UNIVERSITY OF CALIFORNIA
Agriculture and Natural Resources

University of California, Division of Agriculture and Natural Resources Employees' Use and Perception of Generative Artificial Intelligence

Survey results from data collected October to December 2024

Steven M. Worker, Katherine Soule, Vikram Koundinya, Andrew Lyons, Kitty Oppliger, Daniel Obrist, Jennifer Smilowitz

Background

Generative artificial intelligence (GenAI) has tremendous potential to increase efficiency and productivity in applied research and extension work in the University of California, Division of Agriculture and Natural Resources [UC ANR] (Hill & Narine, 2023; Hill et al., 2024); however, there is not a clear understanding about how academics and professionals have been using or thinking about GenAI (e.g., applications, practical use, technical aspects, ethical considerations). Emerging research in a higher education context generally focuses on campus-based research and teaching, rather than community-based applied research and Extension, which is the core mission of UC ANR.

Deep AI, Inc. generated image using the prompt: "applications, practical use, and ethical considerations for the use of generative artificial intelligence at the University of California Division of Agriculture and Natural Resources"

Methodology

Purpose: Identify and assess needs, gaps, and future impacts of the use of GenAI by ANR employees.

Questionnaire: We developed a 30-question Qualtrics survey asking how UC ANR employees have used GenAI in their work; their use and ratings of specific GenAI tools; perceptions of risk, ethical use, and concern in the use of GenAI; how they might use GenAI in their work in the future; and how they believe GenAI will impact the future of UC ANR. UC Davis IRB determined that review was not required [2213112-1].

Sample: We sent emails to all UC ANR employees and affiliates (collected from the ANR Portal) from October to December 2024 using Qualtrics.

Data Preparation: We received 399 responses and applied data inclusion criteria, which removed 101 responses, resulting in a final usable sample of 298. Responses were excluded if they only answered up to question 3 (inclusion criteria) or completed the survey in less than three minutes.

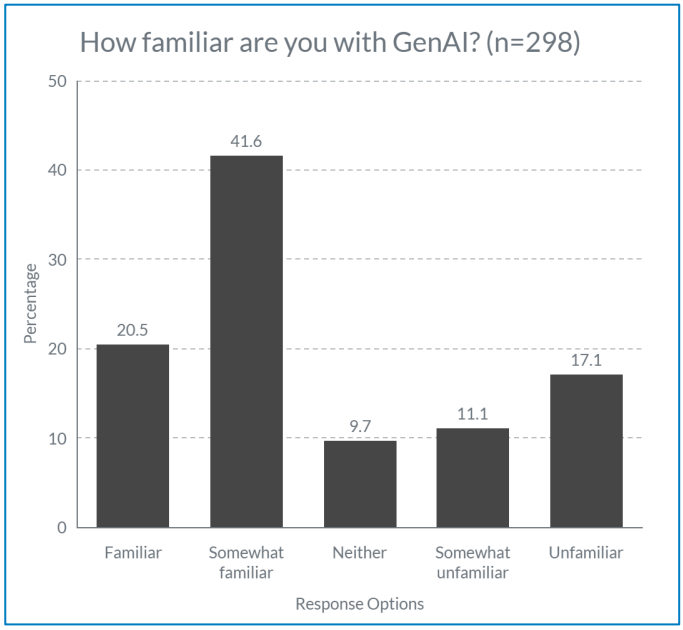
Open-ended comments: We used inductive thematic analysis to analyze responses to four prompts.

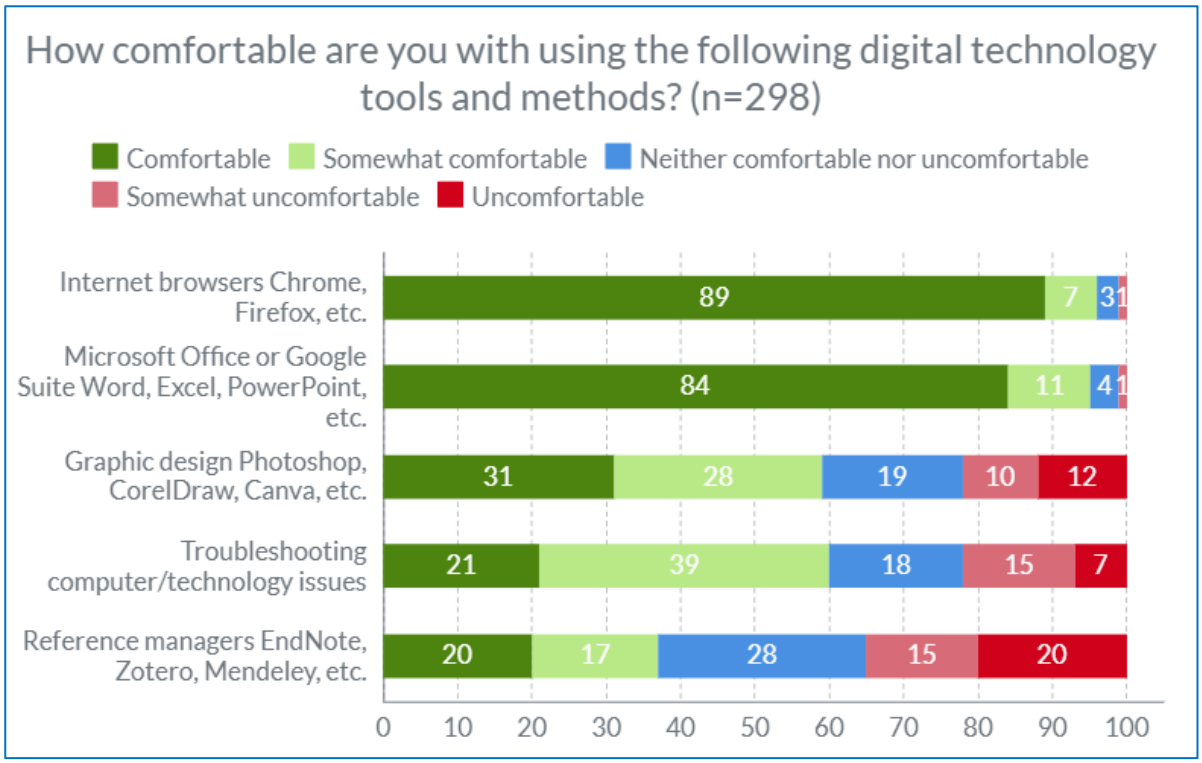
Sample and Response Rate (n=298; however, only 287 provided their current title)

