messages by discovering how consumers perceive messages. *Journal of Applied Communications*, 95(3), 21-33. <http://journalofappliedcommunications.org/2011/12--volume--95--no--3.html>
- Krishnan (2009). What are academic disciplines? University of Southampton, NCRM Working paper series 03/09. [http://eprints.ncrm.ac.uk/783/1/what\\_are\\_academic\\_disciplines.pdf](http://eprints.ncrm.ac.uk/783/1/what_are_academic_disciplines.pdf) (PDF) *What is a discipline? The conceptualization of research areas and their operationalization in bibliometric research*. Available from: [https://www.researchgate.net/publication/327344547\\_What\\_is\\_a\\_discipline\\_The\\_conceptualization\\_of\\_research\\_areas\\_and\\_their\\_operationalization\\_in\\_bibliometric\\_research](https://www.researchgate.net/publication/327344547_What_is_a_discipline_The_conceptualization_of_research_areas_and_their_operationalization_in_bibliometric_research)
- Kuhn, T. S., (2012). *The Structure of Scientific Revolutions* (4<sup>th</sup> ed). University of Chicago Press.
- Miller, J. D., Large, M. M., Rucker, K. J., Shoulders, K., and Buck, E. B. (2015). Characteristics of U.S. agricultural communications undergraduate programs, *Journal of Applied Communications*, 99(4). <https://doi.org/10.4148/1051-0834.1063>
- Miller, J. D., Davis, A., Fanyinkah, K. D., McLeod, A., Cox, C., & Rucker, K. J. (2024). Perceptions of professionals, faculty, and students regarding the implementation of an agricultural communications degree program in the United Kingdom. *Journal of International Agricultural and Extension Education*, 31(1), 1-16. <https://doi.org/10.4148/2831-5960.1140>
- Miller, J. D.; Maples Bell, S., Rucker, J. Buck, E.; and Parks, A. (2020) Introducing the academic discipline of agricultural communications to the United Kingdom, *Journal of Applied Communications*, 104(4). <https://doi.org/10.4148/1051-0834.2364>
- National Research Council. 2015. *Enhancing the Effectiveness of Team Science*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/19007>
- Parrella, J. A., Spence, J. R., Redwine, T., and Leggette, H. R. (2021). Characterizing viewpoints of scholars in agricultural communications as they relate to research themes in the *Journal of Applied Communications: A Q methodological study*. *Journal of Applied Communications*, 105(3). <https://doi.org/10.4148/1051-0834.2389>
- Thorn, L., Meyers, C., Frazee, S., & Akers, C. (2022). Identifying stakeholders' needs for Agricultural communications in higher education curriculum in Australia. *Journal of Applied Communications*, 106(4). <https://doi.org/10.4148/1051-0834.2462>
- United Nations Department of Economic and Social Affairs [U.N. DES]. (2024). The 17 Goals. <https://sdgs.un.org/goals>
- Weckman, R., Witham, D., & Telg, R. (2000). Characteristics of agricultural communications undergraduate programs: Findings from a national survey. US Agricultural Communicators' Congress, Washington, DC.

Wyss, E., & Cletzer, A. (2023). Agricultural communications practitioners' perspectives on skills and competencies graduates need to be career ready: A mixed methods study with implications for undergraduate programs, *Journal of Applied Communications*, 107(2). <https://doi.org/10.4148/1051-0834.2471>