

Study: Farmers and scientists divided over climate change

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Crop producers and scientists hold deeply different views on climate change and its possible causes, a study by Purdue and Iowa State universities shows.

Associate professor of natural resource social science Linda Prokopy and fellow researchers surveyed 6,795 people in the agricultural sector in 2011-2012 to determine their beliefs about climate change and whether variation in the climate is triggered by human activities, natural causes or an equal combination of both.

More than 90 percent of the scientists and climatologists surveyed said they believed climate change was occurring, with more than 50 percent attributing climate change primarily to human activities.

In contrast, 66 percent of corn producers surveyed said they believed climate change was occurring, with 8 percent pinpointing human activities as the main cause. A quarter of producers said they believed climate change was caused mostly by natural shifts in the environment, and 31 percent said there was not enough evidence to determine whether climate change was happening or not.

The survey results highlight the division between scientists and farmers over climate change and the challenges in communicating [climate data](#) and trends in non-polarizing ways, Prokopy said.

"Whenever climate change gets introduced, the conversation tends to

turn political," she said. "Scientists and climatologists are saying climate change is happening, and agricultural commodity groups and farmers are saying they don't believe that. Our research suggests that this disparity in beliefs may cause agricultural stakeholders to respond to climate information very differently."

Climate change presents both potential gains and threats to U.S. agriculture. Warmer temperatures could extend the growing season in northern latitudes, and an increase in [atmospheric carbon dioxide](#) could improve the water use efficiency of some crops. But increases in weather variability and [extreme weather events](#) could lower crop yields.

Growers can manage the potential risks linked to extreme rain events and soil degradation by using adaptive strategies such as planting cover crops, using no-till techniques, increasing the biodiversity of grasses and forage and extending crop rotations, Prokopy said. These strategies contribute to soil health and water quality and also help capture [carbon dioxide](#), reducing the amount of greenhouse gases released into the atmosphere by agricultural systems.

Currently, agriculture accounts for 10-12 percent of the total human-caused greenhouse gas emissions globally.

Focusing on the causes of climate change, however, is likely to polarize the agricultural community and lead to inaction, said study co-author Lois Wright Morton, professor of sociology at Iowa State University. To foster productive dialogue, she said, scientists and climatologists need to "start from the farmer's perspective."

"Farmers are problem solvers," she said. "A majority of farmers view excess water on their land and variable weather as problems and are willing to adapt their practices to protect their farm operation. Initiating conversations about adaptive management is more effective than talking

about the causes of climate change."

The gap in views on [climate change](#) is caused in part by how individuals combine scientific facts with their own personal values, Morton said.

"Differences in beliefs are related to a variety of factors, such as personal experiences, cultural and social influences, and perceptions of risk and vulnerability," she said.

Prokopy advises scientists to "recognize that their worldviews may be different than those of farmers. Moderating communication of climate information based on that realization is key."

Climate science could also be better communicated by using intermediaries such as Extension educators and agricultural advisers to translate data in ways that are most relevant to growers, she said.

"Farmers are by necessity very focused on short-term weather, in-season decisions and managing immediate risks," she said. "They're thinking about when they can get in their field to do what they need to do, rather than looking 20 to 30 years down the road."

More information: The study was published in the *Bulletin of the American Meteorological Society* and is available at journals.ametsoc.org/doi/pdf/10.1175/BAMS-D-13-00172.1

Provided by Purdue University

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