Title	Response Count	Total ANR	Response Rate
Cooperative Extension Advisor	50	188	27%
Specialist in Cooperative Extension	31	109	28%
Other Academic (Administrator, Coordinator, Project Scientist, Professional Researcher)	25	82	30%
Community Education Specialist (CES) or CES Supervisor/Manager	77	311	25%
Other (analyst, admin, support, lab tech)	104		

Familiarity with GenAI

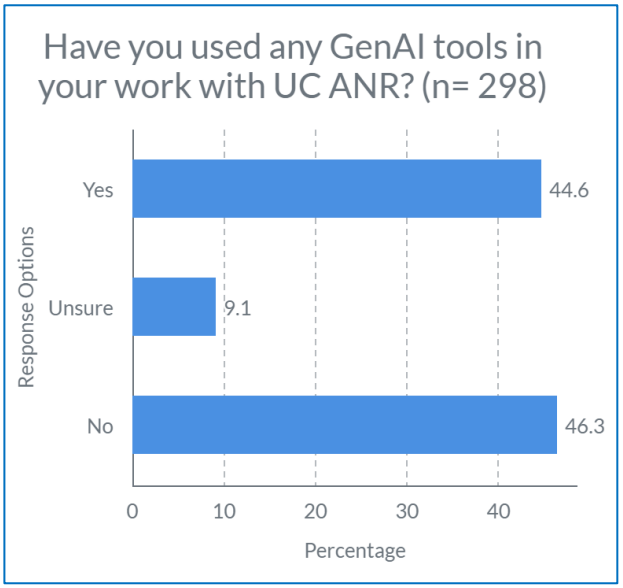
A majority (62%) of respondents reported familiarity with GenAI. For comparison, we asked about comfort with other common technology tools and found most were familiar with browsers and MS Office, but less familiar with computer troubleshooting.



