

Citizen science can play role in addressing agricultural challenges

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An international team of more than three dozen researchers has published a paper highlighting the potential of citizen science to address pressing research challenges in agriculture and food systems. One key to capitalizing on such efforts, the researchers find, may be to build stronger ties between citizen science and agricultural extension efforts. Credit: Lauren Nichols, NC State University

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"We define citizen [science](#) as research in which non-scientists play a role in project development, data collection or discovery and which is subject to conventional peer review," says Sean Ryan, lead author of a paper on the work. "Though citizen science has grown in popularity in recent decades, it isn't a new idea. There are examples of what you might call citizen science dating back to ancient China, 3,500 years ago.

"Our goal with this work was to capture the extent to which modern citizen science has helped us address meaningful research questions related to agriculture and food," says Ryan, who is a Citizen Science Fellow at North Carolina State University and postdoctoral researcher at the University of Tennessee Institute of Agriculture. "Has citizen science made a difference in tackling the global challenge of feeding a growing population in a changing climate? Could it do more?"

To assess the state of citizen science in [agricultural research](#), the researchers analyzed hundreds of academic articles, singling out dozens of examples that address issues from crop pests and pathogens to biodiversity and ecosystem services. The researchers also looked at a number of ongoing projects that have not yet appeared in academic journals.

"In all of the areas we looked at, we found that citizen science has been used to both produce scientifically robust findings that address real-world issues and to engage the public," Ryan says.

Specifically, the researchers found that—as long as a study was well

designed—citizen science could produce solid findings, make a research project more cost effective and allow researchers to expand the scale of their studies dramatically.

"For example, enlisting farmers or gardeners in a study could give researchers access to samples across a broad geographic range, often on lands that researchers would not otherwise have access to," Ryan says.

Another key idea to come out of the work is that agricultural [extension](#) and citizen science practitioners could learn from each other, and such partnerships hold a lot of potential for addressing agricultural research challenges.

"Ag extension is focused on connecting growers and researchers; it's where research findings are put into practice," Ryan says. "It's effective because extension agents have relationships with farmers. There's real trust there. And those kinds of relationships are essential to both understanding which research questions have real-world value and to enlisting growers into efforts to address those questions. Partnerships between extension and citizen science have enormous potential to advance agricultural science."

In addition, the researchers note that citizen science efforts have the potential to—at least partially—fill the role of extension in parts of the world where there is no extension service. For example, by building relationships with farmers, citizen science practitioners may be able to help farmers apply research to address on-farm challenges.

"Ultimately, we hope citizen science researchers consider looking at agricultural issues," Ryan says. "We hope agricultural researchers consider [citizen](#) science as a viable means of advancing their work, and we hope to see more collaboration and communication between [citizen science](#) and agricultural extension."

The paper, "The Role of Citizen Science in Addressing Grand Challenges in Food and Agriculture Research," is published in *Proceedings of the Royal Society B*.

More information: The Role of Citizen Science in Addressing Grand Challenges in Food and Agriculture Research, *Proceedings of the Royal Society B*, [rspb.royalsocietypublishing.org1098/rspb.2018.1977](https://royalsocietypublishing.org/doi/10.1098/rspb.2018.1977)

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