ARTIFICIAL INTELLIGENCE AS AN AGRICULTURAL COMMUNICATOR: A CONTENT ANALYSIS OF GENERATIVE AI RESPONSES

Allyson A. Spears, Sarah Lynn Holick, & Rafael Landaverde

Department of Agricultural Leadership, Education, & Communications, Texas A&M University

INTRODUCTION

Generative artificial intelligence (AI) is rapidly changing how people seek and interpret information. College students and the broader public regularly use tools such as ChatGPT, Gemini, and Claude to answer questions, summarize complex topics, and learn unfamiliar concepts (Mulford, 2025). This shift is particularly important within agriculture, where public knowledge is often limited and misconceptions surrounding modern production practices remain common (Clark et al., 2016). Agricultural communicators have long emphasized the need for accurate, transparent, and accessible communication to bridge the gap between producers and consumers (Shank et al., 2025). As generative AI becomes a common source of agricultural knowledge, the quality and framing of its responses may shape public perceptions before individuals encounter information from agricultural professionals. This study examined how leading AI models communicate agricultural concepts by analyzing themes, portrayals, accuracy, completeness, and variation in responses to standardized agricultural prompts.

METHODS

Develop Standardized Prompts

Fifteen prompts created to reflect general-public agricultural questions

Generate AI Responses

All responses collected within the same time period to reduce variation from platform updates

Prepare for Data Analysis

Organized for coding, comparison, and thematic analysis.

Conduct Qualitative Content Analysis

Examined themes, portrayals, accuracy, completeness, and variation across AI models

RESULTS

ChatGPT routinely **omitted controversial topics**, such as debates surrounding feedlots, pesticides, or animal welfare, resulting in highly industry positive explanations. It also **consistently framed agriculture as science-based**, regulated, and efficient, describing beef production as a system that "helps provide consumers with a reliable supply of safe, nutritious, and affordable beef products" while emphasizing that producers, "balance animal care, environmental stewardship, and efficient food production."

Gemini acknowledged consumer expectations and sustainability concerns but **occasionally oversimplified conventional agriculture**, including descriptions of food bypassing "massive corporate packaging plants" in favor of local systems. Gemini more frequently **adopted a consumer-oriented perspective**, portraying farm- to-table systems as a way to "keep more money within the community, directly supporting local farmers" and emphasizing environmental sustainability through local food systems.

Claude provided the most comprehensive responses by **incorporating multiple perspectives** and discussing environmental, ethical, and economic considerations, though some production realities remained absent depending on the topic. It also consistently **presented agriculture as a complex system** of competing priorities, describing sustainable agriculture as meeting today's needs "without compromising the ability of future generations to feed themselves" while acknowledging environmental and societal trade-offs.

CONCLUSION

Generative AI is becoming a major source of public agricultural information, positioning large language models as influential communicators capable of shaping how people understand modern agriculture. Across platforms, identical prompts produced **distinct frames**, consistent with **framing theory**, showing that AI responses reflect specific narrative emphases rather than purely objective descriptions (Entman, 1991). Findings align with prior research showing that generative AI generally provides **accurate agricultural information** (McCord & Landaverde, 2026) while differing in detail, language, and presentation. This variation underscores the need for **expert oversight** when AI is used for education or communication. For agricultural communicators, educators, and commodity groups, AI should be viewed as an **emerging communication channel**, not just a technical tool. Future work should examine how AI-generated messages influence **public trust**, **knowledge**, and **perceptions** as these models continue to evolve.