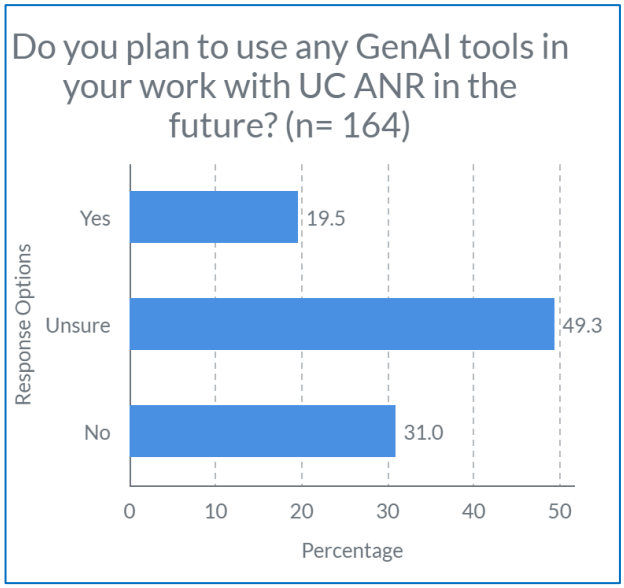


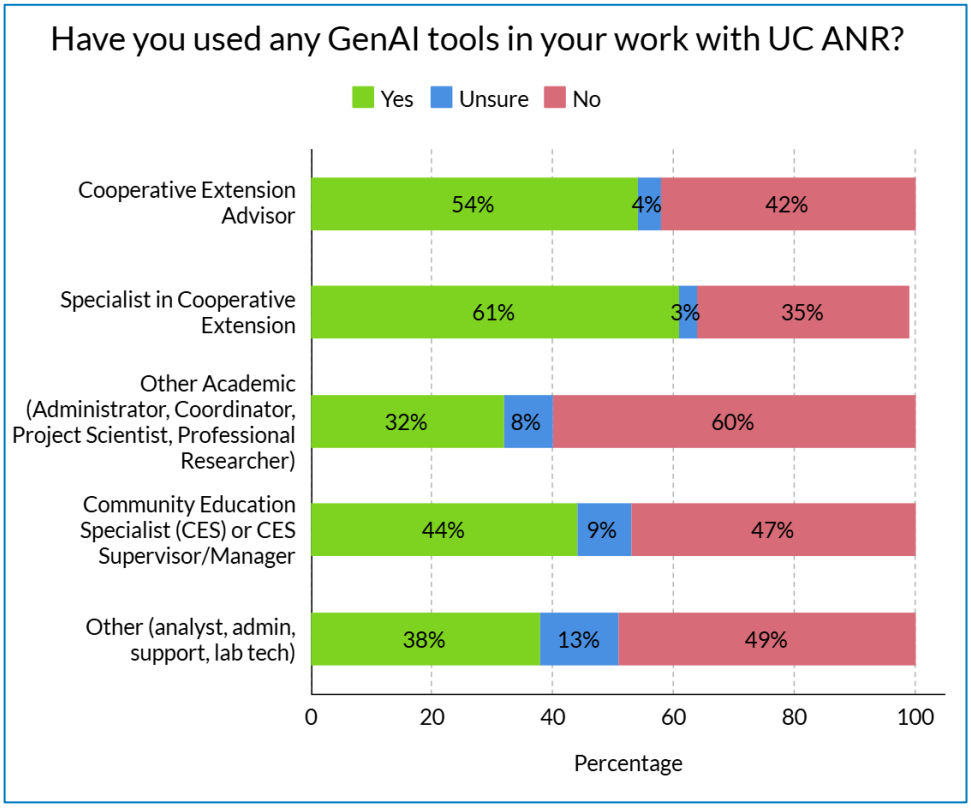
GenAI usage at UC ANR

Nearly 45% reported using GenAI tools in their work with UC ANR. Of those who reported "unsure" or "no", an additional 20% reported planning to use GenAI in the future. Thus, 64% of ANR employees have used or plan to use GenAI, while 31% do not plan to use GenAI with their UC ANR work.



Respondents who marked "No" or "Unsure" were asked the follow-up question →





Specific GenAI tasks and tools

For the 45% (133) who reported using GenAI with their work with UC ANR, common uses included brainstorming ideas and administrative and communication tasks, while fewer used GenAI for data analysis or generating images. By far, the most used GenAI tool was ChatGPT by OpenAI, followed by Zoom.AI/Otter.ai.

We asked people to rate the usefulness of tools they used on a scale from 1 not useful at all to 10 extremely useful. The top six tools are shared here.

