

Responsible Use of Artificial Intelligence and Digital Technologies in Agricultural Development

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Abstract

This article is a written reflection of common themes shared by experts at the second biennial symposium and in their accompanying special issue articles, presented as a forward-looking story integrating themes of purpose, ethics, and human dimensions into decisions about the responsible use of artificial intelligence and digital technologies as innovations for agricultural development.

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Storytelling is a powerful tool spanning cultures and generations, associated with outcomes such as socialization, improved critical thinking, and enhanced adoption of innovations (Ochs et al., 1992; Thomson et al., 2025; van Hulst, 2012). At the second biennial symposium of *Advancements in Agricultural Development*, presenters shared their unique stories of research and/or practice focused on artificial intelligence (AI) and the adoption of digital technologies. However, common themes existed that were suggestive of a more comprehensive, multi-faceted, forward-looking story. In educational settings, storytelling can also be used as tool to discuss actions which increase or decrease the likelihood of a future scenario (Rose, 2026). Our presenters shared practices and knowledge with the potential to contribute to a future which responsibly incorporates AI and digital technologies to advance the goals of agricultural development. While I will use “we” in this reflection to describe thoughts shared by symposium participants during their presentations and in their accompanying special issue articles, our hope is the narrative put forward is one that will resonate with other actors engaged in agricultural development.

In the story that we want to tell, we begin with the premise that *purpose matters*. Clarity about what problems we are trying to solve and for whose benefit we are trying to solve them (McGrath et al., 2026) will be evident. User voices will be centered in the development, application, and evaluation of AI and digital technologies. Further, consideration of whose needs matter will include not only human interests but also the needs of plants, animals, and

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the environment (Rose, 2025). In assessing whether to pursue the purpose or not, a guiding question will be whether the work contributes to the development of solutions that are just.

Another key concept in the story is the importance of differentiating between *what we can do* and *what we should do*. The symposium began with the potential for pro-innovation bias (Rogers, 2003); Drs. Roberts, Lindner, and I intentionally invited people we knew would have unique perspectives which could advance research and practice related to AI and digital technologies. Yet, as we progressed through the event, speakers routinely presented their own hesitations and doubts about the innovations and a recognition that they may not always be the correct tools for the problems being addressed. Cautionary tales were shared highlighting the potential for undesirable and/or unanticipated consequences to outweigh the benefits of the desirable and/or anticipated consequences (Rogers, 2003), including the observed phenomena of people drifting away from social learning experiences in favor of using their mobile phones (Miller, 2025) and the possibility of reinforcing harmful gender stereotypes through AI models trained on biased materials (Jones-Garcia et al., 2026). Continued vigilance to prevent overreliance on AI and/or digital technologies when more appropriate options exist will be critical for achieving positive agricultural development outcomes in the future.

In the story we want to tell about AI and digital technologies, advances will be made which allow for the complexities of navigating the *human dimensions* of knowledge exchange and knowledge building to be acknowledged and addressed. New AI models will be trained with an overt recognition that local context matters (Hill & Narine, 2026; Jones-Garcia et al., 2026), individuals are unique (Stapleton et al., 2026), and that an incredible tapestry of cultures and values exists which needs to be navigated to provide ethical and relevant benefits for all users, not just those belonging to the dominant class (Singh et al., 2026). AI-generated solutions will integrate context, culture, and values because these factors influence the success or failure of innovations (Ahn et al., 2026).

Feelings of uncertainty caused by the integration of AI and digital technologies, such as those documented by Lindner et al. (2026), will be skillfully addressed by organizational leaders who are intentionally trained to help their employees think critically and process complex emotions (Stedman, 2026). Strategies incorporating human preferences, such as those utilized by Digital Green while developing Farmer Chat (Singh et al., 2026) or the integration of design thinking to create new technologies for producers (McGrath et al., 2026), will be standard elements in the development process and help to build trust with users. Prioritizing the human experience is a necessary part of ensuring users will have access to innovations which allow them to retain their agency and make informed choices based on, and appropriate for, their individual circumstances (Jones-Garcia et al., 2026).

Finally, as I reflected upon the valuable perspectives shared by our presenters during the symposium, I noticed a common tendency to approach innovations as problem-solving tools to be used for addressing deficits. Yet, with the group's shared interest in positioning users to be active co-creators in driving solutions and innovations (Jones-Garcia et al., 2026; McGrath et al., 2026; Singh et al., 2026), it is clear that a successful future with AI and digital technologies

evolves to integrate an *assets-based approach*. In the future, for example, farmers may use generative AI tools for advice about how to maximize the available assets on their farms in the same way that home cooks now ask for recommendations about what recipes they can follow based on the ingredients they have available to use. AI may continue to address what is wrong, but it will also become a tool for building upon what is right.

Though I've presented elements of a shared story, they reflect a specific place and moment in time. Continued conversations between symposium participants, new and strengthened collaborations, and an ongoing commitment to pursuing strategies which lead to advancements in agricultural development will ultimately determine how our story plays out. We hope it will be a story of success and invite others to join in crafting the narrative.

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