ChatGPT = 7.3

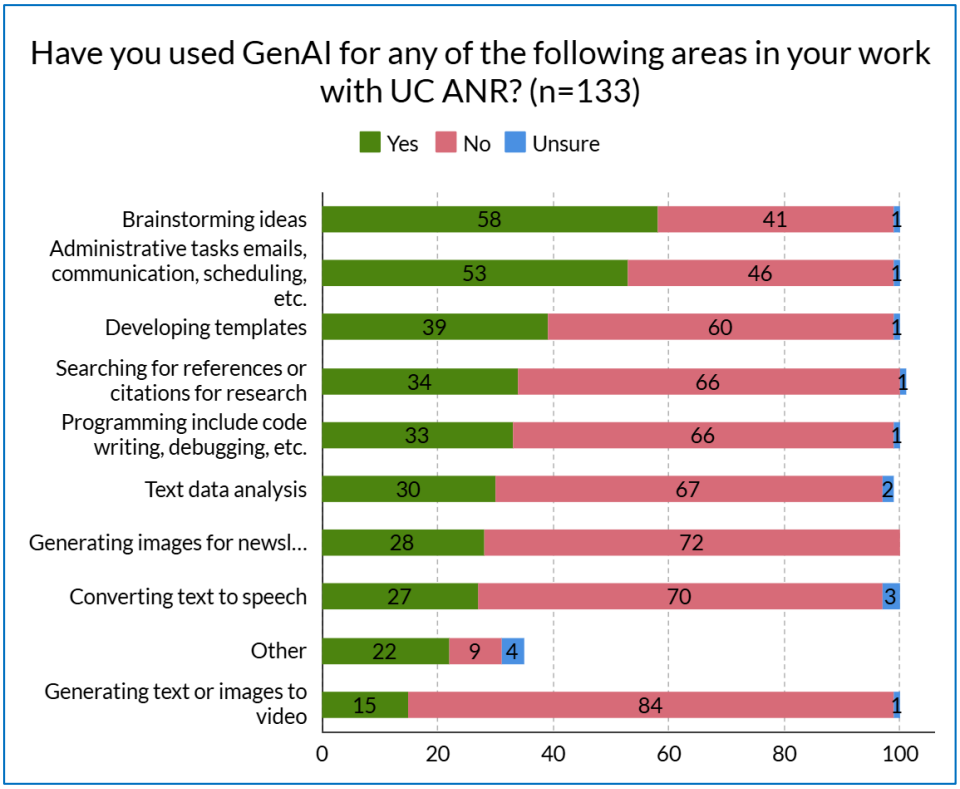
Zoom/Otter = 6.5

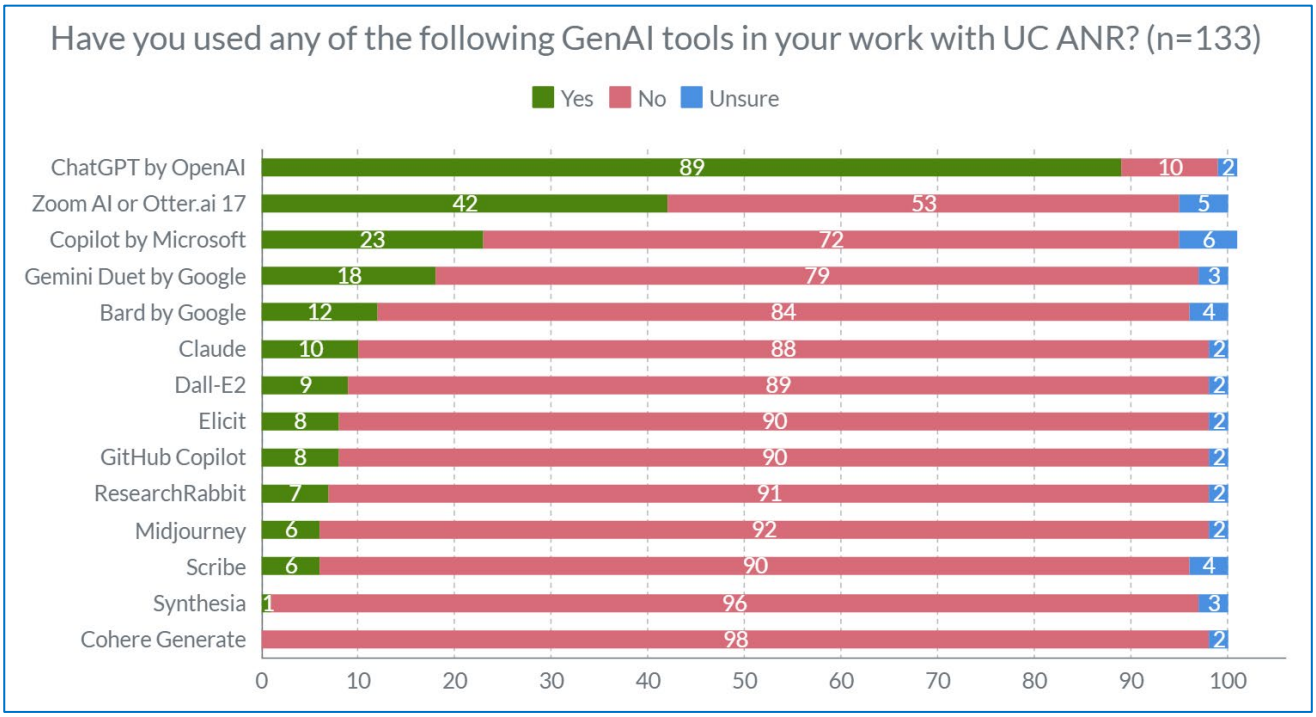
Copilot = 5.4

Gemini = 5.7

Bard = 4.5

Claude = 7.6





Describe other ways you might use GenAI in UC ANR work functions, tasks, or projects in the future.

Findings: 13 themes (each with 2 to 28 responses). Some respondents report active use and plans to use GenAI for a variety of tasks, many others are either unsure or hesitant to adopt it, frequently due to lack of knowledge or ethical concerns. The most common themes were unsure or no additional uses (28), creative content development (18), writing or editing support (15), or administrative tasks (12).

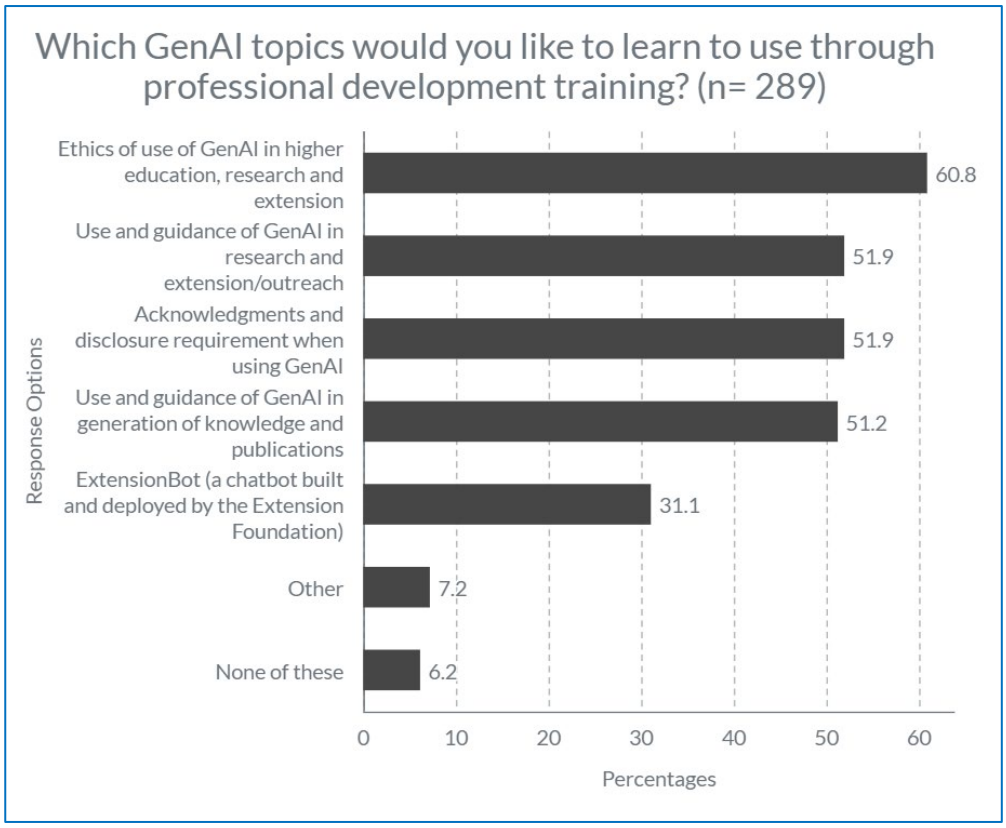
I might use GenAI to assist in developing training materials or programs to help me overcome the curse of knowledge - making sure that any technical terms I think are every day terms are explained enough to be engaging to the average person. I use it to make my writing more personable as it was never my strong suit.

It is enormously powerful in generating ideas, summarizing text, and performing analysis. It is terrific with qualitative data from interviews. I use it to rewrite original text and perform analysis of long documents. I think trainings and conferences on practical methods for qualitative and quant methods would be helpful.

ChatGPT 4o generated image using the prompt: "Create image applications, practical use, and ethical considerations for the use of generative artificial intelligence at the University of California Division of Agriculture and Natural Resources"

Training needs

Respondents requested training in many areas, including ethical use, best practices for research and extension, and how to acknowledge/disclosure use of GenAI.



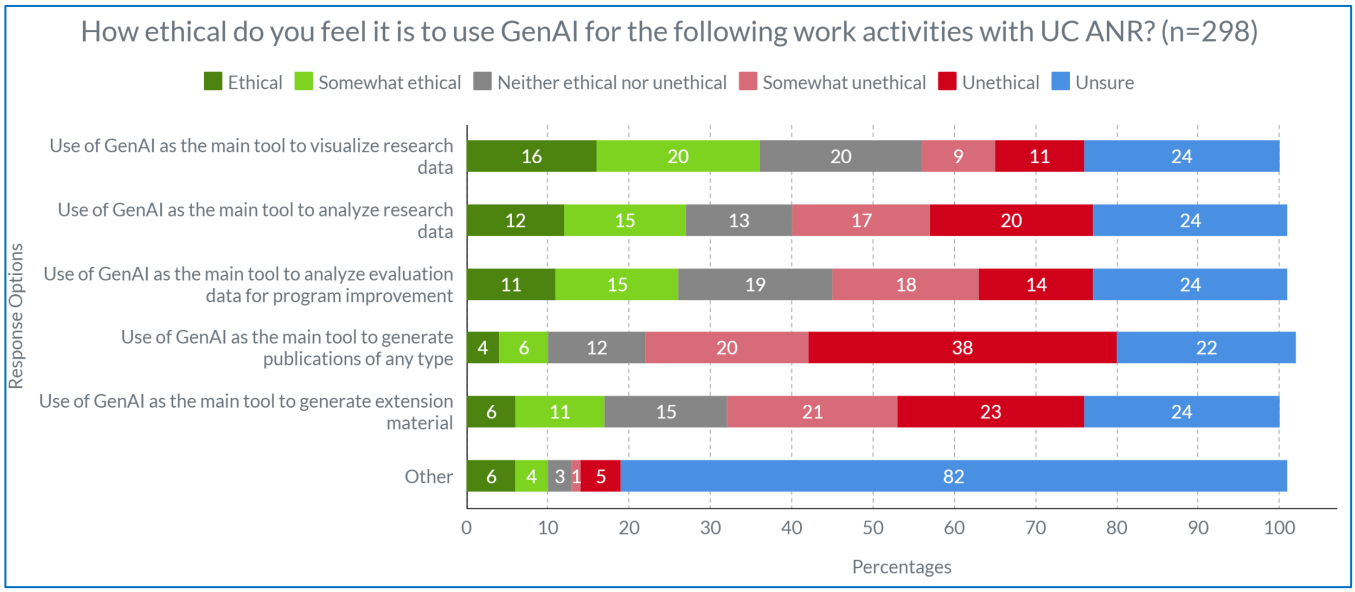
What would you need in order to help improve your abilities and confidence in using GenAI in your work with UC ANR?

Findings: 7 themes (each with 10 to 60 responses). Responses show a need for a structured approach to introduce GenAI, focusing on education, ethical considerations, policy guidance, and support while addressing deeply held concerns around ethics, environmental and human impacts. The most common needs were related to training and education with the most requested topics including hands on experience, ethics, which tools to use, prompt engineering, safety, and limitations.

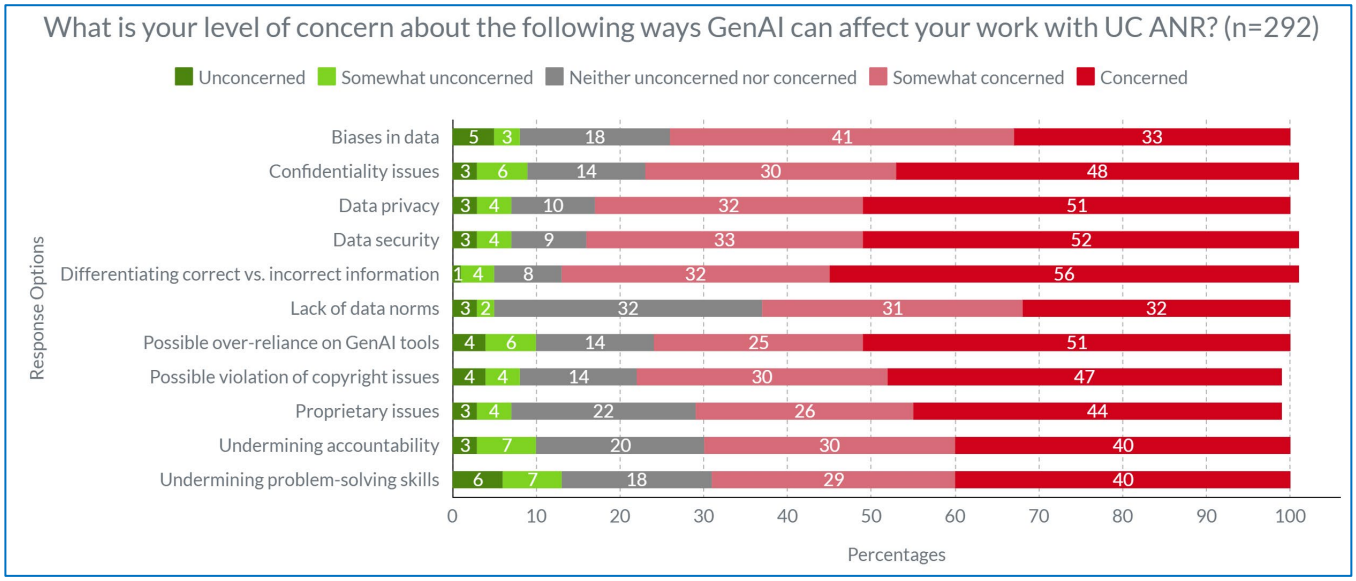
> *"Can we focus on teaching people how to use the tool rather than implementing policies that inhibit people who do know how to use it adequately? People have fears around what they do not know. Professional development can be used to teach them it is just a tool."*

Perceptions of risk, ethics, and work impacts

Respondents reported mixed perceptions on ethical use; visualizing data (36% ethical v. 20% unethical) and analyzing research (27% ethical v. 37% unethical) or evaluation (26% ethical v. 32% unethical) data were more likely to be rated as "ethical" or "somewhat ethical" whereas GenAI use as the main tool for generating publications (10% ethical v. 58% unethical) or extension material (17% ethical v. 44% unethical) was least likely to be perceived as ethical. There was widespread concern about GenAI's impacts in all domains.



"How do we tell what sources were used to generate work? How do we guarantee the privacy and confidentiality of material we feed into GenAI? How do we check for data hallucinations? How do we justify the consumption of energy and resources needed to run GenAI - are the tradeoffs in terms of what's gained worth the environmental cost? How do we value human creativity?" – Cooperative Extension Advisor



What questions or concerns do you have about using GenAI in your work at UC ANR?
Findings: 9 themes (each with 8 to 27 responses). Responses highlight a strong need for transparency, clear policy guidance, and ethical considerations in using GenAI. Concerns center around intellectual property, data security, environmental impacts, and the quality of outputs, with skepticism about over-reliance on GenAI and its potential to diminish critical skills and authentic engagement. The most common needs were related to ethical considerations (27) and guidance on appropriate use (26).

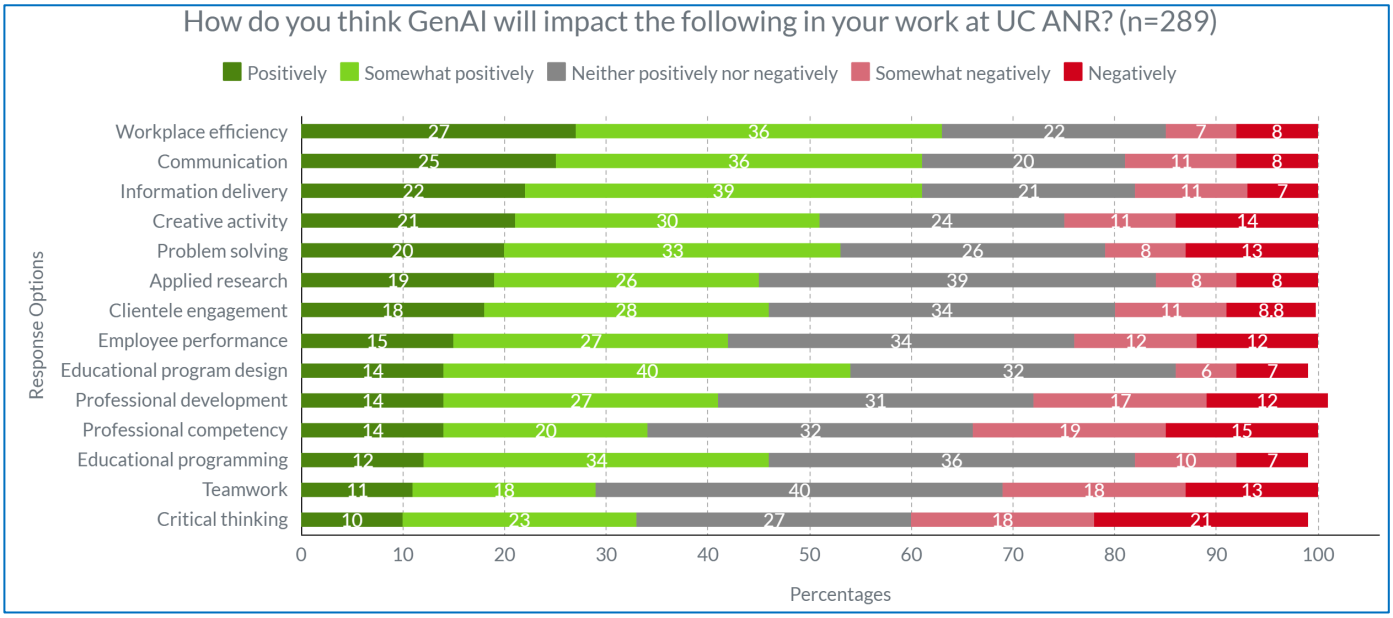
I have grave concerns that UC ANR will recommend using these methods despite the concerns about ecological footprint and errors and "hallucinations" and biases ..., and that it will make it harder to do good work because those of us not using these tools will be seen as "less productive".

Microsoft Copilot generated image using the prompt: "Create an image of applications, practical use, and ethical considerations for the use of generative artificial intelligence at the University of California Division of Agriculture and Natural Resources"

Reve generated image using the prompt: "Create an image of applications, practical use, and ethical considerations for the use of generative artificial intelligence at the University of California Division of Agriculture and Natural Resources"

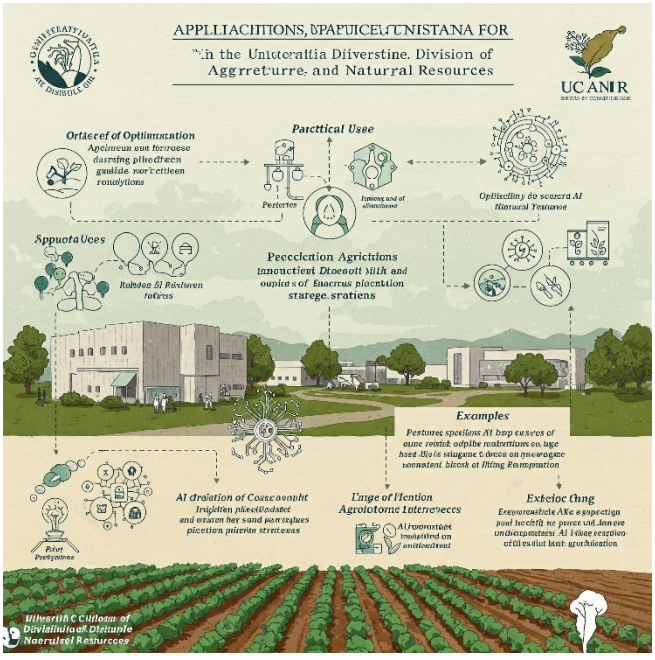
GenAI impacts on the future of work at UC ANR

Respondents reported that GenAI will **positively** impact their efficiency (63% positive), communication (61% positive), and information delivery (61% positive), while **negatively** impacting their critical thinking (39% negative), professional competency (34% negative), and teamwork (31% negative).



"GenAI will make me more efficient and has already made my work more efficient. This will in turn provide better performance for my department. Utilizing it in a way that makes our work more efficient, that creates a different, quicker path to learning, and that reduces wasteful work will impact our departments very positively."

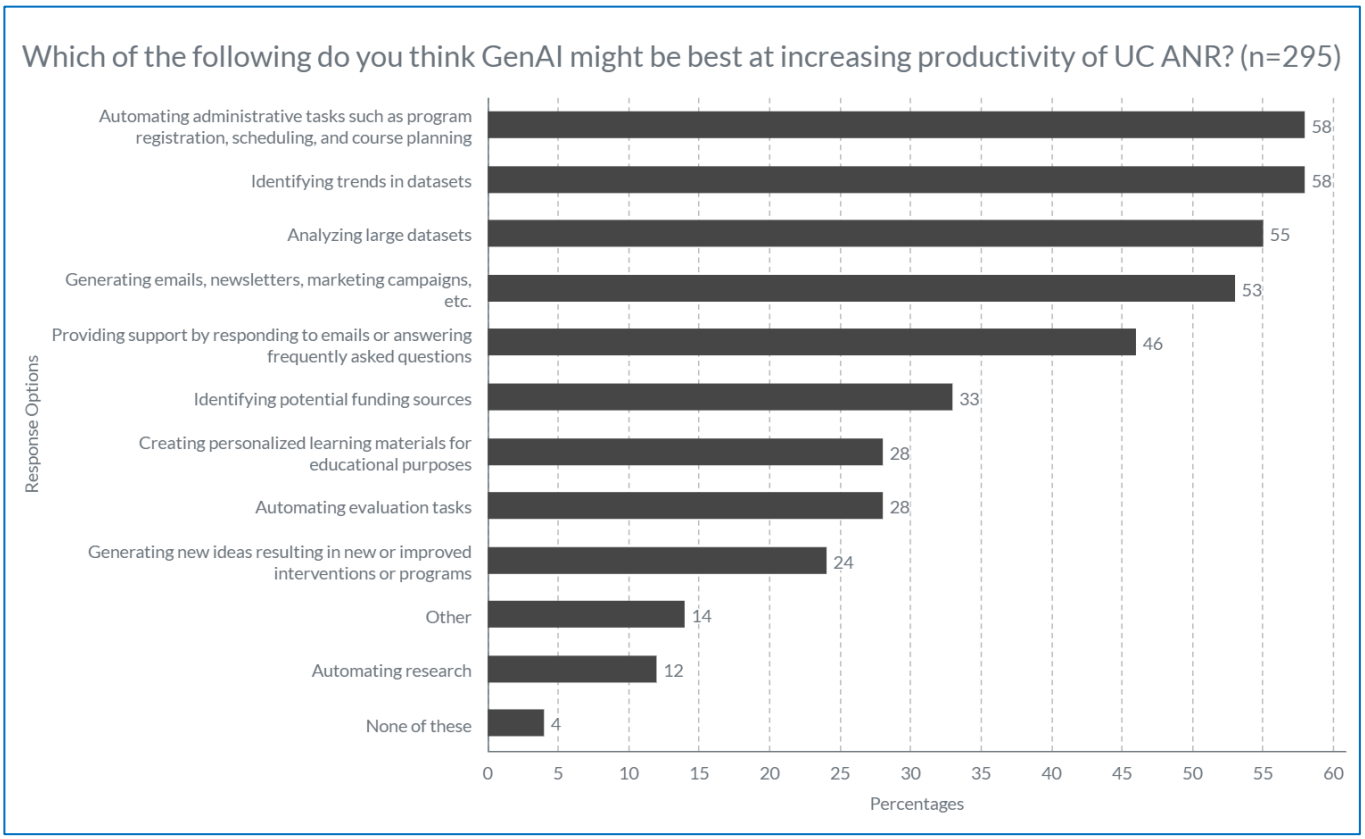
"If properly implemented, in a positive way, maybe even increasing efficiency. Bigger worry is when it is used improperly or unethically, and actions/publications/content are based on potentially inaccurate information or data is skewed in unexpected ways."



Google Gemini generated image using the prompt: "Create an image of applications, practical use, and ethical considerations for the use of generative artificial intelligence at the University of California Division of Agriculture and Natural Resources"

Increasing productivity

Respondents reported specific GenAI tasks that might increase productivity include automated administration tasks (58%); analyzing data (58% & 55%); and generating emails, newsletters, or marketing materials (53%).



How do you think GenAI tools will impact the future of your work at UC ANR and/or your broader discipline (program area)?

Findings: 12 themes (each with 2 to 66 responses). Responses suggest that GenAI has the potential to significantly improve efficiency and streamline administrative tasks while also raising concerns about job displacement, spread of misinformation, and human/environmental impacts. The most common were automation and efficiency (66), not sure (18), dissemination of misinformation (16), change or elimination of job function (13).

> *I think they will streamline a lot of processes that are repetitive and structured, freeing people up to use their brains to solve problems for people more quickly and effectively. They will help people find answers to their questions more quickly so they can move to the next step in their projects.*

Conclusions

- **Widespread Usage** – Nearly 45% of UC ANR employees currently use GenAI in their work, with an additional 20% planning to use it in the future. GenAI is most commonly used for brainstorming, administrative tasks, and communication. Fewer employees use it for data analysis or image generation. ChatGPT is the most widely used tool, rated at 7.3/10 for usefulness. However, Open AI's ChatGPT is not currently approved for use with P2-P4 privacy levels of UC data.
- **Ethics** – Ethical concerns include accuracy, confidentiality and privacy, bias, lack of transparency and accountability, and the environmental impact.
- **Training** – Employees desire guidance on use, best practices, and disclosure of GenAI use in their work.
- **Impact** – GenAI is expected to positively influence efficiency, communication, and information delivery but expected to negatively affect critical thinking, professional competency, and teamwork. Automating administrative tasks, analyzing data, and generating communication materials were identified as key areas where GenAI could improve productivity.

Recommendations

- **Develop Clear UC ANR Guidelines** – Lead by the Chief Information Security Officer and Policies, Compliance, and Programmatic Agreements, a group of ANR academics and staff should develop and provide explicit policies on the allowable use of GenAI, including appropriate applications and disclosure requirements to ensure responsible AI use, including best practices for verifying AI-generated content and managing data confidentiality, providing licenses for GenAI platforms that comply with data privacy and security policies.
- **Expand Training Opportunities** – Learning & Development, in partnership with Human Resources and academic leadership, should offer professional development on ethical use, research and extension applications, and strategies for mitigating risks like misinformation or bias.
- **Continual Evaluation** – The research team should conduct a follow-up survey after professional development is offered to track how GenAI is shaping employees' work and identify emerging challenges. Additionally, systematic evaluation should be conducted for all professional development.

Research Team
Vikram Koundinya, PhD, Evaluation Specialist, Human Ecology, UC Davis
Andrew Lyons, PhD, Program Coordinator, Informatics and GIS Statewide Program, UC Berkeley
Daniel Obrist, PhD, Vice Provost, UC ANR
Kitty Oppliger, MPH, Community Nutrition and Health Advisor, Central Sierra, UC ANR
Jennifer Smilowitz, PhD, Specialist, Food Science and Technology, UC Davis
Katherine Soule, PhD, CE Advisor, San Luis Obispo and Santa Barbara Counties, UC ANR
Steven M. Worker, PhD, 4-H Youth Development Advisor, Marin County, UC ANR